ANNAI WOMEN'S COLLEGE,

KARUR

E-COMMERCE

(P16MCE4A)

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E – COMMERCE

Objective: To educate the importance and usage electronic knowledge in the field of commerce.

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UNIT II

Electronic Commerce and World Wide Web: Architectural Frame work for E- – WWW Architecture – Hypertext Publishing – Consumer Oriented Applications – Mercantile Process Models – Consumer's Perspective – Merchant's Perspective – Electronic Payment Systems (EPS) – Types - Designing EPS - Smart Cards and EPS – Credit Cards and EPS.

UNIT III

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E-COMMERCE

I - UNIT

Meaning

E-Commerce or Electronic Commerce means buying and selling of goods, products, or services over the internet. E-commerce is also known as electronic commerce or internet commerce. These services provided online over the internet network. Transaction of money, funds, and data are also considered as E-commerce. These business transactions can be done in four ways: Business to Business (B2B), Business to Customer (B2C), Customer to Customer (C2C), Customer to Business (C2B).

Types of E-Commerce Models

Electronic commerce can be classified into four main categories. The basis for this simple classification is the parties that are involved in the transactions. So the four basic electronic commerce models are as follows,

1. Business to Business

This is Business to Business transactions. Here the companies are doing business with each other. The final consumer is not involved. So the online transactions only involve the manufacturers, wholesalers, retailers etc.

2. Business to Consumer

Business to Consumer. Here the company will sell their goods and/or services directly to the consumer. The consumer can browse their websites and look at products, pictures, read reviews. Then they place their order and the company ships the goods directly to them. Popular examples are Amazon, Flipkart, Jabong etc.

3. Consumer to Consumer

Consumer to consumer, where the consumers are in direct contact with each other. No company is involved. It helps people sell their personal goods and assets directly to an interested party. Usually, goods traded are cars, bikes, electronics etc. OLX, Quikr etc follow this model.

4. Consumer to Business

This is the reverse of B2C, it is a consumer to business. So the consumer provides a good or some service to the company. Say for example an IT freelancer who demos and sells his software to a company. This would be a C2B transaction.

Examples of E-Commerce

- Amazon

- Flipkart
- eBay
- Fiverr
- Upwork
- Olx
- Quikr

Features of E-Commerce

- E-Commerce has global reach. The technology is utilized in all nations.
- It is a virtual reality
- It is rich with information and provides maximum information
- Provides individual need based messaging services
- Provides interactivity among various uses
- Provides social technology and social networking
- Provides text, audio, video, graphics and all types of entertainment
- Uses international or universal standards for transactions.
- Uses internet and web technologies. It can be reached from all places
- Works in digital area.

Advantages of E-Commerce

- E-commerce provides the sellers with a global reach. They remove the barrier of place (geography). Now sellers and buyers can meet in the virtual world, without the hindrance of location.
- Electronic commerce will substantially lower the transaction cost. It eliminates many fixed costs of maintaining brick and mortar shops. This allows the companies to enjoy a much higher margin of profit.
- It provides quick delivery of goods with very little effort on part of the customer. Customer complaints are also addressed quickly. It also saves time, energy and effort for both the consumers and the company.
- One other great advantage is the convenience it offers. A customer can shop 24×7. The website is functional at all times, it does not have working hours like a shop.
- Electronic commerce also allows the customer and the business to be in touch directly, without any intermediaries. This allows for quick communication and transactions. It also gives a valuable personal touch.

Disadvantages of E-Commerce

- The start-up costs of the e-commerce portal are very high. The setup of the hardware and the software, the training cost of employees, the constant maintenance and upkeep are all quite expensive.
- Although it may seem like a sure thing, the e-commerce industry has a high risk of failure. Many companies riding the dot-com wave of the 2000s have failed miserably. The high risk of failure remains even today.
- At times, e-commerce can feel impersonal. So it lacks the warmth of an interpersonal relationship which is important for many brands and products. This lack of a personal touch can be a disadvantage for many types of services and products like interior designing or the jewelry business.
- Security is another area of concern. Only recently, we have witnessed many security breaches where the information of the customers was stolen. Credit card theft, identity theft etc. remain big concerns with the customers.
- Then there are also fulfillment problems. Even after the order is placed there can be problems with shipping, delivery, mix-ups etc. This leaves the customers unhappy and dissatisfied.

