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E-Commerce & E-Governance
E-Commerce & E-Governance
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Unit: 01 Introduction To Electronic Commerce Structure 1.0 Introduction 1.1 Unit Objectives 1.2. E-Commerce 1.2.1. Definition 1.2.2 Differences Between E-commerce and E-business 1.2.3 E-Commerce Features 1.2.4 E-Commerce Opportunities for Businesses 1.3 E-Commerce History 1.3.1 Origin of E-Business 1.4
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Business-to-consumer (B2C) Model 1.4.2 Business-to-business (B2B) Model 1.4.3 Consumer-to-consumer (C2C) Model 1.4.4 Peer-to-peer (P2P) Model 1.4.5 M-Commerce 1.4.6 Working of E-Business Models 1.5 Unit Summary 1.6 Key Terms 1.7 Check Your Progress 1.0 Introduction Electronic commerce, or e-commerce, is the process of buying and selling goods and services over the Internet or other computer networks. Because of the online boom and a larger share of disposable income, the amount of trade conducted electronically has also grown. This has also spurred innovations in electronic funds transfer, supply chain management, online marketing and transaction processing, and inventory management.
Although a large portion of e-commerce is conducted electronically, some e- commerce involves the transportation of physical items also. The popularity of e-commerce is such that almost all big retailers who have physical outlets are present on the Web. 1.1 Unit Objective On the completion of this unit, students shall have a clear knowledge of the concept

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of e-commerce. 1.2. E-Commerce E-commerce is a selling and transfer process requiring several institutes. It is

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systematic and organized network for the exchange of goods between producers and consumers. The Net aims to establish the interconnections between producers and consumers directly and in this, the internet embraces all those related activities which are indispensable for maintaining a continuous, free and uninterrupted distribution and transfer of goods. The Website or portals may be categorized into commercial and noncommercial. Any website or portal that offers products and/or services for sale is a commercial website. There are thousands of commercial websites on the Internet. Some of them have been successful, and some weren't so lucky. What elements make up a good commercial website? Of course, web pages should look attractive to a customer. However, even the most attractive web pages will not make a person come back to a website where it takes too long to find the right product or where order forms don't work. 1.2.1.

Definition

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E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT's). E-commerce takes place between companies, between companies and their customers, or between companies and public administration. E-commerce includes

the electronic trading of both goods and electronic materials.
● "

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e-commerce denotes the use of electronic transmission media (telecommunication) to engage in the exchange of products and services requiring transportation either physically or digitally, from location to location", M. Greenstein and T.M. Feinman ● "e-commerce describes the process of buying and selling (or exchanging) of products, services, and information via computer networks including the internet". E. Turban and others. E-commerce is the means to complete online transactions and integrate the supply chain into the transaction management process such as receiving orders, making payments, and tracking down the deliveries or orders. ● "e-commerce can be defined as the technology-mediated exchanges between parties (individuals, organizations, or both) as well as the electronic-based intra or inter-organizational activities that facilitate such exchanges". J.F. Rayport and B.I. Jaworski. According to

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World Trade Organization (WTO), "E-commerce as a commercial process includes production, distribution, marketing, sale or delivery of goods and services electronically." E-commerce is used everywhere in everyday life. It ranges from credit/debit card authorization, travel reservation over a phone/network, wire fund transfers across the globe, point of sale transactions in retailing, electronic banking, electronic insurance, fundraising, political Campaigning, online education and training, online auctioneering, on-line lottery and so on. Many people use the terms e-commerce and e-business interchangeably, which is factually wrong. 1.2.2

Differences Between E-commerce and E-business In the English language, the terms business and commerce are mostly used interchangeably as nouns that mean organized profit-seeking activity. However, in the electronic realm, there is a subtle difference between e-commerce and e-

business. The differences between e-business and e-commerce are listed in Table 1.1. E-Business E-Commerce Scope involves buying/selling, marketing, procurement, logistics, and educating thecustomer over the Internet Scope involves mostly buying or selling over the Internet Involves the processes and cultures of an online business enterprise Involves only the economic aspects of an online business enterprise Connecting critical business systems to customers, employees, vendors, and business partners, using Intranets, extranets, e-commerce technologies, collaborative applications and the Web Establishing a channel between sellers and buyers of goods and services Establishment of fully integrated value chains The requirement of integrated value chain is limited because only buyers and sellers are involved Information partnership, real-time information There is not much sharing of real-time information between buyers and sellers Table 1.1: Difference Between E-Business and E-Commerce 1.2.3 E-Commerce Features

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Electronic commerce, or e-commerce, refers to the purchasing and selling of goods or services via electronic means, such as the Internet or mobile phone applications. It may also refer to the process of creating, marketing, servicing, and paying for services and goods. Businesses, governments, and the public can participate in e-Commerce transactions. The following discussion will elicit the unique features of e-commerce. The unique features of e-commerce technology include: ➢ Ubiquity: e-Commerce is ubiquitous, It is available just about everywhere and at all times by using

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internet and Wi-Fi hotspots such as airports, coffee cafes, and hill station places. Consumers can connect it to the Internet at any time, including at their homes, their offices, on their video game systems with an Internet connection and mobile phone devices. E-Commerce is a ubiquitous technology that is available everywhere. Moreover, individuals who have cell phones with data capabilities can access the Internet without a Wi-Fi connection. ➢ Global reach: The potential market size is roughly equal to the size of the online population of the world. E-Commerce Technology seamlessly stretches across traditional cultural and national boundaries and enables worldwide access to the client. E-Commerce websites have the ability to translate multilingual websites as well as allow access to visitors all over the world, purchase products, and make business interactions. ➢ Universal standards: The technical standards of the Internet are shared by all of the nations in the world. The whole online tradition is growing and expanding its features in the world. To develop any kind of business,

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need Internet and communication applications which make the business relationship more lovingly and attractive for secure business and successful business. ➢ Richness: Users can access and utilize text messages and visual and audio components to send and receive information. An individual may see information richness on a company's blog if a post contains a video related to a product and hyperlinks that allow him to look at or purchase the product and send information about the post via text message or email. ➢ Interactivity: E-commerce technologies allow two-way communication between the merchant and the consumer. As a result, e-Commerce technologies can adjust to each individual's experience. For example, while shopping online, an individual is able to view different angles of some items, add products into a virtual shopping cart, checkout by inputting his payment information, and then submit the order. ➢ Personalization: Technologies within e-Commerce allow for the personalization and customization of marketing messages that groups or individuals receive. An example of personalization includes product recommendations based on a user's search history on a Web site that allows individuals to create an account. ➢ Information density: The use of e-Commerce reduces the cost to store, process, and communicate information, At the same time, accuracy and timeliness increase; thus, making information accurate, inexpensive, and plentiful. For example, the online shopping process allows a company to receive personal, shipping, billing, and payment information from a customer all at once and sends the customer's information to the appropriate departments in a matter of seconds. ➢ Social technology: E-Commerce technology has tied up the social media networking application to provide the best source of content sharing technology and e-Marketing systems. You can share your content or data easily with just one click. ➢ User-Generated Content: Social networks use e-Commerce technologies to allow members, the general public, to share content with the worldwide community. Consumers with accounts can share personal and commercial information to promote a product or service. When a company has a professional social networking account, a member of the same social network has the option of associating himself with the company or a product by saying he likes or recommends it. When an individual updates his status on a social networking account, he may also mention a product or company by name, which creates word-of- mouth advertising. 1.2.4

E-Commerce Opportunities for Businesses Many businesses need e-commerce software packages to help take advantage of various business opportunities: 1. Tourism and travel sector: Consumers can make online reservations in hotels and restaurants; can purchase air and railway tickets and so on. 2. Banking sector: Most banks have made their services available online through their respective Websites. These services include making payments, paying bills, purchasing and selling shares, checking account balances and transferring funds, and so on. 3. Health care sector: Most health care companies provide their services online, such as payment of premiums, issue of policies, providing reimbursements, and so on. 4. Stock sector: Demat account facilities are provided to customers who can do overall analyses of the stock markets and their related transactions. 5. Financial sector: The financial sector provides e-commerce services, which are made optimum use by users for paying insurance, loans, mortgages, and so on. 1.3 E-Commerce History

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E-commerce deals with buying and selling information, products, and services through a computer network

without actually visiting an actual physical store. It can also be considered as a business activity that uses an electronic medium for

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the delivery of information, products, services, and payment through the electronic medium.

E-commerce involves the paperless exchange of information in a business with the use of Electronic Data Interchange (EDI), electronic bulletin boards, e-mail, and other technologies. It helps to automate processes and transactions that are usually done on paper. E-commerce technologies have assisted companies to change the way they operate and become more technologically savvy.

1.3.1 Origin of E-Business E-business refers to conducting business over the Internet with the help of electronic devices like computers and laptops, phone lines, fax machines, secure Internet lines, and so on. In the 1950s, computers were used by organizations to process and store records of internal transactions. However, the information between businesses continued to be exchanged on paper, like purchase orders, invoices, cheques, remittance devices, and other standard forms, which were used to document transactions. IBM was the first company that used the term e-business internationally. In 1972, IBM used the term 'e-business' and the first successful transaction was executed between the United States and the European Union in 1993, with the invention of personal computers.

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Although these information transfer agreements between trading partners increased efficiency and reduced errors, they were

still not an ideal solution. A range of processes, such as EDI, e-mail, Internet, and Internet applications were combined to provide ways to exchange information between individuals, companies, customers, and computers. The core element of e-business remains the Internet. Electronic business has become very popular in the past few years, with the value of transactions in India estimated to cross $68.2 million.

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There have been several key steps in the history of e-commerce. ➢ The first step came from the development of the Electronic Data Interchange (EDI). EDI is a set of standards developed in the 1960s to exchange business information and do electronic transactions. At first, there were several different EDI formats that businesses could use, so companies still might not be able to interact with each other. ➢ However, in 1984 the ASC X12 standard became stable and reliable in transferring large amounts of transactions. The next major step occurred in 1992 when the Mosaic web browser was made available; it was the first 'point and click browser. The Mosaic browser was quickly adapted into a downloadable browser, Netscape, which allowed easier access to electronic commerce. ➢ The development of DSL was another key moment in the development of e-commerce. DSL allowed quicker access and a persistent connection to the Internet. Christmas of 1998 was another major step in the development of e-commerce. AOL had sales of 1.2 billion over the 10 week holiday season from online sales. ➢ The development of Red Hat Linux was also another major step in electronic commerce growth. Linux gave users another choice in a platform other than Windows that was reliable and open-source. Microsoft faced this competition

and

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needed to invest more in many things including electronic commerce. ➢ Napster was an online application used to share music files for free. This application was yet another major step in e-commerce. Many consumers used the site and were dictating what they wanted from the industry. A major merger, in early 2000, between AOL and Time Warner was another major push for electronic commerce. The merger, worth $350 million, brought together a major online company with a traditional company. In February 2000 hackers attacked some major players of e-commerce, including Yahoo, eBay, and Amazon. In light of these attacks, the need for improved security came to the forefront in the development of electronic commerce. It is predicted that revenues will grow 40% to 50% yearly. Expectations of higher prices as well as larger profits for e-commerce businesses are also present. Also, we will see a larger presence by experienced traditional companies, such as Wal-Mart, on the Internet. It is believed companies, in general, will take this mixed strategy of having stores online and offline in order to be successful. It can be seen that there will be a large growth in Business-to- Consumer (B2C) e-commerce, which online businesses are selling to individuals. However, even though B2C electronic commerce may be the most recognizable there are different varieties. Today the largest electronic commerce is Business-to-Business (B2B). Businesses involved in B2B sell their goods to other businesses. In 2001, this form of e-commerce had around $700 billion in transactions. Other varieties growing today include Consumer-to-Consumer (C2C) where consumers sell to each other, for example through auction sites. Peer-to-Peer (P2P) is another form of e-commerce that allows users to share resources and files directly. 1.4 Types of E-commerce

A transaction in an electronic market describes a number of interactions between parties. This includes, for example, ordering products, making payments, supporting delivery and marketing and promotion activities. One must therefore have a marketing strategy for transacting commerce through which a corporation maintains itself and generates revenue. Business models are defined as, 'A set of shared common characteristics, behavior, and methods of doing business that enables a firm to generate profits through increasing revenues and reducing cost.' Business models are created for the purpose of trying to answer the following questions: ➢ How can you get a competitive advantage? ➢ Which product-market strategy is to be followed? ➢ What should be the marketing mix? There are mainly five types
of e-commerce models: ➢
Business-to-Consumer (B2C) Model ➢ Business-to-Business (B2B) Model ➢ Consumer-to-Consumer (C2C) Model ➢ M-commerce 1.4.1 Business-to-consumer (B2
C) Model This is the most commonly prevalent e-commerce segment, in which online retailers and marketers sell their products to consumers by using data made available through online marketing tools. This model concentrates on individual buyers and offers consumers the capability to browse, select and
merchandise online from a wider variety of sellers and at better prices. The B2C e-business interaction is most appropriate for the following types of transactions: ● Easily transformable goods, i.e., products that are easily transformable into digital formats, such as videos, software packages, music books, and so on. ● Highly rated branded items or items with return security. ● Items sold in packets that are not possible to open in physical stores. ● Items that follow the standard specifications. The working of B2C has the following steps: 1. The customer identifies his/her need. 2. The customer looks for the product or services that suit his/her needs. 3. The customer selects a vendor and negotiates a price. 4. The customer then receives the product or service. 5. The customer makes the payment for the received product. 6. The customer gets the services and warranty claims that are associated with the product. 1.4.2 Business-to-business (B2B) Model In this form, both buyers and sellers are business set-ups and there are no individual customers. In this model, manufacturers supply goods to retailers or wholesalers. This type of model needs two or more business organizations that do business with each other. It entails commercial activity among companies through the Internet as a medium. At present, there are many types of e- businesses. The B2B e-business is of the following types: ● Supplier-oriented: In this type of e-business, a supplier establishes the electronic market where a number of customers or buyers transact with suppliers. Generally, it is done by a supplier which has a monopoly over the products that it supplies.
● Buyer-oriented: In this type of e-commerce, big business organizations with high volume purchase capacity create an e-business marketplace for purchases and gains by starting a site of their own. The online e- business marketplace is used by buyers for placing requests for quotations and carrying out the entire purchase process. ● Intermediary oriented: In this type of B2B e-business, a third party establishes the e-business marketplace and attracts both buyers and sellers to interact with each other. ● Application of B2B model: Some of the applications of the B2B model are, inventory management, channel management, distribution management, order fulfillment and delivery payment, and payment management. 1.4.3 Consumer-to-consumer (C2C) Model This model facilitates the online selling and purchasing of goods and services between two parties. There is no middleman involved and the parties carry out transactions with

This model involves the growing popularity of peer-to-peer (P2P) software that facilities the exchange of data directly between individuals over the Internet. 1.4.4 Peer-to-peer (P2P) Model In this model, people share computer files and computer resources directly without being routed through a Web server. Here, both parties must install software that enables them to communicate on the common platform. 1.4.5 M-Commerce Short for mobile commerce, this model facilitates the use of smartphones, personal digital assistants, and other mobile devices to conduct business transactions. Other e-commerce business models are listed as follows: ● Business-to-employee (B2E) model
● Government-to-business (G2B) model ● Government-to-citizen (G2C) model Table 1.2: Types of E-Business Models 1.4.6 Working of E-Business Models To understand the operating procedure of an e-business model, consider a customer who wants to make an online purchase. He is transferred to the online transaction server where all the information is converted into an encrypted form. Once he has placed his order, the information moves through a private gateway to a processing network where the issuing and acquiring banks complete or deny the transaction. This process takes only a few seconds. A typical online transaction is shown in Figure 1.1. Figure 1.1: Online Transaction
1.5 Unit Summary ●

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E-commerce is a selling and transfer process requiring several institutes. It is

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systematic and organized network for the exchange of goods between producers and consumers. The Net aims to establish the interconnections between producers and consumers directly and in this, the internet embraces all those related activities which are indispensable for maintaining a continuous, free and uninterrupted distribution and transfer of goods. ●

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E-commerce is used everywhere in everyday life. It ranges from credit/debit card authorization, travel reservation over a phone/network, wire fund transfers across the globe, point of sale transactions in retailing, electronic banking, electronic insurance, fundraising, political Campaigning, online education and training, online auctioneering, on- line lottery and so on. ●

E-Business involves buying/selling, marketing, procurement, logistics, and educating the customer over the internet. While E-commerce involves mostly buying or selling over the internet. ● The unique features of e-commerce technology include ubiquity, global reach, universal standards, richness, interactivity, personalization, information density, social technology, and user-generated content. ● Many businesses like the travel and tourism sector, banking sector, health care sector, stock sector, and financial sector need e-commerce software packages to help take advantage of various business opportunities. ● IBM was the first company that used the term e-business internationally. In 1972, IBM used the term 'e-business' and the first successful transaction was executed between the United States and the European Union in 1993, with the invention of personal computers. ●
There are mainly five types
of e-commerce models:
Business-to- Consumer (B2C) Model, Business-to-Business (B2B) Model, Consumer- to-Consumer (C2C) Model, M-commerce
1.6 Key Terms ● E-business: It may be defined as the application of information and communication technologies (ICT) to facilitate all the activities of the business. ● E-commerce: It consists of buying and selling goods or services over the Internet or other computer networks. ● Business models: They are a set of shared common characteristics, behavior, and methods of doing business that enables a firm to generate profits through increasing revenues and reducing cost. 1.7 Check Your Progress Subjective: 1) Define E-commerce. How are e-commerce and e-business two different terms? 2) Many businesses need e-commerce software packages to help take advantage of various business opportunities. Explain. 3) What are the different features of e-commerce? 4) What are the different types of e-commerce models? Objective: 1) Fill in

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the gap: E-commerce is a selling and transfer process requiring several _____. 2)

Complete the line: Demat account facilities are provided to customers who can do overall _____. 3) True/false:

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E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT's). 4)

Short q/a: What is the Business-to-business model? 5) Short q/a: What is the Peer-to-peer model?

Unit: 02 Background Structure 2.0 Introduction 2.1 Unit
Objectives 2.2
Functions
of

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E-Commerce 2.3 Scope of E-Commerce 2.4 Benefits and limitations of E-Commerce 2.4.1 General Benefits of E-Commerce 2.4.2 Specific: Advantages of E-commerce to Business Firms 2.4.3 Specific: Benefits of E-commerce to Society 2.4.4 Specific: Benefits of E-commerce to Customers 2.4.5 Limitations of E-Commerce 2.5

Electronic Commerce
Framework 2.6 Unit Summary 2.7 Key Terms 2.8 Check Your Progress 2.0 Introduction E-commerce implies business activities and carrying on each activity may involve lots of planning and efforts that require skills.

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There is enough scope for online businesses in the future if they understand the shoppers' psyche and cater to their needs.

Electronic commerce holds several benefits as well as some limitations too. It

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can increase sales and decrease costs. Advertising done well on the web can get even a small firm's promotional message out to potential consumers in every country in the world.

While
most of the disadvantages of e-commerce stem from the newness and rapidly developing pace of the underlying technologies.

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Many of today's ambitious electronic commerce initiatives vary in their approach to security and privacy, their ability to handle micropayments, and their applicability to various types of transactions. 2.1

Unit Objective On the completion of this unit, students shall have a clear knowledge about the concept of e-commerce in relation to its functions, scope, benefits, limitations, and electronic commerce framework. 2.2 Functions of E-Commerce The following are five functions a businessman shall be found engaged in

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in his e-commerce business. a) Search Engine Optimization (SEO): - Generate unique relevant content. Google loves unique content that is related to what your site is all about. - Ensure you are using good keywords you want to focus on. Every page should have an H1 tag around what is the focus of the page, such as a product name, category name, or static content title. Use H2 tags as well for other important page sections. - Keywords in optimized page titles. - Internal linking. Link keywords in your unique content to pages related to that keyword. This is huge!!! - Friendly URLs with related phrases.

E.g. When talking about Zobrist's e-commerce solution, the URL looks like this:
http://www.zobristinc.com/our_solutions/eZ_Commerce/

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b) Selecting New Products - Sell what the customer wants to buy, not what you want to sell! This is a common mistake, especially when merchandisers are given a great price to sell a particular product. If nobody wants to buy that product, it doesn't matter what price you set it at. - Find out what customers want. What is your value proposition on products you sell? Capitalize on your niche! c) Merchandising New Productions: - Pictures, pictures, pictures! It is very important to have high-quality images of the products. - Hero photos: if you have a big seller, feature it on a category page with a hero image of the product. - Promote

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latest releases in your newsletters and feature them in categories or on your homepage. - Market to customers who have purchased related items in the past. d) Customer Service - Make your customers happy. - Delivery orders on time. - Ensure order accuracy. - Reship promptly if a package failed to be delivered to the customer, if it came damaged, or if it was missing parts. - Don't try to save every penny on an order. You may need to take a loss to make a customer happy in order to retain their loyalty to you, and therefore be very valuable for many orders to come. e) Monitoring your KPIs / Analytics - Monitor your analytics reports. View what items are selling and bubble them to the top of product listings so customers can find them easier. A great tool for this, if you are on IBM WebSphere Commerce, is our Smart Merchandiser product. With it, you can see analytic overlays on each product in each category to help you make smart merchandising decisions. - Tackle cart abandonment. Remarket those products to the customers if you have their email addresses. Incentivize them to complete their checkout within X days. 2.3 Scope of E-Commerce Today, online shopping is a reality in India. The marketplace is flooded with several e-commerce options for shoppers to choose from. In the recent past, the growth of

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e-commerce industry in India has been phenomenal as more shoppers have started discovering the benefits of using this platform. There is enough scope for online businesses in the future if they understand the Indian shoppers' psyche and cater to their needs. Listed below are the reasons that guarantee the future prospect of E-commerce in India. ● Enhancing domain registrations ● Rising internet users ● Easy access to

the internet ● Awareness about the

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internet even in rural areas ● Rising number of cybercafes ● Growing need for E-commerce a) Cash on delivery (COD): Indian e-commerce industry has evolved over a period of time with innovations that have changed the rules of the game globally. COD is one such example. In a country where credit card penetration is much lower than other developed markets and where e- commerce companies are still working hard to build trust among shoppers, introducing cash on delivery has been one of the key factors for the success of the segment. At present, COD is the preferred payment mode for close to 55-60% of all online transactions in the fashion and lifestyle segment in India. Executing COD efficiently and painlessly for the customer is critical to the success of any e-commerce player in the country. b) Delivering experiences: E-commerce needs to focus on customer experience to build trust and confidence. Customer experience encompasses every interaction of a customer from placing an order to interacting with

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customer service team, to the actual delivery experience. Providing a great delivery experience is one of the core aspects of delighting customers. This not only means faster deliveries but also consistency and reliability. The more faith the customer has in your delivery service, the more likely he is to buy again. Besides, it builds a good brand image and word-of-mouth publicity. c) Growing the base: In India, in 2021, around 761 million online users

exist and are believed to indulge in at least once in an online
shopping/transaction. During the covid pandemic, this percentage of online users has got a boon and continues to rise. Such a

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large base provides vast scope for e-commerce businesses to establish themselves. d) Growing opportunities: The e-commerce industry is growing at a rapid pace and changing the dynamics of the retail industry. In the coming years, e-commerce is expected to contribute close to 10-11% of the total retail segment in India. This growth is bound to continue provided e- commerce companies focus on innovating, building strong technology infrastructure, and delivering the best customer experience. e) Online Travel Segment: The online travel segment has seen a CAGR of 55.5% from 2007-2012.

This is due to the rise of disposable income, the

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surge in demand for domestic travel, and the boom of the tourism industry. Domestic travel contributed to as much as 50% of the total market, followed by railways tickets, international air tickets, hotel bookings, and bus tickets. f) E-Tailing:

It

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encompasses buying consumer items like apparel, electronic devices, home and kitchen appliances, jewelry, online. Competition is intense due to

the

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low entry barrier of this segment. However, Amazon.com, Flipkart, snapdeal.com, jabong.com, and myntra.com are some of the major players. This segment is expected to grow further as people become more pressed for time. Also, the choice that e-tailing sites offer to customers will drive demand for this segment. However, there will be intense price-based competition in this sector and consolidations are in order. g) Online Financial Services: The financial services segment includes applying for insurance, paying online bills, and premiums and online transactions for financial services. The costs of these insurance policies are lesser with premiums being 40%-60% cheaper. This is a win-win situation for both the insurance provider and the customers. Also, the convenience provided by online portals has led to more customers choosing the online route for bill payment. h) Classifieds: It is in a very promising stage and has

a lot of scope for growth. Online advertising is a

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lot cheaper than conventional methods and unlike the latter, it is not constrained to a geographic location. The growth is mainly fuelled by services like an online job (60% of the segment), online matrimony, B2C classifieds, and B2B classifieds. Naukri.com, timesjob.com, monster.com are the major players in the job market while jeevansathi.com, shaadi.com are the major matrimonial sites. i) Other online Services: These include sites offering online services like buying entertainment tickets, food, and grocery. 2.4 Benefits and limitations of E-Commerce

First, we discuss the benefits and then the

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limitations of e-commerce. 2.4.1 General Benefits of E-Commerce Electronic commerce can increase sales and decrease costs. Advertising done well on the web can get even a small firm's promotional message out to potential consumers in every country in the world. A firm can use electronic commerce to reach narrow market segments that are geographically scattered. The web is particularly useful in creating virtual communities that become ideal target markets for specific types of products or services. A virtual community is a gathering of people who share a common interest, but instead of this gathering occurring in the physical world; it takes place on the internet. Some key benefits of e-commerce are summarized below: ➢ By becoming e-commerce enabled, businesses now have access to people all around the world. In effect, all e-commerce businesses have become virtual multinational corporations. ➢ The cost of creating, processing, distributing, storing, and retrieving paper-based information has decreased. ➢ The pull-type processing allows for products and services to be customized to the customer's requirements. ➢ Enables reduced inventories and overheads by facilitating 'pull'-type supply chain management – this is based on collecting the customer order and then delivering through JIT (just-in-time) manufacturing. ➢ The Internet is much cheaper than value-added networks (VANs) which were based on leasing telephone lines for the sole use of the organization and its authorized partners. It is also cheaper to send a fax or e-mail via the Internet than direct dialing. ➢ Software and music/video products can be downloaded or emailed directly to customers via the Internet in digital or electronic format. ➢ Businesses can be contacted by or contact customers or suppliers at any time. ➢ 24/7 access: Enables customers to shop or conduct other transactions 24 hours a day, all year round from almost any location. ➢ Customers

do

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not only have a whole range of products that they can choose from and customize, but also an international selection of suppliers. ➢ Customers can 'shop' around the world and conduct comparisons either directly by visiting different sites, or by visiting a single site where prices are aggregated from a number of providers and compared (for example www.moneyextra.co.uk for financial products and services). ➢ This can range from the immediate delivery of digitized or electronic goods such as software or audio-visual files by downloading via the Internet, to the online tracking of the progress of packages being delivered by mail or courier. ➢ An environment of competition where substantial discounts can be found or value-added, as different retailers view for customers. It also allows many individual customers to aggregate their orders together into a single order presented to wholesalers or manufacturers and obtain a more competitive price. ➢ Enables more flexible working practices, which enhances the quality of life for a whole host of people in society, enabling them to work from home. Not only is this more convenient and provides happier and less stressful working environments,

but
it also potentially reduces environmental pollution as fewer people have to travel to work regularly. ➢ Enables people in developing countries and rural areas to enjoy and access products, services, information, and other people which otherwise would not be so easily available to them. ➢ Facilitates delivery of public services like health services available over the Internet (on-line consultation with doctors or nurses), filing taxes over the Internet through the Inland Revenue website. ➢
A business can reduce the costs of handling sales inquiries, providing price quotes, and determining product availability by using electronic commerce in its sales support and order-taking processes. ➢ Electronic

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commerce provides buyers with a wider range of choices than traditional commerce. ➢

Electronic commerce provides buyers with an easy way to customize the level of detail in the information they obtain about a prospective purchase. ➢

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Electronic payments of tax refunds, public retirement, and welfare support cost less to issue and arrive securely and quickly when transmitted over the internet. ➢ Electronic payments can be easier to audit and monitor than payments made by cheque, providing protection against fraud and theft losses. ➢ Electronic commerce can

also make products and services available in remote areas. 2.4.2 Specific:

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Advantages of E-commerce to Business Firms ● Economy: E-commerce is highly economical. Unlike the brick-and-mortar environment, in e-commerce, there is no rental of physical store space, insurance, or infrastructure investment. All you need is an idea, a unique product, and a well-designed Web storefront to reach your cyber- customers, plus a partner to do fulfillment. ● Lower Cost: Doing e-business on the Internet is extremely cost-effective; it reduces logistical problems and puts a small business on a par with giants like Amazon.com, Sears, General Motors, or Bank of America. In a commercial bank, for example, a basic over-the-counter transaction costs Rs. 52.95 to process; over the Internet, the same transaction costs about 1 rupee. Every financial transaction eventually turns into an electronic process. The sooner it makes the conversion, the more cost- effective the transaction becomes. ● Better Customer Service: E-commerce emphasizes better and quicker customer service. Web-based customer service makes customers happier. Instead of calling your company on the phone, holding for 10 minutes, then getting to a clerk who taps into your account, the Web merchant gives customers direct access to their personal accounts over the Web. It saves time and money. It is a win-win proposition. For companies that do business with other companies, adding customer service to the Web is a competitive advantage. The overnight package delivery service, where tracking numbers allow customers to check the whereabouts of a package online, is one good example. ● Greater Profit Margin: E-commerce means greater profit margins. For example, the cost of processing a conventional airline ticket is Rs. 400. According to one travel agency, processing the same ticket (called an e- ticket) over the Web costs Rs. 50 only. Along with higher margins, businesses can gain more control and flexibility and are able to save time when manual transactions are done electronically. ● Knowledge Markets: E-commerce helps create knowledge markets. Small groups inside big firms can be funded with seed money to develop new ideas. For example, Daimler Chrysler has created small teams to look for new trends and products. A Silicon Valley team is doing consumer research on electric cars and advising car designers. ● Swapping Goods and Services: Swapping is trading something you have for something you want more. Offering goods or services through barter is gaining in popularity through sites like Web Swap, www.BarterTrust.com, and www.Ubarter.com. Here is how it works: Sam, a networking consultant, offers his technical services through a barter company. People pay currency into Sam's account in exchange for his services. Instead of accepting the cash, he turns around and buys things (a PC, carpeting). The barter house keeps a modest commission to expedite the exchange. ● Information Sharing, Convenience, and Control: Electronic marketplaces improve information sharing between merchants and customers and promote quick, just-in-time deliveries. Conveniences for the consumer are a major driver for changes in various industries: Customers and merchants save money; are online 24 hours a day, 7 days a week; experience no traffic jams, no crowds and do not have to carry heavy shopping bags. Control is another major driving factor. For example, instead of banks controlling the relationships with the customer, customers today can have more control of their banking needs via Internet Web sites. Banks like Bank of America and ICICI now give customers access to their accounts via the Web. ● Quick Comparison Shopping: E-commerce helps consumers to comparison shop. Automated online shopping assistants called hopbots

to

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scour Net stores and find deals on everything from applesauce to printer ribbons. For example, mySimon (www.mysimon.com) learns the navigation preferences of its runner (a tool that fills out the request form asking the bot to search Web pages for solutions). It lets you enter basic keywords such as "ladies dress" to search its database of Web stores for the best buys. ● Teamwork: E-commerce helps people work together. E-mail is one example of how people collaborate to exchange information and work on solutions. It has transformed the way organizations interact with suppliers, vendors, business partners, and customers. More interaction means better overall results. A recent study of 40 corporate Internets by the META Group found that the typical Intranet (within-company network) had an average Return on Investment (ROI) of 38 percent. Networks that provided collaborative capabilities had a 40 percent ROI and those that gave people direct access to needed information had a 68 percent ROI. The implication is that the more interactive and the more. "Collaborative-rich" the Web site, the higher the payoff for the business (www. IBM.com). ● Productivity Gains: E-commerce means productivity gains. Weaving the Web throughout an organization means improved productivity. Take the example of IBM, which incorporated the Web into every corner of the firm-products, marketing, and practices. The company figured it would save $750 million by letting customers find answers to technical questions via its Website. The total cost savings in 1999 alone was close to $1 billion (www. IBM.com for recent details). ● Customization: Digital products are highly customizable. They are easy to reorganize, revise, or edit. With information about consumer tastes and preferences, products can be differentiated (customized) and matched to individual needs. ● Ensure Secrecy: EC devices invariably have in-built security measures. For example password, encoding, cryptography, cipher, etc. are some of the mechanisms/measures which provide security and prevent unauthorized access and use of data, information, and transactions. ● Other Benefits: The other benefits include an improved image, improved customer services, newfound business partners, simplified processes, compressed cycle and delivery time, increased productivity, eliminating paper, expediting access to information, reduced transportation costs, and increased flexibility. 2.4.3

Specific:

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Benefits of E-commerce to Society It helps society in the following ways: ● Enables individuals to work at home and to do less traveling for shopping, resulting in less traffic on the roads and lowers air pollution. ● Allows some merchandise to be sold at lower prices and helps in

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increasing standard of living. ● Enables people in Third World countries and rural areas to enjoy products and services that otherwise are not available to them. ● Facilitates delivery of public services such as health care, education, and distribution of government social service at reduced cost and/or improved quality. 2.4.4 Specific: Benefits of E-commerce to Customers The customers can enjoy the following benefits of e-commerce: ● Customer Convenience: A website is open 24 hours a day. It can take orders, keep an eye on deliveries, and receive payments, at any time of convenience to the customer. ● Product/Service made to Customer's Order: E-commerce enables the customers to get the products/services made as per particular needs. Manufacturers may even invite customers to design the product/service exactly as they want it and thus earn their goodwill. ● Wider Choice: Customers can access websites of as many competing suppliers as desired to, decide on which product/service would best meet their needs. They do not need to drive to different shops for this purpose. In any case, a website can offer any number of products/services and in any detail without any space or inventory limits as in

the case of a shop or marketplace. ● Quick Delivery: In the

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case of digitized products, electronic commerce allows quick delivery. ● Cheaper Products/Services: Electronic commerce allows customers to visit websites of several business firms and make comparisons of their offerings. Thus, he can get cheaper products/services of required quality by visiting various websites. ● Virtual Auction: The customers can participate in virtual auctions through

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Internet. For example, several airlines put air tickets to specify destinations on auction and the customers are free to offer any price. ● Competition: Electronic commerce creates competition between product and service providers. The customers are benefited in the form of lower prices. 2.4.5 Limitations of E-Commerce

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Most of the disadvantages of e-commerce stem from the newness and rapidly developing pace of the underlying technologies.

Some of the key disadvantages are given below: ●

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High Risk of Internet start-up Organizations: Many stories unfolded in 1999 about successful executives in established firms leaving for Internet start-ups, only to find out that their "get rich" dream with a dot.com was just that-a a dream. However, many dot.com organizations bubble burst in 2000 and onward due to various reasons like lack of good revenue model, everything is not possible through dot.com, problems related to customer satisfaction, etc. ● Lack of a Blueprint for Handling E-commerce: There is a continuing shortage of e-literate people in the workplace. In a survey published in Computer World, nearly nine out of 10 respondents said only a few of their key managers have e-commerce skills, Internet experience, and foresight. Sixty-six percent also said they are having a tough time attracting people wanting to take advantage of online opportunities. Finally, traditional organizational structures and cultures were found to inhibit progress in e-commerce. ● E-commerce involves Cost: So far, success stories in e-commerce have favored large businesses with deep pockets and good funding. According to a recent report, small retailers that go head-to-head with e-commerce giants are fighting a losing battle. As in the brick-and-mortar environment, they simply cannot compete on price or product offering. Brand loyalty is related to this issue, which is supposed to be less important for online firms. Brands are expected to lower search costs, build trust, and communicate quality. According to Blackmon, users have difficulty using online search engines such as Yahoo! to locate product information, and rely instead on recognized dot.com brands for purchases. A search engine can come up with the best music deals, for example, yet consumers continue to flock to trusted entities like CDNow. Despite a better-quality product offered by brand-weak, Miami-based FlowerNet, its lower prices generated suspicion about quality when compared with higher-priced but better-known online floral giants. Early branding turned Etrade into a leading discount brokerage firm, while upstarts like Mr. Stock struggled to stay in business. ● Security: Security continues to be a problem for online businesses. In a 2000 Economist article, 95 percent of Americans expressed reluctance to give out their credit card numbers via the internet. For millions of potential cyber-customers, the fear of credit card theft is a real one. Consumers have to feel confident about the integrity of the process before they commit to the purchase. ● Customer Relations Problems: Not many businesses realize that even an e-business cannot survive over the long term without loyal customers. In a 1999 Information Week Research Priorities survey of 300 IT executives, the key question was “What are your IT department's key strategic technology and business priorities in 1999?” Ninety-two percent of the respondents said “improve customer service,” and 90 percent said, “understand and meet the needs of customers” (Eckhouse, September 20, 1999, p. 119). Considering the medicare record on customer service during 2000, there is greater pressure on e-business to meet or exceed customer expectations on service. ● System and Data Integrity: Data protection and the integrity of the system that handles the data are serious concerns. Computer viruses are rampant, with new viruses discovered every day. Viruses cause unnecessary delays, file backups, storage problems, and the like. The danger of hackers accessing files and corrupting accounts adds more stress to an already complex operation. ● Products People Won't Buy Online: Imagine a Website called furniture.com or ww.living.com, where venture capitalists are investing millions in selling home furnishings online. For the case of a sofa, you'd want to sit on it, feel the texture of the fabric, etc. Besides the "sofa road- test" factor, online furniture stores face costly returns and kinds of deliveries that cannot be expedited via FedEx. ● Corporate Vulnerability: The availability of product details, catalogs, and other information about a business through its Web site makes it vulnerable to access by the competition. The idea of extracting business intelligence from the competition’

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Web pages is called Web farming, a term coined by Richard Hackathon. ● Fulfillment Problems: Tales of shipping delays, merchandise mix-ups, and Web sites crashing under pressure continue to be problems e-tailing. Customer confidence in an e-commerce's ability to deliver during heavy shopping seasons continues to be a headache. Even happy customers say the experience could be improved. ● System Scalability: A business develops an interactive interface with customers via a Web site. After a while, statistical analysis determines whether visitors to the site are one-time or recurring customers. If the company expects 2 million customers and 6 million shows up, Web site performance is bound to experience degradation, slow down, and eventually loss of customers. To keep this problem from happening, a website must be scalable, or upgradable on a regular basis. Consider the 1999 IBM chess match Web site, which attracted over 74 million hits in just 9 days without noticeable slowdown. The 1999 U.S.

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Open Tennis Championship drew 70 million hits in 2 weeks, and the 1996 Atlanta Olympic Games drew 189 million hits in just 17 days. All these sites were successful due to their constant scalability with respect to performance, speed, and maintaining a sub-8-second response time. This takes effort and is not cheap to maintain. ● Consumer Search is Not Efficient or Cost-Effective: On the surface, the electronic marketplace appears to be a perfect market, where worldwide sellers and buyers share information and trade without intermediaries. However, a closer look indicates that new types of intermediaries are essential to e-commerce. They include electronic malls that guarantee product quality, mediators for bargaining, and certification authorities to ensure

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legitimacy of transactions. All these intermediaries add to transaction costs. Other Limiting Factors: ● Many legal issues are unresolved and government resolutions and standards are not refined enough for many circumstances. ● E-commerce as a discipline is still evolving and changing rapidly. Many people are looking for a stable area before they enter into it. ● E-commerce could result in a breakdown of human relationships. ● Accessibility to the Internet is still expensive and/or inconvenient for many potential customers. ● There are not enough support services. For example, copyright clearance centers for EC transactions do not exist, and high-quality evaluations or qualified EC tax experts are rare. ●

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Return-on-investment is difficult to calculate. ● Many firms have had trouble recruiting and retaining employees with the technological, design, and business process skills needed to create an effective electronic commerce presence. ●

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difficulty of integrating existing databases and transaction- processing software designed for traditional commerce into the software that enables electronic commerce. ● Many businesses face cultural and legal obstacles to conducting electronic commerce. ● Lack of sufficient system security, reliability, standards, and communication protocols. ● Rapidly evolving and changing technology, so there is always a feeling of trying to 'catch up' and not be left behind. ● Under pressure to innovate and develop business models to exploit the new opportunities which sometimes leads to strategies detrimental to the organization. The ease with which business models can be copied and emulated over the Internet increases that pressure and curtails a longer- term competitive advantage. ● Facing increased competition from both national and international competitors often leads to price wars and subsequent unsustainable losses for the organization. ● Problems with compatibility of older and 'newer' technology. There are problems where older business systems cannot communicate with web- based and Internet infrastructures, leading to some organizations running almost two independent systems where data cannot be shared. This often leads to having to invest in new systems or an infrastructure, which bridges the different systems. In both cases, this is both financially costly as well as disruptive to the efficient running of organizations. ● Computing equipment is needed for individuals to participate in the new 'digital economy, which means an initial capital cost to customers. ● A

piece of
basic technical knowledge is required of both computing equipment and navigation of the Internet and the World Wide Web. ● Cost of access to the Internet, whether dial-up or broadband tariffs. ● Cost of computing equipment. Not just the initial cost of buying equipment but making sure that the technology is updated regularly to be compatible with the changing requirements of the Internet, websites, and applications.
● Lack of security and privacy of personal data. There is no real control of data that is collected over the Web or Internet. Data protection laws are not universal and so websites hosted in different countries may or may not have laws
that protect
the

privacy of personal data. ● Physical contact and relationships are replaced by electronic processes. Customers are unable to touch and feel goods being sold
online or gauge
the
voices and reactions of human beings. ● A lack of trust because they are interacting with faceless computers. ● As people become more used to interacting electronically there could be an erosion of personal and social skills which might eventually be detrimental to the world we live in where people are more comfortable interacting with a screen than face to face. ● There is a potential danger that there will be an increase in the social divide between technical haves and have-nots – so people who do not have technical skills become unable to secure better-paid jobs and could form an underclass with potentially dangerous implications for social stability. ● Reliance on telecommunications infrastructure, power, and IT skills, which in developing countries nullifies the benefits when power, advanced telecommunications infrastructures, and IT skills are unavailable or scarce, or underdeveloped. ● As new technology states how do you dispose of all the old computers, keyboards, monitors, speakers, and other hardware or software? Facilitates Just-In-Time manufacturing. This could potentially cripple an economy in times of crisis as stocks are kept to a
minimum and delivery patterns are based on pre-set levels of stock which last for days rather than weeks. 2.5 Electronic Commerce Framework The concept outlined, in the previous unit and through the

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above heads, for electronic commerce assumes a set of basic infrastructure services and standards consistent with a broad architectural framework. This framework must permit the flexibility, interoperability, and openness needed for the successful evolution of electronic commerce. This framework and its services and products will offer the consumer a diverse set of interoperable choices, rather than a collection of independent solutions that may not work in concert. Many of today's ambitious electronic commerce initiatives vary in their approach to security and privacy, their ability to handle micropayments, and their applicability to various types of transactions. They also differ in their business models – for example, in their pricing strategy and in their assumptions as to who bears the risk in case of insufficient funds or disputes. Such diversity promotes innovation and allows for provider and consumer choices. Still, to achieve wide acceptance and scale to truly mass markets, a broad framework is needed, which encompasses the following requirements and idiosyncrasies of conducting new forms of business in the emerging electronic environment. Some electronic commerce frameworks are discussed ahead. 2.5.1 Zwass's Hierarchical Framework Zwass (1998) presented a very comprehensive hierarchical framework of E- Commerce, consisting of three meta-levels: ➢ Infrastructure ➢ Services ➢ Products and structures Level Functions Examples Products And Structures 7 Electronic marketplaces and electronic hierarchies Electronic auctions, brokerages, dealerships, and direct-search markets inter-organizational supply- chain management 6 Products and systems Remote consumer services (shopping, banking, stock brokerage) Infotainment-on-demand (fee-based content sites, educational offerings) Supplier- consumer linkages Online marketing Electronic benefit systems Intranet-based collaboration systems 5 Enabling services Electronic catalogs/directories, smart agents e- money, digital authentication services Digital libraries, copyright- protection services Traffic auditing Smart-card systems 4 Secure messaging EDI, e-mail, EFT Infrastructure 3 Hypermedia/multimedia object management World Wide Web with Java 2 Public and private communication utilities Internet and Value-added Networks (VANs) 1 Wide-area telecommunications infrastructure Guided- and wireless-media networks Infrastructure The infrastructure is continuously being upgraded to support a larger volume of information exchange and commerce. Services The services level of the hierarchy is far from static, especially in the enabling services sub-category. Various enabling services have continued to be the subject of much research and development. The maturation of these enabling services will provide a strong base on which to build a rich variety of e-commerce products. Products and Structures The enabling services are similar to the API level of the OS stack. These services enable e-commerce products to perform increasingly complex but useful functions. The majority of products in this category are customized designs, but a few off-the-shelf packages exist. A typical e-commerce solution would include leased access to the infrastructure and enabling services, and

the purchase of custom or semi-custom products

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for the customer. 2.5.2 Kalakota and Whinston's "Pillars" Framework Kalakota and Whinston have also developed a generic approach to providing a framework for Electronic Commerce (Kalakota & Whinston, 1996). Using a very different scheme from that taken by Zwass, they use the metaphor of "pillars" (public policy and technical standards), to support four infrastructures (network, multimedia content, messaging, and common business services) on top of which they place E-commerce applications. The framework for electronic commerce in Figure 2.1 is presented as an architectural edifice analogy, the applications shown at roof level cannot be attained if the structure below is missing or incomplete. The underlying requirement is a management perspective that is committed to electronic commerce—without this, individuals and groups will operate piecemeal, acting as early adopters in the innovation cycle but lacking in institutional support (whether that be in financial or human resources, for example). Even when there is a management commitment for electronic commerce in place, the foundations required are the technical and technological infrastructure. Figure 2.1: A Framework for Electronic Commerce by Kalakota and Whinston 2.5.3 Riggins and Rhee's Domain Matrix Riggins and Rhee (1998) contributed the Electronic Commerce Domain Matrix (ECDM) to represent four dimensions of e-commerce. The matrix was developed by crossing the location of the application user (external or internal to

the
organization)

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with the type of relationship technology-enhanced or technology- facilitated). The model is useful as a tool for classification but is mainly representative of trading relationships. In the context of our research, the matrix suggests possible benefits in adopting e-commerce solutions. It provides us with a backdrop to examine an entity to determine if one of the merits will contribute positively to the entity's goals.

External Location of Application Users Internal

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Improve Coordination with Existing Trade Partners Cell 3 Market Creation to Reach New Customers Cell 4 Improve Coordination with Internal Business Units Cell 1 Information Exchange to Work with New Team Members Cell 2 Figure 2.2: Electronic Commerce Domain Matrix 2.6

Unit Summary ● five E-commerce functions involve - search engine optimization, selecting new products, merchandising new products, customer services, and monitoring KPIs/Analytics. ●

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Today, online shopping is a reality in India. The marketplace is flooded with several e-commerce options for shoppers to choose from. In the recent past, the growth of

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e-commerce industry in India has been phenomenal as more shoppers have started discovering the benefits of using this platform. There is enough scope for online businesses in the future if they understand the Indian shoppers' psyche and cater to their needs. ●

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Electronic commerce can increase sales and decrease costs. Advertising done well on the web can get even a small firm's promotional message out to potential consumers in every country in the world. A firm can use electronic commerce to reach narrow market segments that are geographically scattered. ●

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Most of the disadvantages of e-commerce stem from the newness and rapidly developing pace of the underlying technologies. ● Some

electronic commerce frameworks are Zwass's Hierarchical framework, Kalakota & Whinston Pillars, and Riggins & Rhee'

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s Domain framework. - Zwass (1998) presented a very comprehensive hierarchical framework of E-Commerce, consisting of three meta-levels: Infrastructure, Services, Products, and structures. -

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Kalakota and Whinston have also developed a generic approach to providing a framework for Electronic Commerce -

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Riggins and Rhee (1998) contributed the Electronic Commerce Domain Matrix (ECDM) to represent four dimensions of e-commerce. 2.7

Key Terms ●

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E-tailing: E-tailing encompasses buying consumer items like apparel, electronic devices, home and kitchen appliances, jewelry, online. Amazon.com, Flipkart, napdeal.com,jabong.com, and myntra.com are some of the major players. ●

key performance indicator: KPI stands for key performance indicator, a quantifiable measure of performance over time for a specific objective. KPIs provide targets for teams to shoot for, milestones to gauge progress, and insights that help people across the organization make better decisions. ● Customer convenience: It is an element of customer experience that saves the customer time and effort. It is common for products, services, environments, and processes to be designed to offer customer convenience. ● Pull-type processing: A pull system is a lean manufacturing strategy used to reduce waste in the production process.
2.8 Check Your Progress Subjective: 1) What are the five functions a businessman shall be doing in his e- commerce business? 2) Explain the scope of e-commerce? 3) What are different electronic commerce frameworks? 4) Explain e-commerce benefits for: a) A business Firm b) Society c) Customers Objective: 1) True/False: Return-on-investment is difficult to calculate? 2) Complete the line:

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E-commerce needs to focus on customer experience to build ____. 3)

Fill in the gap: The customers can participate in virtual actions through the ____. 4) Short Q/A: E-commerce emphasizes better and quicker customer service, How? 5) Short Q/A: E-commerce helps create knowledge markets, how?

Unit 3: Electronic Commerce Environment Structure 3.0 Introduction 3.1 Unit Objectives 3.2 The Electronic Commerce Environment 3.2.1 The Virtual Corporation 3.2.2 The Electronic Marketers 3.2.3 The Catalyst of Electronic And Web Commerce 3.2.4 Available Communication Apparatus 3.2.5 Application of Electronic /Web Commerce 3.3 Electronic Marketplace 3.3.1 Types of E-marketplace 3.3.2 B2B Marketplace 3.3.3 Marketplace Technologies 3.4 Unit Summary 3.5 Key Terms 3.6 Check Your Progress 3.0 Introduction E-commerce is growing at a record pace and many businesses are trying to set up store fronts in cyberspace and are targeting at selling stuff on the web. This unit shall introduce you to the electronic commerce environment, electronic marketplace, and electronic marketplace technologies. 3.1 Unit Objective This unit intends to teach: • The electronic commerce environment • Electronic marketplace concept • Electronic commerce marketplace technologies.
3.2 The Electronic Commerce Environment The electronic commerce environment includes all the elements e-commerce runs owed to and influences to. It may involve - virtual corporations, electronic marketeers, the catalyst of electronic and web commerce, available communication apparatus, application of electronic /web commerce. 3.2.1 The Virtual Corporation Electronic commerce goes hand in hand with changes that are occurring in corporations. The 1990's have seen the rise of a new form of industrial organization. The network firm, sometimes known as the virtual organization. Information technology (IT) has also undergone a significant change in the past quarter of a century. Electronic commerce is the essence of the virtual corporation: It allows the organization to leverage information and communication resources with all its constituencies, including employees, customers, bankers, government agencies, suppliers, advertisement agencies, and the public. In the past, the organizational structure was 'vertical corporations' where every function was performed in-house. In the late 1980's, the organizational structure turned to horizontally integrated enterprises where core competencies were performing in-house and the rest were outsourced. Since 1990's, the organizational structure is moving towards being fully integrated and virtual. Aiming at making all business functions world class in order to enhance value. Access to all the world's best of breeds, skills, knowledge, and resources. Use a combination of in-sourcing and out-sourcing to create best of breed, end-of-solution. overcome distance and time barriers. The future is a network-centric model. connectivity and bandwidth are becoming cheaper and easy to secure. 3.2.2 The Electronic Marketers Electronic marketers are defined as companies that market their products and service to other business or consumers through private on-line networks,
commercial on-line services such as prodigy and America online (AOL); The internet, CD-ROM, telecommunication-enhanced CD-ROM, interactive television and webTV, and floppy disk media. Electronic commerce frees retailers and consumers from many store constraints. It changes the dynamic in terms of cost, reach, options or speed. 3.2.3 The Catalyst of Electronic and Web Commerce The growth of the internet in terms of people accessing it is now being viewed as one of the greatest transformations in society in the past 25 years. even the growth and impact of the PC was not as strong in the view of some observers. The internet is an aggregation of network connecting computers which is seen as one network by the user. It is the case where the whole is greater than the sum of the parts. Press-time studies indicate that: • 90 percent of the people using web services do so to browse or explore. • 70 percent search for other information. • 60 percent search for information on companies/organizations. • 55 percent search for information on products and services. • 13 percent purchase products or services. Some of the key findings of recent surveys are as follows: • 17 percent (37 million) of

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total persons aged 16 and above in the United states and Canada have access to the internet. • 11 percent (24 million) of total persons aged 16 and above in the United States and Canada have used the internet in the past three months. • Approximately 8 percent (18 million)

of

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total persons aged 16 and above in the United states and Canada have used the www in the past three months. •

Internet users average 5 hours and 28 minutes per week on the internet.
• Males represent 66 percent of internet users and account for 77 percent of internet usage. • On average, www users are upscale (25 percent have income over $80,000/year), professional (50 percent or managerial) and educated (64 percent have at least college degrees). • Approximately 14 percent (2.5 million) of www users have purchased products or services over the internet. • More than 80,000 companies were using

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the internet for distribution of critical company information such as press releases.

Business-to-Business marketers have an initial (but not permanent) advantage over consumer marketers in the electronic commerce arena because the penetration of PCs with modems, CD-ROM drives and internet accounts tends to be higher in the business market than in the consumer market. 3.2.4 Available Communication Apparatus Electronic commerce clearly depends on the availability of reliable, inexpensive, and ubiquitous connectivity. In this context there are five relevant elements: 1. Organizations own enterprise networks which house appropriate information, usually beyond the organizations firewall apparatuses. 2. Public switched telephone network. 3. The internet. 4. On-line networks such as America online, which utilize their own communication and information (storage) facilities. 5. Specialized industry networks, such as those to support EDI 3.2.5 Application of Electronic /Web Commerce Electronic commerce combines the advantages of computer-based processing (speed, reliability, and relatively high volumes of data) with the advantages of people-based insight (creativity, flexibility, adaptability). Electronic commerce enables people to review, analyze, add value, and sell a variety of products. that are represented electronically, such as reference material, textbooks and training materials, entertainment and software. There are three tiers in the electronic marketplace: 1) TIER 1: Electronic classified advertisements, which identify the items (or service) for sale, the price, and information necessary for contacting the seller. Electronic classifieds are analogous to print classifieds and are retrieved by the potential buyers. 2) TIER 2: Includes the characteristics of the first tier, but adds decision support materials to the information available which help the user reach a purchase decision such market places may include such information as product reviews from an industry magazine. 3) TIER 3: Include the features of the first two tiers, but adds the ability to electronically match appropriate buyers and sellers. Application of electronic commerce can include the following: Electronic funds transfer Enterprise integration Computer supported collaborative work Government regulatory data interchanges. 3.3 Electronic Marketplace

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The E-commerce marketplace or the online e-commerce market is a place or a website where one finds different brands of products offered by multiple vendors, shops or

persons and showcased on the same platform. A marketplace owner seeks to attract

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customers and transaction procedures, while the third party vendors deal with the manufacturing and

shipping. Companies like Amazon, eBay, and Flipkart have experienced massive success in the eCommerce marketplace business model.

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The entire marketplace runs on one software infrastructure, allowing all the vendors to sell their

goods under the umbrella of

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one website. In terms of revenue, these companies take a percentage of the sales on any product sold across the platforms. 3.3.1

Types of e-Marketplace There are different types of e-marketplaces based on business models. Broadly they can be divided into different categories: 1) Independent e-marketplace: An independent e-marketplace is usually a business-to-business online platform operated by a third party which is open to buyers or sellers in a particular industry. By registering on an independent e-marketplace, one can access classified ads or requests for quotations or bids in its industry sector. There will typically be some form of payment required to participate. 2) Buyer-oriented e-marketplace: A buyer-oriented e-marketplace is normally run by a consortium of buyers in order to establish an efficient purchasing environment. If one is looking to purchase, participating in this sort of e-marketplace can help him/her lower his/her administrative costs and achieve the best price from suppliers. As a supplier one can use a buyer-oriented e-marketplace to advertise its catalogue to a pool of relevant customers who are looking to buy. 3) Supplier-oriented e-marketplace: Also known as a supplier directory, this marketplace is set up and operated by a number of suppliers who are seeking to establish an efficient sales channel via the internet to a large number of buyers. They are usually searchable by the product or service being offered. Supplier directories benefit buyers by providing information about suppliers for markets and regions they may not be familiar with. Sellers can use these types of marketplace to increase their visibility to potential buyers and to get leads. 4) Vertical and horizontal e-marketplaces: Vertical e-marketplaces provide online access to businesses vertically up and down every segment of a particular industry sector such as automotive, chemical, construction or textiles. Buying or selling using a vertical e-marketplace for an industry sector can increase its operating efficiency and help to decrease supply chain costs, inventories and procurement-cycle time. A horizontal e-marketplace connects buyers and sellers across different
industries or regions. One can use a horizontal e-marketplace to purchase indirect products such as office equipment or stationery. 3.3.2 B2B Marketplace With the advent of the Internet it is easy for the buyers and suppliers to meet, buy and sell across cyber marketplaces and collaborate more quickly than the traditional way. It offers them a wide spectrum of advantages like Online ordering and tracking, managing their logistics, sharing the forecast, demand and POS information etc. The B2B marketplaces are classified as Net marketplaces or private marketplaces. Also they are classified based on Buyer or Seller launched B2B marketplaces. a. Net Marketplace: The Net market is an independently owned marketplace that brings thousands of suppliers and buyers to cyber space in a dynamic real time environment. The buyers may not know the vendors and the Net marketplace connects these anonymous buyers and sellers according to the requirements of both. They could be a horizontal market like Tradeout.com or vertical market place like esteel.com. \vertical marketplaces serve specific industries like food, steel, automobile etc. Horizontal marketplaces serve all types of products serving different types of supplying firms as well as buyer firms like apparels, finance, cars, and other categories of products together. Figure 3.1 Electronic Market Place
b) Private Marketplace: Private marketplace is a trading exchange in which membership is closed or by invitation only. The company that owns the market place launches it. Sometimes they are also called Collaborative Commerce. Private marketplaces bring business firms that collaborate to develop highly efficient and responsive supply chains to cater the needs of customers. For example, Wall-Mart has connected all its point of sale and its point of sale and its 75,000 suppliers. Once the customer sales are captured at the POS, Wall-Mart conveys the information and replenishment orders to the warehouse and distributor. Also it conveys this information to manufacturers like P&G. This helps in better inventory management. This also tells Wall-Mart and its suppliers the exact level of demand for thousands of products. This process is also called the demand-pull system. Figure 3.2: Wall-Mart and P&G Collaboration Some very successful companies have formed their own private exchanges - Dell, for instance, has built Value Chain.dell.com, while Cisco has created its famous eHub. This brings aggregation capabilities to their customers and suppliers and strengthens the whole value chain. 3.3.3 Electronic Marketplace Technologies Electronic marketplace technologies include:

1) Electronic Data Interchange: It is the exchange of well-defined business transactions in a computer-process-able format. It provides a collection of standard message formats to exchange data between organizations computers via any electronic service. In 1979, the American National standard Institute (ANSI) chartered the aggregated standards committee X12, electronic data interchange to develop uniform national standards for electronic interchange of business transactions. 2) On-line Networks and services: They provide access to information, entertainment, communications and transaction services. In general, this term refers to networks by companies such as America Online, CompuServe and Prodigy. The Public switched telephone network (PSTN) is the typical distribution system, cable networks, satellite, wireless networks and the unused portion of FM Radio and broadcast TV signals may also be used. It also includes other specialized (Commercial) Networks. 3) CD-ROM and Hybrids: The Multimedia and storage capabilities of CD- ROMs and the growth in the penetration of CD-ROM drives in both business and home PCs are the reasons why business-to-business and consumer marketers sought to use the CD-ROM as a marketing vehicle in the recent past. CD-ROMs can store large amounts (650 MB or More) of data, in text and/or graphical form. In addition, the CD-ROM provides the ability to add sound, photos and full-motion video to a marketing interaction beyond what is offered by the On-line medium over the telecommunication links. Because of their Cost-effectiveness, CD-ROM catalogs, with the products of either one or more multiple marketers, have become popular. 4) The internet: Web Commerce The Internet is quickly becoming a popular commercial domain for business marketers, driven by the advent of low-cost commercial point – and- click internet software and WWW browsers. The Fastest growing part of the internet at this time is the WWW. The web's ease of access, as well as its multimedia capabilities
and downloadable applications (e.g. with Java), enable marketers to create compelling and enticing advertising and marketing environments. The Internet offers an extensive and demographically attractive potential audience, especially for business-to-business marketers. 5) Screen phones: Such phones are similar to regular phones but have advanced features, such as credit card readers, small screens and keypads that can be used for a variety of interactive, transactional and informative services. Typical services include home banking, home shopping and electronic white Pages. This technology is used more commonly in Europe, where consumers can get up-to-date information on many things from a list of specialty restaurants to training information. The screen-phone's primary advantage for electronic commerce is that it is based on a device that consumers are familiar with and are comfortable using. 6) Kiosks: These are displays used to provide merchandise information in a remote location, such as a retail store or shopping mall. Kiosks employ a variety of technologies to deliver multimedia marketing information. Most kiosks allow the consumers to order products directly from the unit by using a magnetic credit card reader, touch screen, or keypad Kiosks' primary advantages are their large storage capacity and multimedia capabilities, including full-motion video, sound, graphics and text. However, kiosks have not proven to be an Effective medium to support transaction-based interactions. It seems that consumers are not comfortable with the technology or the process of buying merchandise through a kiosk. 7) Interactive television and video dial tone: The television is a ubiquitous electronic home appliance, interactive television, When Available, enables consumers to view advertising about specific products and place orders through the television screen using a remote control and a special set-top box attached to the Cable television line in to the home There has been interest in bringing this technology to the market
in recent years. The key Reason interactive television has generated interest among marketers, technology developers, Cable TV, and telephone companies is that it has a vast potential audience. 8) Web TV: A new technology, called Web TV by some and interacting by others, was seeing Deployment at press time. This approach is yet another vehicle for electronic commerce. Web TV illustrates the fusion or convergence of technologies, eliminating previous lines of demarcation. 9) Inter-casting: It is a technology developed by Intel that intertwines WWW pages with TV Broadcasts With it, video producers can backup their real-time broadcasts with all the resources of the internet. For example, a sports fan could call up batting averages to a window on the screen of a baseBall game; news programs could provide background analysis for those who want to go beyond A 2 to 3 minute story; advertisers could offer viewers the opportunity to purchase their products or obtain more information about them. It can be considered a new medium; however, it is expected to complement rather than supplant existing media. It is being positioned as a medium that combines the digital power of the PC, the global interactivity of the internet, and the rich programming of television. 10) Interactive banking: Many banks are offering another form of electronic commerce known as interactive banking. This generally refers to methods that allow their customers to conduct some of their bank business over the phone or with a PC. Using a Touch-Tone telephone, customers can check their account balance, pay bills, order statements and so forth. PC finance software such as Intuit's Quicken also refers to the links to blanks that can accomplish the same tasks. Home banking has been offered for over a decade with mixed results. Besides technology shock for the average user, users have had to contend with banking fees. The near-term future of home banking is unclear at this time.

At the other end of the spectrum, banks without branches are now becoming available on the internet. For example: Atlanta Internet Bank (AIB) offers interest-bearing checking, direct deposit, and Electronic bill payment over the web. The bank uses applications behind the web server to hook into existing legacy systems to support the traditional banking functions. The bank opened for business in late 1996 and had 200 initial customers. In general, however, most banks have been slow to offer all the elements of virtual banking, in part because few development tools exist. To facilitate banks move toward web-based transaction processing and integration with personal finance management applications, portable toolkit-based CGI- like applications must be developed by software houses to facilitate interworking with current software applications. 3.4 Unit Summary The electronic commerce environment includes all the elements e-commerce runs owed to and influences to. It may involve - virtual corporations, electronic marketeers, the catalyst of electronic and web commerce, available communication apparatus, application of electronic /web commerce.

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The E-commerce marketplace or the online e-commerce market is a place or a website where one finds different brands of products offered by multiple vendors, shops or

persons and showcased on the same platform. A marketplace owner seeks to attract

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customers and transaction procedures, while the third party vendors deal with the manufacturing and

shipping. Companies like Amazon, eBay, and Flipkart have experienced massive success in the eCommerce marketplace business model.

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The entire marketplace runs on one software infrastructure, allowing all the vendors to sell their

goods under the umbrella of

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one website. In terms of revenue, these companies take a percentage of the sales on any product sold across the platforms.

E-commerce marketplace technologies involves: e-data interchange, online networks and services, CD-ROM and Hybrids, the internet, screen phones, kiosks, interactive television and video dial tone, web tv, inter-casting, and interactive banking. 3.5 Key Terms ● Private Marketplace: Private marketplace is a trading exchange in which membership is closed or by invitation only. ● Electronic data interchange: EDI is the concept of businesses electronically communicating information that was traditionally communicated on paper, such as purchase orders and invoices. ● Social networking is the use of Internet-based social media sites to stay connected with friends, family, colleagues, customers, or clients. Social networking can have a social purpose, a business purpose, or both, through sites like Facebook, Twitter, LinkedIn, and Instagram. ● CD-ROM, abbreviation of compact disc read-only memory, type of computer memory in the form of a compact disc that is read by optical means. A CD-ROM drive uses a low-power laser beam to read digitized (binary) data that has been encoded in the form of tiny pits on an optical disk. ● A hybrid disc is a disc, such as CD-ROM or Blu-ray, which contains multiple types of data which can be used differently on different devices ● A kiosk is a small, stand-alone booth typically placed in high-traffic areas for business purposes. It typically provides information and applications on education, commerce, entertainment, and a variety of other topics. Kiosks are popular due to the number of advantages they provide. 3.6 Check Your Progress Subjective: 1) Give a description account of electronic commerce environment elements? 2) What is an e-commerce marketplace? What are different types of e- commerce marketplaces?

3) What are B2B marketplaces, classify and explain them. 4) What are different types of e-marketplace technologies? Objective: 1) True/False: Private marketplaces are also called collaborative marketplaces. 2) Complete the line: The entire marketplace runs on one _____. 3) Fill in the gap: Electronic commerce is the essence of the virtual ____. 4) Short Q/A: What is a net marketplace? 5) Short Q/A: What are three tiers in e-marketplace?
Unit: 04 E-Commerce With Electronic Data Interchange And Internet Structure 4.0 Introduction 4.1 Unit Objectives 4.2 Electronic Data Interchange (EDI) 4.2.1

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Definition of EDI 4.2.2 EDI Architecture 4.2.3 EDI Transaction Steps 4.2.4 Benefits of EDI 4.2.5 Standardisation and EDI 4.2.6 Action Plan for Implementing EDI 4.2.7 Electronic Data Interchange (EDI) Applications 4.2.8 EDI Applications in

E-commerce 4.2.9 Migration to Open EDI 4.3 E-Commerce and Internet/WWW 4.3.1

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Internet 4.3.1.1 Advantages/Limitations of Internet 4.3.2 World Wide Web 4.3.2.1 Ownership, Stability and Reliability of the Web 4.3.2.2 Basic Features of the WEB 4.3.3

E-commerce with Internet/WWW 4.3.3.1 Opportunities 4.3.3.2 Essential Language and Tools of the Internet/Web 4.4 Commerce Net Advocacy 4.5 Unit Summary 4.6 Key Terms 4.7 Check Your Progress 4.0 Introduction As you already know, Electronic commerce undertakes through -

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Business-to- Consumer (B2C) Mode, Business-to-Business (B2B) Mode, Consumer-to- Consumer (C2C) Mode, and M-commerce. In this

unit you shall first learn about electronic data interchange (EDI).

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There have been several key steps in the history of e-commerce. The first step came from the development of the Electronic Data Interchange (EDI). EDI is a set of standards developed in the 1960's to exchange business information and do electronic transactions. At first there were several different EDI formats that businesses could use.

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Electronic Data Interchange is defined as the inter-process communication (computer application to computer application) of business information in a standardized electronic form. The EDI trading partners establish computer – computer links that enable them to exchange information electronically. Electronic

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Commerce is a term popularized by the advent of commercial services on the Internet. Internet e-commerce is however, only

a part of the overall sphere of e-commerce. The commercial use of the

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Internet is perhaps typified by once-off sale to consumers. Other types of transactions use other technologies. Electronic Markets (EMs) are in use in a number of trade segments with an emphasis on search facilities and Electronic Data Interchange (EDI) is used for regular and standardized transactions between organizations.

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When a network connects two or more computers, it's called internet (with a lower-case i). The Internet with a capital I refers to millions of computers connected to a gigantic network and communicating via TCP/IP protocols. A protocol is a pre-defined way for a computer to communicate with another computer, for instance when requesting a service, s.a. an FTP service, or when forwarding some information to another machine. Each computer at any given time has a unique address on the Internet. This is its IP address.

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The World Wide Web, also known as the WWW or the Web, is an organization of files designed around a group of servers on the Internet programmed to handle requests from browser software that resides on users' PCs. The name is based on the fact that the sound, text, animation, pictures, or information that make up a document may come from anywhere in the world. A single document can be perceived to stretch-weblike throughout the world.

In the
e-commerce market many individuals and organizations that cooperate to build it compete on the products and services they sell.
It gives opportunities to them to establish, earn, and grow. 4.1 Unit Objective This unit intends to teach: • Electronic Data interchange, • E-commerce with internet/www • Commerce Net Advocacy 4.2 Electronic Data Interchange (EDI) EDI was developed in the

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early 60s as a means of accelerating the movement of documents related to shipments and transportation. However, from the beginning of 80s it is now widely used in various other sectors like automotives, retails, and international trade. Its relevance and usage is growing at a very fast pace. EDI is based on a set of standardized messages for the transfer of structured data between computer applications. It may have many applications e.g., sending the test results from the pathology laboratory to the hospital or dispatching exam results from exam boards/university to school/college, but it is primarily used for the trade exchanges: order, invoice, payments and many other transactions that can be used in national and international trade exchanges. Notable users of EDI are vehicle assemblers, ordering components for their production lines, and supermarkets (and other multiple retailers), ordering the goods needed to restock their shelves. EDI allows the stock control/material management system of the customer to interface with the stock control/production systems of the suppliers without the use of paper documents or the need of human intervention. The EDI is used for regular repeat transactions. EDI is a formal system and it does not really have a place in the search and negotiation phases. EDI, when initially introduced, was seen by many as a universal, or at least a generalized form of trading. In the event its adoption has been limited to a number of trade sectors where the efficiency of

the supply chain is of vital importance. EDI is a part

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of schemes for just-in-time manufacture of quick response supply. Mature use of EDI allows for a change in the nature of the product or service being offered, mass customization is such an example. 4.2.1 Definition of EDI "Electronic Data Interchange is the transmission, in a standard syntax, of unambiguous information of business or strategic significance between computers of independent organizations." (The Accredited Standards Committee for EDI of the American National Standards Institute) "Electronic Data Interchange is the interchange of standard formatted data between computer application systems of trading partners with minimal manual intervention." (UN/EDIFACT Training Guide) "Electronic Data Interchange is the electronic transfer, from computer to computer, of commercial and administrative data using an agreed standard to structure an EDI message." Figure 4.1: The EDI Process 4.2.2 EDI Architecture The EDI architecture has four layers and these are: ● Semantic (Application) Layer ● Standard Translation Layer ● Packing (Transport) Layer ● Physical Network Infrastructure Layer The EDI Architecture is shown in the following table: Table 4.1: EDI

Architecture 4.2.3

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EDI Transaction Steps The EDI transaction for a purchase, shipment and payment normally follows the following steps: Step 1 Buyer's computer

sends the purchase order to the

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seller's computer. Step 2: Seller's computer sends purchase order confirmation to buyer's computer. Step 3 Seller's computer sends

a booking request to the

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transport company's computer. Step 4 Transport company's computer sends booking confirmation to seller's computer Step 5: Seller's computer sends advance ship notice to buyer's computer. Step 6 Transport computer sends status to seller's computer. Step 7

The buyer's computer sends receipt advice to the seller's computer. Step 8 The seller's computer sends an invoice to the buyer's computer. Step 9 The buyer's computer sends payment to the

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seller's computer. 4.2.4 Benefits of EDI The various benefits are: ● Reduction on use of paper usage ● Greater emphasis on problem resolution and customer service ● Increase in customer/supplier base ● Improvement in international trade ● Bank checks ● Interbank electronic fund transfer ● Automated Clearing House (ACH) transfers: - Bankwire - FedWire - CHIPS (Clearing House Interbank Payment System) - SWIFT (Society for Worldwide Interbank Financial Telecommunication) ● Usage in health care save lot of cost ● Improvement in production by using just-in-time approach ● Better business information and knowledge access ● Better design of product and effective procurement ● Improved legal services in terms of good postal service. ● The indirect benefit include the following: ● Quick matching up of reduction in delay leading to better cash flow ● The ability to order regularly and quickly reduces the stock holding. The reduced stock holding cuts the cost of warehousing ● An established EDI system should be of considerable advantage to both customer and supplier. Shifting to a new supplier require that the electronic trading system and trading relationship be redeveloped ● There is a steady increase in the number of customers, particularly large, customers that will only trade with suppliers that do business via EDI. Supermarkets and vehicle assemblers are prime examples. Thus, being ready and able to trade electronically can be a major advantage when competing for new business opportunities. 4.2.5 Standardisation and EDI All the software, hardware and networks must work together so that the information flows from one source to another in

the

desired manner. Thus, at the heart of any EDI application is the EDI standards. The essence of EDI is the coding and structuring of the data into a common and generally accepted format-anything less is nothing more than a system of file-transfers. Coding and structuring the documents for business transactions is no easy matter. There have been a number of EDI standards developed in various industry sectors or within a specific country and there are more complex committee structures and procedures to support. It was developed by the United Nations. Is a family of standards similar to ANSI X-12 (The Accredited Standard Committee in 1979). EDIFACT was based on TRADESCOMS, developed by the UK today EDIFACT and ANSI are working towards compatibility. 4.2.6 Action Plan for Implementing EDI A stepwise plan for implementing EDI: ● Appoint an EDI project leader ● Form the project team for EDI implementation ● Study the existing flow of information within the organization and out of and into the organization ● Analyze the internal and external information flows ● Identify the information that is generated manually and that which is generated automatically ● Identify the significant business organizations with whom the organization has dealings ● Identify the sources of EDI information ● Identify vendors dealing with EDI software ● Identify network service providers ● Discuss with EDI users ● Assess the costs and benefits of EDI implementation ● Plan pilot implementation based on all above ● Decide on strategy for a pilot with selected business partners in a trail basis ● Assess requirements for software, communications and standards ● Develop the pilot implementation ● Implement the pilot EDI system ● Evaluate the efficiency of the pilot EDI system ● Based on feedback received, identity improvements possible ● Extend the EDI implementation to new business partners and additional business functions. 4.2.7 Electronic Data Interchange (EDI) Applications Any EDI application – whether using EDI outsourcing or EDI software/ managed services – involves four main components including: I. EDI and Infrastructure Layer: (Software and hardware for converting data into and out of EDI) Like any other application, the EDI software needs hardware to run on. The first piece of the EDI puzzle is the EDI software layer itself – the EDI translator itself. Like any other software application, the EDI software needs hardware to run on. These systems will need sophisticated antivirus, firewall, and possibly intrusion detection software. By definition, EDI is a system that communicates with companies on the other side of the firewall, which leaves it immensely vulnerable to attack. EDI is also an application that must operate on a 24×7 basis since orders are often sent by customers during off-peak hours. Thus, system monitoring software is required to ensure that the servers are performing optimally and send alerts the moment anything goes wrong. II. EDI Mapping Layer: (Software for reconciling data between you and your trading partners) The mapping layer is where the electronic trading parameters are set up for every EDI relationship that is implemented. These maps, which sit on top of the translation layer, are slightly different for each trading partner due to particular supply chain or business process requirements of the relationship. Also, since a map is needed for each transaction with every unique trading partner, the number of maps can add up quickly. For example, if Company A has 10 trading partners that it conducts business with using EDI, and each trading partner requires Company A to conduct three transactions, 30 maps are needed. As companies add partners over time, those numbers keep going up; as do the requirements for keeping the maps and the data they're transmitting synchronized. III. EDI Connectivity Layer: (Software and network technology for transporting data between you and your trading partner) The third EDI layer is connectivity. While the first two components have to do with data processing, the third is all about transporting that data between Company A and its trading partners. The upfront costs here have to do with providing the numerous communications methods that trading partners might require. These include a VAN mailbox, which provides access to a specialized proprietary network, often called a value-added network; AS2 software support, which is a secure Internet protocol that large trading partners such as Wal-Mart often use; and even secure FTP sites available via the Internet. Many companies today have to support all three to satisfy their full trading partner community. After setup, high costs are often associated with the ongoing transaction fees for using a VAN, software maintenance fees for FTP and AS2 software, and staffing associated with upkeep. IV. EDI Application Integration Layer: (Software for exchanging data into and out of your accounting system) Application integration allows companies to move data between their own ERP and/or accounting systems and the EDI translator. The last of the EDI pieces is application integration. In short, application integration allows companies to move data between their own ERP or accounting systems and the EDI translator to eliminate manual keying of data – an extremely valuable feature. In some cases, prebuilt software modules, called adapters, can be used to reduce development time for certain ERP and accounting systems. Once implemented, the integration layer has to be maintained to keep it current with accounting system version upgrades and changes to trading partner EDI specifications. 4.2.8 EDI Applications in

E-commerce

As larger suppliers and retailers have advanced their use of certain technologies – specifically Electronic Data Interchange (EDI) – they have been able to conduct business more efficiently. As these companies have mandated the use of similar technologies by their trading partners, many small to mid- market companies have become disadvantaged in their attempts to "trade" with such firms. EDI is a set of protocols for conducting electronic business over computer networks. Traditionally, these networks have been private WANS; but EDI is now done over the Internet. EDI defines the electronic exchange of structured business data, such as purchase orders, invoices, and shipping notices, typically between one organization and another. The relationship is usually between a vendor and customer. For example, EDI provides a way for a customer's computer to place orders for goods with a vendor's computers, based on reorder levels. The EDI system coordinates the transaction, initiates deliveries, and generates invoices. It is important to differentiate between EDI and electronic commerce. Electronic commerce encompasses all aspects of electronic business exchanges, including person-to-person interaction (collaboration), money transfers, data sharing and exchange, Web site merchant systems, and so on. EDI is a subset of electronic commerce that encompasses the exchange of business information in a standardized electronic form. Standard form defines things like the layout of information for an invoice or purchase order. EDI can reduce costs, workforce requirements, and errors associated with retyping orders, invoices, and other documents. With EDI, computer data already entered by one organization is made available to a business partner. EDI is typically handled using store-and-forward technologies similar to e-mail. A third party such as GEIS (General Electric Information Service) often serves as a "middleman" to help organizations establish business relationships and handle business transactions. EDI can be thought of in terms of messages exchanged between businesses that are engaged in electronic commerce. Within a message is a basic unit of information called the data element. A message may consist of many data elements. For example, each line item on an invoice is a data element. All the data elements form a compound document, which is essentially a business form. An EDI message also includes a field definition table that provides information about the data elements in the message, such as whether an element is mandatory or optional, how many characters it has, and whether it is numeric or alphabetic. String identifiers define things like data element names and a data dictionary reference number. The data element dictionary defines the content and meaning of data elements. EDI was first developed by the automobile/transportation industry in the 1970s. Today, it is widely used in a variety of industries, including distribution, finance and accounting, health care, manufacturing, purchasing, retail, tax form filing, and shipping. Early EDI packages used rather simple standard forms that forced companies to convert data to fit the forms. Newer EDI systems allow companies to create custom systems using simple programming or authoring tools. Even more recently, EDI has been adapted for the Internet and to work with XML, as discussed later. There are two approaches to implementing EDI. Many large organizations acquire or build their own proprietary systems, often in association with their business partners. If a business partner is small, it may have little choice but to adopt the proprietary system of its much larger business associate. The other approach is to work with a VAN (value added network) provider, which provides EDI transaction services, security, document interchange assistance, standard message formats, communication protocols, and communication parameters for EDI. Most VANs also provide a network on which to transmit information. In many ways, the Internet is a better medium for implementing EDI than using value added network providers or installing private leased lines. The Internet is already in place as a business-to-business communication system. The startup costs are cheaper and, in most cases, the organization is already connected to the Internet. This makes it easier for more businesses to join the electronic commerce web, especially those who previously could not afford the expense of EDI. The use of VPNs is growing for EDI and e-commerce-related traffic. A VPN can secure and give preferential treatment to EDI traffic. The term extranet is usually used to refer to a secure Internet connection between trading partners. The protocol for VPNs are L2TP (Layer 2 Tunneling Protocol), PPTP (Point-to-Point Tunneling Protocol), and the IETF's IPSec (IP Security). See "VPN (Virtual Private Network)." 4.2.9

Migration to Open EDI It appears that the internet and the transition to what is called by some open EDI will change the economics of EDI by reducing setup and rollout costs. The development/migration to open EDI enables several types of rollout strategies. Generally, users can be classified into two groups. The first group is composed of users (individuals or companies) who are not currently EDI users. The second group is composed of companies currently using EDI. This presents two migration paths to users: - A nonuser becoming a private network/VAN user. - A non-EDI user who can make a direct transition to open EDI. The factors driving migration are as follows: - The cost of using EDI service - The demands of customers - The opening up of market opportunities Migration from non-EDI to EDI operation is generally driven by the demands of dominant organizations.

There are a number of benefits to supporting EDI on the internet. The key benefit relates to the cost of transferring EDI messages on the internet compared to transferring these messages on a VAN. Internet access providers charge an average of about $30.00 per month for a SLIP/PPP(serial line internet protocol /point-to-point protocol) account that gives users an access number and unlimited (or at least a large number of) hours of internet connection time. 4.3 E-Commerce and Internet/WWW To understand the relationship between e-commerce and internet/www first we know about internet and www. 4.3.1

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Internet When a network connects two or more computers, it's called internet (with a lower-case i). The Internet with a capital I refers to millions of computers connected to a gigantic network and communicating via TCP/IP protocols. A protocol is a pre-defined way for a computer to communicate with another computer, for instance when requesting a service, s.a. an FTP service, or when forwarding some information to another machine. Each computer at any given time has a unique address on the Internet. This is its IP address.

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Internet is revolutionising commerce. It provides the first affordable and secure way to link people and computers spontaneously across organizational boundaries. This has given rise to innovative enterprises – virtual companies, markets, and trading communities. The effective use of these technologies and the easy availability of

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internet further provide a boost in this direction making Electronic Commerce (E-commerce) a reality. The Internet is a vast computer network of many different computer networks existing in the world. It is

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collection of interconnected networks. Hence it is called ``inter network" or in short "Internet". Through an Internet connection, one can communicate with any other subscriber of

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internet throughout the world. Many companies including VSNL, Essar, Bharti Telecom, and MTNL provide Internet service in India. They are also known as Internet Service Providers (ISP). Any individual or organisation can open an account with any Internet Service Provider (ISP) who will give an Account Number for monthly or yearly fees. Then the user may have access to the Internet and the e-mail through it. The user needs his own computer, "modem" and a telephone line to send and receive messages. He can also have access to the World-Wide Web (WWW). The user can also send emails through the internet if the email software (called a mailer) is installed on the user's computer. Modern Internet has over 32,000,000 registered domain names (according to domainstats.com/provided by ISOC). The size of

the Internet doubles every 10- 12 months. According to

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cnn.com, more than 50% American households are now connected to the Internet.

World wide web and internet are not the same:

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The world wide web is also known as the 'www' or the 'web'. It is an architectural framework of

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information system fully implemented in 1994 on the Internet. It contains millions of electronic documents called Web Pages. A web page contains text and graphics (drawings) which are linked to related information. The name 'web' is based on the fact that the text, pictures, animation, sound and information that make up a document may come from anywhere in the world. Thus, a single document can be perceived to stretch 'weblike' throughout the world. The Web is not the internet. At times, people confuse the two terms that are related but not identical in meaning. The internet evolved from the military ARPANet in

the 1960

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s with the purpose of' creating a network that would

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continue to work as a whole, when parts of it collapse'. The Internet means a network infrastructure that is built on certain standards, which are followed by all participants to connect to each other. The Internet Protocol (IP) defines how the flow of information is organised. But it does not specify the types of information or services to be exchanged.

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World Wide Web lays down the specifications of information and services to be exchanged with its Hypertext Transfer Protocol (HTTP). Thus, the web offers the exchange of documents via HTTP. Besides www, there are other protocols that enable people to communicate via email (POP3, SMTP, IMAP), chat online (IRC) or participate in newsgroups (NNTP). The WWW is thus one of the numerous services offered on the internet. It does not specify if a certain web page is available in the internet intranet or extranet. The World Wide Web provides a simple-to-use web interface that allows people with very little knowledge in computing to access web services all over the Internet. The web services include content products and services, which can be viewed or ordered through the web browser. It may be noted that the web browser allows customers to self-service themselves over the web. Note that when you are on the Web, you are on the Internet but not the other way round. For example, those sending e-mail are not on the Web, unless they are sending email via a Web browser. 4.3.1.1 Advantages/Limitations of Internet The

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Internet provides numerous advantages to managers. They use it to glean intelligence about rivals, monitor sales, promote their products and services etc. The advantages of internet are: ● Marketing and selling products and services. The "buy and sell" aspect of Internet commerce has attracted more media attention than any other networked activity to date. Thousands of e-corporations have sold over $1 million each in 2000-02. The highest sales volume was in business- to-business commerce, and it is growing. The next highest sales were to government agencies, followed by colleges and universities. In terms of revenue, business-to-consumer ranks fourth in Internet revenue. ● Leveling the playing field. By advertising the products/services on the net, the enterprise is on equal footing with larger companies. ● Excellent customer support resource and service. The most common support resource created is FAQs (Frequently Asked Questions). Most web sites create customer feedback in the form of suggestions and complaints. ● Doing business fast.

The Internet promotes e-selling in a

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fraction of seconds. Thus, it promotes the growth of a customer base. ● Obtaining users' opinions. It promotes interactive surveys. The user's opinions can be gathered anywhere as it provides real-time statistics to the user. ● Promoting economy and efficiency. The cost of establishing and maintaining the website is far less than offline trading. From a marketing view, the web site provides user information more quickly, in a more timely fashion, and the convenience of the user. ● Promotes a paperless environment. All the information an enterprise wants to communicate to customers could be communicated electronically with the help of the internet. ● Support for managerial/functions. The traditional managerial functions of planning, organizing, directing, and controlling require managers to collect, evaluate, and distribute management information, especially in organizations with branches worldwide. The Internet sends business information through a company's networks and across networks around the globe. E-mail is a convenient tool for managers to reach employees, bosses, customers and suppliers quickly and at no charge. ● Triggering new business. Given the world wide networking of business and commerce, mere presence is bound to trigger one type of business activity or another. This includes business-to-business, business-to- government agencies at all levels business to college and universities as well as business to consumers. For example, a start up company owned by students generated $11 millions in revenues in 1999 from selling used books nationwide. Limitations/Disadvantages Of Internet: ● It is difficult to detect the fake user/identify the forged transactions. ● It is often difficult to provide security support to all users. ● It is difficult to provide adequate privacy to all users as their Id accounts could be accessed by other users. ● It passes various threats like: the threat due to hackers, worms, Trojan Horses, viruses, and zombies are the Threats to the security and functioning of web sites. ● The growth of e-business has put a constant demand on existing network infrastructure. Managers have been under great pressures to upgrade and maintain more complex networks to ensure continuous performance. 4.3.2 World Wide Web In 1990 Tim Berners-Lee, a programmer at Particle Physics Laboratory, wrote a program called a hypertext editor that allowed information highlighted in a document to link to other documents on a computer network with a mouse click. Soon, physicists associated with the lab began to use the hypertext editor and the Internet to send papers to each other. Later on, their electronic mail became more elaborate, as they built links that crossed the Internet to transmit information and documents. This virtual space became known as the World Wide Web. The World Wide Web, also known as the WWW or the Web, is an organization of files designed around a group of servers on the Internet programmed to handle requests from browser software that resides on users' PCs. The name is based on the fact that the sound, text, animation, pictures, or information that make up a document may come from anywhere in the world. A single document can be perceived to stretch-weblike throughout the world. A brief summary of the key events of creation of www as shown in Table 4.2 Table 4.2: Major Events in the Creation of the World Wide Web

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When a document is accessed in Washington or Singapore or Madrid, all of the components are pulled from different computers worldwide and integrated in the document displayed on the user's screen. The request is received by one computer, which interprets its content to see if it has what is requested. If not, the request hops across other computers until the entire document IS assembled. The physical structure or architecture of the Internet is hierarchical: there are high-speed backbones at the top, with regional and individual networks at the bottom. The bulk of Internet traffic is fed onto the backbone via Network Access Points (NAPs), which are maintained by Sprint and other service providers at strategic locations throughout the United States. This grand network shares a common set of communication protocols called Transmission Control Protocol/Internet Protocol (TCP/IP) suite. The TCP/IP allowed for a communication to be broken into packets that were routed separately to their destination as separate packets, and then reassembled to the communication's original form (Figure 4.2). The newness of the Web, alongwith its rapid, phenomenal growth, has been a challenge for corporations that want to create a presence on the Internet. They have found it difficult and too costly to invest employees' time in doing professional Web design work. The demand has created

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industry specializing in Web design and Web mastering. Because of the increasing number of Websites, Webmaster or developer is a lucrative new career.

Figure 4.2: How Information Transfers Over the

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Internet Source: Whitehead, Paul and Ruth Maran, 1997. Teach yourself the internet and the World Wide Web visually. Indianapolis:IDG Books Worldwide, Inc. Internet Service Providers (ISPs) The ISPs are a specialized company that connects customers with PCs and browsers to the Internet. The ISPs offer a variety of services like: ● Linking consumers and businesses to the Internet (e.g., America Online, VSNL, Ernet, Microsoft Network, CompuServe) ● Network management and system integration ● Monitoring and maintaining customers' Web sites ● Backbone access services for other ISPs like PSI, BSNL, and UUNET ● Payment systems for online purchases. Initially the cost of Internet access was high, however with the increase in traffic the costs are coming down. Many governments are funding the use of the internet because of its political, education and commercial benefits. The internet provides

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variety of information almost free except those which are membership based. One can contact anyone, anywhere, anytime for a monthly fee. The exceptions are web sites that charge a membership fee or a fee for access to privileged information. Almost everything one needs on the Internet is free. Among the free services are: ● Hotlist that tells the user what is popular and what is not. ● Comics that focus on entertainment events. ● Software archives that list the latest free software available. ● Weather services that provide free weather forecasts anywhere in the world. ● Magazines and broadcasting stations that constantly update the news. ● Searchers that help locate items or subjects on the Internet. ● Dictionaries that include thesauruses and "fact" books on almost all subjects. ● Government services that publicize what is available from them. The problem for ISPs is sudden growth without advance planning to accommodate that growth. Accordingly, response time slows down, triggering customer complaints. The challenge to them is to maintain profitability and meet or beat the competition, while maintaining customer satisfaction. To do all this well requires professional management, a highly skilled technical staff, and a healthy budget to bring the technology in line with the voracious appetite of today's consumer. The trick is to ensure a balance between creativity and control and between managing growth and a stable technical infrastructure. 4.3.2.1 Ownership, Stability and Reliability of the Web There is no one single agency or company who owns the Internet. Each company on the Internet owns its own network. The links between these companies and the Internet are owned by telephone companies and ISPs. The organization that coordinates Internet functions is the Internet Society. It does not operate any of the thousands of networks that make up the Internet, but works with ISPs by providing information to prospective users. This association's Internet Architecture Board consists of work groups that focus on TCP/IP and other protocols. Various committees also handle technical issues and day-to-day operational aspects of the Internet. The Web itself, resides everywhere as well as nowhere at the same time, simply cannot cease functioning by itself. Also because it is based on the Internet, stability is as good as that of the Internet, which is fairly good so far. The Internet is designed to be indefinitely extendable. Reliability depends primarily on the quality of service providers' equipment. Inadequate phone lines, bandwidth, or mediocre computers can affect the reliability of the overall service. 4.3.2.2 Basic Features of the WEB The web is one of the most flexible and exciting tools in existence for surfing the Internet. Using mosaic viewer, the www made it possible for a site to set up a number of pages of information containing text, pictures, sound and even video with embedded links to other pages. By clicking a link the user is suddenly transported to the page pointed to by that link. The basic features of the web are as follows: ● Hypertext information system: The idea behind hypertext is that instead

of

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reading text in a riding, linear structure (such as a book) you can skip easily from one point to another. You can get more information, go back, jump to other topics, and navigate through the text based on what interests you at the time. If the information did not take up much disk space, and if it was freely available, and you could get it reasonably quickly anytime you wanted, then things would be more interesting. ● Graphical and easy to navigate: One of the best parts of the web is its ability to display both text and graphics in full colour on the same page. Before the web, using the internet involved simple text-only connections. Web provides capabilities for graphics, sound and video to be incorporated with the text and web browsers include even capabilities for multimedia and embedded applications. The interface to all this is easily navigable-just jump link to link, from page to page, across sites and servers. ● Cross-platform: If you can access the internet, you can access the world wide web regardless of whether you are running on a low-end PC or an expensive graphics workstation. You can be using a simple text-only modem connection, a small 14-inch black and white monitor or a 21- inch graphics accelerated display system. The world wide web is not limited to any kind of machine, or developed by any company the web is entirely cross-platform. ● The web has global reach: The web is successful in providing so much information because that information is distributed globally across thousands of web sites, each of which contributes the space for the information it publishes. You, as a consumer of that information, go to that site to view the information. When you are done, you go somewhere else, and your system relieves the disk space. You do not have to install it, or change disks, or do anything other than point your browser at that site. ● The web is dynamic: Because information on the web is contained on the site that published it, the people who published it in the first place can update it at any time. If you are browsing that information, you do not have to install

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version of the help system, buy another book, or call technical support to get updated information. Just browse and check out what is up there. ● Accessing many forms of internet information: There are dozens of different ways of getting at information on the Net namely, FTP, Gopher, Usenet news, WAIS databases, Telnet, and e-mail. Before the web became as popular as it is now, to get to these different kinds of information you had to use different tools for each one, all of which had to be installed and all of which used different commands. Although the web itself is its own information system, with its own internet protocol (HTTP, the HyperText Transfer Protocol). Web browsers can also read files from other Internet Services and you can create links to information on those systems just as you would create links to information on web pages. ● The web is interactive: Interactivity is the ability to "talk back" to the web server. Unlike the television, the web is interactive. It means the act of selecting a link and jumping to another web page to go somewhere else on the web. It also enables you to communicate with the publisher of the pages you are surfing. ● Conferencing: In addition to an Internet telephone, we may also have video communication. A digital camera and a video digitizer, which converts a picture into a digital message is required for the purpose. With a combination of Internet video communication and Internet audio phones we can have a conference between people who may be located in different continents. It can be observed that on the Net we can establish all kinds of contact instantaneously except physical contact. The Internet has thus promoted the understanding between the people in the world, by bringing them close together virtually. 4.3.3

E-commerce with Internet/WWW In the
e-commerce market many individuals and organizations that cooperate to build it compete on the products and services they sell.
It gives opportunities to them to establish, earn, and grow. From a broader perspective, e-commerce with internet/www has an extensive scope of opportunities. Let's discuss them: 4.3.3.1
Opportunities 1) On-line Web selling: There are four ways that Web commerce can be undertaken over the Internet. They are as follows:
➢ Toll-free or other telephone numbers. After Web browsing, order the goods by telephone or fax. The advantage of ordering through a toll- free number is that the whole transaction-security issue is skipped, although ordering by telephone is not as convenient as ordering online white browsing for goods. ➢ Shopping clubs. This approach requires new customers to join the club by submitting their credit card information via fax or telephone and subsequent purchases are billed to the credit card. ➢ Off-line ordering and paying. In this approach, customers send checks to the company for the goods they wish to purchase. ➢ On-line credit card entry. An increasing number of Web-based vendors now offer on-line order blanks for shoppers to enter their credit card number but do not encrypt the card number. This is a potential security risk, in that a hacker could read the credit card and make charges to it. The good news is that there is progress on credit card security on the Internet and for transmission of other materials (e.g., with the use of SEPP, SSL, and S-HTTP). 2) Virtual malls: The combination of the home PC and the Internet is making on-line services and shopping easier to implement. For example, MCI has created a large system for shopping based on the Netscape commercial server technology. Although we can view virtual malls as a subset of on-line Web selling, the shopping atmosphere and experience are somewhat different. These Web sites may be more expensive to develop because of the higher aesthetic quality of the cyberspace environment. The following is a partial list of virtual shopping malls on the Internet: - Apollo advertising http://apollo.co.uk - Branch Information Services httplibranch.com:1080 - MarketPlace.Com http://xnarketplace.com MarketNet http://inkneo.uk - Interactive Super Mall http://isupermall.com - Downtown Anywhere http://awa.com - GNN Direct http://gnn.comignnignndirect - Internet Mall httpliwww.mecklenveb.com:80/mall/imall.html 3) Advertising: Organizations that provide well-known Web sites have come to realize that it is possible to charge a recurring fee to companies wishing to have pointers to their own information placed before the public. CNN was charging $7500
per week to place a pointer to a company page on its hot list
which is seen by millions of people per day.
Silicon Graphics pays Hot Wired magazine $15,000 per month to have a direct link to its home page. Netscape Communication

has charged $40,000 for a three-month advertisement placement on its Web site (the site received more than 400,000 hits per day). There are several advantages to advertising on the Internet. One of the most significant is that the sponsor can measure how many people see the information and can interact with them. This is superior to television or other forms of passive advertising. Some Internet news services (e.g. Infoseek) use filters to collect desired news information for the customer, and then use this demographic information to narrowcast or pointcast ads to the user/consumer. 4) Home banking and financial services: As it becomes easier for consumers to do network-based banking, the competition in traditional banking services will become more intense. CyberCash, DigiCash, and other companies are poised to change the nature of financial services delivery on the Internet. The move by some banks to reduce or eliminate fees for online banking may be viewed as service dumping into the market in order to fight off the rapidly emerging competition. 5) Catalog publishing: Many organizations have built home pages that incorporate electronic catalogs listing the products and services the company has to offer. Many of these companies do not yet offer on-line ordering of these products and services from their Web site, but stick with the traditional toll-free number (800 or 888) telephone support for
ordering products. The major advantages of this model are that it complements the existing organizational structure and business model and does not require (evolving) transaction security over the Internet. 6) Interactive ordering: As was just described, many companies have catalogs of their goods and services available on WWW home pages, but they do not support Web-based interactive ordering. An increasing number of early adopter companies, however, do allow interactive ordering of their goods by implementing secure credit card payments over the Internet. The advantage to this integrated approach is that it further automates the ordering process. However, as of press time, only a limited number of Web servers and browsers support transactional security with back-end clearance of credit cards and other payment issues. The problem with making electronic Web payments "in the clear" is that the Internet is not a private network to which only a very limited and controlled population has access. Because the Internet is a public network, electronic transactions can in principle be intercepted and read by other servers on the network. Hackers can pick off logins and passwords. This can happen in one of three ways: - The hacker physically taps the communication line with a protocol analyzer. Likely, this would have to occur at the carrier central office (the ISP, LEC, CLEC, etc.) or at the server-location site (e.g., in the company's own location if it were an "inside job"). - The hacker can reprogram the table of a network router to route information to one of his or her devices for further analysis. This would require either physical access to the router's management port or remote infiltration of that port by identifying its IP and/or dial-up address and then breaking through the access and privilege list of the router. However, the command-line interface of a router is fairly complex and vendor-dependent; the number of people with that kind of practical knowledge is small and they are generally paid "six figures" (implying that unless they are pathological or malicious, they should have no motive to break in). - The hacker can actually break into the server by frustrating its host security mechanism and then can read privileged information (login IDs, credit card information, etc.) from the end system in question. One wonders which of these three methods is more popular with hackers. We tend to believe the latter rather than the former two. This is because these kinds of individuals tend to be more "computers" than "
communication niks";
computer information is more pervasive than communication information. It would be ironic that for all the bad publicity that the Internet receives about security if this were the case because then all infractions can be attributed to and cured by local host security measures, not networking measures; the only role that the Internet plays is to enable the hacker a venue of transport, which is otherwise a legitimate Internet function. Using the same mechanisms, these hackers can read the contents of unencrypted email or FTP files (or any type of electronic file being sent through the Internet). The Internet is vulnerable to these attacks because it is a decentralized network spread across hundreds of thousands of computers worldwide. Thus, there is a critical need to secure data, especially credit card—type electronic transactions. 7) Direct marketing The Internet population of users is growing at 8 percent per month. The challenge that many businesses have is how to reach these users through marketing and advertising to motivate these users to buy their products. Direct marketers use the Internet to disseminate e-mail advertising their products and services. The only charge associated with Internet mailings is the flat monthly fee charged by access providers; however, setup costs such as the prices of powerful PCs, servers, software, and other expenses have to be taken into account in this equation. Direct marketers can utilize newsgroups and discussion
forums which represent the audience most likely to purchase their products. Organizations can market their products on the Internet by posting press releases into newsgroups and mailing lists. Once a press release is posted to a newsgroup, all of the subscribers to the newsgroup will receive the release. Another way to market a company on the Internet is to incorporate a sign-off at the end of each of the messages a company posts on the Internet. This signature sit the end of the message is typically a couple of lines about the company and represents a low-key way to advertise. 4.3.3.2 Essential Language and Tools

of the Internet/Web The commonly used terms of internet/web are: ● Provider or Internet Service Provider (ISP): Internet service provider is an enterprise to provide an entrance ramp to the Internet. The ISP purchases expensive high-speed Internet networks from a major Internet source and a number of telephone lines from a local phone company. By placing computers at the site that interface the phone lines with the Internet the ISP can begin to sell online commercial access. The faster Internet network promotes more data or users, which means more revenues coming from users. The ISP recoups its investment by selling WWW services, providing service to many people simultaneously, and selling major Internet hook-ups to large enterprises in their area of operation. The purchase of internet access from an ISP. You first receive an account that allows you to store files and do your Internet work. You are also connected to a NetNews network that brings you thousands of interest groups on virtually any topic imaginable. You also receive an email address that links you with the world at large and, of course, access to the entire Internet. ● Server: A server is the ultimate destination point on the Internet. It is where the information you are seeking is stored. When you send a message to retrieve a piece of information through the Internet, the browser picks up the message, reformats it, and sends it through various layers to the physical layer where cables and wires transmit the message to the appropriate server. Once there, the server retrieves the information and sends it back to the browser to be viewed by the user. There are various kinds of servers, depending on the information sought by the user. Since most of the focus in this book is on the World Wide Web, we will use the word "server" to refer to WWW servers. ● Browser: A browser is a software program loaded on a PC which allows access or read information stored on the Internet. It is the vehicle that enables you to interface with the Internet. The browser takes your instructions and converts them into a language and a format that can be sent to a remote site and executed. ● Hypertext Transfer Protocol: The World Wide Web (WWW) is a global network of millions of Web servers and Web browsers connected by the Hypertext Transfer Protocol or HTTP and its many derivatives. The WWW is like a client/server system: content is held by Web servers and requested by clients or browsers. Clients display the information sent by the Web server on their monitors. Web servers provide pages of multimedia information in seconds. The most important element of a Web site is its links to other pages within the site or across sites. By clicking on the link, a user can navigate from page to page without having to worry about the location of the information or how it travels across the network. ● Uniform Resource Locators or URLs representing the address of a specific website are central to the Web in e-commerce. For example, http://www.virginia.edu consists of two key parts: http://. The http (Hypertext Transport Protocol) is a protocol designator: It is a special method used in moving files that contain links to other documents related to the material requested across the Internet. It simply tells the browser what protocol to use in connecting to the Web server (in this case, http). Web browsers can also use other protocols such as FTP (file transfer protocol) for file transfer and SMTP (simple mail transfer protocol) for electronic mail. www.virginia.edu is the name of the server: The series www after the double slash tells the network that the material requested is located on a dedicated Web server somewhere. Virginia is the name of the Web site requested, and edu is a code indicating that the site is an educational institution. Other codes like org (organization; e.g., www.ACM.org), gov (government e.g., www.whitehouse.gov), and mil (military, e.g., www.defenselink.mil) are also used. The most common code is com (commercial,e.g., www.dell.com). ● Security Protocols: There are two main security protocols. The first is Secure Sockets Layer (SSL) – a protocol for transmitting private information in a secure way over the Internet. Developed by Netscape Communications Corporation. To date, it is the most widely used security protocol on the Internet, providing security services for messages or streams of data. The second security protocol is S-HTTP secure HTTP (S-HTTP): an extension to HTTP that provides various security features such as client/server authentication and allows Web clients and servers to specify privacy capabilities. ● File Transfer Protocol (FTP): The FTP is a standard protocol that allows you to copy files from computer to computer. Like Telnet, FTP allows you to access remote computers. When you FTP to a remote computer, you log in as anonymous, which means simply entering your e-mail address as the password. The WWW makes heavy use of FTP protocol. Most browsers know how to access information from FTP sites. This feature allows you to store WWW homepages at low-cost FTP sites anywhere in the world. ● Telnet: An Internet service that allows a visitor to access remote computers as if they were local. Telnet is a basic Internet service that allows you to access remote computers as if they were local. To use Telnet, you must have the Internet address of the remote computer. Once you transmit the computer address, you are asked to login before being allowed to access computer files or use the computer. Login entering your user name and password. Once logged in, the information you read and actions you take are acted upon by the remote computer. ● Bulletin Board Systems (BBS): BBS is a computer based meeting and announcement system that allows local people to exchange information free of charge. People often confuse Bulletin Board Systems (BBS) and pay services. A BBS generally has a simple interface to the Internet for users to access services like email and NetNews. By calling a BBS via your PC, you can locate all kinds of information. The e-mail part of this system, for example, accepts e-mail during the day, compiles it, and sends it once or twice a day as a batch. It also receives incoming e-mail the

same way. This is probably satisfactory service for small-time users or those with no time requirements. An alternative type of BBS is service by subscription. These systems are so popular that system owners have added better computer hardware, better storage, more phone lines, etc. The cost of keeping the system current requires users to pay a set fee per month. Pay services like America Online and Prodigy have become household names, offering millions of users access to popular telecommunication offerings that include stock quotes, Internet access, setting up your stock portfolio, and other specialized services. Many pay services follow a similar procedure. First, you subscribe at a fee, which covers basic access to the service. The fee allows you to do e-mail, interactive real-time communication, watch the news, and the like. Pay services offer other options that are hard to get on the Internet. For example, a live news feed and free online (no delay) stock quotes are available at a membership fee; some are free. Security software is also included to ensure privacy, confidentiality, and integrity of the exchange process. ● E-mail: Electronic Mail or e-mail is a system of electronic correspondence by which users send and receive messages over a network of computer and telecommunication links. The messages may consist of short notes and greetings, or extensive (huge) text files plus graphics (drawings) and photographic images, video clips, or sound. Thus, e-mail is an "electronic post office". It provides a "store-and- forward" service. It lets people communicate even in the absence of the receiver at the other end. It means that you can send e-mail messages whenever you want. The person to whom you have sent the message, can read them (after opening his computer) whenever he wants. Thus, the sender and the receiver don't have to connect themselves at the same time to communicate. The ability to compose, send and receive electronic mail is enormously popular on the Internet. Many people use this as the primary way of interacting with the outside world. Electronic mail eliminates most of the problems and delays of getting a physical document from one person to another. The message becomes available to the addresses as soon as it is sent. Unlike telephone calls, both parties need not be available simultaneously for communication to succeed. Some electronic mail packages have an "Express mail" feature. When express mail is sent, the address is immediately notified on the PC's status line that mail is waiting. ● Newsgroups: News Groups are specialized forums in which users with a common interest can exchange messages. Thousands of newsgroups exist, on technical and non-technical topics. Each news group has its own style and customs. The Usenet newsgroups have unique names. The names have two main parts – the first describes the main topic and the second part narrows down the topics in sub-groups. Some of the popular newsgroups are: rec.arts. theatre: Recreation concerning theatrical arts sci.environment: Newsgroup concerned with environmental science sac.history.war.world-war-ii: Newsgroup dealing with the history of World Warn. ● Remote Login: By using Telnet or other login programs, users anywhere on the internet can login to any other machine on which they have an account. Thus, if you are connected to the Internet, and you are away from your computer, and if you have access to another computer on the Internet, you can have access to all the information, programs and utilities which reside in the other computer through the Telnet or through remote log-in. The term 'Telnet' is also referred to as remote log- in, which simply means connecting one machine to another so that one may interact with that other machine as though he or she were actually using it locally. Technically Telnet is a protocol. This means it is a language that computers use to communicate with one another in a particular way. This lets you log-in to a site on the Internet through your connection to teleport. It is a terminal emulation program, meaning that when you connect to the remote site, your computer functions as a terminal to that computer. It has no file-transfer capability. Once the connection is made, you can use your computer to access information, run programs, edit files and use whatever resources are available on the other computer. ● Internet Chatting: Several people may be located in different parts of the world and they can commence chatting with each other in real time by using Internet chat software. E-mail and newsgroups are not real time as the interacting parties are not online at the same time. Chatting is in real-time where the messages reach the destinations instantaneously and are responded

to

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by someone who is also online at the time. The messages may be textual or we may even have Internet telephone facility by transferring voice messages as files instead of textual messages. The advantage is that voice messages can be exchanged anywhere in the world at the cost of a local telephone call. ●

WAIS: While the World Wide Web is a user-friendly interface for browsing data, it has somewhat limited search capabilities. WAIS allows users to search for specific data they are interested in. WAIS searches the documents in a list of servers for one or more keywords and reports back to the user which documents, if any, have occurrences of the keywords.