Electronic Commerce Framework

E-Commerce application will be built on the existing technology infrastructure

- A myriad of computers
- Communication networks
- Communication software
- Common business services for facilitating the buying and selling process
- Messaging & information distribution as a means of sending and retrieving information
- Multimedia content & network publishing, for creating a product & a means to communicate about it
- The information superhighway- the very foundation-for providing the high way system along which all e-commerce must travel
- The two pillars supporting all e-commerce applications & infrastructure
- Any successful e-commerce will require the I-way infrastructure in the same way that regular commerce needs
- I-way will be a mesh of interconnected data highways of many forms

- Telephone,wires,cable TV wire
- Radio-based wireless-cellular & satellite
- Movies=video + audio
- Digital games=music + video + software
- Electronic books=text + data + graphics + music + photographs + video
- In the electronic 'highway system' multimedia content is stores in the form of electronic documents
- These are often digitized
- On the I-way messaging software fulfills the role, in any no. of forms: e-mail, EDI, or point-to-point file transfers
- Encryption & authentication methods to ensure security
- Electronic payment schemes developed to handle complex transactions
- These logistics issues are difficult in long-established transportation

Anatomy of E-Commerce applications

E-Commerce applications are:

1. Multimedia Content for E-Commerce Applications
2. Multimedia Storage Servers & E-Commerce Applications
    i. Client-Server Architecture in Electronic Commerce
    ii. Internal Processes of Multimedia Servers
    iii. Video Servers & E-Commerce
3. Information Delivery/Transport & E-Commerce Applications
4. Consumer Access Devices