WAIS is often used in conjunction with World Wide Web servers as the companion search engine. WAIS works by indexing documents a priori. Indexing of documents allows for quick searches when users send queries to the WAIS database. Together, the index software and the WATS database server allow users to create databases of different types of documents, images, and other files and also give users access to the database through easy-to-use client software. In older versions of WAIS the user looked through the resulting list of documents to find what was needed; newer WAIS software supports further searches by allowing the user to place entire documents into the keyword search engine and execute the search again. The WAIS search engine uses the documents as additional search information and looks for documents that not only match the user's original keywords, but are similar to the documents imported into the search. Newer search engines also allow users to utilize Boolean logic expressions (AND. OR, etc.) and wildcards in their searches. One of the problems with WAIS is that it requires a large amount of disk space. For example, the resulting index of a text-based document can be as large as or larger than the original document itself. WAIS servers with a large number of documents pay a premium in disk space. ● Gopher:
It
is one of the information search and retrieval tools that preceded the widespread use of WWW. Gopher's use is now commonly integrated with the more sophisticated browser interfaces. Gopher is a simple tool and relatively easily implemented, but is an important capability. It can be described as a document delivery tool; in fact, Gopher can deliver documents, lists of documents, and indexes. Gopher servers can offer not only textual resources on the Internet. Gopher transparently links groups of file servers, each with their own accumulation of files and folders. One folder on a computer may access other folders located on another computer including photographs and drawings can be accessed and retrieved.
● WWW: The World Wide Web abbreviated as
www and commonly referred to as Web, is a system of interlinked hypertext documents accessed via the internet. With a web browser, one can view web
pages that may contain text, images, videos, and other multimedia and navigate between them via hyperlinks. HTML, which
stands for HyperText Markup Language, is the predominant markup language for web pages. A markup language is a set of markup tags, and HTML uses markup tags to describe
web
pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page. A website is a collection of related web pages, images, videos, or other digital assets that are addressed relative to a common Uniform Resource Locator (URL), often consisting of only the domain name, or the IP address, and the root Path ('/') in an Internet Protocol-based network. A website is hosted on at least one web server, accessible via a network such as the internet or a private local area network. HTML elements form the building blocks of all websites. HTML allows images
and objects to be embedded and can be used to create interactive forms. It provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes, and other items. It can embed scripts in languages such as JavaScript which affects the behavior of HTML
webpages. 4.4 Commerce Net Advocacy CommerceNet has been a global, nonprofit organization since 1994. It has been working towards meeting the needs of companies doing electronic commerce. It does not only talk about e-commerce, but also actively works in collaboration with industry executives, academia, entrepreneurs, and investors to promote and advance e-commerce globally. It is the source of information, education, research, and inspiration for the unfolding e-commerce marketplace. CommerceNet Charter The CommerceNet charter includes the following goals:
● Advise CommerceNet members of current/upcoming regulatory and legislative activities, in the international, federal, and state arenas, that will impede or enhance the growth of Internet commerce. ● Develop recommended CommerceNet positions, working in conjunction with appropriate CommerceNet resources (task forces, members, staff, and so on). ● Be an external voice through proactive advocacy and educational efforts, and communicate CommerceNet's positions to appropriate government entities. ● Cooperate with other advocacy organizations to amplify CommerceNet's positions, when appropriate. The entire enterprise is oriented toward the goal of making electronic commerce a superior alternative to paper-based commerce. CommerceNet Participation Participation in CommerceNet can take the form of full corporate membership, for large organizations; however, this option may cost $60,000 per year. Associate memberships are available for as little as $8,000 annually for smaller businesses (those with less than $20 million in annual revenue). For those who do not need or wish to participate as members of the CommerceNet consortium, subscriptions are available for $700 annually, with a $580 initiation fee. Subscribers are entitled to inclusion in CommerceNet directories and Internet software and information packages, among other benefits. Subscribers may also purchase Internet host services from third-party Internet Service Providers at special rates. What CommerceNet Offers CommerceNet offers a forum for industry leaders to discuss issues and deploy pilot applications, and from these, to define standards and best business practices for using the Internet for electronic commerce. Through these efforts,

CommerceNet will help this emerging industry evolve to common standards and practices so that users will see a seamless web of resources. Participating companies get additional assistance from CommerceNet, including the following: ● Provides research on emerging e-commerce business and technology trends and developments ● Offers networking opportunities with the key players in the market ● Advocates consistent and appropriate public policy ● Demonstrates and pilots projects to validate new models and concepts ● Creates new business opportunities through promotion and partnerships providing mentoring opportunities with established leaders in electronic commerce ● Promotes a framework that encompasses interoperability among developing electronic commerce standards and applications ● Expands a company's activities throughout the world by engaging local and regional organizations to establish regionally-based programs ● Focuses on the support and expansion of a worldwide sponsorship that includes both end users and suppliers of technology Another key benefit comes from CommerceNet's influence on government and standards organizations. For example, CommerceNet is consulted by various organizations (including the White House) to represent the business and industry perspective of electronic commerce. This is your company's opportunity to help define the next generation of electronic commerce and to ensure a consistent voice in the industry for its use and expansion. 4.5 Unit Summary ● "

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Electronic Data Interchange is the transmission, in a standard syntax, of unambiguous information of business or strategic significance between computers of independent organizations." (The Accredited Standards Committee for EDI of the American National Standards Institute). ●

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The EDI architecture has four layers and these are: Semantic (Application) Layer, Standard Translation Layer, Packing (Transport) Layer, Physical Network Infrastructure Layer ●

There are a number of benefits to supporting EDI on the internet. The key benefit relates to the cost of transferring EDI messages on the internet compared to transferring these messages on

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a VAN. ● The Internet is a vast computer network of many different computer networks existing in the world. It is

a

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collection of interconnected networks. Hence it is called ``inter network" or in short "Internet". Through an Internet connection, one can communicate with any other subscriber of

the

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internet throughout the world. Many companies including VSNL, Essar, Bharti Telecom, and MTNL provide Internet service in India. They are also known as Internet Service Providers (ISP). Any individual or organisation can open an account with any Internet Service Provider (ISP) who will give an Account Number for monthly or yearly fees. Then the user may have access to the Internet and the e-mail through it. The user needs his own computer, "modem" and a telephone line to send and receive messages. He can also have access to the World- Wide Web (WWW). The user can also send emails through the internet if the email software (called a mailer) is installed on the user's computer. ●

In the
e-commerce market many individuals and organizations that cooperate to build it compete on the products and services they sell.

It gives opportunities to them to establish, earn, and grow 4.6 Key Terms ● World Wide Web (WWW), byname the Web, the leading information retrieval service of the Internet (the worldwide computer network).
● The

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Internet (or internet) is the global system of interconnected computer networks that uses the Internet protocol suite (TCP/IP) to

communicate between networks and devices. ● Electronic Data Interchange (EDI) is the electronic interchange of business information using a standardized format; a process which allows one company to send information to another company electronically rather than with paper. Business entities conducting business electronically are called trading partners. 4.7 Check Your Progress Subjective: 1) What is electronic data interchange, define? Discuss its various benefits and applications. 2) Discuss the application of EDI in relation to E-commerce? 3) What is the internet? Discuss its various advantages and disadvantages. 4) What is WWW? Discuss its various features. 5) E-commerce with internet/www has an extensive scope. Discuss. 6) What does Commerce net Advocacy offer? Objective: 1) True/False:

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Coding and structuring the documents for business transactions is no easy matter. 2)

Complete the line: The Internet with a capital I refers to _____. 3) Fill in the gap: EDI is typically handled using _____ technologies similar to e-mail. 4) Short Q/A: What is 'Gopher'? 5) Short Q/A: What is EDI Application Integration Layer?
Module: II Electronic Commerce: Safety Measures
Unit: 05 Approaches to Safe E-commerce Structure 5.0 Introduction 5.1 Unit Objectives 5.2 Safe E-commerce 5.2.1 E-commerce: Safety Threats 5.2.2 Implementing Security for E-commerce 5.2.2.1 Security Engineering life Cycle 5.2.2.2 Security Requirements 5.2.2.3 Security Policy 5.2.2.4. Security Infrastructure 5.2.2.5 Testing E-commerce Security 5.3 Secure Transport Protocol And Transaction 5.3.1 Secure Hypertext Transfer

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Protocol (S-HTTP) 5.3.2 Secure Socket Layer (SSL) 5.4 Secure Transactions 5.5 Secure Electronic Payment Protocol (SEPP) 5.6

Unit Summary 5.7 Key Terms 5.8 Check Your Progress 5.0 Introduction On a single day, on an estimation, according to the Indian Reserve Bank, "payments through digital modes may jump to 1.5 billion a day in upcoming time". Today, in such a time of vast growing e-businesses and making payments online, security is of great importance to address for the sake of a stakeholder. A digital transaction is a process that takes place without the use of cash. It involves the collaboration of parties that include large financial firms and various sectors within the economy. Ahead in the Unit, you shall come to know
about various safety issues and measures established in time for the digital payments.
Security
relates to three general areas: 1. Secure file/information transfers 2. Secure transactions 3.
Secure enterprise networks, when used
to support web commerce
In this unit we shall study about Secure Transport Protocols (STPs) and Secure Transactions (STs) while ahead in the next unit we shall discuss Secure Electronic Payment Protocol and other topics. 5.1 Unit Objective This unit covers: -
Safe e-commerce: an overview - Secure Transport Protocols and Transactions - Secure Transactions - Secure Electronic Payment Protocol 5.2
Safe E-commerce E-commerce practices are vulnerable to certain threats. Implementing some effective safety approaches or safeguarding requirements in the system e- commerce can be a safe experience.
Observers and advocators articulate the thesis that

the security issue must be addressed quickly in order for companies to start investing in electronic commerce, there are indications that merchants are taking a wait-and-see attitude in electronic commerce on the internet until either there is a dominant standard or there is universal software that will support a variety of encryption and transaction schemes. The market is looking for a comprehensive solution that merchants and banks can use to support all functions. Computer security has several fundamental goals:
a.
Privacy: keep private documents private, using encryption, passwords, and access-control systems. b. Integrity: data and applications should be safe from modification without the owner's consent. c. Authentication: ensure that the people using the computer are the authorized users of that system. d. Availability: the end system and data should be available when needed by the authorized user. 5.2.1
E-commerce: Safety Threats What are those different safety threats for the running and success of e- commerce, let's study: 1.
Client threats: Until the introduction of executable web content, Web pages were mainly static. Coded in HTML, static pages could do little more than display content and provide links to related pages with additional information. However, the widespread use of active content has changed this perception. ● Active content: Active content refers to programs that are embedded transparently in web pages and that cause action to occur. Active content can display moving graphics, download and play audio, or implement web-based spreadsheet programs. Active content is used in e-commerce to place items one wishes to purchase into a shopping cart and to compute the total invoice amount, including sales tax, handling, and shipping costs. The best known active content forms are Java applets, ActiveX controls, JavaScript, and VBScript. Since active content modules are embedded in web pages, they can be completely transparent to anyone browsing a page containing them. Anyone can embed malicious active content in web pages. This delivery technique, called a trojan horse, immediately begins executing and taking actions that cause harm. Embedding active content to web pages
involved in e-commerce introduces several security risks. Malicious programs delivered quietly via web pages could reveal credit card numbers, usernames, and passwords that are frequently stored in special files called cookies. Because the internet is stateless and cannot remember a response from one web page view to another, cookies help solve the problem of remembering customer order information or usernames or passwords. Malicious active content delivered by means of cookies can reveal the contents of client-side files or even destroy files stored on client computers. ● Malicious codes: Computer viruses, worms and trojan horses are examples of malicious code. A trojan horse is a program which performs a useful function, but performs an unexpected action as well. Virus is a code segment which replicates by attaching copies to existing executables. A worm is a program which replicates itself and causes execution of the new copy. These can create havoc on the client side. ● Server-side masquerading: Masquerading lures a victim into believing that the entity with which it is communicating is a different entity. For example, if a user tries to log into a computer across the internet but instead reaches another computer that claims to be the desired one, the user has been spoofed. This may be a passive attack (in which the user does not attempt to authenticate the recipient, but merely accesses it), but it is usually an active attack (in which the masquerader issues responses to mislead the user about its identity). 2. Communication channel threats: The
internet serves as the electronic chain linking a consumer (client) to an e-commerce
resource (commerce server). Messages on the internet travel a random path from a source node to a destination node. The message passes through a number of intermediate computers on the network before reaching the final destination. It is impossible to guarantee that every computer on the internet through which messages pass is safe, secure, and non-hostile. ● Confidentiality threats: Confidentiality is the prevention of unauthorized information disclosure. Breaching confidentiality on the internet is not difficult. Suppose one logs onto a website – say www.anybiz.com – that contains a form with text boxes for name, address, and e-mail address. When one fills out those text boxes and clicks the submit button, the information is sent to the web- server for processing. One popular method of transmitting data to a web-server is to collect the text box responses and place them at the end of the target server's URL. The captured data and the HTTP request to send the data to the server is then sent. Now, suppose the user changes his mind, decides not to wait for a response from the anybiz.com server, and jumps to another website instead – say www.somecompany.com. The server somecompany.com may choose to collect web demographics and log the URL from which the user just came (www.anybiz.com). By doing this, somecompany.com has breached confidentiality by recording the secret information the user has just entered. ●

Integrity threats: An integrity threat exists when an unauthorized party can alter a message stream of information. Unprotected banking transactions are subject to integrity violations. Cyber vandalism is an example of an integrity violation. Cyber vandalism is the electronic defacing of an existing website page. Masquerading or spoofing – pretending to be someone you are not or representing a website as an original when it really is a fake – is one means of creating havoc on websites. Using a security hole in a domain name server (DNS), perpetrators can substitute the address of their website in place of the real one to spoof website visitors. Integrity threats can alter vital financial, medical, or military information. It can have very serious consequences for businesses and people. ●
Availability threats: The purpose of availability threats, also known as delay or denial threats, is to disrupt normal computer processing or to deny processing entirely. For example, if the processing speed of a single ATM machine transaction slows from one or two seconds to 30 seconds, users will abandon ATM machines entirely. Similarly, slowing any internet service will drive customers to competitors' web or commerce sites. 3. Server threats
The server is the third link in the client-internet-server trio embodying the e-commerce path between the user and a commerce server. Servers have vulnerabilities that can be exploited by anyone determined to cause destruction or to illegally acquire information. ● Web-server
threats:
Web-server software is designed to deliver web pages by responding to HTTP requests. While web-server software is not inherently high-risk, it has been designed with web service and convenience as the main design goal. The more complex the software is, the higher the probability that it contains coding errors (bugs) and security holes –
security weaknesses that provide openings through which evildoers can enter. ●
Commerce server threats: The commerce server, along with the web-server, responds to requests from web browsers through the HTTP protocol and CGI scripts. Several pieces of software comprise the commerce server software suite, including an FTP server, a mail server, a remote login server, and operating systems on host machines. Each of this software can have security holes and bugs. ●
Database threats: E-commerce systems store user data and retrieve product information from databases connected to the web- server. Besides product information, databases connected to the web contain valuable and private information that could irreparably damage a company if it were disclosed or altered. Some
databases store username/password pairs in a non-secure way. If someone obtains user authentication information, then he or she can masquerade as a legitimate database user and reveal private and costly information. ●
Common gateway interface threats: A common gateway interface (CGI) implements the transfer of information from a web-server to another program, such as a database program. CGI and the programs to which they transfer data provide active content to web pages. Because CGIs are programs, they present a security threat if misused. Just like web-servers, CGI scripts can be set up to run with their privileges set to high – unconstrained. Defective or malicious CGIs with free access to system resources are capable of disabling the system, calling privileged (and dangerous)
base system programs that delete files, or viewing confidential customer information, including usernames and passwords. ●
Password hacking: The simplest attack against a password-based system is to guess passwords. Guessing of passwords requires that access to the complement, the complementation functions, and the authentication functions be obtained. If none of these have changed by the time the password is guessed, then the attacker can use the password to access the system. 5.2.2
Implementing Security for E-commerce Let us now look at the fundamental strategic requirements an organization needs to consider if it wants to ensure that an e-commerce or online security project will be a success.
Technology components of good online security, such as encrypted email, secure SSL websites, and intranets/extranets all have a role to play in protecting valuable data, but for security to be effective it must be designed as a whole and applied consistently across an organization and its IT infrastructure. There is a subtle difference in the design of a software system and that of a security system. While designing softwares, the functional
correctness of applications is the prime concern. In fact, in software systems, the designer aims at ensuring that for reasonable input, the user gets reasonable output. This can be traced from the system specification. But in the case of security systems, the designer has to ensure that the system properties are preserved in the face of attack. Thus the system outputs should not be completely disastrous for unreasonable inputs. In security systems, there definitely can be active interference from the adversary and the system should be hardened to withstand that. Moreover, in security systems, more functionality implies
a
more complex system and more security holes in the system.
The steps to design security of a system is to model the system, identify the security properties to be preserved, model the adversary, and then ensure that the security properties are preserved under attacks. Detailed modelling of the system and identification of the required security properties are

possible. But it
is
almost impossible to accurately model the adversaries and vulnerabilities of the system exploited by those advera\saries.
The result is that there is nothing called “absolute security”. Thus to the designer, system security means: under given assumptions about the system, no attack of a given form will destroy specified properties. Thus system security in general and e-commerce security in particular is conceived of
as
a process rather than a one-time developed product. 5.2.2.1 Security Engineering life Cycle It is important to note that the e-commerce security need of an enterprise is dynamic rather than static and depends on the operational dynamics, shift or addition to business goals, technological advancement etc. Thereby, the process of designing and deploying an information security infrastructure is a continuous process of analysis, design, monitoring, and adaptation to changing needs. Often, the change in needs is frequent in the organizations. In order to be survivable under such frequent changes, the process has to be developed from a life-cycle approach. This observation leads to the concept of “security engineering life-cycle” (
Mazumdar et al 2003).
Figure 5.1:
Security Engineering Life Cycle. The security engineering life cycle consists of the following phases (figure 5.1):
a.
Security requirement specification and risk analysis: This is the first phase in the security engineering life cycle. It collects information regarding assets of the organization that need to be protected, threat perception on those assets, associated access control policies,
existing operational infrastructure, connectivity aspects, services required to access the asset and the access control mechanism for the services. b. Security policy specification: This phase uses “security requirement specification” and “risk analysis report” as input and generates a set of e- commerce security policies. The policy statements are high-level rule-based and generic in nature, and, thereby, does not provide any insight to system implementation or equipment configuration.
c. Security infrastructure specification: This phase analyses the “security requirement specification” and the “security policy specification” to generate a list of security tools that are needed to protect the assets. It also provides views on the location and purpose of the security tools. d. Security infrastructure implementation: The organization, in this phase, procures, deploys, and configures the selected security infrastructure at the system level. e. Security testing: In this phase, several tests are carried out to test the effectiveness of the security infrastructure, functionality of the access control mechanism, specified operational context, existence of known vulnerabilities in the infrastructure etc.
f. Requirement validation: This phase analyses the extent of fulfillment of the security requirements of the e-commerce organization by the corresponding security policy and the implemented security infrastructure. Change in the business goal, operational environment, and technological advancement may lead to a fresh set of security requirements and thereby, triggering a new cycle of the “security engineering life cycle”. Now, let us see the Security Requirements, Security Policy, Security Infrastructure, and Security Testing phases in greater detail. 5.2.2.2 Security Requirements During this phase, the security needs of an enterprise are identified. These needs are governed by the necessity to protect the following security attributes:
a.
Authentication: This is the ability to say that an electronic communication (whether via email or web) does genuinely come from who it purports to. Without
face-to-face contact, passing oneself off as someone else is not difficult on the internet. Forging the “From:'' field in an email header is a trivial matter, and far more sophisticated attacks are standard fare for hackers.
In online commerce the best defence
against being misled by an imposter is provided by unforgeable digital certificates from a trusted authority (such as VeriSign). Although anyone can generate digital certificates for themselves, a trusted authority demands real-world proof of identity and checks its validity before issuing a digital certificate. Only certificates from trusted authorities will be automatically recognized and trusted by the major web browser and email client software.
Authentication can be provided in some situations by physical tokens (such as a driver's license), by a piece of information known only to the person involved (eg. a PIN), or by a physical property of a person (fingerprints or retina scans). Strong authentication requires at least two or more of these. A digital certificate provides strong authentication as it is a unique token (the certificate itself) and requires a password (something known only to the owner) for its usage. b. Privacy:

In online commerce, privacy is the ability to ensure that information is accessed and changed only by authorized parties. Typically this is achieved via encryption. Sensitive data (such as credit card details, health records, sales figures etc.) are encrypted before being transmitted across the open internet – via email or the web. Data which has been protected with strong 128-bit encryption may be intercepted by hackers, but cannot be decrypted by them within a short time. Again, digital certificates are used here to encrypt email or establish a secure HTTPS connection with a web-server. For extra security, data can also be stored long-term in an encrypted format.
c. Authorization: Authorization allows a person or computer system to determine if someone has the authority to request or approve an action or information. In the physical world, authentication is usually achieved by forms requiring signatures, or locks where only authorized individuals hold the keys. Authorization is tied with authentication. If a system can securely verify that a request for information (such as a web page) or a service (such as a purchase requisition) has come from a known individual, the system can then check against its internal rules to see if
that person has sufficient authority for the request to proceed. In the online world, authorization can be achieved by a manager sending a digitally signed email (an email stamped by their personal digital certificate). Such an email, once checked and verified by the recipient, is a legally binding request for a service. Similarly, if a web-server has a restricted access area, the server can request a digital certificate from the user's browser to identify the user and then determine if they should be given access to the information according to the server's permission rules. d. Integrity: Integrity of information means
ensuring that a communication received has not been altered or tampered with. Traditionally, this
problem has been dealt with by having tight control over access to paper documents and requiring authorized officers to initial all changes made – a system with obvious drawbacks and limitations. If someone is receiving sensitive information online, he not
only wants
to ensure that it is coming from who he expects it to (authentication), but also that it hasn't been intercepted by a hacker while in transit and its contents altered. The speed and distances involved in online communications requires a very different approach to this problem from traditional methods. One solution is afforded by using digital certificates to digitally "sign" messages. A travelling employee can send production orders with integrity to the central office by using their digital certificate to sign their email. The signature includes a hash of the original message – a brief numerical representation of the message content. When the recipient opens the message, his email software will automatically create a new hash of the message and compare it against the one included in the digital signature. If even a single character has been altered in the message, the two hashes will differ and the software will alert the recipient that the email has been tampered with during transit.
e.
Non-repudiation: Non-repudiation is the ability to guarantee that once someone has requested a service or approved an action, they cannot turn
around and say "I didn't do that!". Non-repudiation allows one to legally prove that a person has sent a specific email or made a purchase approval from a website.
Traditionally non-repudiation has been achieved by having parties sign contracts and then have the contracts notarized by trusted third parties. Sending documents involved the use of registered mail, and postmarks and signatures to date-stamp and record the process of transmission and acceptance. In the realm of e- commerce, nonrepudiation is achieved by using digital signatures. Digital signatures which have been issued by a trusted authority (
such as VeriSign)
cannot be forged and their validity can be checked with any major email or web browser software. A digital signature is only installed in the personal computer of its owner, who is usually required to provide a password to make use of the digital signature to encrypt or digitally sign their communications. If a company receives a purchase order via email which has been digitally signed, it has the same legal assurances as on receipt of a physical signed contract. 5.2.2.3 Security Policy
The first step in securing an e-commerce venture is to formulate written security policies (
website 1)
which clearly define the requirements for each component of the system (
human, technological, legal)
and how they interact. An organization's security policy defines its position on the protection of its physical and IT assets. It identifies the physical and intellectual property assets that are most valuable for the continued success of the company, and specifies how they should be protected. The security policy
may cover issues like: ● What service types (e.g., web, FTP, SMTP) users may have access to ● What classes of information exist within the organization and which should be encrypted before being transmitted ● What client data does the organization hold? How sensitive is it? How is it to be protected?

● What class of employees may have remote access to the corporate network ● Roles and responsibilities of managers and employees in implementing the security policy ● How security breaches are to be responded to The security policy should also consider physical aspects of network security. For example, ● Who has access to the corporate server? ● Is it in a locked environment or kept in an open office? ● What is the procedure for determining who should be given access? The security policy regulates the activities of employees just as much as it defines how IT infrastructure will be configured. The policy should include details on how it is to be enforced and how individual responsibilities are determined. For it to be effective, the policy needs regular testing and review to judge the security measures. The review process needs to take into account any changes in technology or business practices which may have an influence upon security. Lastly, the policy itself needs to be regarded as a living document which will be updated at set intervals to reflect the evolving ways in which the business, customers and technology interact. 5.2.2.4.
Security Infrastructure The security infrastructure is the implementation of the security policy. The security infrastructure is the technology which is chosen to secure the e- business and the rules by which it operates. Some examples of this include: ● enforcing password aging and expiration ● enforcing the complexity of passwords ● blocking prohibited outbound connections from the firewall ● requiring digital certificates to authenticate remote access connections to an organization's network ● requiring badges for physical access to building
● requiring all physical access to servers to be recorded in a written log Again, the security infrastructure entails managing the behavior of both IT and human resources. It should be regularly policed: - Who checks written logs? - How often are firewall reports checked? Finally, it must be enforced. The penalties for breaches of the security policy must be made clear to all employees and partners and must be enforced if policy requirements are broken or ignored.
5.2.2.5 Testing E-commerce Security
The need for security testing of an organization arises due to two main factors. The primary factor is the importance of measuring the extent to which the security infrastructure implements the security policy and the security requirements of an organization. As the implementation of the security infrastructure needs human interventions, a proper security testing is needed to check out the existence of any "human error". The other factor is the vulnerability of the existing security infrastructure to the new threats and exploits. In recent years, the rate of arrival of new types of threat and new exploits has been alarming with respect to the information security context. This leads to the need for periodical security testing by which the vulnerability of the existing security infrastructure to the growing number of threats and exploits can be measured.
The main objective of security testing, therefore, includes ● Verification of the security requirement specification such as location of the asset(s), access control mechanism for the assets, operational context of the organization, existing system services and their access control mechanisms, and the connectivity within the organization and connectivity of the organization to the outside world ● Verification of the configuration of the security tools specified in the security infrastructure i.e. whether the security tools are properly installed and configured to maintain the security of the asset
● Verification of any gap between the proposed security infrastructure and the implemented security infrastructure ● Verification of the limitation of the proposed security infrastructure with respect to the known vulnerabilities Thus, there are two aspects of testing – compliance checking and penetration testing.
a.
Compliance checking: In compliance checking, it is seen whether
the security infrastructure that has been implemented, matches the security policy of the
organization. A semiautomated tool can be used to match the policies with the existing infrastructure. b. Penetration testing: In penetration testing, it is seen
whether the existing security infrastructure of the organization is sufficient to ward off all possible security threats. Various automated and semi-automated security tools like Retina, Nessus etc. are available for penetration testing. They try
to
penetrate the organization's network and generate a report on the vulnerabilities and threats that are present in the network. The feedback from the testing phase is used to upgrade the security infrastructure and security policy of the organization. After that, the testing is carried out again. Thus, security engineering is an iterative and dynamic process where all the phases need to be carried out at regular intervals to ensure the security of an organization. 5.3
Secure Transport Protocol And Transaction In order to ensure the integrity and security of each electronic transaction, the FTC's echeck technology and other EPSs utilize some or all of the following security measures. It should be noted that a number of these measures are used in other applications as well. For example, authentication is used for other security purposes, such as when logging onto a network, digital signatures
are used for formal contracts, and so forth. There are seven
measures and technologies that are directly related to EPSs: ● Digital signatures ● Authentication

● Public key cryptography ● Certificate authorities ● SSL ● Secure HTTP digital signatures ● Public and private key secure electronic transmission (SET) 5.3.1 Secure Hypertext Transfer Protocol (

98% **MATCHING BLOCK 121/206** W

S-HTTP) S-HTTP is a secure extension of HTTP developed by the CommerceNet Consortium. S-HTTP offers security techniques and encryption with RSA methods, along with other payment protocols. For secure transport, S-HTTP supports end-to-end secure transactions by incorporating cryptographic enhancements to be used for data transfer at the application level. This is in contrast to existing HTTP authorization mechanisms, which require the client to attempt access and be denied before the security mechanism is employed. S- HTTP incorporates public-key cryptography from RSA Data Security in addition to supporting traditional shared secret password and Kerberos-based security systems. The RSA Data Security ciphers used by S-HTTP utilize two keys; files encrypted by one can only be decrypted by application of the other key. A company generates a pair of these keys, publishes one and retains the other. When another company wishes to send a file to the first company, it encrypts the file with the published key of the intended recipient. The recipient decrypts it with the private key. S-HTTP allows internet users to access a merchant's website and supply their credit card numbers to their web browsers; S-HTTP encrypts the card numbers, and the encrypted files are then sent to the merchant. Then, S-HTTP decrypts the files and relays back to the

user's browsers to authenticate the shopper's

100% **MATCHING BLOCK 122/206** W

digital signatures. The transaction proceeds as soon as the signatures are verified.

The term digital signature generally applies to the technique of appending a string of characters to an electronic message that serves to identify the sender or the originator of a message (the authentication function). In other words, digital signature includes any type of electronic message encrypted with a private key that is able to identify the origin of the message. Some digital signature techniques also serve to provide a check against any alteration of the text of the message after the digital signature was appended (the seal function). Early concerns were focused on the problem of the recipient being able to ensure that the message received was genuine and unaltered. However, there was reason to consider the potential legal problem of proving at a later time that the intended recipient did not himself alter the message to use as bogus evidence. This later capability (the integrity function) is of great interest in cases where legal documents are created using such digital signatures. Finally, privacy and confidentiality are of significant concern in many instances where the sender wishes to keep the contents of the message private from all but the intended recipient. 5.3.2 Secure Socket Layer (SSL) SSL is a layer that exists between the raw TCP/IP protocol and the application layer. While the standard TCP/IP protocol simply sends an anonymous error- free stream of information between two computers (or between two processes running on the same computer), SSL
adds numerous features to that stream, including: ●
Authentication
and non-repudiation of the client, using digital signatures ● Data confidentiality through the use of encryption ● Data integrity through the use of message authentication codes
Cryptography is a fast-moving field, and cryptographic protocols don't work unless both parties to the communication use the same algorithms. For that reason, SSL is an extensible and adaptive protocol. When one program using SSL attempts to contact another, the two programs electronically compare notes, determining the strongest cryptographic protocol that they share in common. This exchange is called the SSL Hello. SSL was designed for use worldwide, but it was developed in the United States and is included as part of programs that are sold by U.S. corporations for use overseas. For this reason,

SSL contains many features designed to conform with the U.S. government's restrictive policies on the export of cryptographic systems. The SSL protocol introduced by Netscape Corporation provides a relatively secure method to encrypt data that is transmitted over a public network such as the Internet. SSL provides security for all Web transactions, including file transfer protocol (FTP), HTTP, and Telnet-based transactions. It provides an electronic wrapping around the transactions that go through the Internet. All the major web server vendors, including Microsoft and Netscape, support SSL. The open and nonproprietary nature of SSL is what makes it the preferred choice for TCP/IP application developers for securing sensitive data. Similar to any other security measure, SSL is not perfect. For example, the protocol is vulnerable to attacks on the SSL server authentication. Despite its vulnerabilities, when properly implemented, SSL can be a powerful tool for securing Web-sensitive data. SSL offers comprehensive security by offering authentication and encryption at the client and server sides. It operates between the transport and the application layers in the network stack and uses both public and private key cryptography. Transport and application layers are two of the layers in the network stack in the open system interconnection (OSI) reference model. OSI is a seven-layer architecture defining the method of transmission of data from one computer to another through a network. It is used to describe the flow of data between the physical connection to the network and the end user application. It standardizes levels of service and types of interaction for computers exchanging information through a network. Each layer in the architecture performs a specific task. 1) The application layer is application dependent and performs different tasks in different applications. 2) The presentation layer formats the message. 3) The session layer is responsible for establishing a dialogue between computers. 4) The transport layer is responsible for generating the receiver's address and ensuring the integrity of the messages sent.

5) The network layer is responsible for message routing. 6) The data link layer oversees the establishment and control of communications links. 7) The physical layer specifies the electrical connections between the computer and the transmission medium. Both public and private key cryptography techniques have been around for a long time. Authentication begins when a client requests a connection to an SSL server. The client sends its public key to the server, which in turn generates a random message and sends it back to the client. Next, the client uses its private key to encrypt the message from the server and sends it back. All the server has to do at this point is decrypt the message using the public key and compare it to the original message sent to the client. If the messages match, then the server knows that it is from the client communicating with the intended client. To implement SSL in a web server, the following steps are followed: 1. Generate a key pair on the server. 2. Request a

certificate from a certification authority. 3. Install the certificate. 4. Activate SSL on a security folder

or directory. It is not a good idea to activate SSL on all the directories because the encryption overhead created by SSL decreases system performance.

One important drawback of SSL is that certificates and keys that originate from a computer can be stolen over a network or by other electronic means.

One possible solution to this weakness is to use hardware tokens instead. Hardware tokens improve security tremendously because these tokens are more difficult to steal and they can be customized to individual users. This can be done in a number of ways, including using biometric techniques, such as fingerprint or retinal scan matching.

SSL Versions The SSL protocol was designed by Netscape for use with the Netscape Navigator. Version 1.0 of the protocol was used inside Netscape. Version 2.0 of the protocol shipped with Netscape Navigator Versions 1 and 2. After SSL 2.0 was published,

Microsoft created a similar secure link protocol called PCT which overcame some of SSL 2.0's shortcomings. The advances of PCT were echoed in SSL 3.0. The SSL 3.0 protocol is being used as the basis for the Transport Layer Security (TLS) protocol being developed by the Internet Engineering Task Force. Advantages ➢ Authentication: Allows Web-enabled

browsers and servers to authenticate each other. ➢ Limits access: Allows controlled access to servers, directories, files, and services. ➢

Protects data: Ensures that exchanged data cannot be corrupted without detection. ➢

Shared information: Allows information to be shared

by browsers and servers while remaining out of reach to third parties. Disadvantages ➢ Uses simple encryption: This might increase the chances of being hacked by computer criminals. ➢

Only

point-to-point transactions: SSL handles only point-to-point interaction. ➢ Credit card transactions involve at least three parties: the consumer, the merchant, and the card issuer. This limits its all-purpose applications. ➢ Customer risk: Customers run the risk that a merchant may expose their credit card numbers on its server; in turn, this increases the chances of credit card frauds.

➢ Merchant's risk: Merchants run the risk that a consumer's card number is fraudulent or that the credit card won't be approved. ➢ Additional overhead: The overhead of encryption and decryption means that secure HTTP (HTTPS) is slower than HTTP.

Alternatives

The good news is that the SSL and S-HTTP standards are converging into a single standard which will accommodate both protocols making the use of encrypted credit card transactions even easier to implement. A related capability is a certification authority to authenticate the public keys on which the RSA system relies. The goal is to assure users that a public key that seems to be associated with a company actually is and is not a spurious key. The authority requires applicants to prove their identity. Those passing the tests are issued a certificate in which the applicant's public key is encrypted by the authority's private key.

The CommerceNet certification authority performs due diligence on applicants, including reviews of articles of incorporation and credit reports. An alternative to internet online credit card transactions is the use of digital cash (e-cash). Digital cash is a system by which online shopper's trade real dollars for internet credits to pay for goods and services. With digital cash, users transfer money from their traditional bank accounts to their digital cash accounts, converting real-world currency into digital coins that they store on their hard drive. When a user spends those coins on internet goods or services, the transaction is credited to the merchant's account by the clearing bank and the proceeds are deposited into the merchant's bank account. Digital coins can less easily be stolen or faked, which reduces the risk for both the buyer and seller.

5.4

Secure Transactions The protocols previously discussed support secure transitions, as well as more advanced secure transport capabilities. The secure transaction protocols discussed here are more narrowly focused. For secure payments, internet hardware/software vendors have made a variety of announcements in the past couple of years related to the support for the most popular security payment protocols. Three methods have evolved in the recent past.

Netscape Communications Corp and Microsoft Corp have promoted their respective payment protocols and installed them in World Word Web browsers and servers. 1. SEPP has been championed by MasterCard and Netscape and by other supporters; the American National Standards Institute (ANSI) is fast- tracking SEPP as a standard for the industry. 2. STT was developed jointly by Visa and Microsoft as a method to secure bank card transactions over open networks. STT uses cryptography to secure confidential information transfer, ensure payment integrity, and authenticate both merchants and cardholders. Confidentiality of information is ensured by the use of message encryption; payment information integrity is ensured by the use of digital signatures; cardholder account authentication is ensured by the use of digital signatures and cardholder credentials; merchant authentication is ensured by the use of digital signature and merchant credentials; and interoperability is ensured by the use of specific protocols and message formats. 3. At this juncture, it appears that SET will become the industry de facto standard. SET has emerged as a convergence of the previous standards and has a lot in common with SEPP. SET is expected to be rapidly incorporated into industrial strength "merchantware" already available from Netscape, Microsoft, IBM, and other software sellers.

NetBill is an electronic commerce model designed at Carnegie Mellon University's Information Network Institute with the goal to reduce the cost of processing a transaction enough to accommodate purchase prices on the order of 10 cents per transaction. NetBill's design is based on a central server that acts as an exchange point between vendors and customers. This approach is attractive because there is no prearranged relationship necessary between vendors and customers in order for business transactions to take place. Advantages of the NetBill business model are that it simplifies authentication, single statement billing, and access to account information. The disadvantages concern network and processing bottlenecks and privacy concerns. NetBill's transaction framework uses a distributed transaction protocol with a centralized billing server to provide a funds transfer mechanism. Clients and service providers are authenticated to the billing server and to each other using Kerberos authentication services and private-key cryptography. After customers and vendors agree on a transaction and price, the billing server has an encrypted session with the customer. Once a transaction is successfully completed, goods are sent to the customer. The centralized billing system is cognizant of all transaction information, for example, participant's identity, account number, item purchased, amounts, and tax status, because of this, the transaction is not anonymous and is considered a fund-transfer system and not a digital cash system. The following is a partial list of some of the companies that support secure transactions: ● BizNet Technologies http://rainer.bnt.com/vvv.html ● CommerceNet http://www.commerce.net ● CyberCash http://www.cybercash.com ● Digicash http://www.digicash.com 5.5

Secure Electronic Payment Protocol (SEPP) SEPP (Secure Electronic Payments Protocol) is an open specification for secure bank card transactions over the Internet that was jointly developed by IBM, Netscape, GTE, Cybercash and MasterCard. Building on the iKP protocol, SEPP messages are transmitted as Multi-purpose Internet Mail Extensions (MIME) attachments. A draft version was released for comment in November 1995. SEPP provides an embodiment of the iKP protocol intended for HTTP transactions and adapted to bank card payments; SEPP messages are transmitted with MIME and are based on common ASN.1 syntax including X.509 version 3 certificates and PKCS #7 "signed data". SEPP and STT were being merged into a joint Visa-MasterCard protocol called SET, Secure Electronic Transactions, as of this writing.

Several basic transaction messages are required in a SEPP-based environment; when variations to the canonical flow occur; additional data will be required in the supplementary messages (see the following list).

Messages for SEPP-compliant processing of payment transactions ● Purchase Order Request ● Authorization Request ● Authorization Response ● Purchase Order Inquiry ● Purchase Order Inquiry Response Additional messages for on-line customer ● Initiate ● Invoice ● Purchase Order Response (with Purchase Order Status) Message for offline (i.e., email) transactions or transactions sent to merchant not on-line with the acquirer ● Purchase Order Response (acknowledgement without authorization)

In simplified form, the transaction occurs as follows (see Figure 5.2) which shows some but not all of the transactions). The buying cardholder begins the transaction by sending the merchant an Initiate message. The merchant responds with an Invoice message containing information used by the buying cardholder to validate the goods and service and the transaction information. The buying cardholder then prepares a Purchase Order Request which contains goods and service order validation information and the buying cardholder's payment instructions which are encrypted in a manner so as to only be decrypted by the acquirer. The merchant receives the Purchase Order Request, formats an Authorization Request, and sends it to the acquirer. The Authorization Request contains the confidential card holder payment instructions. The acquirer processes the Authorization Request. The acquirer then responds to the merchant with an Authorization Response. The merchant will respond to the buying cardholder with a Purchase Order Response if a Purchase Order Response message was not previously sent. At a later time, the buying cardholder may initiate a Purchase Order Inquiry (this transaction is used to request order status from the merchant) to which the merchant will respond with a Purchase Order Inquiry Response. The process of shopping is merchant-specific. The process of transaction capture, clearing, and settlement of the transaction is defined by the relationship between the merchant and the acquirer. In certain scenarios (e.g., shopping via a browser/electronic mall), the buying cardholder may have already specified the goods and services before sending a Purchase Order Request message. In other scenarios (e.g., merchandise selection from paper or CD-ROM-based catalogs), the order may be placed with the

payment instructions in the Purchase Order Request message. In an interactive environment, SEPP activities start when the buying cardholder sends a message to the merchant indicating an initiation of a SEPP payment session. This message is referred to as an Initiate message; it is used to request that the merchant prepare an invoice as the first step in the payment process. The merchant responds to the Initiate message with an Invoice message which contains the amount of the transaction, merchant
identification information, and data used to validate subsequent transactions in the sequence.
Figure 5.2 :Simplified SEPP process
The next transaction is initiated by the buying cardholder. This transaction is the Purchase Order Request. This message contains the payment instructions of the buying cardholder. This information is protected in such a manner as to provide a high level of confidentiality and integrity. The payment instructions are encrypted so that they can only be read by the acquirer.
The merchant sends an Authorization Request
to the
acquirer. The acquirer performs the following tasks: ● Authenticates the merchant ● Verifies the acquirer/merchant relationship ● Decrypts the payment instructions from the buying cardholder ● Validates that the buying cardholder certificate matches the account number used in the purchase ● Validates consistency between merchant's authorization request and the
cardholder's
payment instruction data. ● Formats a standard authorization request to the issuer and receives the response.
● Responds to the merchant with a validated authorization request response.
The merchant responds to the buying cardholder with a Purchase Order Response indicating that either the merchant has received the Purchase Order Request message and
the
Authorization Request will be processed later or the Authorization Response has been processed by the acquirer. The buying cardholder can request a status of the purchase order by using a Purchase Order Inquiry message. The merchant then responds with a Purchase Order Inquiry
Response
message. In the scenario supporting e-mail, the Purchase Order Request from the buying cardholder will be the first message and the Purchase Order Response from the merchant will be sent back to the buying cardholder via
email. SEPP Architecture In
SEPP, the buying cardholder is represented by a cardholder workstation which, in the initial implementation, can be based on a World Wide Web browser.
This provides the buying cardholders with the flexibility to shop and conduct negotiations with the merchant system offering items for sale (e.g., Web server). The workstation may support all three stages of the electronic commerce process. Two designs of the cardholder workstations are supported. Integrated electronic commerce workstations include WWW browsers that have been designed to support electronic payments in an integrated fashion. As an alternative design, "bolt-on" payment software may be provided alongside an independent browser to implement the payment process. The protocols have been designed to ensure that such independent software may be invoked from the browsers at the appropriate times by particular data elements in the protocol exchange. Offline
operations using e-mail or other non-interactive payment transactions are also supported by the protocol.
Functions added to traditional WWW browsers to support electronic payments include encryption
and decryption of payment data, certificate management and authentication, and support for electronic payment protocols.
To obtain a certificate, the buying cardholder's PC software interfaces with the certificate
request server in the certificate management system. The certificate management system generates the certificates needed to identify the buying cardholder. The interface to the certificate request server is based on HTTP interactions; the certificate request server includes a WWW server to which the buying cardholder interfaces. The buying cardholder's second and primary interface is with the merchant system. This interface supports the buying cardholder's segment of the payment protocol, which enables the buying cardholder to initiate payment, perform inquiries, and receive order acknowledgment and status. The buying cardholder also has an indirect interface to the acquirer gateway through the merchant system. This interface supports encrypted data sent to the merchant that is only capable of being decrypted by the merchant's acquirer. This enables the acquirer to mediate interactions between the buying cardholder and merchant, and by so doing, provide security services to the buying cardholder. This ensures that the buying cardholder is dealing with a valid merchant. The merchant computer system is based on a Web server
that

provides a convenient interface with the buying cardholder for the support of the electronic payments. In addition, the merchant interfaces with the acquirer gateway in the acquirer bank using the payment protocol to receive authorization and capture services for electronic payment transactions. The merchant also interfaces with the merchant registration authority in the acquirer bank. This is the interface through which a merchant requests and receives its public certificates to support the electronic commerce security functions. This interface may be to a computerized server; alternatively, this interface and service may be provided by manual means. The merchant needs to support SEPP protocols for the capture and authorization of electronic commerce transactions initiated by the buying cardholder. In addition, it needs to support security services (integrity, authentication, certificate management), as well as support the payment and communications functions themselves. A merchant may operate in a fully real-time electronic commerce mode, or it may perform authorization using SEPP protocols and rely on existing mechanisms for the capture process.
The SEPP acquirer consists of a traditional acquirer with the addition of an acquirer gateway and a merchant registration authority.
The acquirer gateway is a system that provides electronic commerce services to the merchants in support of the acquirer and interfaces with the acquirer to support the authorization and capture of transactions. The acquirer gateway interfaces with the merchant system to support authorization and capture services for the merchant. The BankNet interface is basically the existing interface supporting acquirers today. The acquirer receives certificates from the offline certificate authority. The merchant registration authority is a workstation located at the acquirer bank that enables the acquirer to securely receive, validate, and forward merchant certificate requests to the certificate management system and to receive back certificates. The merchant registration authority has a cryptographic module for performing signature(s). It also manages certificate revocation lists for the bank's merchants. The certificate management system consists of computer systems providing certificate authorities to support trusted, reliable, certificate-granting service to cardholders, merchants, and acquirers. This system also includes certificate request servers to issue cardholder certificates through the WWW and interfaces with the acquirer's merchant registration authority to provide merchant certificates. The certificate management system also interfaces through BankNet to issuer banks to obtain authorization for the generation of certificates for cardholders. BankNet is the existing financial network through which acquirers obtain authorization for payment from issuers.
It is also used in SEPP for cardholder certificate authorization between the certificate request server and the issuers.
BankNet provides interfaces based on ISO 8583- formatted
messages.
5.6
Unit Summary A digital transaction is a process that takes place without the use of cash. It involves the collaboration of parties that include large financial firms and various sectors within the economy. Ahead in the Unit, you shall come to know about various safety issues and measures established in time for the digital payments.
Security
relates to three general areas: Secure file/information transfers, Secure transactions,
and Secure enterprise networks, when used
to support web commerce. E-commerce threats include client threat, communication channel threats, and server threats.
Technology components of good online security, such as encrypted email, secure SSL websites, and intranets/extranets all have a role to play in protecting valuable data, but for security to be effective it must be designed as a whole and applied consistently across an organization and its IT infrastructure.
S-HTTP
is a
secure extension of HTTP developed by the CommerceNet Consortium.
S-HTTP offers security techniques and encryption with RSA methods, along with other payment protocols.
SSL is a layer that exists between the raw TCP/IP protocol and the application layer.
For secure payments, internet hardware/software vendors have made a variety of announcements in the past couple of years related to the support for the most popular security payment protocols.
SEPP (Secure Electronic Payments Protocol) is an open specification for secure bank card transactions over the Internet that was jointly developed by IBM, Netscape, GTE, Cybercash and MasterCard. Building on the iKP protocol, SEPP messages are transmitted as Multi-purpose Internet Mail Extensions (MIME) attachments. 5.7
Key Terms ● SEPP (Secure Electronic Payments Protocol): It
is an open specification for secure bank card transactions over the Internet that was jointly developed by IBM, Netscape, GTE, Cybercash and MasterCard.
●

NetBill: It is an electronic commerce model designed at Carnegie Mellon University's Information Network Institute with the goal to reduce the cost of processing a transaction enough to accommodate purchase prices on the order of 10 cents per transaction. ●
Hypertext Transfer Protocol (HTTP) is an application-layer protocol for transmitting hypermedia documents, such as HTML. It was designed for communication between web browsers and web servers, but it can also be used for other purposes. 5.8 Check Your Progress Subjective: 1) What are different safety threats for the running and success of e-commerce? 2) Explain about the Secure Hypertext Transfer Protocol. 3) What is Secure Socket Layer (
SSL)? Describe its advantages and disadvantages. 4) What is SEPP? Explain its process and architecture?
Objective: 1) True/False:
S-HTTP allows internet users to access a merchant's website and supply their credit card numbers to their web browsers. 2)
Fill in the gap: S-HTTP is a secure extension of _____ developed by the _____. 3) Complete the line:
The first step in securing an e-commerce venture is to _____. 4)
Short Q/A: What is Netbill? 5) Short Q/A: What is digital transaction? .
Unit: 06 Approaches to Safe E-commerce - II Structure 6.0 Introduction 6.1 Unit Objectives 6.2

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Secure Electronic Transactions (SET) 6.3 Certificates For Authentication 6.4 Security on Web Servers and Enterprise Networks 6.4.1

Enterprise Network Security 6.5 Unit Summary 6.6 Key Terms 6.7 Check Your Progress 6.0 Introduction This Unit is in continuation of the previous unit. As you know a digital transaction is a process that takes place without the use of cash. It involves the collaboration of parties that include large financial firms and various sectors within the economy. There are various safety issues and measures established in time for digital payments.
Security
relates to three general areas: • Secure file/information transfers • Secure transactions •
Secure enterprise networks, when used
to support web commerce 6.1
Unit Objective This unit covers: •

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Secure Electronic Transactions (SET) • Certificates For Authentication • Security on Web Servers and Enterprise Networks 6.2

Secure Electronic Transactions (
SET) Secure Electronic Transaction is an open protocol which has the potential to emerge as a dominant force in the securing of electronic transactions. Jointly developed by Visa and MasterCard,

in conjunction with leading computer vendors such as IBM, SET is an open standard for protecting the privacy, and ensuring the authenticity, of electronic transactions. This is critical to the success of electronic commerce over the Internet; without privacy, consumer protection cannot be guaranteed, and without authentication, neither the merchant nor the consumer can be sure that valid transactions are being made. In other words, SET is a system for ensuring the security of financial transactions on the Internet. With SET, a user is given an electronic wallet (digital certificate) and a transaction is conducted and verified using a combination of digital certificates and digital signatures among the purchaser, a merchant, and the purchaser's bank in a way that ensures privacy and confidentiality. SET makes use of Netscape's Secure Sockets Layer (SSL), Microsoft's Secure Transaction Technology (STT), and Terisa System's Secure Hypertext Transfer Protocol (S-HTTP). SET uses some but not all aspects of a public key infrastructure (PKI). The SET protocol reproduces the current structure of the credit card processing system and replaces every phone call or transaction slip of paper with an electronic version. This can generate a large number of data packets. The SET protocol offers packets of data for all these transactions, and each transaction is signed with a digital signature. This makes SET the largest consumer of certificates, and it makes banks by default one of the major distributors of certificates. IBM and GTE have announced plans to help banks offer certificates to their customers; these promise to be a significant market for developers of these large databases. One of the most active debates in the SET community is over who will pay for the SET certificate-revocation list. Certificate revocation is an essential part of the certificate process. There are several reasons why a certificate must be revoked before it expires. For example, a user might change organizations or lose his or her key pair, or an e-
commerce site using SSL may discontinue its operations. In all these cases, the certificate needs to be revoked before it expires so that it cannot be used intentionally or unintentionally. The SET protocol forces a transaction processor to check the lists regularly to catch transactions that might be generated by a lost or stolen certificate. In order to simplify the process of keeping the lists current and synchronized, the protocol defines a fingerprint to be a hash of the latest revocation list. A hash function accepts a variable-size message as input and generates a short fixed- sized tag as output. The transaction processors can compare fingerprints to ensure that their copy of the list matches the latest master list. The following steps describe a typical flow of SET protocol messages through a SET transaction (see Figure 6.1). 1. The certificate authority issues certificates to cardholders. 2. The customer (cardholder) initiates a purchase. 3. The merchant requests authorization. 4. The cardholder authorization is provided. 5. The merchant ships products. The confidentiality of messages in the SET payment environment is accomplished through encryption of the payment information using a combination of public key and private key algorithms. In general, public and private key cryptographic algorithms (the process of transforming readable text into cipher text and back again) are used together to encrypt the actual message contents with a short private key, which is distributed securely via the public–private key pair. The most important property of SET is that the credit card number is not revealed to the vendor. However, the SET protocol, despite strong support from Visa and MasterCard, has not emerged as a leading standard. The two major reasons for lack of widespread acceptance are (1) the complexity of SET and (2) the need for the added security that SET provides.
Figure 6.1: A Secure Electronic Transmission (
SET) However, this might change in the future as encryption technology becomes more commonly utilized in the e-business world. Here's how SET works: Assume that a customer has a SET-enabled browser such as Netscape or Microsoft's Internet Explorer and that the transaction provider (bank, store, etc.) has a SET-enabled server. 1. The customer opens a MasterCard or Visa bank account. Any issuer of a credit card is some kind of bank. 2. The customer receives a digital certificate. This electronic file functions as a credit card for online purchases or other transactions. It includes a public key with an expiration date. It has been through a digital switch to the bank to ensure its validity. 3. Third-party merchants also receive certificates from the bank. These certificates include the merchant's public key and the bank's public key.

4. The customer places an order over a Web page, by phone, or some other means. 5. The customer's browser receives and confirms from the merchant's certificate that the merchant is valid. 6. The browser sends the order information. This message is encrypted with the merchant's public key, the payment information, which is encrypted with the bank's public key (which can't be read by the merchant), and information that ensures the payment can only be used with this. 7. The merchant verifies the customer by checking the digital signature on the customer's certificate. This may be done by referring the certificate to the bank or to a third-party verifier. 8. The merchant sends the order message along to the bank's public key, the customer's payment information (which the merchant can't decode), and the merchant's certificate. 9. The bank verifies the merchant and the message. The bank uses the digital signature on the certificate with the message. 10. The bank digitally signs and sends authorization to the merchant, who can then fill the order. The SET protocol relies on two different encryption mechanisms, as well as an authentication mechanism. SET uses symmetric encryption, in the form of the aging Data Encryption Standard (DES), as well as asymmetric, or public transmit session keys for DES transactions (IBM, 1998). Rather than offer the security and protection afforded by public bits) which are transmitted asymmetrically symmetric encryption in the form of DES. This has disturbing connotations for a "secure" electronic transaction
protocol -

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because public key cryptography is used only to encrypt DES keys and for authentication, and not for the main body of the transaction.

The computational cost of asymmetric encryption is cited as reason for using weak 56 bit DES (IBM, 1998), however other reasons such as export/import
restrictions,
and the perceived need by law enforcement
and government agencies to access the plain-text of encrypted SET messages may also play a role. Overview of symmetric and asymmetric cryptography Modern cryptography uses encryption keys, which can encode (lock) and decode (unlock) messages when an encryption algorithm is used. Symmetric encryption works by using a single key, which must be known by all parties wishing to unlock the message. If we apply a specific key to a message, using a good encryption algorithm, then it will be unreadable by unauthorized parties. If we then apply the same key to the encrypted message, then the message will be restored to its original form. However, this presents a problem, because we must find a secure means of transmitting the key to all parties. Figure 6.2: Symmetric Encryption
With A Single Key Asymmetric encryption, also known as public key encryption frees us from this limitation. Asymmetric algorithms use two keys: a public and a private key. These keys are completely independent -- a private key cannot be easily deduced from a public one. When we sign a message using someone's public key, only the holder of the private key can read it. We can place our public key out in the open and rest assured that only the private key holder can read messages encrypted for him or her.
Figure 6.3: Asymmetric Encryption with Public And Private Key In the
SET protocol, two different encryption algorithms are used are DES and RSA. The DES algorithm has been used since the 1970's. It is believed by some that the National Security Agency (NSA) of America played "an invisible hand in the development of the algorithm" (Schneier, 1996); and that they were responsible for reducing its key size from the original 128-bits to 56. DES quickly became a federal standard in 1976, and has been used ever since. In the SET protocol, a DES 56-bit key is used to encrypt transactions. This level of encryption, using DES, can be easily cracked using modern hardware. In 1993,
a
brute-force DES cracking machine was designed by Michael Wiener -
one which was massively parallel. For less than a million dollars (well within the
budget of
many large companies), a 56-bit DES key could be cracked in
an
average time of 3.5 hours. For a billion dollars, which might be considered small change for a military or security organization such as the NSA or a foreign power,
a parallel machine can be constructed that cracks 56-bit DES in a second (
Schneier 1996). Clearly, this is of great concern, since DES encrypts the majority of a SET transaction. As the power of computers grows, and the cost diminishes, such code-crackers may become more and
more common.

One may wonder why such crippled cryptography would be used in a "secure" transaction protocol. One possible reason may be that the organizations involved recognize the desire by government organizations (both foreign and domestic to the US) to observe and monitor financial transactions conducted over the Internet. "Governments tend to look favorably upon SET based cryptography", and the prospect
of
people's financial transactions is disturbing. While many people believe that it is legitimate for a government to observe the financial transactions of its citizens, it is unthinkable that a "secure" protocol would allow those same transactions to be observed by foreign and possibly hostile governments. Transaction Authenticity Authentication is an important issue for users of electronic commerce. Consumers must have faith in the authenticity of the merchant, and merchants must have faith in the authenticity of the consumer. Without authentication, any individual could pose as a merchant, and defame a merchant's good name by failing to deliver goods and billing up credit card bills. Without authentication, any individual could pose as a consumer, ordering costly goods to an abandoned house or apartment, and defrauding the merchant. Without authentication, an individual could pose as a willing buyer, accept the goods, and then repudiate the transaction. Authentication is critical to achieve trust in electronic commerce. Authentication is achieved through the use of digital signatures. Using a hashing algorithm, SET can sign a transaction using the sender's private key. This produces a small message digest, which is a series of values that "sign" a message.
By comparing
the transaction message and the message digest, along with the sender's public key, the authenticity of the transaction can be verified. Digital signatures are aimed at achieving the same level of trust as a written signature has in real life. This helps achieve non-repudiation, as the consumer cannot later establish that the message wasn't sent using his private key. Importance of secure transactions Secure electronic transactions will be an important part of electronic commerce in the future. Without such security, the interests of the merchant, the consumer, and the credit or economic institution cannot be served. Privacy of transactions, and authentication of all parties, is important for achieving the level of trust that will allow such transactions to flourish. However, it is important that the encryption algorithms and key-sizes used will be robust enough to prevent observation by hostile entities (either criminal or foreign powers). The ideal of the secure electronic transactions protocol (SET) is important for the success of electronic commerce. However, it remains to be seen whether the protocol will be widely used because of the weakness of the encryption that it uses. Some of the advantages of SET include the following: - No opportunity for anyone to steal a credit card - Neither a person listening in nor a merchant can use the information passed during a transaction for fraud - Flexibility in shopping; if you have a phone you can shop. Some of the disadvantages of SET include its complexity and high cost for implementation. Authentication Authentication is the process of verification of the authenticity of a person and/or a transaction. There are many tools available to confirm the authenticity of a user; for example, passwords and ID numbers are used to allow a user to log onto a particular site. Authentication Matters Like a passport or a driver's license, an SSL Certificate is issued by a trusted source, known as the Certificate Authority (CA). Many CAs simply verify the
domain name and issue the certificate. VeriSign verifies the existence of your business, the ownership of your domain name, and your authority to apply for the certificate, a higher standard of authentication. VeriSign Extended Validation (EV) SSL Certificates meet the highest standard in the Internet security industry for Web site authentication as required by CA/Browser Forum. EV SSL Certificates give high-security Web browsers information to clearly display a Web site's organizational identity. The high-security Web browser's address bar turns green and reveals the name of the organization that owns the SSL Certificate and the SSL Certificate Authority that issued it. Because VeriSign is the most recognized name in online security, VeriSign SSL Certificates with Extended Validation will give Web site visitors an easy and reliable way to establish trust online. 6.3
Certificates for Authentication Certificates provide a mechanism for establishing confidence in the relationship between a public key and the entity that owns the corresponding private key. A certificate can be thought of as similar to a driver's license. A driver's license is accepted by numerous organizations both public and private as a form of identification. This is mainly due to the legitimacy of the issuer, which is a government agency. Because organizations understand the process by which someone can obtain a driver's license, they can trust that the issuer verified the identity of the individual to whom the license was issued. Therefore, the driver's license can be accepted as a valid form of identification.
A digital certificate is a foolproof way of identifying both consumers and merchants. The digital certificate acts like a network version of a driver's license- it is not credit, but used in conjunction with any number of credit mechanisms, it verifies
the user's identity. Digital certificates, which are issued by certificate
authorities such as VeriSign and CyberTrust, include the holder's name, the name of the
certificate authority, a public key for cryptographic use,
and a time limit for the use

of the certificate (
most frequently, six months to a year).
The certificate typically includes a class, which indicates to what degree it has been verified. For example, VeriSign' s digital certificates come in three classes. Class 1 is the easiest to get and includes the fewest checks on the user's background: only his or her name and e-mail address are verified. For class 2, the issuing authority checks the user's driver's license, Social Security number, and date of birth. Users applying for a class 3 certificate can expect the issuing authority to perform a credit check using a service such as Equifax, in addition to requiring the information required for class 2 certificates. See below Table. Table 6.1: Certificate Classes It is now becoming easier for vendors and for consumers to get digital certificates. VeriSign and CyberTrust, the two primary commercial issuers of digital certificates, can issue certificates via the web. Users of Microsoft Corp's Internet Explorer or Netscape Communications Corp Navigator can take advantage of VeriSign's offer for a free six-month class 1
certificate. The U.S.
Postal Service also is entering the market by offering digital certificate services as well as digital postmarks or e-mail. 6.4 Security on Web Servers and Enterprise Networks As we know, financial transaction security is a major concern for businesses that offer products or services over the internet. However there is also the need for security of the merchant (or other participating organization's) host. This is necessary in order to protect: - files containing buyer's information (credit card lists, addresses, buying habits, etc) that might reside on the accessible web server, and - the overall information platform of the organizations (its enterprise network, the intranet, etc.).
Two general techniques are available: 1. Host-based security capabilities; these are means by which each and every computer on the system is made (more) impregnable. 2. Security watchdog systems which guard the set of internal inter- connected systems. Communication between the internal world
and the external world must be funneled through these systems. These watchdog systems that deal with security within an organization's
own enterprise network are called firewalls. A firewall allows a business to specify the level of access that will be afforded to network users.
Proxies support transactions on behalf of a client in a two-step manner.
In general, both methods are required. An internet site can set up an anonymous FTP site that allows any outside users to access files at the site (anonymous FTP is very useful to companies that wish to place documentation in the public domain; it also can be used to allow users to download software). This could be as a stand-alone system which is updated only by offline means (e.g., load a diskette) or by a physically separate port (e.g., console port); or, it could be a system outside the firewall (but still residing on the overall organization's network called a bastion.
In either case, the host could allow access to all files on the system or to a subset
of files. In any event, the access must be at the lowest level of security (i.e., with minimum privileges), otherwise a hacker might either alter or delete files, use that system to jump off to another system, or create denial of service. This must be accomplished using host security mechanisms;
the firewall comes into play if the FTP system is located on the organization's network, for ease of updating.
These two general areas of security are discussed here. Table 6.2 depicts some strategies that can be used in the context of web commerce applications.
Host security is a discipline that goes back to the 1960s. Mainframes were perhaps endowed with more rigorous security capabilities than their successors.
With even low-end PDs becoming servers, host-based security has suffered for a number of reasons ranging from corporate apathy, to lack of knowledge on the administrator's part, lack of products, and lack of machine power for running the security packages and the daemons. The need and desire to protect a host is based on a whole range of premises, policies, and risk-avoidance reasons. Such a need should stand on its own merit. There will be financial, prestige, political, and organizational losses if some important data is compromised, lost, or improperly disseminated. These reasons should be enough to motivate organizations to develop sound security policies. This discussion focuses only on the matter of not allowing hackers to break into a web server and compromise the financial information of the organization's web commerce customers (but as it implies, a system-wide policy is ultimately desirable).
Table 6.2 Some Web Commerce Host Security Techniques What does a company
wish to
protect? The general answer is the organization's data, login access to the organization's hosts, and the availability of the organization's hosts to do productive work. Organizations must protect themselves from insider attacks, hackers, industrial spies, foreign governments, and other agencies. There are a number of reasons why hackers attempt to penetrate a system, as noted in Table 6.3. People talk about network attacks; what they mean is network-originated attacks.

Naturally, security comes at a price, including following: ➢ The financial resources spent in acquiring the constituent elements such as packet filters, proxy servers, log hosts, vulnerability detection tools, smart cards, and so on. ➢ The staff time spent configuring these tools, identifying and correcting security holes, and training the users about the new tools. ➢
The effort spent in routine administration and management (e.g., reconfiguration to allow/restrict new services/users, inspection log files access violations) ➢ The inconvenience to the users and the associated productivity costs.
However, if the advantages and potential (gain) of web commerce are to be realized, these costs have to be faced and absorbed. Table 6.3 Possible Reasons For Penetration
Host-based security tools include the following: ➢ Monitoring and logging tools,
including standard logging facilities publicly available tools such as tcpdump (this utility captures and dumps packets and headers of a variety of protocols), argus (IP-layer transaction auditing tool), netlog (a UNIX-specific logging utility that logs all UDP and TCP associations mode), syslog utility (a comprehensive logging facility that allows various applications or shell scripts to generate error messages), and so on. ➢ Filtering tools, such as TCP Wrapper which can be configured to restrict incoming requests. This utility is incorporated into the /etc/inetd.conf file so that the tcpd daemon is invoked instead of the regular service, allowing or denying particular services. It also sends a banner to the client, advertising services or displaying the IP address to verify that the address and host name actually match; it logs the results with syslog; and it transfers users to a "jail" environment.
➢ Enhanced versions of standard facilities, such as improved versions of FTP daemons and the portmapper daemon. ➢ Vulnerability-detection tools, such as SATAN (Security Administration Tool for Analyzing Networks), which is a UNIX program that checks both local and remote hosts for network vulnerabilities.
Host based security is an indispensable element of overall computer security, but it does not scale easily (
for example, because of the large number of machines, heterogeneous environments with different operating systems or different releases of the same operating system, the need to manage numerous privilege disciplines, and other reasons).
Nonetheless, the administrator must assume the responsibility to make all of this work. The security concerns regarding web applications are exacerbated by the possible use of public-domain software, including Java applets. WWW servers handle requests generally by either directly transferring static data to the clients or by running local programs such as CGI scripts to dynamically generate the results to client requests. URL requests can be of the form (among others) of HTTP, FTP, Telnet or Gopher, which cause the corresponding service to be run in the server.
Web security concerns include the following: ➢ Server-side security, which involves protecting hosts running the WWW servers themselves. ➢ Client-side security, which relates to security issues involved in requesting WWW services. ➢ Confidentiality, which aims at guaranteeing the privacy of information transmitted across the network between clients and servers
The goal of the administrator is to make sure that clients can access only those data or HTML files explicitly granted by the server and that clients can run only those local utilities or CGI scripts explicitly made available by
the
server. As a basic security measure, clients should not be able to add new text or executables (such as CGI scripts) files; these files may well impact the operation of the server. The design should be such that if servers are compromised, they should not be able to be used as launching platforms for additional attacks.
Some basic precautions for the server are as follows: ➢ The httpd daemon server should be executable only by root and is to be typically invoked only at execution time. ➢ All files and directories in the server directory structure should be owned by root. ➢
The htdocs directory is openly accessible but should be modifiable only by root. ➢ The conf and logs directories should be totally inaccessible to anyone but root. As related to CGI security, the following precautions (among others) should be taken when installing and configuring CGI scripts: ➢ Configure the server so that all CGI scripts reside in a single directory and set the attributes on this directory so that its contents are executable but not examinable. ➢ Do not allow users to install scripts in this directory. ➢ Inspect this directory regularly for newly added scripts or scripts that have been modified recently based on the script timestamp or checksum. ➢ CGI scripts are typically invoked by the server after the client makes a particular selection or fills in a form and submits it. The client request or form information is transmitted to the server, who passes it to the appropriate CGI script. For security reasons, the CGI script should make no assumptions about the validity of the input or even where the input came from. ➢ Do not run any other network services on the server (such as FTP) which only provides additional security infraction opportunities. ➢
Remove all ability for remote logins such as rlogin or Telnet.
➢ Remove all nonessential compilers and programming tools that might be used by attackers to create or run programs on the server. ➢

Isolate the server from the rest of the network, possibly placing it outside of the firewall so that a compromised server does not harm the rest of the network. On the client-side, web browsers are typically configured to invoke the appropriate viewer depending on the type of the file or applet downloaded from the server. While many browsers can already handle basic media (such as plaintext, HTML, and GIF files), they might rely on helper programs to view other files (such as PostScript files or JPEG files). This is a security liability in that it permits the execution of arbitrary commands that may be embedded in the incoming data (such commands as create file, read file, or delete file). In general, the administrator needs to educate users about the risks of downloading arbitrary files, particularly those that require users to modify their configuration files. 6.4.1
Enterprise Network Security A firewall (also called a secure internet gateway)
is a hardware device or software application that sits between your computer and the Internet and blocks all Internet traffic from reaching your computer that you have not specifically requested. What this means is that if you browse to a web site, the firewall will allow the traffic from that web site to reach your computer and therefore yourself. On the other hand, if you did not request information from that website, and the web site sent traffic to you, it would be denied from reaching your computer because you did not specifically ask for it. This behavior can be changed if you wish. A firewall supports communication-based security to screen out undesired communications
which can cause havoc on the host. Host-based security is a critical element of overall computer security, although it does not scale easily;
nonetheless, it must be employed. Ideally, an administrator uses all available tools, including host security and communication gateway security. It is like having two locks on a door: both methods should be used for increased assurance. Figure 6.4 Firewall-
controlled access from the internet
The firewall deployment in the enterprise network must support the following capabilities: - All traffic between the inside and outside must transit through the firewall. - Only authorized traffic based on the security policy is allowed transit. The firewall itself must be immune to penetrate. Firewalls act as a single focus for the security policy of the organization and support advanced authentication techniques such as smartcards and one-time
passwords (which can be difficult or expensive to implement on a per-host basis). In addition, they prevent the release of information such as DNS and finger information. Furthermore, they provide an identifiable location for logging alarms or trigger conditions. Firewalls
are typically configured to filter traffic based on one of two design policies: ➢ Permit. Unless specifically denied. This is weaker because it is impossible to be aware of all the numerous network utilities you may need to protect
against. Specifically, this approach does not protect against new internet utilities. ➢ Deny, unless specifically permitted. This is stronger because the administrator can start off with a blank permit list and add only those
functions that are explicitly required. Packet filters: Packet filters act at the network and transport layers of the TCP/IP protocol. They filter IP protocol data units (PDUs) based on values in the IP PDU header or the UDP or TCP PDU headers. Packet filters parse the header contents of the IP PDU, apply these values against the filter rule set or access list, and determine whether to permit or deny the PDU. Packet filters can range in complexity from simple dual-homed hosts to multi- homed screening routers that perform routing in addition to filtering. The basic packet filter is the dual-homed packet filter firewall. A router that supports scripting allows it to act as a screening router. The router may become a bottleneck; since it does not filter at the application level and hence must examine every PDU. Packet filters can protect an entire network at a single location and they are transparent to users. However, packet filters have limitations. For example, they may be difficult to configure; they are difficult to test exhaustively; they do not inspect the application data or filter based
on
the user; and some protocols do not utilize fixed, predictable ports and are thus more difficult to filter properly. Proxies and Bastions A proxy is an interceptor host that acts on behalf of the real user. It filters application-level PDUs. The proxy server typically is a dual-homed device that acts as an intermediary for requests from clients seeking resources from other servers. A client connects to the proxy server, requesting some service, such as a file, connection, web page, or other resource, available from a different server.
The proxy server evaluates the request according to its filtering rules. For example, it may filter traffic by IP address or protocol. If the request is validated by the filter, the proxy provides the resource by connecting to the relevant server and requesting the service on behalf of the client. A proxy server may optionally alter the client's request or the server's response, and sometimes it may serve the request without contacting the specified server. In this case, it 'caches' responses from the remote server, and returns subsequent requests for the same content directly. Proxy servers can operate at either the application layer or the transport layer. Thus, there are two classes of proxy servers: application gateways, which operate at the application layer; and circuit-level gateways, which operate at the transport layer. A proxy server has a large variety of potential purposes, including: ●

To keep machines behind it anonymous (mainly for security). ● To speed up access to resources (using caching). Web proxies are commonly used to cache web pages from a web server. ● To apply access policy to network services or content, e.g. to block undesired sites. ● To log / audit usage, i.e. to provide company employee Internet usage reporting. ● To bypass security/ parental controls. ● To scan transmitted content for malware before delivery. ● To scan outbound content, e.g., for data leak protection. ● To circumvent regional restrictions.
Figure 6.5: Firewall / Bastion Architecture Bastion Host
The bastion host provides another level of protection. It is the system that is the organization's interface with the outside and the system with which external clients must connect to get access to the organization's internal servers. Since the bastion host is the most exposed system, it is typically the most fortified from a host-security point of view. Bastion hosts can be used in conjunction with a firewall in combination with packet filters, proxy servers, or both, as was seen in Fig. 6.5. Administrators should remove any services or features from the bastion host that they do not absolutely require. Because the bastion host is the most exposed host, it is the most likely to be compromised; hence, one should configure the remainder of the network to not be vulnerable if an infraction occurs at the bastion level (services that are already secure can be handled by packet filtering and need
not be provided by the bastion host). A bastion does not necessarily have to be a proxy; just an application device or it could be a proxy. 6.5
Unit Summary If there is anything that can hurdle the growth of e-commerce, it is the dangers or threats to the safety beaten by frauds. E-Commerce has huge possibilities and can probably increase exponentially. A website created for making business
needs total security architecture, i.e. security that exists in a number of layers — from the web server, to the applications, to the database, and to the extensions to other subsystems. If the security program is already installed, but, in all probability, it is not up to date and if any part of the security architecture is not working as planned, then
the whole security set-up is vulnerable. Limiting outside access is considerably the first line of defense for any website. Some of the important methods are: Firewalls, User account security, Software security, and Additional protection for sensitive data. Protecting the web server is
the second line of defense. Optimizing web servers can resist most hacker attacks. For example, installing antivirus software, installing a firewall. A firewall is a device that controls the flow of communication between internal networks and external networks, such as the Internet. It controls "port-level" access to a network and a website. A properly configured firewall also can act as a filter to prevent suspicious requests from ever arriving at the server or can be configured to drop any request that tries to address a server or server port that has not been specifically enabled by the policy of the firewall. More importantly, firewalls can verify that the request matches the kind of protocol (e.g., HTTP, FTP) that is expected on a particular port. The third line of defense is
to implement monitoring and analysis solutions. Though it may have budget constraints, installing an analysis system helps to
know who and what is connecting to our systems, and interacting with our servers. If budget allows, retain a security expert to perform a detailed review of your web-based business internal procedures,
network topology and permissions, access controls, hardware, software, and utilities that could possibly compromise your website.
It is to note that even if the intricate levels of security have been set up, a
website is never completely safe from a determined and skilled attacker. E- commerce operations are particularly hard to protect since they must be able to interact with their customers. Therefore, building and maintaining a good, state-of-the-art firewall and encrypting sensitive data, such as credit card information,
not forgetting
to institute an on-going program of security monitoring, maintenance, and to perform an annual security audit. 6.6
Key Terms ● Cryptographic algorithms: A cipher, or cryptographic algorithm, is the means of altering data from a readable form (also known as plaintext) to a protected form (also known as ciphertext), and back to the readable form. Changing plaintext to ciphertext is known as encryption, whereas changing ciphertext to plaintext is known as decryption. ● The Data Encryption Standard is a block cipher, meaning a cryptographic key and algorithm are applied to a block of data simultaneously rather than one bit at a time. ● Asymmetric cryptography, also known as public-key cryptography, is a process that uses a pair of related keys -- one public key and one private key -- to encrypt and decrypt a message and protect it from unauthorized access or use. ● Firewall: It is a part of a computer system that is designed to prevent people from getting information without authority but still allows them to receive information that is sent to them ●
A proxy is an interceptor host that acts on behalf of the real user. ●
The bastion host provides another level of protection. It is the system that is the organization's interface with the outside and the system with which external clients must connect to get access to the organization's internal servers.

6.7
Check Your Progress Subjective: 1)
Secure Electronic Transaction is an open protocol which has the potential to emerge as a dominant force in the securing of
electronic transactions.
Explain. 2)
Authentication is an important issue for users of electronic commerce.
Explain. 3) VeriSign's digital certificates come in three classes. Explain. 4) What precautions can be taken in respect to security on web servers? 5) Explain the roles of packet filters, proxies, and bastions in
an enterprise network security. Objective: 1) True/False:
SET is a system for ensuring the security of financial transactions on the Internet. 2)
Complete the line: The certificate typically includes a class, which indicates _____. 3) Fill in the gap: Firewall is also called ..... 4) Short Q/A: Who can
provide a mechanism for establishing confidence in the relationship between a public key and the entity. 5)
Short Q/A: What is authentication?
Unit: 07 Payment and Security Structure 7.0 Introduction 7.1 Unit Objectives 7.2 Electronic Payment Systems 7.2.1 Conventional Payment Process 7.2.2 Types of Electronic Payment Systems 7.2.2.1 Type 1: Payment Through an Intermediary - Payment Clearing Services 7.2.2.2 Type 2:

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Payment Based on EFT - Notational Funds Transfer 7.2.2.3 Type 3: Payment Based on Electronic Currency 7.3

Internet Monetary Payment and Security Requirements 7.4 Payment And Purchase Order Process 7.4.1 Account Holder Registration 7.4.2 Merchant Registration 7.4.3 Account Holder (Customer) Ordering 7.5 Online Electronic Cash 7.6 Unit Summary 7.7 Key Terms 7.8 Check Your Progress 7.0 Introduction Today, in addition to browsing information, the internet is being used for e- commerce. Businesses are using the internet for selling and marketing products and services and making payments. Consumers enjoy the benefits of fast and convenient shopping and paying online.
Electronic

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payment systems are central to on-line business processes as companies look for ways to serve customers faster and at lower cost. Emerging innovations in the payment for goods and services in electronic commerce promise to offer a wide range of new business opportunities.

Clearly, payment is an integral part of the mercantile process and prompt payment is crucial. If the claims and debits of the various participants (consumers, companies and banks) are not balanced because of payment delay, then the entire business chain is disrupted. Hence an important aspect of e-commerce is prompt and secure payment, clearing, and settlement of credit or debit claims.
Gone are the days when an individual had to carry around silver and gold coins. We now have the option of carrying paper money. Now, the amount of paper money that a person needs to carry around has also reduced considerably, thanks to electronic cash. But all is not what meets the eye!
Electronic cash: -
Anonymous: This kind of e-cash works just like cash. Once a specific amount
is withdrawn from an account, it can be used (or misused) without leaving a visible trail. -
Identified: We know this category popularly as PayPal or WebMoney. The usage and transfer of money in these systems is not entirely untraceable. - Online: Obviously, it means that one needs to correspond with a bank (via the internet). The bank, then, gets in touch with the third party. - Offline: One can directly conduct the transaction without any interference from the bank. - Smart Card: Smart cards are like credit cards with a computer chip in them that stores the holder's money-related information. They are used in digital cash applications. 7.1
Unit Objective This Unit covers: • Conventional Payment Process • Types of Electronic Payment Systems: Type 1: Payment Through an Intermediary, Payment Clearing Services, Type 2:

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Payment Based on EFT - Notational Funds Transfer, Type 3: Payment Based on Electronic Currency •

Internet Monetary Payment and Security Requirements • Payment And Purchase Order Process 7.2

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Electronic Payment Systems Electronic payment systems are becoming central to

on-line business transactions nowadays

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as companies look for various methods to serve customers faster and more cost effectively. Electronic commerce brings a wide range of new worldwide business opportunities.

There is no doubt that electronic payment systems are becoming more and more common and will play an important role in the business world. Electronic payment always involves a payer and a payee who exchange money for goods or services. At least one financial institution like a bank will act as the issuer (used by the payer) and the acquirer (used by the payee). Before we discuss the types of electronic payment systems first we discuss conventional payment processes and then the types of electronic payment systems. 7.2.1

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Conventional Payment Process A conventional process of payment and settlement involves a buyer-to-seller transfer of cash or payment information (e.g. credit card or check). The actual settlement of payment takes place in the financial processing network. A cash payment requires a buyer's withdrawal from his bank account, a transfer of cash to the seller, and the seller's deposit of the payment to his/her account. Non-cash payment mechanisms are settled by adjusting, i.e., crediting and debiting, the appropriate accounts between the banks based on payment information conveyed via check or credit card. Figure 7.1 is a simplified diagram for both cash and non-cash transactions. Cash moves from the buyer's bank to the seller's bank through face-to-face exchanges in the market. If a buyer uses a non-cash method of payment, payment information instead of cash flows from the buyer to the seller, and ultimately payments are settled between affected banks who notationally adjust accounts based on the payment information. In real markets, this clearing process involves some type of intermediaries such as credit card services or check clearing companies. Schematically most payment systems are based on similar processes. The 'information' conveyed to settle payments can be one of the following: Information about the identities of the seller and the buyer and some instructions to settle payments without revealing financial information [

payment clearing systems

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financial information such as credit card or bank accounts numbers (including checks and debit cards) actual values represented by digital currency. 7.2.2

Types of Electronic Payment Systems Following are discussed different types of electronic payment systems. 7.2.2.1 Type 1:

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Payment Through an Intermediary - Payment Clearing Services When face-to-face purchase is replaced with on-line commerce, many aspects of a transaction occur instantly, under which various processes of a normal business interaction are subsumed. For example, a typical purchase involves stages of locating a seller, selecting a product, asking a price quote, making an offer, agreeing overpayment means, checking the identity and validity of the payment mechanism, transferring of goods and receipts. In order to be used as a substitute for face-to-face payments, online payment systems must incorporate all or some of these stages within their payment functions. The lack of face-to-face interaction also leads to more secure methods of payment being developed for electronic commerce, to deal with the security problems for sensitive information and uncertainty about identity. Consequently, electronic commerce transactions require intermediaries to provide security, identification, and authentication as well as payment support. Figure 7.2 shows a stylized transaction for online commerce using an intermediary. In this model, the intermediary not only settles payments, it also takes care of such needs as confirming seller and buyer identities, authenticating and verifying ordering and payment information and other transactional requirements lacking in virtual interactions. In the figure, two boxes delineate online purchasing and secure or off-line payment clearing processes. Payment settlement in this figure follows the example of the traditional electronic funds transfer model which uses secured private value networks. The intermediary contributes to market efficiency by resolving uncertainties about security and identity and relieving vendors of the need to set up duplicative hardware and software to handle the online payment clearing process. The payment information transmitted by the buyer may be one of three types. First, it may contain only customer order information such as the identity of the buyer and seller, name of the product, amount of payment, and other sale conditions but no payment information such as credit card numbers or checking account numbers. In this case, the intermediary acts as a centralized commerce enabler maintaining membership and payment information for both sellers and buyers. A buyer need only send the seller his identification number assigned by the intermediary. Upon receiving the purchase order, the intermediary verifies it with both the buyer and seller and handles all sensitive payment information on behalf of both.

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Figure 7.2: Transactions with an intermediary The key benefit of this payment clearing system is that it separates sensitive and non-sensitive information and only non-sensitive information is exchanged online. This alleviates the concern with security that is often seen as a serious barrier to online commerce. In fact, First Virtual does not even rely on encryption for messages between buyers and sellers. A critical requisite for this system to work is the users' trust in the intermediaries. 7.2.2.2

Type 2:

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Payment Based on EFT - Notational Funds Transfer The second type of payment system does not depend on a central processing intermediary. Instead, sensitive payment information (such as credit card or bank account number) is transmitted along with orders, which is in effect an open Internet implementation of financial electronic data interchange (EDI) (see Figure 7.3). An electronic funds transfer (EFT) is a financial application of EDI, which sends credit card numbers or electronic checks via secured private networks between banks and major corporations. To use EFTs to clear payments and settle accounts, an online payment service will need to add capabilities to process orders, accounts and receipts. In its simplest form, payment systems may use digital checks —simply an image of a check— and rely on existing payment clearing networks. The Secure Electronic Transaction (SET) protocol - a credit card based system supported by Visa and MasterCard - uses digital certificates, which are digital credit cards. We call this type of payment system

a

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notational funds transfer system since it resembles traditional electronic fund transfers and wire transfers which settle notational accounts of buyers and sellers. Figure 7.3 Notational Funds Transfer System Notational funds transfer systems differ from payment clearing services in that the 'payment information' transferred online contains sensitive financial information. Thus, if it is intercepted by a third party, it may be abused like stolen credit cards or debit cards. A majority of proposed electronic payment systems fall into this second type of payment system. The objective of these systems is to extend the benefit and convenience of EFT to consumers and small businesses. However, unlike EFTs, the Internet is open and not as secure as private value added networks (VANs). The challenge to these systems is how to secure the integrity of the payment messages being transmitted and to ensure the interoperability between different sets of payment protocols. 7.2.2.3

Type 3:

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Payment Based on Electronic Currency The third type of payment systems transmit not payment information but a digital product representing values: electronic currency. The nature of digital currency mirrors that of paper money as a means of payment. As such, digital currency payment systems have the same advantages as paper currency payment, namely anonymity and convenience. As in other electronic payment systems, here too security during transmission and storage is a concern, although from a different perspective, for digital currency systems doubles pending, counterfeiting, and storage become critical issues whereas eavesdropping and the issue of liability (when charges are made without authorization) are important for notational funds transfers. Figure 7.4 shows a digital currency payment scheme. Figure 7.4 Digital Currency Payment Scheme The only difference from Figure is that the intermediary in Figure 7.4 acts as an electronic bank which converts outside money into inside money (e.g. tokens or e-cash) which is circulated within online markets. However, as a private monetary system, digital currency will have

a wide ranging impact on money and the

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monetary system with implications extending far beyond mere transactional efficiency. Already digital currency has spawned many types of new businesses: software vendors for currency server systems; hardware vendors for smart card readers and other interface devices; technology firms for security, encryption and authentication; and new banking services interfacing accounts in digital currency and conventional currency. 7.3

Internet Monetary Payment and Security Requirements Online monetary transaction systems allow

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customers of financial institutions to conduct financial transactions on secure websites operated by the institution,

which can be a retail or virtual book, credit union or building society.
For consumers and merchants to be able to trust one another, prevent transmitted payment information from being tampered with, and complete transactions with any valid party, the following issues need to be addressed: ➢ Confidentiality of payment
information ➢
Integrity of payment information transmitted via public networks ➢ Verification that an
account holder
is using a legitimate account ➢ Verification that a merchant can accept that particular account ➢ Interoperability across software and network providers ➢ Confidentiality of payment information: Payment information must be secure as it travels across the Internet. Without security, payment information could be picked up by hackers
at
the router, communication-line, or host level* possibly resulting in the production of counterfeit cards or fraudulent transactions.

To provide security, account information and payment information will need to be encrypted. This technology has been around for decades. Cryptography protects sensitive information by encrypting it using number-theoretic algorithms parameterized on keys (bit strings). The resulting ciphertext can then be transmitted to a receiving party that decrypts the message using a specific key to extract the original information.
There are two encryption methods used: symmetric cryptography and asymmetric cryptography. - Symmetric cryptography, or more commonly called secret-key cryptography, uses the same key to encrypt and decrypt a message. Thus, a
sender and receiver of a message must hold the
same secret or key confidentially.
A commonly used secret-key algorithm is the Data Encryption Standard (DES). See Fig. 7.5 - Asymmetric cryptography, or public-key
cryptography, uses two distinct keys: a
public key and a
private key.
Data encrypted using the public key can only be decrypted using the
corresponding private key.
This allows multiple senders to encrypt information using a public key and send it securely to a
receiver, who uses the private key to decrypt it. The assurance of security is dependent on the receiver protecting the private key See Fig. 7.6 Figure 7.5 Symmetric/secret-key cryptography
Figure 7.6: Asymmetric/public-
key cryptography For merchants to use secret-key cryptography, they would each have to administer individual secret keys to all their customers—and provide these keys through some secure channel. This
approach is complex from an administrative perspective. The approach of creating
a
key pair using public-key cryptography and publishing the public key is easier. This would allow customers to send secure payment information to merchants by simply downloading and using the merchant's public key. To further institute security and efficiency, public-key cryptography can be used with secret-key cryptography without creating a cumbersome process for the merchant.' To institute
this process, the customer generates a random number used to encrypt payment information using DES. The corresponding DES key is then encrypted using the public key of the merchant.
The DES-encrypted payment information and the encrypted DES key are then transmitted to the merchant. To decrypt the payment information, the merchant first decrypts the DES key then uses the DES key to decrypt the payment information. See Fig. 7.7 Figure 7.7 Secrete-key/public-key combination ➢ Payment information Integrity:
Payment information sent from consumers to merchants includes order information, personal
data, and payment instructions. If any
piece of
the information is modified, the transaction may no longer be accurate. To eliminate this possible source of error or fraud, an arithmetic algorithm called hashing,
along with the concept of digital signatures is employed.
The hash algorithm generates a value that is unique to the payment information to be transferred.
The value generated is called a hash value or message digest.
A helpful way to view a hash algorithm is as a one-way public cipher, in that: - It has no secret key. - Given a message digest, there is no way to reproduce the original information. - It is impossible to hash other data with the same value.
To ensure integrity, the message digest is transmitted with the payment information. The receiver (merchant) would then validate the message digest by recalculating it once payment information is received. ➢
Account holder and merchant authentication: Similar to the way card accounts are stolen and used today, it is possible for a person to use a stolen account and try to initiate an electronic commerce transaction.
To protect against this, a process that links a valid account to a customer's digital signature needs to be established.
A way to secure this link is by use of a trusted third party who could validate the public key and account of the customer.
This third party could be one of many organizations, depending upon the type of account used. For example, if a credit card account were used, the third party could be one of the major credit card companies; if a checking account were used, the third party could be the Federal Clearinghouse or some other financial institution.
In any instance, the best way for a third party to
validate the public key and account is by issuing the items to the customer, together under the digital signature of the third party Merchants would then decrypt the public key of the
customer (using

the public key of the third party) and, by definition of public-key cryptography, validate the public key and account of the customer. For the preceding to transpire, however, the following is assumed: - The public key(s) of the third party (ies) is widely distributed. - The public key(s) of the third party (ies) is highly trusted on face value. - The third party(ies) issue public keys and accounts after receiving some proof of an individual's identity
So far, it has been assumed that error or fraud takes place only on the customer end of payment information transport. However, the possibility exists that a fraud agent may try
to
pose as a merchant for the purpose of gathering
account information to be used in a criminal manner in the future. To combat this fraud, the same third-party process is used for merchants. For a merchant to be valid, the merchant's public key would need to be issued by a third party under the third party's digital signature. Customers would then decrypt the public key of the merchant using the public key of the third party. Again, for this process to occur, the assumptions previously identified would apply. 7.4
Payment And Purchase Order Process A purchase order (PO) is a commercial document issued by a buyer to a seller, indicating types, quantities, and agreed prices for products or services the seller will provide to the buyer. Sending a PO to a supplier constitutes a legal offer to buy products or services. Acceptance of a PO by a seller usually forms a one-off contract between the buyer and seller, so no contract exists until the PO is accepted. POs usually specify terms of payment, terms for liability and freight responsibility, and required delivery date. There are several reasons why companies use PO's. PO's allow buyers to clearly and explicitly communicate their intentions to sellers, and sellers are protected in case of a buyer's refusal to pay for goods or services. POs also help a purchasing agent manage incoming orders and pending orders. Purchase orders also are an economical choice for a business because they streamline the purchasing process to a standard procedure. Many Purchase Orders are no longer paper-based, but rather transmitted electronically over the Internet. It is common for electronic purchase orders to be used to buy goods or services online for services or physical goods of any type. 7.4.1 Account Holder Registration Once
the account holder receives the public key of the TP, the registration process can start. Once the account holder's software
has a copy of the TP's public key, it encrypts the digests and transmits to the third party for further registration process (Fig. 7.8)
1. Encrypts the public key 2. Encrypts the information, message digest, and secrete key 3. The message digest after encrypting with TP public key, is forwarded for further transmission The encrypted digest for registration is then received at the third party. Third party then decrypts it and then compares the message digests. Figure 7.8: Account-holder registration Figure 7.9 Third party receives registration 1.
Decrypts the secret key 2. Decrypts the information, message digest, and account holder's public key 3. Computes and compares message
digests
Assuming the message digests compute to the same value, the TP would continue the verification process using the account and personal information provided by the requesting account holder. It is assumed the TP would use its existing verification capabilities in processing personal information. If the information in the registration is verified, the TP certifies the account holder's public key and other pertinent account information by digitally signing it with the TP's private key. The certified documentation is then encrypted using a secret key, which is in turn encrypted with the account holder's public key. The entire response is then
transmitted to the customer. Upon receipt of the TP's response, the account holder's software would do the necessary decryption to obtain the certified documentation.
The certified documentation* is then verified by the account holder by using the public key of the TP, thus checking the digital signature.
Once validated, the certified documentation would be held by
the account holder's software for future use in electronic commerce transactions. 7.4.2 Merchant Registration Merchants must register with TPs that correspond to particular account types that they wish to honor before transacting business with customers who share the same account types. For example, if a merchant wishes to accept Visa and MasterCard, that merchant may have to register with two TPs or find a PP that represents both. The merchant registration is similar to the account holder's registration process.
Once merchant information is validated, certified documentation (CD) is transmitted to the merchant from the TP(s). The certified documentation is then stored on the merchant's computer for future use in electronic transactions. 7.4.3 Account Holder (Customer) Ordering To send a message to a merchant the customer (account holder) must have a copy of the merchant's public key and a copy of the TP's public key that corresponds to the account type to be used. The order
process starts when the

merchant sends a copy of its CD to the customer. At some point prior to sending the CD, the merchant must request the customer to specify what type of account will be used so that the appropriate CD will be sent. After receipt of the appropriate merchant CD, the customer software verifies the CD by applying the TP's public key, thus verifying the digital signature of the VP. The software then holds the merchant's CD to be used later in the ordering process. At this point, the customer is allowed to shop in the on-line environment provided by the merchant. After shopping, customers fill out an order form that lists the quantity, description, and price of the goods and services they wish to receive. Once the order form is completed, the customer software does the following (see Fig. 7.10): 1. Encrypts account information with the TP's public key 2. Attaches encrypted account information to the order form 3. Creates a message digest of the order form and digitally signs it with the customer's private key. 4. Encrypts the following with the secret key: order form (with encrypted account information), digital signature. Figure 7.10: Customer ordering- order sent to merchant
5.
Encrypts secret key with the merchant's public key from the merchant's CD 6. Transmits the secret-key-encrypted message and encrypted secret key to the merchant When the merchant software receives the order, it does the following (see Fig. 7.11): 1.
Decrypts the secret key using the private key of the merchant 2. Decrypts the order form, digital signature, and customer's CD using the secret key. 3. Decrypts the message digest using the customer's public key obtained from the customer's CD (and thus verifies the digital signature of
the
customer). 4. Calculates the message digest from the order form and compares with the customer's decrypted message digest. Figure 7.11:
Customer
Ordering - merchant receives order Assuming that the message digests match, the merchant continues processing the order according to its own pre-established order fulfillment processes. One part of the order process, however, will include payment authorization which is discussed in the next section. After the order has been processed the merchant's host should generate an order confirmation or receipt of purchase
notifying the
customer that the order has been processed. This receipt also serves as a
proof of purchase equivalent
to a paper receipt as currently received in stores. The way in
which
a customer receives the electronic receipt is similar to the encryption and digital signature processes previously described. During the processing of an order, the merchant will need to
authorize (clear) the transaction with the PP responsible for that particular account. This authorization assures the merchant that the necessary funds or credit limit is available to cover the cost of the order.
Also, note that the merchant has no access to the customer's
account information since it was encrypted using the TP's public key; thus, it is required that this information be sent to the TP so that the merchant can receive payment authorization from the TP and that the proper customer account is debited for the transaction.
It is assumed that the eventual fund transfer from some financial institution to the merchant (based upon PP payment authorization) and the debit transaction to the customer account takes place through an existing pre financial process. In requesting payment authorization, the merchant software will send the TP the following information using encryption and the
digital signature processes previously described: ● Merchant's CD ● Specific order information such as amount to be authorized, order number, date ●
Customer's CD ● Customer's
account information After verifying the merchant, customer, and account information, the TP would then analyze the amount to be authorized.
Should the amount meet some established criterion, the TP would send authorization information back to the merchant. Again, the way this information would be sent is similar to the encryption and digital signature processes previously described.
7.5

Online Electronic Cash Online Ecash is a digital currency protocol developed by DigiCash and tested extensively on the Internet. Ecash uses public key encryption technologies to maintain the integrity of digital coins. By varying the encryption, Ecash can have strong or weak anonymity. DigiCash licenses Ecash technologies to banks, which convert outside money into digital currency and serve as currency servers in authenticating, clearing and settlement of accounts. Mark Twain Bank of St. Louis (http://www.marktwain.com) is the first electronic bank to license the Ecash technology that serves interface functions between dollar-denominated accounts and Ecash accounts. As discussed in the introduction of this chapter, some transactions are better handled by e-cash, just as not all purchases are made by credit cards or checks.

E-cash works in the following way: a consumer opens an account with an appropriate bank. The consumer shows the bank some form of identification so that the bank knows who the consumer is. When cash is withdrawn, the consumer either goes directly to the bank or accesses the bank through the Internet and presents proof of identity. Once the proof is verified, the bank gives the customer some amount of e-cash. The e-cash is then stored on a PC's hard drive or possibly a PCMCIA card for later use.

At some point in time, the consumer spends the e-cash by sending it to a merchant who validates the e-cash with the bank, which in turn deposits the e-cash in the merchant’s account.

These transactions could all be done using public-key cryptography and digital signatures as discussed earlier. For example, the bank could give the consumer a message which equals x amount of money and digitally signs that message with its private key. When the consumer sends that message to a merchant, the merchant can verify the message by applying the bank's public key. Knowing that no one else other than the bank could have created the message, the merchant accepts it and deposits the value in the bank. Electronic cash boosts your purchasing power by making your money available to you 24×365. One can spend this digital money by accessing it online or offline.

Online Use of Electronic Cash: Electronic cash technology uses computers, local area networks, and the Internet for the transfer of money paid in exchange of services obtained. This process involves 3 entities: the buyer, the seller, and the service provider. Using this technology, money can be transferred online or offline. There are certain organizations such as Eagle Cash Technology (E-Cash), Octopus Card System, etc. which facilitate a secure transfer of money over the Internet between the seller and buyer. This enables one to do Internet shopping and enter in a transaction over the Internet while sitting in his house or office, in fact, from anywhere in the world. This saves time and physical efforts that one has to put in while physically going out and buying a ticket for air travel or for a movie, etc. Within the Internet, dedicated local area networks and computers control the flow of digital or electronic cash between the entities or the bank accounts of the same person - this form of money exists as bits and bytes inside computers memory. Electronic cash transfer systems depend on cryptology and the use of private and public keys for the encryption and decryption of the information that represents one's demand for transfer of money. It also uses digital signatures to verify the authenticity of the source of demand. Offline Use of Electronic Cash: Can you recall when you last visited your bank personally? If you remember the day when you queued to deposit a check or withdraw some money from your bank account, then most probably you don't use a debit or credit card. These cards have a microchip embedded in them that stores the user's latest bank account information. Whenever a user makes use of a credit or debit card to pay for his or her purchases, information in the chip is updated offline. Use of these cards have liberated people from carrying physical or paper money, and for this reason the term 'plastic money', was coined to describe electronic cash used through these cards. Use of these smart cards makes written checks, and withdrawal and deposit slips redundant. Automatic Teller Machines (ATMs) are important for the off-line use of electronic cash and using which one can use his credit or debit cards to withdraw money. Problems with Simple Electronic Cash: A problem with the c-cash example just discussed is that double- spending cannot be detected or prevented, since all cash would look the same.

Part of this problem can be fixed by including unique serial numbers with the e-cash; now the merchant can verify with the bank whether anyone else has deposited e-cash with the associated serial numbers. In this scenario, the merchant must check with the bank for each transaction. Serial numbers, however, do not prevent double spending. While a bank can compare e-cash to see if there is duplication, there is no way to tell whether it was the consumer or the merchant who is trying to defraud the bank. This situation becomes even more difficult when the e-cash has passed through numerous parties before being checked with the bank. Beyond the prevention of double-spending, e-cash with serial numbers is still missing a very important characteristic associated with real cash—it is not anonymous. When

the bank sees e-cash from a merchant with a certain serial number, it can trace back to the consumer who spent it and possibly deduce purchasing habits. This frustrates the nature of privacy associated with real
cash.
Double-spending Prevention: While the preceding process protects the anonymity of the consumer and can identify when money has been double-spent, it still does not prevent consumers, or merchants for that matter, from double-spending. To
prevent double-spending, individuals must feel intimidated by some sort of legal prosecution—much in the same manner as the fact that counterfeiters of real cash will be prosecuted today. For individuals to believe in this threat there must be some way to identify them obtained from the double-spent e- cash.
To create a process to identify double-spenders, but one that keeps the anonymity of lawful individuals requires the use of
tamper proof
software and complex cryptography algorithms. The software used for withdrawing and receiving e-cash, must be tamperproof in that once an individual's identity verified by the bank) is placed in the software, it cannot be changed. Trying to change the identity or any coding of the software invalidates the software and any e-cash held by the software. The software prevents double-spending by encrypting an individual’s
identity by using a random secret key generated for each piece of e-cash.
The secret key is then encrypted using a special two-part lock. The encrypted identity and encrypted secret key is then attached to the e-cash. The property of the two- part lock is such that if the e-cash is double-spent, the two parts of the lock are opened revealing the secret key, and thus the identity of the individual who double-spent the cash. When a consumer sends e-cash to a merchant, the merchant now receives the e-cash along with the encrypted identity of the consumer. Assuming the cash has not been double-spent; the merchant (merchant's software) adds information to the e-cash which unlocks one part of the two-part lock which is ultimately concealing the consumer's identity. Then the merchant, as previously described, checks with the bank to ascertain that the money has not been double-spent. The bank in turn deposits the value of the e-cash in the merchant's account and maintains a record of the now half-unlocked e-cash. If a consumer tries to double-spend the e-cash with another merchant, that merchant adds information that unlocks another half of the two-part lock. The merchant now sends the e-cash to the bank to see if it has been double-spent. The bank, knowing the c-cash has been double-spent, is able to put the two parts of the two-part lock together, revealing the secret key, and thus the consumer's identity. Note that the two-part lock algorithm is complex enough not to allow the merchants or the bank to internally unlock both parts of the two- party system.
As not to be biased toward consumers, merchants that wish to use e-cash would be subject to the same process. (See Fig. 7.12) E-cash interoperability Consumers must be able to transact with any merchant or bank. Hence, process and security standards must exist for all hardware and software used in e-cash transactions. Interoperability can only be achieved by adherence to algorithms and processes in support
of e-cash-initiated commerce. Since e- cash, in theory, can become the near equivalent of real cash, e-cash takes on many of the same economy- driving properties. Because of this, it would seem necessary for some type of government control over
e-
cash transactions and the process and security standards associated with them. While only a single bank is mentioned in the e-cash examples, it is likely that the bank becomes a network of banks under the direct control of the Federal Reserve or similar institution outside of the United States. Figure 7.12 Double-spending process depiction
Advantages and Disadvantages of Electronic Cash
Advantages of e-cash:

Online Electronic Cash ● Anonymity and un-traceability can be maintained: User Id's are kept highly confidential. ● No issues regarding "Double spending": Real-time checking of all transactions makes the possibility of multiple expenditures negligible. ● No requirement of additional secure hardware: Existing POS (point of sale) hardware can be updated and used. Offline Electronic Cash ● Portable: This system is fully offline and portable. ● Anonymity unless double spending: The user is anonymous unless he commits a double expenditure. ● Detection of Double Spender: The bank can effectively detect a double spender. ● Frequent synchronizations are not required: The bank doesn't need to synchronize its servers very often. This is mostly done via batch updates. There are some more advantages. The online electronic cash systems that are operated through the Internet provide convenience to the user and the banker. The online system can be accessed through the Internet from anywhere in the world. Hence, the user does not have to actually go to the bank to transact any business. The online system also provides convenience to the banker, as he does not have to deal with long queues of people. This increases the speed of transactions in financial organizations. This advantage is supplemented by very good accuracy as the transactions are done with the help of machines and computers. The manual labor, involving the cashier, security and other bank staff is reduced. The small-scale and the local level merchants can also access and transact in the global market. This can be easily accomplished through the facility of online shopping. Another advantage of online shopping is that the shopper can sit at home and purchase the goods he wants, with the help of a credit card.
The 'smart' cards can also be restricted to specified payments. For example: the parents of a student studying in a far-off university can charge his smart card that can be used only for paying tuition fees. Another very good advantage of e-cash is that the transactions are all recorded in a database, so one does not have to keep wondering when and for what purpose one has spent money. The concept of smart cards also reduces the possibility of robbery. The smart cards for withdrawal like the ATM cards are protected by passwords. Overall, the concept of electronic cash provides the user with convenience in transactions. The user of the electronic cash technology does not always have to carry around physical cash. The offline e-cash smart cards are also sometimes referred to as plastic money. Dis-advantages of e-cash: Online Electronic Cash ● Communication Overheads: Security and anonymity cost become a bottleneck of the system. This can happen at times during real-time verifications. ● Massive Databases: The bank will have to maintain a detailed and confidential database. ● Synchronization: The bank needs to synchronize its server every time
a
transaction is made. It would be insanely impractical to maintain. Offline Electronic Cash ● Prevention may not be Immediate: Double spending may not be prevented effectively and immediately. ● Implementation Expenditure: the required additional hardware is quite costly to install. There are other disadvantages to consider. E-transactions depend a lot on technology. Hence, power failure, unavailability of internet connection, undependable software and loss of records could be a hindrance in your way. The system of electronic cash is extremely convenient, but it is not a foolproof system. The online electronic cash system has the same problems as your
email account and personal computer. The online facility can be or can also be infected with a virus, if sufficient security is not provided. Some of the disadvantages of electronic cash include serious misuse of a stolen smart card. Criminals who have strong knowledge of the technology of these systems can easily misuse it, if a reliable security system is not deployed. The phenomena of identity protection and credit history play a very important role in the working of the e-cash system. To safeguard the interests of the users, protection against identity theft has become the most important function of these service providers. Many pros and cons are bound to appear as the technology of electronic cash develops even further. However, overcoming the cons of the technology will make e-cash, a very convenient system and a widely accepted, revolutionary mode of cash. 7.6
Unit Summary ● Electronic payment systems are becoming central to on-line business transactions nowadays

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as companies look for various methods to serve customers faster and more cost effectively. Electronic commerce brings a wide range of new worldwide business opportunities.

There is no doubt that electronic payment systems are becoming more and more common and will play an important role in the business world. Electronic payment always involves a payer and a payee who exchange money for goods or services. At least one financial institution like a bank will act as the issuer (used by the payer) and the acquirer (used by the payee). ●

100%	MATCHING BLOCK 141/206	SA	E-commerce.pdf (D165838284)

A conventional process of payment and settlement involves a buyer-to- seller transfer of cash or payment information (e.g. credit card or check). The actual settlement of payment takes place in the financial processing network. ●

Types of Electronic Payment Systems: Type 1: Payment Through an Intermediary, payment Clearing Services, Type 2:

88%	MATCHING BLOCK 142/206	SA	E-commerce.pdf (D165838284)

Payment Based on EFT - Notational Funds Transfer, Type 3: Payment Based on Electronic Currency ●

For consumers and merchants to be able to trust one another, prevent transmitted payment information from being tampered with, and complete transactions with any valid party, the following issues need to be addressed: Confidentiality of payment
information,
Integrity of payment information transmitted via public networks, Verification that an
account holder
is using a legitimate account, Verification that a merchant can accept that particular account, Interoperability across software and network
providers. ●
Merchants
must register with TPs that correspond to particular account types that they wish to honor before transacting business with customers who share the same account types. ●
Online Ecash is a digital currency protocol developed by DigiCash and tested extensively on the Internet. Ecash uses public key encryption technologies to maintain the integrity of digital coins. By varying the encryption, Ecash can have strong or weak anonymity. DigiCash licenses Ecash technologies to banks, which convert outside money into digital currency and serve as currency servers in authenticating, clearing and settlement of accounts. 7.7
Key Terms ● Intermediaries: would include all entities that collect monies received from customers for payment to merchants using any electronic/online payment mode, for goods and services availed by them and subsequently facilitate the transfer of these monies to the merchants in final settlement of the obligations of the paying customers. ● EFTs: An electronic funds transfer system (EFTS) is a transfer system in which money can be transferred to business or individual accounts without requiring paper money to change hands. Electronic funds
transfer systems are used for payroll payments, debit or credit transfers, mortgage payments or other payments. ● Symmetric encryption is a type of encryption where only one key (a secret key) is used to both encrypt and decrypt electronic information. ... This encryption method differs from asymmetric encryption where a pair of keys, one public and one private, is used to encrypt and decrypt messages. ● Asymmetric cryptography, also known as public-key cryptography, is a process that uses a pair of related keys -- one public key and one private key -- to encrypt and decrypt a message and protect it from unauthorized access or use. 7.8 Check Your Progress Subjective: 1) Explain the conventional process of payment. 2) What are different types of electronic pay systems? 3) How should payment information be secure, explain your answer? 4) What is the payment and purchase order process, explain? 5) Discuss advantages and disadvantages inherent in e-cash. Objective: 1) True/False:
The order process starts when the merchant sends a copy of its CD to the customer. 2)
Fill in the gap: Online monetary transaction systems allow

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customers of financial institutions to conduct financial transactions on_____ operated by the institution. 3)

Complete the line: Once the account holder's software has
a copy of the TP's public key, it_____. 4) Short Q/As: Who
assures the merchant that the necessary funds or credit limit is available to cover the cost of the order? 5)
Short Q/As: What is a purchase order?

Unit: 08 Payment and Security-II Structure 8.0 Introduction 8.1 Unit Objectives 8.2 Electronic Payment Schemes 8.3 Master Card / Visa Transaction 8.3.1 Introduction 8.3.2 Need 8.3.3 Features 8.3.4 Scope 8.3.5 Payment Processing 8.3.5.1 Purchase Request 8.3.5.2 Payment Authorization 8.3.5.3 Payment Capture 8.4 Unit Summary 8.5 Key Terms 8.6 Check Your Progress 8.0 Introduction There are various
leading commercial electronic payment schemes that have been proposed in the past few years and companies are using them like Netscape,
Microsoft, Checkfree, etc.
In August 1996, MasterCard and Visa agreed to jointly develop the Secure Electronic Transaction (SET) Specification. SET aims at achieving secure, cost-effective, on-line transactions that will satisfy market demand in the development of a single, open industry specification. Visa and MasterCard have jointly developed the SET protocol as a method to secure payment card transactions over open networks. SET is being published as open specifications for the industry.
8.1
Unit Objective This Unit covers: - Electronic payment schemes - Master card/Visa secure electronic transactions 8.2 Electronic Payment Schemes Through this section we intend to provide
a summary of
the leading commercial electronic payment schemes that have been proposed in the past few years and the companies that are
using them. 1) Netscape: Netscape's
Secure Courier Electronic Payment Scheme, which has been selected by Intuit for secure payment between users of its Quicken home-banking program and
banks, uses SEPP. SEPP's successor, SET, is now expected to see significant deployment. Companies working with MasterCard include Netscape, IBM, Open Market, CyberCash, and GTE Corporation. Netscape Navigator was planning to include Secure Courier, which encrypts data and authenticates individuals and merchants during Internet transactions. 2) Microsoft: Microsoft's STT is similar to SEPP/
SET in that it provides digital signatures and user authentication for securing electronic payments. STT' is an embellished version of Netscape's SSL security tool and is compatible with SSL version 2.0.
SIT provides such enhancements as stronger authentication (hr export and improved protocol efficiency by requiring fewer calls to initiate a communications session. STT is a general purpose technology for securing financial transactions with applications beyond the Internet. Microsoft's Internet products, such as its Internet Explorer browser and the Merchant Web server, were planned to support STT' and Microsoft's Private Communications Technology (PCT security protocol; PCT offers general security for messaging and communications. NaBanco, the nation's largest credit card processor, will support Si'!Spyglass was planning to build Sri' into its Windows, UNIX, and Macintosh Web browsers and servers. The
Internet Shopping Network also is implementing the STT protocol and Microsoft's application programming interfaces. A movement toward SEPP/SET acceptance in the industry, in contrast with STT, has, however, been seen. 3) Checkfree: Checkfree Corporation provides on-line payment-processing services
to major clients, including CompuSense, GEnie, Cellular One, Delphi Internet Services Corporation, and Sky-Tel. Checkfree employs a variety of mechanisms for handling such services, including Microsoft's STT, CyberCash, Netscape's SSL, and VeriSign's Digital ID. Checkfree
has also announced intentions to support all security methods that achieve prominence
in the marketplace, e.g. SET. Together with CyberCash (see the next section), Checkfree developed Checkfree Wallet, a system that lets consumers and merchants undertake transactions easily and safely over the Internet. Checkfree Wallet has a client and a server component. The browser modules can be downloaded free from Checkfree's home page (http://www.checkfree.com) or a merchant's site for use with Netscape Navigator, Spyglass Mosaic, Quarterdeck Corporation's Mosaic, and The Wollongong Groups Emissary browsers. 4) CyberCash: CyberCash's Secure Internet Credit Card Service delivers a safe, real-time solution for merchant processing of credit card payments over the Internet. The Credit Card Service lets any consumer with a valid credit card buy from any CyberCash enabled merchant. Designed to integrate fully with existing transaction processing systems used by banks and other financial institutions, the service provides automated and instantaneous authentication, enabling order processing to traverse the Internet 24 hours a day, 7 days a week. It combines features from checks and cash.
CyberCash is a digital cash software system which is used like a money order, guaranteeing payment to the merchant before the goods are shipped. CyberCash provides a (
nearly) secure solution for sending credit card information across the Internet by using encryption techniques to encode credit card

information. CyberCash wants a micropayment capability of 5 to 20 cents per transaction. There is a one-time charge to the customer to fill the coin purse and money never leaves the hank. The third party deciphers the transaction. To use CyberCash, a user must download the free CyberCash GUI; the user then executes the GUI to view merchandise on-line. The user then chooses the product he or she wishes to purchase and hits the pay button. At this juncture, the software automatically notifies the merchant to send an on-line invoice to the user, who then fills it out including name and credit card information.
This information is then encrypted by the software and sent to the merchant. The merchant then sends the invoice and identification information to the CyberCash server. The CyberCash server then sends a standard credit card authorization to the merchant's bank
and forwards the response to the merchant who then ships the goods to the user. See Fig 8.1 The entire process is conducted quickly and cheaply (CyberCash compares the cost per transaction to the price of a postage stamp). CyberCash's advantages are that it is easy and inexpensive to use and the user does not need to have any special accounts set up with CyberCash or with a bank. The main advantage to the merchant is that the goods are paid for before they are shipped. Figure 8.1: CyberCash Electronic
Transaction Process 5) VeriSign: VeriSign is offering its digital signature technology for authenticating users as a component separate from encryption, which allows for export of stronger authentication.
The U.S. government has (to date) embargoed export of strong encryption outside the United States, so many companies with divisions overseas are increasing security using such authentication technologies as VeriSign's Digital ID.
IBM is building support for Digital ID into its Web Browser and Internet Connection Secure Server for AIX and 03/2.
IBM also is adopting Digital ID for use in its InfoMarket publishing network and clearinghouse. Digital provides Web servers and clients with key authentication, privacy, and non-repudiation functions for electronic commerce? 6) DigiCash: DigiCash is a software company whose products allow users to purchase goods over the Internet without using
a credit
card. The threat of privacy loss (where expenses can
be
easily traced) gave rise to the idea of anonymous e-cash, an electronic store of cash replacement funds, which can be loaded into a smart card for electronic
purchases. This type of system, such as the one offered by the Netherlands' DigiCash NV (http://www.digicash.com), leaves no audit trail and ensures anonymous, untraceable transactions. An advantage of DigiCash is that it provides anonymity to the shopper because the bank replaces the user's digital signature with its own. DigiCash is a software-only electronic cash system that provides complete privacy. The benefit of the DigiCash model is its ability to hold larger amounts of money than a credit card account. One person can hold more than one DigiCash account. The Mark Twain Bank of St. Louis is using the DigiCash Ecash system to let individuals and merchants exchange U.S. dollars electronically. Many Internet-based merchants have adopted Ecash: by mid-1996. 1000 buyers and 250 sellers were participating in the program (there were forecasts of 10,000 buyers participating by press time). Users first need to download the DigiCash encryption software. They must then deposit money into a DigiCash bank via personal check or credit card in which they will receive digital coins in exchange. When purchasing goods; the users must send their e-mail requests to the DigiCash bank. The bank then checks the digital signatures of the users to verify that they are valid users. The bank then replaces the users' digital signature with the bank's digital signature and returns the money
to the users. The users then send the e-cash to the merchant who accepts it based on its acceptance of the bank's digital signature. The only micropayment system which was signing up customers at press time was DigiCash Ecash. Ecash is more complicated to design but cheaper to maintain than the credit/debit model. This is because accounting and auditing expenses are reduced (DigiCash claims that transaction costs are in the range of a penny each). Under this model, if Gabrielle wants to buy from Emile, she sends him 10 cents worth of electronic currency purchased previously from a participating bank. Emile can deposit the currency or spend it in turn as he pleases. This decentralized transaction model has the virtue of making it harder for an authority to accumulate a master list of all the transactions conducted by a single buyer. The downside of DigiCash transactions is that they are hard to trace, which does not make law enforcement officials or regulators happy, and there is no stop limit to financial risk. DigiCash is not foolproof in that it is possible for someone to steal a user's digital encryption key and use it for fraudulent purchases. 7) First Virtual Holdings: First Virtual Holdings is
targeting individuals and small businesses that want to buy and sell on the Internet but cannot afford an extensive on-line infrastructure.
Using

a First Virtual email account and First Virtual hosting systems to track and record the transfer of information, products, and payments for accounting and billing purposes, consumers and merchants can buy and sell goods on the Internet without sensitive information, such as credit card numbers, moving across the network. All sensitive information is delivered by telephone.
With First Virtual, the buyer has an account with the system and receives a password in exchange for a credit card number. The password is not protected while traveling over the Internet (this is not of interest to secure because First Virtual asks the buyer for an acknowledgment of each payment via out-of-band e-mail).
8)
NetCash: It
is the Internet's
answer to traveler's checks. To use NetCash, users must enter their checking account or credit card numbers into an on-screen form and email it to the NetCash
system. This entitles the users to purchase electronic coupons from NetCash for their face value plus a 2% commission. Each coupon is marked with a serial number. To purchase goods, the user browses NetCash's merchant list and selects products; at that juncture, buyers send their electronic coupons to the merchant. The merchant redeems the coupon at the NetCash bank (a computer program, not an actual bank) and NetCash takes 2 percent off the top as its fee. The NetCash system is not totally secure; hence, NetCash puts a limit of $100 on electronic transactions. NetCash does allow vendors to sell tangible goods which vendors ship via postal mail.
Other approaches: This section lists a few other approaches that have appeared in the recent past. ●
Mondex is based on smart-card technology
initially backed by the United Kingdom's National Westminster and Midland Banks. The electronic purse is a handheld smart card; it remembers previous transactions and uses RSA cryptography.
This has not proven to be successful: with the majority of the risk on the consumer's side, why would the consumer carry additional money when debiting ATMs are widely available? ● NetMarket receives user-ids and passwords over the Internet. User-id is good for a single merchant. This is similar to a private label credit card. After the first bill is paid, risk is reduced because the merchant knows the customer. ● OpenMarket (http://www.openmarketcom)
handles credit card transactions via Web servers,
but
it was planning to provide support for debit cards, checking accounts, and corporate purchase
orders. It uses passwords and, optionally, two types of devices for response generation: secure Net key and secure ID shared-key cryptography. It will offer secure servers to merchants that support HTTPS and SSL.
● Global On-line (http://www.globeonline.fr) uses
on-line challenge/ response. It is based on a third party originating agreements; therefore, the seller has a higher cost to enter the market. ●
Carnegie Mellon University's NetBill (http://www.ini.cmu.edu/ NETBILL/) supports micropayments. Micropayment systems can be divided into debit/credit (pay earlier/pay later) and digital cash (pay now). The NetBill system is an example of the former. Both buyers and sellers must have arranged accounts with a NetBill licensee, perhaps a financial services company—prior to the transaction. When Gabrielle hits a buy link on a file carried on Emile's Web site, Emile's server delivers it in encrypted form, unreadable by her. A record of the transaction is sent to the NetBill server maintained by the licensee, which then checks Gabrielle's balance. Meanwhile, a NetBill client running on Gabrielle's desktop probes the integrity of Emile's transmission by matching what was sent against what was received. If both halves of the transaction check out, the NetBill server sends the decryption key to Gabrielle while debiting her account and crediting Emile's. ● NetBill hopes to pay for all costs—storage, processing, bandwidth, and management (including marketing, security, accounting, and software maintenance) out of a gross return of one or two cents per transaction plus a small percentage of the transaction value. While research suggests that many of these costs can be reduced significantly, customer and technical support costs remain unknown. New products naturally generate support calls, and users with money at stake are especially demanding. But pennies per transaction do not buy much of a service bureau. If the support lines cost out at $5 a call and an organization is getting one cent per transaction, one call wipes out the gross of 500 transactions. The prospects for any micropayment protocol will be measured by its success at automating customer support, in addition to providing security, reliability, quick response time, and ease of use.
● Clickshare Corporation (http://www.clickshare.com), which markets a micropayments system with the same name, has been delayed in part by resistance from one of its target markets: newspaper publishers. Clickshare differs from NetBill in that it envisions four interacting parties instead of three: the buyer, the seller or publisher, the buyer's home base (which might be an Internet access provider), and an account manager, which could be Clickshare itself or a licensee. ●
Wallets

and such. Even in the absence of standards , vendors have been developing systems to handle sales over the Internet, and companies willing to accept that the products are not interoperable can support business before standards become widely deployed.
As one example, VeriFone, a POS (point-of-sale; systems provider, has put together a suite of programs to support Web-based payments. vPOS is the merchant's receipt and transaction management system designed. 8.3
Master Card / Visa Transaction In August 1996, MasterCard and Visa agreed to jointly develop the Secure Electronic Transaction (SET) Specification.
SET aims at achieving secure, cost- effective, on-line transactions that will satisfy market demand in the development of a single, open industry specification. Visa and MasterCard have jointly developed the SET protocol as a method to secure payment card transactions over open networks. SET is being published as open specifications for the industry. These specifications are available to be applied to any payment service and may be used by software vendors to develop applications. Key additional participants are GTE, IBM, Microsoft, Netscape, SAIC, Terisa, and VeriSign. 8.3.1
Introduction
There is no question that electronic commerce, as exemplified by the popularity of the Internet, is going to have an enormous impact on the financial services
industry. No financial institution will be left unaffected by the explosion of electronic commerce. ● The number of payment card purchases made through this medium will grow as
Internet-based
on-line ordering systems are created. ● Many banks are planning to support this new form of electronic commerce by offering card authorizations directly over the Internet. ● Several trials with electronic currency and digital cash are already under-way. With more than 30 million users in 1998, and 90 million projected to come on board in upcoming years, the Internet is a new way for businesses to establish computer-based resources that can be accessed by consumers as well as business partners around the world.
With open networks, payments will increasingly be made by consumer- driven devices. As advanced technologies become more practical and affordable, the marketplace will move from brick and mortar-to more convenient locations such as the home or office. As financial services evolve, consumers will consolidate their payment needs into one multifunctional relationship product that enables widespread, around-the-clock access.
In such an e-commerce scenario
payment systems and their financial institutions play a significant role by establishing open specifications for payment card transactions that: ● Provide for confidential transmission; ● Authenticate the parties involved; ● Ensure the integrity of payment instructions for goods and services order data; ● Authenticate the
identity of the cardholder and the merchant to each other. Because of the anonymous nature of communications networks, procedures must be developed to substitute for existing procedures used in face-to-face or mail order/telephone order (MOTO) transactions including the authentication of the cardholder by the merchant. There is also a need for the cardholder to
authenticate that the merchant accepts SET transactions and is authorized to accept payment cards. Use of payment card products: Financial institutions have a strong interest in accelerating the growth of electronic commerce. Although electronic shopping and ordering does not require electronic payment, a much higher percentage of these transactions use payment card products instead of cash or checks. This will hold true both in the consumer marketplace and in the commercial marketplace. Purpose of Secure Electronic Transaction To meet these needs, the Secure Electronic Transaction (SET) protocol uses cryptography to: ● Provide confidentiality of information. ● Ensure payment integrity, and ● Authenticate both merchants and cardholders. These specifications will enable greater payment card acceptance, with a level of security that will encourage consumers and businesses to make wider use of payment card products in this emerging
market.

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Interaction of participants SET changes the way that participants in the payment system interact. In a face to face retail transaction or mail order transaction, the electronic processing of the transaction begins with the merchant or the acquirer. However in SET transactions, the electronic processing of the transaction begins with the cardholder. Cardholder In the electronic environment, consumers and corporate purchasers interact with merchants from personal computers

over the Internet. A cardholder is an
authorized holder of a payment card (e.g.,

MasterCard, Visa) that has been issued by an issuer. Figure 8.2: Secure Electronic Commerce Components ● Merchant: A merchant is a person or organization that has goods or services to sell to the cardholder. Typically, these goods and services are offered via a web site or by electronic mail.
A merchant that accepts payment cards must have a relationship with
an acquirer. ●
Issuer:
This is a financial institution such as a bank that provides the cardholder with the payment card. Typically, accounts are applied for and opened by mail or in person. Ultimately, it is the issuer that is responsible for the payment of the debt of the cardholder. ● Acquirer: This is a
financial institution that establishes an account with a merchant and processes payment card authorizations and payments.
Merchants will usually accept more than one credit card brand but do not want to deal with multiple bankcard associations or with multiple individual issuers. The acquirer provides authorization to the merchant that the given card's account is active and that the proposed purchase does not exceed the credit limit. The acquirer also provides electronic transfer of payments to the merchant's account. Subsequently, the
acquirer is reimbursed by the issuer over
some sort of payment network for electronic funds transfer. ●
Payment gateway: This is a function operated by the
acquirer or a designated third party that processes merchant payment messages.
The payment gateway interfaces between SET and the existing bankcard payment networks for authorization and payment functions. The merchant exchanges SET messages with the payment gateway over the Internet, while the payment gateway has some direct or network connection to the acquirer's financial processing system. ● Certification authority (CA): This is an entity that is trusted to issue X.509v3 public-key certificates for cardholders, merchants, and payment gateways. The success of SET will depend on the existence of a CA infrastructure available for this purpose. As discussed earlier, a hierarchy of CAs is used, so that participants need not be directly certified by a
root authority. Kinds of Shopping: ➢ Variety of experiences: There are many ways that cardholders will shop. This section describes two ways. The SET protocol supports each of these shopping experiences and should support others as they are defined. ➢ On-line catalogues: The growth of electronic commerce can largely be attributed to the popularity of the World Wide Web. Merchants can tap into this popularity by creating virtual storefronts on the Web that contain on-line catalogues. These catalogues can be quickly updated as merchant's product offerings change or to reflect seasonal promotions. Cardholders can visit these Web pages selecting items for inclusion on an order. Once the cardholder finishes shopping, the merchant's Web server can send a completed order form for the cardholder to review and approve. Once the cardholder approves the order and chooses to use a payment card,the SET protocol provides the mechanisms for the
cardholder to securely transmit payment instructions as well as for the merchant to obtain authorization and receive payment for the order. ➢ Electronic catalogues: Merchants may distribute catalogues on electronic media such as diskettes or CD-ROM. This approach allows the cardholder to browse through merchandise off-line. With an on-line catalogue, the merchant has to be concerned about bandwidth and may choose to include fewer graphics or reduce the resolution of the graphics. By providing an off- line catalogue, such constraints are significantly reduced. In addition, the merchant may provide a custom shopping application tailored to the merchandise in the electronic catalogue. Cardholders will shop by browsing through the catalogue and selecting items to include on an order. Once the cardholder approves the order and chooses to use a payment card, an electronic message using the SET protocol can be sent to the merchant with the order and payment instructions. This message can be delivered on-line, such as to the merchant's Web page, or sent via a store-and-forward mechanism, such as electronic mail. 8.3.2
Need
The following business requirements for secure payment processing with credit cards over the Internet and other networks: ➢ Provide confidentiality of payment and ordering information: It is
necessary to assure cardholders that this information is safe and accessible only
to the intended recipient. Confidentiality also reduces the risk of fraud by either party to the transaction or by malicious third parties. SET uses encryption to provide confidentiality. ➢ Ensure the integrity of all transmitted data: That is, ensure that no changes in content occur during transmission of SET messages. Digital signatures are used to provide integrity. ➢ Provide authentication
that a cardholder is a legitimate user of a credit card account:
A mechanism that links a
cardholder to a specific account
number reduces the incidence of fraud and the overall cost of payment processing.

Digital signatures and certificates are used to
verify
that a cardholder is a legitimate user of a valid account. ➢ Provide authentication that a merchant
can accept credit card
transactions through its relationship with
a financial
institution: This is the complement to the preceding requirement.
Cardholders need to be able to identify merchants with whom they can conduct
secure transactions. Again, digital signatures and certificates are used. ➢
Ensure the use of the best security practices and system
design techniques to protect all legitimate parties
in an electronic commerce transaction:
SET is a well-tested specification based on highly secure cryptographic algorithms and protocols. ➢
Create
a protocol that neither depends on transport security mechanisms nor prevents their use:
SET can securely operate over a "raw" TCP/IP stack. However, SET does not interfere with the use of other security mechanisms, such as IPSec and SSL/TLS. ➢
Facilitate and encourage interoperability among software and network providers: The
SET protocols and formats are independent of hardware platform, operating system, and Web software. 8.3.3 Features
These requirements are addressed by the following features of these specifications: ●
Confidentiality of information ● Integrity of data ● Cardholder account authentication ● Merchant authentication ● Interoperability For
the sake of clarity, each of these features has been described as a distinct component. It should be noted, however, that these elements do not function independently; all security functions must be implemented.
● Confidentiality of Information: To facilitate and encourage electronic commerce using payment card products, it will be necessary to assure cardholders that their payment information is safe and accessible only by the intended recipient. Therefore, cardholder account and payment information must be secured as it travels across the network, preventing interception of account numbers and expiration dates by unauthorized individuals. - On-line shopping: In today's on-line shopping environment, payment instructions containing account information are often transmitted from cardholders to merchants over open networks with little or no security precautions. However, this account information provides the key elements needed to create counterfeit cards or fraudulent transactions. - Fraud: While it is possible to obtain account information in other environments, there is a heightened concern about the ease of doing so with public network transactions. This concern reflects the potential for high volume fraud, automated fraud (such as using filters on all messages passing over a network to extract all payment card account numbers out of a data stream), and the potential for 'mischievous fraud that appears to be characteristic of some hackers. ●
Integrity of data: The specifications must guarantee that message content is not altered during the transmission between originator and recipient. Payment information sent from cardholders to merchants includes order information, personal data and payment instructions. If any component is altered in transit, the transaction will not be processed accurately In order to eliminate this potential source of fraud and/or error; SET must provide the means to ensure that the contents of all order and payment messages received match the contents of messages sent.
● Cardholder account authentication: Merchants need a way to
verify that a cardholder is a legitimate user of a valid
branded payment card account number. A mechanism that uses technology to link a cardholder to a specific payment card account number will reduce the incidence of fraud and therefore the overall cost of payment processing. These specifications define the mechanism to
verify
that a cardholder is a legitimate user of a valid
payment card account
number. ●
Merchant authentication: The specifications must provide a way for cardholders to confirm
that a merchant has a relationship with a financial institution allowing it to accept payment cards.
Cardholders also need to be able to identify merchants with whom they can securely conduct electronic commerce. ●
Inlet-operability:

The specifications must be applicable on a variety of hardware and software platforms and must include no preference for one over another. Any cardholder with compliant software must be able to communicate with any merchant software that also meets the defined standard. 8.3.4 Scope Use of payment cards: The SET specifications address a portion of the message protocols that are necessary for electronic commerce. It specifically addresses those parts of the protocols that use or
impact the use of payment cards.
Within the scope ● Application of cryptographic algorithms (such as RSA and DES) ● Certificate message and object formats ● Purchase messages and object formats ● Authorization messages and object formats ● Capture messages and object formats ● Message protocols between participants
Outside the scope ● Message protocols for offers, shopping, delivery of goods. etc.
● Operational issues such as the criteria set by individual financial institutions for the issuance of cardholder and merchant certificates ● Screen formats including the content, presentation and layout of order entry forms as defined by each merchant ● General payments beyond
the
domain of payment cards ● Security of data on cardholder, merchant, and payment gateway systems including protection from viruses. trojan horse programs, and hackers 8.3.5
Payment Processing Table 8.1 lists the transaction types supported by SET. In what follows we look in some detail at the following transactions: ● Purchase request ● Payment authorization ● Payment capture
Table 8.1:SET Transaction Types 8.3.5.1
Purchase Request Before the Purchase Request exchange begins, the cardholder has completed browsing, selecting, and ordering. The end of this preliminary phase occurs when the merchant sends a completed order form to the customer. All of the preceding occurs without the use of SET. The purchase request exchange consists of four messages: - Initiate Request, - Initiate Response, - Purchase Request, and - Purchase Response.
In order to send SET messages to the merchant, the cardholder must have a copy of the
certificates of the merchant and the payment gateway. The customer requests the certificates in the Initiate Request message, sent to the merchant. This message includes the brand of the credit card that the customer is using. The message also includes an ID assigned to this request/response pair by the customer and a nonce used to ensure timeliness.
The merchant generates a response and signs it with its private signature key. The response includes the nonce from the customer, another nonce for the customer to return in the next message, and a transaction ID for this purchase transaction. In addition to the signed response, the Initiate Response message includes the merchant's signature certificate and the payment gateway's key exchange certificate. The cardholder verifies the merchant and gateway certificates by means of their respective CA signatures and then
creates the OI and PI. The transaction ID assigned by the merchant is placed in both the OI and PI.
The OI does not contain explicit order data such as the number and price of items. Rather, it contains an order reference generated in the exchange between merchant and customer
during the shopping phase before the first SET message. Next, the cardholder
prepares the Purchase Request message. For this purpose, the cardholder generates a one-time symmetric encryption key, K s . The message includes the following: 1. Purchase-related information. This information will be forwarded to the payment gateway by the merchant and consists of: - The PI - The dual signature, calculated over the PI and OI, signed with the customer's private signature key - The OI message digests (OIMD) The OIMD is needed for the payment gateway to verify the dual signature, as explained previously. All of these items are encrypted with K s . The final item is - the digital envelope. This is formed by
encrypting K s with the payment gateway's
public key-exchange key. It is called a digital envelope because this envelope must be opened (decrypted) before the other items listed previously can be read. The value of K s is not made available to the merchant. Therefore cannot read any of this payment- related information.
2.
Order-
related information. This information is needed by the merchant and
consists of - The OI - The dual signature, calculated over the PI and OI, signed with the customer's private sign - The PI message digest (PIMD) 3. The PIMD is needed for the merchant to verify the dual signature. Note that the OI is sent in the clear. 4. Cardholder certificate. This contains the cardholder's public signature key. It is needed by the merchant and by the payment gateway. Figure 8.3: Cardholder Sends Purchase Request When the merchant receives the Purchase Request message, it performs the following actions (Figure 8.4): 1. Verifies the cardholder certificates by means of its CA signatures.

2. Verifies the dual signature using the customer's public signature key. This ensures
that the order has not been tampered with in transit and that it was signed using the cardholder's private signature key. 3. Processes the order and forwards the payment gateway for authorization (described
later). 4. Sends a purchase response to the cardholder.
Figure 8.4 Merchant Verified Customer Purchase Request The Purchase
Response message includes a response block that acknowledges the order and references the corresponding transaction number. This block is
signed by the merchant using its private signature key. The block and its signature are sent to the customer, along with the merchant'
s
signature certificate.
When the cardholder software receives the purchase response message, it verifies the merchant's certificate
and then verifies the signature on the response block.
Finally, it takes some action based on the response, such as displaying a message to the user or updating a database with the status of the order. 8.3.5.2
Payment Authorization
During the processing of an order from a cardholder, the merchant authorizes the transaction
with the payment gateway. The payment authorization ensures that the transaction was approved by the issuer. This authorization guarantees that the merchant will receive payment; the merchant can therefore provide the services or goods to the customer. The payment authorization exchange consists of two
messages:
Authorization Request and Authorization response. The merchant sends an Authorization Request message to the payment gateway consisting of the following: 1.
Purchase-related information. This information was obtained from the customer and consists of: - The PI - The dual signature, calculated over the PI and OI, signed with the customer's private signature key - The OI message digests (OIMD) - The
digital envelope 2.
Authorization-related information. This information is generated by the merchant and consists of: - An authorization block that includes the transaction ID, signed with the merchant's private signature key and encrypted with a one-time symmetric key generated by the merchant.
- A digital envelope. This is formed by encrypting the one-time key with the payment gateway's public key-exchange key. 3. Certificates. The merchant includes the cardholder's signature key certificate (used to verify the dual signature), the merchant's signature key certificate (used to verify the merchant's signature), and the merchant's key-exchange certificate (needed in the payment gateway's response).
The payment gateway performs the following tasks: ● Verifies all certificates ● Decrypts the digital envelope of the authorization block to obtain the symmetric key
and then decrypts the authorization block ● Verifies
the merchant's signature on the authorization block ● Decrypts the digital envelope of the payment block to obtain the symmetric key and
then decrypts the payment block ● Verifies the dual signature on
the payment block ● Verifies that the transaction ID received from the merchant matches that in the PI received (indirectly) from the customer ● Requests and receives an authorization from the issuer Having obtained authorization from the issuer, the payment gateway returns an Authorization Response message
to the merchant. It includes the following elements: 1. Authorization-related information. Includes an authorization block, signed with the gateway's private signature key and encrypted with a one-time symmetric key generated by the gateway. Also includes a digital envelope that contains the one-time key encrypted with the merchant's public key-exchange key. 2. Capture token information. This information will be used to affect payment later. This block is of the same form as (1), namely, a signed, encrypted capture token together with a digital envelope. This token is
not processed by the merchant. Rather, it must be returned, as is, with a payment request. 3. Certificate. The gateway's signature key certificate. With the authorization from the gateway, the merchant can provide the goods or service to the customer. 8.3.5.3 Payment Capture To obtain payment, the merchant engages the payment gateway in a payment capture transaction, consisting of a capture request and a capture response message. For the Capture Request message, the merchant generates, signs, and encrypts a capture request block, which includes the payment amount and the transaction ID. The

message also includes the encrypted capture token received earlier (in the Authorization Response) for this transaction, as well as the merchant's signature key and key-exchange key certificates. When the payment gateway receives the capture request message, it decrypts and verifies the capture request block and decrypts and verifies the capture token block. It then checks for consistency between the capture request and capture token. It then creates a clearing request that is sent to the issuer over the private payment network. This request causes funds to be transferred to the merchant's account. The gateway then notifies the merchant of payment in a Capture Response message. The message includes a capture response block that the gateway signs and encrypts. The message also includes the gateway's signature key certificate.
The merchant software stores the capture response to be used for reconciliation with payment received from the acquirer. 8.4
Unit Summary ● There are various
leading commercial electronic payment schemes that have been proposed in the past few years and companies are using them like Netscape,
Microsoft, Checkfree, etc
●
In August 1996, MasterCard and Visa agreed to jointly develop the Secure Electronic Transaction (SET) Specification. SET aims at achieving secure, cost-effective, on-line transactions that will satisfy market demand in the development of a single, open industry specification. ● Master/Visa
Card provides consumers with easy buying or spending experiences. ●
These requirements are addressed by the following features of these specifications: -
Confidentiality of information, Integrity of data, Cardholder account authentication, Merchant authentication, Interoperability. ●
Use of payment cards: The SET specifications address a portion of the message protocols that are necessary for electronic commerce. It specifically addresses those parts of the protocols that use or
impact the use of payment cards. ●
Payment processing takes place through - Purchase request, Payment authorization, Payment capture. 8.5 Key Terms ● Merchant: A merchant is a person or organization that has goods or services to sell to the cardholder. ●
Issuer: This is a financial institution such as a bank that provides the cardholder with the payment card. ●
Acquirer:
This is a
financial institution that establishes an account with a merchant and processes payment card authorizations and payments. ●
Payment gateway: This is a function operated by
the
acquirer or a designated third party that processes merchant payment messages. ●
Certification authority (CA): This is an entity that is trusted to issue X.509v3 public-key certificates for cardholders, merchants, and payment gateways.
8.6
Check Your Progress Subjective: 1) Give an explanatory note on the followings: a. Netscape, b. Checkfree c. Cyber Cash d. Digicash 2) Give an introduction on Master card/ Visa Transactions. 3) Elaborate the payment process undertaken through - Purchase request, Payment authorization, Payment capture. Objective: 1) True/False:
In order to send SET messages to the merchant, the cardholder must have a copy of the
certificates of the merchant and the payment gateway. 2)
Fill in the gap:
As advanced technologies become more ___ and ____, the marketplace will move from brick and mortar-to more convenient locations such as the home or office. 3)
Complete the line:
To facilitate and encourage electronic commerce using payment card products, it will be necessary to _____. 4)
Short Q/A: Write any four transaction types supported by SET. 5) Short Q/A: Write any two points of scope in respect to payment through cards.
Module: III E-Commerce: Consumer and Business Oriented

Unit: 09 E-retailing: Consumer Oriented E-Commerce Structure 9.0 Introduction 9.1 Unit Objectives 9.2 E-retailing 9.2.1 Traditional Retailing and E-retailing 9.2.2 Benefits of E-Retailing 9.2.3 Models of E-retailing 9.3 Developing Consumer-Oriented E-commerce System 9.3.1 Components of E-Retailing 9.3.2 Issues/Challenges In E-retailing 9.3.3 Integration of Brick and Mortar with E-retailing 9.3.4 Multi-Channel Retailing 9.3.5 Essentials of Online Retailing 9.3.6 Key Success Factors 9.4 Unit Summary 9.5 Key Terms 9.6 Check Your Progress 9.0 Introduction Retailing on the web is called e-tailing. The Internet provides new ways for customers to shop for their needs. Today, internet technology is available almost everywhere on the planet, and using the Internet for information is already the number one reason for customers' state of being online. Internet technology allows products and services to be offered on a scale never possible before: a potential global market with a variety of choices that is simply not possible with limited physical floor space (Cunningham, 2000:35).
9.1 Unit Objective This unit covers: • Introduction to E-retailing, features, benefits, and models of e- retailing • Components of e-retailing, challenges in e-retailing, integration of brick and mortar with e-retailing, essentials of online retailing, and key success factors 9.2 E-retailing E-retailers can now serve their customers 24/7 with a variety of products and services at a reduced price (Walsh & Godfrey, 2000). Though there are potential business benefits arising from the usage of the Internet, successful e-retailing still faces numerous challenges such as - improved customer service, increased competition, and increased cost of website and content management. While these remain an important managerial challenge, there is also a changing wave of customers' growing expectations for continuously improved products and service offerings. Retail businesses should therefore take advantage of Internet opportunities and build enduring customer-retailer relationships for sustained customer loyalty. More personalized service that satisfies customers' needs can be developed and deployed into an e-retail environment (Windham & Orton, 2000:145). In e-retailing, because a company website represents the brand and stands as a substitute for the traditional shop, customer loyalty depends, even in the first instance, on the website's performance. Judgment about performance will be based on its usefulness and more specifically on its impact on service quality, during and after purchase. The interrelationships among loyalty, trust, and relationship have been well established in marketing and service management literature (Berry, 1995; Berry and Parasuraman, 1991; Foster and Cadogan, 2000; Graham, 1999; Kandampully, 1997).
On the line of rapid development of new online sales and distribution channels that can be used from anywhere and anytime, retailing is expected to change and grow vastly. The advent of e-retailing has been affecting the traditional retailing businesses running through malls and shops and has driven them to re-evaluate their structure and find solutions. ● 'E-retailing', a buzzword for any business-to-consumer (B2C), refers to the sale of goods online. Figure 9.1: E-retailing Online Stores ● Companies like Amazon and Dell created the online retail industry by putting the entire customer experience. The experiences run from browsing products to placing orders to paying for purchases through the internet. The success of e-retailing has made the traditional retailers create an online presence to expand their brick-and-mortar outlets. Though e-retailing is an independent business model with certain specific constituents like the trust model, electronic transaction processes in a real sense it is a subset of e-commerce. A few years ago Gosh (1998) predicted that competitive pressures of new electronic markets in improving customer loyalty, and meeting up with customers' demand would force businesses to join the market, irrespective of their willingness to do so. ● Electronic Retailing or e-Retailing or e-tailing is defined as the selling of retail goods on the internet. E-retailing is a rapidly emerging channel used by retailers to establish their market share amidst increasing
competition. Smart mobile phones technology is blurring the line between physical and online retailing, consumers are altering their shopping habits in a more fluid manner. ● E-retailing involves the sale of goods and services or tangible or intangible goods. Tangible goods can be categorized as physical goods and digital goods. Physical goods like books, television sets, washing machines, etc. while digital goods imply software and music that can be downloaded from the internet. The sale of intangible goods is sometimes called e-servicing. Services sold through internet technology mean such information as stock prices, foreign exchange rate, education, etc. Games, movies, songs, and other entertainment units sold through the internet are examples of e-services. The sale of tangible and intangible goods to the consumers (end-users) is referred to as customer-oriented e- commerce. Figure 9.2: Kinds of Goods Features: Feature Technological Dimension Impact on E-Retailing Environment Ubiquity Internet Technology is available everywhere, at work, at home, and elsewhere via mobile device, anytime. The marketplace is created or extended beyond traditional boundaries and removed from a geographic location Shopping can take place anywhere Reduced shopping costs. Customer convenience enhanced

Global Reach Technology reaches beyond national boundaries across the globe Commerce is enabled across cultural and national boundaries seamlessly and without modification Marketplace includes potentially billions of consumers and millions of businesses worldwide Universal Standards There is one set of technology standards, namely Internet Standards Only one set of technical media standards across the world Richness Video, Audio, and Text Messages are possible E-Commerce technologies have changed the traditional tradeoff between Richness and the Reach The Internet and web can deliver to an audience of millions rich marketing messages in a way not possible with traditional technologies like radio, TV, and magazines Interactivity The technology that allows two-way communication between merchant and consumer Consumers are engaged in a dialogue that dynamically adjusts the experience to the individual, and makes the consumer a co- participant in the process of delivering goods to the market. (which is not possible in other mediums like TV, radio) Similar to face-to-face experience but on a massive global scale Information Density The technology reduces information cost and raises the quality Information processing, storage, and communication costs drop dramatically while accuracy & timeliness improve. Information becomes plentiful, cheap, and accurate Personalizat ion/ Customizati on Technology allows personalized messages to be delivered to individuals as well as groups Personalization of marketing messages and customization of products and services are based on individual characteristics

Social Technology User content generation and social networking Innovative Internet social & business models enable user content creation & distribution, support social networks Features of Online Retailing and Their Impact on Retail Environment Source: Adapted from Laudonet al. 9.2.1 Traditional Retailing and E-retailing Traditional retailing implies selling to a final customer through a Physical outlet or through direct physical communication. This normally involves a fairly extensive chain starting from a manufacturer to a wholesaler and then to the retailer who through a physical outlet has direct contact with the final customer. Examples of physical outlets that retailers currently use are: ● Malls ● generalized stores (e.g. department store) ● specialized stores ● franchise stores It is useful to reflect that even in traditional retailing we have moved away from just using a static physical outlet within which a customer can have direct contact with the retailer. Thus, more recent forms of traditional retailing include ● direct mailing ● telemarketing ● door-to-door sales ● vending machines Direct mailing to a customer normally involves sending a brochure or catalog to a customer. The customer browses through this catalog and then carries out

mail orders. In some respects, this notion of browsing through a catalog is a forerunner of e-retailing. Direct mailing, telemarketing, door-to-door sales, or the use of vending machines includes other forms that have actually moved away from a physical fixed outlet and in a way are intermediate forms of the movement away from traditional physical retailing outlet to the virtual retailing we see on the internet. E-retailing The internet has allowed a new kind of specialization to emerge. Instead of specializing just in a special product line, they allow specialization in particular classes of customers and sellers. Thus, we see lastminute.com, which allows last-minute purchases of travel tickets, gifts, and entertainment to be matched against last-minute sellers of the same items. Here, we see specialization not in a product line but in a class of purchasers and a class of sellers. This kind of specialization would not have been possible before we had the internet. In addition to these specialized stores, we also get generalized e-stores where a store sells several product lines under single management. Examples of these generalized stores include JCPenney and Walmart. We also have the electronic counterpart of malls or e-malls. E-malls essentially provide a web-hosting service for your individual store much in the way that malls provide a hosting service in the sense of a physical location for your store. Examples of these e-malls are Yahoo! Store, GEO Shops, and CNET stores.

9.2.2 Benefits of E-Retailing Whether it is a customer or a business enterprise selling/buying goods online makes them reap benefits. For customers: Customers enjoy a number of benefits from e-retailing. ● The first of these is convenience. ? It is convenient for the customer as he does not have to move from shop to shop physically in order to examine goods. He is able to sit in front of a terminal and search the net and examine the information on goods. ? The second aspect of convenience he gets is in terms of time. Normally, the traditional shop has an opening time and a closing time

and the customer can only visit the shop within these periods. On the net, the customer can choose at any time to visit a site to examine the goods that are available and actually carry out his purchase at one's own convenient time. ? The third type of convenience that the customer gets is that he has access to a search engine, which will actually locate the products that he describes' and also the site where they may be available, or perhaps even locate the sites where they may be available at the best price. ● The second type of benefit to customers is better information. The Internet and the World Wide web are essentially communication media that allow retailers to put on quite extensive information related to their products, which is available to the customers. ● The third type of benefit that the customer gets is competitive pricing. This is due to two factors. ? The first is lower costs to the retailer because he does not have to maintain a physical showroom, he does not have to hire several shop assistants, and these savings can be passed on to customers in the form of reduced prices. ? Secondly, competitive pricing pressure arises from the fact that the customer is now able to look at prices at several sites. Therefore, the pressure is always there on the retailer to maintain a competitive price for his products. For an enterprise: There are a number of benefits of e-retailing to the business itself. ● The first of these is global reach. The retailer now is no longer restricted to customers who are able to reach the store physically. They can be from anywhere around the globe. The retailer must, of course, deliver the goods of purchase to the customer. ● The second benefit is better customer service. The use of email and the use of electronic interchange of messages between the customer and the retailer allows better communication between the customer and the retailer. These allow one to easily make inquiries and deal with complaints. These also allow a much more rapid response time than was possible in the days of faxes and postal mail. ● The third benefit is the lowered capital cost to the retailer. The retailer does not have to maintain showrooms; he can probably have lower inventories. Thus, while Amazon.com lists over a few million titles, it keeps an inventory of a few thousand best-selling titles only. Therefore, the retailer has lower warehousing costs. He does not have to have many shop assistants who are physically answering questions and. Showing the customer goods. ● The fourth benefit to the retailer is mass customization. Based on requests by the customers, the retailer is now able to carry out mass customization with reduced time to market for the customized products. ● The next advantage is targeted marketing. The retailer is now able to pick on a specific targeted group of customers and direct marketing towards these customers. The retailer is also able to provide more value- added services in the way of better information, add-on services to basic services, or add-on options to products that he is selling. ● The last advantage to the retailer consists of different new forms of specialized stores that he is now able to utilize. 9.2.3 Models of E-retailing Models for e-retailing include: I. Specialized e-stores: The first class of model in e-retailing is the specialized e-store. - Under the traditional specialization (along product lines) one company chooses to position itself specializing in a product line. Having a store
and deciding to pick one particular product line, say books, flowers, CDs, clothes, it sells only one particular product line. It may also choose to deal in a particular part of the product line for example one kind of clothes or one particular brand. A company could do more mass marketing by selling non – brand names at a much lower price, or it could go into discount selling. - In contrast to this, a new kind of specialization is emerging on the internet, as mentioned. earlier, namely specialization by function. A good example of this is lastminute.com In lastminute.com sells gifts, travel tickets, and other items for last-minute shoppers who want to purchase these items at very short notice. Generally, when one purchases an item at very short notice (e.g. travel), he often pays a premium, which is an extra amount for the convenience of booking the travel at the last minute. Now, this means that the air ticket is likely to cost much more than if he had purchased it sometime before traveling and made use of different discounts or promotions. The producers of the website lastminute.com realized that there are groups of customers who make these purchases at the last minute and feel some degree of angst at having to pay the premium for doing this shopping at the last minute. On the other hand, you will find that you may have sellers, e.g. airline companies, that have empty seats at the last minute which they are unable to fill. So, what lastminute.com does is bring together travelers who want to book at the last minute and an airline that has got spare capacity at the last minute, and allow the former to buy from the latter at the last minute. In this situation, the purchaser may get his airline ticket at a reduced price. So, there is a win-win situation for both the purchaser and the seller. This is a unique kind of specialization. It is very difficult to do this unless one utilizes the internet to carry out this kind of specialization.

II. Generalized e-stores: Generalized e-stores sell a large number of product lines rather than confining themselves to just one or a very few product lines. III. E-malls: In an e-mall, cyberspace is rented out to cyber e-stores that wish to sell their goods. This store could be a specialized or generalized e-store. So, several product lines can be present. in a single e-mall. However, unlike the generalized e-store which is under single unified management, in an e-mall, each store is under its own management. E- mall management is responsible only for creating the cyber sites that can be rented and can support services and marketing of the mall. It, thus, provides a web hosting service. Several e-malls also provide software tools, which can be utilized by a prospective e-store to create and maintain an e-store. The advantage for an e-store is that it is grouped together with other stores in a well-known e-mail site and, therefore, is likely to pick up visitors to the mall. IV. Direct selling by the manufacturer: A number of manufacturers with well-known brand name products have chosen to use the internet to carry out direct selling via the internet. One of the best known here is Ford, which utilizes the internet to achieve direct selling but uses its dealer network to facilitate distribution and delivery. The other well- known examples are Cisco systems and Dell computers. Note that this approach permits mass customization to meet customer preferences. This direct selling by the manufacturer has an important disintermediation effect leading to reduced costs to the end customer and increased profitability to the manufacturer. A note of caution is important here. By and large, this approach can be used by manufacturers of well-known brands of products because the customer already knows the product. Secondly, the manufacturer must have a thorough understanding of customer preferences, otherwise, he has to rely on the customer knowledge of a retailer.

V. Brokers or intermediaries: This class of e-retailers is essentially an extension of the notion of a broker from the physical to the cyber world. A broker is an intermediary who - may take an order from a customer and pass it on to a supplier - may put a customer with specific requirements in touch with a supplier who can meet those requirements - may provide a service to a customer, such as a comparison between goods, with respect to particular criteria such as price, quality, etc. Thus, brokers provide comparison shopping, order taking and fulfillment, and services to a customer. That is the reason why they are sometimes referred to as electronic intermediaries. There are several different models for electronic brokers and these include: - Brokers that provide a registration service with directory, search facilities,e-payment facilities, and security-related facilities. Any business can register with such an e-broker. - Brokers that meet a certain requirement such as a fixed price. - Brokers that provide comparison shopping between products. VI. E-services: The delivery of services via the internet to consumers or other businesses is referred to as e-services. There is a wide range of e- services currently offered through the internet and these include banking, loans, stock trading, jobs, and career sites, travel, education, consultancy advice, insurance, real estate, broker services, online publishing, and online delivery of media content such as videos, computer games, etc. Web-enabling services: Banking, stock trading, and education. Matchmaking services: Jobs and employment sites, Travel, Insurance, Loans including mortgage loans, Real estate sales, Brokers. Information selling: consultancy advice, specialized financial or other information and Entertainment services, and specialized services such as auctions.

9.3 Developing Consumer-Oriented E-commerce System Developing a consumer-oriented e-commerce system implies understanding various issues and system requirements, knowing and incorporating the essentials, and working in a way that could relate to the key success factors. 9.3.1 Components of E-Retailing Direct selling of products, information, and service through virtual stores on the web takes place through a format. There are various storefronts or e- commerce sites on the Internet that are extensions of existing retailers or start- ups. There are certain essential ingredients for an electronic retailing business to be successful. Before setting up an electronic store one needs to consider some components well in advance. The components of E-Retailing include: ● Attractive business-to-consumer (B2C) e-commerce portal: The interfaces and navigation should be user-friendly and pleasing. The site should have a strong sense of branding. ● Right revenue model: The revenue model should be accurate and there is transparency in terms of service levels and pricing. ● Penetration of the Internet: As the e-commerce portal is in addition to the existing brick-and-mortar infrastructure aimed to bring in customer loyalty. The retailer should keep in mind the local internet penetration for better success. ● E-Catalogue: It is a database of products with prices and available stock. The retailer can provide value-added service by giving price and feature comparisons between products. This would enhance the value of the e-commerce portal for the customers. The retailer can indicate special benefits available to customers under the loyalty program thus making the customer feel special. ● Shopping Cart: The customers can select the products that they wish to purchase and fill their shopping cart. The Shopping Cart can be designed in a way that it could allow the customer to store their preference and previous purchase history for easy selection. This adds value to the

shopping experience and saves time. Finally, as in a real store, at the time of checkout, the system calculates the price to be paid for the products. The experience should be seamless and without errors. ● A payment gateway: Customer makes payments through his/her credit card or e-cash. The payment mechanism must be fully secure. ● Support Services in E-Retailing: The electronic retail business requires support services, as a prerequisite for successful operations. These services are required to support the business, online or offline, throughout the complete transaction processing phases. The following are the essential support services: - Communication backbone - Payment mechanism - Order fulfillment - Logistics 9.3.2 Issues/Challenges In E-retailing The following are the major challenges faced by e-tailers: I. Channel Conflict: If a seller is a click-and-mortar (both web and physical presence) company, such as Levi's or GM. It may face a conflict with its regular distributors when it sells directly online. This is known as channel conflict. This situation can alienate the regular distributors. Channel conflict has forced some companies (e.g., Lego.com) to limit their B2C efforts. Others (e.g., some automotive companies) have decided not to sell directly online. An alternative approach is to try to collaborate in some way with the existing distributors whose services may be restructured. For example, an auto company could allow customers to configure a car online. It requires that the car be picked up from a dealer, where customers would arrange financing, warranties, and service. IT tools can facilitate the resolution of channel conflict. II. Resolving conflicts within Click-and-mortar Organizations: When an established company decides to sell directly online, it may create a
conflict within its existing operations. Conflicts may arise in areas such as pricing of products and services, allocation of resources (e.g., advertising budget), and logistics services provided by the offline activities to the online activities (e.g., handling returns of items bought online). As a result of these conflicts, some companies have completely separated the "clicks" (the online portion of the organization) from the "mortars" or "bricks" (the traditional brick-and-mortar part of the organization). Such separation may increase expenses and reduce the synergy between the two. The decisions about how to organize the online and offline operations and whether or not to separate them can be facilitated by IT tools. In addition, the Group Decision Support System (Group DSS) can be used to resolve conflicts. III. Organizing Order Fulfilment and Logistics: E-tailers face the difficult problem of how to ship very small quantities to a large number of buyers. This can be a difficult undertaking, especially when returned items need to be handled. IT-supported decision models can help with scheduling, routing, shipments, inventory management, and other logistics-related decisions. IV. Determining Viability and Risk of Online E-tailers: Many pure online e-tailers faced problems with customer acquisition, order fulfillment, and demand forecasting. Online competition, especially in commodity-type products such as CDs, toys, books, or groceries, became very fierce, due to the ease of entry to the marketplace. So a problem most young e-tailers face is to determine how long to operate while they are still losing money and how to finance the losses. In deciding on new EC initiatives, or on an entire dot-com company, a risk analysis is needed. A DSS modeling can be helpful in such cases. V. Identifying Appropriate Revenue Models: Many dot-com companies were selling goods at or below cost, with the objective of attracting many customers and advertisers to their sites. One early dot-com model was to generate enough revenue from advertising to keep the business afloat
until the customer base reached critical mass. This model did not work. Too many dot-com companies were competing for too few advertising dollars, which went mainly to a small number of well-known sites such as AOL and Yahoo. In addition, there was a "chicken-and-egg" problem. Sites could not get advertisers to come if they did not have enough visitors. To succeed in e-Commerce, it is necessary to identify appropriate revenue models. VI. The requirement to Change Business Process: The process of procurement, storage, and logistics in e-businesses is different from that in traditional brick-store businesses. The e-retail organization has to carefully redesign and integrate various processes to suit the new e- business. Traditional sections of departments and management hierarchy may pose hindrances and bottlenecks in the process of order processing and shipments. For example, the traditional business may require the goods to be present at the warehouse and inspected before being shipped to the customer. In electronic retailing, shipping goods from one place to another to a customer would not be possible. The retailer may appoint a local supplier in the city where the customer resides and instruct the supplier to deliver the goods. This would require passing certain business rules and a lot of faith in the local supplier. It would require business confidence that the supplier would follow the instructions and deliver the same product in good quantity and perfect quality. Merchandise planning and demand analysis are also difficult in e-retailing, as compared to traditional retail businesses. IT can play a great role in defining these processes and ensuring compliance. VII. Legal Issues: Proper laws have not yet evolved for Internet-based transactions. The validity of emails, digital signatures, and application of copyright laws is being checked by various government authorities. E- mail and digital signatures are now being recognized as valid for any legal purpose. Value Added Tax (VAT) is yet another area that creates problems. Taxes on goods and services are still an issue. Since the taxes

are levied and shared by multiple government agencies at the local, state, or federal level, there are no clear rules to guide retailers. In e-retailing, the place of billing, the place of dispatch of goods, and the place of delivery all differ. If E-Retailing these three places fall in different jurisdictions of governments, levy and submission of taxes would be a problem. IT needs to understand these implications and build a proper system to take care of them and ensure compliance. VIII. Security and Privacy: Security is one of the major challenges in the digital world. Despite a lot of security arrangements, such as passwords and firewalls, we come across the news of website hacking and data pilferages. The Internet is in the public domain and is more susceptible to unauthorized peeping. People are suspicious about disclosing information regarding their credit cards and personal details on the Net because of a fear that they can be misused. Cybercriminals have exploited the Internet weaknesses and have broken into computer systems, retrieving passwords and banking information. Security of payment gateway is a major concern, which has to be taken care of by the retailer by putting up proper security layers. IT has to ensure a properly established framework that can have multiple layers of security. IT should also ensure interoperability between systems. 9.3.3 Integration of Brick and Mortar with E-retailing Merchants integrating brick-and-mortar stores, eCommerce sites, and catalogs will increase repeat purchase rates and achieve higher levels of customer satisfaction. In any multi-channel retail consumer interaction, traffic and sales are being driven from one channel to the other. In "web-to-store" or "store-to- web" situations, the limitations of one channel are mitigated by the strengths of the other. This calls for greater integration with both these business processes so as to maximize revenue opportunities. For this purpose the retailer needs to focus on the following business process areas:

I. Centralized Order Fulfillment: The centralized order fulfillment includes: ? Common merchandise database for item data, hierarchy across the channel ? Merchandising operation through the integrated platform for pricing, promotions, and offers ? Corporate-wide CRM ? Offer consistent pricing and promotions ? The choice for customers to order through any channel and pick at any channel ? Distributed Order Management, consolidates all channel order and fulfill from a Distribution center ? Put away stocks and cross-dock stocks ? Reallocate & Re-distribute the stocks based on demand in the channels ? Transport planning for a courier to the customer in web/ mobile/ Store channel sales ? Customer returns on any channel are accepted irrespective of the channel that was the purchase made on and is accounted in inventory through POS or Web Payment gateway ? Customer returns through Web/Mobile, the web/mobile should accept the returns as a separate transaction or along with shopping list of purchase II. Supply Chain Synchronisation: It includes: ? Integration to store pickup order, inventory, and billing ? Vendor to supply for all channels ? Visibility of inventory in all channel ? Near real-time POS data for inventory position for accuracy ? Ability to update channels on stockout items ? Ability to transfer the store pickup orders to deliver orders if stock out III. Merchandising planning: It includes:

? Demand planning & forecasting for web / mobile / direct store ? Regular Ordering system for different categories ? Category sales planning for all channels and contribution to a total financial plan ? New product introduction in all channels ? Inventory planning for all channels based on the sales trends. (min /max/ reorder) ? Visual images selection for SKU for display in Mobile and Web IV. Customer Profile: It includes: ? Single window registration for all channels ? Common Identity for every customer/family across the channel ? All channel bills pertain to customers to integrate with a common database ? Schemes on rewards, pre-calculated value before merging into a common database V. Metrics and Measurement: It includes: ? Measure across channels for consumer growth & satisfaction ? Effective loyalty program to track across the channel ? Surveys to gather additional insight across channels ? Measure by category and not by channels ? Inventory reports on efficiency in utilization of inventory across channels ? Category performance reports across channels ? Marketing analysis reports to add value in all channels & enhance customer experiences and conveniences 9.3.4 Multi-Channel Retailing Due to high competition in the retail sector, it is very difficult to serve the customers with a single channel of retailing. Retailers are increasingly multiplying their channels, adding Web platforms and call centers to brick- and-mortar stores to reach more and more customers. Interestingly, customers do not use one channel exclusively to complete their purchases anymore. As a matter of convenience, many customers use multiple channels to complete the purchase process. Consumers also are mixing different channels for different activities. For example, a multi-channel customer might research a product at home by visiting a retailer's online store, doing comparisons, and reading reviews about the product. If this user has specific queries that are not answered online, he may then call the retailer's call center. After completing his research, he may go back to his computer, place an order online and then track the order status or shipping details. Or he may place the order online and then pick up the product from a nearby store instead of having it shipped from a warehouse. Look at figure 9.3 which shows the channels used for retail. While many retailers add different channels one-by-one to respond to rapid changes in the marketplace and in customer expectations, disparate channels are no longer able to drive customer satisfaction or revenue. This is due to Retailers' inability to provide consistent user experience and service levels. Certain channels such as Web call for more product data whereas a mobile storefront expects integration with location services. Figure 9.3: Channels used for retailing

Integrating multiple channels poses several challenges, due to different systems that work using different technologies, organization structure that is already established, and the need to manage inventory across channels. It is important to identify business needs and align integration road maps to satisfy these needs before embarking on a multi-channel integration initiative. Making product and pricing information and inventory visibility uniform across channels poses huge challenges that should be dealt with diligently. Figure 9.4 shows the components of multi-channel retailing. Figure 9.4: Multi-Channel Retailing 9.3.5 Essentials of Online Retailing Retailing over the internet is not as simple as running a brick-and-mortar retail store. It is a totally different and challenging task. Look at figure 9.5 which shows building blocks for running a store online.

Figure 9.5: Building Blocks for Running A Store Online There are some very important points that should be kept in mind while deciding to go online for retail. Let us discuss the essential points one by one. I. The Commerce Platform: It is very important to select the appropriate platform for digital commerce foray. The choice a retailer makes at the beginning will have a long-term impact. The choices one needs to make are: ● Service Model vs. Owning the platform ● Using a standard platform vs. building your own platform ● Using Open source vs. proprietary platforms II. Logistics Partner: It is very important that orders received get executed within the promised time window. The logistics partner should be able to integrate his systems with retailers' systems so that orders flow through uninterrupted and supply chain visibility is available to the customers. In certain payment options such as Cash-on-Delivery (COD), the partner should be able to collect the payment. Reverse logistics includes handling customer returns and non-delivered goods. III. Payment Gateway: Retail stores should be able to accept customer payments using various methods. Most common include: - Credit Card and Debit Card Payments - Net banking - Using Digital Gift vouchers - Cash on delivery - Payment at Store in cash IV. Digital Marketing Agency: In order to drive customer traffic to retail online stores, retailers need to engage a Digital Marketing Agency. The scope of work for such agency includes: - Content Creation for catalog including photographs, videos, and detailed product specifications - Writing reviews, blogs - Search Engine Optimisation to make it easier for customers to find retail stores and merchandise - Managing the loyalty program - Running campaigns on leading portals using advertising networks such as MSN, Google, etc. - Engaging with customers on social media platforms such as Facebook, Twitter, Google+, etc. Figure 9.6: Retail operations platform Source: (IDC, 2011)

Common Process Models For online retailing, there are some common process models and these are: ● Web Store linked to one store: The online storefront uses a catalog of the items available at one particular store in the chain. The orders received are executed through POS. Integration is in batch mode. ● Web Store linked to warehouse: The catalog exposed on the online store reflects stocks available at the warehouse. Execution takes place from the warehouse itself. Integration may be event-driven/real-time or in batch mode. ● Each physical store has a web storefront: Here, each Point of Sale (POS) is linked to the web stores, and customers may place orders online but pick them up from the store. In some variants, it allows pre-booking of new models/ items on the web front end. Payments may be online or offline.

Web-stores Models For web stores, some models are: ● EBO on Popular Platforms: Many brands/retailers launch their online store on popular portals such as Rediff.com or Indiatimes.com. This gives them a shorter time to launch and get online footfalls due to the traffic delivered by the portal. As a part of marketing campaigns, highly effective to get noticed but difficult to sustain due to the high investment required to maintain high visibility. ● Store at the Marketplace: Many brands/retailers set up their online stores on E-commerce Hubs or Marketplaces such as MartJack Exchange or Amazon. This gives them access to technology infrastructure which is very scalable along with advanced tools to manage the content as well as to run targeted campaigns. The operating costs are moderate. ● Stand-alone Stores: Mature retailers prefer to make their own platform an E-Retailing destination for online shoppers. The technology platform can be on a software-as-a-service model or can be owned by the retailer. Integration with the supply chain systems is a must. ● Pure play: These are the retailers who do not have physical stores. They may have a physical supply chain of their own or it is managed by their suppliers. ● Social Commerce: The retailer opens his store on social platforms such as Facebook. 9.3.6 Key Success Factors There are several factors that determine the success of e-retailing: ● The information technology infrastructure is one of the most important factors for doing an effective online retailing business. The website must be provided - quality information to consumers. It should be created on the features that serve information with clarity, clearness, and comprehensibility. Furthermore, web applications, relating to data processing for executives and service providing to customers and sales support systems are also vital. ● Security and privacy: The next factor affecting e-commerce is security and privacy. A consumer considers buying online safely. They remain concerned about the payment security and privacy policies of the firm choosing to buy from. ● Product issues There are various product issues, for example, variety, uniqueness, and quality of products and services that influence the online retailing operations of a seller. Such aspects determine a buyer's decision. ● Marketing management E-commerce needs good marketing efforts such as sales promotion and advertisement to introduce their websites to consumers. Additionally, after-sales service is necessary to maintain customer satisfaction. When customers are satisfied with the quality of the services, they are more likely to be loyal to the products or services of that particular website. Despite the fact that the sellers and buyers do

not actually meet and there is no proof of authentication, effective after- sales service helps businesses sustain customer trust and satisfaction. Besides, good targeting and expansion to new markets are indispensable for the growth of e-businesses. ● Logistics Doing business via the Internet frequently involves the transport of goods to customers at distant locations or in foreign countries. Consequently, the entrepreneurs will have to consider the importance of packaging and transporting their products. Research indicates that B2C e-commerce will be more successful if the company can deliver the products in perfect shape and in a timely manner. ● Management includes human resource management and organizational restructuring. Website owners will not fully benefit from e-commerce unless they have an appropriate structure to deal with the changing way of doing business. It is also necessary that their employees learn management know-how and how to give the best service to their clients. E-commerce owners might want to have business alliances in order to reduce their management costs]. In addition to this, websites have to be developed and updated regularly. The owner of each website will have to register for the "domain name". Use the right domain name could be very beneficial to the business. The domain name should not only relate to the brand of the product but also be easy to remember. Good management for the domain name registration and use of a recognizable domain name will help the business improve their image and to spread their brand's name. ● Government support policy An external factor that can promote the long-term growth of e-commerce is the favorable policy of the government to support online business and consumer protection. Government support is among the most crucial forces affecting the adoption of electronic commerce by consumers. The government can greatly contribute to e-commerce by the implementation of such facilitating
measures and regulations as legal infrastructure, consumer protection, taxation, and other laws concerning e-commerce. 9.4 Unit Summary Retailing on the web is called e-tailing. E-retailers can now serve their customers 24/7 with a variety of products and services at a reduced price (Walsh & Godfrey, 2000). Traditional retailing implies selling to a final customer through a Physical outlet or through direct physical communication. The internet has allowed a new kind of specialization to emerge. Instead of specializing just in a special product line, they allow specialization in particular classes of customers and sellers. Customers enjoy a number of benefits from e- retailing like convenience, better information, and competitive prices; while an enterprise reaps the benefits of global reach, target marketing, and mass customization, etc. Models of e-retailing include Specialized e-stores, Generalized e-stores, E-malls, Direct selling by the manufacturer, Brokers or intermediaries, and E-services. Developing a consumer-oriented e-commerce system implies understanding various issues and system requirements, knowing and incorporating the essentials, and working in a way that could relate to the key success factors. 9.5 Key Terms ● Brick and Mortar: A business that has a physical store that customers can go to rather than just having an online presence. ● Business to Consumer (B2C): The process of selling services or products directly from the business to the consumer. ● Domain: The main page or main URL for a website. This is often the “homepage” or root portion of the web address. 9.6 Check Your Progress Subjective: 1) What is e-retailing and discuss its scope?
2) How are traditional retailing and e-retailing different? 3) What are the different types of E-retailing models? 4) What are different challenges in e-retailing that need to be addressed? 5) What is multi-channel retailing? 6) What are the different essentials of online retailing? Objective: 1) True/False: The online storefront uses a catalog of the items available at one particular store in the chain. 2) Fill in the gap: In an e-mall, cyberspace is rented out to cyber _____ that wish to sell their goods. 3) Complete the line: Under the traditional specialization (along product lines) one company chooses to position itself specializing _____. 4) Short Q/A: Define e-retailing. 5) Short Q/A: List the essentials of e-retailing.
Unit: 10 B2B: Business Oriented E-commerce & Integration Structure 10.0 Introduction 10.1 Unit Objectives 10.2 Business - to - Business (B2B) 10.2.1 Models in B2B 10.2.2 Advantages and Disadvantages of B2B 10.2.3 Trading Process of B2B E-commerce 10.3 Business Models 10.4 E-business Integration 10.4.1 Integration Patterns 10.4.2 Approaches to Middleware 10.4.3 Types of Middleware 10.4.4 Enterprise Application Integration 10.5 Unit Summary 10.6 Key Terms 10.7 Check Your Progress 10.0 Introduction In a business-to-business (B2B) e-commerce system, companies involved in the supply chain conduct business with each other using a common portal. This way manufacturers sell products to wholesalers and wholesalers sell the products to a retailer using an e-portal. For B2B e-commerce a manufacturer can have a website/web portal that can also be used by the wholesaler to place orders. The wholesaler can use the same portal to advertise the product or take orders from retailers. This kind of business is called B2B e-commerce. This unit introduces various concepts on Integration patterns, different approaches to middleware and its different types. A detailed information about the enterprise application integration has also been discussed.
10.1 Unit Objective This unit covers: ? B2B E-commerce ? Business Models ? Integration 10.2 Business - to - Business (B2B) When a type of commerce transaction takes place between businesses, such as

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a manufacturer and wholesaler, or a wholesaler and a retailer, it is known as Business-to-Business (

B2B). It refers to making or conducting business operations between companies, rather than between a company and individual consumers. This is in contrast to business to consumer (B2C) and

implies that the seller as well as buyer is a business entity. B2B covers a large number of applications which enables businesses to form relationships with their distributors, resellers, suppliers etc. IBM, Hewlett Packard (HP), CISCO, Dell are the examples of B2B. Chemconnect.com and chemdex.com are the examples of B2B that brings two firms together on the virtual market. ➢ Following are the leading items in B2B e-Commerce. Electronics Shipping and Warehousing Motor Vehicles Petrochemicals Paper Office products Food Agriculture ➢ B2B applications can be witnessed in the following areas:
Supplier management Inventory management Distribution management Channel management Payment management Figure 10.1: B2B Model 10.2.1 Models in B2B The B2B model can be supplier centric, buyer centric or intermediary centric models. ● Supplier Centric Model: In this model, a supplier sets up the electronic commerce marketplace. Various customers interact with the supplier at its electronic market place. The supplier is generally a dominant supplier. He may provide customized solutions and pricing to fit the needs of buyers. Intel and Cisco have been adopting the supplier centric Model. ● Buyer centric Model: In this model, big business organisations with high volume purchase capacity create an electronic commerce marketplace. The online electronic commerce marketplace is used by the buyer for placing requests for quotations and carrying out the entire purchase process. The US government and the General Electric Trading Process Network are examples of buyer-centric models. ● Intermediary – centric model: In this model, a third party sets up the electronic commerce marketplace. The third party attracts both buyer and seller to interact with each other at its market place. The buyer places their request, interacts with each other and reaches a final decision in purchase or sale of goods. 10.2.2 Advantages and Disadvantages of B2B Selling products to businesses using an online channel is much more complex than selling to private customers. In addition to the way that you approach the customer, which is different than in the B2C sector, there are a whole range of other differences that are essential to understand and that can be advantageous. The following are the advantages of the B2B model. 1. Instant purchases: Online business allows for instant purchases. Now, companies can do almost everything over the internet. They can get in contact with the company they are seeking to transact with, make a first time transaction, and then set up a system for future transactions. This allows for frequent purchases. Under frequent purchases, prices usually drop. Therefore, there is saving in time and money. 2. Increased revenue: 24/7 online ordering will increase companies' revenue. Many different time zones exist in the world and potential clients might not have the same business hours as you. By allowing for companies to make transactions all the time, the time zone becomes irrelevant. For example: If it is 10 am in your clients' time zone and 2 am in your time zone, your client can still make purchases. By offering products at all hours of the day, revenue will increase for the company. 3. Expands company's presence: If your company has joined the online community, then it is expanding its presence and increasing its brand

awareness. Nowadays, you can find just about anything over the internet. Why not allow for people to find your company too? 4. Closer business relationships: Doing business with other companies online will create closer business relationships. This will result in more transactions. This frequent buying builds a stronger relationship. Although this does not require face to face interaction, it does allow for businesses to get more familiar with each other. The Disadvantages of a B2B Companies that embrace a B2B model stand to capture significant profit through the sales of high-cost products or sheer bulk orders. B2B practices diverge in several and significant ways from standard business-to-consumer practices. Although some differences entail simple changes in perspective, others create disadvantages for companies seeking to sell to other businesses. 1. Limited Market: Businesses selling to other businesses face a much smaller buying group than businesses selling to consumers. The total number of prospective buyers may be in thousands, rather than the potential millions of customers for consumer products. These limited numbers make every lead and every existing customer more valuable and the loss of a single, large customer can devastate the bottom line. For example, if you supply parts to businesses in mature markets, where only a handful of competitors normally operate, your business might not survive if one of your buyers closes shop. 2. Long Purchase Decision Time: The majority of consumer purchase decisions involve one or perhaps two decision makers and the total time for a purchase decision tends to run on the short side. The B2B sales cycle involves a complicated set of factors, involving multiple stakeholders and decision-makers, with total decision times that can stretch out for months. B2B sellers cannot depend on a fast turnaround with new clients for an influx of working capital and must maintain the financial solvency to operate with long gaps between sales.

3. Inverted Power Structure: In B2B, buyers wield more power than sellers. A B2B buyer can, also within limits, demand certain customizations, impose exacting specifications and drive a hard line with pricing because the seller depends much more heavily on retaining its customers. This requires B2B sellers to retain a level of flexibility in both product development and production. 4. Sales Process: The typical sales process in B2B demands considerable facetime, often multiple meetings, and gets driven by quantifiable factors, rather than the qualitative and emotional factors. The sales process often depends on the salesperson's ability to demonstrate what the product does or allows modifications that solve the very specific problem the buyer faces, and can deliver a solid return on investment. 10.2.3 Trading Process of B2B E-commerce ● STEP-01: Firstly, the buyer determines the requirements, prepares the Request for Quotation (RFQ) and searches for potential suppliers (sellers). ● STEP-02: The buyer submits the RFQ(Request for Quotation) and invites potential suppliers to respond. ● STEP-03: Suppliers obtain the RFQ (Request for Quotation) for processing. ● STEP-04: Interested suppliers bid for the request accordingly. ● STEP-05: The buyer and suppliers bid for the request accordingly. ● STEP-06: Finally, the buyer selects the best bid and completes the purchase 10.3 Business Models There are two models of e-commerce business. The first is known as the marketplace model and the second is the Inventory-led model. The 'marketplace model' works as a gateway or portal for buyers and sellers. In this model, the suppliers are listed along with their products or services and

prices like a market. However, the physical availability of goods or services needs confirmation from the supplier. The 'marketplace' will interact with the supplier and respond to the service, price, and delivery. The 'marketplace' model is usually a third party who acts as a facilitator of business. In the 'Inventory-led model' the stock of goods is with the company, as own, bought out, or consignment stock, (Gupta & Sharma 2015). As physical possession of goods is with the company the availability, price and delivery are assured. In the case of services, the Inventory-led of resources to provide the service is with the company. The Inventory-led model is usually an exclusive producer, supplier, or owner of goods or services. Developed markets like the US, Japan, and Europe are characterized by the Inventory-led model. Large manufacturers and retailers in these markets like Dell, Guess, Wall-Mart, Gap and Target, etc. have mastered the art of running their online operation or outsource it exclusively to portals. There are 'marketplace' type portal models too like Amazon the biggest and most successful e-commerce portal in the world and eBay the largest e- commerce auction portal for seconds or used goods. In a market like the US where the level of internet usage and transactions is more than 80% both models coexist successfully. The Indian e-commerce industry is dominated by the marketplace model presently. A portal business model provides services to a large number of manufacturers/suppliers and comes with a low investment required for the MSME hence it is more suited for a country like India. If a company has its inventory or stocks at warehouses or facilities in one or more locations and takes orders online to make deliveries to the customer it is called the inventory-led model of e-commerce. The possession of the goods or resources for services empowers the company to give a better buying experience to the customer according to experts. The control over the product or resources and delivery systems gives this e- commerce model several advantages and enables higher satisfaction to the customer. It provides: a) Total transparency in the process and high visibility of stocks/resources

b) Ability to locate and access the product/resources physically c) Customize the delivery process. The chances of accepting an order without assurance of delivery are also minimized. Deliveries can also be streamlined and schedules can be faster and definite. It would also be possible to provide the customer with reliable feedback on the delivery status and enable online tracking of the shipment/process. The Inventory-led model applies to those who use email for business, a static website for generating leads, or a dynamic website where transactions can be carried out. The advantages and disadvantages of the e-commerce business models can be examined using a 'lean business model' framework. For the comparison let us take the models where online transactions can be carried out. This will leave out emails and static websites. Applying the lean business canvas of 9 building blocks stipulated by Alexander Osterwalder, business models of E-commerce Portal E-commerce Website compared as follows: Building Blocks E-commerce Portal E-commerce Website Customer Segments Portals usually target a broad range of customer segments. Businesses opting for a portal need to identify if the customer segments targeted are right for their business. Scaling of markets can be achieved at a relatively low cost. Businesses setting up their own site or app must identify the key customer segments for their business and target the communication about their site or app to them. The website model offers vast scope of scaling including cross border transactions.
Channels Portal acts as a virtual distribution channel for communication and interaction with the customer. The portal can organize the pick-up, delivery and collection of payment for the business. The site or app provides a direct connection to the customer so businesses opting for this mode of ecommerce can save the cost of the distribution channel. Customer Relationshi p Customer relationship is with the portal. Businesses opting for a portal can get customer profile data for its products but interaction with the customer will be handled by the portal. Businesses having their own website or app have access to customers and can run loyalty programs to attract and sustain regular customers. Value Proposition Value proposition on the portal is shared. Customer value for the brand image, ease of use, design, delivery, service etc. are provided by the portal. Supplier has to only ensure value in the satisfaction derived by the customer from the product at the offered price. The presence of competitor brands and products on the portal provides ease of comparison which is a value proposition for the customer. Businesses have to first ensure value in the customer experience with the buying process. After succeeding in attracting and engaging the customer fruitfully on the site/app, it has to also ensure value in the delivery process. Loyalty of the customer will finally depend on the satisfaction the customer derives from the product, its brand image and the price paid for it. While comparisons with competitors products may not be available directly on the website so claims may at times be taken at face value.
Revenue Stream The revenue stream from the portal will be delayed depending on the payment method and delivery arrangements agreed with the portal. Effect of traffic on the portal due to special promotions or lack of it will also impact the flow of revenue. The quantum of revenue however will be net after deductions for charges, promos as well as GST if applicable by the e-portal. Flow of revenue from sales of products/services will be immediate on order or delivery subject to time taken by payment gateways for crediting the account. Seasonal effect may play a role on the number of hits and transactions but the quantum of revenue will equal the billing or gross sales through e-commerce. Key Activities Business should organize a separate team/section to coordinate with the Portal and handle the orders received from this mode. The status and location of stocks offered on the portal should be available to the team 24x7. Delivery arrangements need to be prioritized and honored as per agreement with the portal. Product mix and assortment details including pack qty., specifications, size, color, flavor, style etc. should match the details uploaded on the portal. Business must have its own technology team to create and/or run the website or outsource it fully or partially using web or cloud services. In addition to IT software & hardware teams the business will also require a professional art design team for posting product pictures, graphic art and page design etc. The visuals displays should ensure it matches the product features and meets the customer expectations. Chat room for tele-chat and/or web-chat would also be required to support the site. For end to end deliveries which are crucial for e-commerce either in house delivery teams or outsourced courier arrangements will have to be made. Provision for customer feedback and testimonials should be supported by the after sales service team to quickly resolve complaints.

Key Resources Apart from a small dedicated team to coordinate backend and investment in a basic internet connected computer/s configuration, the business will not have to deploy any more resources specially for handling the business from the e-portal. Investments will be required in having an in house or outsourced IT setup with servers, internet broadband high speed network, studio, warehouse/s, delivery vehicles etc. For human resources a team of trained personnel in IT software, hardware, analytics, social media, computer art & design, packing, delivery & logistics etc. with managers Table 10.1:A lean business model canvasses presentation Overall E-commerce Portal appears far more economical and an easier way to adopt e-commerce with online transactions. However, for long-term sustainability, a business that is financially strong or has an innovative product or service should go for the full-fledged website model. Based on the above mentioned two main models of e-commerce business several hybrid sub-models have also emerged which cater to customers as follows: 1) Omni Channel e-commerce: It is a hybrid of Inventory-led website and offline retail. Well-known brands and retailers resort to this model where their products which are available in exclusive branded (EBO) or multi- branded (MBO) brick & mortar retail shops are also available in the online websites managed by the company. Customer relationship and value proposition for customer time are given importance in this model. Customers can buy the product online and have it delivered or pick it up from a nearby retail location. Customers can also browse the website to know what is available at different locations at what price and then use the traditional distribution channel facility to go across and buy it from the nearest offline retail store. The revenue stream from pure-play e- commerce business done on Omni channels is usually not so high since the model works on a hub (website) and spoke (retail outlet) basis. The
hybrid model does require additional investments in key resources to manage the site, key activities like site design, chat support, fulfillment, and key partners for web hosting, pick up and drop, and digital payments. The cost structure will also change due to higher overheads and expenses. Whether additional sales will happen or the existing sales will have to bear the additional costs will impact its sustainability. Migration from the existing offline retail business to the hybrid Omnichannel would be a risk. Presently however it is being treated by businesses as an additional service to customers in the face of competition from e-portals. So Omnichannel is tweaking the Inventory- led website model to thwart competition from pure-play Inventory-led website model or marketplace-type e-portal model. 2) BTO or MTO e-commerce: Several customized “Built to Order” or “Made to Order” websites have come up recently. The model is a combination of the Inventory Led website model and market-place type e-portal. Here the targeted customer segments are those with special needs which differ from the standard merchandise available in the mass market. Existing customer relationships are developed further with the value proposition of e-commerce in providing the facility of selection and ordering a customized product from anywhere and get it delivered to the location of choice. The manufacturers or suppliers provide the customer the means of selecting inputs from a given list of suppliers stating specifications, make and cost individually which are then assembled by the manufacturer and shipped to the customer. The Inventory-led website model can cover the main inputs and resources for the main activity of assembly. However since it may not be economical to carry stock of all possible inputs required by multiple customers it is easier to create a special marketplace for accessories, ancillaries, etc. which is selected by the customer. The bill of material for the booking by the customer gets created online into several orders and becomes part of the supply chain and brings the inputs to the main location of the manufacturer/supplier
for final assembly and dispatch of the fully finished customized product to the customer. Key resources, activities, and suppliers all get pre- selected by the customer in an order, saving time, effort, and overhead costs. Revenue is also streamlined with the payment from the customer getting divided to each supplier in the chain digitally promptly. In personal computers, M/s Dell Computers Ltd. has made a name for itself with this type of combo model of part e-portal type and part website business model. Experts feel that customers get the value proposition of being empowered to create their products and it also helps businesses to develop customer loyalty for the website brand. Others following this sub-model of e-commerce include bespoke suppliers like iTailor, Cartier, etc. 3) Subscription-based sub-model: Subscription is another sub-model of e- commerce business that combines features of Inventory-led website and marketplace type e-portal. It first started as an easy way to hire books, music & movies Tapes/CD/Blu-ray from offline libraries who would rent, physically deliver the titles and arrange to take them back. When the digitization of books, music, and movies happened this business started losing customers as widespread piracy of the original titles started proliferating online. Piracy was hit with legal claims of copyright which got settled in favor of original owners of titles. Soon another e-commerce based business revolution of legally hosting the titles on the cloud allowing customers to access them and paying royalty entitlement to the owners was born. The subscription sub-model of e-commerce is especially suited for the entertainment services industry. The customer subscribes to the site or app which has a library of titles and gets to enjoy the program by renting individual titles or taking subscription membership of the site for live streaming or downloading the entertainment for later viewing. The business model is both a marketplace type of portal which carries the entire range of entertainment as well as Inventory-led website models focused on one

type or class of entertainment. The business targets a wide range of customer segments offering different genres. The value proposition for the customers is the ability to access and enjoy the entertainment at the time and place of their choice. Channel is one but convergence principle makes it possible to access it on multiple devices. The revenue stream is both periodic and spot based. On the business side activities are in creating and maintaining the e-portal or site, spreading awareness about the services both to customers and publishers/title holders or organizers to upload the entertainment. Partners are internet or mobile service providers, search engines, cloud or web hosting services, and digital payment gateways. Kindle, Amazon Prime, iTunes, Google Play, Netflix, Hotstar, Gaana are examples of this model. 4) Ticketing sub-model: Ticketing is the oldest and most successful type of e-commerce business. Ticketing also comes in both types of e-commerce business models. Ticketing is possible on marketplace e-portals where booking can be done for different carriers of travel or hotels or shows. Ticketing is also possible on exclusive websites of specific carriers of travel, hotels, or show venues. Here e-portal targets mass customer segments with a wide range of needs. Exclusive websites focus on niche customer segments that are selective. Both models bring buyers/customers and sellers/brands together on the internet to order and confirm the service with details of date, time, place/destination, and category of service. The e-portal allows visitors to make choices from a range of suppliers like the marketplace and arranges to confirm the booking with the service provider on the spot. The customer is not charged any fee for the booking but businesses that offer their services are charged for offering their services through the e-portal. Travel portals like MakeMyTrip, Expedia, Cleartrip, Travelocity, and ticket booking channels like Bookmyshow, VizzCo, and Bitstripset are examples. The value propositions are ticketing from anywhere and anytime as well as the advantage of comparative analysis of competition on the spot before
making a purchase. Channels are internet and mobile. Revenues can be bulk for B2B or B2G and spot for B2C. Key activities, resources, and partners are travel & tour agents, travel carriers, hotels, event organizers, and venues. The exclusive websites of airlines like AI, British, Cathay, Indigo, Emirates, Qantas, Swissair, etc., and event sites like IPL, EPL, FIFA-WC or venues like Broadway, IMAX, and PVR, etc. are examples. 5) Aggregator sub-model: This model is unique as it is a hybrid of both the e-portal model and website model. In terms of the customer, it is an Inventory-led or resource-based website so the customer is assured of delivery of the service. On the service resource side, it is like a marketplace portal because it does not own the resources. The owners of the resources agree with the platform and have the independence to accept the order. Customer relationships are maintained by the aggregator portal with special offers and quick responses to customers. Target segments are urban commuters who are short of time and need quick personalized transport. The value propositions for the customers are i) the service is standardized bases on the type of order and the charges are uniformly fixed by the aggregator and agreed with the customer in advance ii) the aggregator has a large number of services providing resources and options visible to the customer hence the chances of failure or non-availability are rare. Revenue streams are through spot cash or digital payments. Activities are to manage the e-portal; recruit, train, and supervise resources; Since the resources work on an incentive-based remuneration the business is prone to succeed if the customers are happy with the services both online and offline. Key partners are internet and mobile service providers; satellite-based map services; vehicle/food manufacturers, dealers/restaurants and fleet owners/café chains; and payment gateways. Expansion and scaling of services in more locations will bring down the costs and make the business model viable and sustain over a longer period. Services like
Uber & Ola for taxis; Rivigo & Porter for logistics, Zomato & Swiggy for restaurant food, etc. are examples of this sub-model of e-commerce business. Ultimately every business which generates revenue on an exchange of the product, process, or service through the internet or mobile is an e-commerce website business model or e-portal business model depending on its framework. While most of the sub-model of e-commerce differ in how they approach the customer side or right side, they all have a very similar organizational side or left side of the business canvas stipulated by Alexander Osterwalder. 10.4 E-business Integration E-Business Integration occurs in as many forms as there are e- Businesses. At first glance, integration problems and the corresponding solutions are seldom identical. Yet, upon closer examination, you discover that integration solutions can be classified into common categories. Each of these categories describes both a "type" of integration problem as well as a solution method. These categories are called integration patterns. Integration patterns help you understand the different methods available to you for a given type of integration problem. They allow you to take a step back and understand the differences in the various scenarios and appreciate the different approaches to integration. Finally, they allow you to view "integration in the big picture." You can learn to break down what may be a complex integration into conceptual categories and understand which technologies to apply. 10.4.1 Integration Patterns A pattern is commonly defined as a reliable sample of traits, acts, tendencies, or other observable characteristics. In software development, you may be familiar with the idea of design patterns or process patterns. Design patterns systematically describe object designs that can be employed for a common set of problems. Similarly, process patterns describe proven methods and

processes used in software development. In practice, patterns are simply a logical classification of commonly recurring actions, techniques, designs, or organizations. What are integration patterns? Integration patterns emerge from classification of standard solutions for integration scenarios. They are not patterns of design or code. Nor are they patterns of operational processes for an integration project. Instead, each integration pattern defines a type of integration problem, a solution technique, as well as parameters applied for e- Business Integration. Following are seven common e-Business Integration patterns. They are not meant to be comprehensive, but they cover most of the common integration scenarios implemented today. They encompass both EAI scenarios as well as B2Bi scenarios: ● EAI (intra-enterprise) Patterns ○ Database Replication ○ Single-Step Application Integration ○ Multi-Step Application Integration ○ Brokering Application ● B2Bi (inter-enterprise) Patterns ○ Application to Application B2Bi ○ Data Exchange B2Bi ○ B2B Process Integration The EAI Patterns represent patterns commonly applied within a corporate enterprise, whereas the B2Bi Patterns represent the different methods in conducting integrated B2B transactions. The following sections provide a closer look at each of these patterns and discuss some of the details. Database Replication: The Database Replication pattern may be the most prevalent pattern of EAI integration today. Database replication involves managing copies of data over two or more databases, resulting in redundant data. Companies engage in database replication for numerous reasons. One reason is that many organizations are becoming more distributed in their
operations, requiring multiple copies of the same data over several physical locations. Replication is also a means of data recovery. In many organizations, an active secondary database is maintained for data recovery purposes. If the production database needs to be recovered, the secondary replicated database can be used. This also applies to "high availability" systems. In these situations, a redundant copy of "live" data is maintained to ensure that if the first system is not available, the redundant database system is activated. The two general categories for database replication are synchronous and asynchronous replication. Single Step Application Integration: The Single Step Application Integration (SSAI) pattern extends the asynchronous database replication pattern. Instead of focusing on data consistency between two databases, the SSAI pattern integrates data between applications, moving data from one context to another. It does so by translating the data syntax of the source message and reformatting data elements into a new target message. It is a "single step" because it requires an intermediary broker to map source messages to target messages. Typically, it is an extension of the asynchronous replication technology, in that it utilizes Message Queuing Middleware such as MQ Series. It is just as likely to be implemented with the less sophisticated FTP in a batch mode. In either case, the point is that it does more than simply move data from point A to point B for consistency's sake. Whereas in the replication pattern both the source and target data models are likely similar, if not identical at times, this is not necessarily the case for the SSAI pattern. The objective here is not data consistency, but application data integration. Multi-Step Application Integration: The Multi- Step Application Integration (MSAI) pattern is an extension of the SSAI pattern. MSAI enables the integration of n (source) to m (target) applications. It addresses many- to- many integration, which SSAI cannot, by providing what is known as sequential logical processing. In other words, steps in this pattern are processed sequentially, and the rules applied are Boolean logical. Like the single- step
pattern, MSAI requires an intermediary to broker the transaction of data between applications. It is often built around an asynchronous event-based system and typically is implemented through the use of Message Queuing Middleware as well. The asynchronous event-based approach creates loose coupling. Although each system is physically independent, they are logically dependent. In other words, interdependencies exist between the application events that can be expressed in terms of transformations and data integration rules. Data elements from one application can drive the retrieval or processing of messages in another application. The simplest multi- step example involves three applications in which a message from application A is combined with a message from application B that is reformatted for a target application C. It is common for a data element from application A to act as a key to drive the request for information from application B. Brokering Application: At times integrating two applications is not principally a matter of integrating data, but integrating business logic. The Brokering Application pattern addresses the use of intermediary application logic to link together two or more applications. In plain terms, it means that custom application code is written containing logic to broker interactions between disparate applications. This custom brokering application sits in the middle as an intermediary for processing requests from different applications The use of this solution pattern is particularly applicable in the scenarios below: Applications Need to Reuse Logic Applications Linked by Complex Logic Applications Unified Through User Interface Application to Application B2Bi Now you're ready to move beyond EAI to learn about Application to Application B2Bi, extending integration beyond the corporate enterprise. I will describe four additional patterns related specifically to B2B integration, beginning first

with the Application to Application B2Bi pattern. The Application to Application pattern is the logical extension of what occurs in EAI. When EAI vendors tout their products as being B2Bi, this specific pattern is what they have in mind. However, as you will discover, this is not the only pattern and very likely not even the primary pattern for B2Bi. Application- to- Application B2Bi, which is often referred to as inter- enterprise integration, involves corporate entities linking their applications directly to the applications of their partners or customers. In practice, this type of integration is often implemented as part of a supply chain of goods and services to the customer. This extension for inter-enterprise integration means that several additional issues need to be accounted for: Security, Federated Control, and Systems Management Data Exchange B2Bi The limitation of the Application to Application B2Bi pattern is that it can be more demanding to implement. It necessitates that each participant handles and externalizes application native data directly. This makes it difficult to scale the B2B interaction model rapidly when such a demand is placed on the participants. The optimal solution is to provide a rapidly scalable B2Bi model in which participants can exchange data freely with the minimal expectation on their infrastructure. The Data Exchange B2Bi pattern enables B2B transactions predicated on a common data exchange format. It is the most widely applied pattern for B2B commerce today. Data Exchange B2Bi is effective because it is simple in concept and has been in use since the days of Electronic Data Interchange (EDI), the forerunner to today's B2B over the Internet. Although there is a significant incumbency of legacy EDI transactions, the XML based B2B will ultimately displace EDI as the primary mechanism for eBusiness transactions. XML based data packets are transmitted between two business entities through the use of a data exchange gateway service on both ends. One of the primary responsibilities of the gateway service is to prepare the data packets by placing them within a security envelope. The B2B gateway service supports security
standards such as MIME, X.509, and S/Key. It is also responsible for routing data through standard transport. Most B2B gateway services provide numerous transport options including HTTPS, FTP, and TCP/IP Sockets. However, upon examination, you will find that most B2Bi transactions still deliver XML documents over an HTTPS pipe. B2B Process Integration Even with industry-wide initiatives such as Rosetta Net, a point- to- point data exchange that manages static interactions has some limitations. If Corporation A wants to purchase office supplies from Depot X, it must agree ahead of time on the content of the documents exchanged and the buying process. This is, of course, to be expected. However, what if the situation involves managing multiple suppliers or if the interactions become more complex? For instance, a scenario in which suppliers openly bid to compete on pricing will increase the dimensions of process interactions. In that case, managing the B2B transaction is no longer an activity of managing a single point- to- point interaction. Instead, it becomes a challenge of managing business processes that are dynamic rather than static. The B2B Process Integration pattern takes the limitations raised by the Data Exchange pattern and addresses them by providing Business Process Integration (BPI) services. Just as the Data Exchange pattern allows participants to manage data exchanges dynamically through XML- based documents, the B2B Process Integration pattern allows the participants to manage processes in the same way. Therefore, richer, more complex relationships can occur between trading partners. B2B Process Integration pattern can be implemented as one of two variations: Closed Process B2Bi or Open Process B2Bi. You might argue that each of these variations constitutes an individual pattern, but because they share the common attribute of being process focused, I have decided to treat them as variations to the B2B Process Integration pattern.

10.4.2 Approaches to Middleware Middleware is computer software that connects software components or some people and their applications. The software consists of a set of services that allows multiple processes running on one or more machines to interact. This technology evolved to provide for interoperability in support of the move to coherent distributed architectures, which are most often used to support and simplify complex distributed applications. It includes web servers, application servers, and similar tools that support application development and delivery. Middleware is especially integral to modern information technology based on XML, SOAP, Web services, and service oriented architecture. Middleware sits "in the middle" between application software that may be working on different operating systems. It is similar to the middle layer of three tier single system architecture, except that it is stretched across multiple systems or applications. Examples include EAI software, telecommunications software, transaction monitors, and messaging and queueing software. The distinction between an operating system and middleware functionality is, to some extent, arbitrary. While core kernel functionality can only be provided by the operating system itself, some functionality previously provided by separately sold middleware is now integrated with operating systems. A typical example is the TCP/IP stack for telecommunications, nowadays included in virtually every operating system. In simulation technology, middleware is generally used in the context of the high-level architecture (HLA) that applies to many distributed simulations. It is a layer of software that lies between the application code and the run- time infrastructure. Middleware generally consists of a library of functions, and enables a number of applications—simulations or federates in HLA terminology—to page these functions from the common library rather than recreate them for each application Definition of Middleware: Software that provides a link between separate software applications. Middleware is sometimes called plumbing because it connects two applications

and passes data between them. Middleware allows data contained in one database to be accessed through another. This definition would fit enterprise application integration and data integration software. Object Web defines middleware as: "The software layer that lies between the operating system and applications on each side of a distributed computing system in a network." Middleware is computer software that connects software components or applications. The software consists of a set of services that allows multiple processes running on one or more machines to interact. This technology evolved to provide for interoperability in support of the move to coherent distributed architectures, which are most often used to support and simplify complex, distributed applications. It includes web servers, application servers, and similar tools that support application development and delivery. Middleware is especially integral to modern information technology based on XML, SOAP, Web services, and service oriented architecture. In simulation technology, middleware is generally used in the context of the high-level architecture (HLA) that applies to many distributed simulations. It is a layer of software that lies between the application code and the run- time infrastructure. Middleware generally consists of a library of functions, and enables a number of applications—simulations or federates in HLA terminology—to page these functions from the common library rather than recreate them for each application. Origin of Middleware: Middleware is a relatively new addition to the computing landscape. It gained popularity in the 1980s as a solution to the problem of how to link newer applications to older legacy systems, although the term had been in use since 1968. It also facilitated distributed processing, the connection of multiple applications to create a larger application, usually over a network.

Use of middleware: Middleware services provide a more functional set of application programming interfaces to allow an application to (when compared to the operating system and network services.): ● Locate transparently across the network, thus providing interaction with another service or application ● Filter data to make them friendly usable or public via anonymization process for privacy protection (for example) ■ Be independent of network services ■ Be reliable and always available ■ Add complementary attributes like semantics ● Middleware offers some unique technological advantages for business and industry. For example, traditional database systems are usually deployed in closed environments where users access the system only via a restricted network or intranet (e.g., an enterprise's internal network). ● With the phenomenal growth of the World Wide Web, users can access virtually any database for which they have proper access rights from anywhere in the world. Middleware addresses the problem of varying levels of interoperability among different database structures. ● Middleware facilitates transparent access to legacy database management systems (DBMSs) or applications via a web server without regard to database- specific characteristics. ● Businesses frequently use middleware applications to link information from departmental databases, such as payroll, sales, and accounting, or databases housed in multiple geographic locations. In the highly competitive healthcare community, laboratories make extensive use of middleware applications for data mining, laboratory information system (LIS) backup, and combining systems during hospital mergers. Middleware helps bridge the gap between separate LISs in a newly formed healthcare network following a hospital buyout.

● Wireless networking developers can use middleware to meet the challenges associated with wireless sensor networks (WSN), or WSN technologies. Implementing a middleware application allows WSN developers to integrate operating systems and hardware with a wide variety of various applications that are currently available. ● Middleware can help software developers avoid having to write application programming interfaces (API) for every control program, by serving as an independent programming interface for their applications. For Future Internet network operation through traffic monitoring in multi- domain scenarios, using mediator tools (middleware) is a powerful help since they allow operators, searchers, and service providers to supervise Quality of service and analyze eventual failures in telecommunication services. ● Finally, e-commerce uses middleware to assist in handling rapid and secure transactions over many different types of computing environments. In short, middleware has become a critical element across a broad range of industries, thanks to its ability to bring together resources across dissimilar networks or computing platforms. 10.4.3 Types of Middleware Hurwitz's classification system organizes the many types of middleware that are currently available. These classifications are based on scalability and recoverability: ➢ Remote Procedure Call Client makes calls to procedures running on remote systems. Can be asynchronous or synchronous. ➢ Message Oriented Middleware Messages sent to the client are collected and stored until they are acted upon, while the client continues with other processing. ➢ Object Request Broker This type of middleware makes it possible for applications to send objects and request services in an object- oriented system.

➢ SQL-oriented Data Access middleware between applications and database servers. ➢ Embedded Middleware communication services and integration interface software/firmware that operates between embedded applications and the real time operating system. Other sources include these additional classifications: • Transaction processing monitors Provide tools and an environment to develop and deploy distributed applications. • Application servers software installed on a computer to facilitate the serving (running) of other applications. • Enterprise Service Bus An abstraction layer on top of an Enterprise Messaging System. Remote Procedure Call (RPC) In computer science, a remote procedure call (RPC) is an inter- process communication that allows a computer program to cause a subroutine or procedure to execute in another address space (commonly on another computer on a shared network) without the programmer explicitly coding the details for this remote interaction. That is, the programmer writes essentially the same code whether the subroutine is local to the executing program or remote. When the software in question uses object- oriented principles, RPC is called remote invocation or remote method invocation. Note that there are many different (often incompatible) technologies commonly used to accomplish this. History and origins: The idea of RPC (Remote Procedure Call) goes back at least as far as 1976 when it was described in RFC 707. One of the first business uses of RPC was by Xerox under the name "Courier" in 1981. The first popular implementation of RPC on Unix was Sun's RPC (now called ONC RPC), used as the basis for NFS (Sun). Another early Unix implementation was Apollo Computer's Network Computing System (NCS). NCS later was used as the foundation of DCE/RPC in the OSF's Distributed Computing Environment (DCE). A decade later Microsoft adopted DCE/RPC as the basis of the Microsoft
RPC (MSRPC) mechanism and implemented DCOM on top of it. Around the same time (mid- 90's), Xerox PARC's ILU, and the Object Management Group's CORBA, offered another RPC paradigm based on distributed objects with an inheritance mechanism. Message passing: An RPC is initiated by the client, which sends a request message to a known remote server to execute a specified procedure with supplied parameters. The remote server sends a response to the client, and the application continues its process. There are many variations and subtleties in various implementations, resulting in a variety of different (incompatible) RPC protocols. While the server is processing the call, the client is blocked (it waits until the server has finished processing before resuming execution). An important difference between remote procedure calls and local calls is that remote calls can fail because of unpredictable network problems. Also, callers generally must deal with such failures without knowing whether the remote procedure was actually invoked. Idempotent procedures (those that have no additional effects if called more than once) are easily handled, but enough difficulties remain that code to call remote procedures is often confined to carefully written low- level subsystems. The steps in making an RPC 1. The client calls the Client stub. The call is a local procedure call, with parameters pushed onto the stack in the normal way. 2. The client stub packs the parameters into a message and makes a system call to send the message. Packing the parameters is called marshaling. 3. The kernel sends the message from the client machine to the server machine. 4. The kernel passes the incoming packets to the server stub. 5. Finally, the server stub calls the server procedure. The reply traces the same in another direction.
Standard contact mechanisms: To let different clients access servers, a number of standardized RPC systems have been created. Most of these use an interface description language (IDL) to let various platforms call the RPC. The IDL files can then be used to generate code to interface between the client and server. The most common tool used for this is RPCGEN. Other RPC analogs: RPC analogs found elsewhere: - Java's Java Remote Method Invocation (Java RMI) API provides similar functionality to standard UNIX RPC methods. - Modula-3's Network Objects, which were the basis for Java's RMI - XML-RPC is an RPC protocol that uses XML to encode its calls and HTTP as a transport mechanism. - Microsoft .NET Remoting offers RPC facilities for distributed systems implemented on the Windows platform. - RPyC implements RPC mechanisms in Python, with support for asynchronous calls. - Pyro Object-Oriented form of RPC for Python. - Etch (protocol) framework for building network services. - Facebook's Thrift protocol and framework. - CORBA provides remote procedure invocation through an intermediate layer called the "Object Request Broker" - DRb allows Ruby programs to communicate with each other on the same machine or over a network. DRb uses remote method invocation (RMI) to pass commands and data between processes. - AMF allows Flex applications to communicate with back-ends or other applications that support AMF. - Libevent provides a framework for creating RPC servers and clients. - Windows Communication Foundation is an application

RMI The Java Remote Method Invocation Application Programming Interface (API), or Java RMI, is a Java application programming interface that performs the object-oriented equivalent of remote procedure calls (RPC). The original implementation depends on Java Virtual Machine (JVM) class representation mechanisms and it thus only supports making calls from one JVM to another. The protocol underlying this Java-only implementation is known as Java Remote Method Protocol (JRMP). Usage of the term RMI may denote solely the programming interface or may signify both the API and JRMP, whereas the term RMI-IIOP (read: RMI over IIOP) denotes the RMI interface delegating most of the functionality to the supporting CORBA implementation. The programmers of the original RMI API generalized the code somewhat to support different implementations, such as an HTTP transport. Additionally, the ability to pass arguments "by value" was added to CORBA in order to support the RMI interface. Still, the RMI-IIOP and JRMP implementations do not have fully identical interfaces. RMI functionality comes in the package java.rmi, while most of Sun's implementation is located in the sun.rmi package. Note that with Java versions before Java 5.0 developers had to compile RMI stubs in a separate compilation step using rmic. Version 5.0 of Java and beyond no longer requires this step. A typical implementation model of Java-RMI using stub and skeleton objects. Java 2 SDK, Standard Edition, v1.2 removed the need for a skeleton.

10.4.4 Enterprise Application Integration Enterprise Application Integration (EAI) is defined as the use of software and computer systems architectural principles to integrate a set of enterprise computer applications. Enterprise Application Integration (EAI) is an integration framework composed of a collection of technologies and services which form a middleware to enable the integration of systems and applications across the enterprise. Supply chain management applications (for managing inventory and shipping), customer relationship management applications (for managing current and potential customers), business intelligence applications (for finding patterns from existing data from operations), and other types of applications (for managing data such as human resources data, health care, internal communications, etc) typically cannot communicate with one another in order to share data or business rules. For this reason, such applications are sometimes referred to as islands of automation or information silos. This lack of communication leads to inefficiencies, wherein identical data are stored in multiple locations, or straightforward processes are unable to be automated. Enterprise application integration (EAI) is the process of linking such applications within a single organization together in order to simplify and automate business processes to the greatest extent possible, while at the same time avoiding having to make sweeping changes to the existing applications or data structures. In the words of the Gartner Group, EAI is the —unrestricted sharing of data and business processes among any connected application or data sources in the enterprise. One large challenge of EAI is that the various systems that need to be linked together often reside on different operating systems, use different database solutions and different computer languages, and in some cases are legacy systems that are no longer supported by the vendor who originally created them. In some cases, such systems are dubbed "stovepipe systems" because they consist of components that have been jammed together in a way that makes it very hard to modify them in any way.

Purposes of EAI EAI can be used for different purposes: Data (information) Integration: Ensuring that information in multiple systems is kept consistent. This is also known as EII (Enterprise Information Integration). Vendor independence: Extracting business policies or rules from applications and implementing them in the EAI system, so that even if one of the business applications is replaced with a different vendor's application, the business rules do not have to be re-implemented. Common Facade: An EAI system could front-end a cluster of applications, providing a single consistent access interface to these applications and shielding users from having to learn to interact with different software packages. EAI patterns ➢ Integration patterns: There are two patterns that EAI systems implement: ● Mediation: Here, the EAI system acts as the go-between or broker between (interface or communicating) multiple applications. Whenever an interesting event occurs in an application (e.g., new information created, new transaction completed, etc.) an integration module in the EAI system is notified. The module then propagates the changes to other relevant applications. ● Federation: In this case, the EAI system acts as the overarching facade across multiple applications. All event calls from the 'outside world' to any of the applications are front-ended by the EAI system. The EAI system is configured to expose only the relevant information and interfaces of the underlying applications to the outside world and performs all interactions with the underlying applications on behalf of the requester.

Both patterns are often used concurrently. The same EAI system could be keeping multiple applications in sync (mediation), while servicing requests from external users against these applications (federation). ➢ Access patterns: EAI supports both asynchronous and synchronous access patterns, the former being typical in the mediation case and the latter in the federation case. ➢ Lifetime patterns: An integration operation could be short-lived (e. g., keeping data in-sync across two applications could be completed within a second) or long-lived (e. g., one of the steps could involve the EAI system interacting with a human workflow application for approval of a loan that takes hours or days to complete). EAI topologies There are two major topologies: hub-and-spoke, and bus. Each has its own advantages and disadvantages. In the hub-and-spoke model, the EAI system is at the center (the hub), and interacts with the applications via the spokes. In the bus model, the EAI system is the bus (or is implemented as a resident module in an already existing message bus or message-oriented middleware). 10.5 Unit Summary B2B implies that the seller as well as buyer is a business entity. B2B covers a large number of applications which enables businesses to form relationships with their distributors, resellers, suppliers etc. IBM, Hewlett Packard (HP), CISCO, Dell are the examples of B2B. Chemconnect.com and chemdex.com are the examples of B2B that brings two firms together on the virtual market. The B2B model can be supplier centric, buyer centric or intermediary centric models. Supplier Centric Model, Buyer centric Model, and Intermediary – centric model. There are two models of e-commerce business. The first is known as the marketplace model and the second is the Inventory-led model. Based on these
two models of e-commerce business several hybrid sub-models have also emerged which cater to customers. E-Business Integration occurs in as many forms as there are e-Businesses. At first glance, integration problems and the corresponding solutions are seldom identical. Yet, upon closer examination, you discover that integration solutions can be classified into common categories. Each of these categories describes both a "type" of integration problem as well as a solution method. These categories are called integration patterns. Integration patterns help you understand the different methods available to you for a given type of integration problem. They allow you to take a step back and understand the differences in the various scenarios and appreciate the different approaches to integration. Finally, they allow you to view "integration in the big picture." You can learn to break down what may be a complex integration into conceptual categories and understand which technologies to apply. 10.6 Key Terms ● The 'marketplace model' works as a gateway or portal for buyers and sellers. In this model, the suppliers are listed along with their products or services and prices like a market. ● In the 'Inventory-led model' the stock of goods is with the company, as own, bought out, or consignment stock, (Gupta & Sharma 2015). As physical possession of goods is with the company the availability, price and delivery are assured. ● Middleware: software that acts as a bridge between an operating system or database and applications, especially on a network. ● Integration patterns: Enterprise integration patterns (EIP) is a catalog of design patterns for developing systems to integrate new and existing software in a business environment.
10.7 Check Your Progress Subjective: 1) What are different types of models in B2B? Explain. 2) What are two main types of business models? Explain. 3) What are the different approaches to middleware? 4) Explain different types of middleware. 5) Explain enterprise application integration briefly. Objective: 1) True/False: In Buyer centric Model big business organisations with high volume purchase capacity create an electronic commerce marketplace. 2) Fill in the gap: Hurwitz's classification system organizes the many types of _____ that are currently available. 3) Complete the line: A pattern is commonly defined as a _____. 4) Short Q/As: What are different purposes of EAI? 5) Short Q/As: What are different types of middleware? References: ● Kalakota, Ravi and Whinston, Andrew B. —Electronic Commerce – A Manager's Guidell, Pearson Education, Inc. ● Rich, Jason R. —Starting an E-Commerce Businessll. IDG Books, Delhi, 2000. ● Samantha Shurety. —E-business with Net Commercell, Addison Wesley, Singapore, 2001. ● Turban et al. —Electronic Commerce: A Managerial Perspectivell, Pearson Education, Inc. ●
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Unit: 11 Web Advertising Structure 11.0 Introduction 11.1 Unit Objectives 11.2 Online/Internet Advertising 11.2.1 Advantages and Disadvantages of Online Advertising 11.2.2 Traditional Versus Internet Advertising 11.2.3 Online Advertisement Types/Techniques 11.3 Business Models Based On Advertising 11.3.1 Internet Advertising Pricing Methods 11.4 Measurement of Effective Online Advertising 11.4.1 Methods of Measuring Ad Visitors 11.5 Unit Summary 11.6 Key Terms 11.7 Check Your Progress 11.0 Introduction Online advertising is an emerging form of advertising which has grown with the rapid development of the Internet and gradually becoming one of the most important advertising mediums. Berthona, Pitt and Watson (1996) mention the Internet as a virtual place where consumers interact with different advertisers. From the Internet, advertisers can sustain and enhance the relationship with customers who come from worldwide, and "represent a remarkable new opportunity for businesses to communicate with new and existing markets in a very integrated way."

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According to Smith and Chaffey(2005), online advertising is “the use of a company web site in conjunction with online promotional techniques such as search engines, banner advertising, direct

email

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and links or services from other web sites to acquire new customers and provide services to existing

customers.”
11.1 Unit Objective This Unit covers the following topics: Web Advertising: o Advantages and Disadvantages of Online Advertising o Traditional Versus Internet Advertising o Online Advertisement Types/Techniques o Business Models Based On Advertising o Internet Advertising Pricing Methods o Measurement of Effective Online Advertising o Methods of Measuring Ad Visitors 11.2 Online/Internet Advertising Online advertising is an emerging form of advertising which has grown with the rapid development of the Internet and gradually becoming one of the most important advertising mediums. Berthona, Pitt and Watson (1996) mention the Internet as a virtual place where consumers interact with different advertisers. From the Internet, advertisers can sustain and enhance the relationship with customers who come from worldwide, and “represent a remarkable new opportunity for businesses to communicate with new and existing markets in a very integrated way.”

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According to Smith and Chaffey(2005), online advertising is “the use of a company web site in conjunction with online promotional techniques such as search engines, banner advertising, direct

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and links or services from other web sites to acquire new customers and provide services to existing

customers.” Online advertising can be a one-to-many or many-to-many model. Compared with traditional advertising, online advertising has the benefit of being interactive. Through this medium consumers are not passive recipients anymore, they become the partners of the advertiser. If they get interested in online advertising, they will read the advertisement carefully, click on the
advertisement, move on to the advertiser's website, and get more information about the product, and even place the order online. Therefore online advertising is better referred to as logical and convincing advertising. Reasons for Advertising on the Internet: ● There are several reasons why companies spend more on internet advertising. ● The use of the internet is growing very rapidly. ● Ads can reach a very large number of potential buyers globally. ● Internet ads are cheaper in comparison to television, radio, or newspaper and can be updated any time with a minimal cost. ● Internet advertising is interactive and targeted to specific groups and/or individuals. ● Increasingly valuable information: With more available information about the product description in online advertising, the decision to purchase on the part of the consumer is easier. Thus more purchases can occur. ● Reduced access fees: Advertisers cover a part of the internet access fees that usually, the user has to pay. These reduced access fees can attract new internet users. ● Increasingly convenient access to information: With the increase in online information, advertisers should get users to their sites quickly by paying more for placement in online periodicals. ● Shorter access times: High bandwidth available to the user provides more time on websites than waiting to access them. Less access time also enables placing complex graphics on websites without requiring additional access time. With more time available to draw user’s attention, advertisers should be willing to pay more per user to place their icons in online periodicals. ● Better measurement of advertising effectiveness: Organizations are willing to pay more if online advertising persuades users to shift a portion of their purchase to the web. However, without determining

advertising rates and the appeal of products, advertisers may not be able to measure advertising effectiveness so as to justify the cost of promoting a website and placing a site-linked icon on an online page. Advertising spending is the amount that advertisers pay to other websites such as periodicals and games to display their icons or product offerings. Though internet advertising is continuously gaining popularity, online publishers need to measure how much money has to be spent on advertising for the following reasons: 1. What advertising expenses need to be counted is not defined clearly. 2. The market is too small to justify the cost of measuring its size. 3. The market is changing too rapidly to develop an effective means of measurement. Researchers indicate that only 10 percent of web surfers currently click on ad banners. As internet advertising rates are usually determined by the size of a site's overall audience, less revenue is expected to generate for websites. 11.2.1 Advantages and Disadvantages of Online Advertising Advantages of the Internet Advertising A number of advantages of the Internet advertising can be cited as depicted in Figure 11.1 and explained as under:
Figure 11.1:

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Advantages of Internet Advertising 1. Target marketing: A major advantage of advertising through

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Web is the ability to target specific groups of individuals with a minimum of waste coverage. Through

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internet, advertisements can be targeted to specific customers as per their age, sex, income, education, hobbies, interests, and geographic locations. 2. Message tailoring: As a result of precise targeting, messages can be designed to appeal to the specific needs and wants of the target audience. The interactive capabilities of the Net make it possible to carry on one-to-one marketing with increased success in both the business and the consumer markets. 3. Interactive capabilities: Because the Internet is interactive, it provides strong potential for increasing customer involvement and satisfaction and almost immediate feedback for buyers and sellers. 4. Information access: Perhaps the greatest advantage of internet advertising is its availability as an information source 24 X 7. Internet users can find a plethora of information about almost any topic of their choice merely by clicking on the ad. They can gather a wealth of information regarding product specifications, costs, purchase information, and so on. Links will direct them to even more information if it is desired. 5. Enhancing client engagement: Marketers aim to interact effectively with their customers and to improve their experience with their brand. This is made possible through interactive internet ads. 6. Sales potential: Internet advertising campaigns focus on growing sales through the brand's website and partner networks. Such campaigns can also simultaneously pursue conversion and branding objectives. The sales potential of this medium is increasing over the years. 7. Creativity-: Creatively designed internet ads can enhance a company's image and positively position the company or organization in the consumer's mind. 8. Exposure: For many smaller companies, with limited budgets, the World Wide Web enables them to gain exposure to potential customers that would have been impossible. For a section of the investment that would be required using traditional media, companies can gain national and even international exposure

on time. 9.