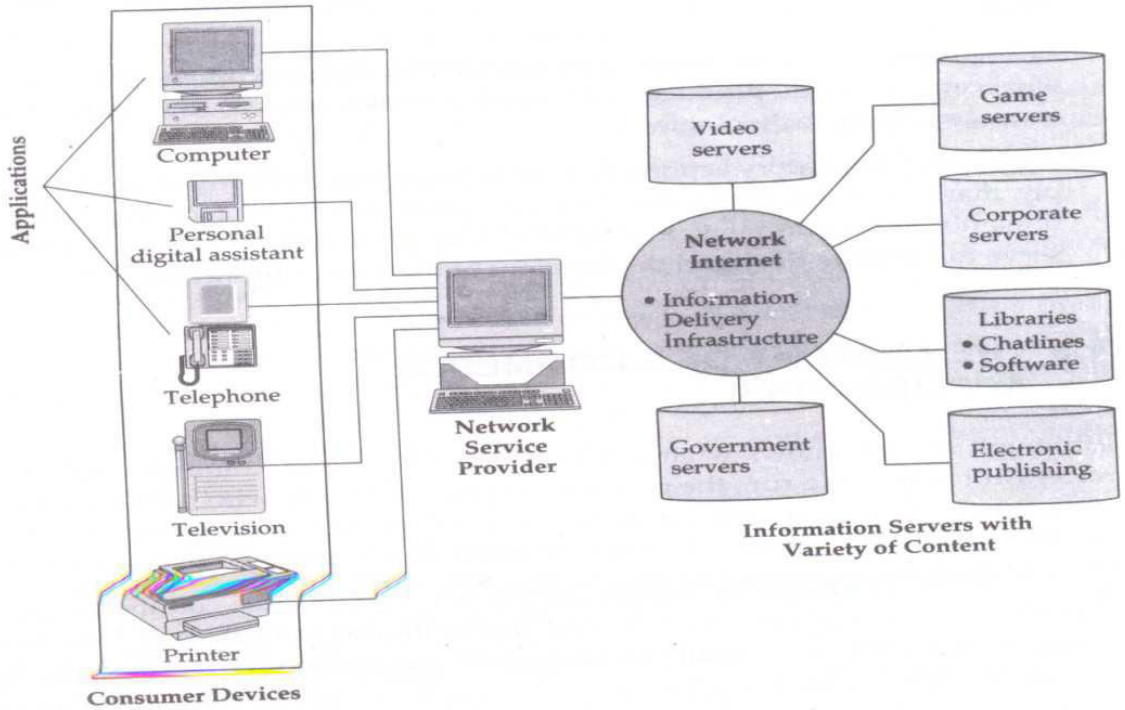


Figure 1.2 Elements of electronic commerce applications

Multimedia Content for E-Commerce Applications

• Multimedia content can be considered both fuel and traffic for electronic commerce applications.

• The technical definition of multimedia is the use of digital data in more than one format, such as the combination of text, audio, video, images, graphics, numerical data, holograms, and animations in a computer file/document.

• Multimedia is associated with Hardware components in different networks.

• The Accessing of multimedia content depends on the hardware capabilities of the customer.

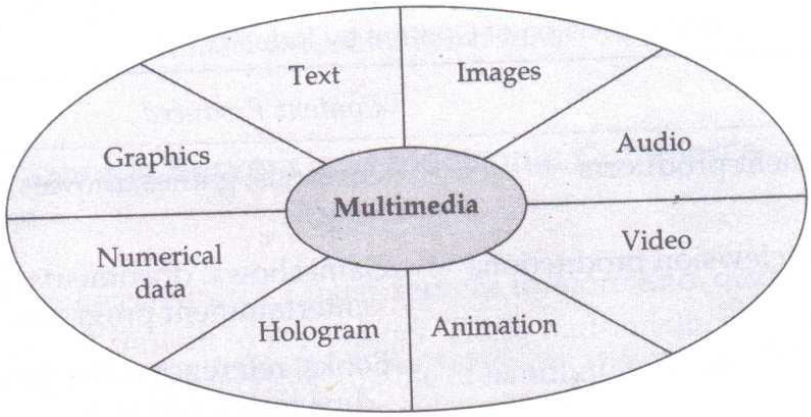


Figure 1.3 Possible components of multimedia

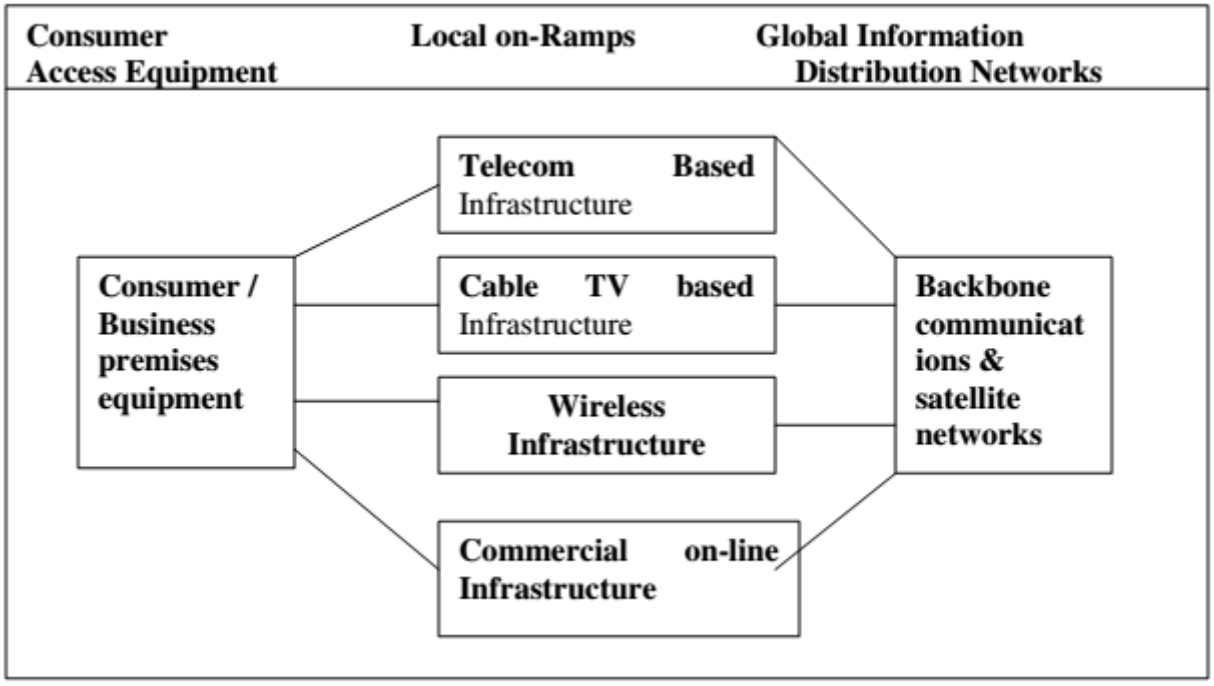
What are the components of I-way Infrastructure?