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Stressing brand message: many marketers supplement a traditional ad campaign with a digital one to increase the likelihood that the message will resonate with their audience and add to their brand image. 10. Complements IMC: The net, both complements and is complemented by other IMC media. As such, it serves as a vital link in the integrative process. Disadvantages of Internet Advertising:

While it is a potentially effective medium, the Internet advertising also has its disadvantages as shown in Figure 11.2 and explained as under:
Figure 11.2: Disadvantages of Internet Advertising 1. Measurement problems: One of the greatest disadvantages of the Internet is the lack of reliability of the research numbers generated. A quick review of forecasts, audience profiles, and other statistics offered by research providers will demonstrate a great deal of variance-leading to a serious lack of validity and reliability. 2. Websnarl: At times, downloading information from Internet ads takes a long time. When there are several users, the time increases, and some sites may be inaccessible due to too many visitors. For many users who expect speed, this is a major disadvantage. Broadband is helping to reduce this problem. 3. Clutter: As the number of ads proliferates, the likelihood of one's ad being noticed drops accordingly. The result is that some ads may not get noticed, and some consumers may become irritated by the clutter. 4. Potential for deception: The Centre for Media Education has referred to the Web as "a web of deceit" regarding attempts of advertisers to target children with subtle advertising messages. In addition, data collection
without consumers' knowledge and permission, hackers, and credit card theft are several problems confronting the Internet. 5. Privacy: Like their direct marketing counterparts, Internet marketers must be careful in not impinging upon the privacy of users. 6. Limited production quality: Although it is improving, net advertising does not offer the capabilities of much competitive media from a production standpoint. While the advent of advanced technologies and rich media is narrowing the gap, the net still lags behind some traditional media in this area. 7. Poor reach: While the Internet numbers are growing in leaps and bounds, its reach is still far behind that of television. The majority of people do not have excess use of the internet and are not computer literate. So the medium is not able to reach the masses. 8. Irritation: Numerous studies have reported on the irritating aspects of some Web-tactics. These studies have shown consumers' discontent with clutter, email spam, and pop-ups and pop-unders. These irritating aspects will deter visitors from coming to the websites and looking at internet ads. Overall, the Internet offers marketers some very definite advantages over traditional media. At the same time, disadvantages and limitations render this medium less than a one-stop solution. However, as part of the marketing communications program, the Internet is a very valuable tool. 11.2.2 Traditional Versus Internet Advertising Advertising on television, radio, newspapers, billboards or direct mail is based on large exposure and a particularly wide audience. Internet advertising, on the other hand, is based on relatively few channels that coalesce to bring forth a maximized target customer. The Internet is the world's most powerful media advertising for two main reasons: First, almost every home has continuous access to the Internet. Second, the Internet has a daily audience that is greater than the sum of the entire historical audience of traditional media. The
possibility of reaching a predefined target audience leverages the brand, induces the effectiveness of the website's sales, and conduces the transfer of information to consumers.Internet advertising helps to market products and services through interactive and colourful catalogs and provides the audience with current and available information. It also allows them to make both local and international purchases. Today, there are numerous websites designed to promote sales and to maintain relationships with customers. As opposed to other media tools, a company website can provide more comprehensive information on the product line and can turn directly to the target audience. With this information, the target audience can make the purchasing decision more efficiently.(Luk, Chan and Li (2002). Advertising is an attempt to disseminate information to affect a buyer-seller transaction and to customers to buy a certain product or service. Traditional advertising was impersonal, one-way mass communication or mass marketing whereas the internet has enabled consumers to interact directly with advertisers and advertisements with a click of a mouse on an ad for more information. The internet has provided the sponsors with two-way communication and e-mail capabilities, as well as allowing the sponsors to target specific groups on which they want to spend money from their advertising budget, which is more accurate than the traditional one. One more aspect of the internet is that it enables a truly one-to-one advertisement. These prospects of internet advertisements have attracted the magazines, and newspapers, to float their sites on the web. Online periodicals also have shown interest in including traditional advertisements as well as icons, which display an advertiser's logo and when clicked with a mouse, send a user across the web to the advertiser's website. The web is very different from television: Web is mainly a cognitive medium, whereas television is mainly an emotional medium. This makes television much more suited for the traditional type of advertising which is flashy and promotes superficial qualities of products. While watching television, people approach a vegetable state and the main goal of a commercial is to minimize interaction by

keeping the user's hand off the remote control. As long as the user watches, advertisers can keep them engaged by high production values and a message that says very little besides "we are good." Where television is warm, the web is cold. It is a user-driven experience, where the user is actively engaged in determining where to go next. The user is usually on the web for a purpose and is not likely to be distracted from the goal by an advertisement (one of the main reasons click-through is so low). This active user engagement makes the web more cognitive since the user has to think about what hypertext links to click and how to navigate. This again makes the web less suited for purely emotional advertising. The user is not on the Web to "get an experience" but to get something done. The web is not simply a "customer-oriented" medium; it is a customer-dominated medium. The user owns the "Back" button. Get over it: there is no way of trapping users in an ad if they do not want it. The current slow download times work against emotional advertising. A pure branding message may work when embedded in the high production values of a television commercial that can be viewed without any delay and without any action on the user's part. On the web, everything is slow, and people don't like waiting for a fancy brand message. 11.2.3 Online Advertisement Types/Techniques Following are given different formats of e-advertising. They include sponsorship, keyword linking, commercial sites, pop-up advertising, and banners, e-mailing etc. These varieties of formats are considerably different techniques used for internet advertising. ➢ Sponsors: In recent years, online sponsorships have increased from 24% to 37% of all new means of interactive media. Online sponsors appear on a specific site or a special section on the site in order to give the advertiser visibility for marketing purposes. For example, the logos of Macy's and Pfizer both appear on the official website of the American Heart Association, along with the added text "Macy's and Pfizer are the
proud sponsors of the American Heart Association, for the women campaign Go Red b", Interactive Advertising Bureau (1999).

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Also called advertorials, they try to integrate editorial content and advertising messages. This practice pleases advertisers because it gives them additional exposure and creates the impression that the publication endorses their product. Sponsorships are important on the web because display ads are generally overlooked by users, sponsorships allow great interactivity because many firms build synergistic partnerships to provide useful content. ➢

Sponsored link words: Studies have found that at least half of Internet surfers use search engines. As a result, an increasing number of advertisers use keywords to ascertain that their messages are brought to the first places in the search results. When the potential customer inserts a specific keyword into the engine search (Google, Yahoo, etc.), the engine scans the entire customer base that pays for those words and provides a list of related sites. Results generally appear at the top or at the side of the search engine and are called sponsored links Overture (2003). Figure 11.3: Sponsored Links
➢ Commercial sites: A commercial site is a website used by companies or economic entities to transmit information about products or services that they are marketing. There is disagreement among marketers whether commercial websites should be considered as advertising, but in recent years there has been a growing consensus that they should. A study conducted by Singh and Dalal (1999) showed that the homepage of commercial sites portrays the same basic features (to inform and to persuade) as do other media networks and should therefore legitimately be considered advertising proper. ➢ Pop-up advertisements: Pop-up advertisements are those advertisement windows that pop up while one is browsing the site. Pop-up advertisement has two subsets: floating advertisements and pop-up advertisements. Floating advertisements appear on the front page of the browser when one switches to another window and then one must wait a specified time interval before the advertisement turns off. A pop-up advertisement opens automatically in a new window once the web page is loaded. The user must open or click on another place in order to bring forward the requested window and not the advertisement. Figure 11.4: Popup Advertisement ➢ Banners: A banner is an advertising sign/film that is part of the web page's tapestry, and when clicked on, links the clicker directly to the advertiser's chosen website. Such advertisements are usually placed at the top of the page, at the margins, or at the bottom. That way, they do not interfere with the activity of the surfers. Steven, Hairong, and Joo-

Hyun (2002). The banner represents the largest share of online advertising and all advertising agencies use it. The sites that are selected for banner advertising are generally sites with a large number of visitors. Two types of banner advertising can be distinguished: a dynamic commercial and a static advertisement. Static advertisements are interactive but with no movements or font exchanges. Dynamic commercials, on the other hand, are more experiential and so producers can benefit from the use of animation, music, color, and motion. Figure 11.5: Banner Advertisement As mentioned above, the banner is located mostly on the margins of the site so it does not interfere with users' activities. The user does not have to strain to avoid a banner advertisement, and if they would like to receive more information about the product, they can click on the banner and go to the selected site, Ramaraj and Suzanna (2003). The main difference between traditional advertisement and banner advertisement is that a banner does not fully occupy the screen and forces the viewer to sit through the ad (as it does on television, e.g). Another study found that the cost of banner advertisement is negligible, Ronald and Barbara (2002). Because the banner already consists of text, images, and music, and often so in a complicated manner, a website that is complicated still will most likely reduce the effectiveness of the ad, and spur negative attitudes on behalf of the viewers. In another research published on Online advertising by Gaurav and Surender (2013) counts six formats of
advertisement. They include floating ads, Expanding ads, Wallpaper ads, Trick Banner, Pop-up, Pop-under, and Banners. - Floating ad: A floating ad is a type of rich media Web advertisement that appears uninitiated, superimposed over a user-requested page, and disappears or becomes unobtrusive after a specific time period (typically 5-30 seconds). The most basic floating ads simply appear over the Web page, either full screen or in a smaller rectangular window. They may or may not provide a means of escape, such as a close button. More sophisticated versions can come in any shape or size and include sound, animation, and interactive components. - Expanding ads: These are ads that expand when users click on them. The ads do not expand just from mousing over hyperlinks, which is a technique used by some other advertisers. They often take a long time to download, which in turn can negatively impact the visitor's experience on that page. Polite ad formats were developed to address this challenge by enabling advertisers to serve larger file formats without disturbing the load time for the rest of the images on the page. A polite ad format is loaded in two phases: Phase One: The initial load is a compact image or SWF file that is smaller in size, so there is no delay in loading other contents on the page. This could be the first few frames of the ad, or a teaser. Phase Two: The main load is the full version of the ad. The full ad can have a larger file size. It is loaded only after the whole web page has finished loading into the visitor's browser. - Wallpaper ads: An ad that

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changes the background of the page being viewed. - Trick banner: A banner ad that

attempts to trick people into clicking, often by imitating an operating system message. -

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Pop-up: A new window that opens in front of the current one, displaying an advertisement, or entire webpage. - Pop-under: Similar to a Pop-Up except that the window is loaded or sent behind the current window so that the user does not see it until they close one or more active windows. ➢

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E-mail advertising: It is one of the least expensive types of online advertising. It is just a few sentences of text embedded in the firm's content. Advertisers purchase space in the email sponsored by others. They generally prefer sending

email newsletters to them informing

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them about the product. It is one of the oldest methods still used. This makes it much simpler to reach an audience that wants to read the email with their website content information included.

Figure 11.6: Email Advertising ➢

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Contextual ads: Ad servers, such as Facebook or Google's double click, maintain an inventory of ads from clients and serve them into websites as appropriate users are viewing particular pages. For example, a user searches for fashion garments on an electronic retail site that works with double click, users might get the ads for fashion garments on their email page. This is called offering specific ad targeting based on profile information. This is good for micro-segmentation for marketers and good for users who receive relevant ads at the precise moment they want information. This process is also the basis for Google's AdSense program, where online marketers can bid for keywords and have their ads appear on Google search engine result pages or websites allowing them. This makes contextual ads, the largest category of online advertising included in the category of keyword search. ➢

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Social Network Advertising: Social network advertising is a form of online advertising found on various social networking sites such as Facebook, Instagram, Twitter, etc. Advertising on such networks can take the form of direct display ads posted on social networks. Facebook and Instagram do have its advantages as it uses an advertising system that is very simple to implement and offers a wide scope of coverage. Only Facebook and Instagram users that are within the specific demographic selected will be able to see the advertisement. This helps to narrow down the specific target audience, who will be interested in advertisements and helps marketers in not wasting their money on people who are not going to be interested in what their website has to offer. ➢

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Mobile advertising- As we all know, smartphones and cell phones are acquiring high penetration rates. Mobile internet usage is growing day by day. More and more people are accessing

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internet through their mobile devices. In order to take advantage of this popular medium, advertisers can use various formats available to them for mobile advertising, such as display ads of banners, short message service(SMS), video ads, voice ads, etc. ➢

Affiliate Marketing: Whether it is for physical products or in digital information products like e-books and other courses, affiliate marketing is a great form of online advertising. In this case, marketers affiliate with other websites and promote their goods from there. The major advantage is that they don't actually have to pay their affiliates a commission until the sale is made. If marketers succeed in promoting their affiliate program in the appropriate marketplaces, then these affiliates can do

most of the legwork for their associates like using pay-per-click advertising and ultimately driving traffic to their product in a number of ways. ➢ Pay-per-click (PPC): Advertising Pay-per-click advertising is a new form of advertising online. In this case, a relevant text ad with a link to a company page is displayed when the user types in a specific phrase at search engines. A series of text ads usually labeled as 'sponsored links' are displayed on the right-hand side of the search engines pages. Unlike conventional advertising, an advertiser doesn't pay when the ad is displayed, they only pay when the ad is clicked on which then leads to a visit to the advertiser's website- that is why this is called pay per click. Most clicks result in a visit to the site, although there may be small attrition that cannot be controlled but marketers have to be aware of it. Pay-per-click advertising is an excellent alternative for companies who have the financial resources and can make an investment in order to bring targeted traffic to their websites. Like SEO traffic, Google AdWords is considered targeted because people are actually typing in keyword phrases that are relevant to the products and services they are searching for before clicking on their advertisement. This can bring a flood of traffic to the online business very quickly, and this is an excellent choice as long as marketers are able to turn it into profit. 11.3 Business Models Based On Advertising Advertising Business Models on the Internet or payments methods for advertising on the Internet or on the web are ways of funding advertising on the Internet, respectively for what the advertiser pays (PPx means Pay-Per-x) - how the price for advertising is calculated and how the income from advertising for an advertising agency is calculated. Business models for Internet Advertising have their own characteristics due to the characteristics of websites (traffic and visitor behavior is measurable).

➢ Display Advertising - In this model, advertisers pay for ad impressions on the website. A number of impressions are derived from the number of website impressions where the banner is located. Price is calculated either for each view (CPI Cost per Impression) or for every thousand impressions (CPM Cost per Mille or CPT Cost per Thousand). There are two basic methods for calculating rates for this model: - PPI (Pay per Impression) - in this model it is paid for the impression - PPV (Pay per View) - in this model it is paid for a particular website view ➢ Payment for activity - in this model, the advertiser pays for an activity of potential customers. Price for the advertiser is calculated based on the number of actions (clicks or other required activities) of website visitors. Price is calculated for made click (CPC Cost Per Click), action, or commission (CPA Cost Per Acquisition / Action) - a provider of the advertising gets money at the moment when a visitor clicks on the advertising and on the following displayed website will do pre-specified action. - PPC (Pay Per Click) - in this model it is paid according to the number of clicks on the ad banner - PPA (Pay per Action) - in this model it is paid for example, for the new user registration, making an order, leaving a comment, etc. ➢ Affiliate marketing or Affiliate programs - in this model it is paid after the order (purchase) made by the customer, i.e. not for banner placement. It includes the following business models: - PPS (Pay Per Sale) - PPL (Pay Per Lead) - PPI (Pay Per Install) ➢ Payment for advertising time - in this model it is paid for the time of the advertising publication. It is the closest to the conventional model of advertising space as we know for the real world - that is, the rent of advertising space. The price for the publication of an ad banner is set over a time (usually week or month) during which the banner is published, regardless of how many visitors actually see the banner or how many times click on it. Price for advertising space is determined by the average visitor on the website where the ad is published, by the attractiveness, and by the exact location of the banner on the website. Use of the business models on the Internet in practice: Business models determine the method of calculating prices. Most models are dependent on technical equipment - i.e., the visitor must have an internet browser and the provider must have an application (so-called advertising system) that can evaluate it and calculate it. 11.3.1 Internet Advertising Pricing Methods Following are given different types of advertising models and their pricing methods. ➢ CPC (Cost per Click) or Pay per click (PPC): Pay per click (PPC) is an advertising model used on websites, advertising networks, and search engines where advertisers do not actually pay for the listing, but only pay when a user actually clicks on an ad to visit the advertiser’s website. This system allows advertising specialists to refine searches and gain information about their market. Under the Pay per click pricing system, advertisers pay for the right to be listed under a series of target-rich keywords (which can be words or phrases and can include product model numbers) having direct relevant traffic to their website such that they believe their target market would type in the search bar when they are looking for a product or service and pay only when someone clicks on their listing which links directly to their website. When a user types a keyword query matching the advertiser’s keyword list, the advertiser’s ad may appear on the search results page. These ads are called “sponsored links” or “sponsored ads” and appear next to, and sometimes, above the

natural or organic results on the page. Pay-per-click ads may also appear on content network websites. In this case, ad networks such as Google Ad-sense and Yahoo! Publisher Network attempt to provide ads that are relevant to the content of the page where they appear, and no search function is involved. While many companies exist in this space, Google Ad Words, Yahoo! Search Marketing, and MSN ad Center are the largest network operators. Depending on the search engine, minimum prices per click start at US$0.01 (up to US$0.50). Very popular search terms can cost much more on popular engines. Arguably this advertising model may be open to abuse through click fraud, although Google and other search engines have implemented automated systems to guard against this. PPC engines can be categorized into two major categories "Keyword" or sponsored match and "Content Match" Sponsored match displays listing on the search engine whereas content match features ads on publisher sites and in newsletters and emails. There are other types of PPC engines that deal with Products and/or services. Search engine companies may fall into more than one category. More models are continually evolving. Pay-per-click programs do not generate any revenue solely from traffic for a site that displays the ad. Revenue is generated only when a user clicks on the ad itself. When a user searches for a particular word or phrase, the list of advertiser links appears in order of the amount bid. Keywords, also referred to as search terms, are the very heart of pay-per-click advertising. The terms are guarded as highly valued trade secrets by the advertisers, and many firms offer software or services to help advertisers develop keyword strategies. Content Match will distribute the keyword ad to the search engine's partner sites and/or publishers that have distribution agreements with the search engine company. "Product" engines let advertisers provide "feeds" of their product databases and when users search for a product, the links to the different
advertisers for that particular product appear, giving more prominence to advertisers who pay more, but letting the user sort by price to see the lowest priced product and then click on it to buy. These engines are also called Product comparison engines or Price comparison engines. Some Online Comparison Shopping engines such as Shopping.com use a PPC model and have a defined rate card whereas others such as Froogle (also known as Google Product Search) do not charge any type of fee for the listing but still require an active product feed to function. Noteworthy PPC Product search engines include Shopzilla, Nex Tag, Shopping.com, and Pricegrabber.com. "Service" engines let advertisers provide feeds of their service databases and when users search for a service offering links to advertisers for that particular service appear, giving prominence to advertisers who pay more, but letting users sort their results by price or other methods. Some Product PPCs have expanded into the service space while other service engines operate in specific verticals. Noteworthy PPC services include Nex-Tag, Side-Step, and Trip-Advisor. Cost-per-click (CPC) advertising charges advertisers only when someone clicks on the ad. This model corrects one of the major issues with the CPM model, where advertisers are charged, regardless of how many people click on the ad. That doesn't mean the CPC model is perfect, in search advertising, keywords have become very expensive (and prices are steadily rising). The most expensive keywords belong to industries such as finance, insurance, and professional services. For example, a single click on a search ad for the keyword, Insurance, costs just under $55, however, having targeted keywords to bid on will lower your cost per click substantially. While CPC advertising guarantees clicks, there still are some issues other than expensive keywords. [It doesn't guarantee clicks] You get charged for errant clicks that do not result in a lead or customer action, but the risk of paying for nothing is lower than it is for
the CPM model. The CPC model is commonly used for sponsored social media posts and display ads on web pages. ➢ Pay-per-call: In February 1998, Jeffrey Brewer of Goto.com, a 25 employee startup company (later Overture, now part of Yahoo!), presented a PPC search engine proof-of-concept to the TED8 conference in California, which was followed by the PPC advertising system. Similar to pay per click, pay per call is a business model for ad listings in search engines and directories that allows publishers to charge local advertisers on a per-call basis for each lead (call) they generate. The term "pay per call" is sometimes confused with "click to call". Click-to-call, along with call tracking, is a technology that enables the "pay-per-call" business model. Pay-per-call is not just restricted to local advertisers. Many of the pay-per-call search engines allow advertisers with a national presence to create ads with local telephone numbers. ➢ CPA (Cost per Action or Cost per Acquisition)/PPA (Pay per Action or Acquisition): This method is performance-based and is common in the affiliate marketing sector of the business. In this payment scheme, the publisher takes all the risk of running the ad, and the advertiser pays only for the number of users who complete a transaction, such as a purchase, filling out a form, creating an account, or signing up for a newsletter. This is the best type of rate to pay for banner advertisements and the worst type of rate to charge. CPA is considered the optimal form of buying online advertising from a direct response advertiser's point of view. An advertiser only pays for the ad when an action has occurred. An action can be a product being purchased, a form being filled, etc. (The desired action to be performed is determined by the advertiser.) Google has incorporated this model into their Google AdSense offering while eBay has recently announced similar pricing called Ad Context. The CPA can be determined by different factors, depending on where the online advertising inventory is being purchased. This compensation

model is very popular with online services from Internet service providers, cell phone providers, banks (loans, mortgages, credit cards), and subscription services. CPA is the second most used compensation model after CPS. Also common, CPO (Cost per Order) advertising is based on each time an order is transacted. Cost per Conversion Describes the cost of acquiring a customer, typically calculated by dividing the total cost of an ad campaign by the number of conversions. The definition of "Conversion" varies depending on the situation: it is sometimes considered to be a lead, a sale, or a purchase. CPV (Cost per Visitor) is where advertisers pay for the delivery of a Targeted Visitor to the advertiser's website. Cost per Acquisition has to do with the fact that most CPA offers by advertisers are about acquiring something (mostly new customers, prospects, or leads). Using the term "Cost per Acquisition" instead of "Cost per Action" is more specific since "Cost per Acquisition" is included in "Cost per Action", but not all "Cost per Action" offers can be referred to as "Cost per Acquisition". ➢ Cost Per Lead: CPL (Cost per Lead) advertising is identical to CPA advertising and is based on the user completing a form, registering for a newsletter, or some other action that the merchant feels will lead to a sale. Cost-per-lead (CPL) pricing models are the most advertiser-friendly pricing models. In the CPL model, advertisers only pay for every qualified lead. This model eliminates the possibility of paying for accidental clicks and views. To qualify as a lead, someone has to explicitly fill out a form on the advertiser's website after clicking the ad (usually to provide contact information.) CPL advertising allows advertisers to generate guaranteed returns from their online advertising budget. In 2008, the Obama campaign used CPL advertising to build email lists. A lead was only considered qualified if they signed up for an e-Newsletter, making the campaign very cost effective. CPL models will increase the cost-per-lead depending on the complexity of the form that the user needs to fill out. The more qualified a lead is, the more expensive they will be. That usually means that the more information the form requires, the more expensive the lead will be. ➢ VPA (Value per Action): Value per Action (VPA) refers to an online marketing business model similar to the Cost per Action (CPA) model. While Cost per Action provides a low-risk arrangement in which the seller only pays an advertising fee when a consumer takes action (such as purchasing their product) Value per Action extends that model to add revenue sharing with the consumer. Using the VPA model, sellers don't incur advertising/marketing costs until a sale takes place, and can increase the likelihood of a sale by increasing the advertising budget. Because the advertising budget is shared between the marketer and the consumer, the amount of the advertising budget becomes a direct incentive to the consumer. Two sellers may offer the same product at the same price, but provide different incentives to consumers through advertising expenditures. With the addition of transparent revenue sharing to the CPA model, VPA becomes a consumer-friendly approach in which the seller's advertising dollars provide a direct benefit to the consumer effectively driving down the net price. Placed in a comparison-shopping marketplace, the competition between sellers to provide better revenue provides additional downward pressure to the net price paid by consumers. ➢ E-CPA (Effective cost per action): A related term, e-CPA or effective Cost per Action, is used to measure the effectiveness of advertising inventory purchased (by the advertiser) via a CPC, CPM, or CPT basis. eCPA is used to measure the effectiveness of advertising inventory purchased (by the advertiser) via a CPC, CPM, or CPT basis. In other words, the eCPA tells the advertiser what they would have paid if they purchased the advertising inventory on a CPA basis (instead of a CPC, CPM, or CPT basis).

➢ CPI (Cost per Impression) / PPI (Pay per Impression): Cost per Impression is a phrase often used in online advertising and marketing related to web traffic. It is used for measuring the worth and cost of a specific e-marketing campaign. This technique is applied with web banners, text links, email spam, and opt-in email advertising, although opt-in email advertising is more commonly charged on a Cost per Action (CPA) basis. Cost per Impression as a method of monetizing advertising impressions refers to the cost paid per 1,000 impressions of the ad unit and does not factor in any user interaction or response. The Cost per Impression is often abbreviated to CPM. ➢ CPM (Cost per Thousand Impressions): In this case, where advertisers pay for exposure of their message to a specific audience. CPM costs are priced per thousand. The M in the acronym is the Roman numeral for one thousand. For example, if a website sells banner ads for a $15 CPM that means it costs $15 to show the banner on 1000 page views. Or in other words, CPI is $0,015. The cost-per-thousand (CPM) model is the most common pricing model for video advertising. Display advertising also commonly uses the CPM model, but display ads are starting to move towards other pricing models, such as cost-per-lead (CPL) or cost-per-action (CPA). The CPM pricing model sets a flat rate for every 1000 views an ad gets. One of the major issues with this pricing model is that advertisers are charged regardless of whether anyone clicks their ad. Youtube, for example, bills advertisers on a CPM basis. Advertisers are charged a flat rate per thousand views that depend on a variety of factors. What content is running alongside the ad? What format is the ad? How long is the ad? Is the ad skippable? Are there other advertisers bidding for that ad space? Depending on the answer to those questions, advertising costs on Youtube can vary wildly. There is one main question advertisers need to ask themselves when considering a CPM digital

advertising campaign. “Am I willing to pay for just impressions, no actions or clicks?” If not, you might want to consider another pricing model. ➢ Shared CPM: Shared CPM is a pricing model in which two or more advertisers share the same ad space for the duration of a single impression (or page view) in order to save CPM costs. Publishers offering a shared CPM pricing model generally offer a discount to compensate for the reduced exposure received by the advertisers that opt to share online ad space in this way. Inspired by the rotating billboards of outdoor advertising, the shared CPM pricing model can be implemented with either refresh scripts (client-side JavaScript) or specialized rich media ad units. Publishers that opt to offer a shared CPM pricing model with their existing ad management platforms must employ additional tracking methods to ensure accurate impression counting and separate click-through tracking for each advertiser that opts to share particular ad space with one or more other advertisers. ➢ eCPM (Effective Cost Per Mile): Effective cost per mile (e-CPM) is used to measure the effectiveness of inventory being sold via a CPA, CPC, or CPM basis. ➢ CTR (Click-Through-Rate): CTR calculated as the ratio of actual clicks on an interactive ad as a fraction of the total impressions is a way of measuring the success of an online advertising campaign. A CTR is obtained by dividing the number of users who clicked on an ad on a web page by the number of times the ad was delivered (impressions). For example, if one banner ad was delivered 100 times (impressions delivered) and 1 person clicked on it (clicks recorded), then the resulting CTR would be 1%. Banner ad click-through rates have fallen over time, often measuring significantly less than 1%. By selecting an appropriate advertising site with high affinity (e.g. a movie magazine for a movie advertisement), the same banner can achieve a substantially higher
click-through rate. Personalized ads, unusual formats, and more intrusive ads typically have higher click-through rates than standard banner ads. CTR is most commonly defined as the number of clicks divided by a number of impressions and generally not in terms of the number of persons who clicked. This is an important difference because if one person clicks 10 times on the same advertisement instead of once then the CTR would increase in the earlier definition but would stay the same in terms of the latter definition. ➢ ROAS (Return on Ad Spend): This is a measure of direct yield on advertising. It refers to total revenue less the cost of audience acquisition directly related to the revenue. ➢ PPS (Pay-per-sale) or CPS (Cost-Per-Sale): Here the advertiser pays the publisher a percentage (%) of the order amount (sale or revenue) that was created by a customer who was referred by the publisher. This model is by far the most common compensation model used by online retailers that have an affiliate program. This form of compensation is also referred to as Revenue sharing. ➢ PPI (Pay-per-install): Advertiser pays publisher in commission for every install that was made by the user who downloaded a usually free application to which was bundled special code containing AdWare application. Users are prompted first if they really want to download and install this software. Pay per Install is included in the definition for Pay per action (like Cost-per-acquisition), but its relationship to how AdWare like Zango is distributed made the use of this term versus Pay per action more popular to distinguish it from other CPA offers that pay for software downloads. The term Pay per install is not being used beyond the download of AdWare.
11.4 Measurement of Effective Online Advertising There is an old saying in advertising that “I know half my advertising dollars are wasted - I just don’t know which half!” But, on the web, advertisers do know, since they can track how many site visitors come from which ads. As a matter of fact, advertisers can continue tracking the users as some of them change from site tourists into paying customers. Only loyal users have lasting value for the site. Measurement of online advertising effectiveness is presently at a fairly immature state. Determining the objectivity of the amount spent on a specific ad in traditional advertising is very difficult in terms of the sales of products or services and profits generated by it. Internet technology makes it easier to justify the cost of advertising as advertisers can get information in the form of electronic trails about where the uses came from, what they did at a site, and whether they purchased a product from the website. This electronic trail may enable advertisers to identify and correct problems with their advertising. Web advertising should be valued in terms of the value of the business it creates from the new users it attracts to the site. This value is usually very small, which is why web advertising works poorly and (while not completely useless) will be one of the smallest contributors to the future of the Web. In theory, the main benefit of the web as an advertising medium is its measurability. Unlike a billboard, it is possible to measure when someone has seen an ad. Unlike television, it is possible to tell when someone has bought a product as a result of seeing the ad. Real-life is harder than theory. It is not easy to measure web advertising and there is no single solution to the problem. Each step of the web advertising process requires different measurement tools and techniques and there are challenges at every step. Sampling tools can report on measures of branding, such as unduplicated reach and frequency of exposure. Survey-based planning tools can also report on users’ subjective experience of the campaign, measuring recall and brand attitudes. There is a longstanding religious debate about the importance of branding vs. direct marketing in web advertising. While branding is part of the

goal of web advertising, direct marketing is a larger part. Web marketers want to increase and improve customers' perception of their company, but most marketers evaluate web advertising by its effectiveness at driving traffic and generating customers. Ad networks provide post-click tracking services which let an advertiser see whether a customer has clicked through from an ad and then whether that customer has bought or registered. These services typically use single-pixel GIFs that report back to the ad server when a customer clicks through to a site, when they reach key pages, and when they have completed a purchase. Information about the purchase is passed back through the URL of the buy page. Using cookies, these systems can even tell when the same visitor has returned to the site several days later to buy. The reports from these network-based systems allow advertisers to compare results for different pieces of a campaign - by ad, or by site, or by the target audience. Advertisers can assess performance by a variety of measures, including impressions, clickthroughs, and registration or sales conversions. When cost information is plugged in, the system can calculate the ROI for an advertising campaign. Reporting systems provided by advertising networks have an important advantage in that they give advertisers pinpoint control over the ad. An advertiser can look at a campaign report, see that a particular banner or site is performing miserably, and change the ad or the allocation. However, this approach also has weaknesses. Because these reporting systems often are not tied directly into the site's commerce server, they are limited in the amount of information they can gather about the transaction. For example, they might pick up the amount of the sale, but not the number of products purchased, or the type of products. Also, without talking to the site's registration system, it is harder for a network-based system to track unique visitors when they return to a site. Moreover, reporting systems that are based on an advertising server only track the effectiveness of ads, they don't pick up referrals from affiliate programs,
keyword searches, partner site referrals, and other parts of an interactive marketing strategy. The same limitation is true of affiliate reporting services. Measurement systems based on a website, on the other hand, are able to track customers' entry to the site from many sources: advertisements and affiliates, search terms, and partner links. Website-based measurement systems are able to tie into the site's commerce server and report directly on the amounts and types of products purchased. Site-based tools can tie into the site's user-tracking and registration database, reporting when a customer buys days or weeks after visiting the first time. Site- based tools can provide customer segmentation capability, enabling marketers to evaluate the results of ads based on criteria that are meaningful to the site. Finally, and most important in the long-run, site-based marketing data can be analyzed along with offline marketing and cost data within the company to provide a picture of the lifetime value of the customer. Ultimately, this is the critical calculation that tells the business whether the customer has been acquired profitably. The chief drawback of site-based measurement systems is that they don't give advertisers a chance to adjust campaigns in real-time. 11.4.1 Methods of Measuring Ad Visitors There are many ways that ad traffic, effectiveness, and exposure are calculated. Here are some of the most popular methods. Click-through rate: The percentage of viewers who clicked on a particular ad versus the total number of viewers who were exposed to that ad. It measures the number of immediate responses generated by an ad. Conversion rate: The percentage of viewers who take the desired action, including service subscriptions, downloads, registrations, or sales. It entails any action other than browsing. Hits: Total number of requests for delivery of a file on a server. It is an unreliable way to measure ad-generated traffic. When a user requests a page,
that web page along with any graphic or textual elements are each counted as a hit. Impression: The number of times a specific ad is downloaded, and therefore the number of exposures. The impression count does not count a user's repeat visits during the same session. Page View: A record of each time a page is requested by a viewer. It is similar to a hit, but additional elements of a page are not counted separately. A high page view rate is good for Web sites that rely on advertising as a major source of revenue. Unique Visitors: the number of separate individuals who visit a site within a specific time period, regardless of repeat visitors. This rate is usually calculated over a 30-day span. Unique visitors are determined by the user's IP address and cookies. 11.3 Unit Summary Online advertising is an emerging form of advertising which has grown with the rapid development of the Internet and gradually becoming one of the most important advertising mediums. Berthona, Pitt and Watson (1996) mention the Internet as a virtual place where consumers interact with different advertisers. From the Internet, advertisers can sustain and enhance the relationship with customers who come from worldwide, and "represent a remarkable new opportunity for businesses to communicate with new and existing markets in a very integrated way." Internet advertising has a number of advantages and disadvantages. Advertising on television, radio, newspapers, billboards or direct mail is based on large exposure and a particularly wide audience. Internet advertising, on the other hand, is based on relatively few channels that coalesce to bring forth a maximized target customer. Advertising Business Models on the Internet or payments methods for advertising on the Internet or on the web are ways of funding advertising on the Internet, respectively for what the advertiser pays (PPx means Pay-Per-x) -

how the price for advertising is calculated and how the income from advertising for an advertising agency is calculated. Business models for Internet Advertising have their own characteristics due to the characteristics of websites (traffic and visitor behavior is measurable). 11.4 Key Terms ● Commercial sites: A commercial site is a website used by companies or economic entities to transmit information about products or services that they are marketing. ● Pop-up advertisements: Pop-up advertisements are those advertisement windows that pop up while one is browsing the site. ● Banners: A banner is an advertising sign/film that is part of the web page's tapestry, and when clicked on, links the clicker directly to the advertiser's chosen website. ● Floating ad: A floating ad is a type of rich media Web advertisement that appears uninitiated, superimposed over a user-requested page, and disappears or becomes unobtrusive after a specific time period (typically 5-30 seconds). ● Affiliate Marketing: In this marketers affiliate with other websites and promote their goods from there. ● Cost per click, or CPC, is the amount you pay for each click on one of your PPC ads in platforms such as Google AdWords or Bing Ads. ● Pay-per-call is an advertising model in which the rate paid by the advertiser is determined by the number of telephone calls made by viewers of an ad. Pay Per Call providers charge per call, per impression or per conversion. ● Cost per action (CPA) is calculated as the cost divided by the number of actions being measured. So for example, if the spend is $150 on a campaign and the actions attributed to this campaign is 10, this would give the campaign a cost per action of $15.

● Cost per lead, often abbreviated as CPL, is an online advertising pricing model, where the advertiser pays for an explicit sign-up from a consumer interested in the advertiser's offer. It is also commonly called online lead generation. ● Cost per impression (CPI) refers to the rate that an advertiser has agreed to pay per 1,000 views of a particular advertisement. A website that serves ads based on CPI doesn't need the user to click on the ad – each appearance of the ad in front of a user counts as one impression. ● VPA (Value per Action): Value per Action (VPA) refers to an online marketing business model similar to the Cost per Action (CPA) model. While Cost per Action provides a low-risk arrangement in which the seller only pays an advertising fee when a consumer takes action (such as purchasing their product) Value per Action extends that model to add revenue sharing with the consumer. ● Cost per Impression is a phrase often used in online advertising and marketing related to web traffic. It is used for measuring the worth and cost of a specific e-marketing campaign. ● CTR (Click-Through-Rate): CTR calculated as the ratio of actual clicks on an interactive ad as a fraction of the total impressions is a way of measuring the success of an online advertising campaign. ● Cost per thousand (CPM), also called cost per mille, is a marketing term used to denote the price of 1,000 advertisement impressions on one web page. 11.5 Check Your Progress Subjective: 1) What is internet advertising and discuss its various advantages and disadvantages? 2) Explain the difference between traditional and internet advertising. 3) What are different types or techniques of internet advertising?

4) Business models for Internet Advertising have their own characteristics due to the characteristics of websites, explain. 5) What are different methods of measuring ad visitors? 6) What are different types of advertising models and their pricing methods? Objective: 1) True/False: CPV (Cost per Visitor) is where advertisers pay for the delivery of a Targeted Visitor to the advertiser's website. 2) Complete the line: In PPI (Pay-per-install), advertiser pays publisher in commission for every _____. 3) Fill in the gap: Sponsorships advertising model is also called _____, 4) Short Q/A: Give pricing method of the advertising model Cost Per Activity (CPA)? 5) Short Q/A: What is a pop-up advertisement? References: ● Article: Types of Online Advertisements and Online Buyers Author : Ms.C.Rajalakshmi, Research Scholar, Anna University, Assistant Professor, Adhiparasakthi Engineering College, Melmaruvathur; Co – author: Dr.P.Uma Rani, Supervisor Professor, Dept of Management Studies, Dr.M.G.R Educational & Research ● "16 Business Models Based on Advertising." National Research Council and Institute of Medicine. 2002. Technical, Business, and Legal Dimensions of Protecting Children from Pornography on the Internet: Proceedings of a Workshop. Washington, DC: The National Academies Press. doi: 10.17226/10324.

Unit: 12 Web Publishing Structure 12.0 Introduction 12.1 Unit Objectives 12.2 Web Publishing 12.2.1 The Products of Online Publishing 12.2.2 Reasons for Online Publishing 12.2.3 Issues of Online Publishing 12.2.4 Guidelines 12.3 Online Publishing Strategies 12.4 Online Publishing Approaches 12.5 Online Publication Specifications 12.6 Website Development Methodologies 12.7 Logic Design of the User Interface 12.7.1 Best Practices for Designing an Interface 12.8 Unit Summary 12.9 Key Terms 12.10 Check Your Progress 12.0 Introduction Online publishing is continuously attracting both commercial and corporate publishers through new interactive technologies because application of these technologies captures the imagination of both content providers and the public. Earlier, business was not much benefited by online publishing; the reasons being online publishers were not experienced selling and understanding of business to them was also very poor. Businesses were attracted towards the web but failed to define even business purposes driving their online presence. Then publishers realized that mere presence on the web can not guarantee success. Exciting technology without relevant content can not drive profits or

capture market share. More attention is needed towards tricky delivering of content for successful online publishing. 12.1 Unit Objective This Unit covers the following topics: Web publishing: • The Products of Online Publishing • Reasons for Online Publishing • Issues of Online Publishing • Guidelines • Online Publishing Strategies • Online Publishing Approaches • Online Publication Specifications • Website Development Methodologies • Logic Design of the User Interface • Best Practices for Designing an Interface 12.2 Web Publishing Online publishing is continuously attracting both commercial and corporate publishers through new interactive technologies because the application of these technologies captures the imagination of both content providers and the public. Earlier, business was not much benefited by online publishing; the reasons being online publishers were not experienced with selling and understanding of business to them was also very poor. Businesses were attracted to the web but failed to define even business purposes driving their online presence. Then publishers realized that mere presence on the web can not guarantee success. Exciting technology without relevant content can not drive profits or capture market share. More attention is needed towards the tricky delivery of content for successful online publishing.

Business organizations are now investing huge amounts in people, equipment, marketing, brand building, and content to find the best way to capture the consumers' attention and in search of a business model that could make these firms profitable sooner than later but have not been able to figure out which business model works best for money-making. However, new models are being developed by online publishers to convince customers of justified charges of unique and valuable information, programs, and services offered to them. As more and more firms begin to offer online content, they are forced to adjust to new customer attitudes regarding pricing. In the offline business, publishers charge large advertising fees from the firms by offering mass markets for delivering the message. News, information, and entertainment are expected to be almost free for the general public, and that advertisers will pay the bill. This concept is not practical in an online marketplace where instead of mass marketing, one-to-one marketing is considered. Customers select their information and delivery methods but are not eager to pay for online content. The size of customers and their habits are nearly impossible to figure out. Even new advertising models can not be claimed to draw profits on the internet. While ad revenues are not coming close to covering expenses, now they could grow substantially in coming years as the traffic increases and brand names become established. Brand development is important because every time a user sits in front of a web browser needs to make a decision about where to go. The better the brand, the more likely it is to pop up in the consumer's mind. One more important aspect of online publishing relates to digital copyrights. The internet makes it extremely easy to copy, retransmit, and alter works without the permission of the copyright holder. Moreover, the digital world has no internal boundaries, and policing is impossible since the levels of protections and sanctions against infringement vary widely in countries across the globe, which makes the risk even greater. Clearly, without effective protection, publishers are not willing to risk their investment and hard work.

12.2.1 The Products of Online Publishing The web has suffered from the same drawbacks, which beset multimedia publishing in its infancy – a lack of business direction and the hi-jacking of operations by technologies without any business knowledge. It is important that publishers identify the product they are selling and its suitability for online delivery. Electronic goods consist of electronicjournals, magazines and newspapers, electronic books, multimedia CD-ROM, software, computer games, music, and online databases. Digital goods and services are those whose purchase and delivery can only be conducted via electronic channels. Thus electronic publishing products are well suited to this medium of production and delivery. The products most suited to electronic commerce are online databases and electronic journals, magazines, and newspapers as these can be accessed, paid for, and delivered directly to the user's PC. 12.2.2 Reasons for Online Publishing At this moment, it is also necessary to debate on what exactly is meant by online publishing. It is an act of disseminating information. Online publishing can also be viewed as the activity of publishing for sale. Publishers package their products as bundled commodities rather than disjointed information in order to realize revenue from their information. In the late 1960s, the concept of online publishing evolved out of public funding associated with aerospace and medical research programs. Many of the publishers switched from manual typesetting and printing to computer- assisted photocomposition and developed their databases. Earlier photo compositions were very expensive and not able to offer much variety but enabled the creation of a central database from which a series of online services could be provided. Improved communication networks, availability of low-cost terminals, and remote access and dialup database systems were the other technical developments that put a great impact on online publishing.

Online publishing is increasingly popular in works of fiction as well as with scientific articles. Online publishers are able to provide quick gratification for late-night readers, books that customers might not be able to find in standard book retailers, and books by

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new authors that would be unlikely to be profitable for traditional publishers. The

Internet and web recently have brought online publishing from a niche target audience to a mass audience. The reasons for the sudden increase in the interest of publishers, advertisers, and content providers in the web include: 1. Rapid evolution of technology and acceptance of the web at large made it possible to meet time-to-market requirements that were even beyond imagination a few years back. 2. It is not necessary to invest huge amounts in advance for uncertain returns; rather much of the investment in infrastructure has been made by others such as Internet Service Providers (ISPs), hardware companies, and various software developers. 3. It allows publishers to interact with a large number of customers in a mass market by exploring new ways of targeting and reaching customers. 4. As compared to conventional media, publishing and advertising involve less of the egos and financial interests of powerful multiple-system cable television operators, television network, and group broadcasters. 12.2.3 Issues of Online Publishing The publishing industry like many other industries has not escaped the impact of information technology in both the production and distribution of the information it creates. From earliest DTP techniques to the selling of books over the Internet and publishing of electronic journals the publishing industry has readily accepted technological innovation. Many publishers are now ready to embrace the potential of the web as a method of publishing and distribution rather than as a purely marketing tool.

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Although the number of businesses on the internet has grown, many organizations simply

have a web presence and do not make strategic use of the
opportunities the web offers. This lack of progress is probably due to concerns over issues such as security, payment mechanisms, user authorization and misuse of personal data.

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Technologies concerned with authorization include firewalls, password access, smart cards and biometric fingerprinting. However in order to provide secure electronic transactions (SET) encryption technologies are used. Encryption technologies, which are supported by the appropriate legal mechanisms, have the potential to develop electronic commerce

globally. These issues have to be addressed not just for the development of e-commerce within the publishing industry, but also for the development of global electronic commerce. Intellectual property is also a major issue for publishers and authors and in particular copyright. Copyright is initially retained by the author of the work, however it may be sold or a license granted to enable reproduction of the work. Any electronic transaction in the publishing industry must include a mechanism of copyright payment. Electronic commerce allows authors the opportunity to self publish, however only a small portion of authors especially in the academic sector earns enough from books sales alone to generate substantial revenue. It is an area, which is worth some future consideration for commercial publishers as electronic commerce develops. There is another issue of quality especially if the information chain is redefined. The publishing chain at present incorporates a number of quality filters such as copy editors and proofreaders, which may be difficult to apply in the electronic environment. On-line publishing must be able to enforce the same quality control, although referred electronic journals do employ strict refereeing controls. The question of information retrieval is important, as users have to be able to find exactly what they are looking for. Perhaps now is the time to create a central National Internet Library similar to the Library of Congress and British Library where all electronic works can be deposited. Surprisingly, the advertising world has also come under the attention of the publishing community with the fast adoption of the internet and web. Advertising industry

has been relatively untouched by technology. Advertising agencies have been notoriously resistant to change in the past, and their reaction to advertising on interactive media has been no exception. These agencies have to embrace the new media to be relevant to their clients. The technology shift in the publishing world has raised many of the technical and managerial issues that need to be debated for building roadmaps of the future for investors and other interested parties. Technical Issues ● Improvement and enforcement of copyright protection ● Creation of compelling content using the available technology ● The ways to conduct financial transactions for micropayments Management Issues ● Creating organization for online publishing ● Selection of business model to ensure success in different segments of online publishing ● Online customers satisfaction and the ways to keep the customers loyal 12.2.4 Guidelines Below are a miscellaneous collection of guidelines that can be used in preparing online publications. Some of them are purely practical rules, others more philosophical. - Make the page layout simple, nice to look at, and easy to read on a monitor. Spare people from eye strain: use a clear font size and color. - Use graphics to catch the reader's eye and to illustrate an idea or theme in the article. Avoid the clutter of too many graphics. - Don't use frames unless it "really" is the best way to help readers navigate through the site.

- Try to respond to all emails, even if it is a kid in school who is treating the publisher like an information-machine that will feed him data for his report. Even a one-liner can be enough as a polite, humane reply. - Remember that "making money" is not the only way a publication can be valuable to a publisher. There is more to an author's life than royalties. - Register publication with the major search engines. - Use spell-checker. - Test your pages on all the major browsers and platforms. A page may look wonderful on one's computer, yet come across as a mess on someone else's. 12.3 Online Publishing Strategies The internet presents a mode of delivery, which may ultimately challenge the traditional perception of publishing. Publishers have used the web as a marketing tool and not as a method of distribution and selling. Investment has been in developing web sites as an advertising tool and not in the technologies and skills required for on-line distribution and payment of digital goods. Electronic publishing is used to compliment rather than replace traditional print products. However the growing interest in on-line media and the changing role of the end-user means publishers have to address their on-line and electronic publishing strategy if they wish to exploit this area for their enterprises. Following are the online publishing strategies that need to be considered by business firms: Early movers: These are independent publishers who already have many of the necessary resources at hand and are highly skilled with existing access to such key capabilities as direct marketing and order fulfillment. Early movers have the capacity to derive the highest benefits from new media as their learning curves are much shorter than others. Watchers: This category includes large publishing companies that employ scale-sensitive economics. Reduction in cost and widening of distribution is the only parameter to view online publishing as a sufficiently attractive channel for them. Testers: These are multi-category and specialty publishers who are competing successfully in traditional markets, who are uncertain who will win in the online marketplace and who neither need nor want to make a choice now. For them, the online medium appears to be an alternative. They have already in place robust customer franchises and attractive distribution channels. These are the majority of publishers that face either attractiveness and/or skill challenges. Publishers are learning about how the potential opportunities can be grabbed, what online publishing has to offer, how to explore the attractiveness of potential channels and how to build required skills so that they can quickly identify and react to changes with the industry. Content, incentives, service, quality, and price are not enough to compete in the new technological environment. Speed of delivery, bundling of products, and diversity of choice also become critical success factors. New skills such as tailored advertising, order processing and fulfillment, and customer service are also required to be learned to find why people subscribe. 12.4 Online Publishing Approaches Following are the four contrasting content publishing approaches: 1. The Online Archive Approach 2. The New Medium Approach 3. The Publishing Intermediation Approach 4. The Dynamic and Just-in-Time Publishing Approach 1. The Online Archive Approach: This approach includes bibliographic databases and full-text search/retrieval services already existing in digital archive of the corporate publishers, and, to some extent of commercial publishers such as academic or journal publishers that is desired by them to be delivered over the web as well as on paper, CD- ROM, or other media. Library catalogs and bibliographic databases are

the most prevalent example of online archive approach. Traditional card catalogs are being replaced with sophisticated electronic online bibliographic databases in most of the libraries and offering an incredible range of functions. MEDLINE, developed by the National Library of Medicine (NLM) is a bibliographic database that caters to an increasing number of physicians who rely on online medical databases to keep updated with the latest developments and literature. Other medical databases are also available free of charge on the internet. 2. The New Medium Approach: This approach includes real-time news delivery, personalized news delivery, and edutainment. It aims at creating new material for web by the publishers to float their own material considering web as a medium. Commercial print publishers such as magazines view the web as an alternative for their print publications but not as a replacement. Some writers may write for both media, but separate content streams will be developed for each medium. Presently, this approach is facing some technological problems such as formatting on the web and expected to be overcome in the near future through technological advancements. Apart from these technology constraints, the expectations of the web are also different from print media. It requires new contents, written for the web audience, must be created. But as these contents are out, they are no longer owned and there is a loss of intellectual content. So all the publishers try to be the initiator with the most interesting stuff on the web for creating a platform where the web audience can see what the world has to say on a minute-by- minute basis. 3. The Publishing Intermediation Approach: This approach includes online directories, exploits new service opportunities for intermediaries. There is always a need for a good directory to help people locate goods, services, and products. Publishing intermediaries offer ease of operation, speed and detailed information to the customers and so are always in
demand. Yahoo (Yet Another Hierarchical Officious Oracle) created in 1994 by David Filo and Jerry Yang specializes in providing the service and has emerged as a key player. Yahoo was at the first place millions of internet users went when they tried to find their way around the rapidly growing internet. It helps in creating a marketplace for conducting e-commerce through the internet. Customers can find more companies, products, and services on the sprawling network. 4. The Dynamic and Just-in-Time Publishing Approach: In this technological environment, contents can be created in real-time and transmitted to the users' location even in the format according to their tastes and preferences. The elements of these dynamic contents are text, graphics, video, and sound which are stored separately in a database. The content engine recognizes repeat visitors to a site and configures the web pages to match the individual's known preferences. Publishers need not to author and update a large product catalog but create individualized pages for each user browsing the site on the internet. Dynamic publishing can also be seen in the form of just-in-time publishing. As and when the consumers need stories, applets etc. into the computer, get the content flow just-in-time, and then these dynamic contents self-destruct after usage. One question arises how payments are collected on a product by a business operating in the small-amount transaction market. Publishers and developers should be thinking about micropayments which are essential for this marketplace. For low-value payments to work, transaction costs must be very small. These various types of the online publishing approaches have some specifics that need to be discussed. 12.5 Online Publication Specifications ➢ Full-Text and Bibliographic Databases: This is the fastest growing publishing sector of the online publishing industry. Trade publications and news-papers information are stored in these databases. In full-text electronic publishing, several brand names such as LEXIS/NEXIS, DIALOG, NewsNet etc. occupy a position and provide news transcripts, professional journals, magazines etc. online every month. One of the famous full-text databases is LEXIS/NEXIS. LEXIS/NEXIS: The legislation and court proceedings in full-text of U.S. and United Kingdom are stored in the LEXIS which was launched in 1973. It also provides the full-text French law and statutes. The students, large law firms, law libraries, financial institutions, and government agencies use LEXIS. It has become the norm in legal research and students of law are given free subscriptions as an introduction to the service. NEXIS has a broad spectrum of users. News, magazines, newsletters, journals, and other information sources are provided in the form of text by NEXIS to news media and researchers, academic and professionals who are the largest user categories. LEXIS/NEXIS collectively include millions of full text documents ranging from Supreme Court Decisions to international business, scientific and financial information. The usage of LEXIS/NEXIS is growing rapidly among researchers and students who need access to its vast up-to-date database to do research. ➢ Securities and Exchange Commission (SEC) EDGAR Database: It contains the world's most valuable collection of financial data of U.S. companies and provides access to corporate documents such as annual reports to describe financial well-being to the financial and investor community, brokerage houses, law firms, and institutional investors. ➢ Personalized and Customized News: Customers want the personalized electronic news on their specified schedules to access on-demand. This selected information is delivered from a large variety of news and information sources by the service providers in real-time to PCs and workstations through automatic news filtering to the users.

➢ News Delivery as an Important Market: As readership trends are slowly declining and the news industry is moving to decrease its reliance on cash flow from paper-based segments, companies have come to depend more on electronic publishing and news on-demand services. These services combine video, audio, text, and graphics in a format that permits browsing, searching, and user-notification on breaking news. Users are able to retrieve the information they need at any time. To meet the needs of personalization, real time news publishers must understand and gain expertise in the information packaging business, which has traditionally been the purview of the news media. ➢ Business Information and News Delivery: The increasingly competitive industry environment's growth in the amount of available information and requirements to improve the quality and timelines of the information has led the business information service market to undergo significant change. Business information is needed to be more current, timely, and easy to access and use. The decentralization of decision making and accountability has also created a need for the widespread distribution of business information to workers at different levels within the organization. ➢ Edutainment = Education + Entertainment: Edutainment is a combination of entertainment, education, and games that engages users in an interactive learning experience that mixes video, graphics, music, voice narration, and text. Edutainment systems are designed for specific age groups and cover a range of subjects including mathematics, reading, learning, writing, history, and geography. The purpose of these edutainment programs is to make a student active rather than a passive learner. Interestingly, edutainment systems are not so popular. Whereas games such as ID Software's Doom, Doom II, and Heretic are very successful, those were initially distributed on the internet. ➢ Benefits and Opportunities of Online Publishing: Electronic commerce offers benefits to both the publisher and the consumer.

Publishers can develop new and customized products, as well as create new markets. Thus they are able to create new business, reduce costs and increase competition. The consumer benefits from increased choice, ease of access, possible price reductions and a better standard of service. The products identified for successful electronic commerce are journals, magazines, newspapers and on-line databases. Most users subscribe to on-line newspapers and magazines or have them free for charge. In the academic environment on-line electronic journals are available to users via the library OPAC. Electronic journal provision is very costly to academic libraries. Although this is a service appreciated by students and academics the choice is limited and dependent upon the contract negotiated between the publisher and the library. The journal is usually the electronic version of the printed work; therefore convenience is the only benefit. A solution to this problem would be to establish an electronic commerce network for academia managed by the university library. The network could consist of university libraries, publishers and the funding bodies. Users could pay on a pay-per-use basis and the payments could be collected using electronic commerce technology. The premise being that funding is allocated for this purpose. This process would have to incorporate devices for tracking copyright and usage. Many "pure" electronic scholarly journals are now available free of charge on the web, however it is not certain how long this situation can last. These journals provide an excellent medium of communicating scholarly information. Quality is also of a premium as the journals are peer reviewed. Due to the high costs involved most subscribers to on-line databases are large commercial organizations or reference libraries. This eliminates access to smaller firms and individuals who might only require a one-off journal article or report. There are two ways of approaching this problem using electronic commerce technology. Firstly database providers allow customers the option of paying for one-off items without incurring subscription and dial-up charges. By allowing access via the internet database providers could allow individuals to purchase an electronic product using credit or debit card technology or by
allowing them to set up individual accounts using a suitable model. The second method would enable the consumer to go straight to the creator of the product and make the purchase in the same way. By doing so the storage, delivery and distribution elements of the information chain are eliminated. These processes require an appropriate business model, which can accommodate on-line commerce. 12.6 Website Development Methodologies The "Methodology for Web Site Creation" involves various steps of - analysis, planning, content, design, programming, testing, marketing and advertising. ➢ Analysis: Developing a website requires making an analysis. Answering the following question can lead to reaching an effective analysis outcome. - For what website is needed? - What the users on the website are looking for? - What image do you want to project with the Web site to the users? - What interactive services will be integrated through the website? - What resources are available for the development of the website? - How much time should be invested in the development of the website? - What impact will the Web site cause to the users? ➢ Selection of Objectives: All projects must have defined objectives, against which can be measured the effectiveness of the actions developed. Green, Chilcoott, and Flick (2003) called this stage, summary of objectives, which set out three key points for this selection, which are to: - Define the users - What users expect from the visit - What pretends to communicate through the Website We can also name them: user selection, user expectations, and expectations of the organization; It described below:

- User selection: Users or audience refers to that part of the population that is to be achieved or influenced by the website; this is closely linked to the nature of the proposed site. All information obtained will be used to establish part of the: Criteria of content design, Languages, Aesthetics, Among others "The user modeling is based on defining user classes or profiles and like that design to satisfy the own needs of each user group" (Montero, Y. & Martón, F., 2003) - User expectations: The organization may or may not be known to potential users of the site. When considering the launch of a website it is necessary to know to whom it is addressed and what the users could expect visiting it. "Take time to connect with your customers, suppliers, and friends, to figure out how they would do to find your website and what they would like to see in it." (Morris, S. & Dickison, P. 2002) - Organizational expectations: It is vital to establish or fix what results the organization intends to achieve with the creation of the Web site. With that, it seeks to define the purpose of your website and should include aspects ranging from the most general, related to the target audience, to the more specifically related to the organization. Morrin and Dickson (2001) indicate that you must decide if you are looking to the Web sites: - Increase sales - Offer specialized services and expertise - Advertising and sponsorship - Incentives (free products for promotion) - Publicize ➢ Planification phase: Every project has a planning phase. It must define: - What are the technical requirements for this purpose - Who the team members will be - Select the structure
- Plan a well organized site - Perform studies of comparative marketing ➢ Software selection: At this stage of the methodology it seeks to determine the requirements in terms of the software to be used for application development; i.e., : - Operating systems - Server (software) - Web design editors - Programming languages - Animations and other components This definition will depend on many aspects such as the existence of software licenses or hardware and technical resources. ➢ Hardware selection: Before undertaking the development of a Web application, you must determine the: - Hardware requirements of the application - The server equipment - Answer capacity - Terminals - Network requirements if the application must be available on an intranet or extranet In the case that the application will be published on the Internet, the domain should be reserved and locate the hosting service of companies that specialize in this service (Morrison and Dickinson). ➢ Selecting the right team: Part of a Web site planification is to think in terms of teamwork. It is about the set of technicians who will be responsible for the creation, construction, evaluation, and maintenance of the site. "The teamwork environment originates from the need to segment the production process in several different functions" (Green, Chilcott y Flick, 2003). The team will be based on the convergence of knowledge and experiences. It must be composed of technicians from many different disciplines, able to contemplate the various aspects at
stake. Initially, most of the organizations had in charge of the website a Webmaster who worked alone, preparing the server, editing pages, did graphic design, and wrote or reunited the texts. Over time, the complexity of these projects was understood. It is very important that the team has a leader (which may in the future be the Webmaster or not) because forming a Web team requires a great personal and institutional commitment. The teams are not built for the overnight, or from an administrative decision or a mandate. They require a process of consolidation, which runs through search times, agreements, and adequacy. A Web team should be in constant communication with both who have assigned their mission, as with their recipients (customers or users). Its success is also based on close collaboration and communication between its members. Each member of the Web team should be trained in their field of work (the presence or level of experience of certain members of the team can vary depending on the project). A list of members who could be part of this team is suggested: - Project Manager: Responsible for the supervision and control of the rest of the team. It acts as a link between the user and the other members - Producer: This is responsible for setting the appearance, perception, and functionality of the site - Editor: Helps to establish and maintain the style, in addition to the integrity of the site. It is responsible for the control of the correction and text flow and in some cases the multimedia content on the site - Writer: Writers should be interested in the technical details and the incorporation of development standards with the site, using the right words, spelling, and grammar. The writer must know HTML or tools with FrontPage or other application

- Database Designer: Develop databases that manage the Web site, it is responsible for defining their relationships - Script Designer: Works along with the database designer. Develops and debugs the scripts, ActiveX components, and other interactive elements on the Web - Graphic Designer: Responsible for creating the visual site files, can also be responsible for creating audio and movie files. Works with images and small programming tasks - Hardware Technician: Configures, tests, operates, and maintains computers, printers and necessary for the implementation and maintenance of site machines - Tester: If there's a large or complex site incorporating a test technician into the team can be beneficial. Their job is to ensure that everything works as it should, it is responsible for testing the elements of all pages Although these functions could be taken as essential, the structure will always be determined by the scope of the project. ➢ Benchmarking: It is a way to detail, monitor, and evaluate all those Web pages rated as the best that are in the network, to design a way that allows the creation of a product of high quality, productivity, and competitiveness. A practical way of performing benchmarking is to propose a series of questions when visiting the sites that were selected as the best in the industry, Morris, and Dickson (2002) suggest the following: - What are the objectives of the site? - How long does it take to load? - Did it load in a logical order? - Is it an interesting website? - How are the graphics? - Does it reflect the gender of the business or company? - It is easy to use and is comfortable navigating it?
- Is the content structured logically? - Are there too many or insufficient levels of information? - In general, is the site a success? ➢ Navigation structure: "The basis of a well-designed site is a precisely defined structure" (Green, Chilcott & Flick, 2003) The relations of pages between them configure the site structure. These are linked from the home page by links to the rest of the pages, this is pretty simple using HTML, but is more difficult to decide the order, how, and with what settings links will be established. The structure of a Web page is very important as it will allow the reader to visualize all the contents easily and clearly (good structure) or make the reader a sense of being lost, which will not quickly find what is seeking and eventually will abandon the site (poor structure). Green, Chilcott, and Flick (2003) highlight the types of navigation structures: - Linear Structure: This structure consists of a straight line that runs through the site from the home page to the final page. It is very useful when you want the reader to follow a fixed and guided path, and to prevent getting distracted by links to other pages. On the other hand, it can cause the reader to feel that being trapped in the road is very long or uninteresting. This type of structure would apply to learning tutorials or guided visit tours. It is the typical tree structure, in which the root is the welcome page, it can also be replaced by the content, in which the different sections containing the site are exposed. The advantage of this structure is that the user is always located and can easily move around the site. Because the majority of secondary pages allow the return to the homepage, visitors fully control the navigation.
- Hierarchical structure: It is the typical tree structure, in which the root is the welcome page, it can also be replaced by the content, in which the different sections containing the site are exposed. The advantage of this structure is that the user is always located and can easily move around the site. Because the majority of secondary pages allow the return to the homepage, visitors fully control the navigation. - Radial Structure: In this model the secondary pages are not connected, and must navigate through the home page to go from a secondary to another, i.e., the main page contains links to all secondary, but secondary only contain an environment to home, as is shown in the figure below: The advantage of this structure is that it facilitates navigation, visitors will have to make only one or two clicks to return to the main page; However, this could also be a disadvantage because it forces the user to always return to the homepage. - Network Structure: Here a model in which all pages are interrelated is proposed. It is an ideal structure for specialized sites on a topic in which the user is allowed free navigation without limitations as we see below:
➢ Investment Costs: When planning a Web site, you must perform a feasibility study that reflects the financial cost to invest, and that includes: time, personnel, Web hosting, domain, licenses if needed, and maintenance: • Time • Personnel • Web hosting • Domain • Licenses if needed • Maintenance Having a time control method becomes relevant in Web development, as in other projects, as the time involves money. A technique for controlling the cost of a certain activity is the agenda system, which consists of individuals each hour into six-minute segments called units, and it's from the number of units per activity in which the cost will be measured. ➢ Benefits to obtain: The launch of the site is not everything, planning the development of a Web site needs to include aspects such as benefits to acquiring with the operation. Before establishing the development of a Website you should estimate the time of return on investment, in a tangible form, such as a monetary return, or intangible such as improving interpersonal relationships of the organization.

➢ Content phase: The success of a Web site is mainly because of its content. The content is probably a combination of the information currently owned and the information to create. It is convenient to show content according to the planned objectives to develop the site, and the information to express covers the needs and interests of the public to whom it is addressed. ➢ Design phase: Web design involves extensive and detailed work since it covers not only the interaction of multiple elements, such as multimedia technology (audio, sound, images, animations, etc.); but also covers integration with a logical structure based on the site's purpose. Representing a task that goes beyond the simple needs and concerns of potential users. When designing Web sites, it is necessary to take into consideration aspects such as usability and accessibility. ➢ Usability: Referred to the time, effort, and required by the visitor to attain a certain level of adaptation to the system, this can sometimes be linked to the number of steps required to achieve the certain activity and the level of knowledge required for users for the application usage. ➢ Accessibility: A Website is developed with the idea that it must be seen by the largest number of visitors, but keep in mind that each of these can access information with different computers, browsers, and languages, these factors may prevent the site from being fully appreciated. Romero (1999) identifies three key areas to determine the accessibility of a Web site, these are: - Accessibility to the computer: Referred to the ability of hardware which it must have to use the Web application, the ideal in this area is that the application adapts to any computer - Accessibility of used browser: Occasionally same contents are displayed differently in different Web browsers, is recommended using a design that can be viewed in most browsers and attached to standards

- Web page design accessibility: Users may have disabled some features of Web browsers, which could affect the proper display of the contents of the Website ➢ Programming Phase: This step corresponds to the use of Web programming tools. At this point it is essential to select: - The programming languages in which the Website is developed - The database defines - Which content will be static and what will be dynamic Once these criteria are defined it's passed to a stage known as three- phase architecture, which states: - Databases: It designs and creates the database - Intermediate Programming: Programs or code that will run on the Web server. Here the communication between the database and the interface will be set - Interface: Programs and codes that will deploy the content to users through the Web browser. It is referred to applications that the user will see andopérate through it ➢ Testing phase: Extensive tests are run to ensure perfect operation of the Web site to users who will use the site: - Checking in browsers: The first and most important step is to check that the pages can be viewed correctly in different browsers - Detect broken links: It is necessary to detect documents that exist on the site but that are not connected by links; they must be repaired or removed if not needed since they're taking up space on the server and tend to create confusion - Check download times: One of the key points in the success of a website is its download speed, based on this it's recommended a minimum download time Here managers should receive training to develop their tasks.

➢ Market and advertising phase: This phase should take into consideration the International Copyrights, whereby: - All copies include copyright - Developers credits or a link that allows users to contact them is appended The site domain is then defined, verified that it is available to register, and files to the remote FTP server or from the server page are transferred. You must verify that all the files are in the corresponding folder of the Web. After the publication of the Web, diffusion depends on the publicity given by the organization's stationery from banners on specific sites through search engines and others. 12.7 Logic Design of the User Interface User Interface (UI) Design focuses on anticipating what users might need to do and ensuring that the interface has elements that are easy to access, understand, and use to facilitate those actions. UI brings together concepts from interaction design, visual design, and information architecture. Users have become familiar with interface elements acting in a certain way, so try to be consistent and predictable in your choices and their layout. Doing so will help with task completion, efficiency, and satisfaction. Interface elements include but are not limited to: ● Input Controls: buttons, text fields, checkboxes, radio buttons, dropdown lists, list boxes, toggles, date field ● Navigational Components: breadcrumb, slider, search field, pagination, slider, tags, icons ● Informational Components: tooltips, icons, progress bar, notifications, message boxes, modal windows ● Containers: accordion There are times when multiple elements might be appropriate for displaying content. When this happens, it's important to consider the trade-offs. For

example, sometimes elements that can help save you space, put more burden on the user mentally by forcing them to guess what is within the dropdown or what the element might be. 12.7.1 Best Practices for Designing an Interface Everything stems from knowing your users, including understanding their goals, skills, preferences, and tendencies. Once you know about your user, make sure to consider the following when designing your interface: ● Keep the interface simple. The best interfaces are almost invisible to the user. They avoid unnecessary elements and are clear in the language they use on labels and in messaging. ● Create consistency and use common UI elements. By using common elements in your UI, users feel more comfortable and can get things done more quickly. It is also important to create patterns in language, layout, and design throughout the site to help facilitate efficiency. Once a user learns how to do something, they should be able to transfer that skill to other parts of the site. ● Be purposeful in page layout. Consider the spatial relationships between items on the page and structure the page based on importance. Careful placement of items can help draw attention to the most important pieces of information and can aid scanning and readability. ● Strategically use color and texture. You can direct attention toward or redirect attention away from items using color, light, contrast, and texture to your advantage. ● Use typography to create hierarchy and clarity. Carefully consider how you use the typeface. Different sizes, fonts, and arrangements of the text to help increase scanability, legibility, and readability. ● Make sure that the system communicates what's happening. Always inform your users of the location, actions, changes in state, or errors. The use of various UI elements to communicate status and, if necessary, the next steps can reduce frustration for your user.
● Think about the defaults. By carefully thinking about and anticipating the goals people bring to your site, you can create defaults that reduce the burden on the user. This becomes particularly important when it comes to forming design where you might have an opportunity to have some fields pre-chosen or filled out. 12.8 Unit Summary ● Business organizations are now investing huge amounts in people, equipment, marketing, brand building, and content to find the best way to capture the consumers' attention and in search of a business model that could make these firms profitable sooner than later but have not been able to figure out which business model works best for money- making. However, new models are being developed by online publishers to convince customers of justified charges of unique and valuable information, programs, and services offered to them. ● Online publishing is increasingly popular in works of fiction as well as with scientific articles. Online publishers are able to provide quick gratification for late-night readers, books that customers might not be able to find in standard book retailers, and books by

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new authors that would be unlikely to be profitable for traditional publishers. ● The

internet presents a mode of delivery, which may ultimately challenge the traditional perception of publishing. Publishers have used the web as a marketing tool and not as a method of distribution and selling. Investment has been in developing web sites as an advertising tool and not in the technologies and skills required for on-line distribution and payment of digital goods. Electronic publishing is used to compliment rather than replace traditional print products. 1) The Online Archive Approach, 2) The New Medium Approach, 3) The Publishing Intermediation Approach, 4) The Dynamic and Just-in-Time Publishing Approach
● The "Methodology for Web Site Creation" involves various steps of - analysis, planning, content, design, programming, testing, marketing and advertising. ● User Interface (UI) Design focuses on anticipating what users might need to do and ensuring that the interface has elements that are easy to access, understand, and use to facilitate those actions. UI brings together concepts from interaction design, visual design, and information architecture. 12.9 Key Terms ● Early movers: These are independent publishers who already have many of the necessary resources at hand and are highly skilled with existing access to such key capabilities as direct marketing and order fulfillment. ● Watchers: This category includes large publishing companies that employ scale-sensitive economics. ● Testers: These are multi-category and specialty publishers who are competing successfully in traditional markets, who are uncertain who will win in the online marketplace and who neither need nor want to make a choice now. ● Full-Text and Bibliographic Databases: This is the fastest growing publishing sector of the online publishing industry. ● Linear Structure: This structure consists of a straight line that runs through the site from the home page to the final page. ● Hierarchical structure: It is the typical tree structure, in which the root is the welcome page, it can also be replaced by the content, in which the different sections containing the site are exposed ● Radial Structure: In this model the secondary pages are not connected, and must navigate through the home page to go from a secondary to another, i. the main page contains links to all secondary, but secondary only contains an environment to home.

● Network Structure: Here a model in which all pages are interrelated is proposed. I 12.10 Check Your Progress Subjective: 1) What is web publishing? What are different products of online publishing? 2) Discuss the various reasons for online publishing. 3) Discuss the several issues related to online publishing. 4) What are different online publishing strategies? 5) Explain all the online publishing approaches in detail. 6) Online publishing approaches have some specifics, discuss them. 7) The "Methodology for Web Site Creation" involves various steps of - analysis, planning, content, design, programming, testing, marketing and advertising. Discuss. 8) What are different best practices for designing an interface? Objective: 1) True/False: NEXIS has a broad spectrum of users. 2) Fill in the gap: _____ approach includes real-time news delivery, personalized news delivery, and edutainment. 3) Complete the line: Don't use frames unless it _____. 4) Short Q/A: In respect to methodology for website creation, what is the testing phase? 5) Short Q/A:What does a script designer do? References: ● Delgado, Hugo. (2019). Methodology for the Creation and Development of Websites.
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Module: IV E-Governance
Unit: 13 Introduction To Electronic Governance Structure 13.0 Introduction 13.1 Unit Objectives 13.2 Introduction to E-Governance 13.2.1 E-Governance Evolution 13.2.2 Advantages of E-Governance 13.2.3 Objectives of E Governance 13.2.4 Features of E Governance 13.2.5 Aspects of E-Governance 13.2.6 Scope of E-Governance 13.2.7 Types Of E-Governance 13.3 Barriers To E-Governance Implementation 13.4 Unit Summary 13.5 Key Terms 13.6 Check Your Progress 13.0 Introduction A new paradigm shift has been developed in the field of governance by the application of ICT in the processes of governing called Electronic-Governance or E-Governance. E-governance raises the transparency, accountability, efficiency, and effectiveness and inclusiveness in the governing process in terms of reliable access to the information within government, between government, national, state, municipal, and local level governments, citizens, and businesses and empowers business through access and use of information (Dwivedi and Bharti: 2005). The main focus of the E-Governance or electronic governance is to provide transparent, equitable, and accountable service delivery to the citizens. The aim of the e-governance facilitates and improves the quality of governance and ensures people's participation in the governing process through electronic means like e-mail, websites, SMS connectivity, and others. 13.1 Unit Objective This Unit covers: ➢ Introduction to E-Governance including: • E-Governance Evolution • Advantages of E-Governance • Objectives of E Governance • Features of E Governance • Aspects of E-Governance • Scope of E-Governance • Types Of E-Governance • Barriers To E-Governance Implementation 13.2 Introduction to E-Governance Traditionally, the interaction between a citizen and a government agency takes place in a government office. With emerging information and communication technologies it is possible to locate service centres closer to the clients. Such centres may consist of an unattended kiosk in the government agency, a service kiosk located close to the client outside the government agency, or the use of a personal computer at home or office. In all the cases the public traditionally looks for information and services addressing his/her needs and in both cases relevance, quality and efficiency are of paramount importance. Therefore, the establishment of e-Governance requires a good knowledge of the needs that exist in the society and that can be offered using ICT. One of the reasons why e-Commerce is well positioned even in countries where e- Governance still lags behind, is that customers know what products and services they want and sellers know what and how they can deliver those.

The development of e-Governance includes (1) publishing, (2) interaction, (3) transact. These activities aim at: broadening access to government information such as laws, regulations and data; increasing public participation in decision- making through, for example, the publishing of e-mail addresses of government officials and on-line forums; making government services more readily available to the public through e-Filing of government documents, online permits. To date, most effort, in e-Governance, is centred on publishing and not in the subsequent phases of interaction and transaction. Governments, particularly in developing countries, face limited resources to move fast in e-Governance, so a strong partnership between the public, government, business and the civil society is instrumental in determining the expected outcomes and the effectiveness of e-Governance. The term e-Governance refers to the process of using information technology for automating both the internal operations of the government and its external interactions with citizens and other businesses. Automation of internal operations reduces their cost and improves their response time while at the same time allowing government processes to be more elaborate in order to increase their effectiveness. Automation of interactions with citizens reduces the overhead for both the government and the citizens, thus creating value for the economy.(E-Governance by V.M.Rao) It is a new paradigm shift that has been developed in the field of governance by the application of ICT in the processes of governing called Electronic- Governance or E-Governance. E-governance raises the transparency, accountability, efficiency, and effectiveness and inclusiveness in the governing process in terms of reliable access to the information within government, between government, national, state, municipal, and local level governments, citizens, and businesses and empowers business through access and use of information (Dwivedi and Bharti: 2005). Governance refers to the processes of governing in which policies are made and implemented. In this process of governing the role of civil society, state and market is very important. All these three important aspects of governance take a very crucial role in the decision making or policy making process and its implementation process as well. It has several types such as participatory governance, corporate governance,environmental governance, good governance, e-governance etc. Through the application of ICT in public administrations, the governing processes are more effective and more efficient and also ensure sustainable development. Through ICT a “new forms of dialogue and collaboration among public, private and civil society organizations enhance transparency and accountability that can create conditions of fair and open while expanding access so that everyone can participate and benefit from today’s knowledge- based economy” (Bhattacharya: 2013). Use of ICT in all aspects of governance can remove irrelevant human involvement in the processes of service delivery from the government to the citizens The main focus of the E-Governance or electronic governance is to provide transparent, equitable, and accountable service delivery to the citizens. The aim of the e-governance facilitates and improves the quality of governance and ensures people’s participation in the governing process through electronic means like e-mail, websites, SMS connectivity, and others. E-governance is not just about government websites or e-mail or financial transactions. “It will change how citizens relate to the government as much as it changes how citizens relate to each other” (Katyal: 2002). It also refers to the utilization of IT in the country’s democratic processes itself such as the election. E-governance is about the use of ICT for steering the citizens and promoting the public service. It includes a pragmatic application and usage of ICT for delivering efficient and cost effective services and information and knowledge to the citizens being governed, thereby realizing the vast potential of the government to serve the citizens (Prabhu: 2015). It made correlations between state and society, government and people, people to people, governance and society. E-governance is beyond the scope of e-government. E-government is defined as delivery of government services and information to the public using electronic

means, e-governance allows citizens direct participation of constituents in political activities going beyond government and includes e-democracy, e-voting etc. Hence the concept of e-governance will cover government, citizen's active participation, political parties, pressure groups, and parliament and judiciary functions. E-governance is not just about government websites and email. It is not just about service delivery over the internet. It is the application of information and communication technologies to transform the efficiency, effectiveness, transparency and accountability of informational and transactional exchange between government as well as government agencies of national, state, municipal and local levels and citizens through access and use of information. E-Governance is the application of information and communication technology to enhance the effectiveness of a legislative, judiciary or administration either to improve efficiency or to change the relationship between citizen and government or both. According to the World Bank, "E-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/ or cost reductions." Thus, the stress here is on the use of information technologies in improving citizen-government interactions, cost- cutting and generation of revenue and transparency. UNESCO defines e-Governance as: "Governance refers to the exercise of political, economic and administrative authority in the management of a country's affairs, including citizens' articulation of their interests and exercise of their legal rights and obligations. E-Governance may be understood as the performance of this governance via the electronic medium in order to facilitate
an efficient, speedy and transparent process of disseminating information to the public, and other agencies, and for performing government administration activities." This definition visualizes the use of the electronic medium in the exercise of authority in the management of a country's affairs along with articulation of citizens' interests leading to greater transparency and efficiency. 13.2.1 E-Governance Evolution History and Present Status Global shift towards increased deployment of IT by government emerged in the nineties, with the advent of the www. The technology as well as e-governance initiatives have come a long way since then. With the increase in internet and mobile connections, the citizens are learning to exploit their new mode of access in wide running ways. They have started expecting more and more information and services online from government and corporate organizations to further their civic, professional and personalities, thus creating abundant evidence that the new 'e-citizenship' is taking hold. The efforts of the National Information Center (NIC) to connect all the district headquarters during the eighties was a very significant development. From the early nineties IT technologies were supplemented by ICT technologies extending its use for wider sectoral applications with policy emphasis on reaching out to rural areas and taking in greater inputs from NGOs and private sector as well. 13.2.2 Advantages of E-Governance E-governance offers a number of advantages for the government as well as the society. It shifts the center of power from human agencies to technology, which is easier to deal with. Some of these advantages are as follows. a) Advantages for the public - Faster, better, satisfactory - Easy access to information - Diminishes the changes of corruption and administrative delay. b) Advantages for the government
- Cut down the cost. - Surplus staff can be employed in other work. - Reduces inefficiencies in office. - Increases productivity. - Enhance working time, as e-governance provides opportunity for timely 24 hours access to public resources. - Fixes the responsibility of officials 13.2.3 Objectives of E Governance The objectives of e governance are as follows- ➢ One of the basic objectives of e-governance is to make every information of the government available to all in the public interest. ➢ One of its goals is to create a cooperative structure between the government and the people and to seek help and advice from the people, to make the government aware of the problems of the people. ➢ To increase and encourage people's participation in the governance process. ➢ e-Governance improves the country's information and communication technology and electronic media, with the aim of strengthening the country's economy by keeping governments, people and businesses in tune with the modern world. ➢ One of its main objectives is to establish transparency and accountability in the governance process. ➢ To reduce government spending on information and services. 13.2.4 Features of E Governance It has been proven from the concept of e-governance that it is a powerful means of public service in the present era. Some of its features can be found by observing the functioning of e-governance.

➢ De bureaucratization: Due to e-governance, the gap between the people and the government in all the services of the government is narrowing and the dependence of the people on the bureaucracy is also greatly reduced. ➢ E-Services: Its main feature is the provision of services through the Internet. As a result, we get G2C, G2B, G2E, etc. services. This is already discussed in the section of 'types of governance'. ➢ International Services: through e-governance, all the essential services can be delivered to the citizens who are living outside of their country for job purposes or any other reasons. It enhances the right to express to the citizens. Using the means of e-governance anyone can share their views with the government on any bill or act or decision taken by the government. ➢ Economic Development: With the introduction of e-governance, various information like import-export, registration of companies, investment situations, etc. are available through the internet. As a result, time is saved, procrastination decreases, and economic dynamism increases. ➢ Reduce inequality: using e-governance tools everyone can gather information and empower themselves. In this globalized world, knowledge is power, and means of e-governance empower us by providing relevant information at minimal cost, effort, and time. 13.2.5 Aspects of E-Governance Different aspects of E-Governance include information management, identify and access management, identity and access management, content management, and standards management: Information Management: Information management is gathering and storing at one place, the information relating to the Government and Governing process. It is the systematic arrangement/classification of information. If the information of the Government is gathered at one place without any
arrangement or management, it would prove difficult for the users to find the required information. Managing information is an important aspect of E- governance. Information management addresses the issues like – How to provide? What to provide? Whom to Provide? When to provide? Where to provide? Why to provide? The process of information management may further be divided into three aspects - Database Management, - Indicator Management, and - Knowledge Management. Database Management involves bare compilation and organisation of data and information at one place. Indicator Management involves storing with the information the catch words, labels, tags, meanings and context relating to the information. Knowledge Management involves managing the skills and know- how of the employees/experts of the Government for the benefit of the Government. Information management is an integral aspect of E-commerce. It also proves essential for E-Governance. It helps transform the governing process in a business-like efficient and cost-effective process. Information management aims at reducing cost, improving performance, differentiating products and services of Government, specialized/customized information, and citizen focus. Identity and Access Management: Identity management is a set of processes and infrastructure for the creation, maintenance and use of digital identities for the purpose of access to E-governance portals and the information on those portals. Well established Identity management system helps set up an Access management system. The object of Identity Management is to create a scalable, extensible and secure standards based framework for identity data acquisition and storage. Access management involves authentication of identity of the user and giving access to the Government and public information available online. Access management is necessary to give secure access to information to the public. Securing of public information available online is very important due to
recent online piracy and attacks on websites through hacking. e-governance would involve huge amounts of sensitive public information up for grabs for the hackers of other countries. Further there are certain things which require to be accessed by only the Government officials. So online security of information is very necessary which can be done through Access management. Access management is only possible if there is an Identity Management system that is already online and running successfully. Content Management: Content management is the process of organizing, distributing and tracking information/data through a website over the internet. It helps to make users more knowledgeable or informed by offering instant access to correct information online. It deals with providing the right information, to the right people at the right time. Contents of a website can be divided as follows: Text, Graphics, Audio, Video, Diagrams, Links, etc. Managing this variety of content is important. It is necessary to decide where to provide text and where images and graphics. Standards Management: ICT provides many ways to achieve E-governance. There are multiple formats to deal with web pages, text, graphics, audio, and video. However, as seen currently, there is no uniformity in the e-governance websites as to the use of formats. There are also various levels of technologies, basic and advanced. For e-governance, basic technologies are not sufficient because of the security concerns of sensitive data/information. Therefore, e- governance websites have to maintain standards. 13.2.6 Scope of E-Governance Dimensions or scope of e-governance is an extension of communication and more between government and other bodies like citizens, other governmental bodies, business organizations, and non government organizations etc. The following given dimensions are considerably the models of E-Governance that describe the scope of it. Government to Citizen (G2C): G2C will connect government to citizens by providing information for all. It will improve the government service by getting

citizens' feedback and provide better services to the citizens through a single point delivery mechanism. It deals with the relationship between government and citizens. E-governance allows government agencies to talk, listen, relate and promote unending communication with its citizens. G2C allows customers to access government information and services instantly, conveniently, from everywhere, by use of multiple channels. It also enables and reinforces their participation in local community life. Government to Government (G2G) In G2G, all the government missionaries are integrated to produce synergy among them. It will improve government processes by cutting cost, reduction in paper work, time cut, managing performances and making strategic connections within government. It covers a secretariat, e-police, e-court and state wise networks etc. It refers to the relationship among governmental organizations or with other foreign government organizations. Government depends on other levels of government within the state to effectively deliver services and allocate responsibilities. Online communication and co-operation allows government agencies and departments to share databases, resources etc. Government to Business (G2B) It will cover all the areas related to commercial activities like e-commerce and e-taxation. Public Key Infrastructure (PKI) is
required for secure and authentic transactions. It consists of the electronic interactions between government agencies and private business companies everywhere, which are conducting business-to-business e-commerce in order to lower their costs and improve inventory control. The opportunity to conduct online transactions with the government reduces red tape and administrative stagnancy and simplifies regulatory processes, thus helping businesses to become more competitive. Government to NGOs (G2N) It will involve building various associations or interest groups (non-Governmental) that will ensure the betterment of the society. The interaction between government and citizens is essential to achieve the G2N dimension of e-government. All the data should be electronically interchanged between citizens, as the citizen has the right to get every government information, and governmental activities. Government encompasses a broad range of activities to civil society as well as NGO. As civil society organizations try to have a visible footprint in the socio-economic field, they always maintain a continuous dialogue with the government and e-governance facilities. Through the applications of ICT, the civil society organizations influence the socioeconomic policy of the government.
Consumer to Government (C2G): It will involve the areas where the citizen interacts with the government such as elections, to cost the vote for the government, census to provide information about him and taxation to pay taxes to the government. G2E (Government to Employees): The government of any country is the biggest employer and so it also deals with employees on a regular basis, as other employers do. ICT helps in making the interaction between government and employees fast and efficient, along with raising their level of satisfaction by providing perquisites and add-on benefits. 13.3.7 Types Of E-Governance E-Governance diversifies through its implications in the fields of Public, Corporate, Urban, and Public-Private Partnerships. Public E-Governance: A working definition is: “Governance is a broader notion than government, whose principal elements include the constitution, legislature, executive and judiciary. Governance involves interaction between these formal institutions and those of civil society”. Another definition explains its content as the regime of laws, administrative rules, judicial rulings, and practices that constrain,
prescribe and enable government activity, where such activity broadly denotes the production and delivery of publicly supported goods and services. The new economic era has greatly extended the scope of the term Public Governance. Corporate Governance: Corporate governance has succeeded in attracting a good deal of public interest because of its apparent importance for the economic health of corporations and society in general. However, the concept of corporate governance is poorly defined because it potentially covers a large number of district economic phenomena"s. “Some commentators take too narrow a view, and say it (corporate governance) is the fancy term for the way in which directors and auditors handle their responsibilities towards shareholders. More specifically, “Corporate governance is the system by which business corporations are directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among different participants in the corporation, such as, the board, managers, shareholders and other stakeholders and spells out the rules and procedures for making decisions on corporate affairs. E-governance requires a fundamental change in how the government operates by constantly reinventing itself by delivering its obligations to the citizens with greater accountability and a responsive sensitivity. Therefore, the quality of e-governance shall eventually depend on the intent of the government and the set of men behind the computers. For an effective and efficient e-governance model, IT deployment has to be backed by flat structures, a healthy work ethos, transparent systems and simple procedures. Public Private Partnership Simply stated, public-private partnerships (PPP’s) are contracts between a private sector entity and a government body that call for the private partner to deliver a desired service and assume the associated risks. The government is relieved of the financial and administrative burden of providing the service, but retains an important role in regulating and monitoring the performance of the private partner.

The popularity of PPP arose initially out of government need for financing to meet increasing demand for expansion and rehabilitation of physical infrastructure such as roads, energy facilities, and water and sanitation networks. Employing PPP as a tool for meeting its obligations to citizens, governments have been able to avail themselves of state of the art technology and private sector expertise, while avoiding excessive strains on already limited budgets. Citizens enjoy improved service delivery without large tax increases, and sometimes with decreased user fees, and economic growth flourishes in sectors seeking to compete for lucrative PPP contracts. While the experience with infrastructure PPP has been varied, public and private partners alike have learned from early infrastructure PPPs. The model continues to gain acceptance, and is rapidly expanding into all areas of public life, including ICT resources and e-government. Urban E-Governance: E-Governance has become an essential tool for urban development by involving the use of IT in: Improving transparency; Providing information to the citizen speedily; Improving administrative efficiency; and Improving public service such as transportation, power, health, water, security and municipal services. 13.4 Barriers To E-Governance Implementation There are several challenges that can delay progress towards realizing the promise of e-government. The variety and complexity of e-government initiatives implies the existence of a wide range of challenges and barriers to its implementation and management. This section will briefly introduce the most important and common challenges and barriers as follows. ICT Infrastructure: The implementation of e-government initiatives face some technological difficulties such as lack of shared standards and compatible infrastructure among departments and agencies. ICT infrastructure is recognised to be one of the main challenges for e-government. Internetworking is required to enable appropriate sharing of information and open up new channels for communication and delivery of new services (Ndou, 2004). For a

transition to electronic government, an architecture providing a uniform guiding set of principles, models and standards, is needed. Sharma & Gupta (2003) point out that implementation of the whole e-government framework requires a strong technology infrastructure. In order to deliver e-government services, the government must therefore develop an effective telecommunication infrastructure. In addition, they stated that successful e- government implementation would depend upon how the capacities of various infrastructures are structured and how they are capitalized with an integrated focus. Privacy: Privacy and security are critical obstacles in implementation of e - government in citizen concern (OECD, 2003). Privacy refers to the guarantee of an appropriate level of protection regarding information attributed to an individual (Basu, 2004). Government has an obligation to ensure citizens' rights regarding privacy, processing and collecting personal data for legitimate purposes only (Sharma & Gupta, 2003). Concerns about website tracking, information sharing, and the disclosure or mishandling of private information are universally frequent. There is also the concern that e-government itself will be used to monitor citizens and invade their privacy. Seifert (2003) emphasised that e-government should be approached with an eye toward the protection of individual privacy. Both technical and policy responses may be required when addressing the privacy issue in an e-government context. In addition, there is a need to respond effectively to privacy issues in networks in order to increase citizen confidence in the use of e-government services. Citizen confidence in the privacy and careful handling of any personal information shared with governmental organizations is essential to e-government applications. Basu (2004) mentioned that in developing countries, many people are so concerned with privacy and confidentiality issues they decide to forego e-government opportunities. A comprehensive privacy policy should specify citizens' rights to privacy and mandate that personal data be collected and processed only for legitimate purposes (Teeter & Hart, 2003).

Security: Security of an information system means protection of information and systems against accidental or intentional disclosure to unauthorized access, or unauthorized modifications or destruction (Layton, 2007). It refers to protection of the information architecture including network, hardware and software assets and the control of access to the information itself (Basu, 2004). Furthermore, Seifert, (2003) points out that information security, referred to as cyber security or computer security, is an important e-government challenge as it is a vital component in the trust relationship between citizens and government. Thus, security policies and standards that meet citizen expectations are an important step toward addressing these concerns (Sharma & Gupta, 2003). Security can be classified into two elements: network security and documents security. It should include maintenance and e-infrastructure protection in the form of firewalls and limits on those who have access to data. Furthermore, the use of security technology, including digital signatures and encryption, to protect user IDs, passwords, credit card numbers, bank account numbers, and other such data being transmitted over the Internet and stored electronically is essential to fulfilling security goals in e-government applications (Feng, 2003). People need to be educated on the importance of security measures, such as private passwords, to ensure their own protection. Cohen & Emicke (2002) point out that while security will remain an obstacle to e-government, it will not extensively affect its progress as the public learns to work with and accept its occasional lapses. Also, they mentioned three keys that affect the success of security. The first involves continuous improvement and upgrades in an attempt to stay ahead of criminals. The second is that security be visible and foreboding to deter would be criminals. Finally, it must be accepted that no security system is perfect and that all can eventually be overcome. However, governmental organizations, being responsible for the collection, maintenance, and distribution of sensitive or confidential information, should consider methods of providing security for collected information as well as for their web sites. Thus, a body of security professionals should be set up to respond to threats and breaches. Also the need for authority and an infrastructure encryption system has to be given top-priority (Feng, 2003). Policy and Regulation Issues: Feng (2003) points out that e-government is not a technical issue, but rather an organizational issue. Implementation of e- government principles and functions requires a range of new rules, policies, laws and governmental changes to address electronic activities including electronic archiving, electronic signatures, transmission of information, data protection, computer crime, intellectual property rights and copyright issues. Dealing with e-government means signing a contract or a digital agreement, which has to be protected and recognized by a formalized law, which protects and secures these kinds of activities or processes. In many countries, e- business and e-government laws are not yet available. Establishing protections and legal reforms will be needed to ensure, among other things, the privacy, security and legal recognition of electronic interactions and electronic signatures (Caldow, 1999). The effort must incorporate a holistic view, one that is not just focused on technology. Legal reforms and new policy directives may have to be adopted before the online world can function smoothly. Archaic laws, old regulatory regimes, overlapping and conflicting authorities can all greatly complicate or altogether halt a project. Lack of Qualified Personnel and Training: Another major challenge of an e- government initiative can be the lack of ICT skills. This is a particular problem in developing countries, where the constant lack of qualified staff and inadequate human resources training has been a problem for years (UNPA&ASPA, 2001). The availability of appropriate skills is essential for successful e-government implementation. E-government requires human capacities: technological, commercial and management. Technical skills for implementation, maintenance, designing and installation of ICT infrastructure, as well as skills for using and managing online processes, functions and customers, are compulsory. To address human capital development issues, knowledge management initiatives are required focusing on staff training in order to create and develop the basic skills for e-government usage. Ongoing

access to training is a fundamental prerequisite as the rate of change increases and new technologies, practices and competitive models appear. The full economic benefits of ICT depend on a process of training and learning skills, this is universal for all governments (OECD, 2003). Lack of Partnership and Collaboration: Collaboration and cooperation at local, regional and national levels, as well as between public and private organizations, are important elements in the e-government development process. However, collaboration and cooperation are not easy factors to achieve. Governments often exhibit considerable resistance to open and transparent systems as they try to preserve their authority, power and hierarchical status (Nodu, 2004). Citizens distrust their governments, especially where there has been a history of dictatorship, political instability or large-scale corruption. To ensure that the public and stakeholders will be partners in the government effort, it is important to try to build trust in government (Carvin, 2004). Collaboration between the private and public sectors is needed too, in order to provide resources, skills and capabilities that the government may lack. A 'new' development model is emerging that focuses on partnership among stakeholders in the knowledge-based development program. Government should play the role of facilitator and encourage the private sector to participate in e-government development and implementation (Nodu, 2004). Digital Divide: The ability to use computers and the Internet has become a crucial success factor in e-government implementation, and the lack of such skills may lead to marginalization or even social exclusion (UNPA & ASPA, 2001). The digital divide refers to the gap in opportunity between those who have access to the Internet and those who do not. Those who do not have access to the Internet will be unable to benefit from online services (OECD, 2003).

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In the case of the digital divide, not all citizens currently have equal access to computers

and the Internet, whether due to a lack of financial resources, necessary skills, or other reasons. In fact, computer literacy is required for people to be able to take advantage of e-government applications.
Government should train its employees and citizens in basic skills of dealing with the computer and Internet in order to let them participate in e-government development applications. In addition, Smith (2002) points out that making computers available in public locations, such as grocery stores, post offices, libraries, and shopping malls, may help in addressing the gap between those households that have access to the Internet and data services and those who do not. Feng (2003) mentioned that the lack of Internet access among certain sections of the population was considered the most important barrier to e- government development. Indeed, this lack of access among vulnerable or low- income citizens prevents them from being able to make use of those services provided specifically to them. UN (2008) survey found that an increasing digital divide in developing countries increases the cost of technical barriers in launching and sustaining e-government services. Culture: Some barriers to the implementation of e-government are not technical, but the cultural implications of new technologies. Personal characteristics and subjective conditions are more likely to be influenced by cultural factors than are the objective conditions surrounding the development and diffusion of new technology (DeLisi, 1990). Cultural norms and individual behaviour patterns play a role in how citizens and policy makers use technology. Because culture plays a significant role in an individual's outlook, many people resist change and adopt new technologies slowly and with great deliberation (Feng, 2003). Hackney & Jones (2002) identified improving working relationships between internal departments and external agencies, and adopting a corporate approach as keys to successful e-government. To achieve this, it was felt that major cultural changes were necessary. Organizational development should be included in the implementation process so that internal cultural changes are accommodated. Chang (2002) states that culture can be determined by several factors: social structure, religion, language, education, economic philosophy and political philosophy. Technical enhancements are not only structural changes, but also cultural changes. These cultural changes,

though not as easily tangible, must receive at least as much planning so that technical change is implemented successfully. Leaders and Management Support: The literature shows that without support from the top management, an innovation is less likely to be adopted. Thus, e-government implementation needs the support from the highest level of government for successful implementation. Top management support refers to the commitment from top management to provide a positive environment that encourages participation in e-government applications. Therefore, it plays a significant role in the adoption and implementation of e-government (Akbulut, 2003). Leadership involvement and clear lines of accountability for making management improvements are required in order to overcome the natural resistance to organizational change, to gather the resources necessary for improving management, and to build and maintain the organization-wide commitment to new methods of conducting government (McClure, 2001). The involvement of high-level leadership, as well as an integrated vision of IT, is vital to vertical e-government planning, the acquisition of necessary resources, the motivation of officials, the support of dealings with external partners and stakeholders, to inter agency and ministry coordination. As can be observed in transitional democracies and developing countries, political leadership and an integrated vision of IT are what drive the development of e-government. Leaders who perceive a potential gain from the promotion of e-government are more likely to support such initiatives, even in the face of obstacles, while those who believe that they stand to lose from the implementation of e-government cannot be counted on for sustained support (Seifert & Bonham, 2003). Therefore, the government needs to educate the upcoming ranks of government leaders, managers and administrators in planning and managing ICTs across all public sectors, focusing on access opportunity, economic development, and effective delivery of public information and services (OECD, 2003). 13.5 Unit Summary E-Governance is a new paradigm shift that has been developed in the field of governance by the application of ICT in the processes of governing called Electronic-Governance or E-Governance. E-governance raises the transparency, accountability, efficiency, and effectiveness and inclusiveness in the governing process in terms of reliable access to the information within government, between government, national, state, municipal, and local level governments, citizens, and businesses and empowers business through access and use of information (Dwivedi and Bharti: 2005). It has been proven from the concept of e-governance that it is a powerful means of public service in the present era. Different aspects of E-Governance include information management, identity and access management, identity and access management, content management, and standards management. Dimensions or scope of e-governance is an extension of communication and more between government and other bodies like citizens, other governmental bodies, business organizations, and non government organizations etc. There are several challenges that can delay progress towards realizing the promise of e- government. The variety and complexity of e-government initiatives implies the existence of a wide range of challenges and barriers to its implementation and management. 13.6 Key Terms ● E-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government.

● Database Management involves bare compilation and organisation of data and information at one place. ● Indicator Management involves storing with the information the catch words, labels, tags, meanings and context relating to the information. ● Knowledge Management involves managing the skills and know-how of the employees/experts of the Government for benefit of the Government 13.7 Check Your Progress Subjective: 1) What is E-governance? 2) What are the different advantages of E-governance? 3) What are distinct objectives of e-Governance? 4) What are different features of e-Governance? 5) What are different aspects of e-Governance? 6) What is the scope of e-Governance? 7) What are the types of e-Governance? 8) What are different types of barriers to the success of e-governance? Objective: 1) True/False: In G2G, all the government missionaries are integrated to produce synergy among them. 2) Complete the line: Content management is the process of _____. 3) Fill in the gap: E-governance offers a number of advantages for the government as well as the _____. 4) Short Q/A: What is G2C? 5) Short Q/A: How does 'security' pose a barrier to the success of e- governance?

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Unit: 14 E-Democracy Structure 14.0 Introduction 14.1 Unit Objectives 14.2 E-democracy 14.2.1 Definitions of E-Democracy 14.2.2 E-Democracy Models 14.3 E-Republic 14.3.1 The Four Dimensions of the E-governance in a Republic 14.4 E-Business 14.4.1 Characteristics of e-Business 14.4.2 Critical Elements to E-Business Models 14.4.3 Elements of an E-Business Solution 14.4 Unit Summary 14.5 Key Terms 14.6 Check Your Progress 14.0 Introduction E-democracy is the use of information and communication technologies and strategies by "democratic sectors" within the political processes of local communities, states/regions, nations, and on the global stage. e-democracy is concerned with the use of information and communication technologies to engage citizens, support the democratic decision-making processes and strengthen representative democracy (Macintosh, 2004). The concept of E- democracy refers to the use of information and communication technology (ICT) in political debates and decision-making processes, complementing or contrasting traditional means of communication, such as face-to-face interaction or one-way mass media. (Paivarinta and Saebo, 2006). 14.1 Unit Objective This Unit covers:
• E-democracy • E-Republic • E-Business 14.2 E-democracy E-democracy is concerned with the use of information and communication technologies to engage citizens, support the democratic decision-making processes and strengthen representative democracy (Macintosh, 2004). The concept of E-democracy refers to the use of information and communication technology (ICT) in political debates and decision-making processes, complementing or contrasting traditional means of communication, such as face-to-face interaction or one-way mass media. (Paivarinta and Saebo, 2006). E-democracy is the use of information and communication technologies and strategies by "democratic sectors" within the political processes of local communities, states/regions, nations, and on the global stage. ● The "democratic sectors" include the following democratic actors: Government Elected officials Media (and major online Portals) ● Political parties and interest groups ● Civil society organizations ● International governmental organizations ● Citizens/voters Figure 14.1 E-Democracy Conceptual Model Reference: Clift (2003) E-Democracy, E-Governance and Public Net-work
14.2.1 Definitions of E-Democracy There are as many interpretations of what constitutes e-Democracy as there are interpretations of democracy. And because e-Democracy is in its beginning stages, there is much confusion about what it encompasses and how to clearly define it. Steven Clift, of DO Wire, is an acknowledged expert and· leader in the worldwide e-Democracy movement. He describes e-Democracy as referring to "how the Internet can be used to enhance our democratic processes and provide increased opportunities for individuals and communities to interact with government and for the government to seek input from the community" (democracy online http://www.dowire.org). Characteristics of the Internet which he feels support eDemocracy are that it provides opportunity to participate in debates as they happen, participation is less limited by geography, disability or networks, and it facilitates the access to information and provision of input by individuals and groups who previously had not been included in these debates. Another organization that specializes in e-Democracy is the International Teledemocracy Centre in Scotland. Their stated goal is to strengthen democracy through the use of innovative ICT to deliver improved democratic decision-making processes, thereby increasing citizen participation-specifically through the use of electronic consultation and electronic petitions. This is undertaken within a backdrop of the devolution of control to the Scottish Parliament for its own domestic legislation. The Centre takes its cue from the OECD study on e-Governance and e-Democracy, concentrating on the last two of the three types of interaction outlined in the OECD's study: a two-way relationship where citizens are given the opportunity to give feedback on issues; and a relationship based on partnership where citizens are actively engaged in the policy-making process. The UK-based Dialogue by Design, summarily defines eDemocracy as "the use of computers to enhance the democratic process." As a proponent of its own data management software to be used in the e-Consultation process, it is clearly unapologetic in its view that ICTs have the potential to transform the political world as dramatically as the invention of the printing press did over five hundred years ago. Ake Gronlund, from the Umea University in Sweden, however, is concerned that definitions of e-Democracy often focus on ICT use and projects, rather than on democratic processes and institutional innovation. In order that the term 'Ie-Democracy' does not become merely a convenient shorthand for ICT use in democratic processes, he argues that it should be assessed in terms of its defining processes, not to what extent ICTs are used. He notes that as e- Governance is still in its early days, e-Democracy is a marginal occurrence, but he does not discount its potential for the future, though which initiatives will be successful and which directions e-Democracy will take will depend on the actions by many different actors. 14.2.2 E-Democracy Models Citizens set the agenda Partisan Democracy Direct Democracy Government (politicians and officers) set the agenda Liberal Democracy Deliberative Democracy Citizens mainly implicitly included in decision making processes Citizens have an explicitly defined role in decision making processes Figure 14.2: E-Democracy Models According to Paivarinta and Saebo (2006) the models of e-democracy like Partisan, have distinct characteristics: Partisan Democracy: Partisan democracy initiatives are characterized by citizen-initiated participation and implicit citizen intervention in the decision-making process. Active citizens participate in the political debate, but not through traditional channels or solely through representatives. Information technology seeks to

obtain visibility for alternative political expressions and criticism without interruptions from the political elite. Unrestricted discussions set the agenda. Examples include the use of independent online communities discussing politics, chat room discussions, Usenet discussions, and blogging (2006). Liberal Democracy: Liberal democracy, in general, is characterized by a representative government, where citizens form the electorate, giving mandates to representatives at the local level but also participating in the public debate. Online communication becomes part of the issues here as citizens may be asked to submit suggestions to the public authorities, citizens can be given opportunities to communicate with representatives and government officials. Deliberative Democracy: The ideal of Deliberative Democracy connects citizens more explicitly and directly to decision-making processes and emphasizes the role of open discussions in a well-functioning public sphere. Politicians and citizens share an interest in dialogue and discourse leading to the formation of political opinion. Deliberative E-Democracy implementations, with explicitly defined relationships to the actual decision-making processes, may increase the level of citizen participation, if compared to traditional means of political discussion between citizens and decision-makers. Direct Democracy: Direct Democracy focuses on how traditional institutions lose power in favor of network-based groups or individuals. In Direct Democracy, network-based groups and individuals take over the role of traditional institutions. A direct E- Democracy initiative requires communication technology to support coordination among a great number of decision-makers, i.e. citizens, possibly geographically scattered, with diverse interests and backgrounds (Paivarinta and Saebo, 2006: 823-827). By looking at the main purposes of discussion forums for different democracy models a framework can be used to identify differences in how a particular technology may work under different conditions.
Partisan Democracy Direct Democracy Citizens set the agenda Discussion forums are channels for expressing opinions by citizen groups often criticizing existing power structures. No explicit connection to existing governmental or political decision making processes is defined beforehand. Citizens set the agenda for public discussion but not for decision-making. ICT seeks to obtain visibility for alternative political expressions uninterrupted by the political elite. Discussion forums represent a direct channel to raise issues and affect decisions. The citizens are online affecting the decisions to be made (mostly at the local level). Citizens set the agenda both for public discussion and decision-making. ICT is a crucial precondition for democracy to support coordination among decision makers. Liberal Democracy Deliberative Democracy Government (politicians and officers) set the agenda The candidates inform citizens about their arguments whereas the citizens try to lobby the candidates. The purposes of communication are defined beforehand by the authorities, Democracy is regarded as occurring after the citizens have been informed about the candidate viewpoints, and vice versa, before the elections, and about the decisions made in between. ICT seeks to improve the amount and quality of information exchange between government and citizens. Discussion forums are used for targeted purposes actually involving citizens in public decision-making processes. The politicians and officials are continually sensitive to the opinions from the field. The citizens have a good reason to expect that their voices are heard concerning a particular matter initiated by the government. ICT is developed for increased citizen participation and involvement in decision making processes. Citizens mainly implicitly included in decision making processes Citizens have an explicitly defined role in decision making processes
The use of the framework to analyze particular implementations can reveal the democratic ideas beneath the surface, and address particular ways to use technology according to the pursued democracy model (Paivarinta and Saebo, 2006).
14.3 E-Republic A republic that has adopted e-governance provides public services to its citizens which improves democratic values as well as the regulatory framework.

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Governments use information and communication technologies for the exchange of information with citizens and businesses on topics such as tax compliance, public utility services, as well as vehicle and voting registration. The introduction of e-government services goes along with a change towards a more citizen-friendly culture.

Using

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the internet, other technologies, and applications like telephones (fixed or mobile), messaging systems (SMS or MMS), biometric identification, smart cards, radio-frequency ID (RFID) chips, as well as television or radio

an e- republic informs/provides its people -

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disaster warnings, electronic newsletters, education management systems, and traffic control systems. E-republic stays associated with

its citizens through web portals as the government builds websites and umbrella portals that operate as gateways and guidance to inform people on government services, policies, and regulations, etc.

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The introduction of e-government applications has been beneficial to governments in several ways. Most significantly, in the area of public procurement, electronic applications have expanded government access to potential suppliers and increased the number of offers received in a timely manner. e-Government applications also provide a valuable development tool by increasing the effectiveness of aid provision and procurement. One example is the Aid Management Platform (AMP), created by the Development Gateway Foundation. This platform provides governments a virtual workspace where state employees and donors can share aid information online, supporting planning, execution, and implementation activities. The time and funds required to provide government services can be a burden to citizens, businesses, and administrations, particularly for those in developing countries and rural areas. By introducing e-government services, governments can dramatically reduce transaction costs and improve internal planning mechanisms. Moreover, the introduction of e-government and the integration of services usually require governments to streamline their administrative processes. Streamlining improves efficiency, reduces costs, and generates savings, lowering the cost of government services. In some cases, generated revenues may be used to reduce or abolish service fees, or can be reinvested into more sophisticated e- government applications and services. 14.3.1 The Four Dimensions of the E-

governance in a Republic

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E-government activities can only be implemented successfully where administrations are able and willing to do so. Accordingly, the success of e- government initiatives depends in part on the ability of public administration, as well as the political will of key stakeholders. While the government

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and its administration play a fundamental role, the e-government environment is shaped also by other stakeholders, including citizens, businesses, civil servants, local, national, and international institutions, and civil society organizations. Analytically, the e-government environment can be structured in several ways, according to different aspects

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four basic dimensions of the e-government environment: (1) Infrastructure, (2) policy, (3) governance, and (4) outreach. While this is not an exhaustive list of dimensions of e-government, these categories are considered to be wide enough to cover all the important aspects of e-government and can, at the same time, be narrowed down to provide useful recommendations on future policy prioritization and activities. Therefore, this framework uses these four dimensions to describe and understand the realities that influence a country's level of e-government readiness.

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Dimension one: Infrastructure: Infrastructure is probably the most obvious and tangible dimension of e- government. Since e-government is characterized by procedures and services taking place between administrations on the one side and citizens or businesses (or other administrative entities) on the other, technical infrastructure is needed to carry information and services. This characteristic distinguishes e-government from earlier forms of interaction with an administration. e-Government provision is not linked to a specific technology, but rather to any electronic means that citizens and businesses use to send and receive voice, data, and images via the Internet, such as personal computers, laptops, personal digital assistant devices (PDAs), as well as mobile and fixed-line telephony, The effectiveness of e-government services in reaching citizens and businesses depends greatly in the availability of ICT infrastructure. Therefore, it is very relevant for decision-makers to evaluate the status and development of ICT infrastructure in their countries and plan e-government projects accordingly. To assess the level of access to ICT infrastructure, decision-makers can use data collected from telecommunication incumbents and Internet providers via individual, business, and household surveys. A well- informed analysis would profit also from knowledge of the affordability of access to ICTs, looking at tariffs for certain services in comparison to per capita income levels. Finally, the infrastructure dimension also extends to the energy sector, as access to electricity is a precondition for a functioning ICT infrastructure. Dimension two: Policy: A policy is a deliberate plan of action to guide decisions and achieve rational outcomes. Commonly, governments develop and implement policies to address basic socio-economic issues that are expressed in

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laws, budgetary actions, international agreements, declarations, contracts, or campaigns. Different types of policies shape the e-government environment. Trade regulations control the import and export of ICT goods, affecting the provision of services. Policies protecting local ICT industries, including tariff barriers, alter the movement and price of goods in a market. Similarly, antitrust regulations and market liberalization strategies, enforced by telecommunication regulatory authorities, have created the conditions for greater competition in the sector, the introduction of new technologies and services, and better prices for consumers. Likewise, the inclusion of universal service obligations in the licenses of telecommunication incumbents or Internet providers has promoted access to ICT infrastructure in

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least served areas, such as rural and low-income communities. Several countries have formulated comprehensive ICT strategies with the goal of accelerating their participation in the information society. The example of Egypt illustrates the close link that exists between general ICT policies and the e-government environment. Egypt's ICT strategy 2007-2010 brings e- government into the country's overall ICT strategy, proposing reforms in five key areas: state-of-the-art telecommunication and postal infrastructure, ICT access for all, ICT for education and Lifelong Learning, ICT for health, and innovation in the ICT industry. The same is true for Singapore, where the responsibility for general ICT policy, as well as for e-government policy, lies with the "Infocomm Development Authority of Singapore" (IDA). In the framework of its "iN2015" master plan and its "iGov 2010"sub-plan, IDA intends to encourage effective competition in the country's telecommunication market. Further, IDA functions as Chief Information Officer (CIO) and is responsible for the security of crucial ICT infrastructure, master-planning as well as project implementation of government-wide ICT plans. Box 2, below, provides more detail on the goals and strategies of both plans. Policies protecting critical information infrastructure also shape the e- government environment. Cybersecurity policies—the protection of e-government infrastructure against failures and attacks from inside the system, as well as from outside—are essential once a country relies strongly on e- government services. Protective measures are particularly necessary for the provision of e-business or whenever sensitive financial or personal data are being transferred electronically. Protecting the privacy of individual users is also crucial to ensure citizen's trust in the new communication technologies. Accordingly, laws and regulations on digital identification, digital signatures, e-payment, and data protection are highly relevant and are shaping the environment of e-government.

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While e-government policies depend strongly on the vision of decision-makers, success requires such visions to be formulated, expressed, shared, and discussed with all relevant stakeholders to improve ownership and ease implementation. When policies fail to be implemented, the gap between plans, actions, and expected outcomes grows, resulting in citizen dissatisfaction.

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Dimension three: Governance: Governance, that is, the performance of public administration, is an important factor for the success of e-government initiatives. The World Bank defines governance as the exercise of political authority and the use of institutional resources to manage society's problems and affairs. The optimum performance an administration can strive for is to produce a "worthwhile pattern of good results while avoiding an undesirable pattern of bad circumstances". Therefore, to achieve good governance, different factors need to be balanced, including costs, freedom of the individual vs. the common good, local, national, or global interests, as well as short and long-term gains vs. losses. The negotiation of these factors may lead to different results and performances, as places and times change. Despite these divergences, there is general consent on the minimum requirements for good performance of national administrations. Commonly, it is recognized that a government performs well if it, at least, does not abuse its power, is not corrupt, and follows the due processes of law, which includes a division between the executive, legislative and judicial powers, and freedom of the press. This paradigm is also often called "good governance" in the development literature.

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Further, the success of e-government initiatives also depends on defining back- office workflows within the administration and on digitizing and reengineering such workflows. Since citizens do not usually know the processes taking place within an administration, they judge its performance based on their personal experiences, drawing conclusions about the quality of governance according to the time it takes to complete standard procedures, like registering a car, and the reliability and consistency of such processes. Dimension four: Outreach: "Outreach" is the dimension of e-government most prominently perceived and experienced by end-users, namely companies and citizens. Often referred to as the "horizontal integration" of public services, this dimension brings together various service offerings to the end-users. One aspect of outreach is the supply of information and services by governments. Governments' communication with and supply of information to businesses and citizens varies in intensity. Some administrations provide static information on web pages; others offer services online, and some others offer electronic consultation and participation. The European Union (EU), for example, practices online consultations of citizens. It applies e-government in order to overcome long distances, language barriers, and the perceived democratic deficit of the institutions of the Union. Service-oriented e-government initiatives intend to bundle different services according to a combination that an end-user would perceive as a logical unit for one-stop-government. For instance, the government of Singapore is working on developing an even more user-friendly government portal. To this end,

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provision of information in the front end should be improved; information should be presented in a better and more intuitive “look-and-feel” way, providing better search engines and including different types of media, such as video clips. Creating a one-stop government interface is a major challenge in national e-government efforts. The services that need to be integrated might represent numerous fragmented processes, requiring the involvement of a diverse number of stakeholders. E-Government activities are also affected by demand forces emanating from the particular needs and characteristics of citizens and businesses, such as education, ICT literacy, and other life circumstances. Many e-government applications consist of texts and are Internet-based, thus requiring users to have at least basic computer literacy and, if they do not rely on agencies in telecentres or other service providers, the ability to read and write. Therefore, it is crucial for the success of an e-government project to understand the capability of the citizens the initiative is targeting. The one-stop shop “Jan Seva Kendra” in India, s a good example of a low barrier e-government service provision project, where illiterate users have the option of receiving information through the telephone or talking to a civil servant in person. Further, life circumstances, such as income, day-night rhythm, working hours, social structures, individual habits, and culture, affect the demand for e- government services as well. For instance, in communities where the elder deals with the administration on behalf of the community, the demand for e-government services offered to individuals will probably be quite low; in contrast,

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individualized population in urban areas might prefer a seemingly anonymous way to communicate with authorities. This dimension also covers outreach between national governments. Peer-to- peer learning, for instance, can be very helpful. Moreover, challenges like cybersecurity and cybercrimes are cross-border issues that should be dealt with in a coordinated manner. Accordingly, engaging in global and regional fora on e-government can improve the e-government environment of a country. 14.4

E-Business Electronic Business (E-Business) is the administration of conducting any business using the internet, extranet, web, and intranet. It implies buying and selling of goods or services using commercial transactions conducted electronically along with providing customer or technical support with the help of the internet. E-business is similar to E-commerce but it is more than just a simple act of buying and selling services or goods online. In fact, it is the method of utilizing digital information and advanced communication technologies to streamline different business processes – from the initial to the implementation phase. E-business includes a lot of business processes including online order processing, CRM (Customer Relationship Management), supply chain management, and many more. If any entity in the value chain begins doing business electronically, companies up and down the value chain must follow suit or risk being substituted or excluded from the chain's transactions. Therefore, rethinking and redesigning your company's business model is not merely an option. It's the first step to profiting—even surviving—in the e-business information era.. Ten Rules of e-Business Rule 1: Technology is no longer an afterthought in forming business strategy but rather the cause and driver. Rule 2: The ability to streamline the structure of information and to influence and control its flow is a dramatically more powerful and cost-effective service than is that of moving and manufacturing physical products. Rule 3: Inability to overthrow the dominant, outdated business design often leads to business failure. Rule 4: Using e-commerce, companies can listen to their customers and become "the cheapest," "the most familiar," or "the best." Rule 5: Don't use technology just to create the product. Use technology to innovate, entertain, and enhance the entire experience surrounding the product: from selecting and ordering to receiving and service. Rule 6: The business design of the future increasingly uses reconfigurable e-business models to best meet customers' needs. Rule 7: The goal of new business designs is for companies to create flexible outsourcing alliances that not only off-load costs but also make customers ecstatic.

Rule 8: For urgent e-business projects, it's easy to minimize application infrastructure needs and to focus on the glitzy front-end apps. The oversight can be costly in more ways than one. Rule 9: The ability to plan an e-business infrastructure course swiftly and to implement it ruthlessly are key to success. Ruthless execution is the norm. Rule 10: The tough task for management is to align business strategies, processes, and applications quickly, correctly, and all at once. Strong leadership is imperative. Figure 14.1 Ten Rules of e-Business e-Business 2.0: Roadmap for Success. e-Business 2.0: Roadmap for Success, ISBN: 0-201-72165-1 Meaning of e-Business: As with e-commerce, e-business (electronic business) also has a number of different definitions and is used in a number of different contexts. One of the first to use the term was IBM, in October 1997, when it launched a campaign built around e-business. Today, major corporations are rethinking their businesses in terms of the Internet and its new culture and capabilities and this is what some see as e-business. ● E-business is the conduct of business on the Internet, not only buying and selling but also servicing customers and collaborating with business partners. ● E-business includes customer service (e-service) and intra-business tasks. ●

An e-business is a company that can adapt to constant and continual change. The development of intranet and extranet is part of e-business. ● E-business is everything to do with back-end systems in an organisation. Due to technological changes and economic development, the information factor has become more significant than the production factor. Many companies and organizations have moved their business processes onto the
Web and realized customer relationships with the help of electronic means of information and communication, leading to the term electronic business. If any entity in the value chain begins doing business electronically, companies up and down the value chain must follow suit or risk being substituted or excluded from the chain's transactions. Therefore, rethinking and redesigning your company's business model is not merely an option. It's the first step to profiting—even surviving—in the e-business information era. The following given figure shows the three most important groups of market participants, along with their possible business connections. Each of these participants can appear as a provider or consumer of services. Thus, nine basic business relation-ships develop in total. Figure 14.2: Various electronic business relationships Source:Andreas Meier • Henrik Stormer eBusiness & eCommerce Managing the Digital Value Chain Translated by Elizabeth Gosselin
14.4.1 Characteristics of E-Business To emphasize, e- Business is not simply buying and selling but encompasses the exchange of many kinds of information, including online commercial transactions. E- Business is about integrating external company processes with an organization’s internal business processes; as such, a variety of core business processes could exploit an e- Business infrastructure. These include among others: ● Collaborative Product Development ● Collaborative Planning, Forecasting andReplenishment ● Procurement and Order management ● Operations and Logistics Collaborative Product Development This is one of the fastest growing technologies in engineering with some form of solutions being implemented in a range of industries such as automotive, aerospace, agricultural machinery etc. It contributes towards making products in a short time span while maintaining quality and reducing cost. It also aids in maximizing time- to- market benefits while maintaining control over product development information. By integrating design and testing cycles of products with those of suppliers, a firm can shorten the complete cycle of its products. This clearly reduces the total cost of the product cycle, & even more importantly, it reduces the time that is needed to bring products to the marketplace. Collaborative product development solutions offer ERP integration and SCM. Collaborative Planning, Forecasting and Replenishment This is a process in which Manufacturers, Distributors and Retailers work together to plan, forecast and replenish products. In e- Business relationships collaboration takes the form of sharing information that impacts inventory levels and merchandise flow. Collaboration points: sales forecasts, inventory requirements, manufacturing and logistic lead times, seasonal set schedules, new/remodel storage plans, promotional plans etc. Goal: To get the partners to work together to improve lower supply cycle times, improve customer service, lower inventory costs, improve inventory levels and achieve better control of planning activities. Procurement and Order management Electronic procurement or E- Procurement can achieve significant savings and other benefits that impact the customer. To support procurement and order management processes, companies use an integrated electronic ordering process and other online resources to increase efficiency in purchasing operations. Benefits: cost savings, better customer service by controlling the supply base, negotiating effective buying preferences, and streamlining the overall procurement process. Operations & Logistics Logistics is that part of the supply chain process that plans, implements

and controls the efficient, effective flow and storage of goods, services and related information

from the point of origin to point of consumption in order to meet customer requirements. To make this happen, transportation, distribution, warehousing, purchasing & order management functions must work together. Logistics in the e- Business era is all about Collaboration - the sharing of critical and timely data on the movement of goods as they flow from raw material, all the way to the end- user. Operations and Logistics processes are based on open communication between networks of trading partners where integrated processes and technology are essential for high performance logistics operations. These solutions help manage the logistics process between buyers and suppliers, while eliminating costly discrepancies between purchase order, sales order and shipping information. By eradicating these variances and inconsistencies improvements
in the supply chain may result from the elimination of mixed shipments and shipment discrepancies, and the reduction of inventory carrying costs for the customer. At the same time this increases customer satisfaction through improved delivery reliability and improved efficiencies in receiving operations. 14.4.2 Critical Elements to E-Business Models Furthermore, there are critical elements to e- business models as well. They are as follows: A shared digital business infrastructure, including digital production and distribution technologies (broadband/wireless networks, content creation technologies, and information management systems), will allow business participants to create and utilize network economies of scale and scope. ● A sophisticated model for operations, including integrated value chains- both supply chains and buy chains. ● An e- business management model, consisting of business teams and/or partnerships; ● Policy, regulatory and social systems i.e., business policies consistent with e-commerce laws, teleworking/virtual work, distance learning, incentive schemes, among others. ● Ease of Automated Processing A payer can now cheaply and easily automate the generation and processing of multiple payments with minimal effort. Previously, the dependency upon banks to handle most payments and the lack of a cheap, ubiquitous communications technology made automation of payment processes expensive and difficult to establish. ● The immediacy of result Payment immediacy occurs because of automation and the ability for the intermediate systems and providers to process payments in real-time. With the more manual, paper- based systems there was always a time delay due to the requirement for human intervention in the process.
● Openness and accessibility The availability of cheap computing and communications technology and the appropriate software enables small enterprises and individuals to access or provide a range of payment services that were previously only available to large organizations via dedicated networks or the transactional processing units of banks. ● Loss of collateral information The new technology dispenses with, or alters collateral information accompanying transactions. This information has traditionally been part of the transaction and has been relied upon by the transacting parties to validate individual payments. ● Globalization Globalization, or the minimization of geographical factors in making payments, has been an obvious aspect of the new payments systems. Its effect is upon areas such as the size of the payments marketplace, uncertainty as to legal jurisdiction in the event of disputes, location, and availability of transaction trails, and the ability of a payment scheme to rapidly adapt to regulatory regimes imposed by one country by moving to another. ● New business models New business models are being developed to exploit the new payment technologies, in particular, to address or take advantage of the disintermediation of customers from traditional payment providers such as banks. In this context, disintermediation is where the technology enables a third party to intervene between the customer and the bank, effectively transferring the customer's trusted relationship with the bank to the new party. 14.4.3 Elements of an E-Business Solution The vision of e- Business is that enterprises will have access to a broad range of trading partners to interact and collaborate with and not only buy and sell more efficiently. Also, it is expected that e-Business will contribute towards the agility of business organizations and with that to reaching higher levels of customization. In this way, an organization can maximize supply chain
efficiency, improve customer service and increase profit margins. Hence, the need to make mission critical processes: Inventory, Accounting, Manufacturing and Customer Support: These must be able to interact with each other by becoming web- enabled. This is achieved by ERP, CRM and other systems by making use of distributed applications that extract data and launch business processes across many or all of the above processes. The key elements of an e-Business solution are: 1. Customer Resource management(CRM) 2. Enterprise resource planning (ERP) 3. Supply Chain Management(SCM) 4. Knowledge Management 5. E- Markets 1. Customer relationship management (CRM): CRM systems are "front-office" systems which help the enterprise deal directly with its customers. CRM (definition) is the process of creating relationships with customers through reliable service automated processes, personal information gathering, processing and self- service through the enterprise in order to create value for customers. There are 3 categories of user applications under CRMs: ● Customer facing applications: Applications which enable customers to order products and services.

● Sales force facing applications: Applications that automate some of the sales and sales force management functions, and support dispatch and logistic functions. ● Management facing applications: Applications which gather data from previous apps and provide management reports and compute Return on relationships(RoR) as per company's business model. 2. Enterprise Resource Planning (ERP): ERPs are often called "back-office" systems. ERP systems are management information systems that integrate and automate many of the business practices associated with operations or production aspects of a company. ERP software can aid in control of many business activities such as sales, delivery, production, billing, production, inventory, shipping, invoicing and accounting. A typical ERP system is designed around these 4 primary business procedures: ● Production: manufacturing, resource planning and execution process.
● Buying a product: procurement process ● Sales of a product and services: customer order management process ● Costing, paying bills, and collecting: financial/management accounting and reporting process. 3. Supply Chain Management (SCM): Supply chain (definition) is a network of facilities and distribution options that perform the functions of procurement of materials, transformation of these materials into intermediate and finished products, and distribution of these finished products to customers. SCM deals with the planning and execution issues involved in managing a supply chain. Supply chain has 3 main parts:
● Supply side: concentrates on how, where from, and when raw materials are procured and supplied to manufacturing. ● Manufacturing side: converts raw materials to finished products. ● Distribution side: ensures that finished products reach the final customers through a network of distributors, warehouses and retailers. 4. Knowledge Management: This relates to the identification and analysis of available and required knowledge assets and related processes. Knowledge assets encompass two things: Information and Experience. Knowledge assets comprise of all knowledge that a business has or needs to have in order to generate profits and add value. Knowledge management includes the subsequent planning and control of actions to develop both the knowledge assets and the processes to fulfill organizational objectives. Knowledge is a strong denominator of a business model and determines business competencies especially when unique to the business and so must be kept in- house. 5. E-Markets: E- Market is an electronic meeting place for multiple buyers and sellers providing many participants with a unified view of sets of goods and services, enabling them to transact using many different
mechanisms. An e- Market uses Internet technology to connect multiple buyers and suppliers. 14.5 Unit Summary E-democracy is concerned with the use of information and communication technologies to engage citizens, support the democratic decision-making processes and strengthen representative democracy (Macintosh, 2004). The concept of E-democracy refers to the use of information and communication technology (ICT) in political debates and decision-making processes, complementing or contrasting traditional means of communication, such as face-to-face interaction or one-way mass media. (Paivarinta and Saebo, 2006). A republic that has adopted e-governance provides public services to its citizens which improves democratic values as well as the regulatory framework.

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Governments use information and communication technologies for the exchange of information with citizens and businesses on topics such as tax compliance, public utility services, as well as vehicle and voting registration. The introduction of e-government services goes along with a change towards a more citizen-friendly culture.

Electronic Business (E-Business) is the administration of conducting any business using the internet, extranet, web, and intranet. It implies buying and selling of goods or services using commercial transactions conducted electronically along with providing customer or technical support with the help of the internet. To emphasize, e-Business is not simply buying and selling but encompasses the exchange of many kinds of information, including online commercial transactions. E-Business is about integrating external company processes with an organization's internal business processes; as such, a variety of core business processes could exploit an e- Business infrastructure. These include among others: Collaborative Product Development, Collaborative Planning, Forecasting andReplenishment, Procurement and Order management, Operations and Logistics. The vision of e- Business is that enterprises will have access to a broad range of trading partners to interact and

collaborate with and not only buy and sell more efficiently. Also, it is expected that e- Business will contribute towards the agility of business organizations and with that to reaching higher levels of customization. In this way, an organization can maximize supply chain efficiency, improve customer service and increase profit margins. The key elements of an e-Business solution are: Customer Resource management(CRM), Enterprise resource planning (ERP), Supply Chain Management(SCM), Knowledge Management, E- Markets. 14.6 Key Terms e-Democracy: It refers to "how the Internet can be used to enhance our democratic processes and provide increased opportunities for individuals and communities to interact with government and for the government to seek input from the community". E-republic: A republic that has adopted e-governance provides public services to its citizens which improves democratic values as well as the regulatory framework. Electronic Business (E-Business) is the administration of conducting any business using the internet, extranet, web, and intranet. It implies buying and selling of goods or services using commercial transactions conducted electronically along with providing customer or technical support with the help of the internet. 14.7 Check Your Progress Subjective: 1) Define e-Democracy, explain its model. 2) What is E-republic? 3) What is e-business? What are the ten rules inherent in it? 4) What are different characteristics of e-business? Objective: 1) True False: Electronic Business (E-Business) is the administration of conducting any business using the internet, extranet, web, and intranet.
2) Complete the line: E-democracy is the use of _____ 3) Fill in the gap: E-business is everything to do with _____ systems in an organisation. 4) Short Q/AS: Give a brief sketch of supply chain management, the key e- business element. References: ●

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INTERNATIONAL TELECOMMUNICATION UNION E-GOVERNMENT IMPLEMENTATION TOOLKIT INTRODUCTION: E-GOVERNMENT READINESS ASSESSMENT FRAMEWORK

https://www.itu.int/ITU- D/cyb/app/docs/eGovernment%20toolkitFINAL.pdf ● E-GOVERNANCE DIMENSIONS IN THE REPUBLIC OF MAURITIUS Dr. Chintamanee Sanmukhiya Deputy Rector -Modern College, Mauritius. Email: chintamanee@hotmail.co.uk Article History: Received on 18th July 2019, Revised on 27th August 2019, Published on 28th September 2019 ● E GOVERNANCE: CHALLENGES IN THE WAY AHEAD Dr Shalini Verma Sheel1 , Dr Neelaksh Sheel 2 1Management, Meerut Institute of Engineering and Technology (India) 2 Computer Science, JP Institute of Engineering and Technology (India) ● Kassen, M. (2015).

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E-Government in the United States: The Federal Model of Implementation.

In: Understanding Systems of e-Government (pp.27-43). Rowman & Littlefield: New York, NY. For more information on how to purchase this or other Rowman & Littlefield books, please visit: https://rowman.com/ISBN/9781498526609 ● E-Government Fundamentals Author Alshehri, Mohammed, Drew, Steve Published 2010 Conference Title Proceedings of the IADIS International Conference ICT, Society and Human Beings 2010. ● B.Srinivas Raj, E-governance Techniques Indian and Global Experiences, New Century Publications, New Delhi, India
● E-Governance-The New Age Governance by Pankaj Sharma APH Publishing Corporation ● E-Governance V.M.Rao ABD PUBLISHERS Jaipur, India
Unit: 15 E-Government Security Issues Structure 15.0 Introduction 15.1 Unit Objectives 15.2 Stages of E-government Development 15.3 E-government Privacy 15.3.1 Privacy Issues in E-Government 15.3.2 Privacy Legislations 15.3.3 Privacy Enhancing Technologies 15.4 E-Governance: Security & Accessibility 15.5 Mobile Technology for e-Government 15.5.1 M-Government and E-Government 15.5.2 M-Government Guiding Principles 15.5.3 Critical Issues for M-Government Applications 15.5.4 m-Government in India (Case Study) 15.6 Unit Summary 15.7 Key Terms 15.8 Check Your Progress 15.0 Introduction The e-government cannot be thought of as a one-step process or implemented as a single project. It is evolutionary in nature, involving multiple stages or phases of development. In order to protect the concerns of citizens, many laws have been enacted to safeguard the privacy of their information. Laws alone cannot address all the concerns surrounding a complex issue like privacy. The total solution must combine policy, law, and technology. As e-governance is the use and involvement of internet and communication technology to improve different activities of public sector organization, so its security plays a major role as the public's data is flowing in the form of

information across different government activities. Through this paper we can learn the application of different security aspects of e-governance in terms of cryptography issues like user authorization and authentication, nonrepudiation and integrity of government issues and many more. Different govt. activities are being automated with the progressing time but as they are mostly involving common man's information regarding their education, residences, job areas, income and expenditures, involvement in public activities etc. so their security is of major concern. A single leak in the system can deteriorate the full e-governance architecture as all the components are interrelated to one another. So, instead of thinking of security after it has been lost, it's better to consider it in advance and have a perfect e-governance system capable of dealing with the security aspects as and when faced by it. 15.1 Unit Objective This Unit covers: ● Stages of E-government Development ● E-government Privacy ● E-Governance: Security & Accessibility ● Mobile Technology for e-Government 15.2

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Stages of E-government Development In addition to identifying e-government initiatives according to their sector, such projects can also be classified according to their level or stage of development. Although different e-government initiatives strive to accomplish different goals, some observers argue that one of the overarching themes of e-government is to fully realize the capabilities of available information technology in an effort to transform government from an agency-centric, limited-service operation into an automated, citizen-centric operation capable of delivering government services to citizens,

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businesses, and other government agencies 24 hours a day, seven days a week. However, for a variety of technical, economic, and political reasons, it will take time for these initiatives to evolve into their full potential. For that reason, some observers use a common schema for classifying the stages of evolution of e-government projects. The schema is based on the degree to which the properties of information technology have been utilized to enable the delivery of services electronically. Using this schema, there are four stages of evolution; presence, interaction, transaction, and transformation. It is important to note that an e-government initiative does not necessarily have to start at the first stage and work its way through all of the stages. Instead, a project can skip levels, either from its inception or as it develops. Presence Presence is the first stage of development and is the establishment of a placeholder for delivering information in the future. It represents the simplest and least expensive entrance into e-government, but it also offers the fewest options for citizens. A typical example is a basic Web site that lists cursory information about an agency, such as hours of operation, mailing address, and/or phone numbers, but has no interactive capabilities. It is a passive presentation of general information. Some observers refer to these types of sites as 'brochureware,' suggesting they are the electronic equivalent of a paper brochure. Interaction The second stage is interaction. Although interactive Web-based initiatives offer enhanced capabilities, efforts in this group are still limited in their ability to streamline and automate government functions. Interactions are relatively simple and generally revolve around information provision. These types of initiatives are designed to help the customer avoid a trip to an office or make a phone call by making commonly requested information and forms available around the clock. These resources may include instructions for obtaining services, downloadable forms to be printed and mailed back to an agency, or perhaps e-mail contact to respond to simple questions. Transaction The third stage in the evolution of e-government initiatives is

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transaction. These initiatives are more complex than simple information provision and embody the types of activities popularly associated with e-government. They enable clients to complete entire tasks electronically at any time of the day or night. These initiatives effectively create self-service operations for tasks such as license renewals, paying taxes and fees, and submitting bids for procurement contracts. Although the level of interactivity is of a higher magnitude than second stage initiatives, the activities still involve a flow of information that is primarily one-way (either to

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government or to the client, depending on the activity). The electronic responses are generally highly

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regularized and create predictable outcomes (e.g., approving a license renewal, creating a receipt, acknowledging a bid). Transformation The highest order of evolution for e-government initiatives is transformation. Initiatives at this level utilize the full capabilities of the technology to transform how government functions are conceived, organized, and executed. Such initiatives would have the robust customer relationship management capabilities required to handle a full range of questions, problems, and needs. Currently, there are very few examples of this type of initiative, in part due to administrative, technical, and fiscal constraints. One of the distinctions of these initiatives is that they facilitate the seamless flow of information and collaborative decision-making between federal, state, local, public, and private partners. In other words, transformative e-government initiatives often seek to remove the organizational barriers that promote agency-centric solutions and, instead, promote customer-centric solutions. Some advocates suggest that, at its most advanced level, e-government could potentially reorganize, combine, and/or eliminate existing agencies and replace them with virtual organizations.

The e-government cannot be thought of as a one-step process or implemented as a single project. It is evolutionary in nature, involving multiple stages or
phases of development. This section summarises the stages of e-government development by comparing and contrasting the work by the United Nations, the World Bank, the Gartner Group, the e-ASEAN Task Force, and individual researchers (Hiller and Belanger, 2001; Layne and Lee, 2001; Moon, 2002). These models are discussed in the following subsections. ➢ World bank-3 stage model: Publish: Publish implementations of e-government diverge widely in their design and content, but developing nations generally can start the process of e-government by publishing government information online, beginning with rules and regulations, documents, and forms. Interact: E-government has the potential to involve citizens in the governance process by engaging them in interaction with policymakers throughout the policy cycle and at all levels of government. Strengthening civic engagement contributes to building public trust in government. Transact: Governments go further, by creating websites that allow users to conduct transactions online. Potential cost savings, accountability through information logs, and productivity improvements will be important drivers ➢ UN's five-stage model: The United Nations and American Society for Public Administration (UNASPA, 2001) suggested an e-government model with five stages which are as follows: Emerging presence: A single or a few independent government websites provide formal but limited and static information. Enhanced presence: Government websites provide dynamic, specialized, and regularly updated information. Interactive presence: Government websites act as a portal to connect users and service providers and the interaction takes place at a more sophisticated level.
Transactional presence: Users have the capability to conduct complete and secure transactions, such as renewing visas, obtaining passports, and updating birth and death records through a single government website. Seamless or fully integrated presence: Governments utilize a single and universal website to provide a one-stop portal in which users can immediately and conveniently access all kinds of available services ➢ Gartner's four-stage model: Gartner and others (Baum and Di Maio, 2000) had proposed a four-stage model, which is as follows: Web presence: In this stage, agencies provide a website to post basic information to the public. Interaction: In this stage, users are able to contact agencies through websites (e.g., e-mail) or do self-service (e.g., download document) Transaction: In this stage, users (including customers and businesses) can complete entire transactions (e.g., license application and procurement) online. Transformation: In this stage, governments transform the current operational processes to provide more efficient, integrated, unified, and personalized services. ➢ E-ASEAN task force model: Association of Southeast Asian nations task force considered teledensity and the personal computer penetration as important factors for e- government to work and hence include them as one of the criteria in their four-stage model (AOEMA). Emerging (>5% teledensity and >1% PC penetration) Evolving (5-10% teledensity and 2-5% PC penetration) Embedding (20-40% teledensity and 5-10% PC penetration) Extending (<40% teledensity and <20% PC penetration) ➢ Deloitte's six-stage model:

Deloitte and Touche (2001) had proposed a six-stage model as described below: Information publishing/dissemination: Governments provide users with increased access to information. Official two-way transaction: Agencies are used to provide interaction between governments and users by using information and communication technologies such as digital signatures and security keys. Multi-purpose portals: Governments utilize a single portal to provide universal service across multiple departments. Portal personalization: governments enable users to customize portals according to their own desires. Clustering of common services: Governments enhance collaboration and reduce intermediaries (between operational processes) in order to provide a unified and seamless service. Full integration and enterprise transaction: an ideal vision in which governments provide sophisticated, unified, and personalized services to every customer according to their own needs and preferences ➢ Layne and Lee's four-stage model: Layne and Lee (2001) regarded e-government as an evolutionary phenomenon and proposed a four-stage model. The four stages are: Catalogue: This stage delivers some static or basic information through websites. Transaction: This stage extends the capability of catalog and enables citizens to do some simple online transactions such as filling government forms. Vertical integration: This stage initiates the transformation of government services rather than automating its existing processes. It focuses on integrating government functions at different levels, such as those of local governments and state governments.
Horizontal integration: This stage focuses on integrating different functions from separate systems so as to provide users a unified and seamless service. ➢ Hiller and Belanger's five-stages and Moon's five-stage model: Hiller and Belanger (2001) identified five-stage model information, two- way communication, transaction, integration, and participation. Despite some minor differences in phrasing, Moon (2002) adapted Hiller and Belanger's (2001) five-stage model. Moon (2002) model consists of the following: Simple information dissemination (one-way communication): This is the most basic form of e-government, which disseminates information by simply posting it on the websites. Two-way communication (request and response): Interaction occurs between governments and users. This is also known as synchronous and asynchronous communication. Service and financial transaction: Transactions occur both between governments and individuals (e.g., obtaining the visa) and between governments and businesses (i.e., ordering office facilities). Vertical and horizontal integration: This is similar to the last two stages in Layne and Lee's (2001) four-stage model. This stage refers to integrating separate systems at different levels (vertical) and from different departments (horizontal). Political participation: Promotion of political participation through services such as online voting and surveys. In this research, we aim to combine these models into a synthesized model. A synthesized model provides a common framework for future research in this area and a common point of reference. ➢ Keng Siau and Yuan Long's synthesizing e-government stage model: Web presence: In this stage, governments typically post simple and limited information through their websites, such as the agency's vision and mission, office hours, contact information, and official documents
Interaction: This phase provides simple interaction between the governments and the users. This includes basic search engines, e-mail systems, as well as official form downloads. Transaction: This phase enables users (including both individual citizens and businesses) to conduct complete online transactions. Transformation: This stage moves towards transforming the way that governments provide services. The transformation involves both vertical (i.e. governments in different levels) and horizontal integration (i.e., different departments or governments in different locations). E-democracy: E-government gradually changes the way in which people make political decisions. 15.3 E-government Privacy The fast progress in networking technologies has led to an enormous amount of digital information stored all over the world. This process has been accompanied by a rise of tools that are able to collect data, add them to databases and find information that could not be discovered in an obvious way. This explosive growth in digital data has brought increased concerns about the privacy of personal information. Privacy concerns restrict the free flow of information. Organizations do not want to reveal their private databases for various legal and commercial reasons. Neither do individuals want their data to be revealed to parties other than those they give permission to. This is especially the case with E-Government, as it is an amalgam of interconnected heterogeneous information systems in which government agencies and public and private sectors exchange a high volume of information. Several government agencies have aggressively adopted information technologies in order to modernize the government's highly fragmented service-centric information infrastructure by improving information flow and the decision-making process. The E-Government infrastructure that essentially builds on these Internet technologies carries over a level of concerns for citizen privacy.

Citizens, while welcoming client-driven, interactive, integrated information and services from the government, have concerns about privacy in electronic contexts. Numerous surveys (Westin, 1998; Cranor. et. al., 1999) have found that citizens will not participate in electronic transactions where privacy concerns have not been appropriately addressed. In order to protect the concerns of citizens, many laws have been enacted to safeguard the privacy of their information. Laws alone cannot address all the concerns surrounding a complex issue like privacy. The total solution must combine policy, law, and technology. Therefore, the adoption of new policies for collection and access, use, disclosure, and retention of information, and for redress and oversight is vital. Moreover, technology itself should be a part of this solution. The same technology that permits the accumulation, sharing, and analysis of huge databases should also incorporate features that protect information from abuse or misuse into information-sharing systems. Here, we outline these crucial privacy issues in E-Government systems and present various legislations and solutions that are available. 15.3.1 Privacy Issues in E-Government Governments are increasingly using the Internet as a means for the delivery of services and information. This development allows users to register for government services; obtain and file government forms; apply for employment; comment on public policy issues, and engage in a growing number of other functions - all online. The trend towards E-Government and the electronic delivery of services has further expanded government collection of personally identifiable data. Governments' practices in collecting, retaining, and managing personal data pose a wide range of privacy concerns. With this increasing use of technology in government-to-citizen interactions, G2C, it is important to ensure that government agencies that collect personal information adopt and maintain adequate privacy practices. Many details of an individual's life, activities, and personal characteristics can be found scattered throughout the files of government agencies. Many of these
records are, by law or tradition, open to public inspection. This transparency serves important democratic values. But in the Internet Age, it also poses privacy risks. It is now increasingly possible to construct a detailed profile of an individual using only publicly available, individually identifiable information from government records. While the types of government records that are publicly available vary from jurisdiction to jurisdiction, publicly accessible government records with personal information may include property ownership and tax records (name, address, value of property); driver's license (name, address, data on birth, physical characteristics, ID number); voter registration files; and occupational licenses. In the Information Age, personal information has become a highly valued commodity that is collected, aggregated, shared, and sold in ways never before imagined. Whole industries have formed solely to collect and distribute sensitive information that individuals once viewed as under their control: medical records, personal shopping habits, and financial data. As public institutions move services online, there is a growing risk of compromise and abuse. If personal identification data is used in the context of a given transaction, privacy concerns occur but seem manageable. However, privacy concerns become more serious when these data are the subject of secondary use by businesses and/or the government. They arise because such use often means activities that do not reproduce social institutions in ways that allow continuation of the formally achieved, privacy-related status quo, but rather, transform social institutions in ways that force individuals to renegotiate arrangements for privacy protection in ways that diminish private space. Secondary use of personal identification data does not stop at the boundary of the digital divide. The demand of markets for consumer-related information has been globalized. The demand of governments for information on the people may be local, but it is increasingly supported by Information and Communication Technology applications on both sides of the digital divide. The growing experience of people adversely affected by the secondary use of personal identification data limits the element of trust in transactions that require

revealing such data. Within the context of e-government applications, in particular, the willingness of many to reveal personal information may be marred by the lack of concern on the part of the authorities for protecting it or indicating all other purposes for which it may be used. As a result, such information is given if the ends to be achieved are worth the price of potentially diminished privacy, e.g. in the context of welfare programs. 15.3.2 Privacy Legislations It is gradually being accepted that privacy is an important right that the state has some obligation to protect through regulatory policy. Privacy laws embody the premise of trust and confidence between the citizenry and the government when it comes to the delivery mechanisms and ingrained e-government programs. Privacy is the right to have an individual's personal information protected from the undue prying eyes of governments and of organizations seeking to use such personal information for trade and profit, without the consent of the individual, except in exceptional circumstances dictated by law. The new rules laid out for people to have access to their data represent a transfer of power from the state to the citizen in that the citizen now has some control over personal information. At the beginning of the computer revolution, governments developed a set of Principles of Fair Information Practices. These principles are intended to foster individuals' control over their personal information, limit data collection, and place responsibilities on data collectors. They are the basis for most modern data protection and online privacy laws and policies. Many countries have adopted national privacy or data protection laws. Such laws may apply to data about individuals collected by the government, to personal data in the hands of private sector businesses, or both. According to the US Privacy Act of 1974 (US Privacy Act of 1974), a privacy- sensitive transaction will permit: ● An individual to determine what records of him are collected, maintained, used, or disseminated prevent records about him, obtained
for a particular purpose from being used or made available for another purpose without his consent gain access to information about him in records, and to correct or amend such records ● Collect, maintain, use or disseminate any record of personally identifiable information in a manner that assures that: - such action is for a necessary and lawful purpose, - the information is current and accurate for its intended use, - adequate safeguards are provided to prevent misuse of such information ● Permit exemptions from the requirements concerning the records provided in this act only in those cases where there is an important public policy need for such exemption as has been determined by specific statutory authority. ● Be subject to civil suit for any damages, which occur as a result of willful or intentional action, which violates any individual's right under this act. Similarly, there are other governments and other related US acts and those of the European Union (U.S.Federal Trade Commission report to Congress, May 2000; US Computer Matching and Privacy Protection Act of 1998; Official Journal of the European Communities, 1995; World Wide Web Consortium, Platform for Privacy Preferences 1.0 (P3P 1.0) Specification, W3C Working Draft, 2000.) that define the Privacy rights of individuals. The Freedom of Information and Protection of Privacy Act (FIPPA) (Freedom of Information and Protection of Privacy Regulations) provides a right of access to records of public bodies, subject to certain specified exceptions, and with protection for personal information held by public bodies.) The purposes of this Act are to make public bodies more accountable to the public and to protect personal privacy by ● giving the public a right of access to records, ● giving individuals a right of access to, and a right to request correction of, personal information about themselves,
● specifying limited exceptions to the rights of access, ● preventing the unauthorized collection, use or disclosure of personal information by public bodies, and ● providing for an independent review of decisions made under this Act. Also, to tackle the growing problem of identity theft, Senator Feinstein introduced a Package of Bills. Senator Feinstein's package of bills includes: ● The Privacy Act: A comprehensive bill that would set a national standard for protecting personal information such as Social Security numbers, driver's licenses, and medical and financial data, including information collected both online and offline. Modeled on California's financial privacy law, it requires companies to let consumers "opt-in" before their most sensitive information is shared. ● The Social Security Number Misuse Prevention Act: This bill would regulate the use of Social Security numbers by government agencies and private companies by prohibiting the sale or display of Social Security numbers to the general public and by requiring Social Security numbers to be taken off of public records published on the Internet. ● The Notification of Risk to Personal Data Act: Modeled on California's database security law, this bill would define as personal data an individual's Social Security number, driver's license number, state identification number, bank account number or credit card number; require a business or government entity to notify an individual when it appears that a hacker has obtained unencrypted personal data; levy fines by the FTC of $5,000 per violation or up to $25,000 per day while the violation persists, and allow California's privacy law to remain in effect, but preempt conflicting state laws. In addition to the above provisions of the various privacy acts, a privacy- sensitive transaction needs to also permit an individual to securely transact

without revealing his or her identity and ensure that the transaction is upheld in the court of law. 15.3.3 Privacy Enhancing Technologies An essential aspect of any privacy protection regime is enforcement. Without privacy policy enforceability across enterprises, everything is a matter of trust. Therefore, it is recommended to use privacy-enhancing technologies in e- governments as a natural part of the development of an Internal Market (the free flow of personal information) and the protection of the fundamental rights and freedoms of individuals. Several technologies exist that can help the government to effectively address privacy issues in any E-Government initiative. Primary among them has been to (a) define a privacy specification language, (b) enforcing privacy during data mining, (c) ensuring that the database itself ensures privacy (Agrawal et. al., 2002), (d) ensuring transactional Privacy using encryption and co-processors, (e) Statistical Disclosure Control, (f) Anonymized data analysis and (g) developing a privacy broker for privacy-preserving transactions. a. Privacy Specification Language In the legal views privacy policies in standardized machine-readable formats should be available on all agency Websites. A World Wide Web Consortium standard, the Platform for Privacy Preferences, or P3P (http://www. w3.org/P3P/P3FAQ. Html.), is a broadly adopted formal language for communicating privacy promises to consumers. A P3P policy is a promise by a service provider to limit the use of certain data for certain purposes, recipients, and retention periods. Before retrieving a web page, a consumer's web browser first downloads the site's P3P policy and then compares the downloaded policy against its user's privacy preferences. If the policy respects the user's preferences, the web browser retrieves the web page. However, if the policy does not respect the user's preferences, the browser may block the site or
notify the user. When manipulating data, the website operator is obligated to adhere to the P3P policy under which it collected the data. However, P3P does not provide an enforcement mechanism for organizations to use in monitoring their information handling practices. IBM's Enterprise Privacy Authorization Language (EPAL) (Ashley, et. al. 2003) addresses the need for machine enforceable policies. Like P3P, EPAL is an XML-based privacy policy specification language and is designed for organizations to specify internal privacy policies. These EPAL policies can be used internally and amongst the organization and its business partners to ensure compliance with the underlying policies of each. Posting privacy policies is essential in building trust between government websites and their users and these policies are created to inform users of a site's data collection, use, and disclosure practices. P3P is not a panacea for privacy, but it does represent an important opportunity to make progress in building greater privacy protections into the web experience of the average user. b. Enforcing privacy during data mining Privacy is becoming an increasingly important issue in counter-terrorism and homeland defense-related applications. These applications may require creating profiles, constructing social network models, and detecting terrorist communications among others from privacy-sensitive data. One method for preserving an individual's privacy is by distorting the data values. The idea is that the distorted data does not reveal private information, and thus is "safe" to use for mining. The key result is that the distorted data, and information on the distribution of the random data used to distort the data, can be used to generate an approximation to the original data distribution, without revealing the original data values. Consider the example of census data: the government of a country collects private information about its inhabitants, and then has to turn this data into a tool for research and economic planning. However, it is assumed that private records of any given
person should not be released nor be recoverable from what is released. In particular, a company should not be able to match up records in the publicly released database with the corresponding records in the company's own database of its customers. Therefore, distortion can be used to ensure high privacy protection. Agrawal and Srikant first proposed using randomization to solve the above problem (Agrawal and Srikant, 2004). In their randomization scheme, a random number is added to the value of a sensitive attribute. For example, if xi is the value of a sensitive attribute, xi+r, rather than xi, will appear in the database, where it is a random value drawn from some distribution. It is shown that given the distribution of random noises, recovering the distribution of the original data is possible. The randomization techniques have been used for a variety of privacy-preserving data mining work (Agrawal and Aggarwal, 2001; Rizvi and Haritsa, 2002; (Du and Zhan, 2003). Another approach to achieve Privacy-Preserving Data Mining is to use Secure Multi-party Computation (SMC) techniques. SMC deals with computing certain functions on multiple inputs, in a distributed network where each participant holds one of the inputs; SMC ensures that no more information is revealed to a participant in the computation than what can be inferred from the participant's input and the final output. For example, a government agency might have employment information, another health data, and third information about education. An analysis on an integrated database would be more informative and powerful than, or at least complementary to, individual analyses. The work in (Du and Attalah, 2001) proposes a transformation framework that allows the systematic transforming of normal computations to secure multiparty computations. Among other information items, a discussion on the transformation of various data mining problems to a secure multiparty computation is demonstrated. These problems include privacy-preserving information retrieval, privacy-preserving geometric computation, privacy- preserving statistical analysis, and privacy-preserving scientific computations, etc.

The work in (Clifton, et. al.,2002.) discussed several SMC protocols to securely compute the sum, set union, size of the set intersection, and inner product. These protocols are directly applied for privacy-preserving association rule mining from vertically partitioned data and horizontally partitioned data, clustering with distributed EM mixture modeling, and K-Means clustering over vertically partitioned data. The SMC ideas have also been applied for privacy- preserving distributed decision tree induction, naive Bayes classification for horizontally partitioned data, privacy-preserving Bayesian network structure computation for vertically partitioned data, and many others. c. Privacy-Preserving Databases Oracle has implemented privacy (Edwards) using a combination of techniques that allow a higher granularity of control at the tuple level as well as at column level. The key mechanisms are as follows: ● Strong authentication and single sign-on: Strong authentication is generated by PKI infrastructure that uses industry-standard X.509 digital certificates for strong authentication ● Granular Access control through views: A view is a subset of one or more tables. However, views have issues of scalability and complication in the administration of security and privacy. ● Virtual Private Database (row-level control): VPD enables, within a single database, per-user or per-group data access with the assurance of data separation. By dynamically appending SQL statements with a predicate (a "where" clause), VPD limits access to data at the row level and ties security policy to the table itself. ● Label-Based Access Control: The label security mediates access to data by comparing a sensitivity label on a piece of data with label authorizations assigned to an application user. Such access mediation allows data to be separated into different sensitivities within a single database.
● Secure Application Role: It ensures that the appropriate conditions are met before the user can have excursive privileges granted to the role in the database. This limits the bypassing of the application to directly access the database.
● Encryption in the database: Oracle supports DES (56 bit) and triple-DES (112 and 168 bits) encryption of the records. However, Oracle 9i's solution is not a tool dedicated to privacy but is a tool that facilitates privacy-enabled implementations. Another approach is that of Hippocratic databases (Rizvi and Haritsa, 2002) that use components of a secure database and introduce privacy control within the database itself. The Hippocratic database uses Privacy Metadata, which is defined as (a) External recipients, (b) Retention period, and (c) Authorized users. In providing services to the public and carrying out various functions, the government collects and uses a wide range of personal information about the people. Different individuals will have different choices pertaining to sharing their personal information. Government can deploy a Hippocratic database to support the privacy needs of individuals. d. Ensuring Transactional Privacy using Encryption and co- processors With the use of E-Government systems, database transactions are executed over the internet and the data is accessible through the web. One method to secure this data is to encrypt it. If hacked into, the hackers would only get a string of garbage and nothing meaningful. The only people who could use the data would be those individuals having the encryption key. An uncompromised program (e.g. IBM 4758 programmable secure coprocessor) as a broker for all database transactions can be used. The uncompromised program encrypts the stored data with its private key and signs the outgoing data with its private key again (Kaplam, 1996; Smith and Safford, 2001; Smith, 2000). Alternatively, the privacy of data collection is ensured by using a direct encrypted connection between the database and the user's client (Oracle Corporation. Database Encryption in Oracle 8i, 2000).
The work in (Mattsson) presents a scalable approach for data privacy and security in which a security administrator protects privacy at the level of individual fields and records, and provides seamless mechanisms to create a store, and securely access databases. Such a model alleviates the need for organizations to purchase expensive hardware, deal with software modifications, and hire professionals for encryption key management development tasks. They proposed, implemented, and evaluated different encryption schemes. e. Statistical Disclosure Control Privacy in statistical databases, known as Statistical Disclosure Control (SDC), seeks to protect statistical data in such a way that they can be publicly released without giving away confidential information that can be linked to specific individuals or entities. Most countries have legislation that compels national statistical agencies to guarantee statistical confidentiality when they release data collected from citizens or companies. The problem of protecting sensitive information in a database while allowing statistical queries (i.e. queries about sums of entries, and the like) has been studied extensively since the late '70s. In their comparative survey of privacy methods for statistical databases, Adam and Wortmann (Adam and Wortmann, 2004) classified the approaches taken into three main categories: (i) query restriction, (ii) data perturbation, and (iii) output perturbation. Query Restriction: In the query restriction approach, queries are required to obey a special structure, supposedly to prevent the querying adversary from gaining too much information about specific database entries. The limit of this approach is that it allows for a relatively small number of queries. Data/Output Perturbation: In the data perturbation approach queries are answered according to a perturbed database. In the output perturbation approach, the database first computes an 'exact' answer but returns a 'noisy' version of it. Methods of data perturbation include swapping where portions of the data are replaced with data taken from the same distribution and fixed perturbations where a random perturbation is added to every data entry.

Methods of output perturbation include varying output perturbations, where a random perturbation is added to the query answer, with increasing variance as the query is repeated, and rounding either deterministic or probabilistic. The three sub-disciplines of Statistical Disclosure Control are: Tabular data protection: This is the oldest and best-established part of SDC because tabular data has been the traditional output of national statistical offices. The goal here is to publish static aggregate information, i.e. tables, in such a way that no confidential information on specific individuals among those to which the table refers can be inferred (Adam and Wortmann, 2004; Willenborg and DeWaal, 2001). Dynamic databases: The scenario here is a database to which the user can submit statistical queries (sums, averages, etc.). The aggregate information obtained by a user as a result of successive queries should not allow him to infer information on specific individuals. Since the 80s, this has been known to be a difficult problem, subject to the tracker attack [85]. One possible strategy is to perturb the answers to queries; solutions based on perturbation can be found in (Duncan and Mukherjee. 2000) If the perturbation is not acceptable and exact answers are needed, it may become necessary to refuse answers to certain queries; solutions based on query restriction can be found in (Chin and Ozsoyoglu, 1982) and (Gopal, et. al. 1998). Finally, a third strategy is to provide correct (unperturbed) interval answers, as done in (Garfinkel, 2004) and (Gopal et.al.2002). Microdata protection: This subdiscipline is about protecting static individual data, also called microdata. It is only recently that data collectors (statistical agencies and the like) have been persuaded to publish microdata. Therefore, microdata protection is the youngest subdiscipline and is experiencing continuous evolution in the last years (Crises, 2004; Gopal, et. al. 1998). f. Anonymized Data Analysis In order to make progress in improving the nation's response to terrorism and preserving civil liberties, the government uses commercial and governmental databases to collect information about individuals. When personally
identifiable information is used to make judgments about people, a person sometimes will be misidentified as a criminal or a suspected terrorist or a risk when in fact he is innocent but shares some identifiers with someone who is of interest to the government. Anonymizing technology would allow multiple data holders to collaborate to analyze information while protecting the privacy and security of the information. If both the privacy of personal information and the operational sensitivity of the information the government has on known or suspected terrorists can be assured, the reluctance to share data would be minimized. This would enable an analysis of data from diverse sources, without requiring data to be gathered in a single place in a form that could be read or used for other purposes. This would limit abuses, including mistaken identity. The process of -anonymizing a dataset involves applying operations to the input dataset including data suppression and cell value generalization. Suppression is the process of deleting cell values or entire tuples. Generalization involves replacing specific values such as a phone number with a more general one, such as the area code alone. There are several -anonymization algorithm proposals in the literature. Iyengar (Iyengar, 2002) shows how to attack a very flexible (and highly combinatorial) formulation of -anonymity using a genetic algorithm. The data fly approach of Sweeney (Sweeney, 2002) is another greedy approach that generates frequency lists and iteratively generalizes those combinations with less than occurrences. Like incomplete stochastic approaches, iterative greedy approaches such as - argus and Datafly offer no solution quality guarantees. Sweeney (Sweeney, 2002) and Samarati (Meyerson and Williams, 2004) have both proposed complete algorithms for -anonymization. Sweeney's algorithm exhaustively examines all potential generalizations to identify the optimal (or "preferred") generalization that minimally satisfies the anonymity requirement, acknowledging the approach is impractical even on modestly sized datasets. Samarati proposes an algorithm to identify all "k-minimal" generalizations,
among which reside the optimal k-anonymization according to certain preference criteria. g. Privacy Broker for Privacy-Preserving Transactions The Privacy Broker (Bhattacharya and Gupta, 2004) for privacy-preserving transactions enables the following aspects of privacy without modifying the database kernel. (a) The Broker accepts the agreed privacy specification and ensures adherence to the stated privacy policies, (b) it enables individuals to authorize specific individuals to access their data, and (c) it enforces non- repudiation of agreements between visitors and websites. The overall structure of the broker is as follows: ● Uses an uncompromised program as a broker for all database transactions • The uncompromised program encrypts the stored data with its private key and signs the outgoing data with its private key again ● All data accesses are through "Capability Certificates" ● "Capability Certificates" also double up to support non-repudiation ● Capability certificates will allow a suitably authorized person to allow a user to access privacy-constrained data. ● Such authorization would be through capability certificates, which would allow the user to access data for a pre-specified time period. For example, the Mayor of a city can allow the local police head to access medical data, for forensic reasons, of all citizens in the city who have blue eyes and are of the age between 20 and 30 years and NO other data. ● The capability certificates would allow the appropriate policy to be executed, fetching the required data 15.4 E-Governance: Security & Accessibility Implementation of E-governance has changed the way of living of the people in various countries. In the present scenario, we can say our most activities or needs are totally dependent upon E-governance, that's why security of E- governance is a major issue.

Here we try to explain an approach for E-governance security which is based on two terms i.e. “Security of What?” and the other is “Security against What?” In this section we try to work on these two questions. Security of What? This is a major question when we talk about E-governance security. Security is all about protecting the Information and Communication Technology (ICT) assets of an organization. Figure 15.1 Security Layers The ICT assets themselves can be of a wide variety including the following: Data, Information, Knowledge Resources, Programs, Hardware, Networks Above we mention some ICT assets which are very important for the security perspective of E-governance. This is a very important responsibility of E- governance administrators to protect these assets. Security against What? There are various threats to the security of our ICT system, and we can’t define or declare them exactly, it may come from various sources and in various forms. So it is very necessary for e governance administrators to identify these threats. In this section we firstly give some sources of threats and then some types of threats which affect E-governance. Sources of Threat: The sources of threat can be internal or it can be external to the government body. There are various internal sources of threat like the employees who work on the E-governance project, customers of the E-governance projects they may attempt to access the databases for their personal financial profit. When we
talk about external sources it may be Professional hackers, Criminal organizations, various Intelligence agencies or Investigation agencies. Types of Threat Threats may include unauthorized access, modification, and destruction of data. The threats may be of different types varying from time to time because technology changes frequently. The attacks on security of e- governance system can be in different forms including- Defacing of websites, Hacking, Cracking, Damage to critical database and applications, Network security checklist, DSA, Viruses and Malwares etc. the damage of ICT assets need not always be a result of such malicious attacks as mentioned previously. It may be some kind of natural or environmental disaster etc. Security Management The above facts lead us to conclusion that the security of the e governance system has to be managed systematically in three levels, this model is explained with the help of this figure Figure 15.2: E-governance Security Environment Security at User Level Security at user level is a very important issue. We can classify user level security management in three Parts
Figure 15.3: Security at user level Identity Management The main purpose of this is to create a unique digital identity or credential to all legal users by providing a unique username and password, to create and manage ICT systems which ensure that the digital identities are secure. Access Management System In this level the unique credentials which are provided to the user at identity level are matched to identify the user, that he/she is actually the authentic person. Interaction Management System interaction management is a most comprehensive and complex phase. It includes assurance of the Integrity, Confidentiality and Non-repudiation principles of a comprehensive security. At the user level, we can use various tools such as digital identity token, public key infrastructure (PKI), digital signature, asymmetric key cryptography etc. to provide or enhance the security at the user level. Security at Transport Level In this level we consider e-governance security in two aspects which are security within LAN and WAN, and the second one is Security over the Internet. This security level is classified into two systems, i.e. Secure Communication System and Cryptographic System. Figure 15.4: Security at Transport level The data and information reaches through user to ICT assets or vice-versa, and when the data is in between these two i.e. in transmission medium which can be either LAN, WAN, or any wireless or any other medium whatever, then we need a higher security. For this e-governance administrator use various tools or techniques like creating a Virtual Private Network (VPN), installing Firewalls, using higher and complex Encryption or decryption techniques etc. Security at ICT Assets level ICT assets are the most precious for any organization or institution, so to secure this level we have two broad categories of security treatment i.e. Physical security and Electronic security. Figure 15. 5: Security for ICT Assets Physical Security It is used to protect the data against physical damages or losses like- natural disasters etc. to protect data in this security level we take some steps such as- security level of data centers are highly secured by using biometric-controlled system, in data centers provision of dust-proof environment, fire protection
systems, security alarms, CCTV monitoring of data center etc. automated backup system. By using some basic instructions we easily secure the data physically. Electronic Security to give protection against digital threats we want to use electronic security. We have various electronic security tools, and we can manage them in two categories. Figure 15.6: Categories of Electronic Security Anti-virus System When we discuss digital threats the first thing in our mind is a virus, which affects our ICT assets in various ways such as- slowing down of the system, occupying disk space, corrupting our valuable data or storage medium etc. it is also known as malware, worms and Trojan horses. there are “over 1,122,311 known viruses active in the world as of 2008”. Firewalls “A system designed to prevent unauthorized access to or from a private network[3]”. A firewall is a security device that can be hardware or software that is mainly used to separate a secure area from a less secure area and to control communications between the two. We have several firewall techniques such as Packet filter, Application gateway, Circuit-level gateway, Proxy server.

There are many different brands of software firewalls, some of them areZoneAlarm, BlackICE and Kerio etc. Figure 15.7: Firewall in an Enterprise Security Standards The standard for information security was set by the BS 7799, being its popularity it was adopted by ISO as ISO 17799 and its sequel BS 7799-2 that prescribes the specification for Information Security Management. "The ISO 27001 standard was published in October 2005, essentially replacing the old BS 7799-2 standard. It is the specification for an Information Security Management System". "ISO 17799 defines 127 security controls structured under 10 major headings to enable the information security manager to identify the particular safeguards that are appropriate to their specific area of responsibility". Figure 15.8: Major Security Areas
Security Architecture The security architecture of E-governance is a high level document that sets the security goals of an e-governance project and describes the procedure that needs to be followed by all the e-governance hierarchy such as users, businesses, operators etc. Appropriate legal framework is absolutely essential for the systematic and sustained growth of e-governance. Figure 15.9: E-governance Security Architecture Protection of Public Order and Decency The internet is highly capable of being a saturated and versatile medium at the same time. Its reach is very vast and due to its multimedia capability its impact can be immediate and profound. So the government has to beware of its potential to create a negative impact on society through promotion of terrorism, pornography, communalism, violence etc. Section 67 of the IT Act 2000 of India makes it a punishable offence to "publish

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or transmit or cause to be published it the electronic form, an material which is lascivious or

appeals to the prurient interest

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or if its effect is such as to tend to deprave and corrupt persons who are likely, having regard to all relevant circumstances, to read, see or hear the matter contained or embodied in it".

The enormity of the Internet pornography and immense responsibility of governments in intervention can be gauged from the following statistics on the subject, taken from Internet Filter Review 2004, on 24 October 2003: Number of pornographic websites on the internet: 370 million.
Number of child pornographic web sites on the Internet: 100,000. Size of the pornographic industry world-wide: US$ 57 billion. Size of Internet pornographic industry: US$ 2.5 billion. Protection of Privacy of Individuals Disclosure of personal information over the internet raises questions related to the privacy of individuals. The United States passed an Act which is "The Privacy Act of 1974". According to this Act any organization should followed some steps when it gathered any personal information of any individual- Notice, Choice, Onward Transfer and Security Providing Legal Status to Digital Identities and Transactions One of the fundamental requirements of e-governance projects is its ability to create and sustain the operations of government agencies as well as private agencies. So it's very necessary to consult legal status of entities and actions such as- 'legal status is to be provided to the digital identities', 'provide the legal recognition to digital assets', ' provide a digital authority to digital transactions, these transactions could be in the areas of G2G, G2B,G2C etc'. 'Agreements and contracts in digital form'. To provide the authority to any legal digital transaction or deal the Indian government gave 'Information Technology Act 2000' in October 2000. It specifically takes care of all the issues mentioned above. India followed some provisions of 'Electronic transaction Act 1998 (Singapore)' closely while drafting the IT Act 2000. Information Security Policy It is a document which is prepared by an organization to address on the following terms- "why, information security important for an organization?", "What are the possible security attacks?", "What are the communication channels and ICT assets, which want to protect" etc. that why it is also known as Information Security Management System (ISMS). ISMS is a set of policies which are concerned with security risks which are related to Information and Communication Technology. "The establishment, maintenance and continuous update of an ISMS provide a

strong indication that a company is using a systematic approach for the identification, assessment and management of information security risks. Furthermore such a company will be capable of successfully addressing information confidentiality, integrity and availability requirements" Figure 15.10: Framework of Information Security Policy As e-governance is the use and involvement of internet and communication technology to improve different activities of public sector organization, so its security plays a major role as the public's data is flowing in the form of information across different government activities. Through this paper we can learn the application of different security aspects of e-governance in terms of cryptography issues like user authorization and authentication, nonrepudiation and integrity of government issues and many more. Different govt. activities are being automated with the progressing time but as they are mostly involving common man's information regarding their education, residences, job areas, income and expenditures, involvement in public activities etc. so their security is of major concern. A single leak in the system can deteriorate the full e-governance architecture as all the components are interrelated to one another. So, instead of thinking of security after it has been lost, it's better to consider it in advance and have a perfect e-governance system capable of dealing with the security aspects as and when faced by it.
15.5 Mobile Technology for e-Government The terms "government" and "governance" are currently in widespread use, sometimes interchangeably. It is important to develop a distinction between the two. Government is an institutional superstructure that society uses to translate politics into policies and legislation. Governance is the outcome of the interaction of government, the public service, and citizens throughout the political process, policy development, program design, and service delivery. Governments are specialized institutions that contribute to governance. Representatives of governments seek and receive citizen support, but they also need the active cooperation of their public servants. Governance is the outcome of politics, policies, and programs. e-Government (from electronic government, also known as eGov, digital government, online government or in a certain context transformational government) refers to the government's use of information technology to exchange information and services with citizens, businesses, and other arms of government. e Government may be applied by the legislature, judiciary, or administration, in order to improve internal efficiency, the delivery of public services, or better processes of democratic governance. The primary delivery models are Government-to-Citizen or

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Government-to-Customer (G2C), Government-to-Business (G2B) and Government-to-Government (G2

G) and Government to its employees (G2E). The most important anticipated benefits of e-Government include improved efficiency, convenience, and better accessibility of public services. The word 'e-Government' is in itself a self-understanding phrase. 'e' being small we can say 'e-Government' as providing better Governance by use of ICT tools. While e-Government is often thought of as "online government" or "Internet- based government," many non- Internet "electronic government" technologies can be used in this context. Some non-internet forms include Telephone, Fax, PDA, SMS (Short Message Service) text messaging, MMS (Multimedia Messaging service), wireless networks and services, Bluetooth, CCTV (Closed- Circuit Television), Tracking Systems, RFID(Radio Frequency Identification), Biometric Identification, Road Traffic Management and regulatory enforcement, Identity Cards, Smart Cards and other NFC applications; polling station technology (where non-online e-voting is being considered), TV and radio-based delivery of government services, email, online community facilities, Newsgroups and Electronic mailing lists, Online Chat, and Instant Messaging technologies. There are also some technology-specific sub-categories of e- Government, such as mGovernment (Mobile Government), uGovernment (Ubiquitous Government), and gGovernment (GIS/GPS applications for e- Government). There are many considerations and potential implications of implementing and designing e-government, including disintermediation of the government and its citizens, impact on economic, social, and political factors, and disturbances to the status quo in these areas. 15.5.1 M-Government and E-Government m-Government is a subset

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of e-Government. e-Government is the use of information and communication technologies (

ICTs) to improve the activities of public sector organisations. In the case of m-government, those ICTs are limited to mobile and/or wireless technologies like cellular/mobile phones, and laptops and PDAs (Personal Digital Assistants) connected to wireless Local Area Networks (LANs). m-Government can help make public information and government services available "anytime, anywhere" to citizens and officials. m- Government should not be seen as something brand-new: for example, wireless technology has always been an important part of law enforcement. Only today, police officers are as likely to use a laptop wirelessly connected to the Internet as the good old two-way radio. When officers spot a suspicious vehicle they can directly search databases that provide information on who owns the vehicle, if it has been reported stolen or has been reported at a crime scene, and if the owner is wanted by police or has jumped bail. Health and safety inspectors can now file their reports from the field in real time using a Pocket PC or handheld terminals, eliminating paper forms and the need to re-enter the data collected when they get back to the office.
On the other hand, citizens are able to save time and energy by further accessing the Internet and government networks through mobile phones and other wireless devices. In Malaysia, for example, citizens can verify their voting information, such as the parliamentary and state constituencies where they are to vote, using SMS (Short Message Service). Alternatively, citizens can request that real-time information is sent to their mobile phone, PDA, or pager as an e- mail or text message. As another example, the California state government has established a Web page where citizens can register to receive wireless PDA and cell phone notification services for energy alerts, lottery results, traffic updates and articles from the Governor's pressroom. m-Government is not only about efficiency but it also allows for citizen activism. In the Philippines, citizens are able to help enforce anti-pollution laws by reporting smoke-belching public buses and other vehicles via SMS. SMS is also being used to get citizens involved in the fight against crime and illegal drugs. M-Government is not a replacement for e-government, rather it supplements it. While mobile devices are excellent access devices, most of them, particularly mobile phones, are not suitable for the transmission of complex and voluminous information. Despite the emergence of more sophisticated handsets, mobile phones do not have the same amount of features and services as PC-based Internet applications. For example, SMS limits messages to 160 characters, whereas email allows a nearly infinite quantity of characters and multimedia content. Even PDAs or Pocket PCs that support email have display and other limitations. Internet-connected PCs are still the preferred device to take part in online political discussions to search for detailed public sector information, and to transact most types of e-government service. Mobile applications also rely on good back office ICT infrastructure and work processes: government networks and databases, data quality procedures, transaction recording processes, etc. M-Government is particularly suited for the developing world where Internet access rates are low but mobile phone penetration is growing rapidly, particularly in urban areas. Globally, the number of mobile phones has
surpassed the number of fixed/wired phones. This is also the case in many individual nations, including 49 middle-income and 36 low-income countries. Among these countries are Burkina Faso, Chad, Honduras, Indonesia, Jordan, Mexico, Mongolia, Nigeria, Philippines, Saudi Arabia, and South Africa. 15.5.2 M-Government Guiding Principles Some guiding principles can be laid out for those planning m-government systems, as discussed below. Firstly, it should be accepted that m-Government is not a substitute for e- Government. Not all applications can run on mobile devices nor should they. Not all wireless connections are cost competitive compared to wired connections. m-Government should be conceived and developed as part of the overall e-Government strategy and programme. The exact mix of m-Government and traditional e-Government applications depends on the respective conditions of each country. An important determinant would be the state of the nation's information infrastructure. It is easy to build expectations but difficult to regain trust. Citizens who are turned off by their experience with m-Government are not only harder to lure back but will also bad mouth it to others. Thus it is important to: ● Choose m-Government applications wisely. Make sure they are non- trivial but also be careful that they are not the most difficult. ● Make sure that the application is user-friendly. Balance your need for information with the comfort (or frustration) level of the user with the technology. ● In deploying m-Government applications ensure that citizens get exactly what the application claims to be able to deliver in the shortest possible time. If it is a channel to receive complaints, be sure to regularly get back to the complainants about the status of their complaint until it is resolved. ● Ensure that there are suitable back-office systems in place to deliver on m-Government promises.

15.5.3 Critical Issues for M-Government Applications Privacy and Security - While all traffic on the Internet is subject to interception, some hackers are spying on corporate wireless networks from outside buildings, where they can scan e-mail and documents. Wireless networks broadcast signals over the public airwaves so they are vulnerable. Privacy and security issues must be addressed in the planning phase, and may impact the timing or selection of a specific type of wireless service. Specific programs have been developed and released on the Internet to facilitate access to 802.11b networks using the Wired-Equivalent Privacy (WEP) encryption system. AirSnort and WEPCrack are tools that can be used to grab passwords and other sensitive data. Additional security protocols are being developed for 802.11 networks, and some vendors are offering enhanced security features in specific products. Accessibility As government entities pursue plans to provide access to m-Government information and services via text to wireless access devices, they should also facilitate making the information more accessible for all citizens via the Web and other communications technologies. The new Voice Extensible Markup Language protocol is being developed to make information on Web sites accessible to disabled and other users by telephone. This technology could make Web site information accessible by voice commands. The World Wide Web Consortium's draft VoiceXML 2.0 standard integrates markup languages for common dialogs, grammar, speech synthesis and natural language semantics. Future Trends and m-Government Issues Mobile Authentication - As states deal with citizens and businesses over a variety of different technologies (Desktop, Laptop, Cell Phone, PDA, etc.), it will
be ever more important to set uniform policy for how to conduct a specific transaction. This policy should be applicable no matter what technology the user has chosen to use to conduct the transaction on that day. The authentication of an individual should not be restricted to a specific device, or to how they access the service. Industry is proposing several options for authentication and on-line payments systems. The Microsoft initiative is called Passport, the American OnLine (AOL) initiative is called Magic Carpet, and a group has proposed an open, distributed system with implementations available from multiple technology providers and identities issued by many parties operating in a web of trust called the “Liberty Alliance.” Several credit card associations are planning similar initiatives using smart cards. Mobile Payments In Europe and parts of Asia, citizens can use their mobile phones to dial a special number on a vending machine and obtain a beverage. The same technology can let them call a bank or brokerage firm and trade stocks. In the U.S., the federal government regulates billing practices for mobile pay-per-call services, and is in the process of revising the rules that may include allowing non telecommunications related charges. This would allow mobile phones to be used as payment devices. Issues to be addressed include a mechanism that constitutes prima facie evidence of authorization (e.g., a dialed call) and authentication. As states consider m-Government services, they may need to address new regulations for mobile payments and the associated authorization and authentication requirements. Location-Aware Applications The use of the Global Positioning System (GPS), emergency 911 (e911), and other technologies (e.g., Bluetooth and/or radio beacons) will provide another option for m Government applications to be tailored to a specific location. The citizen or government employee will be able to access specific information about services, facilities and specific requirements in the immediate area:
City Guides: location of historical structures/buildings, government offices and interactive commercial services as Yahoo-Earth is doing. Permit Requirements: digging in an area with underground pipes or cables. Obtaining a drilling permit in a rural area and the associated filings with groundwater districts and natural resources/environmental entities. The Telephone Number Mapping (enum) Working Group of the IETF (Internet Engineering Task Force) is defining a DNS-based architecture and protocols for mapping a telephone number to a set of attributes (e.g. URLs) that can be used to contact a resource associated with that number. RFC 2916 is currently on the standards track and addresses the use of the Domain Name System (DNS) for storage of E.164 numbers and how DNS can be used for identifying available services connected to one E.164 number (Note: E.164 simply defines a worldwide numbering plan, with country code and the specific number). While both of these initiatives may offer additional capabilities to support mobile applications for government workers, they will also raise additional privacy concerns for general public use. Content and Presentation Management Issues Publishing web pages has evolved from the primary function of a “Webmaster” to a distributed model where functional staffs that are directly responsible for the content are expected to post information. For agencies with strong web development policies and standards, this did not present a problem. For all the others it resulted in inconsistent page design, usability and accessibility problems. Content Management Systems (CMS) helped resolve this problem by adding a formal structure to the web publishing process and required agencies to adopt enterprise-wide web design standards. The majority of CMS products do a good job managing the presentation of information, providing the display in a standard web browser. Wireless devices do not use standard browsers, nor is there a single standard for all wireless devices.

Wireless devices also have different display capabilities that are limited by display size, support for color and graphics. The other issue that needs to be addressed is the input capability of wireless devices, e.g., lack of a full keyboard, buttons, and pen-based. Some devices use WAP (Wireless Application Protocol) and WML (Wireless Markup Language), and other technologies are used in specific devices (e.g., cHTML - Compact HTML used in I-Mode cell phones, HDML - Handheld Device Markup Language, Web Clippings - PalmVII, and xHTML - Extensible HTML). While government organizations may adopt a specific standard for mobile employees, citizen access to government information and services may require agencies to support multiple standards/technologies. Extensible Markup Language (XML) The solution to presentation management may also facilitate other e Government initiatives, and that is in the use of the Extensible Markup Language (XML) and Extensible Stylesheet Language (XSL). The use of both technologies allows information content to be formatted for specific wireless devices. The World Wide Web Consortium (W3C) has released the XML Schema as a W3C Recommendation, indicating that the specification is stable and contributes to Web interoperability. The recommendation covers the following three parts: ● Part 0: Primer,
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http://www.w3.org/TR/2001/REC-xmlschema-0- 20010502/ ● Part 1: Structures, at http://www.w3.org/TR/2001/REC-xmlschema-1- 20010502/ ● Part 2: Data types, at http://www.w3.org/TR/2001/REC-xmlschema-2- 20010502/

Simple Object Access Protocol (SOAP) - Another technology that may facilitate m-Government. A solution is the Simple Object Access Protocol (SOAP). SOAP
is a lightweight protocol for the exchange of information in a decentralized, distributed environment. It is an XML based protocol that consists of three parts: an envelope that defines a framework for describing what is in a message and how to process it, a set of encoding rules for expressing instances of application-defined data types, and a convention for representing remote procedure calls and responses. The XML, XSL and SOAP infrastructure will also facilitate applications communicating directly with each other over the Internet. Additional information is available at http://www.w3.org/TR/SOAP, and from the Organization for the Advancement of Structured Information Standards (OASIS), an international consortium that creates interoperable industry specifications based on public standards related to structured information processing, at http://www.oasis open.org. Wireless Application Service Providers (WASPs) Some government entities may not have the technical staff to support the required programming and deployment to link applications to multiple types of wireless devices. This has resulted in a new breed of service providers that can manage and configure application content for a range of wireless devices. The WASPs host and manage wireless applications for a variety of devices and protocol languages. WASPs may provide a solution until wireless technologies become less complex and more standardized. 15.5.4 m-Government in India (Case Study) In India data entry related to village information and amenities available in different villages are done at concerned Panchayats which in turn is connected to a central server (available at District Collectorate or State Head quarter), using the wireless technology in particular Mobile phones people residing in surrounding villages can have the requisite information on a particular village on their Mobile phones from their houses without surfing the Net. We can take an example which is not exactly m-Government but transformation towards m- Government using mobile devices; the Karnataka state government in India

has computerised land records. The only problem is that the servers storing these records are in district headquarters and are not easily accessible to villages, while perhaps only 70 Km. away, are without phone lines. Enter DakNet, a "store and forward wireless broadband network" that uses a Mobile Access Point (MAP) mounted on a regular passenger bus to transmit information between village and district headquarters. A villager can request information about their land records (or other services) through a PC in a WiFi-enabled village kiosk (WiFi stands for 'wireless fidelity': a radio-based protocol for transmitting information). The request will be stored in the computer until a bus with an MAP passes and collects the information wirelessly. The information will then be transferred to the district headquarters when the bus is within range of the WiFi-enabled systems based at headquarters. The villager gets their response when the bus 'delivers' the information back to the PC in the village kiosk. This can include delivery of land records and related service transactions. At present most of the State Governments in India have implemented the Treasury Information System in either Client Server mode or Web Based (3-Tier Architecture). Certain reports are also being generated as per the demand of the concerned Finance department either in offline mode or online in case the application software is Web Based. But no one can find out the volume of instant withdrawals being made from the individual Treasury using the said application. Here we can incorporate the use of Mobile Technology to flash the instant withdrawals being made from a particular Treasury in the form of SMS (Short Messaging System). The moment the amount of withdrawals being made is more than a certain cut off amount as fixed by the Finance Department, the concerned authority of the finance department will receive a SMS regarding the withdrawals being made who in turn can make an inquiry at the same instant of time if required. This may prove to be a better live example which transforms a Government from e-Government to m-Government. This example is already in place in the State of Haryana where the farmers are able to know
the price of different commodities on Mobile, transforming the Government system to m-Government. Nowadays in India every villager is well acquainted with the use of mobile phones rather than surfing Net, the literacy rate being low in most of the villages of our country. Obviously the Government can plan the deficit in a mobile fashion instead of sitting and planning in a closed-door room. Some day one can expect m-Government to over ride the e-Government. m-Government development focuses mostly on infrastructures, including mobile networks and applications. After the necessary infrastructure is developed and sufficient mobile density is reached, governments will have to deal with the more difficult task of regulating and developing legal aspects of mobile applications and use of the mobile services. This is also the problem that governments face when implementing e-Government. At this stage, roles of legal interventions in developing the mobile market can be brought to the forefront and will determine further success of m-Governments initiatives. The main advantage of m Government over e-Government in developing and transitional countries is that they have more advanced mobile infrastructure than Internet base. However, accessibility doesn't mean actual use of services. Citizens can mistrust m-Government services and transactions until their privacy and security won't be ensured by the government. Legislation needs to be accurately developed to assure legality and legitimacy of related transactions, thus promoting wider service acceptance by citizens. Although the current mobile infrastructures and applications in most developing countries do not allow providing intellectual public services, it does not mean there is a lack of applicable policy. As in the case of e-Government, m Government has its development stages: one way communication, interaction and transaction. Being at the early stages of the m-Government implementation process, governments should take advantage of existing second generation (2G) networks and start providing simple informational and interactive services, such as providing brief information relating to administrative procedures via Short Message Services (SMS). The transition to
the transactional stage and provision of value added public services, such as providing platforms for downloading and exchanging administrative forms of doing different administrative transactions requires deployment of the next generation of mobile networks (i.e. third generation (3G) networks) that allow mobile users to access the Internet via high speed mobile connections. Deploying 3G networks is becoming a worldwide mobile trend; since May 2006, 196 cellular operators in 84 countries have launched third generation (3G) networks. With the adoption of 3G services by citizens and development of content for mobile platforms by administrative agencies, governments can start providing more effective services at less cost. In that way, m-Government strategy based on mobile infrastructures suggests more gradual development of m-Government services requiring less initial investments, as far as it relies on existing mobile networks, which will be later upgraded to 3G networks by cellular operators. 15.6 Unit Summary

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There are four stages of evolution; presence, interaction, transaction, and transformation. It is important to note that an e-government initiative does not necessarily have to start at the first stage and work its way through all of the stages. Instead, a project can skip levels, either from its inception or as it develops.

This is especially the case with E-Government, as it is an amalgam of interconnected heterogeneous information systems in which government agencies and public and private sectors exchange a high volume of information. Several government agencies have aggressively adopted information technologies in order to modernize the government's highly fragmented service- centric information infrastructure by improving information flow and the decision-making process. The E-Government infrastructure that essentially builds on these Internet technologies carries over a level of concerns for citizen privacy. Citizens, while welcoming client-driven, interactive, integrated information and services from the government, have concerns about privacy in
electronic contexts. Numerous surveys (Westin, 1998; Cranor. et. al., 1999) have found that citizens will not participate in electronic transactions where privacy concerns have not been appropriately addressed. Implementation of E-governance has changed the way of living of the people in various countries. In the present scenario, we can say our most activities or needs are totally dependent upon E-governance, that's why security of E- governance is a major issue. Here we try to explain an approach for E-governance security which is based on two terms i.e. "Security of What?" and the other is "Security against What?" The terms "government" and "governance" are currently in widespread use, sometimes interchangeably. It is important to develop a distinction between the two. Government is an institutional superstructure that society uses to translate politics into policies and legislation. Governance is the outcome of the interaction of government, the public service, and citizens throughout the political process, policy development, program design, and service delivery. Governments are specialized institutions that contribute to governance. Representatives of governments seek and receive citizen support, but they also need the active cooperation of their public servants. Governance is the outcome of politics, policies, and programs 15.7 Key Terms ● E-ASEAN: Association of Southeast Asian nations. ● LINUX : pronounced lee-nucks or lih-nucks is a freely distributable open source operating system that runs on a number of hardware platforms. The LINUX kernel was developed mainly by Linus Torvalds. Because it's free, and because it runs on many platforms, including PCs and Macintoshes, LINUX has become an extremely popular alternative to proprietary operating systems.
15.8 Check Your Progress Subjective: 1) What are the four general development stages of e-government? 2) Explain the privacy issues inherent in e-governance. 3) What are different privacy enhancing technologies, explain any two? 4) Explain the concept of security in relation to e-governance. 5) What is m-government? 6) What are different critical issues related to m-government? Objective: 1) True/False:

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Presence is the first stage of development and is the establishment of a placeholder for delivering information in the future. 2)

Fill in the gap: The World Wide Web Consortium's draft VoiceXML 2.0 standard integrates _____ for common dialogs, grammar, speech synthesis and natural language semantics. 3) Complete the line: In the legal views privacy policies in standardized machine-readable formats should be available on _____. 4) Short Q/A: Give one critical issue related to m-government? 5) Short Q/A: What is an anti-virus system? References: ●

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A Primer on E-Government: Sectors, Stages, Opportunities, and Challenges of Online Governance Updated January 28, 2003 Jeffrey W. Seifert Analyst in Information Science and Technology Policy Resources, Science, and Industry Division.

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Unit: 16 ICT & E-Governance Structure 16.0 Introduction 16.1 Unit Objectives 16.2 Role of ICT in E-Governance 16.3 Format For an ICT Infrastructure 16.4 Customer Relationship Model (CRM) 16.5 Standards In E-Governance 16.6 Mission Mode Project 16.7 India Development Gateway 16.8 Unit Summary 16.9 Key Terms 16.10 Check Your Progress 16.0 Introduction The e-government cannot be thought of as a one-step process or implemented as a single project. It is evolutionary in nature, involving multiple stages or phases of development. In order to protect the concerns of citizens, many laws have been enacted to safeguard the privacy of their information. Laws alone cannot address all the concerns surrounding a complex issue like privacy. The total solution must combine policy, law, and technology. 16.2 Role of ICT in E-Governance E-governance is the application of ICT to the processes of government functioning for good governance. In other words, e-governance is the public sector's use of ICTs to improve information and service delivery, encourage citizen participation in decision-making and make government more accountable, transparent and efficient. According to the Ministry of Information and Technology (India) e-governance goes far beyond mere computerisation of stand alone back office operations. It implies fundamental changes in government operations; and a new set of responsibilities for the legislature, executive, judiciary and citizens. According to the Comptroller and Auditor General, UK, e-governance means providing public access to information via the internet by government departments and their agencies. So in essence, e-governance is the application of ICT in government functioning to bring in SMART governance implying: simple. moral, accountable, responsive and transparent governance. S: meaning simplification of rules, regulations and processes of government through the use of 1CTs and thereby providing for a user-friendly government Moral: connoting emergence of an entirely new system of ethical values in the political and administrative machinery. Technology interventions improve the efficiency of anti corruption agencies, police, judiciary, etc. Accountable: facilitating design development and implementation of effective Management Information System and performance measurement mechanisms and thereby ensuring accountability of public service functionaries. Responsive: streamlining the processes to speed up service delivery and make the system more responsive. Transparent: bunging information hitherto confuted in the government documents to the public domain and making processes and functions transparent. which in turn would bring equity and rule of law in responses of the administrative agencies. SMART governance, thus, helps in: improving the internal organisational processes of governments; increasing government transparency to reduce corruption; reinforcing political credibility and accountability; and promoting democratic practices through public participation and consultation.

ICT applications impact upon the structures of public administration systems. Technological advancements facilitate the administrative systems by enabling: ➢ Administrative Development; and ➢ Effective Service Delivery Administrative Development Administrative reforms, often, have focused on procedural details and restructuring of systems and processes of government organisations. The basic objective of these reforms is to enhance capacities of the systems. ICTs can be used and are being used now to give further impetus to the process. They help in the following manners: 1. Automation of Administrative Processes: A truly be-governed system would require minimal human intervention and would. rather be system driven. While initially the solutions that were offered were quite primitive with poor information layout, inadequate navigation provisions, occasional disruption in services, periodic outdated content and little or no 'back office' support. However, technological advancements and increased pressure from citizenry have prompted improvements in these areas. Now administrative departments are computerised and connected through networks. Software has been built and designed around government departments ensuring efficiency in operations. The departments have launched individual websites carrying information of their respective departments. This has enabled online carrying of operations and file movements. Budgeting, accounting, data flow, etc. has become easy. This has increased the efficiency of office operations and processes and has reduced unnecessary delays. 2. Paperwork Reduction: An immediate impact of automation would be on the paperwork. Paperwork is reduced to a greater extent with communication being enabled via electronic route and storage and retrieval of information in the electronic form. All this has led to the emergence of fewer paper offices'. This concept is defined as an office

situation where all the information (file and mail) amongst various functionaries is distributed online. In the words of Dubey, less paper office is the implementation of effective electronic communication processes that enable elimination of reproductive works and unnecessary papers. The concept is where files and mails (information) are transmitted over wires to small computers at each employee's desk. Office work, such as file movements, notings, etc. is computerised and documentation, report preparation, and databases are now maintained in computers. Due to interconnectivity through LAN, transfer of information and files take place online, thus reducing the physical movements and consumption and storage of huge piles of paper. 3. Quality of Services: ICT helps governments to deliver services to the citizens with greater accountability, responsiveness and sensitivity. Quality of services improves, as now the people are able tc, get services efficiently and instantaneously. As volumes of transactions and information can be electronically handled and delivered over a wider area through the net and web, qualitative services become possible in least time, in least cost, in least difficulty and in greater convenience. By ensuring online redressal of grievances the accountability of officials is ensured. They have become sensitive to the issues affecting people. Monitoring by way of video teleconferencing has further facilitated central monitoring, reporting and face to face communication that has assured effective service delivery, by the officials. 4. Elimination of Hierarchy: ICT has reduced procedural delays caused by hierarchical processes in the organisation. Through Intranet and LAN, it has become possible to send information and data across various levels in the organisation at the same time. Computerisation and communication patterns facilitated by ICT have increased efficiency and have led to the involvement of all levels in decision-making. 5. Change in Administrative Culture: Bureaucratic structures have been plagued by characteristics aptly described by Victor Thompson as 'bureau-pathology'. From the days of New Public Administration, efforts have been made to find ways to deal with the pathological or dysfunctional aspects of)rt. bureaucratic behaviour and to make delivery of public services effective and efficient. With e-governance, public actions coming under public glare would certainly induce norms and values of accountability, openness, integrity, fairness, equity, responsibility and justice in the administrative culture. Rather, administration would become efficient and responsive. Effective Service Delivery ICTs play an important role in effectively delivering services to the people. ICTs ensure: 1. Transparency by dissemination and publication of information on the web: This provides easy access to information and subsequently makes the system publicly accountable. Also as web enables free flow of information, it can be easily accessed by all without any discrimination. 2. Economic Development: The deployment of ICTs reduces the transaction costs, which makes services cheaper. For example, rural areas suffer on account of lack of information regarding markets, products, agriculture, health, education, weather, etc. and if all this could be accessed online would lead to better and more opportunities and thereby prosperity in these areas. 3. Social Development: The access to information empowers the citizens. Informed citizens can participate and voice their concerns, which can be accommodated in the programme/ project formulation, implementation, monitoring and service delivery. Web enabled participation will counter the discriminatory factors affecting our societal behaviour. 4. Strategic Information System: Changing organisational environment and increasing competitiveness have put pressures on the performance of the functionaries. Information regarding all aspects need to be made available to the management at every point to make routine as well as strategic decisions. 16.3 Format For an ICT Infrastructure As people communicate differently, they are looking at different forms of governance from this relatively modern thing that was developed in Europe a couple of centuries ago. We are starting the next evolution and where it will end is unpredictable. While there is much discussion about what digital government can or will do, the process is still in its infancy. Few governments or agencies have anything even as elemental as EDSs iForm, linking three databases together. And that may be all to the good. Even before you get to the people who think the government is just one giant conspiracy, there are many people with deep concerns about hyper-efficient governments. Given the dangerous excesses that non-digital governments have been capable of it is indeed sobering to think about what tomorrow's a-government might do with unfettered access to the digital information of its citizenry. But that is not the only risk. There are also concerns about individuals and businesses having too much input in the day-to-day business of government, creating a hyper- responsive government. Will it move us toward a direct democracy where people vote on whatever hot-button issue they see on the evening news. The first step in using ICTs as a tool to improve governance is to ignore ICTs altogether and focus on selecting and prioritizing improvement goals that are urgent or important. Once the most important goals are established, senior level policymakers must establish milestones that will indicate that the activities designed to meet these goals are on track. The next step is to review alternative ICT solutions that support the activities designed to achieve the goals, given constraints on financing, infrastructure, literacy, and skills. Each solution must be associated with (financial and opportunity) costs - of infrastructure, training, etc. - and benefits.

Once the ICT solution is accepted based on the planners' estimation of its merits and costs, a detailed work plan must be developed with provisions for adequate training and capacity building. Again the key is to focus on strategic goals and user constraints. The final step in the process is to lay the groundwork for monitoring and evaluation (M&E) and to incorporate M&E as an ongoing integral part of the process of adapting ICTs to meet needs. Build capacities in people to absorb information and knowledge and use it for improvement in their quality of life. Basic education enhances people's capacity to learn and to interpret information. Knowledge about technology asserts a belief in people that they can be a part of the ICT revolution. (Education, Computer Literacy, Exposure Visits, Creation of Innovative Models of people centered governance). Simplify information to suit the capacity of the end users. (Language Barriers etc.) • Efficient Judiciary to enforce amendments and abide by people's decisions. • Low Literacy rate • Fostering intermediary organizations and strong civil society groups to force changes. • Transformation from information and knowledge deprivation to easy access to the same-capacities to Absorb and Understand. There are several stumbling blocks for an effective implementation of an ICT policy, which are as follows; • Undermining Political Control? • Governance will become accountable to not just opposition parties but to individuals. • Public Policies that hinder the spread of ICT's. • Lack of understanding about the technology and its potential.

• High Cost of setting up ICT infrastructure for inclusion of all but not higher than the cost of inclusion incurred so far and to be incurred in the future. • Great use of ICT can influence the process of Governance in several ways; • Technical - in terms of automation of tedious or repetitive governance tasks and thereby improving efficiency of governance processes. For instance automated filing of tax forms, checking the status of an application online etc. Through technology it enhances the productivity effectively of response and grievance handling on part of the governments. • To Facilitating / Supportive role - in terms of using ICT to complement existing efforts/methods to improve governance. For instance, putting government information on a website or opening avenues for people to communicate with government officials through email. • To a completely innovative role-which involves initiating new services and new mechanisms to improve governance. For instance, the potential for any individual to access the same information instantly as and when it becomes available in the public domain is useful to fighting corruption and reducing information monopoly to traditional power bearers etc. In other cases, rapid access to information from sources other than government sources can improve decision-making capacity of an individual. E-governance is not just about government websites and email. It is not just about service delivery over the Internet. It is not just about digital access to government information or electronic payments. It will change how citizens relate to governments as much as it changes how citizens relate to each other. It will bring forth new concepts of citizenship, both in terms of needs and responsibilities. E-governance will allow citizens to communicate with the government, participate in the governments' policy-making and citizens to communicate with each other. The e-governance will truly allow citizens to participate in the government decision making process, reflect their true needs and welfare by utilizing e-government as a tool. Different organizations seek to integrate ICT in their governance infrastructures to achieve different goals. UNDP is using ICT to: • Raise awareness, build vision and advise on policies to capture information and knowledge for development; • Promote and build connectivity and necessary infrastructure for access to information and development. • Build required human and social capacities and institutions and provide training and education to impart requisite skills. • Empower communities and disadvantaged groups, reinforce participatory approaches and good governance and foster networking; • Help create new livelihood and employment opportunities; • Conduct pilot projects to demonstrate the feasibility, suitability and impact of ICT for SHD through electronic community centres; • Promote partnerships between the public sector, the private sector and civil society. 16.4 Customer Relationship Model (CRM) Customer relationship management (CRM) is a business strategy whose outcomes optimize profitability, revenue and customer satisfaction by fostering customer satisfying behaviors and implementing customer-centric processes. CRM is often seen as a key element in delivering customer-centric services. Today CRM solutions are often implemented as a cloud computing service. Cloud computing refers to providing and using computational resources via the

Internet. It enables access to technology in the form of service on demand. Services and data coexist in a shared and dynamically scaled set of resources. E-government is the organic combination of information technology and government management function. With the development of information technology, the government has been upgrading from management-oriented mode to service-oriented one. Therefore, government CRM is a business strategy to provide comprehensive service from all public organizations. This paper presents a model of CRM in an e-government system. Model includes process specification, metrics for evaluation of the system performance and recommendations for implementation. Customer Relationship Management (CRM) today is very important for institutions that aim to manage the relationship between citizens and administrators. Government institutions need to identify the problems of citizens and enhance the cohesion in relationships with citizens. A good customer relationship is the key to success. The use of customer relationship management systems in government is becoming significantly important for increasing citizen lifetime value. CRM e-government system is the systematic care of a business relationship between the institution and citizens. A new vision of a government system in which the citizens is the central subject opens up new opportunities that include customization and adaptation to citizens' needs and preferences. Given the possibility of dissemination of information to many users, social computing can play an important role in improving the e-government process. Many social networks formed groups for government purposes. This paper discusses possible solutions for improving relations between citizens and government institutions in the process of e-government through social media. The paper focuses on the development of social media metrics that can be applied in e-government. The metrics should be defined with respect to processes in e-government, on strategic and operative levels, and synchronized with the strategy of government institutions. In this paper, we deal with metrics considering the quality of government process and
outcomes, while metrics for financial outcomes are not considered. Customer Relationship Management Customer relationship management (CRM) has been defined as the management approach that involves identifying, attracting, developing and maintaining successful customer relationships over time in order to increase the retention of profitable customers. CRM is a coherent and complete set of processes and technologies for managing relationships with current and potential customers and associates of the company, using the marketing, sales and service departments, regardless of the channel of communication (Chen & Popovich, 2003). CRM is a highly fragmented environment and has different meanings for different people (Sohrabi, Haghighi & Khanlari,2010). CRM is endorsed to generate and administer bonds with clients more efficiently through the itemized and precise analysis of customer information utilizing distinctive information technologies (Peppers & Rogers, 2011). To assess future customer behavior and offer the best possible care, it is necessary to exploit, evaluate and regularly update the company's knowledge about the customer (Wilde,2011). CRM is therefore understood as a customer-oriented management approach where information systems provide information to support operational, analytical and collaborative CRM processes and thus contribute to customer profitability and retention (King & Burgess, 2008). Total customer relationship management (TCRM) is proposed hopefully to validate activities more effectively, to pursue business excellence in CRM practice, as well as to have CRM become a mission covering all members, resources, processes and endeavours of an organisation. The TCRM system is composed of five components: customer-related processes, management responsibility, resource management, product or service realization and measurement, analysis and improvement (Su, Tsai & Hsu, 2010).
Social Customer Relationship Management Social CRM is a philosophy and a business strategy, supported by a system and a technology, designed to engage the customer in a collaborative interaction that provides mutually beneficial value in a trusted and transparent business environment. It's the company's response to the customer's ownership of the conversation. Social CRM can provide the tools and strategies for meaningful, accurate customer insight. Rather than attempting to learn something emotional from a customer record, it can change the face and nature of what information is gathered, what companies can learn from that information and how they can apply that information. The information includes the nature of conversations about the company by an individual customer, customers associated with an account, or discussions going on in the general population about a company (Greenberg, 2010a). Social CRM is based on the ability of a company to meet the personal agendas of their customers while at the same time meeting the objectives of their own business plan. It's aimed at customer engagement rather than customer management (Garcia-Crespo, Colomo-Palacios, Gomez-Berbis & Ruiz-Mezcua, 2010). The characteristics of Social CRM are (Greenberg, 2010b): ● fully integrated into an enterprise value chain and that includes the citizens as part of it; ● citizens interactions are encouraged through authenticity and transparency, · knowledge is utilized in context to create meaningful conversations, · the company processes are modeled from the citizens point of view; ● both information-seeking and information-contributing behaviour are encompassed into the citizens business ecosystem; ● resides in a citizens ecosystem; ● creating conversation with citizen - engaging citizen in activity and discussion – observing and redirecting conversations among citizens are activities done in the marketing frontline; ● business is an aggregator of experiences, products, services, tools and

knowledge for the citizen; ● the intellectual property that is created with the citizen, partner, supplier, problem solver is also owned together; ● the business is focused on environments and experiences that engage the citizen; ● The focus of technology is on both operational and social/collaborative areas and citizens are integrated into the value chain. Social CRM strategies often involve an integration of new tools with traditional measures. In social-communicative context social networking means the initiation of connection, mostly between strangers. In addition to being cultural, media and social contexts, social networks are aimed at interaction as one of the most important communication practices. Social networks typically deal with measuring and quantifying the relationships between individuals in a group. The focus is on measuring the structural patterns of interaction and how these patterns can explain outcomes. Social media are two-way media, and in most cases the interactions and dialogues on social media sites have been initiated and are largely conducted by private individuals, not by company representatives or officials. Social media can serve as a resource for understanding what citizens' expressions about the government are (Peppers & Rogers, 2011). Social media can be defined as a type of web page through which the connection of modern Internet technology and interaction is easily enabled (DeAndrea, Ellison, LaRose, Steinfield & Fiore, 2012). Further, social media adds a level of qualitative information to the quantitative data traditionally made available through web analytics. The most popular social media applications/services are blogs, wikis, social network sites, and micro blogging (Stuart, 2009). In terms of social media metrics, blogs have the big advantage of allowing the use of traditional web analytics. Wiki software can be used for the collaborative creation of web pages. The success of a wiki may be quantitatively measured in several different ways: number of pages created, number of editors and the amount
of edits. Social network site metrics are heavily dependent on the information that a site shares. This can vary considerably not only from site to site but also according to a user’s type of account (Stuart, 2009). Social network sites have been defined by (Boyd & Ellison, 2007) as web services that allow individuals to construct public or semi-public profiles, articulate a list of other users with whom they are connected, and view and traverse connections made by others. They are usually based on the Internet or mobile technologies. Professional title for social web services is the Social Network Service (SNS). SNS allow the citizens to create and maintain personal or business contacts through a network with close friends or business partners (Radovanović, 2010). SNS represents one of the most popular forms of online communication. They enable the exchange and review of large amounts of multimedia content, finding persons of the same interests, exchange of knowledge and experiences. SNS are primarily focused on creating a community of the like-minded or on connecting a particular group of people primarily through the Internet. Social CRM in e-government Government institutions are becoming aware that citizens’ demands and desires have to be met. The CRM integration into e-government is a long and demanding process because citizens’ demands are increasing simultaneously with the growth of technology capability. Citizens relationship management is the systematic care of a business relationship between the institutions and citizens, where service quality is becoming an ever more interesting question. Citizen satisfaction can be increased in this way. The steps in the CRM implementation in the e-government field are defining the CRM goal and strategies, adaptation and implementation. From the perspective of the citizen, the CRM strategy allows interaction with the government institutions from a single entity that has a complete understanding of their unique status. From the perspective of the government institutions, the CRM business strategy provides a clear and
complete picture of each individual and all the activities pertaining to the individual. Data related to citizens characteristics and interaction are substantial for CRM. Data should be acquired, stored, analyzed, distributed and applied throughout the government institution in a timely manner. Data sources are documents, news, database, practice and virtual communities. Government institutions should consider what data about citizens are required to support analytics and operational processes. CRM technologies form a fundamental part of any government institution's application portfolio and architecture. CRM application requirements should be considered as the provision of integrated functionality that supports seamless citizen-centric processes across all areas of the government. Performance measurement is one of the key aspects of managing the CRM system. It's very hard to effectively manage a CRM system, if government institutions don't have insight into the functionality of the system. Well defined CRM system metrics increase chances for success through synchronization of processes in a government institution. This affects on increase of quality of the government process. The absence of appropriate CRM metrics has a bad influence on citizens' results, communication and satisfaction of their demands. Techniques of performance measurement and system metrics that are described in the literature, put focus on key performance indicators. Some of the authors indicate the need of measuring global performances, but they don’t offer a framework or methods for designing metrics. Additional research is necessary for identification of CRM metrics and overcoming barriers of implementation. Bigger part of the literature focuses on analysis and classification of systems for performance management, and a smaller part on CRM metrics. CRM must be observed as one entity and system for performance measurement must have global character. Goal is development of system metrics that enables identification of fields for improvement CRM system

performance. In this way, government institutions can focus their efforts and achieve better performance. With considering all specificity of CRM system, system metrics should satisfy following criteria: • metrics is based on processes, • metrics is defined on all levels (strategic, operative), • metrics is synchronized with the strategy of government institutions, • metrics cover all relevant processes. Standard definitions, quality description, formulas for calculation and relations between metrics on different levels, provide standard and consistent measurement of CRM system performance measurement on global level, internal and collaborative processes. Important elements of system metrics are descriptions and instructions for collecting data necessary for defining (calculating metrics). Implementation of model for Social CRM in e-government The structural framework and the necessary elements for implementing e-government are shown in Figure 16.1. Figure 16.1: Structural framework of e-government The building blocks for successful CRM projects contains (Thompson, 2011): ● SRM vision and strategy, valued student experience and collaboration,
● SRM processes, ● SRM metrics, ● SRM technology, ● SRM information. The framework can be used for government and debate in developing the CRM vision and CRM strategies. The government institution must take a proactive approach in creating a citizen relationship management. The CRM vision should be used as the guide to the creation of a CRM strategy which is all about how to build and develop a valuable asset: the citizen base. It must set objectives and metrics for attaining that goal. It directs the objectives of other operational strategies and the CRM implementation strategy. The citizen experience must be designed in line with the CRM vision and must be constantly refined, based on actively sought citizen feedback. The relationship with the citizens needs to be viewed and managed in terms of the citizen life cycle and formalized processes must exist to manage that life cycle. Collecting data is important for good relationships and adjusting the government system to the needs of each citizen, and personalization of government services. Successful e-government process should create processes that not only meet citizens' expectations and support the citizen value proposal, but also provide competitive differentiation and contribute to a designed citizen experience. In order to define an adequate set of metrics, we need to identify key processes within the e-government system. In this paper we consider the government processes for citizens in the Republic of Serbia. CRM activities are proposed to be implemented through SugarCRM. This software solution provides a variety of features that enables implementation of CRM activities in e-government, such as: collaboration and communication among citizens and departments, providing citizens with appropriate information about services, government portal promotions, citizens’ roles and management, citizens’ activities analytics. We identified the following processes are of importance for this research: ● promotion of e-government portal, ● usage of e-government portal, ● social CRM in government, ● issuance of documents. In the following Table metrics are shown for each relevant process. Process Attribute of performance Definition SRM Metrics Promotion of e-government portal The number of social media interactions Conversation means the number of blog posts, forum discussions, tweets on the social network site. Volume is a strong metric when measured over time. Conversation volume The details of online citizens Social listening tools can collect data on citizen location, gender, and age. Demographic metrics The number of total impressions in an online and offline discussion Measured by the number of different sources covering a topic and each source's potential official site views. Message reach The number of citizens’ discussions around government institution Frequency and qualitative analyses related to discussions about a government institution business. Frequency
Usage of e-government portal The attitudes of citizens Non-adequate analysis of the citizens’ needs and neglecting comments and suggestions that can be made by government institutions result in dissatisfaction and a large negative impact on the citizens Sentiment Type Financial position Government institutions provide financial benefits for some citizens. Citizen equity The number of company partners The number of enterprises that have signed contracts with the government. Work Distance and speed at which a information spreads Measured by the number of different entries around the same topic within a certain time period. Viral Propagation Social The number of access to portal Automatically collected data from web server logs. These are rich collections of data relating The intensity of the use of portal CRM in government the access to specific web pages. The number of posts on forum Interactivity between citizens and government in the online portal is measured through the amount of comments, which clearly shows the interest of both sides for good communication and obtaining the necessary information. The intensity of the interaction trough portal

The number of group members Interactivity between citizens and government in social networks is measured through the number of posts. Significant indicator of citizens' interest for the web site of the Republic of Serbia is the same number as view the same. The intensity of the interaction on social networks Processing time Time metrics evaluate the time to deliver a product or service to customers, the portion of time that is spent processing the documents or idle time, whether citizens receive documents or responses on time, and other time-related considerations. Total time The number of steps in the process Number of times is a document handed off between individuals, offices, or departments in the process. Process complexity Process cost How much does the process cost to operate online? Cost Issuance of documents The number of citizen referrals The number of citizens who have previously finished work with the government institution. Good reputation of government process Satisfaction with the work of institution Availability of staff in government for consultation and help, as well as recommendations for practice and work. Expertise and availability of government The number of open opportunities Percentage of citizens who were employed in the profession. Employed citizens Table 16.1: E-government social CRM metrics

Public services for citizens Metrics ● Income taxes ● Job search ● Social security contributions ● Personal documents ● Car registration ● Application for building permission ● Declaration to the police ● Public libraries ● Certificates, request and delivery ● Enrolment in higher education ● Change of address ● Health related services Declaration, notification of assessment The number of citizens registered in the employment office Unemployment benefits, family allowances, medical costs, student stipends The number of passport, driver's license The number of license plate The number of steps in a process where a task or activity is performed The number of legal offenses The number of available catalogues, books, search tools The number of birth, marriage The number of new students The number of requests for the purchase and sale of homes or apartments The number of appointments for hospitals Table 16.2: Public services and metrics for citizens CRM module for passport issuing (Figure 16.2), as part of proposed e- government portal, provides the possibility for registration by citizens and sending notifications when requirement is fulfilled. By using this module the government can send notifications to citizens via email when the application form is accepted. Integration between the government portal and mail server enables sending automatic and personalized information about citizens' activities. Figure 16.3 shows the schedule of appointments for passport issuing.

Figure 16.2: Application for passport issuing Figure 16.3: Schedule of appointments for passport issuing 16.5 Standards In E-Governance Many, if not all governments worldwide, are now developing and implementing strategies to a) deliver e-government services to citizens and businesses, and b) to support the modernisation of government. For the public services, the real opportunity is to use information technology to help create fundamental improvement in the efficiency, convenience and quality of service. The plan is not only to offer more convenient access to services but also to transform how governments organise mainstream delivery. When people interact with the government, in either their role as a citizen or a member of a business, they want to do so on their own terms. They want high quality services which are accessible, convenient and secure. People should not need to understand how the government is organised, or to know which department or agency does what, or whether a function is exercised by central, regional or local government.

New ways of doing business will change the relationship between individuals and the government. At the same time, it will be vital to make sure that people can trust the systems being used, by ensuring that their personal data is protected and that systems are secure. Better public services tailored to the needs of the citizen and business, as outlined above, require the seamless flow of information across government organisations. This requires technical policies and specifications for achieving interoperability and information systems coherence across the public sector. Interoperability and data integration are the key to success. Governments have many databases built on various hardware and software platforms and these cannot be replaced overnight or even in the medium term so the task is how to join them up and make them work together to provide the citizen and business facing services. The main thrust nowadays is to adopt open, international standards, including the Internet and World Wide Web specifications, for all government systems, and to adopt XML and XSL as the core standards for data integration and the presentation of data. The main benefits of using open standards are: - More choice of products and suppliers - Less dependency on a single supplier - Avoid proprietary lock-in - Stability or reduction in costs - Accommodate future changes more easily However deciding which are the most appropriate open standards and how to deploy them is one aspect that all governments are finding difficult. Through the work of the OASIS e-Government Technical Committee we are addressing those issues and others, and providing roadmaps and good practice for all, particularly for those countries who are new to e-Government work.

Open standards What is an open standard? The marketplace is rife with instances of a single vendor declaring its work to be a standard or of a closed collective of vendors proclaiming the combined weight of their customer base constitutes 'de facto standard' status. To truly be an open standard, however, a specification must be developed and approved under a published, transparent process that is democratic and fully exposed to public review and comment. Open standards development is conducted without non-disclosure agreements and is subject to explicit, fully revealed IPR terms. An open standard is publicly available in stable, persistent versions. Because no single vendor or closed alliance of companies can dictate an open standard, the results are more likely to meet the needs of the entire community, not just the largest players. Initial work may begin in a private setting, but until it is submitted and vetted through an open standards process, it remains a proprietary specification. OASIS (Organization for the Advancement of Structured Information Standards) produces global standards that have both the traction of widespread marketplace adoption and the sanction of a trusted, open process. OASIS is a not-for-profit, international consortium that drives the development, convergence, and adoption of e-business standards. The consortium is best known for its work in Web services, security, e-business, and standardization efforts in the public sector and for application-specific markets. OASIS is distinguished by its transparent governance and operating procedures. Founded in 1993, OASIS has more than 3,000 participants representing over 600 organizations and individual members in 100 countries. Members themselves set the OASIS technical agenda, using a lightweight process expressly designed to promote industry consensus and unite disparate efforts. Completed work is ratified by open ballot. Governance is accountable and unrestricted. Officers of both the OASIS Board of Directors and Technical Advisory Board are chosen by democratic election to serve two-year terms. Consortium leadership is based on individual merit and is not tied to financial contribution, corporate standing, or special appointment. The OASIS open standards process enables collaboration, embraces full participation, and ensures a level playing field for all. Unfair first-to-market advantage for any one participant is eliminated. OASIS encourages convergence but does not mandate it. The consortium provides fair data about projects being standardized, but doesn't pick winners. OASIS believes widespread adoption can only be achieved when all those affected by a standard participate in its creation. The consortium takes pride in an inclusive, international, and balanced member base, where users and vendors, governments and universities, trade groups and service providers all have a seat at the table. By participating in OASIS, organisations ensure their business requirements are met and their staff stay informed on key developments. Members play an active role in minimizing duplication of standards efforts and unifying fragmented initiatives. Government agencies, in particular, take an active role in OASIS standards development in order to reduce the risk inherent in recommending new technology to their constituencies. The e-Government Technical Committee The purpose of the e-Government TC within OASIS is to: ➢ provide a forum for governments internationally to voice their needs and requirements with respect to XMLbased standards which can: - be handed off to relevant OASIS TCs if they exist, or, - cause the formation of new TCs, or - sub-committees of this TC, for needs that are not currently addressed, or, - cause the formation of Joint Committees within OASIS, or, - cause the formation of liaisons with other international standards bodies.