There are three components of the I-way infrastructure:

• Consumer access equipment

• Local on-Ramps

• Global information Distribution Network



FACTORS FOR FRAMEWORK

E-Commerce framework depends upon the following two main aspects:

1. Public policy, legal and privacy issues
2. Standards required for documents, protocols and transactions with reference to the technology

First Major Concepts	*Public policy *Legal *Privacy policy	Frame Work	*E-Commerce Frame work	Major Second Concepts	*Standards for documents *Protocols *Transactions with reference to technology

The business activities have to be within these two pillars. The usual business standards that are expected in E-Commerce are:

a) Infrastructure for usual business services such as authenticity, security and electronic payments directories etc.
b) Infrastructure for communicating and distribution of information
c) Infrastructure for multimedia content and network
d) Infrastructure information superhighway through channels

Media convergence

Media convergence is the merging of mass communication outlets – print, television, radio, the Internet along with portable and interactive technologies through various digital **media** platforms. **Media convergence** is the blending of multiple **media** forms into one platform for purposes of delivering a dynamic experience.

Different Types of Networking For E-Commerce:

Internet:

The Internet is a global network of computers that allows people to send email, view web sites, download files such as mp3 and images, chat, post messages on newsgroups and forums and much more.

The Internet was created by the Advanced Research Projects Agency (ARPA) of the U.S.

government in 1960's and was first known as the ARPA Net. At this stage the Internet's first computers were at academic and government institutions and were mainly used for accessing files and to send emails. From 1983 onwards the Internet as we know it today started to form with the introduction of the communication protocol TCP/IP to ARPA Net. Since 1983 the

Internet has accommodated a lot of changes and continues to keep developing. The last two decades has seen the Internet accommodate such things as network LANs and ATM and frame switched services. The Internet continues to evolve with it becoming available on mobile phones and pagers and possibly on televisions in the future.

Advantages of internet:

There many advantages to using the internet such as:

E-mail

Email is now an essential communication tool in business. It is also excellent for keeping in touch with family and friends. The advantage to email is that it is free (no charge per use) when compared to telephone, fax and postal services.

Information

There is a huge amount of information available on the internet for just about every subject known to man, ranging from government law and services, trade fairs and conferences, market information, new ideas and technical support.

Services

Many services are now provided on the internet such as online banking, job seeking and applications, and hotel reservations. Often these services are not available off-line or cost more.

Buy or sell products. The internet is a very effective way to buy and sell products all over the world.

Communities communities of all types have sprung up on the internet. Its a great way to meet up with people of similar interest and discuss common issues. A Leading-Edge Image

Presenting your company or organization as leading-edge shows your customers and prospective

customers that you are financially strong, technologically savvy, and ready for the 21st century.

And that you care enough about your customers to take advantage of new technologies for their benefit. And finally that you have the resources to support your clients in the most beneficial manner possible.

More and more advertisers on television, radio, magazines, and newspapers are including a Web address. Now is the time to avoid playing catch-up later.