➢ provide a mechanism for the creation of best practice documents relative to the adoption of OASIS specifications/standards and other related standards within Governments internationally; ➢ promote the adoption of OASIS specifications/standards within Governments which could include the creation of implementation- oriented pilot projects to involve software vendors and participating government agencies to demonstrate the use of OASIS specifications/standards; ➢ work with other OASIS channels and other international standards bodies' channels (e.g. XML.org for schema registry and/or information portal), to act as a clearinghouse of information related to applicable specifications/standards as well as activities and projects being conducted by Governments in the adoption of XML-based systems and standards. To meet the objectives, the Committee has identified the following as its list of deliverables: ● co-ordinated input from Governments to the development of emerging standards, eg ebXML, Web Services, to ensure the standards are not just developed for the benefit of the private sector ● the identification of new standards required to support e-government and plans for development of those standards either by the e-Gov TC or other more appropriate standards bodies ● the channel and process for Governments to press for all relevant standards bodies to coordinate their activities ● co-ordinated input from EU countries to deliver aspects of the eEurope 2005 plan. Membership: The committee has a very wide membership including many governments and their agencies from countries in Europe, North America, the Far East and

Australasia. In addition most of the major international suppliers of ICT to governments are represented on the committee. The current membership is over 150 which makes this TC one of the largest in OASIS. Current Projects The work of the Committee is structured into a number of projects, each dealing with a specific aspect of putting e-government services on-line. Some of the projects are very technically focussed on ICT infrastructure issues whilst others are more business orientated. The following sub-paragraphs give a brief overview of each project. 1) Search Service Interoperability Governments at all levels worldwide are major producers and consumers of data and information. Governments and the publics they serve have long invested heavily in enhancing the discovery and use of government data and information resources, thereby serving goals such as government transparency and accountability, efficiency of commerce, education, scientific research, and a range of other societal objectives. As the Internet becomes ever more essential to the dissemination of data and information resources held by governments, interoperability of information search mechanisms is a major issue. To address this need the TC has published the following Recommendation: “Governments are recommended to enhance interoperability among their networked systems by adopting a common search service. The search service should be based on the ISO 23950 international standard that features a high degree of interoperability across many communities of practice and types of data and information holdings. Governments should implement the search service as a supplement to other search mechanisms, as these may be required for reasons other than broad scale interoperability.” 2) ebXML Messaging for use within e-Government The initial ebXML Message Specification was designed primarily for Business-toBusiness communication, (see www.oasisopen.org/committees/ebxml-msg),
therefore a number of Government specific service delivery requirements will not have been considered. The TC has produced a requirements document that identifies additional elements that will need to be added to allow for complete compliance with Government issues. With these additional Government elements the ebXML messaging specification can be used for: ˙ Citizen to Government ˙ Business ‘line of Business’ applications to Government ˙ Agency to Agency Communications ˙ Agency to Government Common Service ˙ Government to Government The requirements document has now been handed over to the ebXML Messaging TC for them to include the additional elements into the ebXML Messaging Specification. 3) Harmonising Taxonomies One of the keys to successful sharing and interchange of information between governments is the consistent use of terminology. For example, there are a variety of terms used for the welfare and benefit payments functions. This is compounded in the international arena where translation into multiple languages makes this consistency even harder to achieve. Many Governments are or have developed taxonomies for use in e-service delivery, and this project aims to review the scope for harmonising these taxonomies. This harmonisation could take a number of forms, e.g. linking them together or producing a master one that all governments use. The technical solution is a secondary aspect, first there needs to be agreement on the business terminology and to that end a Glossary of Terms is being produced. The next phase will be to analyse the content of a number of government taxonomies to establish what common content there is between them. From this analysis a decision can then be made on the viability of either creating a single master taxonomy or whether a mapping of existing taxonomies is more appropriate. 4) Common Data Definitions As with 3rd point above, there is a need to have common definitions of data so that when data is exchanged in support of a process both parties know exactly what the data is and how
it should be processed. For example, there are a variety of formats for the names and addresses of Taxpayers. This project will examine the Core Components already defined as part of UBL, (see www.oasisopen.org/committees/ubl), and either seek to refine them or identify new government components that need to be added to the list. 5) Use by Governments of ebXML Registries Governments currently use a mixture of data dictionaries, XML schema repositories and other registries to store information about the IT components they use in the delivery of their e-services. There is a need for these all to be based on the same standards and to interoperate to help governments meet their interoperability aims both within their own jurisdictions and across boundaries. The TC is running a proof of concept / showcase project to demonstrate how the ebXML registry, (see www.oasisopen.org/committees/regrep), with suitable client applications, can meet the needs of governments to store these components. The UK Government is hosting the trial site and using its corporate data dictionary and that of the Ministry of Defence to show how a federation of dictionaries can be built and linked together. 6) Use by Governments of the eprXML Standard This standard was developed by the Norwegian Government and covers electronic processes (EPR). It is used to describe how data support can be organized in a unified and standardised manner. This means that data support to such different areas as health care and housing construction can be modelled in the same way and use the same basic components. The standard describes how: - information is presented to the users - Tools and supporting materials are implemented - Communication with legacy systems will take place - Roles, processes and routines will be organized - General functions can be standardised

The TC is considering the use of this standard to support the delivery of e-government services. 7) Workflow Standards: An increasingly important component of delivering e-Government services is the need for a workflow system to underpin the e-service, particularly where the service needs input from across organisational boundaries. From the customer perspective i.e the citizen or business organisation, they will want to enquire on-line at any point what the latest situation is with their request for the service and who is currently dealing with it. To meet these needs Governments want products that support open, interoperable standards to enable different workflow systems to work together and alos interface with their e-service applications. Currently there appears to be a number of standards in this category but with no clear indication of which should be used for what aspects and how they relate to each other. Within this project the TC will hope to clarify which standards should be used and in what circumstances. 8) Records Management in Government This project aims to develop and record the requirements and issues for records management that are specific to the context of e-Government, particularly long term archiving. The focus is on when, where and how (the right bits of) the information involved in e-style government interactions (G2G, C2G, B2G) become formal records (an aspect of record declaration); and identifying, & getting hold of, all the right information to constitute an authentic record (aspects of capture). Following on from this initial requirements definition the TC will seek to develop a standard for use in this context. 9) Semantic Interoperability Business Implementation Guidelines: XML has clearly proven itself as a standard that enables syntactic interoperability between information systems. However on its own it cannot improve and enable semantic interoperability, i.e. systems that can talk to each other and understand each other. In an effort to reap the benefits of an XMLcentred and semantically interoperable
information architecture, this project will look to establish a set of Business Guidelines that will help prepare enterprises to address the issues early and up-stream of any technology based initiatives. 10) Naming and Design Rules for XML Schemas: Many of the advantages of XML can only be realized if common Naming and Design Rules for use in XML schemas are followed. This is not only a regional or a national issue since services on the Internet are available to anyone. Therefore rules have to be developed in an international context. This project will set out the standard set of naming and design rules to be used by governments. e-Government strategies are about harnessing the information revolution to improve the lives of citizens and businesses, and to improve the efficiency of government. Delivering e-government, building the knowledge economy and delivering pervasive access requires the use of pervasive technologies, e.g. the Internet, XML and Web Services, based on open standards. The delivery requires the involvement of, acceptance by and partnership with the public and private sectors, in the development and implementation of those standards and technologies. That activity and partnership is being enabled through the work of the OASIS e-Government Technical Committee. 16.6

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Mission Mode Project A mission mode project (MMP) is an individual project within the National e- Governance Plan (NeGP) that focuses on one aspect of electronic governance, such as banking, land records or commercial taxes etc. Within NeGP, "mission mode" implies that projects have clearly defined objectives, scopes, and implementation timelines and milestones, as well as measurable outcomes and service levels. NeGP comprises 31 mission mode projects (MMPs), which are further classified as state, central or integrated projects. Each state government can also define five MMPs specific to its individual needs.

The following is the list of MMPs at central, State and at Integrated level . Some of the MMPs are in advanced stages of implementation, while some are in the conceptualization stage. No . Projects Line Ministry /Dept Responsible Project Brief Mission Mode Projects - Central Sector 1) Passport Ministry of External Affairs/Ministry of Home Affairs The Passport Seva Project was launched by the Ministry of External Affairs with the objective of delivering Passport Services to the citizens in a comfortable environment with wider accessibility and reliability.. Various e-services being offered under the MMP include issue / re-issue of Passport, issue of duplicate Passport, issue of Tatkal Passport, change in name, address, ECNR/ ECR suspensions, passport status enquiry etc. 2) Visa & Immigrati on Ministry of External Affairs/Ministry of Home Affairs In order to Modernize and upgrade the Immigration services, “Immigration, Visa and Foreigners Registration & Tracking (IVFRT)” has been identified and included as one of the MMPs to be undertaken by the Ministry of Home Affairs under the National e-Governance Plan (NeGP). The core objective of this Project is to develop and implement a secure and integrated service delivery framework that facilitates legitimate travelers while strengthening security. 3) MCA21 Ministry of Corporate Affairs The project aims to provide electronic services to the Companies registered under the Companies Act. Various online facilities offered include allocation and change of name, incorporation, online payment of registration charges, change in address of registered office, viewing of public records and other related services.

4) Insurance Department of Banking MMP aims at facilitating customer services, automating grievance redressal mechanisms and creating a holistic database of insurance users. 5) Income Tax Ministry of Finance/Central Board of Direct Taxes Various important e-services being offered under this MMP includes facility for downloading of various forms, online submission of applications for PAN and TAN, query-based services for allotment of PAN and TAN, e- filing of Income Tax Returns, e-filing of TDS returns, online payment of Taxes, issue of refunds through Electronic Clearance Scheme (ECS) and Refund Banker, etc. 6) National Citizen Database /UID Ministry of Home Affairs/Registrar General of India (RGI)/ Planning Commission This MMP aims towards creating a Central database of resident information and assign a Unique Identification number to each such resident in the country, to facilitate efficient delivery of social and welfare services. 7) Central Excise Central Excise Department of Revenue/Central Board of Excise & Customs This MMP aims towards facilitating availability of e- services related to indirect taxation for industry, importers and exporters, inbound travellers etc. Various important e-services being offered include e-filing of Import and Export documentation, electronic processing of declarations, facilities for e-filing of Central Excise and Service Tax returns, e-registration services, digital signatures, e-payment of Customs Duties etc. 8) Pensions Department of Pensions & Pensioners Welfare and Department of Expenditure This MMP provides updated information on government pension rules and regulations; helps facilitate registration of pensioners' grievances; enables monitoring timely sanction of pension/gratuity; maintains a database of Pensioners and provides links to the websites of the Directorates of Pensions and the AGs of various States. 9) Banking Department of Banking This MMP aims towards streamlining various eservices initiatives undertaken by individual banks. 10) e-Office Department of Administrative Reforms & Public Grievances This MMP aims at significantly improving the operational efficiency of the Government by transitioning to a "Less Paper Office". Mission Mode Projects - State Sector 1) Land Records Ministry of Rural Development The project National Land Records Modernization Programme (NLRMP) aims towards providing integrated land related information and services to citizens. Various online services provided are issue of copies of RORs, crop; irrigation details, filing and tracking of mutation cases, availability and submission of forms 2) Road Transpor t Ministry of Road Transport & Highways The project aims to introduce technology in transport offices across India to offer vehicle registration, driving licenses and Smart Card based RCs (Registration Certificates) to citizens. 3) Agricultu re Department of Agriculture & Cooperation The MMP aims at providing information regarding farm practices, market trends, agricultural and technical know-how, providing online certification / licenses to wholesalers and retailers dealing in pesticides, fertilizers etc. and other related services to the farming community. 4) Treasurie s Ministry of Finance This MMP aims at computerisation of treasuries involving a common set of standards for seamless integration of participating agencies.

5) Municipal ities Ministry of Urban Employment and Poverty Alleviation The MMP aims at providing various services offered by Urban Local Bodies (ULBs) to residents electronically. 6) Gram Panchaya ts Ministry of Panchayati Raj The MMP aims at improving governance at the grass roots and providing various e-services at the Panchayat level. 7) Commerci al Taxes Ministry of Finance The MMP, which aims at providing electronic services to commercial tax payers, is being formulated. 8) Police (CCTNS) Ministry of Home Affairs The Mission Mode Project of the Police – Crime and Criminal Tracking Network System (CCTNS) - - is aimed at facilitating the process of civil policing and law enforcement by utilizing ICT effectively. Among many other services, it will allow citizens to register and track an online complaint. 9) Employm ent Exchanges Ministry of Labour & Employment This MMP of the Ministry of Labour aims at providing e-services to employment seekers and employers. 10) E District Department of Information Technology The MMP aims at delivery of high volume, citizen-centric services at the District level such as issue of birth/death certificate, income and caste certificate, old age and widow pension etc. Mission Mode Projects - Integrated Category 1) EDI (eCommerce) Ministry of Commerce & Industry/ Department of Commerce The MMP aims at facilitating Electronic Data Interchange amongst various agencies involved in the process of Imports and Exports.

2) e-Biz Department of Industrial Policy & Promotion / Department of Information Technology The project aims to provide comprehensive Government- to-Business (G2B) services to business entities with transparency, speed, and certainty 3) Common Services Centres Department of Information Technology The MMP is a part of the core and support infrastructure of NeGP and aims towards offering e- Governance services to rural citizens. 4) India Portal Department of Information Technology and Department of Administrativ e Reforms & Public Grievances The MMP aims towards providing a single window access to information and services of Government at all levels, in a multilingual form. 5) National Service Delivery Gateway (NSDG) Department of Information Technology The MMP aims at providing a common interface between the service seekers and service providers (Government Department). 6) e-Courts Department of Justice, Ministry of Home Affairs The MMP aims at utilising technology for improved provisioning of judicial services to citizens.

7) e-Procurement Ministry of Commerce & Industry/ DGS&D The MMP of the Ministry of Commerce aims at rolling- out IT-enabled procurement by Government Departments. Reference: e-Governance Project Lifecycle Reading Supplement Handbook 16.7

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India Development Gateway Vikaspedia is a MeitY initiative for providing e-knowledge and using ICT-based applications for empowerment of the poor (rural and urban). It seeks to maximise utility of ongoing government programmes through provision of universally accessible digital information resources in Indian languages, created and shared collaboratively by various development stakeholders. Developed as part of the initiative, is the multi-lingual, multi-sectoral online knowledge platform - Salient features: ● Vikaspedia hosts information in all 22 scheduled languages of India, besides English. ● Domains covered - Agriculture, Health, Education, Social Welfare, Energy, e-Governance. ● Vikaspedia hosts multiple content forms – text, audio, video, etc shared by various agencies/individuals. ● Vikaspedia offers content editing & adding provisions to authenticated registered users. ● The platform has several user interactive features - discussion forum, polls, page rating & commenting, interaction with social networking sites, screen reader access, etc. ● The portal information is shared through various modes to reach the last mile – personalised voice alerts, SMS, community radio, mobile apps, e- mailers, audio/video IEC materials etc. The utility of Vikaspedia is as follows ● Vikaspedia currently hosts 9 lakh pages of content shared by institutions (300+) & registered members (67,000+). It attracts 10.1 Crore hits per month. Exclusive information for marginalised sections like women, SC/ST/BC/Minorities are being covered. ● Focussed capacity building of grassroot service providers on digital information access & sharing in regional languages have been taken up through 2260 events at state, district, community levels covering 23 states & 3 UTs. About 2.94 lakh have been trained so far. ● About 3 Crore target audience have been reached to promote ongoing government programmes through various ICT modes. ● Several products & services developed as part of Vikaspedia have been taken up by various state governments to be replicated as part of their existing programmes. ● Online utility surveys among the users of Vikaspedia portal indicate that Vikaspedia is a preferred source of information among the rural youth who access information on policies, schemes & entrepreneurship. ● Vikaspedia portal and its products have received several awards including the World Summit on the Information Society Forum (WSIS) 2014 Award. 16.8

Unit Summary In essence, e-governance is the application of ICT in government functioning to bring in SMART governance implying: simple. moral, accountable, responsive and transparent governance. S: meaning simplification of rules, regulations and processes of government through the use of 1CTs and thereby providing for a user-friendly government. Moral: connoting emergence of an entirely new system of ethical values in the political and administrative machinery. Technology interventions improve the efficiency of anti corruption agencies, police, judiciary, etc. Accountable: facilitating design development and implementation of effective Management Information System and performance
measurement mechanisms and thereby ensuring accountability of public service functionaries. Responsive: streamlining the processes to speed up service delivery and make the system more responsive. Transparent: bunging information hitherto confuted in the government documents to the public domain and making processes and functions transparent. which in turn would bring equity and rule of law in responses of the administrative agencies. 16.9 Key Terms ● ebXML (Electronic Business XML) is a project to use the Extensible Markup Language (XML) to standardize the secure exchange of business data. ● A

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mission mode project (MMP) is an individual project within the National e-Governance Plan (NeGP) that focuses on one aspect of electronic governance, such as banking, land records or commercial taxes etc. 16.10

Check Your Progress Subjective: 1) Explain the role of ICT in administrative development. 2) Explain the role of ICT in effective service delivery. 3) Explain the format for an ICT infrastructure. 4) Customer Relationship Management (CRM) today is very important for institutions that aim to manage the relationship between citizens and administrators. Explain 5) The main thrust nowadays is to adopt open, international standards, including the Internet and World Wide Web specifications, for all government systems, and to adopt XML and XSL as the core standards for data integration and the presentation of data. Objective: 1) Complete the line: Vikaspedia is a MeitY initiative for providing_____.

2) Fill in the gap: NeGP comprises ___ mission mode projects (MMPs). 3) True/False: Social CRM strategies often involve an integration of new tools with traditional measures. 4) Short Q/A: What is social CRM in e-governance? References: ● E-Governance-The New Age Governance by Pankaj Sharma APH Publishing Corporation ● CRM E-GOVERNMENT SERVICES IN THE CLOUD Marko Vulić1 , Jovana Dadić2 , Konstantin Simić3 , Đorđe Mazinjanin4 , Aleksandar Milić5 - [1]Boyd, Danah M. & Ellison, Nicole B. (2007): Social network sites: Definition, history, and scholarship. Journal of Computer-Mediated Communication. Vol.: 13, No.: 1, pp.: 210- 230. - [2] Chen, Injazz J. & Popovich, Karen. (2003). Understanding customer relationship management (CRM): People, process and technology. Business Process Management Journal. Vol.: 9, No.: 5, pp.: 672-688. - [3] Concha, Gaston, Astudillo, Hernan, Porrua, Miguel & Pimenta, Carlos (2012): E Government procurement observatory, maturity model and early measurements. Government Information Quarterly. Vol.: 29, No.: 1, Supplement: S, pp.: S43-S50. - [4] DeAndrea, David C, Ellison, Nicole B, LaRose, Robert, Steinfield, Charles & Fiore, Andrew (2012): Serious social media: On the use of social media for improving students' adjustment to college. The Internet and Higher Education. Vol.: 15, No.: 1, pp.: 15-23. - [5] Garcia-Crespo, Angel, Colomo-Palacios, Ricardo, Gomez-Berbis, Juan Miguel & Ruiz Mezcua, Belen (2010): SEMO: A framework for customer social networks analysis based on semantics. Journal of Information Technology. Vol.: 25, No.: 2, pp.: 178-188. - [6] Greenberg Paul (2010a): The impact of CRM 2.0 on customer insight. Journal of Business and Industrial Marketing. Vol.: 25, No.: 6, pp.: 410-419. - [7] Greenberg, Paul (2010b): CRM at the Speed of Light, Fourth Edition: Social CRM Strategies, Tools, and Techniques for Engaging Your Customers. McGraw-Hill Companies, Inc. - [8]King, Stephen F. & Burgess, Thomas F. (2008): Understanding Success and Failure in Customer Relationship Management. Industrial Marketing Management. Vol.: 37, No.: 4, pp.: 421-431.
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Module: V E-Governance In India

Unit: 17 Electronic Governance In India: NeGP Structure 17.0 Introduction 17.1 Unit Objectives 17.2 E-Governance in India: Introduction 17.2.1 Evolution of E-Governance in India 17.2.2 Pioneering E-Governance Initiatives in India 17.3 The NeGP Framework for E-Governance 17.3.1 Mission Mode Projects 17.3.2 NeGP Components 17.3.2.1 Core Components 17.3.2.2 Other Plan Components 17.3.3 Core Policies 17.3.4 Core Support Infrastructure 17.3.5 Human Resource Development/Training 17.3.6 Technical Assistance 17.3.7 Organizational Structures 17.4 NeGP Implementation Strategies 17.5 NeGP Governance Structure 17.6 Unit Summary 17.7 Key Terms 17.8 Check Your Progress 17.0 Introduction In India, the government deals with several matters affecting people's lives. It is said that the government is all encompassing as it touches the lives of human beings from cradle (health services for women and children) to grave (payment of pensions, gratuity etc.). Government has to tackle unending problems and challenges emanating from over-population, poverty, illiteracy, unemployment and underdevelopment.

Government is expected to look after defense, foreign policy, communications and infrastructure, maintenance of land records, maintenance of law and order, collection of revenue, promotion of agriculture, science and technology, international trade, banking, insurance, transport, social welfare, family planning etc 17.1 Unit Objective This Unit covers: • E-Governance in India: Introduction o Evolution of E-Governance in India o Pioneering E-Governance Initiatives in India • The NeGP Framework for E-Governance o Mission Mode Projects o NeGP Components o Core Policies o Core Support Infrastructure o Human Resource Development/Training o Technical Assistance o Organizational Structures • NeGP Implementation Strategies • NeGP Governance Structure 17.2 E-Governance in India: Introduction In India, the government deals with several matters affecting people's lives. It is said that the government is all encompassing as it touches the lives of human beings from cradle (health services for women and children) to grave (payment of pensions, gratuity etc.). Government has to tackle unending problems and challenges emanating from over-population, poverty, illiteracy, unemployment and underdevelopment.

Government is expected to look after defense, foreign policy, communications and infrastructure, maintenance of land records, maintenance of law and order, collection of revenue, promotion of agriculture, science and technology, international trade, banking, insurance, transport, social welfare, family planning etc. As citizens of India, we have to deal with the government in our day-to-day lives. Citizens expect speedy service, courteous treatment, and quick disposal of grievances or applications. This interaction, however, is not always pleasant. The general perception among citizens is that the quality of administration is deteriorating day-by-day and that quality of governance needs to be considerably improved upon. The general feeling outside the government is that the government is huge, it lacks direction, it is unmanageable, is wasteful and it is uncaring of the citizens. But those in the government continue to feel that they are doing a fine job and nothing could be done better. There is, therefore, a wide gap between the expectations of the citizens and their experience with the government. This gap can only be filled by drastic simplification of procedures and change in attitude of civil servants vis-à-vis the citizens. Just as business corporations have discovered over the last few decades that information technology can make their service (or product) delivery value chain more efficient and lead to quality improvements and cost savings, governments in developing countries, over the last 5-7 years, have discovered that information technology can make the provision of services to the citizen more efficient and transparent, can save costs and lead to a higher level of comfort and satisfaction to the citizens in dealing with Government. So far as governments are concerned, the coming together of computerization and internet connectivity/web-enablement in association with process Re- engineering, promises faster and better processing of information leading to speedier and qualitatively better decision making, greater reach and accountability, better utilization of resources and overall good governance. In the case of citizens, it holds the promise of enhanced access to information and government agencies, efficient service delivery and transparency in dealings and interactions with government. With the increasing awareness among citizens about their rights and the resultant increase in expectations from the government to perform and deliver, the whole paradigm of governance has changed. Government, today, is expected to be transparent in its dealings, accountable for its activities and faster in its responses. This has made the use of ICT imperative in any agenda drawn towards achieving good governance. It has also led to the realization that such technologies could be used to achieve a wide range of objectives and lead to faster and more equitable development with a wider reach. 17.2.1 Evolution of E-Governance in India Recognizing the increasing importance of electronics, the Government of India established the Department of Electronics in 1970. The subsequent establishment of the National Informatics Centre (NIC) in 1977 was the first major step towards e-Governance in India as it brought 'information' and its communication in focus. In the early 1980s, use of computers was confined to very few organizations. The advent of personal computers brought the storage, retrieval and processing capacities of computers to Government offices. By the late 1980s, a large number of government officers had computers but they were mostly used for 'word processing'. Gradually, with the introduction of better software, computers were put to other uses like managing databases and processing information. Advances in communications technology further improved the versatility and reach of computers, and many Government departments started using ICT for a number of applications like tracking movement of papers and files, monitoring of development programmes, processing of employees' pay rolls, generation of reports etc. However, the main thrust for e-Governance was provided by the launching of NICNET in 1987 – the national satellite-based computer network. This was followed by the launch of the District Information System of the National Informatics Centre (DISNIC) programme to computerize all district offices in the

country for which free hardware and software was offered to the State Governments. NICNET was extended via the State capitals to all district headquarters by 1990. In the ensuing years, with ongoing computerization, tele-connectivity and internet connectivity, came a large number of e-Governance initiatives, both at the Union and State levels. A National Task Force on Information Technology and Software Development was constituted in May 1998, while recognizing Information Technology as a frontier area of knowledge per se, it focused on utilizing it as an enabling tool for assimilating and processing all other spheres of knowledge. It recommended the launching of an 'Operation Knowledge' aimed at universalizing computer literacy and spreading the use of computers and IT in education. In 1999, the Union Ministry of Information Technology was created. By 2000, a 12-point minimum agenda for e-Governance was identified by the Government of India for implementation in all the Union Government Ministries/Departments. Some of the important agenda points included the following actions to be taken by the Ministries / Departments: a. Each Ministry/Department must provide PCs with necessary software up to the Section Officer level. In addition, Local Area Network (LAN) must also be set up. b. It should be ensured that all staff who have access to and need to use computers for their office work are provided with adequate training. To facilitate this, inter alia, Ministries/Departments should set up their own or share other's Learning Centres for decentralized training in computers as per the guidelines issued by the MIT. c. Each Ministry/Department should start using the Office Procedure Automation software developed by NIC with a view to keeping a record of receipt of dak, issue of letters, as well as movement of files in the department. d. Payroll accounting and other house-keeping software should be put to use in day-to-day operations.
These initiatives / actions though served an important purpose in introducing ICTs in Government but fell far short of expectations because the approach was still Departmental and not Citizen Centric. Citizens did not benefit much as they still were supposed to physically go to each Department (or its associated office) to avail the service. Second, there was no integration of information within and among departments. This resulted in the creation of silos of information. Third, from a government perspective, there was huge duplicity of effort and wastage of precious resources in creation of overlapping infrastructure by each Department / Ministry at the Central and State level. Prior to 2006 when the Government of India formally launched its National e- Governance Plan (NeGP), which is discussed in the subsequent chapter of this book, some Departments of Government of India as well as State Governments had initiated steps to adopt e-Governance. In this context it would be useful to highlight some of the important e-Governance initiatives implemented by the Union and State Governments in the last 10 to 15 years. 17.2.2 Pioneering E-Governance Initiatives in India The e-Governance scenario in India has come a long way since computers were first introduced. The focus now is on extending the reach of governance to have a major impact on the people at large. A large number of initiatives have been taken in this category by the Union and the State Governments. Some of these are described in the following paragraphs. Bhoomi Project (Karnataka): Online Delivery of Land Records Bhoomi is a self-sustainable e-Governance project for the computerized delivery of 20 million rural land records to 6.7 million farmers through 177 Government-owned kiosks in the State of Karnataka. It was felt that rural land records are central conduits to delivering better IT-enabled services to citizens because they contain multiple data elements: ownership, tenancy, loans, nature of title, irrigation details, crops grown etc. In addition to providing the proof of title to the land, this land record is used by the farmer for a variety of purposes: from documenting crop loans and legal actions, to securing scholarships for school-children. These records were hitherto maintained manually by 9,000 village officials. Through this project, computerised kiosks are currently offering farmers two critical services - procurement of land records and requests for changes to land title. About 20 million records are now being legally maintained in the digital format. To ensure authenticity of data management, a biometric finger authentication system has been used for the first time in an e- Governance project in India. To make the project self-sustaining and expandable, Bhoomi levies user charges. The Bhoomi project is a noteworthy effort and sets an example for other projects in its approach towards piloting a project, as well as its rolling out and sustenance. It may be mentioned here that manually written Records of Right, Tenancy and Cultivation (RTC) have been declared illegal. The key lessons learned from the Bhoomi project can be summarised as follows: a. A well conceptualized and executed BPR is a prerequisite for success of e-Governance projects. b. There should be end-to-end computerization. c. Large e-Governance projects, having large scale impact require total support at the political level. d. Continuity in the Project Management team helps in proper implementation of e-Governance projects. e. If benefits to citizens are real and substantial, projects become sustainable. f. A holistic approach is necessary for e-Governance. Adequate time and resources need to be devoted to conceptualization, implementation and maintenance of projects. g. Systems should have a strong back-up mechanism. eSeva (Andhra Pradesh): Front-end Citizen Service Delivery This project is designed to provide 'Government to Citizen' and 'e-Business to Citizen' services. Originally, it was implemented in the form of the TWINS (Twin Cities Integrated Network Services) project in 1999 in the twin cities of Hyderabad and Secunderabad. The highlight of the eSeva project is that all the services are

delivered online to consumers /citizens by connecting them to the respective government departments and providing online information at the point of service delivery. The network architecture is designed as an Intranet on a Wide Area Network (WAN). The network is designed in three tiers, each tier being physically located in different places. The first tier for the client-end is located at the eSeva centres. The second tier consists of the data servers and the application servers. The third tier comprises Departmental servers as the backend in the concerned departments (Electricity, Municipality, Passport Office, Transport Department, Registration, Commercial Tax, etc). These servers keep consolidated databases. Presently, eSeva is providing 'One-stop- shop' for over 66 G2Cand B2Cservices in 46 eSeva centres in the twin cities and Ranga Reddy district. Centres have also been opened in 20 other districts. The services include online payment of utility bills, issuing certificates, issuing licenses & permits, e-forms etc. Payments can be made by cash/cheque/DD/credit card/Internet. KHAJANE (Karnataka): End-to-end automation of Government Treasury System 'KHAJANE' is a major government-to-government (G2G) e-Governance initiative of the Karnataka State Government. It has been implemented mainly to eliminate systemic deficiencies in the manual treasury system and for the efficient management of state finances. It involves end-to-end process Re- engineering -- from the time of approval of the state budget to the point of rendering accounts to the government. There are 216 treasuries functioning across the state. The treasuries in the state disburses salaries to about 7 lakh government and grant-in-aid employees, services 4.3 lakh pensioners and 15.7 lakh social security pensioners. From 228 departments, 21,000 drawing officers draw money for 2117 schemes from the treasuries in the state. The treasuries handle about Rs 36,000 crore of receipts and Rs 46,000 crore of payments annually. In addition to state government transactions, the treasuries also handle the zilla panchayat and taluk panchayat transactions, which is unique in the country.

Before computerization, in the manual treasury system, owing to ever increasing volume of transactions, certain systemic deficiencies had crept in that resulted in (i) Over-withdrawal of funds, (ii) Fraudulent withdrawal of funds, (iii) Misclassification of expenditure, and (iv) Nonreconciliation, delay in submission of accounts and settling claims. The application software 'KHAJANE' is modular in nature and covers the entire treasury activity. 'KHAJANE' includes the following modules: Receipts, Payments, Deposits, Stamps and Strong Room, Pensions, Social Security Pensions, Accounts, Returns, Housekeeping and Master Maintenance. The key features of the system include: Validation of the bill against the budget availability, requirements regarding the provisions of financial code and treasury code, and manual of contingent expenditure. Validation and the genuineness of the drawing officer, his or her authority to draw the money for the scheme and whether it is within his financial powers. Validates the budget availability. If the system raises any objection, the treasury officer has no discretion to overrule it. With these system validations, the compliance and strict adherence to the provisions of various codes is ensured. The state disburses about 15.7 lakh social security pensions like old-age pension/physically handicap pension/destitute widow pension every month across the state. With automation of treasuries, the printing of this voluminous number of money orders have been decentralized up to the sub-treasury level. Now the money orders are printed at the sub-treasury level and disbursed to pensioners during the first week of every month. 17.3 The NeGP Framework for E-Governance Over the past decade, India has seen islands of Electronic Governance (e- Governance) initiatives in the country at National, State, district and even minor government level. A need was therefore felt for taking a holistic view towards the entire e-Governance initiative across the country. The National e- Governance Plan (NeGP) has been conceptualized with the following vision: "Make all Government services accessible to the common man in his locality,

through common service delivery outlets and ensure efficiency, transparency and reliability of such services at affordable costs to realize the basic needs of the common man". The Government approved the National e-Governance Plan on May 18 2006, comprising 27 Mission Mode Projects (MMPS) and 8 components – three Core Components, and five others. As described in the diagram below, the E-Governance framework would include Back-ends (databases of the different government agencies, service providers, state governments etc.), Middleware and the Front-end delivery channels (home PCs, mobile phones, kiosks, integrated citizen service centres etc.) for citizens and businesses. The Middleware comprises communication and security infrastructure, gateways and integrated services facilitating integration of inter- departmental services. ● National e-Governance Strategy ● Centralized initiative, Decentralized implementation ● Identify services to be targeted ● Prioritize services (Mission), Identify measurable service goals (Outcomes) Figure 17.1: NEGP Program Framework ● Identify, appoint and empower mission leaders ● Create mechanism for effective Private Sector participation

● Put in place a common infrastructure, policies, standards, and framework ● Service delivery through Common Service Centres ● Think Big, Start Small, and Scale Fast ● All services supported by 3 infrastructure pillars to facilitate webenabled Anytime, Anywhere access 17.3.1 Mission Mode Projects

Selection Criteria for the Mission Mode Projects ● Impact in terms of the number of people likely to be affected by the project. ● Impact in terms of likely improvement of the quality of service ● Impact on the economy or economic environment in the country ● Impact in terms of the likely cost-benefit of investments in the project ● Readiness and willingness of ministry/department to position a National Mission Project ● Feasibility of implementing the project from a financial, administrative, and political perspective within a reasonable time frame 17.3.2 NeGP Components The components of the plan are broadly divided into two categories. The first category covers core infrastructural components, and the other category covers capacity building, technical support, research and development, policy guidelines and standards, awareness creation and assessment that go a long way to ensure successful implementation, institutionalization and sustainability of NeGP.

17.3.2.1 Core Components Three main core components were identified by the Plan: State Wide Area Network, State Data Center, and Common Services Centre. Each of them is presented below. State Wide Area Network (SWAN): The Government has approved the SWAN Scheme for establishing State Wide Area Networks (SWANs) across the country in 35 States and Union Territories, at a total outlay of Rs. 3,334 Crore over a period of five years. The objective of SWAN Scheme is to establish a converged network consisting of data, voice and video circuits with minimum 2 Mbps capacity, linking the State with the Union Territories Headquarters, right up to the Block and Tehsil headquarters, through the district and the Sub-division headquarters. The aim is to create a secure government closed user group (CUG) network, for the purpose of delivering Government-to-Citizen (G2C) and Government-to-Government (G2G) services. State Data Centre (SDC): State Data Centre (SDC) has been identified as one of the important elements of the Core infrastructure components for supporting NeGP. SDC provides key functionalities such as central repository of the state, secure data storage, online delivery of services, Citizen Information/Services portal, State Intranet portal, disaster recovery, remote management and service integration, among others. The entire scheme involves an outlay of Rs. 17,000 million. It is expected that the State Data Centre shall be set-up and operated by 2009 across different states in the country. Common Services Centre (CSC): CSC involves a scheme for providing support for establishing 100,000 broadband Internet enabled Common Service Centers (CSCs) in rural areas of the country. The Scheme has been approved at a total cost of Rs 5742 Crores over 4 years, of which the Government of India is estimated to contribute with Rs 856 Crore and the State Governments with Rs 793 Crores. Other resources would be mobilized from the private sector.

17.3.2.2 Other Plan Components Other plan components refer to broad areas, like standards, capacity-building, awareness and communications, assessment, and research and development. Each of these areas is explained as follows. Standards Various Working Groups and Task Forces have been constituted considering various areas of interventions to formulate guidelines and standards. These areas include, technical standards and e-governance architecture, network and information security, e-governance information security standard, localization and language technology standards, metadata and standards for application domains, conformity assessment framework which is extremely relevant for any e-governance project, policies on identity and access management, and e- forms. Capacity Building A comprehensive Capacity Building Scheme has been approved covering all States and Union Territories. The major component of the Capacity Building Scheme is the formation of professional core teams for providing technical support to the policy makers, executive bodies and implementing authorities. The responsibilities of the core teams include providing training and orientation of key stakeholders associated with policy-making and implementation of state e-Governance Programme, and providing a platform to promote knowledge sharing. In addition, it creates Capacity Building Management Cell at the national level, to oversee the smooth implementation of capacity building scheme and to take midterm corrective actions, as appropriate. The Scheme will also facilitate recruitment of professionals, preparation of training content, scheduling of training programs, study and adoption of international best practices. Awareness and Communications The success of the Plan hinges not only on accessibility and availability to information and various services but also awareness regarding the Programme, effective branding of NeGP and finally a communication strategy that addresses

the above two. This component focuses on creating and implementing the strategy to achieve the following objectives: 1) building distinctive brand of NeGP which will be utilized across Departmental communications; 2) creating awareness among citizens about the initiative and its objectives; 3) motivating stakeholders, with an emphasis on the point that NeGP is not about computerization or technology but making interaction with government easier and 4) creating a demand driven atmosphere which would ensure that the service delivery and its quality are met. The aim is also to create a set of communication guidelines that can be used by other Ministries and /or Departments to design their own communications plan. Assessment A significant part of scarce resources are being invested in e-Government projects. Even with its perceived potential, e-Government projects are fraught with risks and the success rate across the world is not very encouraging. Given this scenario and the fact that e-Government projects are inherently complex, it therefore becomes imperative that a robust assessment strategy and framework is devised for evaluating performance of e-Government projects. This would not only provide valuable understanding on individual projects but also provide for a backward integration into the process of project appraisal and capacity building. Research and Development (R&D) Inputs from research activities are needed in the areas of e-Governance Technical Standards including interoperability standards, e-Government Enterprise Architecture Frameworks, Information Security, Data and Metadata Standards, and Quality and documentation that includes e-Governance Quality Manual, e-Governance Project Life-Cycle, Project Management, Program Management Conformance Assessment Frameworks, and ServiceLevel Agreement guidelines, among others. In addition, research results are needed for preparing deliverables that are being aimed at producing publications related to e-government standards, published at government websites for reference and as discussion papers for working group members. In addition,
they are also required for reviewing technical papers, proposals, documents, guidelines, and for providing technical inputs on various open standards and technologies, architectures, and middleware to the e-Governance directorate. The approach includes collaborations with industry and academics in the area of eGovernance research and innovations. In particular, the Microsoft Innovation Lab has been set up for developing innovative e-Governance solutions and research in the area. 17.3.3 Core Policies 1) Overall Vision, Mission, Strategy, and Approach 2) e-Governance technology architecture, framework, and guidelines 3) Funding strategies-business models BOO, BOOT etc. 4) Human Resource Strategy - for project leadership, implementation, and operation, team performances, collaboration among agencies, networking with stakeholders, motivations/participation issues 5) Policy on front-end facilitation counters, kiosks, integrated service centres etc. - ownership, funding/subsidy, types of service, charges, etc. 6) Policy on backend - department automation - role of private sector, role of government, safeguards, right to information, privacy etc. 7) Policy on integrated services (ownership, responsibility, etc.) 8) Process re-engineering- policies, guidelines with respect to criteria for redesign of processes, interfacing with workflow, record management, transaction requirements, quality standards, requirements for audit and accountability, escalation procedures, collaboration among different agencies, sharing of information, security standards, process monitoring, tracking system deficiencies, performance measurements etc. 9) Policies and guidelines on Geographic Information Systems 10) Policies and guidelines on electronic payment mechanisms. 11) Policies on employment generation through EG, development of skills, linkages with banking institutions, and entrepreneurship development programmes, etc.
12) Prioritization policy for selection of Project interventions 13) Policies, strategies, and guidelines for managing content, prescribing authorization, privileges, validation, content authoring, collaboration among content contributors, ownership issues, etc. 17.3.4 Core Support Infrastructure Under NeGP, all services are supported by three infrastructure pillars for efficient delivery of “web-enabled” anytime anywhere access to information and service across the country, NeGP envisions 3 pillars of e-Governance infrastructure namely: a. National e-Government Intranet (NICNET ERNET) and other service providers). b. State wide Intranets c. National e-Government Data Center d. State Data Centers e. Security Infrastructure f. Resource Centre for e-Governance (PKI etc) g. GIS National Spatial Data Infrastructure h. Language Resource Centre Support Infrastructure ● Support Infrastructure would cater to areas such as: ● Service delivery infrastructure at State, District, Block, and Village levels including wireless infrastructure for last mile connectivity. ● e-Post ● Design, development and deployment of low cost technology solutions ● Integrated Service Delivery frontends 17.3.5 Human Resource Development/Training Human Resource Development/Training and Capacity Building activities would comprise Training for: 1. e-Governance policy makers

2. Chief Information Officers 3. Project specific training 4. General IT skills and competencies 5. Special training programmes for specialists 6. Security, use of local language solutions, Advanced courses architecture, language technologies 7. Equipping National/State institutions of public administration for e- Governance, training, etc. 17.3.6 Technical Assistance The technical assistance under this Scheme may include: 1. Support for undertaking surveys of needs, expectations, etc. 2. Benchmarking of interventions 3. Feasibility studies 4. Planning and design of various projects 5. Capacity building of institutions which would be involved in the implementation and monitoring of the projects 17.3.7 Organizational Structures 1. National Electronic Governance Council/National Information Services Board, 2. National Institute for Smart Governance (NISG) 3. State ElectronicGovernance Councils/State Information Services Board 4. Electronic Government Standards Institutions 5. National Informatics Center (NIC) 17.4 NeGP Implementation Strategies The implementation strategy for NeGP is based on an integrated approach and on seven guiding principles. The integrated approach is based on the integration of the following perspectives.
- Connectivity: deploying a State Wide Area Network, State Data Centers and 100,000 Common Service Centers (CSCs); - Capacity: building human and institutional capacity in 20 Government of India Departments, 35 States and Urban Territories, 360 Departments at States; - Content: providing services in vertical domains like Health and Education; - Cyberlaw: providing the regulatory framework for digital signatures, etc. - Citizen Interface: providing enhanced G2C services like vehicle registration, driver's license, passports and visas, etc. - Capital: assuring financial resources. Figure 17.2: Integrated Approach The seven guiding principles include: 1) Deliver Public Value: - delivery of value added government services that is citizen centered. The focus here is on transformation within
government and its processes to achieve and deliver services that are easy to access and convenient to realize. 2) Change Management: It is appreciated that the change that is being aimed at as an outcome of this exercise has to be constantly managed at all levels. Process reengineering as part of project design, focused on value addition to services, necessitates that reengineered processes are managed as part of a dedicated change management policy. Explicit Change Management strategy addressing internal and external stakeholders and their concerns form an integral part of project formulation and design. 3) Think Big, Start Small, and Scale Fast: these three phases model the implementation strategy, where pilots are taken up to launch and test the efficacy of models. This would enable proper customization before the project is rolled out on a full scale. Process reengineering is an essential feature of such pilots. 4) Centralized Initiative and Decentralized Implementation: each MMP is to be conceptualized and implemented by the respective Ministry or line department at central or state level. States have been given flexibility to identify up to 5 additional state specific projects, which are very relevant for the economic development of the State. 5) Common Core and Support Infrastructure: Common core infrastructure in the form of State Wide Areas Network (SWAN), State Data Centre (SDC) and Electronic Service Delivery Gateways (SDG) has been envisaged for optimal utilization of limited resources and to ensure interoperability for seamless delivery of public services. Similarly to ensure wider accessibility to public service delivery, over 100,000 Common Services Centres (CSCs) are being created in the villages, which will act as one-stop shop for government as well as private services. The core and support infrastructure is likely to be in place by March 2009. 6) Capacity Building: Capacity Building (CB) Scheme approved with an outlay of Rs. 313 cr. enables the creation of State e-Governance Mission
Teams for providing technical and professional support to decision- makers in States and for imparting specialized training and orientation for State parliamentarians, bureaucrats and SeMT members. The teams also enable strengthening State level training institutions. In addition, the Scheme enables the creation of a CB Management Cell at the National level for facilitating implementation and providing support to Central Line Ministries for overall program management. 7) Public Private Partnership (PPP): PPPs would be promoted wherever feasible to enlarge the pool of resources and to enhance capacity to effectively delivery public without compromising on the security aspects. 17.5 NeGP Governance Structure Considering the multiplicity of agencies involved in the implementation of NeGP and the need for overall aggregation and integration at the national level, NeGP is conceived as a program, with well-defined roles and responsibilities of each agency involved. Therefore, the creation of an appropriate program management structure that guides, steers and coordinates the program is crucial for the whole endeavor. The structure comprises the following entities: The Cabinet Committee on Economic Affairs (CCEA) responsible for program level policy decisions. A body under the Chairpersonship of the Prime Minister has been constituted with representation drawn from relevant Ministries and Departments, the National Knowledge Commission, the Planning Commission, experts, etc., to provide leadership, prescribe deliverables and milestones, and periodically monitor the implementation of the NeGP. A National e-Governance Advisory Group, headed by the Minister of Communication and IT has been created, to solicit views of external stakeholders and to provide inputs to the CCEA, advise the government on policy issues and strategic interventions necessary for accelerating introduction of e-Governance across Central and State Government Ministries and Departments.

An Apex Committee (NeGP), with Cabinet Secretary as its Chairman and Secretary, Department of IT (DIT) as its Member Convener, has been constituted to oversee the program and provide policy and strategic directions for its implementation and for resolving inter-ministerial issues. Line Ministries and Departments are responsible for the implementation of the assigned Mission Mode Projects (MMPs) and Components. Mission Mode Projects are owned and spearheaded by various line Ministries for Central Government, State Governments and Integrated projects. State Governments are responsible for implementing State Sector MMPs, under the overall guidance of respective Line Ministries, in cases where Central Assistance is also required. An Apex Committee has been constituted at the State level headed by the Chief Secretary with a similar role and responsibility to the Apex Committee at the centre. DIT is the facilitator and catalyst for the implementation of NeGP and is tasked with providing assistance to the Departments. In addition, DIT serves as the secretariat to the Apex Committee and assists it in managing the program. The DIT also implements pilot/ infrastructure/ technical/ special projects and support components in addition to the technical appraisal of all NeGP projects. This appraisal covers issues relating to project design, optimal utilization of infrastructure, compliance with interoperability standards etc. A specific unit was created for managing the whole program, the Programme Management Unit (PMU) of the Department of IT. PMU assists the Apex Committee to drive NeGP through effective program monitoring and management. It provides assistance in policy and strategy formulation; supports DIT in implementing those projects and components of NeGP for which DIT is the implementing department; and builds capacity of various departments to enable them to implement their MMPs successfully.

17.5 Unit Summary In India, the government deals with several matters affecting people's lives. It is said that the government is all encompassing as it touches the lives of human beings from cradle (health services for women and children) to grave (payment of pensions, gratuity etc.). Government has to tackle unending problems and challenges emanating from over-population, poverty, illiteracy, unemployment and underdevelopment. Government is expected to look after defense, foreign policy, communications and infrastructure, maintenance of land records, maintenance of law and order, collection of revenue, promotion of agriculture, science and technology, international trade, banking, insurance, transport, social welfare, family planning etc. These initiatives / actions though served an important purpose in introducing ICTs in Government but fell far short of expectations because the approach was still Departmental and not Citizen Centric. Citizens did not benefit much as they still were supposed to physically go to each Department (or its associated office) to avail the service. Second, there was no integration of information within and among departments. This resulted in the creation of silos of information. Third, from a government perspective, there was huge duplicity of effort and wastage of precious resources in creation of overlapping infrastructure by each Department / Ministry at the Central and State level. Over the past decade, India has seen islands of Electronic Governance (e- Governance) initiatives in the country at National, State, district and even minor government level. A need was therefore felt for taking a holistic view towards the entire e-Governance initiative across the country. The National e- Governance Plan (NeGP) has been conceptualized with the following vision: "Make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency and reliability of such services at affordable costs to realize the basic needs of the common man". The Government approved the National e-Governance Plan on May 18 2006, comprising 27 Mission Mode.

The components of the plan are broadly divided into two categories. The first category covers core infrastructural components, and the other category covers capacity building, technical support, research and development, policy guidelines and standards, awareness creation and assessment that go a long way to ensure successful implementation, institutionalization and sustainability of NeGP. Under NeGP, all services are supported by three infrastructure pillars for efficient delivery of "web-enabled" anytime anywhere access to information and service across the country, NeGP envisions 3 pillars of e-Governance infrastructure namely: National e-Government Intranet (NICNET ERNET) and other service providers); State wide Intranets; National e-Government Data Center; State Data Centers; Security Infrastructure; Resource Centre for e- Governance (PKI etc); GIS National Spatial Data Infrastructure; Language Resource Centre 17.6 Key Terms ● National Informatics Centre is an attached office under the Ministry of Electronics and Information Technology in the Indian government. The NIC provides infrastructure to help support the delivery of government IT services and the delivery of some of the initiatives of Digital India. ● The National e-Governance Plan is an initiative of the Government of India to make all government services available to the citizens of India via electronic media. NeGP was formulated by the Department of Electronics and Information Technology and Department of Administrative Reforms and Public Grievances. ● A public–private partnership (PPP) is an arrangement between two or more public and private sectors of a long-term nature. Typically, it involves private capital financing government projects and services up- front, and then drawing operating profits from taxpayers and/or users over the course of the PPP contract.

17.7 Check Your Progress Subjective: 1) Give an introduction on Indian e-Governance. 2) Discuss any two pioneering e-Governance initiatives in India. 3) Explain NeGP Components. 4) Give core policies given under NeGP. 5) What are NeGP implementation strategies? 6) Explain NeGP governance structure. Objective: 1) True/False: eSeva (Andhra Pradesh) is Front-end Citizen Service Delivery. 2) Complete the line:Human Resource Development/Training and Capacity Building activities would comprise Training for: _____. 3) Fill in the gap: The Microsoft Innovation Lab has been set up for developing _____ e-Governance solutions and research in the area. 4) Short Q/A: What is Public-private partnership? 5) Short Q/A: What is the National Informatics Centre for? References: ● Piyush Gupta, R.K.Bagga; Compendium of E-governance Initiatives in India https://books.google.co.in/books?id=5PW_tqBmwVgC&pg=PT11&dq=e- governance+india+selection+criteria&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwjWu9Pak57yAhVWfd4KHRENAsMQ6AEwAHoECA QQAg ● e-Governance Project Life Cycle 3 e-Governance Project Lifecycle Reading Supplement Handbook ● National e-Governance Plan: Vision, Challenges and the Way Forward Electronics and IT Rajendra Kumar

Unit:18 Guidelines on Website Structure 18.0 Introduction 18.1 Unit Objectives 18.2. Draft Policy Guidelines 18.2.1 Introduction 18.2.1.1 Scope & Objective 18.2.1.2 Compliance 18.2.1.3 Categories: Mandatory, Advisory & Voluntary 18.2.1.4 Accessibility 18.2.2 Government of India Identifiers 18.2.2.1 Indian Government Identity 18.2.2.2 Guidelines: Government Domains 18.2.2.3 Guidelines: Link with the National Portal 18.2.3 Building Confidence 18.2.3.1 Guidelines: Content Copyright 18.2.3.2 Guidelines: Content Hyperlinking 18.2.3.3 Guidelines: Terms & Conditions 18.2.3.4 Guidelines: Privacy Policy 18.2.4 Scope of Content 18.2.4.1 Information in Public Domain 18.2.4.2 Primary Content 18.2.4.3 Secondary Content 18.2.4.4 Tertiary Content 18.2.4.5 Minimum Content 18.2.4.6 Information meant for Internal Use 18.2.4.7 Information to Avoid 18.2.5 Guidelines: Quality Of Content 18.2.5.1 Citizen Orientation 18.2.5.2 Content Authenticity, Accuracy & Currency 18.2.5.3 Language 18.2.5.4 Consistent Terminology 18.2.5.5 International Conventions 18.2.5.6 Information Architecture & Relationship 18.2.5.7 Multilingual Versions 18.2.6 Guidelines: Design 18.2.6.1 Visual Identity 18.2.6.2 Page layout 18.2.6.3 Graphics, Buttons & Icons 18.2.6.4 Typography

18.2.6.5 Colour 18.2 6.6 Images 18.2.6.7 Audio / Video / Animation 18.2 6.8 Navigation 18.2 6.9 Site Search 18.2 6.10 Sitemap: Powerful Navigation Aide 18.2.7 Guidelines: Development 18.2.7.1 Markup Languages 18.2.7.2 Cascading Style Sheets (CSS) 18.2.7.3 Scripting Languages 18.2.7.4 File Formats 18.2.7.5 Ready Reference for Developers 18.2.7.6 Validation & Testing 18.2.7.7 Web Application Security 18.2.8 Guidelines: Website Hosting 18.2.8.1 Hosting Service Provider 18.2.8.2 Contingency Management 18.2.9 Guidelines: Website Promotion 18.2.9.1 Search Engine Optimisation 18.2.9.2 Website Promotion Techniques 18.2.10 Website Management 18.2.10.1 Website Management Team 18.2.10.2 Website Maintenance Tools 18.2.10.3 Website Monitoring 18.2.10.4 Archiving of Documents 18.2.10.5 Compliance with Guidelines & Standards 18.2.10.6 Website Review & Enhancement 18.2.10.7 Website Policies 18.3 Unit Summary 18.4 Key Terms 18.5 Check Your Progress 18.0 Introduction Today when citizens expect to avail different services from their homes. Different government bodies have established their web presence through different websites and mobile apps. These websites and apps offer information and services to one and all.

National Portal of India, a mission mode project, provides single window access to information & services offered by different entities of the Indian government at all levels. National Portal of India has a vision to promote engaging digital initiatives. This portal was set up as a single point access to government information and services and it aggregates the content from more than 8000 websites of Indian Government. With the goal of improving the inherent quality of government websites, a Content Advisory Committee was constituted to look into the means to enhance the intrinsic quality of Government Websites. On the basis of the advice of this committee, NIC formulated the first version of 'Guidelines for India Government Websites' in 2009, which were adopted by the Department of Administrative Reforms and Public Grievances (DARPG). This was also included in the Central Secretariat Manual of Office Procedure. 18.1 Unit Objective This unit intends to cover all guidelines related to - website creation, designing, privacy etc. 18.2. Draft Policy Guidelines With the goal of improving the inherent quality of government websites, a Content Advisory Committee was constituted to look into the means to enhance the intrinsic quality of Government Websites. On the basis of the advice of this committee, NIC formulated the first version of 'Guidelines for India Government Websites' in 2009, which were adopted by the Department of Administrative Reforms and Public Grievances (DARPG). This was also included in the Central Secretariat Manual of Office Procedure. 18.2.1 Introduction India, the largest democracy in the world, is set to emerge as an ICT Superpower in this millennium. Realising the recognition of 'electronic governance' as an important goal by Governments world over, Indian

Government has also laid a lot of emphasis on anytime, anywhere delivery of Government services. As of today, there are over eight thousand Government websites in India. A close look at these websites, belonging to both Central and State Government reveals that most of the important Government entities have already made headway in establishing their presence on the internet and others are in the process of doing so. Every other day, there is a new Government website, be it of a Department of a Ministry, Task forces set-up by the Government, new project, citizen service initiative, State Government Department or even a remote district of India. Awareness about the fast changing ICT world and keenness to keep pace with the latest has ensured that almost all the State Governments in India already have their websites up and running. In fact each state has multiple websites belonging to different Departments. However, these websites follow different Technology Standards, Design Layouts, Navigation Architecture, or, in simple terms, different look and feel as well as functionality. This invariably requires a common citizen to familiarise himself/herself with the functionality of each individual website which results in a lot of inconvenience, thus defeating the very purpose of these initiatives. The need for standardisation and uniformity in websites belonging to the Government cannot be stressed enough, in today's scenario. Ideally, properly audited technical 'Standards' should form the foundation of the web efforts of any Country's Government but it shall take some time for any Country, no matter how developed and advanced it is in terms of ICT levels to reach that stage of maturity. It is therefore imperative that a 'phased approach' be adopted to bring out a set of recommended guidelines and policies based on common knowledge and accepted National and International norms. It is suggested that the Indian Government websites adhere to certain common minimum standards which have been derived, in the form of guidelines discussed in this document, as prerequisites for a Government website to fulfill its primary objective of being a citizen centric source of information & service delivery.

18.2.1.1 Scope & Objective This document recommends policies and guidelines for Indian Government websites and Portals, at any organisational level and belonging to both Central Government as well as State/UT Governments (including District Administrations to Village Panchayats) for making Indian Government websites citizen centric and visitor friendly. Compliance to these guidelines will ensure a high degree of consistency and uniformity in the content coverage and presentation and further promote excellence in Indian Government Web space. These guidelines address common policy issues and practical challenges that Government Departments face during development and management of their websites. The guidelines aim to assist the Departments in ensuring that their website conform to a consistently high standard. This is expected to enhance the trust level of the citizens while accessing Government information and availing services online. 18.2.1.2 Compliance These Guidelines have been framed with an objective to make the Indian Government Websites conform to the essential prerequisites of UUU trilogy i.e. Usable, User-Centric and Universally Accessible. They also form the basis for obtaining Website Quality Certification from STQC (Standardisation Testing Quality Certification), an organisation of the Ministry of Electronics & Information Technology, Government of India. These Guidelines are based on International Standards including ISO 23026, W3C's Web Content Accessibility Guidelines (WCAG 2.0) Rights of Persons with Disabilities Act 2016 as well as Information Technology Act of India. Further, the long standing experience of the authors in design, development and management of Government Websites as well as their knowledge of the ground realities and challenges faced by the Government Departments in developing and managing their websites have helped significantly in drafting these Guidelines.

These guidelines are being circulated amongst all Indian Government Departments at all levels (Central, State, District). These are to be followed and implemented on priority so that the overall aim of making all Indian Government websites citizen focused and visitor friendly may be realised. 18.2.1.3 Categories: Mandatory, Advisory & Voluntary Guidelines are divided into three categories viz. mandatory, advisory and voluntary. Explanation and requirement of each of these categories is given as follows: ● Mandatory: The usage of the term 'MUST' signifies requirements which can be objectively assessed and which the Departments are supposed to mandatorily comply with. It is anticipated that there will be no exceptions for a Department not complying with these. In the case of any Department, these guidelines shall apply to all the WebPages/websites under the ownership of that Department. The websites will be checked against these guidelines when audits for compliance are undertaken or for the purpose of quality certification. It is the responsibility of each Department to address and bring into compliance, any non-compliant issues found in any website under their ownership. ● Advisory: The usage of the term 'should' refers to recommended practices or advisories that are considered highly important and desirable but for their wide scope and a degree of subjectivity these guidelines would have otherwise qualified to be mandatory. Departments are, however, expected to comply with these advisories. ● Voluntary: The usage of the term 'may' refers to voluntary practice, which can be adopted by a Department, if deemed suitable. These have been drawn from good practices and conventions that have proved successful and can help a Department achieve high quality benchmarks for their web endeavours.

18.2.1.4 Accessibility Web accessibility means that people with disabilities can also perceive, understand, navigate, and interact with the Web, and that they can contribute to the Web. It encompasses all disabilities that affect access to the Web, including visual, auditory, physical, speech, cognitive, and neurological disabilities. Thus the impact of persons with disabilities is radically changed on the Web because the Web removes barriers to communication and interaction that many people face in the physical world. When websites, web technologies, or web tools are badly designed, they can create barriers that exclude people from using the web. The Website and apps should be designed and developed in such a way that they are accessible by all people, whatever may be their hardware, software, language, culture, location, or physical or mental ability. Legal Provisions The United Nations General Assembly adopted its Convention on the Rights of Persons with Disabilities on the 13th day of December, 2006. India is a signatory to the Convention and has ratified the Convention on the 1st day of October, 2007. To implement the Convention India has enacted the Rights of Persons With Disabilities Act, 2016 on 27th December, 2016. With regard to ICT one of the important provisions in the act is that all contents available in audio, print and electronic media must be in accessible format. International Guidelines and Standards (WCAG) Web Content Accessibility Guidelines (WCAG) covers a wide range of recommendations for making Web content accessible. Following these guidelines will make content accessible to persons with disabilities. Further Web accessibility also benefits people without disabilities as a key principle of Web accessibility is designing Websites that are flexible to meet different user
needs, preferences, and situations. This flexibility benefits people without disabilities in various situations such as slow Internet connection, presence of “temporary disabilities” such as a broken arm and people with changing abilities due to aging. The WCAG are organized around the four principles, which lay the foundation necessary for anyone to access and use Web content. These require the web content to be; ● Perceivable: users must be able to perceive the information being presented i.e. it can't be invisible to all of their senses. ● Operable: users must be able to operate the interface and the interface cannot require interaction that a user cannot perform. ● Understandable: users must be able to understand the information as well as the operation of the user interface. ● Robust: users must be able to access the content as technologies advance. Under each principle there is a list of guidelines. There are 12 guidelines that address these principles. The guidelines provide the basic goals that authors should work toward in order to make content accessible to persons with disabilities. These guidelines are not objectively testable however, under each guideline, there are Success Criteria that describe specifically what must be achieved in order to conform to this standard. Each Success Criterion is written as a statement that will be either true or false when specific Web content is tested against it. The Success Criteria are written to be technology neutral. GIGAW and Accessibility. One of the major focus areas of the Guidelines is web accessibility. With respect to accessibility focus is on the following: ● Addressing the needs of the persons with disabilities.
● Ensuring that the sites are accessible with equal ease to all users on all the major browsers and across all platforms and bandwidths i.e. universally accessible. GIGAW aims to ensure that people with disabilities can perceive, understand, navigate, interact and contribute through the Web. GIGAW has been developed in accordance with W3C's Web Content Accessibility Guidelines 2.0 which are internationally accepted standards on accessibility. GIGAW ensures compliance with level AA of WCAG 2.0. The above-mentioned sections have been categorized as ‘MUST’ meaning thereby that inclusion of these in a website is mandatory for ensuring compliance to GIGAW. The reference to the corresponding WCAG 2.0 guideline is also provided. Compliance with these guidelines will make the websites accessible to persons with various disabilities like low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities and combinations of these which may otherwise hinder access to the web. Compliance with these guidelines ensures that any disabled person using assistive technology can easily navigate the website. Compliance matrix lists all the accessibility guidelines in a separate section along with the reference numbers. 18.2.2 Government of India Identifiers Under it, guidelines are in respect to different fields. 18.2.2.1 Indian Government Identity Visitors to a Government website are very particular about ensuring the veracity and authenticity of the official status of the website before trusting its contents. Hence, it is important to convey in some way to the visitors that Indian Government officially sponsors and owns the information and services being provided in the concerned website. All websites and Portals belonging to the Indian Government Domain at any hierarchical level (Apex Offices,

Constitutional Bodies, Ministries, Departments, Organisations, States/UTs, District Administrations, and Village Panchayats et al) must prominently display a strong Identity and ownership of Indian Government. The above objective can be achieved through the following: ➢ State Emblem of India MUST be displayed on the Homepage of the websites of Central Government Ministries/Departments. The usage of State Emblem of India on an Indian Government website must comply with the directives as per the 'State Emblem of India (Prohibition of improper use) Act, 2005'. Further, the State Governments should also display their Emblems (or the State Emblem of India in case the State has adopted it as its official Emblem) as per the Code provided in the above Act. Public Sector organisations and autonomous bodies should display their official logo on the Homepage of the website to reinforce their identity. These logo images must be accompanied by proper alternate text so that the screen reader uses may be informed of the same. ➢ The Homepage and all important entry pages of the website MUST display the ownership information, either in the header or footer. ➢ The lineage of the Department should also be indicated at the bottom of the Homepage and all important entry pages of the website. For instance, at the bottom of the Homepage, the footer may state the lineage information, in the following manner: a. 'This Website belongs to the Department of Heavy Industries, Ministry of Heavy Industries and Public Enterprises, Government of India' (for a Central Government Department). b. 'This Website belongs to the Department of Industries, State Government of Himachal Pradesh, India' (for a State Government Department). c. 'This is the official Website of Gas Authority of India Limited (GAIL), a Public Sector Undertaking of the Government of India under the Ministry of Petroleum and Natural Gas' (for a Public Sector Undertaking).
d. 'This is the official Website of the District Administration of Thanjavur, State Government of Tamil Nadu (India)' (for a District of India). ➢ All subsequent pages of the website should also display the ownership information in a summarised form. Further, the search engines often index individual pages of a website and therefore, it is important that each webpage belonging to a site displays the relevant ownership information. ➢ In case of those websites which belong to Inter-Departmental initiatives involving multiple Government Departments which are difficult to list on the Homepage, the Government ownership should still be reflected clearly at the bottom of the page with detailed information provided in the 'About the Portal/Website' section. ➢ The page title of the Homepage (the title specified by HTMLtag which appears on the top bar of the browser) MUST describe the topic and purpose of the page. Page title should be complete with the name of the country included, for instance, instead of the title being just Ministry of Health and Family Welfare, it should state, Ministry of Health & Family Welfare, Government of India. Alternatively, in case of a State Government Department, it should state 'Department of Health, Government of Karnataka, India'. This will not only facilitate an easy and unambiguous identification of the website but would also help in a more relevant and visible presence in the search engine results. Further, it is important since the screen readers used by the visually impaired users first read the title of the page and in case the title is not explanatory enough, it may confuse or mislead them. (Ref. WCAG 2.4.2) 18.2.2.2 Guidelines: Government Domains The URL or the Web Address of any Government website is also a strong indicator of its authenticity and status as being official. In today's era with a large proliferation of websites, which resemble Government websites and
fraudulently claim to provide reliable Government information and services, the role of a designated Government domain name assumes a lot of significance. ● Hence, in compliance to the Government's Domain Name Policy, all Indian Government websites MUST use 'gov.in' or 'nic.in' domain exclusively allotted and restricted to Government websites. The military institutions and organisations in India may also use 'mil.in' domain in place of or in addition to the gov.in/.nic. in domain. Educational Institutions, and Research and Academic Institutions, which are otherwise eligible for registration under 'gov.in' may use 'edu.in', 'res.in' or 'ac.in' domains. The above naming policy applies to all Government websites irrespective of where they are hosted. ● Those Departments and Government entities that are using and have been publicising a domain name other than the above should take appropriate early action to register official government domain names. ● The Domain Name Conventions, as specified in the '.IN Registration' policy should be followed while registering a 'gov.in' Domain Name. A summary of the domain name conventions is given below: Domain Naming Conventions: ● Domains can contain the English-language letters 'a' through 'z', and the digits 0 through 9. ● Departments can also use hyphens, but hyphens cannot begin or end a domain name. Also, two hyphens together are usually not permitted, and hyphens cannot appear in both the third and fourth positions. ● Spaces and special characters (such as !, $, &, _ and so on) are not permitted. ● The minimum length is 3 characters, and the maximum length is 63 characters (excluding extension ". gov.in"). ● Domain names are not case-sensitive. (i.e. you may use a mix of upper or lower case letters). Restrictions on the composition of domain names under .IN: ● Generic names are not allowed (e.g. shipping.gov.in is not allowed).

● For domains under gov.in, the domain must be derived from the name of the organisation name/entity. (e.g. Central Vigilance Commission can opt for a domain cvc.gov.in but NOT xyz.gov.in or vigilance.gov.in). ● One and Two letter domain names are not allowed for registration (e.g. ab.gov.in). ● The generic second level names (SLDs) of .in should not be used as third level names. (e.g. mil.gov.in and org.gov.in are not allowed as mil and org are generic second level names under .in). Source: http://registry.gov.in Obtaining a GOV.IN Domain for your website National Informatics Centre (NIC) is the exclusive Registrar for GOV.IN domain names. The use of GOV.IN Domain is restricted to the constituents of Indian Government at various levels, right from Central, State/UT, District and Sub- District to block, village etc. For detailed information and step-by-step procedure on how to register a .GOV.IN Domain, one may visit http://registry.gov.in. 18.2.2.3 Guidelines: Link with the National Portal india.gov.in; The National Portal of India is a single window source for access to all information and services being provided by the various constituents of the Indian Government to its citizens and other stakeholders. The Portal is an aggregator of all Indian Government websites belonging to different entities of the Government. The Portal has been designed, developed and hosted by National Informatics Centre (NIC), the premier ICT organisation of the Government with a nationwide presence. india.gov.in has a unified interface and seamless access to a wide variety of services for citizens from all walks of life and from varied demography. This official Portal for the Government of India acts as a gateway to a plethora of information and services provided electronically by the different departments of Indian Government. It acts as an escort to the visitors and guides them
through varied web sites of Indian Government constituents and also presents a lot of value added information like their association/status in terms of sectors, ministries, departments etc. in a unique and unified manner. There are exclusive sections catering to the different information needs of citizens. A variety of services being provided by the government across sectors and States/UTs can also be accessed from the Portal. The Portal also provides comprehensive information & access to Government News, Press Releases, Documents, Policies, Forms and Tender Notifications etc. The content of the Portal is also available in Hindi. Further, the content can be personalised for each viewer based on his/her demographic profile and area of interest. ● Since the National Portal is the official single entry Portal of the Indian Government, all Indian Government websites MUST provide a prominent link to the National Portal from the Homepage and other important pages of citizen's interest. ● The pages belonging to the National Portal MUST load into a newly opened browser window of the user. This will also help visitors find information or service they could not get on that particular website. It is quite common that citizens are not aware which information or service is provided by which Department. How to link to the National Portal As per linking Policy of the National Portal, no prior permission is required to link 'india.gov.in' from any Indian Government website. However, the Department providing a link to The National Portal is required to inform the National Portal Secretariat about the various sections of the National Portal that they have linked to, so that they can be informed of any changes, updations/additions therein. Also, it is not permitted that the National Portal Pages be loaded into frames on any site. These must be loaded into a new browser window.
Special Banners in different sizes and colour schemes for providing a link to the National Portal have been given at: http://india.gov.in/linktous.php. Instructions on how to provide a link have also been given. The Government websites/ Portals may choose any banner from the ones provided, depending upon their site design and place the same on their Homepage. 18.2.3 Building Confidence Under it, guidelines are in relation to different fields. 18.2.3.1 Guidelines: Content Copyright Copyright is a form of protection provided to the owners of "original works of authorship" in any form or media. It is implied that the original information put up on the website by a Government Department is by default a copyright of the owner Department and may be copied, reproduced, republished, uploaded, posted, transmitted, or distributed only if the copyright policy of the concerned Department allows so. ➢ Hence, the information, material and documents made available on an Indian Government website MUST be backed up with proper copyright policy explaining the terms and conditions of their usage and reference by others. The copyright policy of a Department could be liberal, moderate or conservative depending upon their preferences based on the kind of information available on their website. However, since it is a duty of a Government Department to provide all the information in the public domain freely to the citizens, the Departments should aim to have a liberal copyright policy. ➢ In cases where the document is in public domain and there is no restriction on its reproduction, the copyright statement may be worded as follows: ○ Sample: Copyright Statement

○ “Material featured on this site may be reproduced free of charge in any format or media without requiring specific permission. This is subject to the material being reproduced accurately and not being used in a derogatory manner or in a misleading context. Where the material is being published or issued to others, the source must be prominently acknowledged. However, the permission to reproduce this material does not extend to any material on this site, which is explicitly identified as being the copyright of a third party. Authorisation to reproduce such material must be obtained from the copyright holders concerned.” ➢ In cases where the nature of information/document calls for a restriction on its reproduction, the copyright statement may be worded as follows: ○ Sample of alternate Copyright Statement ○ “Material on this site is subject to copyright protection unless otherwise indicated. The material may be downloaded without requiring specific prior permission. Any other proposed use of the material is subject to the approval of (name of Department). Application for obtaining permission should be made to (email address of the concerned Department).” ➢ The Departments should also be sensitive towards publishing any information having a third party copyright. The Government Departments MUST follow proper procedures to obtain the permission, prior to publishing such information on their websites. ➢ If any published Government Document/Report is being reproduced on any website, whether as excerpts or in full, the source of the same i.e. Full Title of the Report/Document along with the name of the concerned Department and year of publication MUST be provided. 18.2.3.2 Guidelines: Content Hyperlinking Since Government websites often receive queries and requests from owners of other websites who might want to provide a hyperlink to their web pages, every

Indian Government website MUST have a comprehensive and clear-cut hyper linking policy defined and spelt out for those who wish to hyperlink content from any of its sections. The basic hyper linking practices and rules should ideally be common across the websites of a State/Ministry. ➢ The hyperlinking policy enumerating the criteria and guidelines with respect to hyperlinks with other sites may be made available under the common heading of ‘Hyperlinking Policy’ and displayed at a common point on the Homepage of all sites under the ownership of a State/Ministry. ➢ In case the concerned Department has no objection to anyone providing a hyperlink to their website, the policy statement may be worded as: ○ Sample Hyperlinking Policy ○ “We do not object to you linking directly to the information that is hosted on our site and no prior permission is required for the same. However, we would like you to inform us about any links provided to our site so that you can be informed of any changes or updations therein. Also, we do not permit our pages to be loaded into frames on your site. Our Department’s pages must load into a newly opened browser window of the user”. ➢ In case Prior permission is required by anyone who wishes to provide a link to a Government website, the policy statement may be worded as follows: ○ Sample of alternate Hyperlinking Policy ○ “Prior permission is required before hyperlinks are directed from any website to this site. Permission for the same, stating the nature of the content on the pages from where the link has to be given and the exact language of the Hyperlink should be obtained by sending a request at (Email address of the Department)”.

➢ Many times, cross linkages between different websites can cause ambiguity in the mind of the visitors about the owner of a particular portion of content and whom to be contacted in case of any query. Also, many times, there could be a difference in the security domains of two linked websites. Hence, it is important to notify the visitors when they are leaving a particular website through a hyperlink and entering another one. Clear indications MUST be given when leaving the Government website for an external website. Sample of indication of leaving the Government Website “This link shall take you to a page outside the (website URL). For any query regarding the contents of the linked page, please contact the webmaster of the concerned website”. ➢ To create a visual distinction for links that lead offsite, Cascading Style Sheets (CSS) controls or some such similar mechanism should be used. In case the link takes the user to another website of the same Department/Ministry/State, a seamless transition should be used through appropriate CSS controls. ➢ Third party content should only be linked when consideration about the copyright, terms of use, permissions, content authenticity and other legal and ethical aspects of the concerned content have been taken into account. ➢ The overall quality of a website’s content is also dependent, among other things, on the authenticity and relevance of the ‘linked’ information it provides. This fact is all the more significant in the context of a Government website since there is a lot of credibility attached with an official website. Therefore, all Indian Government websites should make sure that the external hyperlinks, wherever present on the site, MUST be verified and checked on a regular basis to ensure that the information being provided ‘through’ them is up-to-date, accurate and relevant.

➢ Further, it MUST be ensured that 'broken links' or those leading to 'Page Not Found' errors are checked on a regular basis and are rectified or removed from the site immediately upon discovery. A number of technology tools are available for convenient discovery of broken links. 18.2.3.3 Guidelines: Terms & Conditions With the increased proliferation of the Internet, more and more citizens are accessing information from Government websites. Clearly defined Terms & Conditions including well-worded disclaimers regarding the usage of websites MUST be present on every Indian Government website. Terms & Conditions shall address the following aspects: - Ownership Details - Usage Policy of Content - Legal Aspects - Responsibility towards hyperlinked Sites ➢ Since it is the responsibility of all Indian Government Departments to uphold and maintain the trust imposed in them by the visitors to the sites, the Government websites should not outrightly 'disclaim' the content of another Government website. Instead, a politely worded statement clearly indicating the ownership of the particular piece of content and the relevant details for further queries and information may be provided. Once all Indian Government websites follow standard content practices, the visitors should be able to move from one Government website to another in a manner as seamless as possible. ➢ The Terms & Conditions should also clarify whether the information available on the website may be construed as a statement of law to be used for any legal purposes or not. It should also be mentioned that in case of any legal dispute arising out of the content on the Government website, the matter shall be heard in a court of law within the jurisdiction of the State where the concerned owner Department of the website/portal is located.
➢ In case the content is sourced/linked from a non-government website at the other end; the Terms & Conditions should clearly state this fact and disclaim responsibility for its accuracy and currency. ➢ In case the website involves any e-payment features where electronic transactions are involved, appropriate disclaimers, worded in consultation with the involved agencies (bank, payment gateway service provider etc.) and the legal cell of the Department should be placed on the site. Sample Statement for Terms & Conditions ● This website is designed, developed and maintained by (Name of Department), Government of India. ● Though all efforts have been made to ensure the accuracy and currency of the content on this website, the same should not be construed as a statement of law or used for any legal purposes. In case of any ambiguity or doubts, users are advised to verify/check with the Department(s) and/or other source(s), and to obtain appropriate professional advice. ● Under no circumstances will this Department be liable for any expense, loss or damage including, without limitation, indirect or consequential loss or damage, or any expense, loss or damage whatsoever arising from use, or loss of use, of data, arising out of or in connection with the use of this website. ● These terms and conditions shall be governed by and construed in accordance with the Indian Laws. Any dispute arising under these terms and conditions shall be subject to the jurisdiction of the courts of India. ● The information posted on this website could include hypertext links or pointers to information created and maintained by non- Government/private organisations. (Name of Department) is providing these links and pointers solely for your information and convenience. When you select a link to an outside website, you are leaving the (Name of Department) website and are subject to the privacy and security policies of the owners/sponsors of the outside website.
● (Name of Department), does not guarantee the availability of such linked pages at all times. ● (Name of Department), cannot authorise the use of copyrighted materials contained in linked websites. Users are advised to request such authorisation from the owner of the linked website. ● (Name of Department), does not guarantee that linked websites comply with Indian Government Web Guidelines. 18.2.3.4 Guidelines: Privacy Policy ➢ Government websites should follow an extremely cautious approach when it comes to collecting personal details/information about the visitors to the sites. It should be an endeavour to solicit only that information which is absolutely necessary. ➢ In case a Department solicits or collects personal information from visitors through their websites, it MUST incorporate a prominently displayed Privacy Statement clearly stating the purpose for which information is being collected, whether the information shall be disclosed to anyone for any purpose and to whom. ➢ Further, the privacy statement should also clarify whether any cookies shall be transferred onto the visitor's system during the process and what shall be the purpose of the same. ➢ Whenever a Department's website allows e-commerce and collects high risk personal information from its visitors such as credit card or bank details, it should be done through sufficiently secure means to avoid any inconvenience. SSL (Secure Socket Layer) and Digital Certificates are some of the instruments which could be used to achieve this. It is further informed that the following examples of Privacy Statements are only for reference purpose and Departments are requested to customise them to the requirements of their own websites.

Sample Privacy Statement: Thanks for visiting the website of (Name of Department), and reviewing our privacy policy. We collect no personal information, like names or addresses, when you visit our website. If you choose to provide that information to us, it is only used to fulfil your request for information. We do collect some technical information when you visit to make your visit seamless. The section below explains how we handle and collect technical information when you visit our website. Information collected and stored automatically: When you browse, read pages, or download information on this website, we automatically gather and store certain technical information about your visit. This information never identifies who you are. The information we collect and store about your visit is listed below: - The Internet domain of your service provider (e.g. mtnl.net.in) and IP address (an IP address is a number that is automatically assigned to your computer whenever you are surfing the web) from which you access our website. - The type of browser (such as Firefox, Netscape, or Internet Explorer) and operating system (Windows, Linux) used to access our site. - The date and time you accessed our site. - The pages/URLs you have visited, and - If you reached this website from another website, the address of that referring website. This information is only used to help us make the site more useful for you. With this data, we learn about the number of visitors to our site and the types of technology our visitors use. We never track or record information about individuals and their visits.
Cookies: When you visit some websites, they may download small pieces of software on your computer/browsing device known as cookies. Some cookies collect personal information to recognise your computer in the future. We only use non-persistent cookies or "per-session cookies". Per-session cookies serve technical purposes, like providing seamless navigation through this website. These cookies do not collect personal information on users and they are deleted as soon as you leave our website. The cookies do not permanently record data and they are not stored on your computer's hard drive. The cookies are stored in memory and are only available during an active browser session. Again, once you close your browser, the cookie disappears. If you send us personal information: We do not collect personal information for any purpose other than to respond to you (for example, to respond to your questions or provide subscriptions you have chosen). If you choose to provide us with personal information-like filling out a Contact Us form, with an e-mail address or postal address, and submitting it to us through the website-we use that information to respond to your message, and to help you get the information you have requested. We only share the information you give us with another Government agency if your question relates to that agency, or as otherwise required by law. Our website never collects information or creates individual profiles for commercial marketing. While you must provide an email address for a localised response to any incoming questions or comments to us, we recommend that you do NOT include any other personal information. Site Security: - For site security purposes and to ensure that this service remains available to all users, this Government computer system employs commercial software programs to monitor network traffic to identify unauthorised attempts to upload or change information, or otherwise cause damage. - Except for authorised law enforcement investigations, no other attempts are made to identify individual users or their usage habits. Raw data logs are used for no other purposes and are scheduled for regular deletion. - Unauthorised attempts to upload information or change information on this service are strictly prohibited and may be punishable under the Indian IT Act (2000). Sample of alternate Privacy Policy Statement (in case a website does not collect any personal data) As a general rule, this website does not collect Personal Information about you when you visit the site. You can generally visit the site without revealing Personal Information, unless you choose to provide such information. Site Visit Data: This website records your visit and logs the following information for statistical purposes - your server's address; the name of the top-level domain from which you access the Internet (for example, .gov, .com, .in, etc.); the type of browser you use; the date and time you access the site; the pages you have accessed and the documents downloaded and the previous Internet address from which you linked directly to the site. We will not identify users or their browsing activities, except when a law enforcement agency may exercise a warrant to inspect the service provider's logs. Cookies: A cookie is a piece of software code that an internet web site sends to your browser when you access information at that site. This site does not use cookies.

Email Management: Your email address will only be recorded if you choose to send a message. It will only be used for the purpose for which you have provided it and will not be added to a mailing list. Your email address will not be used for any other purpose, and will not be disclosed without your consent. Collection of Personal Information: If you are asked for any other Personal Information you will be informed how it will be used if you choose to give it. If at any time you believe the principles referred to in this privacy statement have not been followed, or have any other comments on these principles, please notify the webmaster through the 'Contact Us' page. Note: The use of the term "Personal Information" in this privacy statement refers to any information from which your identity is apparent or can be reasonably ascertained. 18.2.4 Scope of Content Under the scope of content, guidelines are: 18.2.4.1 Information in Public Domain The content of a Government website is its soul as the citizens rely heavily upon a Government website to access authentic and up-to-date information. Ideally, an Indian Government website ought to have the following kinds of content: a. Primary Content: Primary content shall be the original content that is sought by the target audience of the website which could be citizens, business community, overseas citizens or other Government Departments or even Government employees. Examples of such content are information about the Department, various Schemes and programmes of the Department, Documents, Forms etc. Besides regulatory content mandated by legislation such as IT act, RTI or even Directives from apex offices shall also form a part of this category e.g. parliament question and answers. b. Secondary Content: Secondary content is generated from the assortment, packaging of primary content to suit the requirement of different audiences, events and occasions. Examples of such content are Advertisements/Banners/Spotlight/Media Gallery/Related sites etc. c. Tertiary Content: Information about the 'Primary' and 'Secondary' content forms a part of the tertiary content. This includes sections like About the Site, Online Help, Terms and Conditions and Frequently Asked Questions (FAQ). Departments/Organisations should compile their own list of contents/sub contents which they feel should be in public domain or needed by their intended audience. Information could be free to access by all or part of information (due to concerns of privacy & sensitivity) could be made available only to registered users. A generic list of content is given ahead:

Guidelines pertaining to compilation of content in some of the common content categories have been given in the following sections. 18.2.4.2 Primary Content Primary Content forms the main focus of any Government website as it comprises the information for which the citizen has visited the website. Examples are information about the Department, Schemes and Programmes, Contact Information, Forms, Documents, Tenders etc. Broadly, the following subcategories encompass most of the Primary Content that ought to be made available on an Indian Government Website. ➢ About (Ministries/Department/State Govt./Organisation/District Administration) This essentially refers to the content describing the owner Department of the website and comprises the following information:

- Profile - Mission/Vision Statement - History/Background - Departments/Divisions/Cells - Role/Functions/Responsibilities/Activities - Agencies under the Administrative Control - Organisational Structure - Who's Who This content should be reviewed frequently to ensure delivering accurate and updated information. All information concerning the Legislative/Government officials MUST always be kept up to date. ➢ Profile of a Sector/Region Some websites/portals shall also be required to include a section on the overview of the sector(s) they deal with, naming all information concerning that sector present on their website or website of other Government entities working in that sector. This should be made accessible to give a comprehensive view to the visitors. Similarly some of the portals are required to publish a profile of a region e.g. National Portal publishes a profile of India. States Portals should publish a profile of the respective States while District websites should publish a profile of their respective district. Detailing of this segment should be done by each Department and included in their web content policy. Policy must also include the frequency/event of updation as well as officers responsible for updating this content. ➢ Programmes & Schemes The Government Departments at the Centre and State have welfare programmes and schemes benefiting the individuals, groups of citizens (e.g. women, persons with disabilities etc.) or community at large running in different regions and sectors across the country. Information about all such schemes of the Centre as well as State Governments is included in this category. These schemes could be Centrally Sponsored, or being run by the

State/District Administration itself. It is important to note that these schemes should be directly benefiting the individuals, special interest groups of citizens (e.g. widows, persons with disabilities etc.) or the community at large. Also, information should only be highlighted with regard to those schemes which are currently active and ongoing, and not about schemes which are no longer open/available to the public. a. The complete official title of the Scheme MUST be reflected and should be self-explanatory. The correct title would lead to an accurate search output for information on that scheme and it would be easy for the users to locate it. Any abbreviation in the title should be expanded. b. This site should enlist all those who are eligible to receive benefits under the scheme e.g. women, children, persons with disabilities, poor etc. Also, the details of the eligibility criteria for availing those benefits should be clearly mentioned. c. Information should be given about whether the scheme entails monetary or nonmonetary benefits. Also, what are the specific kinds of non- monetary benefits that can be availed e.g. Subsidy, Training, Land Allotment, etc. d. Procedure to be followed, whom to contact, supporting documents to be carried etc. for availing benefits under the scheme MUST form a part of this content. e. For schemes that are valid for a particular period of time, the validity of the scheme MUST be mentioned so that the information could accordingly be moved to archives after the expiry date. ➢ Services A large number of citizen services are being provided by various Ministries, Departments and State/UT Governments. Information about these services as well as the interface to access and use them (if it is available online) should be made available on their websites. a. It is important to clearly understand what constitutes the term 'services' in this context. Information about all services provided by the Government, whether fully online, partially online or available offline but whose description and details exist online can be called services. For example, if the complete details about how to apply for a birth certificate in a particular State are given along with the facility to download the requisite application form, it shall be categorised as a Service. However, just information about things like a programme of any Department, or access to some searchable database without any service associated will not constitute a 'Service'. b. The complete title of the Service MUST be reflected and should be self- explanatory. The correct title would lead to an accurate search output for information on that service and it would be easy for the users to locate it. Any abbreviation in the title should be expanded. c. The websites should prominently display the most often used/accessed services, so that visitors can locate and access them quickly. d. The website MUST provide a complete description of what the service is, how is it useful for the citizens, how it can be availed, who is eligible to avail the service, who is to be contacted and during which hours. This is important for the common citizens to understand the significance of the service and the steps to be followed for availing it. e. If the service is delivered online then it should be developed as a web service so that other websites and portals can access it seamlessly, subject to authorisation of the owner Department. All online services should be made available through the Government Services Portal. (https://services.india.gov.in) ➢ Application Forms Visitors to Government websites want fast, easy service at 24x7 basis. They do not want to wait until an organisation is open for business. They do not want to wait in line to get forms and documents to avail the desired service. Therefore, all application forms existing in the public domain and meant for applying for licenses, certificates, scholarships, grants, services, information, loans, utilities etc. should be published on the concerned Government website for the convenience of citizens.

a. All Forms must be provided in an accessible format. The format along with the file size must be mentioned in the download link. (Ref. Section 7.4.2) b. The title of the form MUST be clearly indicated and should be self- explanatory and devoid of any abbreviations which may render it incomprehensible. The correct title would lead to an accurate search output for information on that Form and it would be easy for the users to locate it. Also, in case the Form is popularly known by a number (e.g. Form 16 for Income Statement or Form 4 for Driving license), the same should also be mentioned along with the title. c. It should be specified whether the language of the form is English, Hindi or any other Regional language. In case of the latter, the name of the concerned language MUST be mentioned clearly. If the form is bilingual/multilingual, it is important to mention the languages in which it is available. d. Information assisting the user in filling up the application form should also be provided such as where to submit and supporting documents to attach etc. ➢ Documents/Reports a. All documents developed/published and issued in the Public Domain by Government Departments, Ministries, State/UT Governments, Public Sector Units and Organisations must be published on the website. The following list gives an idea of the category of Government documents that can be covered under this: ● Five-year Plan documents ● Annual Reports ● Budget Documents ● Guidelines by Government ● Citizen Charters ● Census Documents ● Survey Outcomes/Reports

● Statistical Reports etc. b. This content should be reviewed regularly to ensure the accuracy and currency of the information. c. The complete official title and date of the document MUST be mentioned on the website. The correct title would lead to an accurate search output for that document and it would be easy for the users to locate it. For example: 'Policy on Promotion of Tourism in the State of Manipur' is a more appropriate title than just 'Tourism Policy.' Any abbreviation in the title should be expanded and the title should not be formulated on just a document number/date. d. In case any reference to a document of another Government Department is given, it should be clearly specified as with whom lies the ownership of the document i.e. which is the exact Ministry/Department at the Central or State level which has produced/published/issued the concerned document. e. It should be specified whether the language of the document is English, Hindi or any other Regional language. In case of the latter, the name of the concerned language MUST be mentioned clearly. If the document is bilingual/multilingual, it is important to mention the languages it exists in. f. It is important that if the document is valid only for a certain time period, the validity MUST be clearly mentioned on the site. In fact, the document should be removed or moved to the archives after expiry of the validity period. g. Documents must be made available in an accessible format. (Ref. Section 7.4.2) ➢ Circulars/Notifications There are various Circulars/Notifications that are released from time to time by the Indian Government at the Central or State level. Information about all the Circulars/ Notifications of the Centre as well as State Governments should be made available on the respective websites.

a. The official title of the Circular/Notification MUST be mentioned and should be self explanatory. The correct title will also help in accurate search output for information on that circular and thus, it would be easy for the users to locate it. b. The ownership of the concerned circular should be specified i.e. Ministry/ Department and also the level i.e. Centre/State etc. c. Circulars/Notifications must be made available in an accessible format. (Ref. Section 7.4.2) d. If the Circulars/Notifications are valid only for a certain time period, the validity MUST be clearly mentioned on the site. In fact, the Circulars/Notifications should be removed or moved to the archives after expiry of the validity period. ➢ Tenders As directed by the Central Vigilance Commission (CVC) all Government and Public Sector Procurement/Tenders/Notifications issued by the Central and State Governments and other public bodies across India for goods, services and works MUST be made available/linked through the websites. ➢ Recruitment All Indian Government websites MUST provide complete and transparent information on their recruitment policies for the benefit of those who would like to join the Government and serve the nation. In case the recruitment is through some Central or State level examination or recruitment agency such as UPSC, SSC etc. that should be highlighted along with a link to respective pages of those organisations' websites. In either of the cases information about the recruitment should abide by the following guidelines. a. The title of the recruitment notice MUST be self-explanatory. b. This site MUST enlist all those who are eligible for a particular recruitment. Also the details of the eligibility criteria should be clearly mentioned. c. All required application forms should be made available on the website so that the interested person can download and submit the same.

d. Procedure to be followed, whom to contact, supporting documents to be carried etc. for the particular recruitment MUST form a part of this content. e. All currently open vacancies may be highlighted on the Homepage of the website. f. All recruitment notices should also be registered with the National Portal for wider access by target audience. g. Information for those recruitment notices in which the last date is over must be either removed or moved into the archives section. ➢ News and Press Releases News having national importance and significance for the Citizens as well as Government Press Releases issued by Departments and organisations at the Centre and State level should be published on the website of the concerned Department. News and Press Releases should carry the date and should be organised as per the Archival Policy of the website. News and Press releases should be published in RSS format so that associated offices and Departments can also consume them on their websites with due permission or based on their access policy. ➢ Contact Information on Government Websites Citizens would like to contact any Government Department or entity to ask questions, get information, seek clarifications or sort out problems. Therefore it is essential that Government websites provide them with the means to do that. a. All Indian Government websites MUST have a 'Contact Us' page, linked from the Homepage and all relevant places in the website. b. The 'Contact Us' page should be categorised according to the various divisions handling different kinds of queries; e.g. grievance redressal, file status, procedural details etc. c. The contact details for the Important functionaries in the Department MUST have the telephone numbers/fax numbers, postal address as well as email address along with the timings specified for personal/public dealing (if applicable). The content policy of the department should enlist

the functionaries whose details are to be given on the contact us or who's who/directory page. d. There should be a clear-cut policy for redressal (correction) of inaccurate information found on the website. The contact details of the Web Information Manager, who is overall responsible for the content on the website, should be provided. ➢ Presence on the National Portal Mechanism should be in place to ensure that metadata for all important information and Services, have been provided to the National Portal. 18.2.4.3 Secondary Content Secondary content is generated from the assortment and packaging of primary content to suit the requirement of different audiences, events and occasions Examples of such content are advertisements/banners/spotlight/media gallery/related sites. ? Special Interest Group Corner In case of an event or on special occasions, Government departments may introduce a section for a particular target group e.g. during result time a special section for students may be put up or the Department of Social Welfare may open a section for senior citizens on its website. It must be noted that the original content that is sourced from various sections of the website to make up this section should remain as such so that it may be referred to, once the section has been removed. ? Events and Announcements Government websites should have a section to cover various Events & Announcements such as: o Announcements having International/National/State level importance. o Announcements related to important upcoming Government events being organised by a Ministry/Department/State/UT.
o Announcements related to schemes/grants/scholarships/ fellowships etc. o Warnings of Natural disasters/Epidemics etc. o Calls for relief funds during disasters. Other help from citizens or civic agencies. o Display of important helpline numbers in case of crisis. Guidelines relating to events and announcements are as follows: o Announcement must be taken off/archived once it loses its relevance or after the expiry of the time period attached to the event or happening. o All important announcements should also be published on the National Portal for wider access. o Announcements should be worded in simple English/Regional language depending on whom it is meant for. ? Discussion Forums & Chat Rooms Discussion forums are becoming an increasingly popular tool for sharing viewpoints and information. Discussion Forums could be initiated by a Department on any relevant topic of public interest and can prove quite useful in obtaining opinions and viewpoints of the citizens on issues important for policy making. Departments should use MyGov platform to conduct discussions.While initiating an online discussion forum through any platform, the following should be kept in mind: o The purpose and objective of the Discussion Forum should be clearly defined. Preferably, an initiating document or background paper explaining the topic of the forum may be provided on the site. o Clear-cut Terms and Conditions for posting content in the Discussion Forum should be indicated. Policy related to content that must not be posted in the discussion forum (see box) should be defined.
o The discussion forums on a Government website should be moderated so that there is some control to avoid publishing unwanted content on the website. All the inputs submitted by the users may be reviewed by the moderator for context and appropriateness of the language or a provision for marking the post as spam may be provided to the users of the forum. o The discussion forum should be open for a limited period of time and the validity of the same should be prominently indicated on the site. However, rather than closing the forum abruptly, it is advised that a summary of the inputs received as well as an Action Taken Report, if possible, should be provided on the website so that the visitors are assured that their inputs are being seriously considered and valued by the Department. Chat Rooms Chat rooms on a website could be used by citizens to exchange their viewpoints on some common topic amongst each other as well as by the Departments to facilitate an online conversation between a senior functionary and citizens. Like Discussion Forums, Chat rooms should also follow a Policy related to content that must not be posted by the users (see box). It is desirable that the participants of an online chat through a Government Department's website be registered before they are allowed to login and post their messages. Permanent chat rooms should be monitored frequently. In case of temporary or special occasion chat sessions with a senior functionary, it is advised that questions be submitted to the interviewee, before being published in the chat room. Online Discussion Forum: Usage Policy A Usage Policy should be established and published alongside all online discussion forums and chat rooms on a Government website. This policy should be prominently displayed to any new user who should be made to pass

through a page with this information before being able to input data. The usage policy should clearly specify that the following is forbidden: ● Insulting, threatening or provoking language. ● Inciting hatred on the basis of race, religion, gender, nationality or sexuality or other personal characteristics. ● Swearing, using hate-speech or making obscene or vulgar comments. ● Libel, condoning illegal activity, contempt of court and breach of copyright. ● Spamming, i.e. adding the same comment repeatedly. ● Impersonating or falsely claiming to represent a person or organisation. ● Posting in a language other than the language of the website. ● Invading people's privacy or Posting off-topic comments. ? Related links For every content topic in different modules of the website, a section should be provided for 'Related Links' to the concerned information. a. Each content topic covered in the website may have some Related Links to other Government websites which provide further details on the topic. b. For every Related Link, the complete URL of the Homepage/Concerned webpage should be provided correctly along with the complete title of the Website which shall appear on the screen. c. The validity and accuracy of the URL should be checked on a regular basis to make sure that the information is relevant and the linked address is correct. Only Government websites/webpages should be provided as 'Related Links' for further information since there is no control over the veracity and availability of information on private websites.

? Spotlight The website may have a section called 'Spotlight' which focuses on a certain issue of importance and highlights it. The guidelines with regard to this section are: a. Every Spotlight topic should be chosen keeping in mind the relevance and significance of the topic in today's context. It should be ensured that the chosen topic is of significance and should interest a diverse group of audience. b. The content for the Spotlight Section should have the following essential elements: ? Brief introductory text to appear on the Homepage of the website. ? Detailed text on the topic in the Main Page of the Spotlight section. This content should comprise key highlights of the topic and the facts ought to be sourced from authentic and official sources related to the topic. ? Address of the Webpage/Websites which have detailed information on the topic addressed in the Spotlight. ? Graphical Banner highlighting the Spotlight topic and linked to the webpage providing further details. c. Once the new Spotlight is launched, the older one should be shifted/ moved to the Archives section along with the date for future reference. 18.2.4.4 Tertiary Content Information about the 'primary' and 'secondary' content forms a part of the tertiary content. The guidelines for this type of content are given as follows: ➢ About the site - this section should contain information about the Department responsible for the contents as well as the maintenance of the site, purpose behind the development of the site, when it was launched, where it is hosted etc.

➢ Navigation Aids Sections such as Help, Site Map, and Search (described in detail in the latter sections). ➢ Terms and Conditions with respect to the usage of content on the site. This includes policies on Copyright, Privacy, Legal Implications etc. as well as Content Disclaimers. This has been explained in detail in the previous chapter. ? 'Frequently Asked Questions' or FAQs Although the content developers of websites make (and should make) all possible efforts to ensure that the content answers all possible and anticipated information needs of the citizens, it is sometimes not possible to address these completely. Visitors still have questions because either they couldn't find what they were looking for or because it is presented in such a manner that it is difficult for them to comprehend or understand. In such a case, a detailed list of answers to common questions can prove highly useful to the website audience. Also, it has been proven by usability studies that information presented in a 'questionanswer' form is much easier for people to understand than lengthy write-ups. Hence, Government websites, particularly the ones having frequent interaction with citizen for various services/schemes should have a 'Frequently Asked Questions' section linked from the Homepage and all other relevant places in the site. a. The web information managers can compile the list of commonly asked queries and their answers through the following sources: b. Emails, phone calls and letters from the public. c. Survey conducted amongst the public. d. Input from people who answer phones and mail in the organisation. e. Review of website usage statistics and top search terms/items. ? User Feedback

A commonly used method of receiving the feedback from the visitors of the site is through feedback forms or guest books. Feedback forms, with pre-decided fields, to be filled in by the visitors, enable a much more structured way of receiving feedback and hence make it easy to categorise or analyse the same. Forms are also quite useful for receiving grievances/complaints from the users in a structured and formatted manner. The information collected through feedback forms can also be used as a means of knowing the usage pattern of the website and can be used in the enhancement of future versions of the website. a. All feedback MUST be collected through online forms for reasons explained above. b. All feedback forms should be prominently displayed on the website. c. Departments MUST respond to the feedback explaining how it shall be processed. d. Departments should also make it clear on the response screen whether citizens should expect a reply on their feedback If 'yes' then in how many days. ? Help A special section 'Help' on the website MUST be created, which allows and guides for a pleasant experience while browsing the website. This category includes the kind of content which allows for an easy and convenient navigation for the visitor to the website (e.g. online help, how to open files of certain formats, how to access audio/video on the portal, kinds of plug-ins required etc.). Further, the content which clarifies the purpose of the website as well as its policies for the visitors should also be included in this category. Help should be linked from all pages of the website and should be displayed in a consistent location across the website. ? Downloads and Plug-ins
a. Information about downloadable material Downloading material from the Internet can be an expensive and time consuming exercise. Therefore, Government websites MUST provide Information that will help visitors determine whether they want to access downloadable material. This information would concern the following: ? Self explanatory title of the document/file. ? Download and use instructions (install, open, view). ? File format and file size. b. Size of downloads to be minimised The total size of the file should be kept to a minimum to ensure acceptable download times for all users, especially those that do not have high-speed, reliable Internet connections. c. Virus Free Downloads Prior to making downloadable material available for visitors, Government websites should check for viruses and clear them. 18.2.4.5 Minimum Content The homepage of a website is the primary entry page to the entire content of the website. It is important that the visitors to the site get to access the most important content elements from the Homepage itself. ➢ Government websites MUST ensure the availability of the following minimum content elements on the Homepage. This is applicable not just to the websites of Departments but also to any Indian Government website, be it on a specific Project, Task Force, Committee or Service etc. Minimum Content on the homepage of a Department ● Department Name (alternatively, the name of the Project, Service etc. as applicable). ● State emblem of India/Logo (as applicable). ● About the Department (including its main activities and functions). ● Link to all the major modules/sections of the site. ● Link to all the citizen services offered by the Department. ● Link to the 'Contact Us' page of the website. ● Link to the "Feedback" page. ● Link to National Portal. ● Search/Site Map. ● Terms and Conditions of Use. ➢ Minimum Content on Subsequent Pages Apart from the Homepage, the subsequent pages of the website MUST have the following minimum information, in addition to the main content. ● Self explanatory title of the page. ● Link to the Homepage. ● Link to the parent section/top module of the individual page. ● Ownership (name of the Department owning the website). ● Link to the "Contact Us" page. 18.2.4.6 Information meant for Internal Use Government websites contain information and services for the public. Therefore, it has to be strictly noted that Indian Government websites should not be used to convey information specific to the Department's employees. Information meant for the internal consumption of the employees should be disseminated through Intranets. This is required, as the information intended for employees can confuse the common public visiting the website. ● All information meant for internal consumption and not in public domain, presently existing on any Indian Government website should be moved to an Intranet secured through proper authentication. In case for some reason it is not possible for the Department to develop an Intranet, the information meant for internal use may be isolated and explicitly labelled (e.g. 'for employees' or 'for internal use'), to make it clear to the public that it is not intended for them.

18.2.4.7 Information to Avoid ➢ Commercial banner advertisements should be avoided on Government websites. Banner advertisements that promote and link to other Government agencies as well as social messages are permissible. ➢ Any information in text, visual or any other media which may offend/harm the National sentiments, religious communities as well as security and integrity of the Country MUST be avoided on the websites and content must be authenticated as per the content moderation and approval policy. ➢ Government Information which is confidential or only for restricted use should be avoided on a website meant for the common public. 18.2.5 Guidelines: Quality Of Content Under it guidelines in relation to different fields: 18.2.5.1 Citizen Orientation The crucial element of an effective presence of Government on the Web is the way its content is written and packaged. Indian Government websites should be oriented towards their prospective audience. Intended audience to the Government website could be Citizens, Businesses, Government Departments as well as Government employees. Following are the guidelines towards the same: ➢ The content should be selected keeping the audience in mind, not from the Government's perspective. Apart from the selection of the content, equal emphasis should be given to the way it is written and presented on the web. Content aimed at the common public should be written in such a way so that people from diverse professional, educational and demographic backgrounds can easily comprehend the same. ➢ Homepage of the website should be designed carefully and effectively to provide a good interface for the citizen. Homepages should ideally not
feature details of individuals and office bearers of the Department. Those details may be appropriate on the "About Us" or "Who's who" page. ➢ In order to gauge the content requirements of the citizens, who are the prime target audience of any Government website, Government Departments may use following means to determine the best way to identify and package information for citizens and other stakeholders: ● Discussion Forums ● User satisfaction surveys ● Online feedback from citizens ● Analysing website usage reports, including search terms and statistics ● Usability testing and research 18.2.5.2 Content Authenticity, Accuracy & Currency It is the duty of every Web Information Manager to ensure that the content on his/ her website is always authentic, up-to-date and latest. This fact assumes paramount significance in the context of Government websites since the public puts a lot of trust in the information available on the official websites of any department. ➢ Each and every bit of content published on a Government website should be verified and checked thoroughly as the public expects nothing less than authentic and accurate information from a credible source such as an official Government website. The Departments MUST have a Content Contribution, Moderation and Approval Policy (CMAP) stating the responsibility, authorisation and workflow details with regard to content publishing on the site. ➢ The Homepage MUST and every important entry page of all Indian Government websites/portals should display a timestamp indicating one of the following: a. Date on which the information was posted on the website. b. Date on which the content was last reviewed and/or modified.
➢ Every piece of content appearing on the Government website should be reviewed after a pre-decided duration for its accuracy, relevance and currency. All Government Departments MUST formulate a proper web Content Review Policy (CRP) depending upon the nature of their content and if possible, also publish the policy on their website. ➢ In case the nature of the content is 'historical' i.e. it will never change (e.g. press releases, speeches, published reports/documents of a Department etc.), the date of posting the content may be mentioned along with a note indicating the nature of the document and explaining that it is not subject to revision. ➢ In case the reports and documents are voluminous and it is difficult to mention the timestamp on every page, the same MUST be indicated on the main page as well as on all icons/places which link to that document. ➢ For time sensitive content which expires after a certain date (e.g. tender notifications, announcements, contest entries etc.), a policy on whether the content should be archived for future reference or removed altogether from the website should be decided by the concerned Department after careful consideration of their nature of content. However, 'expired or outdated' content MUST not be presented or flashed on the website. Such content should be removed or archived as per the content archival policy (CAP). 18.2.5.3 Language The language used in a Government website is very important for ensuring effective communication with the target audiences. If the language on the website is complex and uses terminology which a common visitor is unfamiliar with, the very purpose of having the website will be lost.

➢ Departments should ensure that the homepage, all major entry points, and navigational elements of Government websites are written in clear language appropriate for the site's content. ➢ Indian Government websites cater to a diverse target audience with diverse demographic profiles and educational background. Therefore it is highly desirable that the language used in the Government website is understood easily and correctly by all sections of the audiences. Departments may test the language and its comprehension with a sample set of typical visitors before making the site live for all audiences. ➢ Writing for the web is very different from writing for the Print medium. One of the best ways of making the language web friendly is to keep the sentences short and simple. Long, convoluted sentences seem forbidding on screen and can distract the visitors. ➢ There are tools available which can help a Department evaluate how easy to understand and comprehend the language used on their website is. Departments should use such language tools, including language software, to evaluate the readability of the website's content. ➢ The language used in a Government website MUST be free from any spelling or grammatical errors of any kind. Further, there should be uniformity across the site when it comes to using British/American English. ➢ Abbreviations/Acronyms, which may be typical in Government parlance and may not be commonplace with citizens of diverse backgrounds should be avoided or expanded at all possible places. At the same time, if a short form or abbreviation of a term is more popularly known and understood by the citizens than along with its full form, the short form should be mentioned. ➢ The language of a complete web page MUST be indicated by the use of lang attribute. If there are any changes in the default language of the document, either in the document's text or any text equivalents (e.g., captions), they MUST be clearly identified. (Ref. WCAG 3.1.1 & 3.1.2)

18.2.5.4 Consistent Terminology Common look and feel in Government websites of any country helps in promoting the brand image of the Government; raises user confidence; provides a user-friendly experience in navigating Government websites; and organises information more consistently to facilitate search. An integral part of the common look and feel strategy is the usage of standard content terminology, positioning and framework. Usability Research has established that using common terms and placement of content can help visitors locate the information they want more quickly and conveniently. ➢ Hence it is suggested that 'Consistent Content Terminology and Positioning' should be adopted by Government websites in India. This could act as a beginning for adopting a larger view towards the common look and feel of Indian Government websites in the long run. If a certain 'term' has been presented in a particular manner at one place in the website, it should be referred to in the same manner at all places in the site. ➢ Components that have the same functionality within a set of Web pages MUST be identified consistently. If identical functions have different labels on different Web pages, the site will be considerably more difficult to use. It may also be confusing and increase the cognitive load for people with cognitive limitations. (Ref. WCAG 3.2.4) For example ● If a certain Government entity has been referred to as the 'Department' at one place in the site, it should not be mentioned as 'organisation' or some other name at an alternative place in the same site. ● In any application form, if the button to submit information after filling up the form says 'SUBMIT' then it must say so across the entire website. It should not happen that different terminology is used in the same context at various places in a single website.

18.2.5.5 International Conventions Web as a medium transcends all geographic and physical boundaries. Obviously therefore, the target audience of any website could be multicultural with highly varied demographic backgrounds. It should be ensured that the content of every Indian Government website takes international and cultural conventions into account. ➢ Currency: The mention of Indian Currency should be uniform across all Indian Government Websites. As per international convention, any monetary value in terms of Indian currency may be described as INR (Indian National Rupee or Rs.). ➢ Time: To mention timings in any context, the IST (Indian Standard Time) should be used and if possible, the standard reference of it with respect to the more widely known internationally GMT (Greenwich Mean Time) may be mentioned. ➢ Phone Numbers: The format for mentioning the phone numbers should be according to international conventions (+Country Code - Area Code- Phone No.) and uniform across all Indian Government websites. e.g. +91- 11-2430XXXX. ➢ Date: The format for date across all pages of Indian Government websites should to be dd/mm/yyyy to ensure uniformity. ➢ Holidays: Holidays and Work Hours may vary between geographical areas and cultures and hence the websites should provide and clarify information taking into account the culturally specific terms. Time zone variations as well as workday variations should be considered in this context. ➢ Icons: Icons can be international symbols or may be culturally dependent. Icons may be accompanied by text to assist individuals who are not familiar with the icons. Icons that present meaningful information must be accompanied with alternate text to assist persons with visual impairment. (Ref. Section 6.6.3)

➢ Hemispherical: Some references are hemispherically oriented. Winter means something different in the northern hemisphere than it does in the southern hemisphere. Equating seasons to months should be avoided. Note that references such as “west” or “east” may be culture-or hemisphere-specific. ➢ Postal/Physical Address: When presenting or collecting address information, country, state and postal/pin code should be included. It is important to know that postal codes across Countries vary in format, and validation code should take this into consideration. It may be useful to collect Country, State or Postal/ PIN Code information before other information to minimise the user entry required, although it may not be made compulsory as many users may not know details such as PIN Code. Though it is preferable to follow international convention, however if for some reason there is a deviation the same should be highlighted in the ‘help’ section. 18.2.5.6 Information Architecture & Relationship Information Architecture is concerned with how information is organized, structured, labelled, and presented for maximum access. The content of a Government website or any website per se, has to be structured in such a way that the target audience is able to access the desired information with minimum effort. The following guidelines are important for achieving the objective of well-organized Information Architecture: ➢ It is imperative that the information and services on the website are well organised and categorized into relevant modules/sections and sub- sections so that any information can be located conveniently and is not buried deep inside WebPages. These sections or categories may be identified with headings or labels. Headings wherever used MUST correctly describe the topic or purpose of content. Headings must be specified using HTML heading tags (H1 to H6) with proper hierarchy. When headings are clear and descriptive, users can find the information they seek more easily, and they can understand the relationships between different parts of the content more easily. Descriptive labels help users identify specific components within the content. Labels and headings do not need to be lengthy. A single word, may suffice if it provides an appropriate cue to finding and navigating content. (Ref. WCAG 2.4.6) ➢ The objective of the Homepage of a website is to allow the visitors to locate the desired information in the easiest possible manner. Homepages must be designed so as to prominently highlight the most requested information and services. Further, the homepage should provide an easy-to-identify section where the purpose of the website and the value to citizens is explained in terms which they can understand. Indian Government websites should ensure that all information, which is of direct importance to the citizen, is accessible from the Homepage itself. ➢ Sighted users perceive structure and relationships through various visual cues present on a page (page headings are in a larger and bold font; list items are preceded by a bullet; form fields may be positioned as groups that share text labels; a different background color may be used to indicate related items and so on). However visually challenged users cannot take advantage of these cues. It must be ensured that these information and relationships are preserved even when the presentation format changes. (For example when the content is read by a screen reader or CSS is turned off or replaced).Therefore departments MUST ensure that Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text. (Ref. WCAG 1.3.1) ➢ When the sequence in which content is presented affects its meaning, a correct reading sequence MUST be programmatically determined. This helps people who rely on assistive technologies like screen readers because the meaning evident in the sequencing of the information in the visual presentation will be the same when the content is presented in
spoken form. This also preserves the meaning of the page when the CSS is turned off or not supported. It should be noted that a sequence is meaningful if change of order shall impact its meaning. Two independent content items like two separate articles in a page may be placed in any sequence without affecting the meaning. Similarly the navigation block and the content area may be placed in any sequence without affecting their meaning. (Ref. WCAG 1.3.2) 18.2.5.7 Multilingual Versions India is a country with diverse cultures and as many as 22 languages. One of the major users of Government websites are common citizens with highly diverse demographic profiles. Due to the various initiatives taken by Centre and State Governments, as well as the private sector, the Internet is now accessible even in the remote parts of the nation. At present, a majority of the content in Government websites is in English, except few which have content in Hindi or one of the Regional languages. Thus, even though Government websites are accessible, they are still not usable. Hence, there is a need to put the information in Regional languages. Depending on the nature of the content and its prospective usage, content should be translated in desired languages and should be a part of the same website with prominent links. Technology for publishing the content in Indian languages is already quite developed and a large number of tools are available to support this. ● Ideally all the pages on the website should be translated in Hindi or other Regional languages. In case it is becoming difficult to do so, Departments MUST identify the content which is widely accessed by the public and begin to put up such content in multiple languages. The web pages MUST use a Unicode character set. ● It MUST be ensured that the documents/pages in multiple languages are updated simultaneously so that there are no inconsistencies, at any

point, between the various language versions. Prominent links to the bilingual version must be provided. ● In case it is practically difficult to update the versions in all languages simultaneously due to delays on account of translation etc., the obsolete information should be removed from the site till the latest information is uploaded. In any case, a time stamp indicating the date of uploading the information and its validity should be put along with all the time sensitive documents. 18.2.6 Guidelines: Design Under it guidelines are: 18.2.6.1 Visual Identity Design in the broad sense is a process that achieves the end result of enhancing the user experience by presenting the content in a form that is easily understandable, navigable and searchable by the user, in addition to being visually appealing. The branding of a website can be established by incorporating common design elements such as colours, logos, styles, etc., into every page. This presents a professional and consistent visual identity as well as an important signpost that tells visitors where they are. ➢ Therefore, visual/textual identity elements highlighting the Indian Government's ownership of the site MUST prominently stand out on the page. 18.2.6.2 Page layout Page Layout is a significant consideration in the overall design interface of any website. Following are some guidelines to achieve well laid out pages: ➢ A consistent page layout with reference to navigation elements MUST be maintained throughout the site. (placement of navigation elements should be uniform across the website). (Ref. WCAG 3.2.3)
➢ Focus should be laid on a few important elements of the page, so that the visitor may be guided to those portions, which deserve most attention. If a lot of elements in a webpage are blinking/flashing or highlighted, the visitor will not be able to concentrate on the essence of the page. ➢ There should be a clear demarcation of components. This can be guided by the Information Architecture where information of one kind is grouped together and presented visually at one point in the page. 18.2.6.3 Graphics, Buttons & Icons Buttons and icons are symbolic representations of objects and the representation of actions that can be applied to objects. Icons, if used properly can be a powerful technique for communication and attracting attention. They can hold the users attention, add interest to a website and quickly convey information. They are also free from the barriers of language. ➢ While using national identity symbols like Flag, National Emblem etc., it MUST be ensured that the images are in a proper ratio and colour. ➢ The graphic elements like buttons and icons should be simple and their meaning and symbolism should be self explanatory and relevant.Buttons and Icons should be large enough to be distinguishable on a high- resolution monitor, since the display size of components decreases with the increase in the screen resolution. 18.2.6.4 Typography ➢ The content of the site should be readable with default standard fonts. ➢ Fonts like Verdana and Georgia that are suited for screen viewing may be used. Text that must be in a particular font for reasons such as branding may use an image and provide the same as Alt text. (Ref. Section: 6.6.3) ➢ When using Hindi/Regional language fonts the page MUST be tested on major browsers for any inconsistency (loss of layout). Unicode characters must be used.
➢ Italic fonts are not legible in small font sizes. Paragraphs in all capital characters and italics should be used sparingly as they hinder legibility in big blocks of text. ➢ It is author's responsibility to create Web content that does not prevent the user agent (e.g. browser) from scaling the content effectively, therefore Except for captions and images of text, text MUST be resizable without the use of assistive technology by upto 200% without loss of content or functionality. (Ref. WCAG 1.4.4) ➢ Font properties should be such that the text MUST be readable both in electronic and print format and the content MUST print correctly on an A4 size paper. 18.2.6.5 Colour ➢ Proper contrast between text and background is essential for users who have low vision Therefore the visual presentation of text and images of text MUST have a contrast ratio of at least 4.5:1 except if the text is purely for decorative purpose, is not visible, is a part of an inactive user interface or is a part of a logo where it has no minimum contrast requirement. If the text is substantially large in size (18 pt or 14 pt bold) it must have a contrast ratio of 3:1. (Ref. WCAG 1.4.3) ➢ Use of colour should depend on the target audience. For example, a site for children may use bigger fonts and bright colours to grab the attention of kids while a site designed for researchers and academicians should focus on content with subtle use of colours. ➢ Websites should ensure the colours used for text and graphics look good on a variety of platforms, monitors and devices. ➢ Color is an important asset in presentation of Web content however, some users have difficulty perceiving color e.g. People with partial sight or older users who do not see color well. In addition there are people using text-only, limited-color or monochrome displays and browsers.If a page has information that is conveyed by color differences like: "required

fields are red", "error is shown in red", and "january sales are in red, july are in blue" or indications of an action like using color to indicate that a link will open in a new window then these users may not be able to access such information. Therefore it MUST be ensured that Color is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element. (Ref. WCAG 1.4.1) 18.2 6.6 Images ➢ Use of images for representing text should be limited Though images add life to a website, they also increase downloading time. Images should only be used when it adds value to the content. Images should not be used to present text as those using text only browsers shall not be able to access the information thus rendering the site inaccessible to many. Therefore, text MUST be used to convey information rather than images of text except when the image of text can be customised to the users requirement or when a particular representation of text is essential for the information being conveyed (such as a text in a logotype): The use of text, rather than images of text, should be considered for page headings and website navigation items (Menus). (Ref. WCAG 1.4.5) ➢ Size of image files should be minimised The size of image files should be reduced as much as possible to minimise the download time of web pages. A variety of techniques can improve the download time of pages: - Scaling of images should be avoided as they tend to distort when scaled. Instead, a correct size should be prepared in image processing software. - A thumbnail (a smaller version) for a large image and link to the full-size copy should be provided where appropriate. ➢ Images and other non text content MUST be made Accessible - A meaningful explanatory text equivalent MUST be specified for images and other non text content e.g. by using the ALT attribute. The ALT text for an image is displayed before the image is fully downloaded. It is the main source of image information for users of text-only browsers, users of browsers with graphics turned off, and users who are sight impaired. The description should summarise the content or purpose of the image. For example, to use the description 'Picture' to explain a graphic does not serve any purpose. The following situations are exceptions: (i) If the non text content is a control or accepts input e.g. a submit button then it must have a name describing the purpose of the control. (ii) If the non text content is time based media (audio/video) then the text equivalent provides a descriptive identification of the same. (iii) If non-text content is a test or exercise that would be invalid if presented in text, then text alternatives at least provide descriptive identification of the non-text content. (iv) If non-text content is primarily intended to create a specific sensory experience, then text alternatives at least provide descriptive identification of the non-text content. (v) CAPTCHA: If the purpose of non-text content is to confirm that content is being accessed by a person rather than a computer, then text alternatives that identify and describe the purpose of the non-text content are provided, and alternative forms of CAPTCHA using output modes for different types of sensory perception are provided to accommodate different disabilities. (vi) If non-text content is pure decoration, is used only for visual formatting, or is not presented to users, then it is implemented in a way that it can be ignored by assistive technology (by using blank alt attribute). (Ref. WCAG 1.1.1) - The HEIGHT and WIDTH dimension attributes force the browser to allocate space for images and download the text first. The height and width specifications should be the same as the actual height and width of the image. This speeds up the time to download the web page and display the content. 18.2.6.7 Audio / Video / Animation The use of audio/video clips in a website can enrich the content and render the communication more effective for the visitor; however, the following guidelines should be followed while including audio/video clips on the website. ➢ Download Details for Video and Audio Clips a. Download information MUST be provided to help users determine whether they wish to access the video or audio clip. This includes the download and usage instructions, file size, and file format. b. If a specific software programme is required to access the multimedia file, a link to enable the user to download it MUST be provided. ➢ Text Equivalents for Video and Audio Clips In order to ensure that content of video and audio clips is accessible to all, including those with impaired vision, hearing impaired or those accessing the information on slow connections: a. Government websites MUST provide equivalent information of audio only/ video only clips (e.g. a text description of the audio/video). In case of videoonly clips audio description of the video may also be provided in place of text. Ref. WCAG 1.2.1 b. When audio (live or pre recorded) is synchronised with other media for presenting information the audio information MUST be presented as captions for the benefit of hearing impaired or those who do not have access to audio. Captions must not only include dialogue, but identify who is speaking and include non-speech information conveyed through sound, including meaningful sound effects. In case of video presented in synchronised media audio descriptions must be provided

(if all of the information in the video track is already provided in the audio track, no audio description is necessary) WCAG 1.2.2 & 1.2.3. ➢ Animations The use of animation can be an effective means for drawing attention to key aspects of a website. However, Government websites should ensure that animations used on the site do not distract or irritate users or lead to unacceptable download times. Animation should be used only if it adds value to a page. File sizes of animated images should be kept small by limiting the number of frames. a. Certain special effects such as blinking or flashing have been reported to cause epileptic seizures. It is also seen that people are more sensitive to red flashing than other colours.Web pages MUST not contain anything that flashes more than three times in any one second period. (Ref. WCAG 2.3.2) b. For any moving, blinking or scrolling information that starts automatically and lasts for more than 5 seconds and is presented in parallel with other content, there MUST be a mechanism for the user to pause, stop, or hide it (unless the movement, blinking, or scrolling is part of an activity where it is essential). Many web pages also contain auto updating content that disappears or is updated in a preset interval of time e.g. stock prices, news etc. In such a case also the user MUST have a mechanism to pause, stop or hide the content or to control its frequency unless this auto update is a part of an activity where it is essential. (Ref. WCAG 2.2.2) c. If any audio on a Web page plays automatically for more than 3 seconds, there MUST be a mechanism to pause or stop the audio. Individuals who use screen reading software can find it hard to hear the speech output if there is other audio playing at the same time. Also as screen readers speech output is controlled via the same volume control as the system sound control the webpage MUST
provide a means to control the volume of audio playing in the page independently from the overall system volume level. (Ref. WCAG 1.4.2) 18.2 6.8 Navigation Consistent navigation makes it easy to use a website since a visitor does not need to understand or remember different navigation styles for different sections. Therefore to promote ease-of-use for all citizens, Government websites must have a navigation scheme that is used consistently across the website. The organisation and navigation scheme of the content in the website should be either categorised by subject (topic, tasks, services, life events), by audience group, by geographic location, or by any combination of these factors. Web information managers should analyse the wants and needs of citizens and other intended target groups when organizing the content of Government websites. ➢ It must be possible for a visitor to reach the Homepage from any other page in the website. ➢ Navigational mechanisms that are repeated on multiple Web pages within a set of Web pages MUST occur in the same relative order each time they are repeated, unless a change is initiated by the user. (Ref. WCAG 3.2.3) ➢ Navigation items of the same type should look and behave the same way. For example, if a set of pages on one topic has subtopic links in the left navigation bar, pages on other topics should also have subtopic links in the left navigation bar that look and behave identically. ➢ Links to under construction pages MUST be avoided as far as possible. ➢ Each page MUST be a standalone entity in terms of ownership, navigation and context of content. ➢ List of all levels between the homepage and current page should be provided on each page (as breadcrumbs).
➢ Navigation to external websites should be enabled in such a manner that the external website opens in a small sized browser window. This is to ensure that the context remains on the screen for the visitor. ➢ Web pages and applications often have content that is repeated on other pages or screens (for example navigation links, heading graphics, banner frames etc). A sighted user can ignore the repeated material by focusing on the main content area but it is not possible for a person using a screen reader as the content is read sequentially. Therefore Web pages MUST provide a mechanism to bypass blocks of content that are repeated on multiple Web pages. This may be done by providing a link at the top of each page that goes to the main content area. (Ref. WCAG 2.4.1) 18.2 6.9 Site Search “Search” is a standard facility on any website now as visitors expect to be guided to the desired information and service through an easy to use search facility. Effective search functionality is crucial for mining through the large volumes of information made available on Government websites. Following are some of the guidelines to achieve the same: ➢ Government websites MUST include either a “Search” box or a link to a “Search” page from every page of the website. The search box or link must be titled “Search”, as it is a standard term understood by web surfers world over. As per internationally accepted Usability principles, search boxes are most effective when placed in the same position on all pages (usually within the upper third part of the webpage). (Ref. WCAG 2.4.5) ➢ Search results should be displayed in an easy-to-read format that, at a minimum, shows visitors the term(s) they searched for and may highlight the term(s) in each search result. Search results should be marked with an HTML heading so that the screen reader users can quickly locate search results.

➢ Departments should carefully determine the scope of their search index to determine which content should be included and which content should be excluded. This further implies that the content not meant to be in the public domain should not be included in any web-based file that could be retrieved through any search engine. ➢ The frequency of indexing the content of a Government website should be predecided by the hosting provider. Content that is added and updated frequently, such as press releases, should be indexed more frequently. ➢ Government Departments should regularly use traffic analysis tools to identify the common search terms used to reach their website. This shall enable a higher ranking of the site on search engines after due customisation. ➢ Although usability research indicates that very few people use "advanced" search features, Departments should allow visitors to conduct more refined, focused searches to achieve more relevant results. ➢ Considering the fact that many people are unfamiliar or unskilled at using search technology, the website should provide help, hints, or tips, and include examples, along with its search facility to aid the visitors. ➢ Users may expect the site index/search to access all the appropriate content and not display content from outside the site. In case the search results reflect the results from outside the website, it should be clearly distinguished and mentioned on the top of the page. 18.2 6.10 Sitemap: Powerful Navigation Aide The citizens visiting Government websites need to be able to find the information and services they seek, as easily and quickly as possible. A site map represents the structure of a website, textually as well as graphically, on a single page. A proper 'Site-Map' can provide a convenient and easy-to understand view of the contents in the whole site. It also facilitates quick access to the information that the citizens want. Following guideline pertains to site maps:
➢ Every Indian Government website MUST have a 'Sitemap' linked through to Homepage as well as all important entry pages of the site. (Ref. WCAG 2.4.5) ➢ Frames: Frames are an HTML technique used by web site designers to display two or more pages in the same browser window. Each frame is built as a separate HTML file, but with one "master" file to identify each frame. When a user requests a page with frames, several pages are displayed as panes. Framesets are not supported in HTML5. Use of frames must be minimised as many search engines do not index framed web pages properly, however if frames are used, it should be ensured that: - Each frame is titled to facilitate frame identification and navigation. - HTML file name of each frame is meaningful. - A text title is included on each frame (this can be hidden in visual browsers). 18.2.7 Guidelines: Development Use of Open Standard based tools and technologies for the development of websites, software as well as content are very important to interoperability and accessibility of websites. World wide web consortium (W3C) is an International body working towards defining standards in web technologies and formats for publishing content on the web. With respect to markup languages Indian Government websites should comply with W3C standards. Most of the browsers, softwares, companies/communities, also try to comply with W3C standards. Some of the commonly required standards are listed below: 18.2.7.1 Markup Languages HTML (Hypertext Markup Language) is at the core of the foundation of World Wide Web. Language has undergone a number of revisions to enable it to be
more powerful. HTML 4.01 version established it as a structural document markup language and is oriented towards the use of Cascading Style Sheets (CSS). The latest standard in HTML is version 5.0. XML (Extensible Markup Language) is the means to extend HTML further and make it more generic. XSL (eXtensible Stylesheet Language) is the preferred style sheet language of XML. XHTML 1.0 is an XML based markup language and gives a new dimension to markup languages. Indian Government websites/web documents/pages/forms should validate to following published grammars: ● HTML 5.0 ● XHTML 1.0 ● XML 1.0 Web pages should be tested for compliance with validation tools such as W3C markup validator. For further details on the above markup languages, visit the website of W3C at https://www.w3c.org. 18.2.7.2 Cascading Style Sheets (CSS) Cascading Style Sheets (CSS) is a style sheet language used to describe the presentation of a document written in a markup language. Its most common application is to style web pages written in HTML and XHTML. The CSS specifications are maintained by the World Wide Web Consortium (W3C). Its current specification is CSS3. CSS is used by both the authors and readers of web pages to define colours, fonts, layout, and other aspects of document presentation. It is designed primarily to enable the separation of document content from document presentation. This separation can improve content accessibility, provide more flexibility and control in the specification of presentational characteristics, and reduce complexity and repetition in the structural content. CSS can also allow the same markup page to be presented in different styles for different rendering methods, such as on-screen, in print, by voice (when read out by a speech- based browser or screen reader) and on Braille-based, tactile devices.

To know more about CSS, visit https://www.w3.org/Style/CSS/. Advantages of using CSS include: - Presentation of information for an entire website or collection of pages can be held in one CSS file, allowing global changes to be propagated quite conveniently. - Web browser software can store a copy of the CSS file in the computer's cache, so that it doesn't have to be downloaded each time the user views a web page that references it, hence improving the access time. - Different users and screen readers can have different style sheets: for example a large text alternative for visually impaired users or a layout optimised for small displays for mobile phones. - The document code is reduced in size and complexity, since it does not need to contain any presentational markup. ➢ Therefore Indian Government websites should use Cascading Style Sheets to control layouts/styles and MUST make the interface responsive to cater to a wide range of screen sizes. ➢ Websites that use style sheets should 'degrade' gracefully so that the site remains fully functional even if the stylesheet settings are ignored. Therefore the Web pages in Indian Government websites MUST have the same logical order without the style sheets as they have with the style sheets. 18.2.7.3 Scripting Languages Scripting languages are an easy and fast means to enable or include more controls in Web pages. They can be implemented either as Server side scripting languages using PHP, JSP, PERL and ASP or as Client side scripting language using JavaScript. ➢ Server side scripting languages should be preferred over Client side since client side scripting may face issues of browser incompatibility, scripts being turned off by browsers, security etc.
➢ It should be ensured that pages are usable when scripts, applets, or other programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page. 18.2.7.4 File Formats Documents form a very important and significant component of Government websites. Indian Government Websites should therefore provide access to documents in appropriate File Formats that are based on open standards and do not impose an unnecessary burden of downloading or acquiring specific software on the intended audience. When choosing file format(s), Departments should consider: Intended use of the material Frequency of use, Accessibility of the format and Level of effort and time required to convert the material to the specific format. File formats for different forms of content are discussed below: ➢ Graphics & Multimedia files a. Sites should have image and graphic components in JPEG, PNG and GIF formats and the same should be compressed without losing on visual quality as far as possible, to allow faster downloads. b. Multiple graphic images at the server may be used (such as providing a thumbnail image with a link to a higher resolution graphic) to make the site more usable even for low bandwidth connections. c. Departments may use Web and multimedia technologies to enhance sites, on the condition that all elements are accessible. ➢ Documents a. Government websites shall have a lot of information in the form of documents such as Acts, Rules, Schemes, Gazettes, Forms, Circulars and Notifications. Accessibility and usability of these documents by all citizens is as important as that of the entire website. Departments MUST either use HTML format or any other format that makes the document accessible. In case documents are published in a format
other than HTML format, departments MUST provide a link to the website from where the document reader can be downloaded free of cost. b. When the document has been provided in a format other than HTML, websites should include a text description of the document, including the title, file type, file size, and effective date. This will ensure that visitors have a reasonable understanding of what to expect when they view the document. c. When the document has been provided in a format other than HTML, websites should include a text description of the document, including the title, file type, file size, and effective date. This will ensure that visitors have a reasonable understanding of what to expect when they view the document. The document should be properly tagged and should not contain scanned images of text (Ref. 6.6.1).This will ensure that the document is accessible to screen reader users (refer guidelines website web.guidelines.gov.in for details). 18.2.7.5 Ready Reference for Developers a. It MUST be ensured that in content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and IDs , if any, are unique, except where the specifications allow these features. This helps to ensure that user agents, including assistive technologies, can accurately interpret and parse content. If the content cannot be parsed, then different user agents may present it differently. Some user agents use "repair techniques" to render poorly coded content. Since repair techniques vary among user agents, authors cannot assume that content will be rendered correctly by specialized user agents. (Ref. WCAG 4.1.1) b. Labels or instructions MUST be provided when content requires user input (for example in forms). Text instructions that describe the input

must be provided at the beginning of a form or set of fields. Elements associated with input must be labeled to ensure that information about the input field is spoken by screen readers when the field receives focus. c. In situations where web functions are time-dependent, (for example, filling out an online form) it will be difficult for people with disabilities such as blindness, low vision, dexterity impairments, and cognitive limitations to perform the required functions before a time limit occurs. This may render the service inaccessible to them. It must therefore be ensured that such users are given adequate time to interact with Web content whenever possible. For each time limit that is set by the content, the user MUST be allowed to turn off the time limit, adjust the default setting before encountering it or is warned before time expires and given the option to extend the time limit with a simple action (for example, “press the spacebar”). (Ref. WCAG 2.2.1) Activities that essentially require a time limit (for example an online auction) or the time limit is too long (say 20 hours) are exceptions. d. Many users including the visually challenged cannot perceive shape, size or use information about location or orientation. For such users the content that relies on knowledge of the shape or position of objects becomes inaccessible (for example, “round button” or “button to the right”). Hence It MUST be ensured that instructions provided for understanding and operating content do not rely solely on sensory characteristics of components such as shape, size, visual location, orientation, or sound. Additional information needs to be provided to clarify anything that is dependent on this kind of information. (Ref. WCAG 1.3.3) e. If an input error is automatically detected, the error MUST be described to the user in text. The error message should be as specific as possible. This will ensure that users are aware that an error has occurred and can determine what is wrong. Describing the error in text in addition to highlighting the errors will help screen reader users, who cannot
distinguish colour and users with cognitive disorders who have difficulty in perceiving the meaning of other visual cues. (Ref. WCAG 3.3.1) f. All functionality of the content MUST be operable through a keyboard interface without requiring specific timings for individual keystrokes, except where input depends on the path of the user’s movement (for example, drawing freehand curves or using handwriting to write). (Ref. WCAG 2.1.1) g. Whenever a web page is rendered using plug-ins or embedded applications, it is possible that functionality of the Web page restricts the keyboard focus to a subsection of the content, unless the user knows how to leave that state and “untrap” the focus. This situation may affect navigation for people who rely on a keyboard or keyboard interface to use the Web, including visually challenged and people with physical disabilities. Therefore it MUST be ensured that if focus can be moved to a component of the page using a keyboard interface, then focus can be moved away from that component using only a keyboard interface, and, if it is not possible the user is advised of the method for moving focus away. (Ref. WCAG 2.1.2) h. It MUST be ensured that the purpose of each link can be determined from the link text alone or from the link text along with its programmatically determined link context e.g. by using title attribute as a tooltip to clarify the purpose of link. (Ref. WCAG 2.4.4) i. When any component receives focus, it MUST not initiate a change of context. Developers must use “activate” rather than “focus” as a trigger for change of context. This ensures that functionality is predictable as visitors navigate their way through a webpage. (Examples of changing context when a component receives focus include forms being submitted automatically when a component receives focus or new windows launched when a component receives focus). (Ref. WCAG 3.2.1) j. Entering data or selecting a form control must have predictable effects. Changing the setting of any user interface component MUST not
automatically cause a change of context unless the user has been advised of the behaviour before using the component. Unexpected changes of context can be disorienting for users with visual disabilities or cognitive limitations. (Ref. WCAG 3.2.2) k. Metadata adds semantic information to pages and sites and provides contextual information for people navigating the site, especially those with screen readers who rely on things such as page titles, structured page headings and lists. Metadata may also be used by some search engines. Indian Government websites MUST provide metadata like, keywords, and description at least on Homepage and all important entry pages. l. Tables help in organising and presenting data on a webpage. However, many designers in the past have been using tables to make the layout of Web pages. This has resulted in the Web pages not being accessible to people using assistive technologies such as screen readers. For this reason, Use of Tables for page layout should be avoided and for data tables, proper tags and markup MUST be provided to identify row and column headers and associate data cells and header cells. m. When users navigate sequentially through content, they should encounter information in an order that is consistent with the meaning of the content and can be operated from the keyboard. Hence if a Web page can be navigated sequentially and the navigation sequences affect meaning or operation, focusable components MUST receive focus in an order that preserves meaning and operability. (Ref. WCAG 2.4.3) n. For all user interface components, it is a MUST that the name and role can be programmatically determined; states, properties, and values can be programmatically set; and notification of changes to these items is available to assistive technologies. (Ref. WCAG 4.1.2) o. Any keyboard operable user interface MUST have a mode of operation where the keyboard focus indicator is visible. This helps the user know which element among the multiple elements present in the page has

focus. For e.g., in case of a button a visual change in the button (e.g. color, size) can indicate that the focus is on the button. (Ref. WCAG 2.4.7) p. If an input error is automatically detected and suggestions for correction are known, then the suggestions MUST be provided to the user, unless it would jeopardize the security or purpose of the content. Input error occurs if the user omits a certain information that is required by the webpage or the information provided by the user is not in the correct format or falls outside the permissible value.This is to ensure that the users receive appropriate suggestions for correction of input errors if possible. (Ref. WCAG 3.3.3) q. For Web pages that cause legal commitments or financial transactions for the user to occur, that modify or delete user-controllable data in data storage systems, or submit user test responses, at least one of the following MUST be true: (Ref. WCAG 3.3.4) ● Reversible: Submissions are reversible. ● Checked: Data entered by the user is checked for input errors and the user is provided with an opportunity to correct them. ● Confirmed: A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission. 18.2.7.6 Validation & Testing Websites should be validated and tested with automatic tools and human review. Automated methods are generally rapid and convenient but cannot identify all issues. Human review can help in issues like ensuring clarity of language and ease of navigation. Following are some important validation methods that may be followed: a. Departments may use automated accessibility tools and browser validation tools. ● Validate syntax (e.g., HTML, XML, etc.). ● Validate stylesheets (e.g, CSS).
b. It is a MUST that Indian Government websites are tested for multiple browsers and versions of browsers, operating systems, connection speeds, and screen resolutions to ensure access by all. c. Use of a self-voicing browser, a screen reader, magnification software, small display, etc. d. Use spell and grammar checkers. Eliminating grammar problems increases comprehension. e. Review the document for clarity and simplicity. Readability statistics, such as those generated by some word processors may be useful indicators of clarity and simplicity. Better still, ask experienced (human) editors to review written content for clarity. 18.2.7.7 Web Application Security Web Application security is of paramount concern to owners as well as consumers of the website. A lot of security threats are handled at data centres and server administrator level where the application is hosted. Application developers should however be sensitive about security aspects, as a large number of security threats arise due to vulnerability of application software code. These application driven attacks sometimes turn out to be quite fatal. Best Practices to follow while developing web applications using various technologies are available on CERT-IN website (http://www.cert-in.org.in) as well as in internet space. Developers should read, understand and follow these Best Practices during development. NIC as well as CERT.IN have empaneled a number of agencies to conduct the security audit of applications. ➢ Each website/application MUST undergo a security audit from empaneled agencies and clear the same, prior to hosting and after addition of new modules. ➢ Department MUST formulate a security policy to address various security issues related to the website. 18.2.8 Guidelines: Website Hosting The fundamental purpose of a Government website is to deliver the information and services to the citizens and other stakeholders using the medium of Internet. Generally, websites/portals/web applications are hosted on special purpose servers in a Data Centre. Data Centre is a facility equipped with controlled power, cooling systems, physical security and access control. Generally, a large number of servers are hosted in a Data Centre, powered by high speed networking infrastructure, storage system along with a storage network. Provision for back-ups of data/information residing in Data Centres is also an important service of Data Centre. Multi-tier security infrastructure is also a crucial component of Data Centres. While it is extremely important to develop websites using state-of-the-art technologies, hosting infrastructure plays a crucial role in the performance, availability and accessibility of these websites to end users with varying set- ups. Hence, configuration of hosting server infrastructure as well as facilities at Data Centres are important aspects to review, prior to hosting. Following section details the kinds of facilities and services that the Department should expect from their hosting service providers. 18.2.8.1 Hosting Service Provider ➢ Indian Government websites must be accessible to the public in a fast and secure manner on a 24x7 basis. It is important that the Web Hosting Service Provider (HSP) for a government department be chosen with extreme caution and care, keeping the following in mind: a. The HSP MUST possess state-of-the-art multi tier security infrastructure at both, physical and network level as well as security policies to ensure the best possible security to Government websites.

b. The Web Hosting Service Provider MUST also use devices such as firewall and intrusion prevention systems to make the website more secure. c. The Web Hosting Service Provider MUST have a redundant server infrastructure to ensure fastest restoration of the website in the event of any unforeseen hardware/software failure. d. The HSP MUST have a Disaster Recovery (DR) Centre in a geographically distant location and a well drafted DR plan for fast restoration of the services during any disaster. e. Provision should be given to the concerned Department to remotely update their website in a secured manner. f. The HSP should also provide the facility of staging infrastructure in order to facilitate the testing of the new websites as well as their enhanced or revised versions' content prior to publishing on the internet. g. HSP should provide web server statistics required for performance evaluation on a regular basis. If possible, online access to the traffic analysis should be provided so that the Department can access the traffic analysis at any point of time for the purpose of evaluation. h. Web Hosting Service Provider MUST provide helpdesk and technical support to the department on 24 x 7 x 365 basis. 18.2.8.2 Contingency Management The website of a Government Department is its presence on the Internet and it is very important that the site is fully functional at all times. It is expected of the Government websites to deliver information and services on a 24x7 basis. Hence, all efforts should be made to minimise the downtime of the website as far as possible. It is therefore necessary that a proper Contingency Plan MUST be prepared in advance to handle any eventualities and restore the site in the shortest possible time. The possible contingencies include: ➢ Defacement of the website: All possible security measures must be taken for a Government website to prevent any possible defacement/hacking by unscrupulous elements (Ref. 7.7.1). However, if despite the security measures in place, such an eventuality occurs, there must be a proper contingency plan, which should immediately be executed. If it has been established beyond doubt that the website has been defaced, the site must be immediately blocked. The contingency plan must clearly indicate as to who is the person authorised to decide on the further course of action in such eventualities. The complete contact details of this authorised person must be available at all times with the web management team. Efforts should be made to restore the original site in the shortest possible time. At the same time, regular security reviews and checks should be conducted in order to plug any gaps in the security. ➢ Data Corruption: A proper mechanism has to be worked out by the concerned Government Departments, in consultation with their web hosting service provider, to ensure appropriate and regular back-ups of the website data are being taken. These enable a fast recovery and uninterrupted availability of the information to the citizens in view of any data corruption. ➢ Hardware/Software Crash: Though such an occurrence is a rarity, still in case the server on which the website is being hosted crashes due to some unforeseen reason, the web hosting service provider must have enough redundant infrastructure available to restore the website at the earliest. ➢ Natural Disasters: There could be circumstances wherein due to some natural calamity, the entire data center where the website is being hosted gets destroyed or ceases to exist. A well planned contingency mechanism has to be in place for such eventualities wherein it should be ensured that the Hosting Service Provider has a 'Disaster Recovery Centre (DRC)' set up at a geographically remote location and the website
is switched over to the DRC with minimum delay and restored on the Web. Apart from the above, in the event of any National Crisis or unforeseen calamity, Government websites are looked upon as a reliable and fast source of information to the public. A well defined plan for all such eventualities should be in place within all Departments/Organisations so that the emergency information/contact help-lines could be displayed on the website without delay. For this, the concerned person in the Department responsible for publishing such emergency information should be identified and his/her complete contact details should be available at all times. 18.2.9 Guidelines: Website Promotion Web is a medium of mass information dissemination. With the exponential growth in the number of websites, which has even crossed the one billion mark, the question of visibility on the Internet/Web has assumed critical significance. The ultimate aim of any Government website should be to provide information and services to as many citizens as possible. The existence of any Government site lying inaccessible on the web is meaningless. For this purpose a conscious and concentrated effort has to be made to increase the reach of the website. Therefore, the importance of website promotion, especially in the context of Government websites which aim to reach the largest possible number of citizens and stakeholders cannot be overemphasised. 18.2.9.1 Search Engine Optimisation People usually search for a website through search engines. Therefore searching for a site in a search engine by using the Department name or the services offered by it as keywords should preferably bring the website in the first five results on major search engines. In order to achieve this, the following guidelines may be followed:

➢ The Page Title should include useful and distinctive indication of the contents and should be self-explanatory. The HTML title should be chosen carefully considering its role in search engine indexing, query responses, window title bar and in bookmark labels. (Ref. 2.1.6) ➢ Department name, services offered, schemes, location etc. should form a part of the Meta information (meta tags) of the HTML page. The important meta tags that MUST be included are keywords and description tags. These tags are present in the portion of the html page and while they are not displayed as part of the page content in web, search engines can read them. ➢ Search engines often display the first few lines of a Web page to help searchers to identify the sites they want to visit. The description meta tag should be used to provide guidance to search engines on what to present to the users in the search response. ➢ Search engines only consider a limited number of keywords when indexing pages. Government websites should present keywords in the order of priority and without duplication. ➢ The content of the web page should be in textual form as far as possible, including hyperlinks. Important points/programmes/schemes etc. should be highlighted as headings marked by HTML heading tag. ➢ HTML links should be specific. Instead of just 'Our Programmes', a link saying 'The Programmes of Department name' will be more favourable for a search engine. ➢ Link exchange with related Government sites increases the weightage of the site for search engines, thus improving its ranking in search results. It will also bring more visitors, who are looking for similar schemes, services or information, to the site.

18.2.9.2 Website Promotion Techniques Apart from search engines the website may be promoted through other media like print, television etc. This will prompt casual visitors to browse the website and if they find the information useful, they may visit the site more often. ➢ All the advertisements/public messages including Press Releases, Tender Notifications etc. issued in the Newspapers/Audio-visual media by the concerned Department MUST prominently mention the URL of the web site clearly in order to give it due publicity. It should be directed that no press release or advertisement of any Government Department shall be issued to the press without checking the presence of the URL of the website and necessary steps should also be taken to ensure the presence of relevant corresponding information on the website. ➢ All the stationery items of the Department such as Letterheads, Visiting Cards Publicity material such as Brochures, Pamphlets and documents such as the Annual Report etc. MUST display the URL of the web site. ➢ The website URL may become a part of the mail signature for all the outgoing mails from the Departments and its employees. ➢ The website should also be promoted by link exchange with other Government websites as well as international websites. ➢ Providing regular and updated news on various issues related to the Government, citizens etc. are very important tools of promotion. Regular revised updates on all important issues related to Government and in interest of the citizens should be highlighted/placed on the website. Frequent updates and change in contents will bring the visitors back to the portal and will keep the readers interested in the website. ➢ Sending regular updates on the websites to registered and interested users through an electronic newsletter should form an important means of promotion. 18.2.10 Website Management Under it, guidelines are:

18.2.10.1 Website Management Team The success of any endeavour depends upon the backing of a strong and enthusiastic team. In case of a Government website, the role of a Website management team assumes paramount importance in ensuring its credibility amongst its patrons. ➢ Departments MUST appoint a Web Information Manager (WIM) whose role shall be to ensure that there is a proper flow of content to the site and that content quality and user satisfaction issues are taken care of. To achieve this WIM has to coordinate with the various groups within the Department and undertake the following activities with regard to the Indian Government website being maintained by her/him. - Formulation of policies concerning management of content on the web through its entire life cycle viz. Creation, Moderation, Approval, Publishing and Archival. Ensuring that all content on the website is always authentic, up-to-date and obsolete information or services are removed. - Set a mechanism for periodically validating links to related information. An automated report can provide a list of broken links on the site, which can be immediately corrected. - Getting the website certified for Guideline Compliance and ensuring that it remains compliant throughout its lifecycle. - Web Information Manager is overall responsible for quality and quantity of information and services on the website. The complete contact details of the Web Information Manager should be displayed on the website, so that the visitor could contact him/her in case of some queries or requirements. - Since the websites receive a significant amount of feedback/query mails from the visitors, it is the responsibility of the Web Information Manager to either reply to all of them himself/herself

or designate someone to regularly check and respond to the feedback/query mails. ➢ Besides the Web Information Manager, a Technical Manager should also be appointed for every Indian Government website whose responsibilities would be: - Regular monitoring of websites for Performance, Security and Availability. - Ensuring compliance with policies (organisational, regulatory, legislative, etc.) that may require changes in website content, architecture, and security. - Periodic security audit of the website in line with major revisions. - Analysis of traffic on the website and feedback to the development/management team. ➢ In case of a large website/multiple websites, a team should be set up with a Web Information Manager having professionals skilled in HTML Authoring, Programming, Design, Content etc.
18.2.10.2 Website Maintenance Tools Web is a dynamic medium and a website grows with time with addition of new content and features. The website therefore requires regular maintenance to ensure that the quality is maintained and it meets the expectations of the visitor. With the increase in content size and complexity, it becomes difficult to manually maintain the site and therefore automated tools should be used for updating, analyzing and checking the site. It is intended that the practice of using these tools may be adopted from the beginning as it avoids difficulties later. Some such tool categories are suggested below: ➢ Website Authoring Tools: Website Authoring Tool is a software for generating well-engineered web pages. Lots of web page authoring tools are available in the market, as well as in the free domain. One can
choose any tool based on the requirements, however, the following should be ensured while selecting the tool: - It generates pages that conform to all of the requirements, recommendations and options of this guideline. - It conforms to the Web Consortium's Authoring Tool Accessibility Guidelines. ➢ Web Content Management System: A web Content Management System (CMS) is the software used for creating and managing web content. It is used to manage and control a large, dynamic collection of content on a website/portal (HTML documents and their associated documents and files). CMS facilitates content creation, content control, editing, and many essential content maintenance functions. Usually the software provides an interface where users with little or no knowledge of programming languages and markup languages can create and manage content with relative ease of use. A wide variety of CMS solutions are available right from customised CMS to enterprise class CMS software available commercially as well as in free domain. Ease of use, support for a variety of content, automated templates, content workflow management are some of the features to be looked into in CMS software. For small scale websites, developers could also develop website specific CMS solutions, as it may turn out to be cost effective in many instances. ➢ Web Analytic tools: Many organisations rely on statistics regarding site usage to measure the impact of the site and also for reorganising or enhancing their website further. Some use simple counters while others use more sophisticated Web analyser tools to obtain data. Counters add little value to a site and often appear to be self-congratulatory. Web analyzer tools provide more information and are virtually transparent to the end user, therefore Web analyzer tools should be the standard means of collecting site usage data. Counters should not be used to perform this function.
➢ Validation and Testing: The code of the webpages, scripts and applications may be tested manually or with automated tools to ensure that the quality of web content is maintained and all compliance related guidelines are adhered to.
18.2.10.3 Website Monitoring Web being a dynamic medium, changes in terms of technologies, access devices and even the requirements and expectation levels of visitors happen frequently. Keeping this in mind, Indian Government websites MUST have a website monitoring policy in place. Websites must be monitored periodically in accordance with the plan to address and fix the quality and compatibility issues around the following parameters: a. Performance: Site download time should be optimised for a variety of network connections as well as devices. All important pages of the website should be tested for this. b. Functionality: All modules of the website should be tested for their functionality. Moreover, interactive components of the site such as discussion boards, opinion polls, feedback forms etc. should be working smoothly. c. Broken Links: The website should be thoroughly reviewed to rule out the presence of any broken links or errors. A number of tools and techniques are now available to easily detect the broken links in a website. d. Traffic Analysis: The site traffic should be regularly monitored to analyse the usage patterns as well as visitors' profile and preferences. Traffic Analysis tools also give reports on broken links. e. Feedback: Feedback from the visitors is the best way to judge a website's performance and make necessary improvements. A proper mechanism for feedback analysis should be in place to carry out the changes and enhancements as suggested by the visitors.

18.2.10.4 Archiving of Documents Government websites generally are storehouses of a large number of documents and reports, which are of relevance and importance to specific audiences as well as citizens at large. Many times, these documents also have historical importance and are also referred to extensively for academic and research purposes. These documents can be kept for online access only for a specific period of time and need to be moved to offline archives on the expiry of the pre-decided duration. This is important since these old documents sometimes need to be referred to for regulatory or legal purposes. The Departments MUST have a well-defined Archival Policy with regard to such old documents stating the duration for which they would be kept online, when would they be moved to offline archives and if/when would they be permanently deleted or purged. 18.2.10.5 Compliance with Guidelines & Standards Since these guidelines aim at fulfilling the common objective of making the Indian Government websites citizen friendly and conform to high standards of quality, the website development and management teams in all Departments should endeavor to comply with these guidelines in earnest spirit. Further, the website management teams should ensure that all Government websites undergo and clear a security audit carried out by an authorised empaneled agency before being hosted, as well as after major revisions. 18.2.10.6 Website Review & Enhancement Departments and Organisations that own Government websites, and the citizens they serve, want these websites to be as useful as possible. Government Departments at all levels should evaluate visitor satisfaction and usability of their websites and use the outcome of assessments to improve the websites. ➢ Besides regular feedback through feedback form, Departments may obtain visitor feedback through online questionnaires or surveys where
the visitors can be asked to rank the website on various parameters and give detailed inputs on what more they would like to be added on the website. ➢ Detailed review of web analysis reports over a long span may also reveal a lot of information on usage or expectations from the website. ➢ In order to keep abreast with the latest technologies as well as to cater to the visitor's demands for major changes and enhancements in the website, Indian Government sites should opt to undergo a formal review by an internal group or an external agency to further orient them towards citizens and other stakeholders. 18.2.10.7 Website Policies Websites represent the face of the department in the cyber world. Like the Department itself, the website also has to continually grow and evolve. As the website grows in size and reach, the expectations of the citizen also grow. It is therefore important that we set down rules and regulations to operate and manage the websites effectively. Although different policies and their need and purpose is explained in various sections of this document for the sake of convenience, a complete list of policies along with the section are referenced below: 18.3 Unit Summary With the goal of improving the inherent quality of government websites, a Content Advisory Committee was constituted to look into the means to enhance the intrinsic quality of Government Websites. On the basis of the advice of this committee, NIC formulated the first version of 'Guidelines for India Government Websites' in 2009, which were adopted by the Department of Administrative Reforms and Public Grievances (DARPG). This was also included in the Central Secretariat Manual of Office Procedure. 18.4 Key Terms ● Domains:

Content Copyright: The online content or feed in the form of a text, image, video or music, assuming it to be an original creation, are protected as a literary work under the Copyright Act. ● Content hyperlinks: Hyperlinks allow us to link documents to other documents or resources, link to specific parts of documents, or make apps available at a web address. Almost any web content can be converted to a link so that when clicked or otherwise activated the web browser goes to another web address (URL) ● Web typography refers to the use of fonts on the World Wide Web. When HTML was first created, font faces and styles were controlled exclusively by the settings of each web browser. ● In computer text processing, a markup language is a system for annotating a document in a way that is visually distinguishable from the content. ● Cascading Style Sheets is a style sheet language used for describing the presentation of a document written in a markup language such as

HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript. ● A scripting language or script language is a programming language for a runtime system that automates the execution of tasks that would otherwise be performed individually by a human operator. Scripting languages are usually interpreted at runtime rather than compiled. ● A file format is a standard way that information is encoded for storage in a computer file. It specifies how bits are used to encode information in a digital storage medium. File formats may be either proprietary or free and may be either unpublished or open. ● A hosted service provider is a business that delivers a combination of traditional IT functions such as infrastructure, applications, security, monitoring, storage, web development, website hosting and email, over the Internet or other wide area networks. 18.5 Check Your Progress Subjective: 1) According to the 'Guidelines for India Government Websites', what are guidelines on the following given topics: a. Content Structure b. Website features c. Website promotion d. Website Security e. Website Maintenance Objective: 1) True/False: Commercial banner advertisements should be avoided on Government websites. 2) Fill in the gap: The HSP MUST possess state-of-the-art multi tier security infrastructure at both, _____ and _____ level.
3) Complete the line: Websites should ensure the colours used for text and graphics look good on _____. 4) Complete the line: The HSP MUST have a Disaster Recovery (DR) Centre in a _____. 5) What is the guideline on data corruption? References: ● https://web.guidelines.gov.in/ ● https://web.guidelines.gov.in/assets/gigw-manual.pdf

Hit and source - focused comparison, Side by Side

Submitted text	As student entered the text in the submitted document.
Matching text	As the text appears in the source.

1/206	**SUBMITTED TEXT**	18 WORDS	**91%**	**MATCHING TEXT**	18 WORDS
of e-commerce. 1.2. E-Commerce E-commerce is a selling and transfer process requiring several institutes. It is			of e-commerce. 1.2 ELECTRONIC COMMERCE E-commerce is a selling and transfer process requiring several institutes. It is		
SA E-commerce.pdf (D165838284)					

2/206	**SUBMITTED TEXT**	40 WORDS	**100%**	**MATCHING TEXT**	40 WORDS
E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT's). E-commerce takes place between companies, between companies and their customers, or between companies and public administration. E-commerce includes			E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT'E-commerce takes place between companies, between companies and their customers, or between companies and public administration. E-commerce includes		
SA E-commerce.pdf (D165838284)					

3/206	SUBMITTED TEXT	126 WORDS	96%	MATCHING TEXT	126 WORDS

e-commerce denotes the use of electronic transmission media (telecommunication) to engage in the exchange of products and services requiring transportation either physically or digitally, from location to location", M. Greenstein and T.M. Feinman ● "e-commerce describes the process of buying and selling (or exchanging) of products, services, and information via computer networks including the internet". E. Turban and others. E-commerce is the means to complete online transactions and integrate the supply chain into the transaction management process such as receiving orders, making payments, and tracking down the deliveries or orders. ● "e-commerce can be defined as the technology-mediated exchanges between parties (individuals, organizations, or both) as well as the electronic-based intra or inter-organizational activities that facilitate such exchanges". J.F. Rayport and B.I. Jaworski. According to

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SA E-commerce.pdf (D165838284)

4/206	SUBMITTED TEXT	86 WORDS	91%	MATCHING TEXT	86 WORDS

World Trade Organization (WTO), “E-commerce as a commercial process includes production, distribution, marketing, sale or delivery of goods and services electronically.” E-commerce is used everywhere in everyday life. It ranges from credit/debit card authorization, travel reservation over a phone/network, wire fund transfers across the globe, point of sale transactions in retailing, electronic banking, electronic insurance, fundraising, political Campaigning, online education and training, online auctioneering, on-line lottery and so on. Many people use the terms e-commerce and e-business interchangeably, which is factually wrong. 1.2.2

World Trade Organization (WTO), “E-commerce as a commercial process includes production, distribution, marketing, sale or delivery of goods and services electronically.” E-commerce is used everywhere in everyday life. It ranges from credit/debit card authorization, travel reservation over a phone/network, wire fund transfers across the globe, point of sale transactions in retailing, electronic banking, electronic insurance, fund raising, political Campaigning, on-line education and training, on-line auctioneering, on-line lottery and so on. Many people use the term e-commerce and e-business interchangeably, which is factually wrong.

SA E-commerce.pdf (D165838284)

5/206	SUBMITTED TEXT	151 WORDS	92%	MATCHING TEXT	151 WORDS

systematic and organized network for the exchange of goods between producers and consumers. The Net aims to establish the interconnections between producers and consumers directly and in this, the internet embraces all those related activities which are indispensable for maintaining a continuous, free and uninterrupted distribution and transfer of goods. The Website or portals may be categorized into commercial and noncommercial. Any website or portal that offers products and/or services for sale is a commercial website. There are thousands of commercial websites on the Internet. Some of them have been successful, and some weren't so lucky. What elements make up a good commercial website? Of course, web pages should look attractive to a customer. However, even the most attractive web pages will not make a person come back to a website where it takes too long to find the right product or where order forms don't work. 1.2.1.

systematic and organized network for the exchange of goods between produces and consumers. The Net aims to establish the interconnections between producers and consumers directly and in this, the Internet embraces all those related activities which are indispensable for maintaining a continuous, free and uninterrupted distribution and transfer of goods. The Website or portals may be categorized into commercial and noncommercial. Any web site or portal that offers products and/or services for sale is a commercial web site. There are thousands of commercial web sites on the Internet. Some of them have been successful, and some weren't so lucky. What elements make up a good commercial web site? Of course, web pages should look attractive to a customer. However, even the most attractive web pages will not make a person come back to a web site where it takes too long to find the right product or where order forms don't work.

SA E-commerce.pdf (D165838284)

6/206	SUBMITTED TEXT	88 WORDS	100%	MATCHING TEXT	88 WORDS

Electronic commerce, or e-commerce, refers to the purchasing and selling of goods or services via electronic means, such as the Internet or mobile phone applications. It may also refer to the process of creating, marketing, servicing, and paying for services and goods. Businesses, governments, and the public can participate in e-Commerce transactions. The following discussion will elicit the unique features of e-commerce. The unique features of e-commerce technology include: ➢ Ubiquity: e-Commerce is ubiquitous, It is available just about everywhere and at all times by using

SA Ecommerce.pdf (D164350998)

7/206	SUBMITTED TEXT	170 WORDS	80%	MATCHING TEXT	170 WORDS

internet and Wi-Fi hotspots such as airports, coffee cafes, and hill station places. Consumers can connect it to the Internet at any time, including at their homes, their offices, on their video game systems with an Internet connection and mobile phone devices. E-Commerce is a ubiquitous technology that is available everywhere. Moreover, individuals who have cell phones with data capabilities can access the Internet without a Wi-Fi connection. ➢ Global reach: The potential market size is roughly equal to the size of the online population of the world. E-Commerce Technology seamlessly stretches across traditional cultural and national boundaries and enables worldwide access to the client. E-Commerce websites have the ability to translate multilingual websites as well as allow access to visitors all over the world, purchase products, and make business interactions. ➢ Universal standards: The technical standards of the Internet are shared by all of the nations in the world. The whole online tradition is growing and expanding its features in the world. To develop any kind of business,

SA Ecommerce.pdf (D164350998)

need Internet and communication applications which make the business relationship more lovingly and attractive for secure business and successful business. ➢ Richness: Users can access and utilize text messages and visual and audio components to send and receive information. An individual may see information richness on a company's blog if a post contains a video related to a product and hyperlinks that allow him to look at or purchase the product and send information about the post via text message or email. ➢ Interactivity: E-commerce technologies allow two-way communication between the merchant and the consumer. As a result, e-Commerce technologies can adjust to each individual's experience. For example, while shopping online, an individual is able to view different angles of some items, add products into a virtual shopping cart, checkout by inputting his payment information, and then submit the order. ➢ Personalization: Technologies within e-Commerce allow for the personalization and customization of marketing messages that groups or individuals receive. An example of personalization includes product recommendations based on a user's search history on a Web site that allows individuals to create an account. ➢ Information density: The use of e-Commerce reduces the cost to store, process, and communicate information, At the same time, accuracy and timeliness increase; thus, making information accurate, inexpensive, and plentiful. For example, the online shopping process allows a company to receive personal, shipping, billing, and payment information from a customer all at once and sends the customer's information to the appropriate departments in a matter of seconds. ➢ Social technology: E-Commerce technology has tied up the social media networking application to provide the best source of content sharing technology and e-Marketing systems. You can share your content or data easily with just one click. ➢ User-Generated Content: Social networks use e-Commerce technologies to allow members, the general public, to share content with the worldwide community. Consumers with accounts can share personal and commercial information to promote a product or service. When a company has a professional social networking account, a member of the same social network has the option of associating himself with the company or a product by saying he likes or recommends it. When an individual updates his status on a social networking account, he may also mention a product or company by name, which creates word-of- mouth advertising. 1.2.4

SA Ecommerce.pdf (D164350998)

9/206	SUBMITTED TEXT	15 WORDS	83%	MATCHING TEXT	15 WORDS

E-commerce deals with buying and selling information, products, and services through a computer network

SA E commerce B.com VI semester.docx (D146772307)

10/206	SUBMITTED TEXT	13 WORDS	100%	MATCHING TEXT	13 WORDS

the delivery of information, products, services, and payment through the electronic medium.

SA E commerce B.com VI semester.docx (D146772307)

11/206	SUBMITTED TEXT	217 WORDS	98%	MATCHING TEXT	217 WORDS

There have been several key steps in the history of e-commerce. ➢ The first step came from the development of the Electronic Data Interchange (EDI). EDI is a set of standards developed in the 1960s to exchange business information and do electronic transactions. At first, there were several different EDI formats that businesses could use, so companies still might not be able to interact with each other. ➢ However, in 1984 the ASC X12 standard became stable and reliable in transferring large amounts of transactions. The next major step occurred in 1992 when the Mosaic web browser was made available; it was the first 'point and click browser. The Mosaic browser was quickly adapted into a downloadable browser, Netscape, which allowed easier access to electronic commerce. ➢ The development of DSL was another key moment in the development of e-commerce. DSL allowed quicker access and a persistent connection to the Internet. Christmas of 1998 was another major step in the development of e-commerce. AOL had sales of 1.2 billion over the 10 week holiday season from online sales. ➢ The development of Red Hat Linux was also another major step in electronic commerce growth. Linux gave users another choice in a platform other than Windows that was reliable and open-source. Microsoft faced this competition

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SA E-commerce.pdf (D165838284)

12/206	SUBMITTED TEXT	288 WORDS	97%	MATCHING TEXT	288 WORDS

needed to invest more in many things including electronic commerce. ➢ Napster was an online application used to share music files for free. This application was yet another major step in e-commerce. Many consumers used the site and were dictating what they wanted from the industry. A major merger, in early 2000, between AOL and Time Warner was another major push for electronic commerce. The merger, worth $350 million, brought together a major online company with a traditional company. In February 2000 hackers attacked some major players of e-commerce, including Yahoo, eBay, and Amazon. In light of these attacks, the need for improved security came to the forefront in the development of electronic commerce. It is predicted that revenues will grow 40% to 50% yearly. Expectations of higher prices as well as larger profits for e-commerce businesses are also present. Also, we will see a larger presence by experienced traditional companies, such as Wal-Mart, on the Internet. It is believed companies, in general, will take this mixed strategy of having stores online and offline in order to be successful. It can be seen that there will be a large growth in Business-to-Consumer (B2C) e-commerce, which online businesses are selling to individuals. However, even though B2C electronic commerce may be the most recognizable there are different varieties. Today the largest electronic commerce is Business-to-Business (B2B). Businesses involved in B2B sell their goods to other businesses. In 2001, this form of e-commerce had around $700 billion in transactions. Other varieties growing today include Consumer-to-Consumer (C2C) where consumers sell to each other, for example through auction sites. Peer-to-Peer (P2P) is another form of e-commerce that allows users to share resources and files directly. 1.4 Types of E-commerce

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SA E-commerce.pdf (D165838284)

13/206	SUBMITTED TEXT	16 WORDS	100%	MATCHING TEXT	16 WORDS

Although these information transfer agreements between trading partners increased efficiency and reduced errors, they were

SA CMP513-Ecommerce technology-R.pdf (D164968100)

14/206	SUBMITTED TEXT	13 WORDS	100%	MATCHING TEXT	13 WORDS

E-commerce is a selling and transfer process requiring several institutes. It is

E-commerce is a selling and transfer process requiring several institutes. It is

SA E-commerce.pdf (D165838284)

15/206	SUBMITTED TEXT	52 WORDS	97%	MATCHING TEXT	52 WORDS

systematic and organized network for the exchange of goods between producers and consumers. The Net aims to establish the interconnections between producers and consumers directly and in this, the internet embraces all those related activities which are indispensable for maintaining a continuous, free and uninterrupted distribution and transfer of goods. ●

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SA E-commerce.pdf (D165838284)

16/206	SUBMITTED TEXT	50 WORDS	88%	MATCHING TEXT	50 WORDS

E-commerce is used everywhere in everyday life. It ranges from credit/debit card authorization, travel reservation over a phone/network, wire fund transfers across the globe, point of sale transactions in retailing, electronic banking, electronic insurance, fundraising, political Campaigning, online education and training, online auctioneering, on- line lottery and so on. ●

E-commerce is used everywhere in everyday life. It ranges from credit/debit card authorization, travel reservation over a phone/network, wire fund transfers across the globe, point of sale transactions in retailing, electronic banking, electronic insurance, fund raising, political Campaigning, on-line education and training, on-line auctioneering, on-line lottery and so on.

SA E-commerce.pdf (D165838284)

17/206	SUBMITTED TEXT	14 WORDS	87%	MATCHING TEXT	14 WORDS

the gap: E-commerce is a selling and transfer process requiring several _____. 2)

the Internet. E-commerce is a selling and transfer process requiring several

SA E-commerce.pdf (D165838284)

18/206	SUBMITTED TEXT	23 WORDS	100%	MATCHING TEXT	23 WORDS

E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT's). 4)

E-commerce is a general concept covering any form of business transaction or information exchange executed using Information and Communication Technologies (ICT's).

SA E-commerce.pdf (D165838284)

19/206	SUBMITTED TEXT	18 WORDS	73%	MATCHING TEXT	18 WORDS

other consumers directly via online classified advertisements and auctions or by selling personal services or expertise online.

SA CMP513-Ecommerce technology-R.pdf (D164968100)

20/206	SUBMITTED TEXT	44 WORDS	58%	MATCHING TEXT	44 WORDS

E-Commerce 2.3 Scope of E-Commerce 2.4 Benefits and limitations of E-Commerce 2.4.1 General Benefits of E-Commerce 2.4.2 Specific: Advantages of E-commerce to Business Firms 2.4.3 Specific: Benefits of E-commerce to Society 2.4.4 Specific: Benefits of E-commerce to Customers 2.4.5 Limitations of E-Commerce 2.5

e-Commerce 1.6.6 Intra-business e-Commerce 1.7 Interdisciplinary of e-Commerce 1.8 Advantages and Disadvantages of Electronic Commerce 1.8.1 Advantages of e-Commerce to Business Firms 1.8.2 Benefits of e-Commerce to Society 1.8.3 Benefits of e-Commerce to Customers 1.8.4 Limitations or Disadvantages of e-Commerce 1.9

SA E-commerce.pdf (D165838284)

21/206	SUBMITTED TEXT	22 WORDS	88%	MATCHING TEXT	22 WORDS

There is enough scope for online businesses in the future if they understand the shoppers' psyche and cater to their needs.

SA Ecommerce.pdf (D164350998)

22/206	SUBMITTED TEXT	31 WORDS	93%	MATCHING TEXT	31 WORDS

Many of today's ambitious electronic commerce initiatives vary in their approach to security and privacy, their ability to handle micropayments, and their applicability to various types of transactions. 2.1

Many of today's ambitious electronic commerce initiatives vary in their approach to security and privacy, their ability to handle micro payments, and their applicability to various types of transactions.

SA E-commerce.pdf (D165838284)

23/206	SUBMITTED TEXT	31 WORDS	100%	MATCHING TEXT	31 WORDS

can increase sales and decrease costs. Advertising done well on the web can get even a small firm's promotional message out to potential consumers in every country in the world.

SA Ecommerce.pdf (D164350998)

24/206	SUBMITTED TEXT	109 WORDS	96%	MATCHING TEXT	109 WORDS

in his e-commerce business. a) Search Engine Optimization (SEO): - Generate unique relevant content. Google loves unique content that is related to what your site is all about. - Ensure you are using good keywords you want to focus on. Every page should have an H1 tag around what is the focus of the page, such as a product name, category name, or static content title. Use H2 tags as well for other important page sections. - Keywords in optimized page titles. - Internal linking. Link keywords in your unique content to pages related to that keyword. This is huge!!! - Friendly URLs with related phrases.

SA Ecommerce.pdf (D164350998)

25/206	SUBMITTED TEXT	117 WORDS	98%	MATCHING TEXT	117 WORDS

b) Selecting New Products - Sell what the customer wants to buy, not what you want to sell! This is a common mistake, especially when merchandisers are given a great price to sell a particular product. If nobody wants to buy that product, it doesn't matter what price you set it at. - Find out what customers want. What is your value proposition on products you sell? Capitalize on your niche! c) Merchandising New Productions: - Pictures, pictures, pictures! It is very important to have high-quality images of the products. - Hero photos: if you have a big seller, feature it on a category page with a hero image of the product. - Promote

SA Ecommerce.pdf (D164350998)

26/206	SUBMITTED TEXT	233 WORDS	97%	MATCHING TEXT	233 WORDS

latest releases in your newsletters and feature them in categories or on your homepage. - Market to customers who have purchased related items in the past. d) Customer Service - Make your customers happy. - Delivery orders on time. - Ensure order accuracy. - Reship promptly if a package failed to be delivered to the customer, if it came damaged, or if it was missing parts. - Don't try to save every penny on an order. You may need to take a loss to make a customer happy in order to retain their loyalty to you, and therefore be very valuable for many orders to come. e) Monitoring your KPIs / Analytics - Monitor your analytics reports. View what items are selling and bubble them to the top of product listings so customers can find them easier. A great tool for this, if you are on IBM WebSphere Commerce, is our Smart Merchandiser product. With it, you can see analytic overlays on each product in each category to help you make smart merchandising decisions. - Tackle cart abandonment. Remarket those products to the customers if you have their email addresses. Incentivize them to complete their checkout within X days. 2.3 Scope of E-Commerce Today, online shopping is a reality in India. The marketplace is flooded with several e-commerce options for shoppers to choose from. In the recent past, the growth of

SA Ecommerce.pdf (D164350998)

27/206	SUBMITTED TEXT	69 WORDS	94%	MATCHING TEXT	69 WORDS

e-commerce industry in India has been phenomenal as more shoppers have started discovering the benefits of using this platform. There is enough scope for online businesses in the future if they understand the Indian shoppers' psyche and cater to their needs. Listed below are the reasons that guarantee the future prospect of E-commerce in India. ● Enhancing domain registrations ● Rising internet users ● Easy access to

SA Ecommerce.pdf (D164350998)

28/206	SUBMITTED TEXT	166 WORDS	98%	MATCHING TEXT	166 WORDS

internet even in rural areas ● Rising number of cybercafes ● Growing need for E-commerce a) Cash on delivery (COD): Indian e-commerce industry has evolved over a period of time with innovations that have changed the rules of the game globally. COD is one such example. In a country where credit card penetration is much lower than other developed markets and where e- commerce companies are still working hard to build trust among shoppers, introducing cash on delivery has been one of the key factors for the success of the segment. At present, COD is the preferred payment mode for close to 55-60% of all online transactions in the fashion and lifestyle segment in India. Executing COD efficiently and painlessly for the customer is critical to the success of any e-commerce player in the country. b) Delivering experiences: E-commerce needs to focus on customer experience to build trust and confidence. Customer experience encompasses every interaction of a customer from placing an order to interacting with

SA Ecommerce.pdf (D164350998)

29/206	SUBMITTED TEXT	75 WORDS	77%	MATCHING TEXT	75 WORDS

customer service team, to the actual delivery experience. Providing a great delivery experience is one of the core aspects of delighting customers. This not only means faster deliveries but also consistency and reliability. The more faith the customer has in your delivery service, the more likely he is to buy again. Besides, it builds a good brand image and word-of-mouth publicity. c) Growing the base: In India, in 2021, around 761 million online users

SA Ecommerce.pdf (D164350998)

30/206	SUBMITTED TEXT	90 WORDS	96%	MATCHING TEXT	90 WORDS

large base provides vast scope for e-commerce businesses to establish themselves. d) Growing opportunities: The e-commerce industry is growing at a rapid pace and changing the dynamics of the retail industry. In the coming years, e-commerce is expected to contribute close to 10-11% of the total retail segment in India. This growth is bound to continue provided e-commerce companies focus on innovating, building strong technology infrastructure, and delivering the best customer experience. e) Online Travel Segment: The online travel segment has seen a CAGR of 55.5% from 2007-2012.

SA Ecommerce.pdf (D164350998)

31/206	SUBMITTED TEXT	41 WORDS	100%	MATCHING TEXT	41 WORDS

surge in demand for domestic travel, and the boom of the tourism industry. Domestic travel contributed to as much as 50% of the total market, followed by railways tickets, international air tickets, hotel bookings, and bus tickets. f) E-Tailing:

SA Ecommerce.pdf (D164350998)

32/206	SUBMITTED TEXT	20 WORDS	84%	MATCHING TEXT	20 WORDS

encompasses buying consumer items like apparel, electronic devices, home and kitchen appliances, jewelry, online. Competition is intense due to

SA Ecommerce.pdf (D164350998)

33/206	SUBMITTED TEXT	144 WORDS	99%	MATCHING TEXT	144 WORDS

low entry barrier of this segment. However, Amazon.com, Flipkart, snapdeal.com, jabong.com, and myntra.com are some of the major players. This segment is expected to grow further as people become more pressed for time. Also, the choice that e-tailing sites offer to customers will drive demand for this segment. However, there will be intense price-based competition in this sector and consolidations are in order. g) Online Financial Services: The financial services segment includes applying for insurance, paying online bills, and premiums and online transactions for financial services. The costs of these insurance policies are lesser with premiums being 40%-60% cheaper. This is a win-win situation for both the insurance provider and the customers. Also, the convenience provided by online portals has led to more customers choosing the online route for bill payment. h) Classifieds: It is in a very promising stage and has

SA Ecommerce.pdf (D164350998)

34/206	SUBMITTED TEXT	83 WORDS	98%	MATCHING TEXT	83 WORDS

lot cheaper than conventional methods and unlike the latter, it is not constrained to a geographic location. The growth is mainly fuelled by services like an online job (60% of the segment), online matrimony, B2C classifieds, and B2B classifieds. Naukri.com, timesjob.com, monster.com are the major players in the job market while jeevansathi.com, shaadi.com are the major matrimonial sites. i) Other online Services: These include sites offering online services like buying entertainment tickets, food, and grocery. 2.4 Benefits and limitations of E-Commerce

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limitations of e-commerce. 2.4.1 General Benefits of E-Commerce Electronic commerce can increase sales and decrease costs. Advertising done well on the web can get even a small firm's promotional message out to potential consumers in every country in the world. A firm can use electronic commerce to reach narrow market segments that are geographically scattered. The web is particularly useful in creating virtual communities that become ideal target markets for specific types of products or services. A virtual community is a gathering of people who share a common interest, but instead of this gathering occurring in the physical world; it takes place on the internet. Some key benefits of e-commerce are summarized below: ➢ By becoming e-commerce enabled, businesses now have access to people all around the world. In effect, all e-commerce businesses have become virtual multinational corporations. ➢ The cost of creating, processing, distributing, storing, and retrieving paper-based information has decreased. ➢ The pull-type processing allows for products and services to be customized to the customer's requirements. ➢ Enables reduced inventories and overheads by facilitating 'pull'-type supply chain management – this is based on collecting the customer order and then delivering through JIT (just-in-time) manufacturing. ➢ The Internet is much cheaper than value-added networks (VANs) which were based on leasing telephone lines for the sole use of the organization and its authorized partners. It is also cheaper to send a fax or e-mail via the Internet than direct dialing. ➢ Software and music/video products can be downloaded or emailed directly to customers via the Internet in digital or electronic format. ➢ Businesses can be contacted by or contact customers or suppliers at any time. ➢ 24/7 access: Enables customers to shop or conduct other transactions 24 hours a day, all year round from almost any location. ➢ Customers

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36/206	SUBMITTED TEXT	189 WORDS	97%	MATCHING TEXT	189 WORDS

not only have a whole range of products that they can choose from and customize, but also an international selection of suppliers. ➢ Customers can 'shop' around the world and conduct comparisons either directly by visiting different sites, or by visiting a single site where prices are aggregated from a number of providers and compared (for example www.moneyextra.co.uk for financial products and services). ➢ This can range from the immediate delivery of digitized or electronic goods such as software or audio-visual files by downloading via the Internet, to the online tracking of the progress of packages being delivered by mail or courier. ➢ An environment of competition where substantial discounts can be found or value-added, as different retailers view for customers. It also allows many individual customers to aggregate their orders together into a single order presented to wholesalers or manufacturers and obtain a more competitive price. ➢ Enables more flexible working practices, which enhances the quality of life for a whole host of people in society, enabling them to work from home. Not only is this more convenient and provides happier and less stressful working environments,

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37/206	SUBMITTED TEXT	571 WORDS	97%	MATCHING TEXT	571 WORDS

Advantages of E-commerce to Business Firms ● Economy: E-commerce is highly economical. Unlike the brick-and- mortar environment, in e-commerce, there is no rental of physical store space, insurance, or infrastructure investment. All you need is an idea, a unique product, and a well-designed Web storefront to reach your cyber- customers, plus a partner to do fulfillment. ● Lower Cost: Doing e-business on the Internet is extremely cost-effective; it reduces logistical problems and puts a small business on a par with giants like Amazon.com, Sears, General Motors, or Bank of America. In a commercial bank, for example, a basic over-the-counter transaction costs Rs. 52.95 to process; over the Internet, the same transaction costs about 1 rupee. Every financial transaction eventually turns into an electronic process. The sooner it makes the conversion, the more cost- effective the transaction becomes. ● Better Customer Service: E-commerce emphasizes better and quicker customer service. Web-based customer service makes customers happier. Instead of calling your company on the phone, holding for 10 minutes, then getting to a clerk who taps into your account, the Web merchant gives customers direct access to their personal accounts over the Web. It saves time and money. It is a win-win proposition. For companies that do business with other companies, adding customer service to the Web is a competitive advantage. The overnight package delivery service, where tracking numbers allow customers to check the whereabouts of a package online, is one good example. ● Greater Profit Margin: E-commerce means greater profit margins. For example, the cost of processing a conventional airline ticket is Rs. 400. According to one travel agency, processing the same ticket (called an e- ticket) over the Web costs Rs. 50 only. Along with higher margins, businesses can gain more control and flexibility and are able to save time when manual transactions are done electronically. ● Knowledge Markets: E-commerce helps create knowledge markets. Small groups inside big firms can be funded with seed money to develop new ideas. For example, Daimler Chrysler has created small teams to look for new trends and products. A Silicon Valley team is doing consumer research on electric cars and advising car designers. ● Swapping Goods and Services: Swapping is trading something you have for something you want more. Offering goods or services through barter is gaining in popularity through sites like Web Swap, www.BarterTrust.com, and www.Ubarter.com. Here is how it works: Sam, a networking consultant, offers his technical services through a barter company. People pay currency into Sam's account in exchange for his services. Instead of accepting the cash, he turns around and buys things (a PC, carpeting). The barter house keeps a modest commission to expedite the exchange. ● Information

Advantages of E-commerce to Business Firms The major advantages of E-commerce are: z Economy: E-commerce is highly economical. Unlike the brick-and-mortar environment, in e-commerce there is no rental of physical store space, insurance, or infrastructure investment. All you need is an idea, a unique product, and a well-designed Web storefront to reach your cyber-customers, plus a partner to do fulfillment. Lower Cost: Doing e-business on the Internet is extremely cost effective; it reduces logistical problems and puts a small business on a par with giants like Amazon.com, Sears, General Motors, or Bank of America. In a commercial bank, for example, a basic over-the-counter transaction costs Rs. 52.95 to process; over the Internet, the same transaction costs about 1 rupee. Every financial transaction eventually turns into an electronic process. The sooner it makes the conversion, the more cost-effective the transaction becomes. z Better Customer Service: E-commerce emphasizes better and quicker customer service. Web-based customer service makes customers happier. Instead of calling your company on the phone, holding for 10 minutes, then getting to a clerk who taps into you account, the Web merchant gives customers direct access to their personal accounts over the Web. It saves time and money. It is a win-win proposition. For companies that do business with other companies, adding customer service to the Web is a competitive advantage. The overnight package delivery service, where tracking numbers allow customers to check the whereabouts of a package online, is one good example. z Greater Profit Margin: E-commerce means greater profit margins. For example, the cost of processing a conventional airline ticket is Rs. 400. According to one travel agency, processing the same ticket (called e-ticket) over the Web costs Rs. 50 only. Along with higher margins, business can gain more control and flexibility and are able to save time when manual transactions are done electronically. z Knowledge Markets: E-commerce helps create knowledge markets. Small groups inside big firms can be funded with seed money to develop new ideas. For example, Daimler Chrysler has created small teams to look for new trends and products. A Silicon Valley team is doing consumer research on electric cars and advising car designers. z Swapping Goods and Services: Swapping is trading something you have for something you want more. Offering goods or services through barter is gaining in popularity through sites like Web Swap, www.BarterTrust.com, and www.Ubarter.com. Here is how it works: Sam, a networking consultant, offers his technical services through a barter company. People pay currency into Sam's account in exchange for his services. Instead of accepting the cash, he turns around and buys things (a PC, carpeting). The barter house keeps a modest

Sharing, Convenience, and Control: Electronic marketplaces improve information sharing between merchants and customers and promote quick, just-in-time deliveries. Conveniences for the consumer are a major driver for changes in various industries: Customers and merchants save money; are online 24 hours a day, 7 days a week; experience no traffic jams, no crowds and do not have to carry heavy shopping bags. Control is another major driving factor. For example, instead of banks controlling the relationships with the customer, customers today can have more control of their banking needs via Internet Web sites. Banks like Bank of America and ICICI now give customers access to their accounts via the Web. ● Quick Comparison Shopping: E-commerce helps consumers to comparison shop. Automated online shopping assistants called hopbots

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38/206 **SUBMITTED TEXT** 14 WORDS **100%** **MATCHING TEXT** 14 WORDS

commerce provides buyers with a wider range of choices than traditional commerce. ➢

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39/206	SUBMITTED TEXT	359 WORDS	94%	MATCHING TEXT	359 WORDS

scour Net stores and find deals on everything from applesauce to printer ribbons. For example, mySimon (www.mysimon.com) learns the navigation preferences of its runner (a tool that fills out the request form asking the bot to search Web pages for solutions). It lets you enter basic keywords such as "ladies dress" to search its database of Web stores for the best buys. ● Teamwork: E-commerce helps people work together. E-mail is one example of how people collaborate to exchange information and work on solutions. It has transformed the way organizations interact with suppliers, vendors, business partners, and customers. More interaction means better overall results. A recent study of 40 corporate Internets by the META Group found that the typical Intranet (within-company network) had an average Return on Investment (ROI) of 38 percent. Networks that provided collaborative capabilities had a 40 percent ROI and those that gave people direct access to needed information had a 68 percent ROI. The implication is that the more interactive and the more. "Collaborative-rich" the Web site, the higher the payoff for the business (www. IBM.com). ● Productivity Gains: E-commerce means productivity gains. Weaving the Web throughout an organization means improved productivity. Take the example of IBM, which incorporated the Web into every corner of the firm-products, marketing, and practices. The company figured it would save $750 million by letting customers find answers to technical questions via its Website. The total cost savings in 1999 alone was close to $1 billion (www. IBM.com for recent details). ● Customization: Digital products are highly customizable. They are easy to reorganize, revise, or edit. With information about consumer tastes and preferences, products can be differentiated (customized) and matched to individual needs. ● Ensure Secrecy: EC devices invariably have in-built security measures. For example password, encoding, cryptography, cipher, etc. are some of the mechanisms/measures which provide security and prevent unauthorized access and use of data, information, and transactions. ● Other Benefits: The other benefits include an improved image, improved customer services, newfound business partners, simplified processes, compressed cycle and delivery time, increased productivity, eliminating paper, expediting access to information, reduced transportation costs, and increased flexibility. 2.4.3

scour Net stores and find deals on everything from applesauce to printer ribbons. For example, mySimon (www.mysimon.com) learns the navigation preferences of its runner (a tool that fills out the request form asking the bot to search Web pages for solutions). It lets you enter basic keywords such as "ladies dress" to search its database of Web stores for the best buys. z Teamwork: E-commerce helps people work together. E-mail is one example of how people collaborate to exchange information and work on solutions. It has transformed the way organizations interact with suppliers, vendors, business partners, and customers. More interaction means better overall results. A recent study of 40 corporate Internets by MET A Group found that the typical Intranet (within-company network) had an average Return on Investment (ROI) of 38 per cent. Networks that provided collaborative capabilities had a 40 per cent ROI and those that gave people direct access to needed information had a 68 per cent ROI. The implication is that the more interactive and the more. "Collaborative-rich" the Web site, the higher the payoff for the business (www. IBM.com). 14 e-Commerce z Productivity Gains: E-commerce means productivity gains. Weaving the Web throughout an organization means improved productivity. Take the example of IBM, which incorporated the Web into every corner of the firm-products, marketing, and practices. The company figured it would save $750 million by letting customers find answers to technical questions via its Web site. The total cost savings in 1999 alone was close to $1 billion (www. IBM.com for recent details). z Customization: Digital products are highly customizable. They are easy to reorganize, revise, or edit. With information about consumer tastes and preferences, products can be differentiated (customized) and matched to individual needs. z Ensure Secrecy: EC devices invariably have in built security measures. For example password, encoding encryptography, cipher etc. are some of the mechanisms/measures which provide security and prevent unauthorized access and use of data, information and transactions. z Other Benefits: The other benefits include improved image, improved customer services, new found business partners, simplified processes, compressed cycle and delivery time, increased productivity, eliminating paper, expediting access to information, reduced transportation costs, and increased flexibility. 1.8.2

SA E-commerce.pdf (D165838284)

40/206	SUBMITTED TEXT	52 WORDS	98%	MATCHING TEXT	52 WORDS

Benefits of E-commerce to Society It helps society in the following ways: ● Enables individuals to work at home and to do less traveling for shopping, resulting in less traffic on the roads and lowers air pollution. ● Allows some merchandise to be sold at lower prices and helps in

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41/206	SUBMITTED TEXT	195 WORDS	95%	MATCHING TEXT	195 WORDS

increasing standard of living. ● Enables people in Third World countries and rural areas to enjoy products and services that otherwise are not available to them. ● Facilitates delivery of public services such as health care, education, and distribution of government social service at reduced cost and/or improved quality. 2.4.4 Specific: Benefits of E-commerce to Customers The customers can enjoy the following benefits of e-commerce: ● Customer Convenience: A website is open 24 hours a day. It can take orders, keep an eye on deliveries, and receive payments, at any time of convenience to the customer. ● Product/Service made to Customer's Order: E-commerce enables the customers to get the products/services made as per particular needs. Manufacturers may even invite customers to design the product/service exactly as they want it and thus earn their goodwill. ● Wider Choice: Customers can access websites of as many competing suppliers as desired to, decide on which product/service would best meet their needs. They do not need to drive to different shops for this purpose. In any case, a website can offer any number of products/services and in any detail without any space or inventory limits as in

increasing standard of living. z Enables people in Third World countries and rural areas to enjoy product and services that otherwise are not available to them. z Facilitates delivery of public such as health care, education and distribution of government social service at reduced cost and/or improved quality. 1.8.3 Benefits of E-commerce to Customers The customers can enjoy the following benefits of e-commerce: z Customer Convenience: A website is open 24 hours a day. It can take orders, keep an eye on deliveries, and receive payments, at any time of convenience to the customer. z Product/Service made to Customer's Order: E-commerce enables the customers to get the products/services made as per particular needs. Manufacturers may even invite customers to design the product/service exactly as they want it and thus earn their goodwill. z Wider Choice: Customers can access websites of as many competing suppliers as desired to, decide on which product/service would best meet their need. They do not need to drive to different shops for this purpose. In any case, a website can offer any number of products/services and in any detail without any space or inventory limits as in

SA E-commerce.pdf (D165838284)

42/206	SUBMITTED TEXT	55 WORDS	89%	MATCHING TEXT	55 WORDS

case of digitized products, electronic commerce allows quick delivery. ● Cheaper Products/Services: Electronic commerce allows customers to visit websites of several business firms and make comparisons of their offerings. Thus, he can get cheaper products/services of required quality by visiting various websites. ● Virtual Auction: The customers can participate in virtual auctions through

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43/206	SUBMITTED TEXT	49 WORDS	92%	MATCHING TEXT	49 WORDS

Internet. For example, several airlines put air tickets to specify destinations on auction and the customers are free to offer any price. ● Competition: Electronic commerce creates competition between product and service providers. The customers are benefited in the form of lower prices. 2.4.5 Limitations of E-Commerce

Internet. For example, several airlines put air tickets to specify destination on auction and the customers are free to offer any price. Introduction to e-Commerce 15 z Competition: Electronic commerce creates competition between product and service providers. The customers are benefited in the form of lower prices. 1.8.4 Limitations Disadvantages of E-commerce

SA E-commerce.pdf (D165838284)

44/206	SUBMITTED TEXT	51 WORDS	81%	MATCHING TEXT	51 WORDS

Electronic payments of tax refunds, public retirement, and welfare support cost less to issue and arrive securely and quickly when transmitted over the internet. ➢ Electronic payments can be easier to audit and monitor than payments made by cheque, providing protection against fraud and theft losses. ➢ Electronic commerce can

SA Thesis-HDP.pdf (D30343019)

45/206	SUBMITTED TEXT	647 WORDS	94%	MATCHING TEXT	647 WORDS

High Risk of Internet start-up Organizations: Many stories unfolded in 1999 about successful executives in established firms leaving for Internet start-ups, only to find out that their "get rich" dream with a dot.com was just that-a a dream. However, many dot.com organizations bubble burst in 2000 and onward due to various reasons like lack of good revenue model, everything is not possible through dot.com, problems related to customer satisfaction, etc. ● Lack of a Blueprint for Handling E-commerce: There is a continuing shortage of e-literate people in the workplace. In a survey published in Computer World, nearly nine out of 10 respondents said only a few of their key managers have e-commerce skills, Internet experience, and foresight. Sixty-six percent also said they are having a tough time attracting people wanting to take advantage of online opportunities. Finally, traditional organizational structures and cultures were found to inhibit progress in e-commerce. ● E-commerce involves Cost: So far, success stories in e-commerce have favored large businesses with deep pockets and good funding. According to a recent report, small retailers that go head-to-head with e-commerce giants are fighting a losing battle. As in the brick-and-mortar environment, they simply cannot compete on price or product offering. Brand loyalty is related to this issue, which is supposed to be less important for online firms. Brands are expected to lower search costs, build trust, and communicate quality. According to Blackmon, users have difficulty using online search engines such as Yahoo! to locate product information, and rely instead on recognized dot.com brands for purchases. A search engine can come up with the best music deals, for example, yet consumers continue to flock to trusted entities like CDNow. Despite a better-quality product offered by brand-weak, Miami-based FlowerNet, its lower prices generated suspicion about quality when compared with higher-priced but better-known online floral giants. Early branding turned Etrade into a leading discount brokerage firm, while upstarts like Mr. Stock struggled to stay in business. ● Security: Security continues to be a problem for online businesses. In a 2000 Economist article, 95 percent of Americans expressed reluctance to give out their credit card numbers via the internet. For millions of potential cyber-customers, the fear of credit card theft is a real one. Consumers have to feel confident about the integrity of the process before they commit to the purchase. ● Customer Relations Problems: Not many businesses realize that even an e-business cannot survive over the long term without loyal customers. In a 1999 Information Week Research Priorities survey of 300 IT executives, the key question was “What are your IT department's key strategic technology and business priorities in 1999?” Ninety-two percent of the

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respondents said “improve customer service,” and 90 percent said, “understand and meet the needs of customers” (Eckhouse, September 20, 1999, p. 119). Considering the medicare record on customer service during 2000, there is greater pressure on e-business to meet or exceed customer expectations on service. ● System and Data Integrity: Data protection and the integrity of the system that handles the data are serious concerns. Computer viruses are rampant, with new viruses discovered every day. Viruses cause unnecessary delays, file backups, storage problems, and the like. The danger of hackers accessing files and corrupting accounts adds more stress to an already complex operation. ● Products People Won't Buy Online: Imagine a Website called furniture.com or ww.living.com, where venture capitalists are investing millions in selling home furnishings online. For the case of a sofa, you'd want to sit on it, feel the texture of the fabric, etc. Besides the "sofa road- test" factor, online furniture stores face costly returns and kinds of deliveries that cannot be expedited via FedEx. ● Corporate Vulnerability: The availability of product details, catalogs, and other information about a business through its Web site makes it vulnerable to access by the competition. The idea of extracting business intelligence from the competition’

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46/206 **SUBMITTED TEXT** 19 WORDS **86%** **MATCHING TEXT** 19 WORDS

Most of the disadvantages of e-commerce stem from the newness and rapidly developing pace of the underlying technologies.

SA CMP513-Ecommerce technology-R.pdf (D164968100)

47/206	SUBMITTED TEXT	158 WORDS	92%	MATCHING TEXT	158 WORDS

Web pages is called Web farming, a term coined by Richard Hackathon. ● Fulfillment Problems: Tales of shipping delays, merchandise mix-ups, and Web sites crashing under pressure continue to be problems e-tailing. Customer confidence in an e-commerce's ability to deliver during heavy shopping seasons continues to be a headache. Even happy customers say the experience could be improved. ● System Scalability: A business develops an interactive interface with customers via a Web site. After a while, statistical analysis determines whether visitors to the site are one-time or recurring customers. If the company expects 2 million customers and 6 million shows up, Web site performance is bound to experience degradation, slow down, and eventually loss of customers. To keep this problem from happening, a website must be scalable, or upgradable on a regular basis. Consider the 1999 IBM chess match Web site, which attracted over 74 million hits in just 9 days without noticeable slowdown. The 1999 U.S.

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48/206	SUBMITTED TEXT	117 WORDS	99%	MATCHING TEXT	117 WORDS

Open Tennis Championship drew 70 million hits in 2 weeks, and the 1996 Atlanta Olympic Games drew 189 million hits in just 17 days. All these sites were successful due to their constant scalability with respect to performance, speed, and maintaining a sub-8-second response time. This takes effort and is not cheap to maintain. ● Consumer Search is Not Efficient or Cost-Effective: On the surface, the electronic marketplace appears to be a perfect market, where worldwide sellers and buyers share information and trade without intermediaries. However, a closer look indicates that new types of intermediaries are essential to e-commerce. They include electronic malls that guarantee product quality, mediators for bargaining, and certification authorities to ensure

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49/206	SUBMITTED TEXT	110 WORDS	93%	MATCHING TEXT	110 WORDS

legitimacy of transactions. All these intermediaries add to transaction costs. Other Limiting Factors: ● Many legal issues are unresolved and government resolutions and standards are not refined enough for many circumstances. ● E-commerce as a discipline is still evolving and changing rapidly. Many people are looking for a stable area before they enter into it. ● E-commerce could result in a breakdown of human relationships. ● Accessibility to the Internet is still expensive and/or inconvenient for many potential customers. ● There are not enough support services. For example, copyright clearance centers for EC transactions do not exist, and high-quality evaluations or qualified EC tax experts are rare. ●

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SA E-commerce.pdf (D165838284)

50/206	SUBMITTED TEXT	33 WORDS	98%	MATCHING TEXT	33 WORDS

Return-on-investment is difficult to calculate. ● Many firms have had trouble recruiting and retaining employees with the technological, design, and business process skills needed to create an effective electronic commerce presence. ●

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above heads, for electronic commerce assumes a set of basic infrastructure services and standards consistent with a broad architectural framework. This framework must permit the flexibility, interoperability, and openness needed for the successful evolution of electronic commerce. This framework and its services and products will offer the consumer a diverse set of interoperable choices, rather than a collection of independent solutions that may not work in concert. Many of today's ambitious electronic commerce initiatives vary in their approach to security and privacy, their ability to handle micropayments, and their applicability to various types of transactions. They also differ in their business models – for example, in their pricing strategy and in their assumptions as to who bears the risk in case of insufficient funds or disputes. Such diversity promotes innovation and allows for provider and consumer choices. Still, to achieve wide acceptance and scale to truly mass markets, a broad framework is needed, which encompasses the following requirements and idiosyncrasies of conducting new forms of business in the emerging electronic environment. Some electronic commerce frameworks are discussed ahead. 2.5.1 Zwass's Hierarchical Framework Zwass (1998) presented a very comprehensive hierarchical framework of E-Commerce, consisting of three meta-levels: ➢ Infrastructure ➢ Services ➢ Products and structures Level Functions Examples Products And Structures 7 Electronic marketplaces and electronic hierarchies Electronic auctions, brokerages, dealerships, and direct-search markets inter-organizational supply- chain management 6 Products and systems Remote consumer services (shopping, banking, stock brokerage) Infotainment-on-demand (fee-based content sites, educational offerings) Supplier- consumer linkages Online marketing Electronic benefit systems Intranet-based collaboration systems 5 Enabling services Electronic catalogs/directories, smart agents e- money, digital authentication services Digital libraries, copyright- protection services Traffic auditing Smart-card systems 4 Secure messaging EDI, e-mail, EFT Infrastructure 3 Hypermedia/multimedia object management World Wide Web with Java 2 Public and private communication utilities Internet and Value-added Networks (VANs) 1 Wide-area telecommunications infrastructure Guided- and wireless-media networks Infrastructure The infrastructure is continuously being upgraded to support a larger volume of information exchange and commerce. Services The services level of the hierarchy is far from static, especially in the enabling services sub-category. Various enabling services have continued to be the subject of much research and development. The maturation of these enabling services will provide a strong base on which to build a rich variety of e- commerce products. Products and Structures The

above for electronic commerce assumes a set of basic infrastructure services and standards consistent with a broad architectural framework. This framework must permit the flexibility, interoperability, and openness needed for the successful evolution of electronic commerce. This framework and its services and products, will offer the consumer a diverse set of interoperable choices, rather than a collection of independent solutions that may not work in concert. Many of today's ambitious electronic commerce initiatives vary in their approach to security and privacy, their ability to handle micro payments, and their applicability to various types of transactions. They also differ in their business models – for example, in their pricing strategy and in their assumptions as to who bears the risk in case of insufficient funds or disputes. Such diversity promotes innovation and allows for provider and consumer choices. Still, to achieve wide acceptance and scale to truly mass markets, a broad framework is needed, which encompasses the following requirements and idiosyncrasies of conducting new forms of business in the emerging electronic environment. Some electronic commerce frameworks are discussed below: 1.4.1 Zwass's Hierarchical Framework Zwass (1998) presented a very comprehensive hierarchical framework of E-Commerce, consisting of three meta- levels: z Infrastructure z Services z Products and structures Table 1.1: Hierarchical Framework of Electronic Commerce Level Function Examples Products and Structures 7 Electronic marketplaces and electronic hierarchies Electronic auctions, brokerages, dealerships, and direct-search markets interorganisational supply-chain management 6 Products and systems Remote consumer services (shopping, banking, stock brokerage) Infotainment-on- demand (fee-based content sites, educational offerings) Supplier-consumer linkages On-line marketing Electronic benefit systems Intranet-based collaboration systems Contd... 8 e-Commerce Services 5 Enabling services Electronic catalogs/directories, smart agents e-money, digital authentication services Digital libraries, copyright- protection services Traffic auditing Smart-card systems 4 Secure messaging EDI, e-mail, EFT Infrastructure 3 Hypermedia/multimedia object management World Wide Web with Java 2 Public and private communication utilities Internet and Value-added Networks (VANs) 1 Wide-area telecommunications infrastructure Guided- and wireless-media networks Infrastructure The infrastructure is continuously being upgraded to support a larger volume of information exchange and commerce. Services The services level of the hierarchy is far from static, especially in the enabling services sub-category. Various enabling services have been continued to be the subject of much research and development. The maturation of these enabling services

enabling services are similar to the API level of the OS stack. These services enable e-commerce products to perform increasingly complex but useful functions. The majority of products in this category are customized designs, but a few off-the-shelf packages exist. A typical e-commerce solution would include leased access to the infrastructure and enabling services, and

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52/206 **SUBMITTED TEXT** 223 WORDS **99% MATCHING TEXT** 223 WORDS

for the customer. 2.5.2 Kalakota and Whinston's "Pillars" Framework Kalakota and Whinston have also developed a generic approach to providing a framework for Electronic Commerce (Kalakota & Whinston, 1996). Using a very different scheme from that taken by Zwass, they use the metaphor of "pillars" (public policy and technical standards), to support four infrastructures (network, multimedia content, messaging, and common business services) on top of which they place E-commerce applications. The framework for electronic commerce in Figure 2.1 is presented as an architectural edifice analogy, the applications shown at roof level cannot be attained if the structure below is missing or incomplete. The underlying requirement is a management perspective that is committed to electronic commerce—without this, individuals and groups will operate piecemeal, acting as early adopters in the innovation cycle but lacking in institutional support (whether that be in financial or human resources, for example). Even when there is a management commitment for electronic commerce in place, the foundations required are the technical and technological infrastructure. Figure 2.1: A Framework for Electronic Commerce by Kalakota and Whinston 2.5.3 Riggins and Rhee's Domain Matrix Riggins and Rhee (1998) contributed the Electronic Commerce Domain Matrix (ECDM) to represent four dimensions of e-commerce. The matrix was developed by crossing the location of the application user (external or internal to

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53/206	SUBMITTED TEXT	64 WORDS	100%	MATCHING TEXT	64 WORDS

with the type of relationship technology-enhanced or technology- facilitated). The model is useful as a tool for classification but is mainly representative of trading relationships. In the context of our research, the matrix suggests possible benefits in adopting e-commerce solutions. It provides us with a backdrop to examine an entity to determine if one of the merits will contribute positively to the entity's goals.

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SA E-commerce.pdf (D165838284)

54/206	SUBMITTED TEXT	237 WORDS	93%	MATCHING TEXT	237 WORDS

difficulty of integrating existing databases and transaction- processing software designed for traditional commerce into the software that enables electronic commerce. ● Many businesses face cultural and legal obstacles to conducting electronic commerce. ● Lack of sufficient system security, reliability, standards, and communication protocols. ● Rapidly evolving and changing technology, so there is always a feeling of trying to 'catch up' and not be left behind. ● Under pressure to innovate and develop business models to exploit the new opportunities which sometimes leads to strategies detrimental to the organization. The ease with which business models can be copied and emulated over the Internet increases that pressure and curtails a longer-term competitive advantage. ● Facing increased competition from both national and international competitors often leads to price wars and subsequent unsustainable losses for the organization. ● Problems with compatibility of older and 'newer' technology. There are problems where older business systems cannot communicate with web- based and Internet infrastructures, leading to some organizations running almost two independent systems where data cannot be shared. This often leads to having to invest in new systems or an infrastructure, which bridges the different systems. In both cases, this is both financially costly as well as disruptive to the efficient running of organizations. ● Computing equipment is needed for individuals to participate in the new 'digital economy, which means an initial capital cost to customers. ● A

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55/206	SUBMITTED TEXT	43 WORDS	91%	MATCHING TEXT	43 WORDS

Improve Coordination with Existing Trade Partners Cell 3 Market Creation to Reach New Customers Cell 4 Improve Coordination with Internal Business Units Cell 1 Information Exchange to Work with New Team Members Cell 2 Figure 2.2: Electronic Commerce Domain Matrix 2.6

Improve Coordination with Existing Trade Partners Cell 3 Market Creation to Reach New Customers Cell 4 External Location of Application Users Internal Improve Coordination with Internal Business Units Cell 1 Information Exchange to Work with New Team Members Cell 2 Figure 1.2: Electronic Commerce Domain Matrix

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56/206	SUBMITTED TEXT	29 WORDS	93%	MATCHING TEXT	29 WORDS

Today, online shopping is a reality in India. The marketplace is flooded with several e-commerce options for shoppers to choose from. In the recent past, the growth of

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57/206	SUBMITTED TEXT	43 WORDS	95%	MATCHING TEXT	43 WORDS

e-commerce industry in India has been phenomenal as more shoppers have started discovering the benefits of using this platform. There is enough scope for online businesses in the future if they understand the Indian shoppers' psyche and cater to their needs. ●

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58/206	SUBMITTED TEXT	51 WORDS	100%	MATCHING TEXT	51 WORDS

Electronic commerce can increase sales and decrease costs. Advertising done well on the web can get even a small firm's promotional message out to potential consumers in every country in the world. A firm can use electronic commerce to reach narrow market segments that are geographically scattered. ●

SA Ecommerce.pdf (D164350998)

59/206	SUBMITTED TEXT	26 WORDS	87%	MATCHING TEXT	26 WORDS

s Domain framework. - Zwass (1998) presented a very comprehensive hierarchical framework of E-Commerce, consisting of three meta-levels: Infrastructure, Services, Products, and structures. -

s Hierarchical Framework Zwass (1998) presented a very comprehensive hierarchical framework of E-Commerce, consisting of three meta- levels: z Infrastructure z Services z Products and structures

SA E-commerce.pdf (D165838284)

60/206	SUBMITTED TEXT	18 WORDS	100%	MATCHING TEXT	18 WORDS

Kalakota and Whinston have also developed a generic approach to providing a framework for Electronic Commerce -

Kalakota and Whinston have also developed a generic approach to providing a framework for Electronic Commerce (

SA E-commerce.pdf (D165838284)

61/206	SUBMITTED TEXT	21 WORDS	100%	MATCHING TEXT	21 WORDS

Riggins and Rhee (1998) contributed the Electronic Commerce Domain Matrix (ECDM) to represent four dimensions of e-commerce. 2.7

Riggins and Rhee (1998) contributed the Electronic Commerce Domain Matrix (ECDM) to represent four dimensions of e-commerce.

SA E-commerce.pdf (D165838284)

62/206	SUBMITTED TEXT	21 WORDS	100%	MATCHING TEXT	21 WORDS

Most of the disadvantages of e-commerce stem from the newness and rapidly developing pace of the underlying technologies. • Some

SA Ecommerce.pdf (D164350998)

63/206	SUBMITTED TEXT	29 WORDS	86%	MATCHING TEXT	29 WORDS

E-tailing: E-tailing encompasses buying consumer items like apparel, electronic devices, home and kitchen appliances, jewelry, online. Amazon.com, Flipkart, napdeal.com,jabong.com, and myntra.com are some of the major players. •

SA Ecommerce.pdf (D164350998)

64/206	SUBMITTED TEXT	12 WORDS	100%	MATCHING TEXT	12 WORDS

E-commerce needs to focus on customer experience to build _____. 3)

SA Ecommerce.pdf (D164350998)

65/206	SUBMITTED TEXT	55 WORDS	70%	MATCHING TEXT	55 WORDS

total persons aged 16 and above in the United states and Canada have access to the internet. • 11 percent (24 million) of total persons aged 16 and above in the United States and Canada have used the internet in the past three months. • Approximately 8 percent (18 million)

total persons aged 16 and above in the U.S. and Canada have access to the Internet. The study found that 24 million total persons aged 16 and above in the U.S. and Canada have used the Internet in the past three months and approximately 18 million

W https://core.ac.uk/download/pdf/36724982.pdf

66/206	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

the internet for distribution of critical company information such as press releases.

the Internet for distribution of critical company information such as press releases (

W https://core.ac.uk/download/pdf/36724982.pdf

67/206	SUBMITTED TEXT	24 WORDS	77%	MATCHING TEXT	24 WORDS

total persons aged 16 and above in the United states and Canada have used the www in the past three months. •

total persons aged 16 and above in the U.S. and Canada have used the Internet in the past three months

W https://core.ac.uk/download/pdf/36724982.pdf

68/206	SUBMITTED TEXT	28 WORDS	46%	MATCHING TEXT	28 WORDS

The E-commerce marketplace or the online e-commerce market is a place or a website where one finds different brands of products offered by multiple vendors, shops or

SA SLM of BBA Sem- VI eBusiness final 22 dec20.docx (D90524124)

69/206	SUBMITTED TEXT	15 WORDS	71%	MATCHING TEXT	15 WORDS

customers and transaction procedures, while the third party vendors deal with the manufacturing and

SA SLM of BBA Sem- VI eBusiness final 22 dec20.docx (D90524124)

70/206	SUBMITTED TEXT	16 WORDS	100%	MATCHING TEXT	16 WORDS

The entire marketplace runs on one software infrastructure, allowing all the vendors to sell their

SA SLM of BBA Sem- VI eBusiness final 22 dec20.docx (D90524124)

71/206	SUBMITTED TEXT	25 WORDS	92%	MATCHING TEXT	25 WORDS

one website. In terms of revenue, these companies take a percentage of the sales on any product sold across the platforms. 3.3.1

SA SLM of BBA Sem- VI eBusiness final 22 dec20.docx (D90524124)

72/206	SUBMITTED TEXT	28 WORDS	46%	MATCHING TEXT	28 WORDS

The E-commerce marketplace or the online e-commerce market is a place or a website where one finds different brands of products offered by multiple vendors, shops or

SA SLM of BBA Sem- VI eBusiness final 22 dec20.docx (D90524124)

73/206	SUBMITTED TEXT	15 WORDS	71%	MATCHING TEXT	15 WORDS

customers and transaction procedures, while the third party vendors deal with the manufacturing and

SA SLM of BBA Sem- VI eBusiness final 22 dec20.docx (D90524124)

74/206	SUBMITTED TEXT	16 WORDS	100%	MATCHING TEXT	16 WORDS

The entire marketplace runs on one software infrastructure, allowing all the vendors to sell their

SA SLM of BBA Sem- VI eBusiness final 22 dec20.docx (D90524124)

75/206	SUBMITTED TEXT	35 WORDS	100%	MATCHING TEXT	35 WORDS

Definition of EDI 4.2.2 EDI Architecture 4.2.3 EDI Transaction Steps 4.2.4 Benefits of EDI 4.2.5 Standardisation and EDI 4.2.6 Action Plan for Implementing EDI 4.2.7 Electronic Data Interchange (EDI) Applications 4.2.8 EDI Applications in

Definition of EDI 3.4 EDI Architecture 3.5 EDI Transaction Steps 3.6 Benefits of EDI 3.7 Standardisation and EDI 3.8 Action Plan for Implementing EDI 3.9 Electronic Data Interchange (EDI) Applications 3.10 EDI Application in

SA E-commerce.pdf (D165838284)

76/206	SUBMITTED TEXT	25 WORDS	70%	MATCHING TEXT	25 WORDS

Internet 4.3.1.1 Advantages/Limitations of Internet 4.3.2 World Wide Web 4.3.2.1 Ownership, Stability and Reliability of the Web 4.3.2.2 Basic Features of the WEB 4.3.3

Internet/Web 2.4 Advantages of Internet 2.5 Limitations/Disadvantages of Internet 2.6 The World Wide Web 2.7 Internet Service Providers (ISPs) 2.8 Ownership, Stability and Reliability of the Web 2.9 Basics Features of the Web 2.10

SA E-commerce.pdf (D165838284)

77/206	SUBMITTED TEXT	22 WORDS	92%	MATCHING TEXT	22 WORDS

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SA SLM of BBA Sem- VI eBusiness final 22 dec20.docx (D90524124)

78/206	SUBMITTED TEXT	57 WORDS	97%	MATCHING TEXT	57 WORDS

There have been several key steps in the history of e-commerce. The first step came from the development of the Electronic Data Interchange (EDI). EDI is a set of standards developed in the 1960's to exchange business information and do electronic transactions. At first there were several different EDI formats that businesses could use.

There have been several key steps in the history of e-commerce. The first step came from the development of the Electronic Data Interchange (EDI). EDI is a set of standards developed in the 1960's to exchange business information and do electronic transactions. At first there were several different EDI formats that business could use,

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79/206	SUBMITTED TEXT	41 WORDS	83%	MATCHING TEXT	41 WORDS

Electronic Data Interchange is defined as the inter-process communication (computer application to computer application) of business information in a standardized electronic form. The EDI trading partners establish computer – computer links that enable them to exchange information electronically. Electronic

Electronic Data Interchange (EDI) is defined as the communication (computer application to computer application) of business information in a standardized electronic form. The EDI, trading partners establishes computer-computer links that enables them to exchange information electronically. Electronic

SA E-commerce.pdf (D165838284)

80/206	SUBMITTED TEXT	20 WORDS	92%	MATCHING TEXT	20 WORDS

Commerce is a term popularized by the advent of commercial services on the Internet. Internet e-commerce is however, only

Commerce is a term popularized by the advent of commercial services of the Internet. Internet e-commerce is however, only

SA E-commerce.pdf (D165838284)

81/206	SUBMITTED TEXT	49 WORDS	96%	MATCHING TEXT	49 WORDS

Internet is perhaps typified by once-off sale to consumers. Other types of transactions use other technologies. Electronic Markets (EMs) are in use in a number of trade segments with an emphasis on search facilities and Electronic Data Interchange (EDI) is used for regular and standardized transactions between organizations.

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SA E-commerce.pdf (D165838284)

82/206	SUBMITTED TEXT	87 WORDS	98%	MATCHING TEXT	87 WORDS

When a network connects two or more computers, it's called internet (with a lower-case i). The Internet with a capital I refers to millions of computers connected to a gigantic network and communicating via TCP/IP protocols. A protocol is a pre-defined way for a computer to communicate with another computer, for instance when requesting a service, s.a. an FTP service, or when forwarding some information to another machine. Each computer at any given time has a unique address on the Internet. This is its IP address.

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SA E-commerce.pdf (D165838284)

83/206	SUBMITTED TEXT	78 WORDS	100%	MATCHING TEXT	78 WORDS

The World Wide Web, also known as the WWW or the Web, is an organization of files designed around a group of servers on the Internet programmed to handle requests from browser software that resides on users' PCs. The name is based on the fact that the sound, text, animation, pictures, or information that make up a document may come from anywhere in the world. A single document can be perceived to stretch-weblike throughout the world.