Improved Customer Service

The companies are available to their customers 24 hours a day, 7 days a week. The Internet never sleeps. Whenever customer needs information about any company, products or services, they can access the company‘s Web Page.

Market Expansion

The Internet is a global system. Latest estimates are that there are about 40 million people with access to the Internet, and this number is growing every day. By simply posting a Web Page you are also addressing International markets.

Low Cost Marketing

Imagine developing a full color brochure without having to incur the costs of proofs, printers, wasted paper, long lead times between revisions, and more. Then imagine a full color product or services brochure that is interactive and which incorporates text, graphics, audio, and/or video. One that can be immediately updated without incurring the usual costs of product material updates.

Low Cost Selling

Without the cost of direct selling potential customers can get detailed information about your products or services at any time. And they can easily order your products over the Internet, or request additional information be sent to them via a request form on your Web page.

Lower Communication Costs

Your time, and your employees time, is valuable. Most businesses and organizations spend time answering the same questions over and over again. With a Web page you can make the answers available to everyone immediately. You can also update your Wed page with new information quickly and easily.

Intranet:

An intranet is a computer network that uses Internet Protocol technology to share information, operational systems, or computing services within an organization. This term is used in contrast to extranet, a network between organizations, and instead refers to a network within an organization.

The objective is to organize each individual's desktop with minimal cost, time and effort to be more productive, cost efficient, timely, and competitive.

An intranet may host multiple private websites and constitute an important component and focal point of internal communication and collaboration.

Any of the well known Internet protocols may be found in an intranet, such as HTTP (web services), SMTP (e-mail), and FTP (file transfer protocol). Internet technologies are often

deployed to provide modern interfaces to legacy information systems hosting corporate data.

Uses of Intranet:

Increasingly, intranets are being used to deliver tools, e.g. collaboration (to facilitate working in groups and teleconferencing) or sophisticated corporate directories, sales and customer relationship management tools, project management etc., to advance productivity. Intranets are also being used as corporate culture-change platforms. For example, large numbers of employees discussing key issues in an intranet forum application could lead to new ideas in management, productivity, quality, and other corporate issues.

In large intranets, website traffic is often similar to public website traffic and can be better understood by using web metrics software to track overall activity. User surveys also improve intranet website effectiveness. Larger businesses allow users within their intranet to access public internet through firewall servers. They have the ability to screen messages coming and going keeping security intact.

When part of an intranet is made accessible to customers and others outside the business, that part becomes part of an extranet. Businesses can send private messages through the public network, using special encryption/decryption and other security safeguards to connect one part of their intranet to another.

Intranet user-experience, editorial, and technology teams work together to produce in-house sites. Most commonly, intranets are managed by the communications, HR or CIO departments of large organizations, or some combination of these. Because of the scope and variety of content and the number of system interfaces, intranets of many organizations are much more complex than their respective public websites. Intranets and their use are growing rapidly.

Advantages:

Workforce productivity: Intranets can help users to locate and view information faster and use applications relevant to their roles and responsibilities. With the help of a web browser interface, users can access data held in any database the organization wants to make available, anytime and — subject to security provisions — from anywhere within the company workstations, increasing employees' ability to perform their jobs faster, more accurately, and with confidence that they have the right information.

Time: Intranets allow organizations to distribute information to employees on an as-needed basis; Employees may link to relevant information at their convenience, rather than being distracted indiscriminately by email.

Communication: Intranets can serve as powerful tools for communication within an organization, vertically strategic initiatives that have a global reach throughout the organization. By providing this information on the intranet, staff have the opportunity to keep up-to-date with the strategic focus of the organization. Some examples of communication would be chat, email, and/or blogs. A great real world example of where an intranet helped a company communicate is when Nestle had a number of food processing plants in Scandinavia. Their central support system had to deal with a number of queries every day.