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SA E-commerce.pdf (D165838284)

84/206	SUBMITTED TEXT	244 WORDS	98%	MATCHING TEXT	244 WORDS

early 60s as a means of accelerating the movement of documents related to shipments and transportation. However, from the beginning of 80s it is now widely used in various other sectors like automotives, retails, and international trade. Its relevance and usage is growing at a very fast pace. EDI is based on a set of standardized messages for the transfer of structured data between computer applications. It may have many applications e.g., sending the test results from the pathology laboratory to the hospital or dispatching exam results from exam boards/university to school/college, but it is primarily used for the trade exchanges: order, invoice, payments and many other transactions that can be used in national and international trade exchanges. Notable users of EDI are vehicle assemblers, ordering components for their production lines, and supermarkets (and other multiple retailers), ordering the goods needed to restock their shelves. EDI allows the stock control/material management system of the customer to interface with the stock control/production systems of the suppliers without the use of paper documents or the need of human intervention. The EDI is used for regular repeat transactions. EDI is a formal system and it does not really have a place in the search and negotiation phases. EDI, when initially introduced, was seen by many as a universal, or at least a generalized form of trading. In the event its adoption has been limited to a number of trade sectors where the efficiency of

early 60s as a means of accelerating the movement of documents related to shipments and transportation. However, from the beginning of 80s it is now widely used in various other sectors like automotives, retails, and international trade. Its relevance and usage is growing at a very fast pace. EDI is based on a set of standardized messages for the transfer of structured data between computer applications. It may have many applications e.g., sending the test results from the pathology laboratory to the hospital or dispatching exam results from exam boards/university to school/college, but it is primarily used for the trade exchanges: order, invoice, payments and many other transactions that can be used in national and international trade exchange. Notable users of EDI are vehicle assemblers, ordering components for their production lines, and supermarkets (and other multiple retailers), ordering the goods needed to restock their shelves. EDI allow the stock control/material management system of the customer to interface with the stock control/production systems of the suppliers without the use of paper documents or the need of human intervention. The EDI is used for regular repeat transactions. EDI is a formal system and it does not really have a place in the search and negotiation phases. EDI, when initially introduced was seen by many as a universal, or at least a generalized form of trading. In the event its adoption has been limited to a number of trade sectors where the efficiency of

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85/206	SUBMITTED TEXT	173 WORDS	98%	MATCHING TEXT	173 WORDS

of schemes for just-in-time manufacture of quick response supply. Mature use of EDI allows for a change in the nature of the product or service being offered, mass customization is such an example. 4.2.1 Definition of EDI "Electronic Data Interchange is the transmission, in a standard syntax, of unambiguous information of business or strategic significance between computers of independent organizations." (The Accredited Standards Committee for EDI of the American National Standards Institute) "Electronic Data Interchange is the interchange of standard formatted data between computer application systems of trading partners with minimal manual intervention." (UN/EDIFACT Training Guide) "Electronic Data Interchange is the electronic transfer, from computer to computer, of commercial and administrative data using an agreed standard to structure an EDI message." Figure 4.1: The EDI Process 4.2.2 EDI Architecture The EDI architecture has four layers and these are: ● Semantic (Application) Layer ● Standard Translation Layer ● Packing (Transport) Layer ● Physical Network Infrastructure Layer The EDI Architecture is shown in the following table: Table 4.1: EDI

of schemes for just-in-time manufacture of quick response supply. Mature use of EDI allows for a change in the nature of the product or service being offered mass customization is such an example. 3.3 DEFINITION OF EDI Electronic Data Interchange is the transmission, in a standard syntax, of unambiguous information of business or strategic significance between computers of independent organizations. (The Accredited Standards Committee for EDI of the American National Standards Institute) Electronic Data Interchange is the interchange of standard formatted data between computer application systems of trading partners with minimal manual intervention. (UN/EDIFACT Training Guide) Electronic Data Interchange is the electronic transfer, from computer to computer, of commercial and administrative data using an agreed standard to structure an EDI message. 40 40 e-Commerce Figure 3.1: The EDI Process 3.4 EDI The EDI architecture has four layers and these are: Semantic (Application) Layer z Standard Translation Layer z Packing (Transport) Layer z Physical Network Infrastructure Layer The Architecture is shown in the following table: Table 3.1 EDI

SA E-commerce.pdf (D165838284)

86/206	SUBMITTED TEXT	14 WORDS	67%	MATCHING TEXT	14 WORDS

Business-to- Consumer (B2C) Mode, Business-to-Business (B2B) Mode, Consumer-to- Consumer (C2C) Mode, and M-commerce. In this

SA sset protocol.pdf (D21220264)

87/206	SUBMITTED TEXT	22 WORDS	100%	MATCHING TEXT	22 WORDS

EDI Transaction Steps The EDI transaction for a purchase, shipment and payment normally follows the following steps: Step 1 Buyer's computer

EDI TRANSACTION STEPS The EDI transaction for a purchase, shipment and payment normally follows the following steps: Step 1 Buyer's computer

SA E-commerce.pdf (D165838284)

88/206	SUBMITTED TEXT	262 WORDS	93%	MATCHING TEXT	262 WORDS

seller's computer. 4.2.4 Benefits of EDI The various benefits are: ● Reduction on use of paper usage ● Greater emphasis on problem resolution and customer service ● Increase in customer/supplier base ● Improvement in international trade ● Bank checks ● Interbank electronic fund transfer ● Automated Clearing House (ACH) transfers: - Bankwire - FedWire - CHIPS (Clearing House Interbank Payment System) - SWIFT (Society for Worldwide Interbank Financial Telecommunication) ● Usage in health care save lot of cost ● Improvement in production by using just-in-time approach ● Better business information and knowledge access ● Better design of product and effective procurement ● Improved legal services in terms of good postal service. ● The indirect benefit include the following: ● Quick matching up of reduction in delay leading to better cash flow ● The ability to order regularly and quickly reduces the stock holding. The reduced stock holding cuts the cost of warehousing ● An established EDI system should be of considerable advantage to both customer and supplier. Shifting to a new supplier require that the electronic trading system and trading relationship be redeveloped ● There is a steady increase in the number of customers, particularly large, customers that will only trade with suppliers that do business via EDI. Supermarkets and vehicle assemblers are prime examples. Thus, being ready and able to trade electronically can be a major advantage when competing for new business opportunities. 4.2.5 Standardisation and EDI All the software, hardware and networks must work together so that the information flows from one source to another in

seller's computer. 3.6 BENEFITS OF EDI The various benefits are: z Reduction on use of paper usage z Greater emphasis on problem resolution and customer service z Increase in customer/supplier base z Improvement in international trade z Bank checks z Interbank electronic fund transfer z Automated Clearing House (ACH) transfers: ™ Bankwire ™ FedWire ™ CHIPS (Clearing House Interbank Payment System) ™ SWIFT (Society for Worldwide Intebank Financial Telecommunication) z Usage in health care save lot of cost z Improvement in production by using just-in-time approach z Better business information and knowledge access z Better design of product and effective procurement z Improved legal services in terms of good postal service. The indirect benefit include the following: z Quick matching up of reduction in delay leading to better cash flow z The ability to order regularly and quickly reduces the stock holding. The reduced stock holding cuts the cost of warehousing z An established EDI system should be of considerable advantage to both customer and supplier. Shifting to a new supplier require that the electronic trading system and trading relationship be redeveloped z There is a steady increase in the number of customers, particularly large, customers that will only trade with suppliers that do business via EDI. Supermarkets and vehicle assemblers are prime examples. Thus, being ready and bale to trade electronically can be a major advantage when competing for new business opportunities. STANDARDISATION AND EDI All the software, hardware and networks must work together so that the information flows from one source to another in

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89/206	SUBMITTED TEXT	19 WORDS	100%	MATCHING TEXT	19 WORDS

seller's computer. Step 2: Seller's computer sends purchase order confirmation to buyer's computer. Step 3 Seller's computer sends

seller's computer. Step2 : Seller's computer sends Purchase Order Confirmation to buyer's computer. Step3 : Seller's computer sends

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desired manner. Thus, at the heart of any EDI application is the EDI standards. The essence of EDI is the coding and structuring of the data into a common and generally accepted format-anything less is nothing more than a system of file-transfers. Coding and structuring the documents for business transactions is no easy matter. There have been a number of EDI standards developed in various industry sectors or within a specific country and there are more complex committee structures and procedures to support. It was developed by the United Nations. Is a family of standards similar to ANSI X-12 (The Accredited Standard Committee in 1979). EDIFACT was based on TRADESCOMS, developed by the UK today EDIFACT and ANSI are working towards compatibility. 4.2.6 Action Plan for Implementing EDI A stepwise plan for implementing EDI: ● Appoint an EDI project leader ● Form the project team for EDI implementation ● Study the existing flow of information within the organization and out of and into the organization ● Analyze the internal and external information flows ● Identify the information that is generated manually and that which is generated automatically ● Identify the significant business organizations with whom the organization has dealings ● Identify the sources of EDI information ● Identify vendors dealing with EDI software ● Identify network service providers ● Discuss with EDI users ● Assess the costs and benefits of EDI implementation ● Plan pilot implementation based on all above ● Decide on strategy for a pilot with selected business partners in a trail basis ● Assess requirements for software, communications and standards ● Develop the pilot implementation ● Implement the pilot EDI system ● Evaluate the efficiency of the pilot EDI system ● Based on feedback received, identity improvements possible ● Extend the EDI implementation to new business partners and additional business functions. 4.2.7 Electronic Data Interchange (EDI) Applications Any EDI application – whether using EDI outsourcing or EDI software/ managed services – involves four main components including: I. EDI and Infrastructure Layer: (Software and hardware for converting data into and out of EDI) Like any other application, the EDI software needs hardware to run on. The first piece of the EDI puzzle is the EDI software layer itself – the EDI translator itself. Like any other software application, the EDI software needs hardware to run on. These systems will need sophisticated antivirus, firewall, and possibly intrusion detection software. By definition, EDI is a system that communicates with companies on the other side of the firewall, which leaves it immensely vulnerable to attack. EDI is also an application that must operate on a 24×7 basis since orders are often sent by customers during off-peak hours. Thus, system monitoring software is required to ensure that the servers are performing optimally and

desired manner. Thus, at the heart of any EDI application is the EDI standards. The essence of EDI is the coding and structuring of the data into a common and generally accepted format-anything less is nothing more than a system of file-transfers. Coding and structuring the documents for business transactions is no easy matter. There have been a number of EDI standards developed in various industry sector or with in a specific country and there are more complex committee structures and procedures to support. It was developed by the United Nations. Is a family of standards similar to ANSI X-12 (The Accredited Standard Committee in 1979). EDIFACT was based on TRADESCOMS, developed by the UK today EDIFACT and ANSI are working towards compatibility. 3.8 ACTION PLAN FOR IMPLEMENTING EDI A stepwise plan for implementing EDI: z Appoint an EDI project leader z Form the project team for EDI implementation z Study the existing flow of information within the organization and out of and into the organization z Analyze the internal and external information flows z Identify the information that is generated manually and that which is generated automatically z Identify the significant business organizations with whom the organization has dealings z Identify the sources of EDI information z Identify vendors dealing with EDI software z Identify network service providers z Discuss with EDI users z Assess the costs and benefits of EDI implementation Plan pilot implementation based on all above z Decide on strategy for a pilot with selected business partners in a trail basis z Assess requirements for software, communications and standards z Develop the pilot implementation z Implement the pilot EDI system z Evaluate the efficiency of the pilot EDI system z Based on feedback received, identity improvements possible z Extend the EDI implementation to new business partners and additional business functions. 43 Electronic Data Interchange 43 3.9 ELECTRONIC DATA INTERCHANGE (EDI) APPLICATIONS Any EDI application – whether using EDI outsourcing or EDI software/managed services – involves four main components including: EDI and Infrastructure Layer (Software and hardware for converting data into and out of EDI) Like any other application, the EDI software needs hardware to run on. The first piece of the EDI puzzle is the EDI software layer itself – the EDI translator itself. Like any other software application, the EDI software needs hardware to run on. These systems will need sophisticated antivirus, firewall, and possibly intrusion detection software. By definition, EDI is a system that communicates with companies on the other side of the firewall, which leaves it immensely vulnerable to attack. EDI is also an application that must operate on a 24×7 basis since orders are often sent by customers during off-peak hours. Thus, system monitoring software is required to ensure that the servers are performing optimally and

send alerts the moment anything goes wrong. II. EDI Mapping Layer: (Software for reconciling data between you and your trading partners) The mapping layer is where the electronic trading parameters are set up for every EDI relationship that is implemented. These maps, which sit on top of the translation layer, are slightly different for each trading partner due to particular supply chain or business process requirements of the relationship. Also, since a map is needed for each transaction with every unique trading partner, the number of maps can add up quickly. For example, if Company A has 10 trading partners that it conducts business with using EDI, and each trading partner requires Company A to conduct three transactions, 30 maps are needed. As companies add partners over time, those numbers keep going up; as do the requirements for keeping the maps and the data they're transmitting synchronized. III. EDI Connectivity Layer: (Software and network technology for transporting data between you and your trading partner) The third EDI layer is connectivity. While the first two components have to do with data processing, the third is all about transporting that data between Company A and its trading partners. The upfront costs here have to do with providing the numerous communications methods that trading partners might require. These include a VAN mailbox, which provides access to a specialized proprietary network, often called a value-added network; AS2 software support, which is a secure Internet protocol that large trading partners such as Wal-Mart often use; and even secure FTP sites available via the Internet. Many companies today have to support all three to satisfy their full trading partner community. After setup, high costs are often associated with the ongoing transaction fees for using a VAN, software maintenance fees for FTP and AS2 software, and staffing associated with upkeep. IV. EDI Application Integration Layer: (Software for exchanging data into and out of your accounting system) Application integration allows companies to move data between their own ERP and/or accounting systems and the EDI translator. The last of the EDI pieces is application integration. In short, application integration allows companies to move data between their own ERP or accounting systems and the EDI translator to eliminate manual keying of data – an extremely valuable feature. In some cases, prebuilt software modules, called adapters, can be used to reduce development time for certain ERP and accounting systems. Once implemented, the integration layer has to be maintained to keep it current with accounting system version upgrades and changes to trading partner EDI specifications. 4.2.8 EDI Applications in

send alerts the moment anything goes wrong. EDI Mapping Layer (Software for reconciling data between you and your trading partners) The mapping layer is where the electronic trading parameters are set up for every EDI relationship that is implemented. These maps, which sit on top of the translation layer, are slightly different for each trading partner due to particular supply chain or business process requirements of the relationship. Also, since a map is needed for each transaction with every unique trading partner, the number of maps can add up quickly. For example, if Company A has 10 trading partners that it conducts business with using EDI, and each trading partner requires Company A to conduct three transactions, 30 maps are needed. As companies add partners over time, those numbers keep going up; as do the requirements for keeping the maps and the data they're transmitting synchronized. EDI Connectivity Layer (Software and network technology for transporting data between you and your trading partner) The third EDI layer is connectivity. While the first two components have to do with data processing, the third is all about transporting that data between Company A and its trading partners. The upfront costs here have to do with providing the numerous communications methods that trading partners might require. These include a VAN mailbox, which provides access to a specialized proprietary network, often called a value-added network; AS2 software support, which is a secure Internet protocol that large trading partners such as Wal-Mart often use; and even secure FTP sites available via the Internet. Many companies today have to support all three to satisfy their full trading partner community. After setup, high costs are often associated with the ongoing transaction fees for using a VAN, software maintenance fees for FTP and AS2 software, and staffing associated with upkeep. EDI Application Integration Layer (Software for exchanging data into and out of your accounting system) Application integration allows companies to move data between their own ERP and/or accounting systems and the EDI translator. The last of the EDI pieces is application integration. In short, application integration allows companies to move data between their own ERP or accounting systems and the EDI translator to eliminate manual keying of data – an extremely valuable feature. In some cases, prebuilt software modules, called adapters, can be used to reduce development time for certain ERP and accounting systems. Once implemented, the integration layer has to be maintained to keep it current with accounting system version upgrades and changes to trading partner EDI specifications. 44 44 e-Commerce 3.10 EDI APPLICATION IN

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91/206	SUBMITTED TEXT	740 WORDS	99%	MATCHING TEXT	740 WORDS

As larger suppliers and retailers have advanced their use of certain technologies – specifically Electronic Data Interchange (EDI) – they have been able to conduct business more efficiently. As these companies have mandated the use of similar technologies by their trading partners, many small to mid- market companies have become disadvantaged in their attempts to “trade” with such firms. EDI is a set of protocols for conducting electronic business over computer networks. Traditionally, these networks have been private WANS; but EDI is now done over the Internet. EDI defines the electronic exchange of structured business data, such as purchase orders, invoices, and shipping notices, typically between one organization and another. The relationship is usually between a vendor and customer. For example, EDI provides a way for a customer's computer to place orders for goods with a vendor's computers, based on reorder levels. The EDI system coordinates the transaction, initiates deliveries, and generates invoices. It is important to differentiate between EDI and electronic commerce. Electronic commerce encompasses all aspects of electronic business exchanges, including person-to-person interaction (collaboration), money transfers, data sharing and exchange, Web site merchant systems, and so on. EDI is a subset of electronic commerce that encompasses the exchange of business information in a standardized electronic form. Standard form defines things like the layout of information for an invoice or purchase order. EDI can reduce costs, workforce requirements, and errors associated with retyping orders, invoices, and other documents. With EDI, computer data already entered by one organization is made available to a business partner. EDI is typically handled using store-and-forward technologies similar to e-mail. A third party such as GEIS (General Electric Information Service) often serves as a "middleman" to help organizations establish business relationships and handle business transactions. EDI can be thought of in terms of messages exchanged between businesses that are engaged in electronic commerce. Within a message is a basic unit of information called the data element. A message may consist of many data elements. For example, each line item on an invoice is a data element. All the data elements form a compound document, which is essentially a business form. An EDI message also includes a field definition table that provides information about the data elements in the message, such as whether an element is mandatory or optional, how many characters it has, and whether it is numeric or alphabetic. String identifiers define things like data element names and a data dictionary reference number. The data element dictionary defines the content and meaning of data elements. EDI was first developed by the automobile/transportation industry in the 1970s. Today, it

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is widely used in a variety of industries, including distribution, finance and accounting, health care, manufacturing, purchasing, retail, tax form filing, and shipping. Early EDI packages used rather simple standard forms that forced companies to convert data to fit the forms. Newer EDI systems allow companies to create custom systems using simple programming or authoring tools. Even more recently, EDI has been adapted for the Internet and to work with XML, as discussed later. There are two approaches to implementing EDI. Many large organizations acquire or build their own proprietary systems, often in association with their business partners. If a business partner is small, it may have little choice but to adopt the proprietary system of its much larger business associate. The other approach is to work with a VAN (value added network) provider, which provides EDI transaction services, security, document interchange assistance, standard message formats, communication protocols, and communication parameters for EDI. Most VANs also provide a network on which to transmit information. In many ways, the Internet is a better medium for implementing EDI than using value added network providers or installing private leased lines. The Internet is already in place as a business-to-business communication system. The startup costs are cheaper and, in most cases, the organization is already connected to the Internet. This makes it easier for more businesses to join the electronic commerce web, especially those who previously could not afford the expense of EDI. The use of VPNs is growing for EDI and e-commerce-related traffic. A VPN can secure and give preferential treatment to EDI traffic. The term extranet is usually used to refer to a secure Internet connection between trading partners. The protocol for VPNs are L2TP (Layer 2 Tunneling Protocol), PPTP (Point-to-Point Tunneling Protocol), and the IETF's IPSec (IP Security). See "VPN (Virtual Private Network)." 4.2.9

automobile/transportation industry in the 1970s. Today, it is widely used in a variety of industries, including distribution, finance and accounting, health care, manufacturing, purchasing, retail, tax form filing, and shipping. Early EDI packages used rather simple standard forms that forced companies to convert data to fit the forms. Newer EDI systems allow companies to create custom systems using simple programming or authoring tools. Even more recently, EDI has been adapted for the Internet and to work with XML, as discussed later. There are two approaches to implementing EDI. Many large organizations acquire or build their own proprietary systems, often in association with their business partners. If a business partner is small, it may have little choice but to adopt the proprietary system of its much larger business associate. The other approach is to work with a VAN (value added network) provider, which provides EDI transaction services, security, document interchange assistance, standard message formats, communication protocols, and communication parameters for EDI. Most VANs also provide a network on which to transmit information. In many ways, the Internet is a better medium for implementing EDI than using value added network providers or installing private leased lines. The Internet is already in place as a business-to-business communication system. The startup costs are cheaper and, in most cases, the organization is already connected to the Internet. This makes it easier for more businesses to join the electronic commerce web, especially those who previously could not afford the expense of EDI. The use of VPNs is growing for EDI and e-commerce-related traffic. A VPN can secure and give preferential treatment to EDI traffic. The term extranet is usually used to refer to a secure Internet connection between trading partners. The protocol for VPNs are L2TP (Layer 2 Tunneling Protocol), PPTP (Point-to-Point Tunneling Protocol), and the IETF's IPSec (IP Security). See "VPN (Virtual Private Network)."

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92/206	SUBMITTED TEXT	88 WORDS	98%	MATCHING TEXT	88 WORDS

Internet When a network connects two or more computers, it's called internet (with a lower-case i). The Internet with a capital I refers to millions of computers connected to a gigantic network and communicating via TCP/IP protocols. A protocol is a pre-defined way for a computer to communicate with another computer, for instance when requesting a service, s.a. an FTP service, or when forwarding some information to another machine. Each computer at any given time has a unique address on the Internet. This is its IP address.

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93/206	SUBMITTED TEXT	47 WORDS	100%	MATCHING TEXT	47 WORDS

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94/206	SUBMITTED TEXT	37 WORDS	97%	MATCHING TEXT	37 WORDS

transport company's computer. Step 4 Transport company's computer sends booking confirmation to seller's computer Step 5: Seller's computer sends advance ship notice to buyer's computer. Step 6 Transport computer sends status to seller's computer. Step 7

transport company’s computer. Step4 : Transport company’s computer sends Booking Confirmation to seller’s Computer. Step5 : Seller’s computer sends Advance Ship Notice to buyer’s computer. Step6 : Transport company’s computer sends status to seller’s computer. Step7 :

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95/206	SUBMITTED TEXT	33 WORDS	100%	MATCHING TEXT	33 WORDS

internet further provide a boost in this direction making Electronic Commerce (E-commerce) a reality. The Internet is a vast computer network of many different computer networks existing in the world. It is

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96/206	SUBMITTED TEXT	27 WORDS	100%	MATCHING TEXT	27 WORDS

collection of interconnected networks. Hence it is called ``inter network" or in short "Internet". Through an Internet connection, one can communicate with any other subscriber of

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97/206	SUBMITTED TEXT	132 WORDS	97%	MATCHING TEXT	132 WORDS

internet throughout the world. Many companies including VSNL, Essar, Bharti Telecom, and MTNL provide Internet service in India. They are also known as Internet Service Providers (ISP). Any individual or organisation can open an account with any Internet Service Provider (ISP) who will give an Account Number for monthly or yearly fees. Then the user may have access to the Internet and the e-mail through it. The user needs his own computer, "modem" and a telephone line to send and receive messages. He can also have access to the World-Wide Web (WWW). The user can also send emails through the internet if the email software (called a mailer) is installed on the user's computer. Modern Internet has over 32,000,000 registered domain names (according to domainstats.com/provided by ISOC). The size of

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98/206	SUBMITTED TEXT	15 WORDS	100%	MATCHING TEXT	15 WORDS

cnn.com, more than 50% American households are now connected to the Internet.

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99/206	SUBMITTED TEXT	20 WORDS	100%	MATCHING TEXT	20 WORDS

The world wide web is also known as the 'www' or the 'web'. It is an architectural framework of

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100/206	SUBMITTED TEXT	103 WORDS	98%	MATCHING TEXT	103 WORDS

information system fully implemented in 1994 on the Internet. It contains millions of electronic documents called Web Pages. A web page contains text and graphics (drawings) which are linked to related information. The name 'web' is based on the fact that the text, pictures, animation, sound and information that make up a document may come from anywhere in the world. Thus, a single document can be perceived to stretch 'weblike' throughout the world. The Web is not the internet. At times, people confuse the two terms that are related but not identical in meaning. The internet evolved from the military ARPANet in

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101/206	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

s with the purpose of' creating a network that would

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102/206	SUBMITTED TEXT	61 WORDS	100%	MATCHING TEXT	61 WORDS

continue to work as a whole, when parts of it collapse'. The Internet means a network infrastructure that is built on certain standards, which are followed by all participants to connect to each other. The Internet Protocol (IP) defines how the flow of information is organised. But it does not specify the types of information or services to be exchanged.

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103/206	SUBMITTED TEXT	190 WORDS	95%	MATCHING TEXT	190 WORDS

World Wide Web lays down the specifications of information and services to be exchanged with its Hypertext Transfer Protocol (HTTP). Thus, the web offers the exchange of documents via HTTP. Besides www, there are other protocols that enable people to communicate via email (POP3, SMTP, IMAP), chat online (IRC) or participate in newsgroups (NNTP). The WWW is thus one of the numerous services offered on the internet. It does not specify if a certain web page is available in the internet intranet or extranet. The World Wide Web provides a simple-to-use web interface that allows people with very little knowledge in computing to access web services all over the Internet. The web services include content products and services, which can be viewed or ordered through the web browser. It may be noted that the web browser allows customers to self-service themselves over the web. Note that when you are on the Web, you are on the Internet but not the other way round. For example, those sending e-mail are not on the Web, unless they are sending email via a Web browser. 4.3.1.1 Advantages/Limitations of Internet The

World Wide Web lays down the specifications of information and services to be exchanged with its Hypertext Transfer Protocol (HTTP). Thus, the web offers the exchange of documents via HTTP. Besides the www, there are other protocols that enable people to communicate via e-mail (POP3, SMTP, IMAP), chat online (IRC) or participate in newsgroups (NNTP). The WWW is thus one of the numerous services offered on the internet. It does not specify if a certain web page is available in the internet intranet or extranet. The World Wide Web provides a simple-to-use web interface that allows people with very little knowledge in computing to access web services all over the Internet. The web services include content products and services, which can be viewed or ordered through the web browser. It may be noted that the web browser allows customers to self- service themselves over the web. Note that when you are on the Web, you are on the Internet but not the other way round. For example, those sending e-mail are not on the Web, unless they are sending e-mail via a Web browser. 2.3 ESSENTIAL LANGUAGE OF THE INTERNET/WEB The

SA E-commerce.pdf (D165838284)

104/206	SUBMITTED TEXT	161 WORDS	95%	MATCHING TEXT	161 WORDS

Internet provides numerous advantages to managers. They use it to glean intelligence about rivals, monitor sales, promote their products and services etc. The advantages of internet are: ● Marketing and selling products and services. The "buy and sell" aspect of Internet commerce has attracted more media attention than any other networked activity to date. Thousands of e-corporations have sold over $1 million each in 2000-02. The highest sales volume was in business- to-business commerce, and it is growing. The next highest sales were to government agencies, followed by colleges and universities. In terms of revenue, business-to-consumer ranks fourth in Internet revenue. ● Leveling the playing field. By advertising the products/services on the net, the enterprise is on equal footing with larger companies. ● Excellent customer support resource and service. The most common support resource created is FAQs (Frequently Asked Questions). Most web sites create customer feedback in the form of suggestions and complaints. ● Doing business fast.

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fraction of seconds. Thus, it promotes the growth of a customer base. ● Obtaining users' opinions. It promotes interactive surveys. The user's opinions can be gathered anywhere as it provides real-time statistics to the user. ● Promoting economy and efficiency. The cost of establishing and maintaining the website is far less than offline trading. From a marketing view, the web site provides user information more quickly, in a more timely fashion, and the convenience of the user. ● Promotes a paperless environment. All the information an enterprise wants to communicate to customers could be communicated electronically with the help of the internet. ● Support for managerial/functions. The traditional managerial functions of planning, organizing, directing, and controlling require managers to collect, evaluate, and distribute management information, especially in organizations with branches worldwide. The Internet sends business information through a company's networks and across networks around the globe. E-mail is a convenient tool for managers to reach employees, bosses, customers and suppliers quickly and at no charge. ● Triggering new business. Given the world wide networking of business and commerce, mere presence is bound to trigger one type of business activity or another. This includes business-to-business, business-to-government agencies at all levels business to college and universities as well as business to consumers. For example, a start up company owned by students generated $11 millions in revenues in 1999 from selling used books nationwide. Limitations/Disadvantages Of Internet: ● It is difficult to detect the fake user/identify the forged transactions. ● It is often difficult to provide security support to all users. ● It is difficult to provide adequate privacy to all users as their Id accounts could be accessed by other users. ● It passes various threats like: the threat due to hackers, worms, Trojan Horses, viruses, and zombies are the Threats to the security and functioning of web sites. ● The growth of e-business has put a constant demand on existing network infrastructure. Managers have been under great pressures to upgrade and maintain more complex networks to ensure continuous performance. 4.3.2 World Wide Web In 1990 Tim Berners-Lee, a programmer at Particle Physics Laboratory, wrote a program called a hypertext editor that allowed information highlighted in a document to link to other documents on a computer network with a mouse click. Soon, physicists associated with the lab began to use the hypertext editor and the Internet to send papers to each other. Later on, their electronic mail became more elaborate, as they built links that crossed the Internet to transmit information and documents. This virtual space became known as the World Wide Web. The World Wide Web, also known as the WWW or the Web, is an organization of files designed

fraction of seconds. Thus, it promotes the growth of a customer base. z Obtaining users opinion. It promotes interactive surveys. The users opinions can be gathered anywhere as it provides real-time statistics to the user. z Promoting of economy and efficiency. The cost of establishing and maintaining the website is far less than off line trading. From a marketing view, the web site provides user information more quickly, in a more timely fashion, and the convenience of the user. z Promotes a paper less environment. All the information an enterprise wants to communicate to customers could be communicated electronically with the help of internet. z Support to managerial/functions. The traditional managerial functions of planning, organizing, directing, and controlling require managers to collect, evaluate, and distribute management information, especially in organizations with branches worldwide. The Internet sends business information through a company's networks and across networks around the globe. E-mail is a convenient tool for managers to reach employees, bosses, customers and suppliers quickly and at no charge. z Triggering new business. Given the world wide networking of business and commerce, mere presence is bound to trigger one type of business activity or another. This includes business-to-business, business-to-government agencies at all levels business to college and universities as well as business to consumers. For example, a start up company owner by students generated $11 millions in revenues in 1999 from selling used books nationwide. 2.5 LIMITATIONS/DISADVANTAGES OF INTERNET The limitations of Internet are as follows: z It is difficult to detect the fake user/identify the forged transactions. It is often difficult to provide security support to all users. z It is difficult to provide adequate privacy to all users as their Id accounts could be accessed by other users. 26 26 e-Commerce z It passes various threats like: the threat due to hackers, worms, Trojan Horses, viruses, and zombies are the Threats to the security and functioning of web sites. z The growth of e-business had put a constant demand on existing network infrastructure. Managers have been under great pressures to upgrade and maintain more complex networks to ensure continuous performance. 2.6 THE WORLD WIDE WEB In 1990 Tim Berners-Lee a programmer at Particle Physics Laboratory, wrote a program called a hypertext editor that allowed information highlighted in a document to link to other documents on a computer network with a mouse click. Soon, physicists associated with the lab began to use the hypertext editor and the Internet to send papers to each other. Later on, their electronic mail became more elaborate, as they built links that crossed the Internet to transmit information and documents. This virtual space became known as the World Wide Web. The World Wide

around a group of servers on the Internet programmed to handle requests from browser software that resides on users' PCs. The name is based on the fact that the sound, text, animation, pictures, or information that make up a document may come from anywhere in the world. A single document can be perceived to stretch-weblike throughout the world. A brief summary of the key events of creation of www as shown in Table 4.2 Table 4.2: Major Events in the Creation of the World Wide Web

Web, also known as the WWW or the Web, is an organization of files designed around a group of servers on the Internet programmed to handle requests from browser software that resides on users' PCs. The name is based on the fact that the sound, text, animation, pictures, or information that make up a document may come from anywhere in the world. A single document can be perceived to stretch-weblike throughout the world. A brief summary of the key events of creation of www as shown in Table 2.1 Table 2.1: Major Events in the Creation of the World Wide Web

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106/206 **SUBMITTED TEXT** 217 WORDS **99%** **MATCHING TEXT** 217 WORDS

When a document is accessed in Washington or Singapore or Madrid, all of the components are pulled from different computers worldwide and integrated in the document displayed on the user's screen. The request is received by one computer, which interprets its content to see if it has what is requested. If not, the request hops across other computers until the entire document IS assembled. The physical structure or architecture of the Internet is hierarchical: there are high-speed backbones at the top, with regional and individual networks at the bottom. The bulk of Internet traffic is fed onto the backbone via Network Access Points (NAPs), which are maintained by Sprint and other service providers at strategic locations throughout the United States. This grand network shares a common set of communication protocols called Transmission Control Protocol/Internet Protocol (TCP/IP) suite. The TCP/IP allowed for a communication to be broken into packets that were routed separately to their destination as separate packets, and then reassembled to the communication's original form (Figure 4.2). The newness of the Web, alongwith its rapid, phenomenal growth, has been a challenge for corporations that want to create a presence on the Internet. They have found it difficult and too costly to invest employees' time in doing professional Web design work. The demand has created

When a document is accessed in Washington or Singapore or Madrid, all of the components are pulled from different computers worldwide and integrated in the document displayed on the user's screen. The request is received by one computer, which interprets its content to see if it has what is requested. If not, the request hops across other computers until the entire document IS assembled. The physical structure or architecture of the Internet is hierarchical: there are high-speed backbones at the top, with regional and individual networks at the bottom. The bulk of Internet traffic is fed onto the backbone via Network Access Points (NAPs), which are maintained by Sprint and other service providers at strategic locations throughout the United States. This grand network of networks shares a common set of communication protocols called Transmission Control Protocol/Internet Protocol (TCP/IP) suite. The TCP/IP allowed for a communication to be broken into packets that were routed separately to their destination as separate packets, and then reassembled to the communication's original form (Figure 2.3). The newness of the Web, alongwith its rapid, phenomenal growth, has been a challenge for corporations that want to create a presence on the Internet. They have found it difficult and too costly to invest employees' time in doing professional Web design work. The demand has created

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107/206 **SUBMITTED TEXT** 26 WORDS **91%** **MATCHING TEXT** 26 WORDS

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industry specializing in Web design and Web mastering. Because of the increasing number of Web sites, Webmaster or developer is a lucrative new career. 27

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108/206	SUBMITTED TEXT	139 WORDS	94%	MATCHING TEXT	139 WORDS

Internet Source: Whitehead, Paul and Ruth Maran, 1997. Teach yourself the internet and the World Wide Web visually. Indianapolis:IDG Books Worldwide, Inc. Internet Service Providers (ISPs) The ISPs are a specialized company that connects customers with PCs and browsers to the Internet. The ISPs offer a variety of services like: ● Linking consumers and businesses to the Internet (e.g., America Online, VSNL, Ernet, Microsoft Network, CompuServe) ● Network management and system integration ● Monitoring and maintaining customers' Web sites ● Backbone access services for other ISPs like PSI, BSNL, and UUNET ● Payment systems for online purchases. Initially the cost of Internet access was high, however with the increase in traffic the costs are coming down. Many governments are funding the use of the internet because of its political, education and commercial benefits. The internet provides

Internet 27 Source: Whitehead, Paul and Ruth Maran, 1997. Teach yourself the internet and the World Wide Web visually. Indianpolis: IDG Books Worldwide, Inc. Figure 2.3: How Information Transfers Over the Internet 2.7 INTERNET SERVICE PROVIDERS (ISPs) The ISPs are a specialized company that connects customers with PCs and browsers to the Internet. The ISPs offer a variety of services like: z Linking consumers and businesses to the Internet (e.g., America Online, VSNL, Ernet, Microsoft Network, CompuServe) z Network management and system integration z Monitoring and maintaining customers' Web sites z Backbone access services for other ISPs like PSI, BSNL, and UUNET z Payment systems for online purchases. Initially the cost of Internet access was high, however with the increase in traffic the costs are coming down. Many governments are funding the use of the internet because of its political, education and commercial benefits. The internet provides

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variety of information almost free except those which are membership based. One can contact anyone, anywhere, anytime for a monthly fee. The exceptions are web sites that charge a membership fee or a fee for access to privileged information. Almost everything one needs on the Internet is free. Among the free services are: ● Hotlist that tells the user what is popular and what is not. ● Comics that focus on entertainment events. ● Software archives that list the latest free software available. ● Weather services that provide free weather forecasts anywhere in the world. ● Magazines and broadcasting stations that constantly update the news. ● Searchers that help locate items or subjects on the Internet. ● Dictionaries that include thesauruses and "fact" books on almost all subjects. ● Government services that publicize what is available from them. The problem for ISPs is sudden growth without advance planning to accommodate that growth. Accordingly, response time slows down, triggering customer complaints. The challenge to them is to maintain profitability and meet or beat the competition, while maintaining customer satisfaction. To do all this well requires professional management, a highly skilled technical staff, and a healthy budget to bring the technology in line with the voracious appetite of today's consumer. The trick is to ensure a balance between creativity and control and between managing growth and a stable technical infrastructure. 4.3.2.1 Ownership, Stability and Reliability of the Web There is no one single agency or company who owns the Internet. Each company on the Internet owns its own network. The links between these companies and the Internet are owned by telephone companies and ISPs. The organization that coordinates Internet functions is the Internet Society. It does not operate any of the thousands of networks that make up the Internet, but works with ISPs by providing information to prospective users. This association's Internet Architecture Board consists of work groups that focus on TCP/IP and other protocols. Various committees also handle technical issues and day-to-day operational aspects of the Internet. The Web itself, resides everywhere as well as nowhere at the same time, simply cannot cease functioning by itself. Also because it is based on the Internet, stability is as good as that of the Internet, which is fairly good so far. The Internet is designed to be indefinitely extendable. Reliability depends primarily on the quality of service providers' equipment. Inadequate phone lines, bandwidth, or mediocre computers can affect the reliability of the overall service. 4.3.2.2 Basic Features of the WEB The web is one of the most flexible and exciting tools in existence for surfing the Internet. Using mosaic viewer, the www made it possible for a site to set up a number of pages of information containing text, pictures, sound and even

variety of information almost free except those which are membership based. One can contact anyone, anywhere, anytime for a monthly fee. The exceptions are web sites that charge a membership fee or a fee for access to privileged information. Almost everything one needs on the Internet is free. Among the free services are: z Hotlist that tell the user what is popular and what is not. z Comics that focus on entertainment events. 28 28 e-Commerce z Software archives that list the latest free software available. z Weather services that provide free weather forecasts anywhere in the world. z Magazines and broadcasting stations that constantly update the news. z Searchers that help locate items or subjects on the Internet. z Dictionaries that include thesauruses and "fact" books on almost all subjects. z Government services that publicize what is available from them. The problem for ISPs is sudden growth without advance planning to accommodate that growth. Accordingly, response time slows down, triggering customer complaints. The challenge to them is to maintain profitability and meet or beat the competition, while maintaining customer satisfaction. To do all this well requires professional management, a highly skilled technical staff, and a healthy budget to bring the technology in line with the voracious appetite of today's consumer. The trick is to ensure a balance between creativity and control and between managing growth and a stable technical infrastructure. 2.8 OWNERSHIP, STABILITY AND RELIABILITY OF THE WEB There is no one single agency or company who owns the Internet. Each company on the Internet owns its own network. The links between these companies and the Internet are owned by telephone companies and ISPs. The organization that coordinates Internet functions is the Internet Society .It does not operate any of the thousands of networks that make up the Internet, but works with ISPs by providing information to prospective users. This association's Internet Architecture Board consists of work groups that focus on TCP/IP and other protocols. Various committees also handle technical issues and day-to-day operational aspects of the Internet. The Web itself, resides everywhere as well as nowhere at the same times, simply cannot cease functioning by itself. Also because it is based on the Internet, stability is as good as that of the Internet, which is fairly good so far. The Internet designed to be indefinitely extendable. Reliability depends primarily on the quality of service providers' equipment. Inadequate phone lines, bandwidth, or mediocre computers can affect the reliability of the overall service. 2.9 BASICS FEATURES OF THE WEB The web is one of the most flexible and exciting tools in existence for surfing the Internet. Using mosaic viewer, the www made it possible for a site to set up a number of pages of information containing text, pictures, sound and even

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video with embedded links to other pages. By clicking a link the user is suddenly transported to the page pointed to by that link. The basic features of the web are as follows: z Hypertext information system: The idea behind hypertext is that instead

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110/206	SUBMITTED TEXT	372 WORDS	97%	MATCHING TEXT	372 WORDS

reading text in a riding, linear structure (such as a book) you can skip easily from one point to another. You can get more information, go back, jump to other topics, and navigate through the text based on what interests you at the time. If the information did not take up much disk space, and if it was freely available, and you could get it reasonably quickly anytime you wanted, then things would be more interesting. ● Graphical and easy to navigate: One of the best parts of the web is its ability to display both text and graphics in full colour on the same page. Before the web, using the internet involved simple text-only connections. Web provides capabilities for graphics, sound and video to be incorporated with the text and web browsers include even capabilities for multimedia and embedded applications. The interface to all this is easily navigable-just jump link to link, from page to page, across sites and servers. ● Cross-platform: If you can access the internet, you can access the world wide web regardless of whether you are running on a low-end PC or an expensive graphics workstation. You can be using a simple text-only modem connection, a small 14-inch black and white monitor or a 21- inch graphics accelerated display system. The world wide web is not limited to any kind of machine, or developed by any company the web is entirely cross-platform. ● The web has global reach: The web is successful in providing so much information because that information is distributed globally across thousands of web sites, each of which contributes the space for the information it publishes. You, as a consumer of that information, go to that site to view the information. When you are done, you go somewhere else, and your system relieves the disk space. You do not have to install it, or change disks, or do anything other than point your browser at that site. ● The web is dynamic: Because information on the web is contained on the site that published it, the people who published it in the first place can update it at any time. If you are browsing that information, you do not have to install

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111/206	SUBMITTED TEXT	306 WORDS	98%	MATCHING TEXT	306 WORDS

version of the help system, buy another book, or call technical support to get updated information. Just browse and check out what is up there. ● Accessing many forms of internet information: There are dozens of different ways of getting at information on the Net namely, FTP, Gopher, Usenet news, WAIS databases, Telnet, and e-mail. Before the web became as popular as it is now, to get to these different kinds of information you had to use different tools for each one, all of which had to be installed and all of which used different commands. Although the web itself is its own information system, with its own internet protocol (HTTP, the HyperText Transfer Protocol). Web browsers can also read files from other Internet Services and you can create links to information on those systems just as you would create links to information on web pages. ● The web is interactive: Interactivity is the ability to "talk back" to the web server. Unlike the television, the web is interactive. It means the act of selecting a link and jumping to another web page to go somewhere else on the web. It also enables you to communicate with the publisher of the pages you are surfing. ● Conferencing: In addition to an Internet telephone, we may also have video communication. A digital camera and a video digitizer, which converts a picture into a digital message is required for the purpose. With a combination of Internet video communication and Internet audio phones we can have a conference between people who may be located in different continents. It can be observed that on the Net we can establish all kinds of contact instantaneously except physical contact. The Internet has thus promoted the understanding between the people in the world, by bringing them close together virtually. 4.3.3

version of the help system, buy another book, or call technical support to get updated information. Just browse and check out what is up there. z Accessing of many forms of internet information: There are dozens of different ways of getting at information on the Net namely, FTP, Gopher, Usenet news, WAIS databases, Telnet, and e-mail. Before the web became as popular as it is now, to get to these different kinds of information you had to use different tools for each one, all of which had to be installed and all of which used different commands. Although the web itself is its own information system, with its own internet protocol (HTTP, the Hyper Text Transfer Protocol) .Web browsers can also read files from other Internet Services and you can create links to information on those systems just as you would create links to information on web pages. z The web is interactive: Interactivity is the ability to "talk back" to the web server. Unlike the television, the web is interactive. It means the act of selecting a link and jumping to another web page to go somewhere else on the web. It also enables you to communicate with the publisher of the pages you are surfing. z Conferencing: In addition to an Internet telephone, we may also have a video communication. A digital camera and a video digitizer, which converts a picture into a digital message is required for the purpose. With a combination of Internet video communication and Internet audio phones we can have a conference between people who may be located in different continents. It can be observed that on the Net we can establish all kinds of contact instantaneously except physical contact. The Internet has thus promoted the understanding between the people in the world, by bringing them close together virtually. 2.10

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of the Internet/Web The commonly used terms of internet/web are: ● Provider or Internet Service Provider (ISP): Internet service provider is an enterprise to provide an entrance ramp to the Internet. The ISP purchases expensive high-speed Internet networks from a major Internet source and a number of telephone lines from a local phone company. By placing computers at the site that interface the phone lines with the Internet the ISP can begin to sell online commercial access. The faster Internet network promotes more data or users, which means more revenues coming from users. The ISP recoups its investment by selling WWW services, providing service to many people simultaneously, and selling major Internet hook-ups to large enterprises in their area of operation. The purchase of internet access from an ISP. You first receive an account that allows you to store files and do your Internet work. You are also connected to a NetNews network that brings you thousands of interest groups on virtually any topic imaginable. You also receive an email address that links you with the world at large and, of course, access to the entire Internet. ● Server: A server is the ultimate destination point on the Internet. It is where the information you are seeking is stored. When you send a message to retrieve a piece of information through the Internet, the browser picks up the message, reformats it, and sends it through various layers to the physical layer where cables and wires transmit the message to the appropriate server. Once there, the server retrieves the information and sends it back to the browser to be viewed by the user. There are various kinds of servers, depending on the information sought by the user. Since most of the focus in this book is on the World Wide Web, we will use the word "server" to refer to WWW servers. ● Browser: A browser is a software program loaded on a PC which allows access or read information stored on the Internet. It is the vehicle that enables you to interface with the Internet. The browser takes your instructions and converts them into a language and a format that can be sent to a remote site and executed. ● Hypertext Transfer Protocol: The World Wide Web (WWW) is a global network of millions of Web servers and Web browsers connected by the Hypertext Transfer Protocol or HTTP and its many derivatives. The WWW is like a client/server system: content is held by Web servers and requested by clients or browsers. Clients display the information sent by the Web server on their monitors. Web servers provide pages of multimedia information in seconds. The most important element of a Web site is its links to other pages within the site or across sites. By clicking on the link, a user can navigate from page to page without having to worry about the location of the information or how it travels across the network. ● Uniform Resource Locators or URLs representing the address of a specific website are

OF THE INTERNET/WEB The commonly used terms of internet/web are: z Provider or Internet Service Provider (ISP): Internet service provider is an enterprise to provide an entrance ramp to the Internet. The ISP purchases expensive high-speed Internet network from a major Internet source and a number of telephone lines from a local phone company. By placing computers at the site that interface the phone lines with the Internet the ISP can begin to sell online commercial access. The faster Internet network promotes, more data or users, means more revenues coming from users. The ISP recoups its investment by selling WWW services, providing service to many people simultaneously, and selling major Internet hook-ups to large enterprises in their area of operation. The purchase of internet access from an ISP. You first receive an account that allows you to store files and do your Internet work. You are also connected to a NetNews network that brings you thousands of interest groups on virtually any topic imaginable. You also receive an e-mail address that links you with the world at large and, of course, access to the entire Internet. z Server: A server is the ultimate destination point on the Internet. It is where the information you are seeking is stored. When you send a message to retrieve a piece of information through the Internet, the browser picks up the message, reformats it, and sends it through various layers to the physical layer where cables and wires transmit the message to the appropriate server. Once there, the server retrieves the information and sends it back to the browser to be viewed by the user. There are various kinds of servers, depending on the information sought by the user. Since most of the focus in this book is on the World Wide Web, we will use the word "server" to refer to WWW servers. z Browser: A browser is a software program loaded on a PC which allows to access or read information stored on the Internet. It is the vehicle that enables you to interface with the Internet. The browser takes your instructions and converts them into a language and a format that can be sent to a remote site and executed. z Hypertext Transfer Protocol: The World Wide Web (WWW) is a global network of millions of Web servers and Web browsers connected by the Hypertext Transfer Protocol or HTTP and its many derivatives. The WWW is like a client/server system: content is held by Web servers and requested by clients or browsers. Clients display the information sent by the Web server on their monitors. Web servers provide pages of multimedia information in seconds. The most important element of a Web site is its links to other pages within the site or across sites. By clicking on the link, a user can navigate from page to page without having to worry about the location of the information or how it travels across the network. 23 History of Internet 23 z Uniform Resource Locators or URLs represents the address of a specific website are central to the Web in e-

central to the Web in e-commerce. For example, http://www.virginia.edu consists of two key parts: http://. The http (Hypertext Transport Protocol) is a protocol designator: It is a special method used in moving files that contain links to other documents related to the material requested across the Internet. It simply tells the browser what protocol to use in connecting to the Web server (in this case, http). Web browsers can also use other protocols such as FTP (file transfer protocol) for file transfer and SMTP (simple mail transfer protocol) for electronic mail. www.virginia.edu is the name of the server: The series www after the double slash tells the network that the material requested is located on a dedicated Web server somewhere. Virginia is the name of the Web site requested, and edu is a code indicating that the site is an educational institution. Other codes like org (organization; e.g., www.ACM.org), gov (government e.g., www.whitehouse.gov), and mil (military, e.g., www.defenselink.mil) are also used. The most common code is com (commercial,e.g., www.dell.com). ● Security Protocols: There are two main security protocols. The first is Secure Sockets Layer (SSL) – a protocol for transmitting private information in a secure way over the Internet. Developed by Netscape Communications Corporation. To date, it is the most widely used security protocol on the Internet, providing security services for messages or streams of data. The second security protocol is S-HTTP secure HTTP (S-HTTP): an extension to HTTP that provides various security features such as client/server authentication and allows Web clients and servers to specify privacy capabilities. ● File Transfer Protocol (FTP): The FTP is a standard protocol that allows you to copy files from computer to computer. Like Telnet, FTP allows you to access remote computers. When you FTP to a remote computer, you log in as anonymous, which means simply entering your e-mail address as the password. The WWW makes heavy use of FTP protocol. Most browsers know how to access information from FTP sites. This feature allows you to store WWW homepages at low-cost FTP sites anywhere in the world. ● Telnet: An Internet service that allows a visitor to access remote computers as if they were local. Telnet is a basic Internet service that allows you to access remote computers as if they were local. To use Telnet, you must have the Internet address of the remote computer. Once you transmit the computer address, you are asked to login before being allowed to access computer files or use the computer. Login entering your user name and password. Once logged in, the information you read and actions you take are acted upon by the remote computer. ● Bulletin Board Systems (BBS): BBS is a computer based meeting and announcement system that allows local people to exchange information free of charge. People often confuse Bulletin Board Systems (BBS) and pay services. A BBS generally has a simple interface to the Internet for users to access services like email and

commerce. For example, http://www.virginia.edu consists of two key parts: ™ http://. The http (Hypertext Transport Protocol) is a protocol designator: It is a special method used in moving files that contain links to other documents related to the material requested across the Internet. It simply tells the browser what protocol to use in connecting to the Web server (in this case, http). Web browsers can also use other protocols such as FTP (file transfer protocol) for file transfer and SMTP (simple mail transfer protocol) for electronic mail. ™ www.virginia.edu is the name of server: The series www after the double slash tells the network that the material requested is located on a dedicated Web server somewhere. Virginia is the name of the Web site requested, and edu is a code indicating that the site is an educational institution. Other codes like org (organization; e.g., www.ACM.org), gov (government e.g., www.whitehouse.gov), and mil (military, e.g., www.defenselink.mil) are also used. The most common code is com (commercial, e.g., www.dell.com). z Security Protocols: There are two main security protocols. The first is Secure Sockets Layer (SSL) – a protocol for transmitting private information in a secure way over the Internet. Developed by Netscape Communications Corporation. To date, it is the most widely used security protocol on the Internet, providing security services for messages or streams of data. The second security protocol is S-HTTP secure HTTP (S-HTTP): an extension to HTTP that provides various security features such as client/server authentication and allows Web clients and servers to specify privacy capabilities. z File Transfer Protocol (FTP): The FTP is a standard protocol that allows you to copy files from computer to computer. Like Telnet, FTP allows you to access remote computers. When your FTP to a remote computer, you log in as anonymous, which means simply entering your e-mail address as the password. The WWW makes heavy use of FTP protocol. Most browsers know how to access information from FTP sites. This feature allows you to store WWW homepages at low-cost FTP sites anywhere in the world. z Telnet: An Internet service that allows a visitor to access remote computers as if they were local. Telnet is a basic Internet service that allows you to access remote computers as if they were local. To use Telnet, you must have the Internet address of the remote computer. Once you transmit the computer address, you are asked to login before being allowed to access computer files or use the computer. Login entering your user name and password. Once logged in, the information you read and actions you take are acted upon by the remote computer. z Bulletin Board Systems (BBS): BBS is a computer based meeting and announcement system that allows local people to exchange information free of charge. People often confuse Bulletin Board Systems (BBS) and pay services. A BBS generally has a simple interface to the Internet for users to access services like e-mail and NetNews. By

NetNews. By calling a BBS via your PC, you can locate all kinds of information. The e-mail part of this system, for example, accepts e-mail during the day, compiles it, and sends it once or twice a day as a batch. It also receives incoming e-mail the same way. This is probably satisfactory service for small-time users or those with no time requirements. An alternative type of BBS is service by subscription. These systems are so popular that system owners have added better computer hardware, better storage, more phone lines, etc. The cost of keeping the system current requires users to pay a set fee per month. Pay services like America Online and Prodigy have become household names, offering millions of users access to popular telecommunication offerings that include stock quotes, Internet access, setting up your stock portfolio, and other specialized services. Many pay services follow a similar procedure. First, you subscribe at a fee, which covers basic access to the service. The fee allows you to do e-mail, interactive real-time communication, watch the news, and the like. Pay services offer other options that are hard to get on the Internet. For example, a live news feed and free online (no delay) stock quotes are available at a membership fee; some are free. Security software is also included to ensure privacy, confidentiality, and integrity of the exchange process. ● E-mail: Electronic Mail or e-mail is a system of electronic correspondence by which users send and receive messages over a network of computer and telecommunication links. The messages may consist of short notes and greetings, or extensive (huge) text files plus graphics (drawings) and photographic images, video clips, or sound. Thus, e-mail is an "electronic post office". It provides a "store-and- forward" service. It lets people communicate even in the absence of the receiver at the other end. It means that you can send e-mail messages whenever you want. The person to whom you have sent the message, can read them (after opening his computer) whenever he wants. Thus, the sender and the receiver don't have to connect themselves at the same time to communicate. The ability to compose, send and receive electronic mail is enormously popular on the Internet. Many people use this as the primary way of interacting with the outside world. Electronic mail eliminates most of the problems and delays of getting a physical document from one person to another. The message becomes available to the addresses as soon as it is sent. Unlike telephone calls, both parties need not be available simultaneously for communication to succeed. Some electronic mail packages have an "Express mail" feature. When express mail is sent, the address is immediately notified on the PC's status line that mail is waiting. ● Newsgroups: News Groups are specialized forums in which users with a common interest can exchange messages. Thousands of newsgroups exist, on technical and non-technical topics. Each news group has its own style and customs. The Usenet newsgroups have unique

calling a BBS via your PC, you can locate all kinds of information. The e-mail part of this system, for example, accepts e-mail during the day, compiles it, and sends it once or twice a day as a batch. It also receives incoming e-mail the same way. This is probably satisfactory service for small-time users or those with no time requirements. An alternative type of BBS is service by subscription. These systems are so popular that system owners have added better computer hardware, better storage, more phone lines, etc. The cost of keeping the system current requires users to pay a set fee per month. Pay services like America Online and Prodigy have become household names, offering millions of users access to popular telecommunication offerings that include stock quotes, Internet access, setting up your stock portfolio, and other specialized services. Many pay services follow a similar procedure. First, you subscribe at a fee, which covers basic access to the service. The fee allows you to do e-mail, interactive real-time communication, watch the news, and the like. Pay services offer other options that are hard to get on the Internet. For example, a live news feed and free 24 24 e-Commerce online (no delay) stock quotes are available at a membership fee; some are free. Security software is also included to ensure privacy, confidentiality, and integrity of the exchange process. z E-mail: Electronic Mail or e-mail is a system of electronic correspondence by which users send and receive messages over a network of computer and telecommunication links. The messages may consist of short notes and greetings, or extensive (huge) text files plus graphics (drawings) and photographic images, video clips, or sound. Thus, e-mail is an "electronic post office". It provides a "store-and-forward" service. It lets people communicate even in the absence of the receiver at the other end. It means that you can send e-mail message whenever you want. The person to whom you have sent the message, can read them (after opening his computer) whenever he wants. Thus, the sender and the receiver don't have to connect themselves at the same time to communicate. The ability to compose send and receive electronic mail is enormously popular on the Internet. Many people use this as the primary way of interacting with the outside world. Electronic mail eliminates most of the problems and delays of getting a physical document from one person to another. The message becomes available to the addresses as soon as it is sent. Unlike telephone call, both parties need not be available simultaneously for communication to succeed. Some electronic mail packages have an "Express mail" feature. When express mail is sent, the address is immediately notified on the PC's status line that mail is waiting. z Newsgroups: News Groups are specialized forums in which users with a common interest can exchange messages. Thousands of newsgroups exist, on technical and non-technical topics. Each news group has its own style and customs. The Usenet newsgroups have unique

names. The names have two main parts – the first describes the main topic and the second part narrows down the topics in sub-groups. Some of the popular newsgroups are: rec.arts. theatre: Recreation concerning theatrical arts sci.environment: Newsgroup concerned with environmental science sac.history.war.world-war-ii: Newsgroup dealing with the history of World Warn. ● Remote Login: By using Telnet or other login programs, users anywhere on the internet can login to any other machine on which they have an account. Thus, if you are connected to the Internet, and you are away from your computer, and if you have access to another computer on the Internet, you can have access to all the information, programs and utilities which reside in the other computer through the Telnet or through remote log-in. The term 'Telnet' is also referred to as remote log-in, which simply means connecting one machine to another so that one may interact with that other machine as though he or she were actually using it locally. Technically Telnet is a protocol. This means it is a language that computers use to communicate with one another in a particular way. This lets you log-in to a site on the Internet through your connection to teleport. It is a terminal emulation program, meaning that when you connect to the remote site, your computer functions as a terminal to that computer. It has no file-transfer capability. Once the connection is made, you can use your computer to access information, run programs, edit files and use whatever resources are available on the other computer. ● Internet Chatting: Several people may be located in different parts of the world and they can commence chatting with each other in real time by using Internet chat software. E-mail and newsgroups are not real time as the interacting parties are not online at the same time. Chatting is in real-time where the messages reach the destinations instantaneously and are responded

names. The names have two main parts – the first describes the main topic and the second part narrows down the topics in sub-groups. Some of the popular newsgroups are: rec.arts. theatre: Recreation concerning theatrical arts sci.environment: Newsgroup concerned with environmental science sac.history.war.world-war-ii: Newsgroup dealing with the history of World Warn. z Remote Login: By using Telnet or other login programs, users anywhere on the internet can login to any other machine on which they have an account. Thus, if you are connected to the Internet, and you are away from your computer, and if you have access to another computer on the Internet, you can have access to all the information, programs and utilities which resides in the other computer through the Telnet or through remote log-in. The term 'Telnet' is also referred to as remote log-in, which simply means connecting one machine to another so that one may interact with that other machine as though he or she were actually using it locally. Technically Telnet is a protocol. This means it is a language that computers use to communicate with one another in a particular way. This lets you log-in to a site on the Internet through your connection to teleport. It is a terminal emulation program, meaning that when you connect to the remote site, your computer functions as a terminal to that computer. It has no file-transfer capability .Once the connection is made, you can use you computer to access information, run programs edit files and use whatever resources are available on the other computer. z Internet Chatting: Several people may be located in different parts of the world and they can commence chatting with each other in real time by using Internet chat software. E-mail and newsgroups are not real time as the interacting parties are not online at the same time. Chatting is in real-time where the messages reach the destinations instantaneously and are responded

SA E-commerce.pdf (D165838284)

113/206 **SUBMITTED TEXT** 55 WORDS **97%** **MATCHING TEXT** 55 WORDS

by someone who is also online at the time. The messages may be textual or we may even have Internet telephone facility by transferring voice messages as files instead of textual messages. The advantage is that voice messages can be exchanged anywhere in the world at the cost of a local telephone call. ●

by someone who is also online at the time. The messages may be textual or we may even have Internet telephone facility by transferring voice messages as 25 History of Internet 25 files instead of textual messages. The advantage is that voice messages can be exchanged anywhere in the world at the cost of a local telephone call. 2.4

SA E-commerce.pdf (D165838284)

114/206	SUBMITTED TEXT	38 WORDS	100%	MATCHING TEXT	38 WORDS

Electronic Data Interchange is the transmission, in a standard syntax, of unambiguous information of business or strategic significance between computers of independent organizations." (The Accredited Standards Committee for EDI of the American National Standards Institute). ●

Electronic Data Interchange is the transmission, in a standard syntax, of unambiguous information of business or strategic significance between computers of independent organizations. (The Accredited Standards Committee for EDI of the American National Standards Institute)

SA E-commerce.pdf (D165838284)

115/206	SUBMITTED TEXT	24 WORDS	90%	MATCHING TEXT	24 WORDS

The EDI architecture has four layers and these are: Semantic (Application) Layer, Standard Translation Layer, Packing (Transport) Layer, Physical Network Infrastructure Layer ●

The EDI architecture has four layers and these are: z Semantic (Application) Layer z Standard Translation Layer z Packing (Transport) Layer z Physical Network Infrastructure Layer

SA E-commerce.pdf (D165838284)

116/206	SUBMITTED TEXT	23 WORDS	92%	MATCHING TEXT	23 WORDS

a VAN. ● The Internet is a vast computer network of many different computer networks existing in the world. It is

a reality. The Internet is a vast computer network of many different computer networks existing in the world. It is

SA E-commerce.pdf (D165838284)

117/206	SUBMITTED TEXT	27 WORDS	100%	MATCHING TEXT	27 WORDS

collection of interconnected networks. Hence it is called ``inter network" or in short "Internet". Through an Internet connection, one can communicate with any other subscriber of

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SA E-commerce.pdf (D165838284)

118/206	SUBMITTED TEXT	116 WORDS	96%	MATCHING TEXT	116 WORDS

internet throughout the world. Many companies including VSNL, Essar, Bharti Telecom, and MTNL provide Internet service in India. They are also known as Internet Service Providers (ISP). Any individual or organisation can open an account with any Internet Service Provider (ISP) who will give an Account Number for monthly or yearly fees. Then the user may have access to the Internet and the e-mail through it. The user needs his own computer, "modem" and a telephone line to send and receive messages. He can also have access to the World- Wide Web (WWW). The user can also send emails through the internet if the email software (called a mailer) is installed on the user's computer. ●

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SA E-commerce.pdf (D165838284)

119/206	SUBMITTED TEXT	15 WORDS	100%	MATCHING TEXT	15 WORDS

Coding and structuring the documents for business transactions is no easy matter. 2)

Coding and structuring the documents for business transactions is no easy matter.

SA E-commerce.pdf (D165838284)

120/206	SUBMITTED TEXT	18 WORDS	100%	MATCHING TEXT	18 WORDS

Protocol (S-HTTP) 5.3.2 Secure Socket Layer (SSL) 5.4 Secure Transactions 5.5 Secure Electronic Payment Protocol (SEPP) 5.6

Protocol 10.3 S-HTTP 10.4 Secure socket layer (SSL) 10.5 Secure transactions 10.6 Secure electronic payment protocol (SEPP) 10.7

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121/206	SUBMITTED TEXT	211 WORDS	98%	MATCHING TEXT	211 WORDS

S-HTTP) S-HTTP is a secure extension of HTTP developed by the CommerceNet Consortium. S-HTTP offers security techniques and encryption with RSA methods, along with other payment protocols. For secure transport, S-HTTP supports end-to-end secure transactions by incorporating cryptographic enhancements to be used for data transfer at the application level. This is in contrast to existing HTTP authorization mechanisms, which require the client to attempt access and be denied before the security mechanism is employed. S- HTTP incorporates public-key cryptography from RSA Data Security in addition to supporting traditional shared secret password and Kerberos-based security systems. The RSA Data Security ciphers used by S-HTTP utilize two keys; files encrypted by one can only be decrypted by application of the other key. A company generates a pair of these keys, publishes one and retains the other. When another company wishes to send a file to the first company, it encrypts the file with the published key of the intended recipient. The recipient decrypts it with the private key. S-HTTP allows internet users to access a merchant's website and supply their credit card numbers to their web browsers; S-HTTP encrypts the card numbers, and the encrypted files are then sent to the merchant. Then, S-HTTP decrypts the files and relays back to the

S-HTTP S-HTTP is a secure extension of HTTP developed by the commerce Net S-HTTP offers security techniques and encryption with RSA methods, along with other payment protocols. For secure transport, S-HTTP supports end-to-end secure transactions by incorporating cryptographic enhancements to be used for data transfer at the application level. This is in contrast to existing HTTP authorization mechanisms, which required the client to attempt access and be denied before the security mechanism is employed. S-HTTP incorporates public-key cryptography from RSA Data security in addition to supporting traditional shared secret password and Kerberos based security systems. The RSA data security ciphers used by S-HTTP utilize two keys; files encrypted by one can only be decrypted by application of the other key. A company generates a pair of these keys, publishes one and retains the other. When another company wishes to send a file to the first company, it encrypts the file with the published key of the intended recipient. The recipient decrypts it with the private key. S-HTTP allows Internet users to access a merchant's Website and supply their credit card numbers to their web browsers; S-HTTP encrypts the card numbers, and the encrypted files are then sent to the merchant. Then, S-HTTP decrypts the files and relays back to the

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122/206	SUBMITTED TEXT	14 WORDS	100%	MATCHING TEXT	14 WORDS

digital signatures. The transaction proceeds as soon as the signatures are verified.

digital signatures. The transaction proceeds as soon as the signatures are verified. 10.4

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123/206	SUBMITTED TEXT	20 WORDS	85%	MATCHING TEXT	20 WORDS

Internet (or internet) is the global system of interconnected computer networks that uses the Internet protocol suite (TCP/IP) to

SA 6 Ecommerce.docx (D93357867)

124/206	SUBMITTED TEXT	20 WORDS	100%	MATCHING TEXT	20 WORDS

Secure Electronic Transactions (SET) 6.3 Certificates For Authentication 6.4 Security on Web Servers and Enterprise Networks 6.4.1

SA Doc1.docx (D54744278)

125/206	SUBMITTED TEXT	18 WORDS	88%	MATCHING TEXT	18 WORDS

Payment Based on EFT - Notational Funds Transfer 7.2.2.3 Type 3: Payment Based on Electronic Currency 7.3

Payment Based on EFT – Notational Funds Transfer 7.14.3 Payment Based on Electronic Currency 7.15

SA E-commerce.pdf (D165838284)

126/206	SUBMITTED TEXT	24 WORDS	100%	MATCHING TEXT	24 WORDS

Secure Electronic Transactions (SET) • Certificates For Authentication • Security on Web Servers and Enterprise Networks 6.2

SA Doc1.docx (D54744278)

127/206	SUBMITTED TEXT	18 WORDS	88%	MATCHING TEXT	18 WORDS

Payment Based on EFT - Notational Funds Transfer, Type 3: Payment Based on Electronic Currency •

Payment Based on EFT – Notational Funds Transfer 7.14.3 Payment Based on Electronic Currency 7.15

SA E-commerce.pdf (D165838284)

128/206	SUBMITTED TEXT	24 WORDS	78%	MATCHING TEXT	24 WORDS

because public key cryptography is used only to encrypt DES keys and for authentication, and not for the main body of the transaction.

SA sset protocol.pdf (D21220264)

129/206	SUBMITTED TEXT	45 WORDS	85%	MATCHING TEXT	45 WORDS

payment systems are central to on-line business processes as companies look for ways to serve customers faster and at lower cost. Emerging innovations in the payment for goods and services in electronic commerce promise to offer a wide range of new business opportunities.

SA CMP513-Ecommerce technology-R.pdf (D164968100)

130/206	SUBMITTED TEXT	220 WORDS	98%	MATCHING TEXT	220 WORDS

Conventional Payment Process A conventional process of payment and settlement involves a buyer-to-seller transfer of cash or payment information (e.g. credit card or check). The actual settlement of payment takes place in the financial processing network. A cash payment requires a buyer's withdrawal from his bank account, a transfer of cash to the seller, and the seller's deposit of the payment to his/her account. Non-cash payment mechanisms are settled by adjusting, i.e., crediting and debiting, the appropriate accounts between the banks based on payment information conveyed via check or credit card. Figure 7.1 is a simplified diagram for both cash and non-cash transactions. Cash moves from the buyer's bank to the seller's bank through face-to-face exchanges in the market. If a buyer uses a non-cash method of payment, payment information instead of cash flows from the buyer to the seller, and ultimately payments are settled between affected banks who notationally adjust accounts based on the payment information. In real markets, this clearing process involves some type of intermediaries such as credit card services or check clearing companies. Schematically most payment systems are based on similar processes. The 'information' conveyed to settle payments can be one of the following: Information about the identities of the seller and the buyer and some instructions to settle payments without revealing financial information [

CONVENTIONAL PAYMENT PROCESS A conventional process of payment and settlement involves a buyer-to-seller transfer of cash or payment information (e.g. credit card or check). The actual settlement of payment takes place in the financial processing network. A cash payment requires a buyer's withdrawal from his bank account, a transfer of cash to the seller, and the seller's deposit of the payment to his account. Non-cash payment mechanisms are settled by adjusting, i.e. crediting and debiting, the appropriate accounts between the banks based on payment information conveyed via check or credit card. 106 106 e-Commerce Figure 7.1 is a simplified diagram for both cash and non-cash transactions. Cash moves from the buyer's bank to the seller's bank through face-to-face exchanges in the market. If a buyer uses a non-cash method of payment, payment information instead of cash flows from the buyer to the seller, and ultimately payments are settled between affected banks who notationally adjust accounts based on the payment information. In real markets, this clearing process involves some type of intermediaries such as credit card services or check clearing companies. Schematically then most payment systems are based on similar processes. The 'information' conveyed to settle payments can be one of the following: z Information about the identities of the seller and the buyer and some instruction to settle payments without revealing financial information

SA E-commerce.pdf (D165838284)

131/206	SUBMITTED TEXT	26 WORDS	97%	MATCHING TEXT	26 WORDS

financial information such as credit card or bank accounts numbers (including checks and debit cards) actual values represented by digital currency. 7.2.2

Financial information such as credit card or bank accounts numbers (including checks and debit cards) z Actual values represented by digital currency.

SA E-commerce.pdf (D165838284)

132/206	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS

Electronic Payment Systems Electronic payment systems are becoming central to

SA E commerce B.com VI semester.docx (D146772307)

133/206	SUBMITTED TEXT	382 WORDS	99%	MATCHING TEXT	382 WORDS

Payment Through an Intermediary - Payment Clearing Services When face-to-face purchase is replaced with on-line commerce, many aspects of a transaction occur instantly, under which various processes of a normal business interaction are subsumed. For example, a typical purchase involves stages of locating a seller, selecting a product, asking a price quote, making an offer, agreeing overpayment means, checking the identity and validity of the payment mechanism, transferring of goods and receipts. In order to be used as a substitute for face-to-face payments, online payment systems must incorporate all or some of these stages within their payment functions. The lack of face-to-face interaction also leads to more secure methods of payment being developed for electronic commerce, to deal with the security problems for sensitive information and uncertainty about identity. Consequently, electronic commerce transactions require intermediaries to provide security, identification, and authentication as well as payment support. Figure 7.2 shows a stylized transaction for online commerce using an intermediary. In this model, the intermediary not only settles payments, it also takes care of such needs as confirming seller and buyer identities, authenticating and verifying ordering and payment information and other transactional requirements lacking in virtual interactions. In the figure, two boxes delineate online purchasing and secure or off-line payment clearing processes. Payment settlement in this figure follows the example of the traditional electronic funds transfer model which uses secured private value networks. The intermediary contributes to market efficiency by resolving uncertainties about security and identity and relieving vendors of the need to set up duplicative hardware and software to handle the online payment clearing process. The payment information transmitted by the buyer may be one of three types. First, it may contain only customer order information such as the identity of the buyer and seller, name of the product, amount of payment, and other sale conditions but no payment information such as credit card numbers or checking account numbers. In this case, the intermediary acts as a centralized commerce enabler maintaining membership and payment information for both sellers and buyers. A buyer need only send the seller his identification number assigned by the intermediary. Upon receiving the purchase order, the intermediary verifies it with both the buyer and seller and handles all sensitive payment information on behalf of both.

Payment through an Intermediary – Payment Clearing Services When face-to-face purchase is replaced with on-line commerce, many aspects of a transaction occur instantly, under which various processes of a normal business interaction are subsumed. For example, a typical purchase involves stages of locating a seller, selecting a product, asking a price quote, making an offer, agreeing over payment means, checking the identity and validity of the payment mechanism, transferring of goods and receipts. In order to be used as a substitute for face-to-face payments, online payment systems must incorporate all or some of these stages within their payment functions. The lack of face-to-face interaction also leads to more secure methods of payment being developed for electronic commerce, to deal with the security problems for sensitive information and uncertainty about identity. Consequently, electronic commerce transactions require intermediaries to provide security, identification, and authentication as well as payment support. Figure 7.2 shows a stylized transaction for online commerce using an intermediary. In this model, the intermediary not only settles payments, it also takes care of such needs as confirming seller and buyer identities, authenticating and verifying ordering and payment information and other transactional requirements lacking in virtual interactions. In the figure, two boxes delineate online purchasing and secure or off-line payment clearing processes. Payment settlement in this figure follows the example of the traditional electronic funds transfer model which uses secured private value networks. The intermediary contributes to market efficiency by resolving uncertainties about security and identity and relieving vendors of the need to set up duplicative hardware and software to handle the online payment clearing process. The payment information transmitted by the buyer may be one of three types. First, it may contain only customer order information such as the identity of the buyer and seller, name of the product, amount of payment, and other sale conditions but no payment information such as credit card numbers or checking account numbers. In this case, the intermediary acts as a centralized commerce enabler maintaining membership and payment information for both sellers and buyers. A buyer need only send the seller his identification number assigned by the intermediary. Upon receiving the purchase order, the intermediary verifies it with both the buyer and seller and handles all sensitive payment information on behalf of both.

SA E-commerce.pdf (D165838284)

134/206	SUBMITTED TEXT	81 WORDS	100%	MATCHING TEXT	81 WORDS

Figure 7.2: Transactions with an intermediary The key benefit of this payment clearing system is that it separates sensitive and non-sensitive information and only non-sensitive information is exchanged online. This alleviates the concern with security that is often seen as a serious barrier to online commerce. In fact, First Virtual does not even rely on encryption for messages between buyers and sellers. A critical requisite for this system to work is the users' trust in the intermediaries. 7.2.2.2

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SA E-commerce.pdf (D165838284)

135/206	SUBMITTED TEXT	165 WORDS	99%	MATCHING TEXT	165 WORDS

Payment Based on EFT - Notational Funds Transfer The second type of payment system does not depend on a central processing intermediary. Instead, sensitive payment information (such as credit card or bank account number) is transmitted along with orders, which is in effect an open Internet implementation of financial electronic data interchange (EDI) (see Figure 7.3). An electronic funds transfer (EFT) is a financial application of EDI, which sends credit card numbers or electronic checks via secured private networks between banks and major corporations. To use EFTs to clear payments and settle accounts, an online payment service will need to add capabilities to process orders, accounts and receipts. In its simplest form, payment systems may use digital checks —simply an image of a check—and rely on existing payment clearing networks. The Secure Electronic Transaction (SET) protocol - a credit card based system supported by Visa and MasterCard - uses digital certificates, which are digital credit cards. We call this type of payment system

Payment Based on EFT – Notational Funds Transfer The second type of payment systems does not depend on a central processing intermediary. Instead, sensitive payment information (such as credit card or bank account number) is transmitted along with orders, which is in effect an open Internet implementation of financial Electronic Data Interchange (EDI) (see Figure 7.3). An Electronic Funds Transfer (EFT) is a financial application of EDI, which sends credit card numbers or electronic checks via secured private networks between banks and major corporations. To use EFTs to clear payments and settle accounts, an online payment service will need to add capabilities to process orders, accounts and receipts. In its simplest form, payment systems may use digital checks – simply an image of a check – and rely on existing payment clearing networks. The Secure Electronic Transaction (SET) protocol – a credit card based system supported by Visa and MasterCard – uses digital certificates, which are digital credit cards. We call this type of payment system

SA E-commerce.pdf (D165838284)

136/206	SUBMITTED TEXT	26 WORDS	40%	MATCHING TEXT	26 WORDS

as companies look for various methods to serve customers faster and more cost effectively. Electronic commerce brings a wide range of new worldwide business opportunities.

SA CMP513-Ecommerce technology-R.pdf (D164968100)

137/206	SUBMITTED TEXT	153 WORDS	97%	MATCHING TEXT	153 WORDS

notational funds transfer system since it resembles traditional electronic fund transfers and wire transfers which settle notational accounts of buyers and sellers. Figure 7.3 Notational Funds Transfer System Notational funds transfer systems differ from payment clearing services in that the 'payment information' transferred online contains sensitive financial information. Thus, if it is intercepted by a third party, it may be abused like stolen credit cards or debit cards. A majority of proposed electronic payment systems fall into this second type of payment system. The objective of these systems is to extend the benefit and convenience of EFT to consumers and small businesses. However, unlike EFTs, the Internet is open and not as secure as private value added networks (VANs). The challenge to these systems is how to secure the integrity of the payment messages being transmitted and to ensure the interoperability between different sets of payment protocols. 7.2.2.3

notational funds transfer system since it resembles traditional electronic fund transfers and wire transfers which settle notational accounts of buyers and sellers. 109 Electronic Payment System 109 Figure 7.3: Notational Funds Transfer System Notational funds transfer systems differ from payment clearing services in that the 'payment information' transferred online contains sensitive financial information. Thus, if it is intercepted by a third party, it may be abused like stolen credit cards or debit cards. A majority of proposed electronic payment systems fall into this second type of payment systems. The objective of these systems is to extend the benefit and convenience of EFT to consumers and small businesses. However, unlike EFTs, the Internet is open and not as secure as private Value Added Networks (VANs). The challenge to these systems is how to secure the integrity of the payment messages being transmitted and to ensure the interoperability between different sets of payment protocols. 7.14.3

SA E-commerce.pdf (D165838284)

138/206	SUBMITTED TEXT	169 WORDS	95%	MATCHING TEXT	169 WORDS

Payment Based on Electronic Currency The third type of payment systems transmit not payment information but a digital product representing values: electronic currency. The nature of digital currency mirrors that of paper money as a means of payment. As such, digital currency payment systems have the same advantages as paper currency payment, namely anonymity and convenience. As in other electronic payment systems, here too security during transmission and storage is a concern, although from a different perspective, for digital currency systems doubles pending, counterfeiting, and storage become critical issues whereas eavesdropping and the issue of liability (when charges are made without authorization) are important for notational funds transfers. Figure 7.4 shows a digital currency payment scheme. Figure 7.4 Digital Currency Payment Scheme The only difference from Figure is that the intermediary in Figure 7.4 acts as an electronic bank which converts outside money into inside money (e.g. tokens or e-cash) which is circulated within online markets. However, as a private monetary system, digital currency will have

Payment Based on Electronic Currency The third type of payment systems transmit not payment information but a digital product representing values: electronic currency. The nature of digital currency mirrors that of paper money as a means of payment. As such, digital currency payment systems have the same advantages as paper currency payment, namely anonymity and convenience. As in other electronic payment systems, here too security during transmission and storage is a concern, although from a different perspective, for digital currency systems double spending, counterfeiting, and storage become critical issues whereas eavesdropping and the issue of liability (when charges are made without authorization) are important for notational funds transfers. Figure 7.4 shows a digital currency payment scheme. 110 110 e-Commerce Figure 7.4: Digital Currency Payment System The only difference from Figure is that the intermediary in Figure 7.4 acts as an electronic bank which converts outside money (e.g. U.S. currency), into inside money (e.g. tokens or e-cash) which is circulated within online markets. However, as a private monetary system, digital currency will have

SA E-commerce.pdf (D165838284)

139/206	SUBMITTED TEXT	59 WORDS	100%	MATCHING TEXT	59 WORDS

monetary system with implications extending far beyond mere transactional efficiency. Already digital currency has spawned many types of new businesses: software vendors for currency server systems; hardware vendors for smart card readers and other interface devices; technology firms for security, encryption and authentication; and new banking services interfacing accounts in digital currency and conventional currency. 7.3

monetary system with implications extending far beyond mere transactional efficiency. Already digital currency has spawned many types of new businesses: software vendors for currency server systems; hardware vendors for smart card readers and other interface devices; technology firms for security, encryption and authentication; and new banking services interfacing accounts in digital currency and conventional currency,

SA E-commerce.pdf (D165838284)

140/206	SUBMITTED TEXT	16 WORDS	76%	MATCHING TEXT	16 WORDS

customers of financial institutions to conduct financial transactions on secure websites operated by the institution,

SA 023E2440_Applied E- commerce.pdf (D165201746)

141/206	SUBMITTED TEXT	35 WORDS	100%	MATCHING TEXT	35 WORDS

A conventional process of payment and settlement involves a buyer-to- seller transfer of cash or payment information (e.g. credit card or check). The actual settlement of payment takes place in the financial processing network. ●

A conventional process of payment and settlement involves a buyer-to-seller transfer of cash or payment information (e.g. credit card or check). The actual settlement of payment takes place in the financial processing network.

SA E-commerce.pdf (D165838284)

142/206	SUBMITTED TEXT	18 WORDS	88%	MATCHING TEXT	18 WORDS

Payment Based on EFT - Notational Funds Transfer, Type 3: Payment Based on Electronic Currency ●

Payment Based on EFT – Notational Funds Transfer 7.14.3 Payment Based on Electronic Currency 7.15

SA E-commerce.pdf (D165838284)

143/206	SUBMITTED TEXT	26 WORDS	40%	MATCHING TEXT	26 WORDS

as companies look for various methods to serve customers faster and more cost effectively. Electronic commerce brings a wide range of new worldwide business opportunities.

SA CMP513-Ecommerce technology-R.pdf (D164968100)

144/206	SUBMITTED TEXT	69 WORDS	97%	MATCHING TEXT	69 WORDS

Interaction of participants SET changes the way that participants in the payment system interact. In a face to face retail transaction or mail order transaction, the electronic processing of the transaction begins with the merchant or the acquirer. However in SET transactions, the electronic processing of the transaction begins with the cardholder. Cardholder In the electronic environment, consumers and corporate purchasers interact with merchants from personal computers

Interaction of participants SET changes the way that participants in the payment system interact. In a face-to-face retail transaction or a mail order transaction, the electronic processing of the transaction begins with the merchant or the Acquirer. However, in an SET transaction, the electronic processing of the transaction begins with the cardholder. Cardholder In the electronic commerce environment, consumers and corporate purchasers interact with merchants from personal computers.

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145/206	SUBMITTED TEXT	15 WORDS	88%	MATCHING TEXT	15 WORDS

customers of financial institutions to conduct financial transactions on_____ operated by the institution. 3)

SA 023E2440_Applied E- commerce.pdf (D165201746)

146/206	SUBMITTED TEXT	16 WORDS	64%	MATCHING TEXT	16 WORDS

a manufacturer and wholesaler, or a wholesaler and a retailer, it is known as Business-to-Business (

SA 023E2440_Applied E- commerce.pdf (D165201746)

147/206	SUBMITTED TEXT	62 WORDS	74%	MATCHING TEXT	62 WORDS

business to government (B2G). Website following B2B business model sells its product to an intermediate buyer who then sells the product to the final customer. For example, a wholesaler places an order from a company's website and after receiving the consignment, sells the end product to the final customer who comes to buy the product at the wholesaler's retail outlet. B2B

SA Ecommerce.pdf (D164350998)

148/206	SUBMITTED TEXT	29 WORDS	100%	MATCHING TEXT	29 WORDS

According to Smith and Chaffey(2005), online advertising is “the use of a company web site in conjunction with online promotional techniques such as search engines, banner advertising, direct

SA 023E2440_Applied E- commerce.pdf (D165201746)

149/206	SUBMITTED TEXT	18 WORDS	100%	MATCHING TEXT	18 WORDS

and links or services from other web sites to acquire new customers and provide services to existing

SA 023E2440_Applied E- commerce.pdf (D165201746)

150/206	SUBMITTED TEXT	29 WORDS	100%	MATCHING TEXT	29 WORDS

According to Smith and Chaffey(2005), online advertising is “the use of a company web site in conjunction with online promotional techniques such as search engines, banner advertising, direct

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151/206	SUBMITTED TEXT	18 WORDS	100%	MATCHING TEXT	18 WORDS

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SA 023E2440_Applied E- commerce.pdf (D165201746)

152/206	SUBMITTED TEXT	15 WORDS	95%	MATCHING TEXT	15 WORDS

Advantages of Internet Advertising 1. Target marketing: A major advantage of advertising through

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153/206	SUBMITTED TEXT	18 WORDS	100%	MATCHING TEXT	18 WORDS

Web is the ability to target specific groups of individuals with a minimum of waste coverage. Through

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154/206	SUBMITTED TEXT	308 WORDS	99%	MATCHING TEXT	308 WORDS

internet, advertisements can be targeted to specific customers as per their age, sex, income, education, hobbies, interests, and geographic locations. 2. Message tailoring: As a result of precise targeting, messages can be designed to appeal to the specific needs and wants of the target audience. The interactive capabilities of the Net make it possible to carry on one-to-one marketing with increased success in both the business and the consumer markets. 3. Interactive capabilities: Because the Internet is interactive, it provides strong potential for increasing customer involvement and satisfaction and almost immediate feedback for buyers and sellers. 4. Information access: Perhaps the greatest advantage of internet advertising is its availability as an information source 24 X 7. Internet users can find a plethora of information about almost any topic of their choice merely by clicking on the ad. They can gather a wealth of information regarding product specifications, costs, purchase information, and so on. Links will direct them to even more information if it is desired. 5. Enhancing client engagement: Marketers aim to interact effectively with their customers and to improve their experience with their brand. This is made possible through interactive internet ads. 6. Sales potential: Internet advertising campaigns focus on growing sales through the brand's website and partner networks. Such campaigns can also simultaneously pursue conversion and branding objectives. The sales potential of this medium is increasing over the years. 7. Creativity-: Creatively designed internet ads can enhance a company's image and positively position the company or organization in the consumer's mind. 8. Exposure: For many smaller companies, with limited budgets, the World Wide Web enables them to gain exposure to potential customers that would have been impossible. For a section of the investment that would be required using traditional media, companies can gain national and even international exposure

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155/206	SUBMITTED TEXT	67 WORDS	95%	MATCHING TEXT	67 WORDS

Stressing brand message: many marketers supplement a traditional ad campaign with a digital one to increase the likelihood that the message will resonate with their audience and add to their brand image. 10. Complements IMC: The net, both complements and is complemented by other IMC media. As such, it serves as a vital link in the integrative process. Disadvantages of Internet Advertising:

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156/206	SUBMITTED TEXT	62 WORDS	100%	MATCHING TEXT	62 WORDS

Also called advertorials, they try to integrate editorial content and advertising messages. This practice pleases advertisers because it gives them additional exposure and creates the impression that the publication endorses their product. Sponsorships are important on the web because display ads are generally overlooked by users, sponsorships allow great interactivity because many firms build synergistic partnerships to provide useful content. ➢

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157/206	SUBMITTED TEXT	17 WORDS	100%	MATCHING TEXT	17 WORDS

changes the background of the page being viewed. - Trick banner: A banner ad that

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158/206	SUBMITTED TEXT	56 WORDS	94%	MATCHING TEXT	56 WORDS

Pop-up: A new window that opens in front of the current one, displaying an advertisement, or entire webpage. - Pop-under: Similar to a Pop-Up except that the window is loaded or sent behind the current window so that the user does not see it until they close one or more active windows. ➢

SA 023E2440_Applied E- commerce.pdf (D165201746)

159/206	SUBMITTED TEXT	40 WORDS	96%	MATCHING TEXT	40 WORDS

E-mail advertising: It is one of the least expensive types of online advertising. It is just a few sentences of text embedded in the firm's content. Advertisers purchase space in the email sponsored by others. They generally prefer sending

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160/206	SUBMITTED TEXT	36 WORDS	88%	MATCHING TEXT	36 WORDS

them about the product. It is one of the oldest methods still used. This makes it much simpler to reach an audience that wants to read the email with their website content information included.

SA 023E2440_Applied E- commerce.pdf (D165201746)

161/206	SUBMITTED TEXT	145 WORDS	97%	MATCHING TEXT	145 WORDS

Contextual ads: Ad servers, such as Facebook or Google's double click, maintain an inventory of ads from clients and serve them into websites as appropriate users are viewing particular pages. For example, a user searches for fashion garments on an electronic retail site that works with double click, users might get the ads for fashion garments on their email page. This is called offering specific ad targeting based on profile information. This is good for micro-segmentation for marketers and good for users who receive relevant ads at the precise moment they want information. This process is also the basis for Google's AdSense program, where online marketers can bid for keywords and have their ads appear on Google search engine result pages or websites allowing them. This makes contextual ads, the largest category of online advertising included in the category of keyword search. ➢

SA 023E2440_Applied E- commerce.pdf (D165201746)

162/206	SUBMITTED TEXT	126 WORDS	98%	MATCHING TEXT	126 WORDS

Social Network Advertising: Social network advertising is a form of online advertising found on various social networking sites such as Facebook, Instagram, Twitter, etc. Advertising on such networks can take the form of direct display ads posted on social networks. Facebook and Instagram do have its advantages as it uses an advertising system that is very simple to implement and offers a wide scope of coverage. Only Facebook and Instagram users that are within the specific demographic selected will be able to see the advertisement. This helps to narrow down the specific target audience, who will be interested in advertisements and helps marketers in not wasting their money on people who are not going to be interested in what their website has to offer. ➢

SA 023E2440_Applied E- commerce.pdf (D165201746)

163/206	SUBMITTED TEXT	30 WORDS	93%	MATCHING TEXT	30 WORDS

Mobile advertising- As we all know, smartphones and cell phones are acquiring high penetration rates. Mobile internet usage is growing day by day. More and more people are accessing

SA 023E2440_Applied E- commerce.pdf (D165201746)

164/206 **SUBMITTED TEXT** 41 WORDS **98%** **MATCHING TEXT** 41 WORDS

internet through their mobile devices. In order to take advantage of this popular medium, advertisers can use various formats available to them for mobile advertising, such as display ads of banners, short message service(SMS), video ads, voice ads, etc. ➢

SA 023E2440_Applied E- commerce.pdf (D165201746)

165/206 **SUBMITTED TEXT** 14 WORDS **84%** **MATCHING TEXT** 14 WORDS

new authors that would be unlikely to be profitable for traditional publishers. The

SA Enterprise Business Application.docx (D119009350)

166/206 **SUBMITTED TEXT** 14 WORDS **88%** **MATCHING TEXT** 14 WORDS

Although the number of businesses on the internet has grown, many organizations simply

SA CMP513-Ecommerce technology-R.pdf (D164968100)

167/206 **SUBMITTED TEXT** 44 WORDS **91%** **MATCHING TEXT** 44 WORDS

Technologies concerned with authorization include firewalls, password access, smart cards and biometric fingerprinting. However in order to provide secure electronic transactions (SET) encryption technologies are used. Encryption technologies, which are supported by the appropriate legal mechanisms, have the potential to develop electronic commerce

SA CMP513-Ecommerce technology-R.pdf (D164968100)

168/206 **SUBMITTED TEXT** 15 WORDS **84%** **MATCHING TEXT** 15 WORDS

new authors that would be unlikely to be profitable for traditional publishers. ● The

SA Enterprise Business Application.docx (D119009350)

169/206 **SUBMITTED TEXT** 17 WORDS **100%** **MATCHING TEXT** 17 WORDS

In the case of the digital divide, not all citizens currently have equal access to computers

In the case of the digital divide, not all citizens currently have equal access to computers,

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170/206	SUBMITTED TEXT	47 WORDS	94%	MATCHING TEXT	47 WORDS

Governments use information and communication technologies for the exchange of information with citizens and businesses on topics such as tax compliance, public utility services, as well as vehicle and voting registration. The introduction of e-government services goes along with a change towards a more citizen-friendly culture.

Governments use information and communication technologies (ICTs) for the exchange of information with citizens and businesses on topics such as tax compliance, public utility services, as well as vehicle and voting registration. Often, the introduction of e-government services goes along with a change towards a more customer friendly culture. 1

W https://www.itu.int/ITU-D/cyb/app/docs/eGovernment%20toolkitFINAL.pdf

171/206	SUBMITTED TEXT	17 WORDS	78%	MATCHING TEXT	17 WORDS

disaster warnings, electronic newsletters, education management systems, and traffic control systems. E-republic stays associated with

disaster warnings, electronic newsletters, education management systems and traffic control systems. e-Government is often associated with

W https://www.itu.int/ITU-D/cyb/app/docs/eGovernment%20toolkitFINAL.pdf

172/206	SUBMITTED TEXT	205 WORDS	98%	MATCHING TEXT	205 WORDS

The introduction of e-government applications has been beneficial to governments in several ways. Most significantly, in the area of public procurement, electronic applications have expanded government access to potential suppliers and increased the number of offers received in a timely manner. e-Government applications also provide a valuable development tool by increasing the effectiveness of aid provision and procurement. One example is the Aid Management Platform (AMP), created by the Development Gateway Foundation. This platform provides governments a virtual workspace where state employees and donors can share aid information online, supporting planning, execution, and implementation activities. The time and funds required to provide government services can be a burden to citizens, businesses, and administrations, particularly for those in developing countries and rural areas. By introducing e-government services, governments can dramatically reduce transaction costs and improve internal planning mechanisms. Moreover, the introduction of e-government and the integration of services usually require governments to streamline their administrative processes. Streamlining improves efficiency, reduces costs, and generates savings, lowering the cost of government services. In some cases, generated revenues may be used to reduce or abolish service fees, or can be reinvested into more sophisticated e- government applications and services. 14.3.1 The Four Dimensions of the E-

The introduction of e-government applications has been beneficial to governments in several ways. Most significantly, in the area of public procurement, electronic applications have expanded government access to potential suppliers and increased the number of offers received in a timely manner. e-Government applications also provide a valuable development tool by increasing the effectiveness of aid provision and procurement. One example is the Aid Management Platform (AMP), created by the Development Gateway Foundation. This platform provides governments a virtual workspace where state employees and donors can share aid information online, supporting planning, execution and implementation activities. 3 The time and funds required to provide government services can be a burden to citizens, businesses and to administrations, particularly for those in developing countries and rural areas. By introducing e-government services, governments can dramatically reduce transaction costs and improve internal planning mechanisms. Moreover, the introduction of e-government and the integration of services usually require governments to streamline their administrative processes. Streamlining improves efficiency, reduces costs and generates savings, lowering the cost of government services. In some cases, generated revenues may be used to reduce or abolish service fees, or can be reinvested into more sophisticated e-government applications and services. The case of the Indian e-

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173/206	SUBMITTED TEXT	44 WORDS	96%	MATCHING TEXT	44 WORDS

E-government activities can only be implemented successfully where administrations are able and willing to do so. Accordingly, the success of e- government initiatives depends in part on the ability of public administration, as well as the political will of key stakeholders. While the government

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174/206	SUBMITTED TEXT	46 WORDS	96%	MATCHING TEXT	46 WORDS

and its administration play a fundamental role, the e-government environment is shaped also by other stakeholders, including citizens, businesses, civil servants, local, national, and international institutions, and civil society organizations. Analytically, the e-government environment can be structured in several ways, according to different aspects

and its administration play a fundamental role, the e-government environment is shaped also by other stakeholders, including citizens, businesses, civil servants, local, national and international institutions and civil society organisations. Analytically, the e-government environment can be structured in several ways, according to different aspects. 6

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175/206	SUBMITTED TEXT	86 WORDS	98%	MATCHING TEXT	86 WORDS

four basic dimensions of the e-government environment: (1) Infrastructure, (2) policy, (3) governance, and (4) outreach. While this is not an exhaustive list of dimensions of e-government, these categories are considered to be wide enough to cover all the important aspects of e-government and can, at the same time, be narrowed down to provide useful recommendations on future policy prioritization and activities. Therefore, this framework uses these four dimensions to describe and understand the realities that influence a country's level of e-government readiness.

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176/206	SUBMITTED TEXT	267 WORDS	98%	MATCHING TEXT	267 WORDS

Dimension one: Infrastructure: Infrastructure is probably the most obvious and tangible dimension of e-government. Since e-government is characterized by procedures and services taking place between administrations on the one side and citizens or businesses (or other administrative entities) on the other, technical infrastructure is needed to carry information and services. This characteristic distinguishes e-government from earlier forms of interaction with an administration. e-Government provision is not linked to a specific technology, but rather to any electronic means that citizens and businesses use to send and receive voice, data, and images via the Internet, such as personal computers, laptops, personal digital assistant devices (PDAs), as well as mobile and fixed-line telephony, The effectiveness of e-government services in reaching citizens and businesses depends greatly in the availability of ICT infrastructure. Therefore, it is very relevant for decision-makers to evaluate the status and development of ICT infrastructure in their countries and plan e-government projects accordingly. To assess the level of access to ICT infrastructure, decision-makers can use data collected from telecommunication incumbents and Internet providers via individual, business, and household surveys. A well- informed analysis would profit also from knowledge of the affordability of access to ICTs, looking at tariffs for certain services in comparison to per capita income levels. Finally, the infrastructure dimension also extends to the energy sector, as access to electricity is a precondition for a functioning ICT infrastructure. Dimension two: Policy: A policy is a deliberate plan of action to guide decisions and achieve rational outcomes. Commonly, governments develop and implement policies to address basic socio-economic issues that are expressed in

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177/206	SUBMITTED TEXT	110 WORDS	97%	MATCHING TEXT	110 WORDS

laws, budgetary actions, international agreements, declarations, contracts, or campaigns. Different types of policies shape the e-government environment. Trade regulations control the import and export of ICT goods, affecting the provision of services. Policies protecting local ICT industries, including tariff barriers, alter the movement and price of goods in a market. Similarly, antitrust regulations and market liberalization strategies, enforced by telecommunication regulatory authorities, have created the conditions for greater competition in the sector, the introduction of new technologies and services, and better prices for consumers. Likewise, the inclusion of universal service obligations in the licenses of telecommunication incumbents or Internet providers has promoted access to ICT infrastructure in

laws, budgetary actions, international agreements, declarations, contracts or campaigns. Different types of policies shape the e-government environment. Trade regulations control the import and export of ICT goods, affecting the provision of services. Policies protecting local ICT industries, including tariff barriers, alter the movement and price of goods in a market. Similarly, antitrust regulations and market liberalisation strategies, enforced by telecommunication regulatory authorities, have created the conditions for greater competition in the sector, the introduction of new technologies and services, and better prices for consumers. Likewise, the inclusion of universal service obligations in the licences of telecommunication incumbents or Internet providers has promoted access to ICT infrastructure in

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178/206	SUBMITTED TEXT	285 WORDS	99%	MATCHING TEXT	285 WORDS

least served areas, such as rural and low-income communities. Several countries have formulated comprehensive ICT strategies with the goal of accelerating their participation in the information society. The example of Egypt illustrates the close link that exists between general ICT policies and the e-government environment. Egypt's ICT strategy 2007-2010 brings e-government into the country's overall ICT strategy, proposing reforms in five key areas: state-of-the-art telecommunication and postal infrastructure, ICT access for all, ICT for education and Lifelong Learning, ICT for health, and innovation in the ICT industry. The same is true for Singapore, where the responsibility for general ICT policy, as well as for e-government policy, lies with the "Infocomm Development Authority of Singapore" (IDA). In the framework of its "iN2015" master plan and its "iGov 2010"sub-plan, IDA intends to encourage effective competition in the country's telecommunication market. Further, IDA functions as Chief Information Officer (CIO) and is responsible for the security of crucial ICT infrastructure, master-planning as well as project implementation of government-wide ICT plans. Box 2, below, provides more detail on the goals and strategies of both plans. Policies protecting critical information infrastructure also shape the e- government environment. Cybersecurity policies—the protection of e-government infrastructure against failures and attacks from inside the system, as well as from outside—are essential once a country relies strongly on e- government services. Protective measures are particularly necessary for the provision of e-business or whenever sensitive financial or personal data are being transferred electronically. Protecting the privacy of individual users is also crucial to ensure citizen's trust in the new communication technologies. Accordingly, laws and regulations on digital identification, digital signatures, e-payment, and data protection are highly relevant and are shaping the environment of e-government.

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179/206	SUBMITTED TEXT	31 WORDS	80%	MATCHING TEXT	31 WORDS

the internet, other technologies, and applications like telephones (fixed or mobile), messaging systems (SMS or MMS), biometric identification, smart cards, radio-frequency ID (RFID) chips, as well as television or radio

the Internet, other technologies and applications can be used for e-government services, such as telephones (fixed or mobile), messaging systems (SMS or MMS), fax, biometric identification, smart cards, radio-frequency ID (RFID) chips, as well as television or radio-

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180/206	SUBMITTED TEXT	52 WORDS	99%	MATCHING TEXT	52 WORDS

While e-government policies depend strongly on the vision of decision-makers, success requires such visions to be formulated, expressed, shared, and discussed with all relevant stakeholders to improve ownership and ease implementation. When policies fail to be implemented, the gap between plans, actions, and expected outcomes grows, resulting in citizen dissatisfaction.

While e-government policies depend strongly on the vision of decision makers, success requires for such visions to be formulated, expressed, shared and discussed with all relevant stakeholders to improve ownership and ease implementation. When policies fail to be implemented, the gap between plans, actions and expected outcomes grows, resulting in citizen dissatisfaction.

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181/206	SUBMITTED TEXT	197 WORDS	100%	MATCHING TEXT	197 WORDS

Dimension three: Governance: Governance, that is, the performance of public administration, is an important factor for the success of e-government initiatives. The World Bank defines governance as the exercise of political authority and the use of institutional resources to manage society's problems and affairs. The optimum performance an administration can strive for is to produce a “worthwhile pattern of good results while avoiding an undesirable pattern of bad circumstances”. Therefore, to achieve good governance, different factors need to be balanced, including costs, freedom of the individual vs. the common good, local, national, or global interests, as well as short and long-term gains vs. losses. The negotiation of these factors may lead to different results and performances, as places and times change. Despite these divergences, there is general consent on the minimum requirements for good performance of national administrations. Commonly, it is recognized that a government performs well if it, at least, does not abuse its power, is not corrupt, and follows the due processes of law, which includes a division between the executive, legislative and judicial powers, and freedom of the press. This paradigm is also often called “good governance” in the development literature.

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182/206	SUBMITTED TEXT	242 WORDS	99%	MATCHING TEXT	242 WORDS

Further, the success of e-government initiatives also depends on defining back- office workflows within the administration and on digitizing and reengineering such workflows. Since citizens do not usually know the processes taking place within an administration, they judge its performance based on their personal experiences, drawing conclusions about the quality of governance according to the time it takes to complete standard procedures, like registering a car, and the reliability and consistency of such processes. Dimension four: Outreach: "Outreach" is the dimension of e-government most prominently perceived and experienced by end-users, namely companies and citizens. Often referred to as the "horizontal integration" of public services, this dimension brings together various service offerings to the end-users. One aspect of outreach is the supply of information and services by governments. Governments' communication with and supply of information to businesses and citizens varies in intensity. Some administrations provide static information on web pages; others offer services online, and some others offer electronic consultation and participation. The European Union (EU), for example, practices online consultations of citizens. It applies e-government in order to overcome long distances, language barriers, and the perceived democratic deficit of the institutions of the Union. Service-oriented e-government initiatives intend to bundle different services according to a combination that an end-user would perceive as a logical unit for one-stop-government. For instance, the government of Singapore is working on developing an even more user-friendly government portal. To this end,

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183/206 **SUBMITTED TEXT** 258 WORDS **98%** **MATCHING TEXT** 258 WORDS

provision of information in the front end should be improved; information should be presented in a better and more intuitive "look-and-feel" way, providing better search engines and including different types of media, such as video clips. Creating a one-stop government interface is a major challenge in national e-government efforts. The services that need to be integrated might represent numerous fragmented processes, requiring the involvement of a diverse number of stakeholders. E-Government activities are also affected by demand forces emanating from the particular needs and characteristics of citizens and businesses, such as education, ICT literacy, and other life circumstances. Many e-government applications consist of texts and are Internet-based, thus requiring users to have at least basic computer literacy and, if they do not rely on agencies in telecentres or other service providers, the ability to read and write. Therefore, it is crucial for the success of an e-government project to understand the capability of the citizens the initiative is targeting. The one-stop shop "Jan Seva Kendra" in India, s a good example of a low barrier e-government service provision project, where illiterate users have the option of receiving information through the telephone or talking to a civil servant in person. Further, life circumstances, such as income, day-night rhythm, working hours, social structures, individual habits, and culture, affect the demand for e- government services as well. For instance, in communities where the elder deals with the administration on behalf of the community, the demand for e- government services offered to individuals will probably be quite low; in contrast,

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184/206 **SUBMITTED TEXT** 70 WORDS **100%** **MATCHING TEXT** 70 WORDS

individualized population in urban areas might prefer a seemingly anonymous way to communicate with authorities. This dimension also covers outreach between national governments. Peer-to- peer learning, for instance, can be very helpful. Moreover, challenges like cybersecurity and cybercrimes are cross-border issues that should be dealt with in a coordinated manner. Accordingly, engaging in global and regional fora on e-government can improve the e-government environment of a country. 14.4

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185/206 **SUBMITTED TEXT** 17 WORDS **100%** **MATCHING TEXT** 17 WORDS

E-business is the transformation of key business processes through the use of Internet technologies. ●

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186/206 **SUBMITTED TEXT** 47 WORDS **94%** **MATCHING TEXT** 47 WORDS

Governments use information and communication technologies for the exchange of information with citizens and businesses on topics such as tax compliance, public utility services, as well as vehicle and voting registration. The introduction of e-government services goes along with a change towards a more citizen-friendly culture.

Governments use information and communication technologies (ICTs) for the exchange of information with citizens and businesses on topics such as tax compliance, public utility services, as well as vehicle and voting registration. Often, the introduction of e-government services goes along with a change towards a more customer friendly culture. 1

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187/206 **SUBMITTED TEXT** 12 WORDS **100%** **MATCHING TEXT** 12 WORDS

INTERNATIONAL TELECOMMUNICATION UNION E-GOVERNMENT IMPLEMENTATION TOOLKIT INTRODUCTION: E-GOVERNMENT READINESS ASSESSMENT FRAMEWORK

INTERNATIONAL TELECOMMUNICATION UNION E-GOVERNMENT IMPLEMENTATION TOOLKIT INTRODUCTION: E-GOVERNMENT READINESS ASSESSMENT FRAMEWORK ©

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188/206 **SUBMITTED TEXT** 15 WORDS **71%** **MATCHING TEXT** 15 WORDS

and controls the efficient, effective flow and storage of goods, services and related information

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189/206 **SUBMITTED TEXT** 82 WORDS **98%** **MATCHING TEXT** 82 WORDS

Stages of E-government Development In addition to identifying e-government initiatives according to their sector, such projects can also be classified according to their level or stage of development. Although different e-government initiatives strive to accomplish different goals, some observers argue that one of the overarching themes of e- government is to fully realize the capabilities of available information technology in an effort to transform government from an agency-centric, limited-service operation into an automated, citizen-centric operation capable of delivering government services to citizens,

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190/206	SUBMITTED TEXT	353 WORDS	100%	MATCHING TEXT	353 WORDS

businesses, and other government agencies 24 hours a day, seven days a week. However, for a variety of technical, economic, and political reasons, it will take time for these initiatives to evolve into their full potential. For that reason, some observers use a common schema for classifying the stages of evolution of e-government projects. The schema is based on the degree to which the properties of information technology have been utilized to enable the delivery of services electronically. Using this schema, there are four stages of evolution; presence, interaction, transaction, and transformation. It is important to note that an e-government initiative does not necessarily have to start at the first stage and work its way through all of the stages. Instead, a project can skip levels, either from its inception or as it develops. Presence Presence is the first stage of development and is the establishment of a placeholder for delivering information in the future. It represents the simplest and least expensive entrance into e-government, but it also offers the fewest options for citizens. A typical example is a basic Web site that lists cursory information about an agency, such as hours of operation, mailing address, and/or phone numbers, but has no interactive capabilities. It is a passive presentation of general information. Some observers refer to these types of sites as 'brochureware,' suggesting they are the electronic equivalent of a paper brochure. Interaction The second stage is interaction. Although interactive Web-based initiatives offer enhanced capabilities, efforts in this group are still limited in their ability to streamline and automate government functions. Interactions are relatively simple and generally revolve around information provision. These types of initiatives are designed to help the customer avoid a trip to an office or make a phone call by making commonly requested information and forms available around the clock. These resources may include instructions for obtaining services, downloadable forms to be printed and mailed back to an agency, or perhaps e-mail contact to respond to simple questions. Transaction The third stage in the evolution of e-government initiatives is

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transaction. These initiatives are more complex than simple information provision and embody the types of activities popularly associated with e-government. They enable clients to complete entire tasks electronically at any time of the day or night. These initiatives effectively create self-service operations for tasks such as license renewals, paying taxes and fees, and submitting bids for procurement contracts. Although the level of interactivity is of a higher magnitude than second stage initiatives, the activities still involve a flow of information that is primarily one-way (either to

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government or to the client, depending on the activity). The electronic responses are generally highly

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regularized and create predictable outcomes (e.g., approving a license renewal, creating a receipt, acknowledging a bid). Transformation The highest order of evolution for e-government initiatives is transformation. Initiatives at this level utilize the full capabilities of the technology to transform how government functions are conceived, organized, and executed. Such initiatives would have the robust customer relationship management capabilities required to handle a full range of questions, problems, and needs. Currently, there are very few examples of this type of initiative, in part due to administrative, technical, and fiscal constraints. One of the distinctions of these initiatives is that they facilitate the seamless flow of information and collaborative decision-making between federal, state, local, public, and private partners. In other words, transformative e-government initiatives often seek to remove the organizational barriers that promote agency-centric solutions and, instead, promote customer-centric solutions. Some advocates suggest that, at its most advanced level, e-government could potentially reorganize, combine, and/or eliminate existing agencies and replace them with virtual organizations.

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194/206	SUBMITTED TEXT	12 WORDS	100%	MATCHING TEXT	12 WORDS

E-Government in the United States: The Federal Model of Implementation.

E-Government in the United States: The Federal Model of Implementation

W https://rowman.com/ISBN/9781498526609

195/206	SUBMITTED TEXT	18 WORDS	58%	MATCHING TEXT	18 WORDS

or transmit or cause to be published it the electronic form, an material which is lascivious or

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196/206	SUBMITTED TEXT	7 WORDS	70%	MATCHING TEXT	7 WORDS

Government-to-Customer (G2C), Government-to-Business (G2B) and Government-to-Government (G2

government-to-government (G2G), government-to-business (G2B), and government-to-citizen (G2

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197/206	SUBMITTED TEXT	13 WORDS	76%	MATCHING TEXT	13 WORDS

of e-Government. e-Government is the use of information and communication technologies (

OF IMPLEMENTING E-GOVERNMENT Electronic government or “e-Government” is defined as “the use of information and communication technologies

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198/206	SUBMITTED TEXT	37 WORDS	100%	MATCHING TEXT	37 WORDS

or if its effect is such as to tend to deprave and corrupt persons who are likely, having regard to all relevant circumstances, to read, see or hear the matter contained or embodied in it”.

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199/206	SUBMITTED TEXT	55 WORDS	100%	MATCHING TEXT	55 WORDS

There are four stages of evolution; presence, interaction, transaction, and transformation. It is important to note that an e-government initiative does not necessarily have to start at the first stage and work its way through all of the stages. Instead, a project can skip levels, either from its inception or as it develops.

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Presence is the first stage of development and is the establishment of a placeholder for delivering information in the future. 2)

Presence is the first stage of development and is the establishment of a placeholder for delivering information in the future.

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201/206	SUBMITTED TEXT	32 WORDS	100%	MATCHING TEXT	32 WORDS

A Primer on E-Government: Sectors, Stages, Opportunities, and Challenges of Online Governance Updated January 28, 2003 Jeffrey W. Seifert Analyst in Information Science and Technology Policy Resources, Science, and Industry Division.

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202/206	SUBMITTED TEXT	19 WORDS	51%	MATCHING TEXT	19 WORDS

http://www.w3.org/TR/2001/REC-xmlschema-0-20010502/ ● Part 1: Structures, at http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/ ● Part 2: Data types, at http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/

http://www.w3.org/TR/2001/REC-xmlschema-0-20010502/ Latest version: http://www.w3.org/TR/xmlschema-0/ Previous version: http://www.w3.org/TR/2001/PR-xmlschema-0-20010330/

W http://www.w3.org/TR/2001/REC-xmlschema-0-20010502/

203/206	SUBMITTED TEXT	92 WORDS	96%	MATCHING TEXT	92 WORDS

Mission Mode Project A mission mode project (MMP) is an individual project within the National e- Governance Plan (NeGP) that focuses on one aspect of electronic governance, such as banking, land records or commercial taxes etc. Within NeGP, "mission mode" implies that projects have clearly defined objectives, scopes, and implementation timelines and milestones, as well as measurable outcomes and service levels. NeGP comprises 31 mission mode projects (MMPs), which are further classified as state, central or integrated projects. Each state government can also define five MMPs specific to its individual needs.

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204/206	SUBMITTED TEXT	361 WORDS	98%	MATCHING TEXT	361 WORDS

India Development Gateway Vikaspedia is a MeitY initiative for providing e-knowledge and using ICT-based applications for empowerment of the poor (rural and urban). It seeks to maximise utility of ongoing government programmes through provision of universally accessible digital information resources in Indian languages, created and shared collaboratively by various development stakeholders. Developed as part of the initiative, is the multi-lingual, multi-sectoral online knowledge platform - Salient features: ● Vikaspedia hosts information in all 22 scheduled languages of India, besides English. ● Domains covered - Agriculture, Health, Education, Social Welfare, Energy, e-Governance. ● Vikaspedia hosts multiple content forms – text, audio, video, etc shared by various agencies/individuals. ● Vikaspedia offers content editing & adding provisions to authenticated registered users. ● The platform has several user interactive features - discussion forum, polls, page rating & commenting, interaction with social networking sites, screen reader access, etc. ● The portal information is shared through various modes to reach the last mile – personalised voice alerts, SMS, community radio, mobile apps, e- mailers, audio/video IEC materials etc. The utility of Vikaspedia is as follows ● Vikaspedia currently hosts 9 lakh pages of content shared by institutions (300+) & registered members (67,000+). It attracts 10.1 Crore hits per month. Exclusive information for marginalised sections like women, SC/ST/BC/Minorities are being covered. ● Focussed capacity building of grassroot service providers on digital information access & sharing in regional languages have been taken up through 2260 events at state, district, community levels covering 23 states & 3 UTs. About 2.94 lakh have been trained so far. ● About 3 Crore target audience have been reached to promote ongoing government programmes through various ICT modes. ● Several products & services developed as part of Vikaspedia have been taken up by various state governments to be replicated as part of their existing programmes. ● Online utility surveys among the users of Vikaspedia portal indicate that Vikaspedia is a preferred source of information among the rural youth who access information on policies, schemes & entrepreneurship. ● Vikaspedia portal and its products have received several awards including the World Summit on the Information Society Forum (WSIS) 2014 Award. 16.8

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W https://www.meity.gov.in/content/india-development-gateway

205/206	SUBMITTED TEXT	34 WORDS	100%	MATCHING TEXT	34 WORDS

mission mode project (MMP) is an individual project within the National e-Governance Plan (NeGP) that focuses on one aspect of electronic governance, such as banking, land records or commercial taxes etc. 16.10

mission mode project (MMP) is an individual project within the National e-Governance Plan (NeGP) that focuses on one aspect of electronic governance, such as banking, land records or commercial taxes etc.

W https://www.meity.gov.in/content/mission-mode-projects

206/206	SUBMITTED TEXT	37 WORDS	100%	MATCHING TEXT	37 WORDS

A domain name is an identification string that defines a realm of administrative autonomy, authority or control within the Internet. Domain names are used in various networking contexts and for application-specific naming and addressing purposes. ●

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