Web publishing: allows cumbersome corporate knowledge to be maintained and easily accessed throughout the company using hypermedia and Web technologies. Examples include: employee manuals, benefits documents, company policies, business standards, news feeds, and even training, can be accessed using common Internet standards (Acrobat files, Flash files, CGI applications). Because each business unit can update the online copy of a document, the most recent version is usually available to employees using the intranet.

Business operations and management: Intranets are also being used as a platform for developing and deploying applications to support business operations and decisions across the internetworked enterprise.

Cost-effective: Users can view information and data via web-browser rather than maintaining physical documents such as procedure manuals, internal phone list and requisition forms. This can potentially save the business money on printing, duplicating documents, and the environment as well as document maintenance overhead.

Enhance collaboration: Information is easily accessible by all authorised users, which enables teamwork.

Cross-platform capability: Standards-compliant web browsers are available for Windows, Mac, and UNIX.

Built for one audience: Many companies dictate computer specifications which, in turn, may allow Intranet developers to write applications that only have to work on one browser (no cross-browser compatibility issues).

Promote common corporate culture: Every user has the ability to view the same information within the Intranet.

Immediate updates: When dealing with the public in any capacity, laws, specifications, and parameters can change. Intranets make it possible to provide your audience with "live" changes so they are kept up-to-date, which can limit a company's liability.

Supports a distributed computing architecture: The intranet can also be linked to a company‘s management information system, for example a time keeping system.

Wireless Application Protocol:

WAP is a technical standard for accessing information over a mobile wireless network. A WAP browser is a web browser for mobile devices such as mobile phones that uses the protocol. WAP is a specification for a set of communication protocols to standardize the way that wireless devices, such as cellular telephones and radio transceivers, can be used for Internet access, including e-mail, the World Wide Web, newsgroups, and instant messaging.

The WAP layers are:

Wireless Application Environment (WAE)

Wireless Session Layer (WSL)

Wireless Transport Layer Security(WTLS)

Wireless Transport Layer (WTP)

Web security:

It is a branch of Information Security that deals specifically with security of websites, web applications and web services.

At a high level, Web application security draws on the principles of application security but applies them specifically to Internet and Web systems. Typically web applications are developed using programming languages such as PHP, Java EE, Java, Python, Ruby, ASP.NET, C#, VB.NET or Classic ASP.

Technological convergence:

Technological convergence is the tendency that as technology changes, different technological systems sometimes evolve toward performing similar tasks.

Digital convergence refers to the convergence of four industries into one conglomerate, ITTCE (Information Technologies, Telecommunication, Consumer Electronics, and Entertainment).Previously separate technologies such as voice data and productivity applications, and video can now share resources and interact with each other synergistically.

Telecommunications convergence, network convergence or simply convergence are broad terms used to describe emerging telecommunications technologies, and network architecture used to migrate multiple communications services into a single network. Convergence in this instance is defined as the interlinking of computing and other information technologies, media content, and communication networks that has arisen as the result of the evolution and popularization of the Internet as well as the activities, products and services that have emerged in the digital media space. Convergent services, such as VoIP, IPTV, Mobile TV, Smart TV, and others, tend to replace the older technologies and thus can disrupt markets. IP-based

convergence is inevitable and will result in new service and new demand in the market.

Technology Implications:

Convergent solutions include both fixed-line and mobile technologies. Recent examples of new,

convergent services include:

Using the Internet for voice telephony

Video on demand

Fixed-mobile convergence

Mobile-to-mobile convergence

Location-based services

Integrated products and bundles

Convergent technologies can integrate the fixed-line with mobile to deliver convergent solutions.

Convergent technologies include:

IP Multimedia Subsystem

Session Initiation Protocol

IPTV

Voice over IP

Voice call continuity

Digital video broadcasting – handheld

II – UNIT

E-COMMERCE

E-Commerce

II Unit

Electronic Commerce and world wide web: Architectural Frame work for E-Commerce - www Architecture - Hypertext Publishing - Consumer oriented Applications - Mercantile Process Models - Consumer's Perspective - Merchant's Perspective - Electronic Payment Systems (EPS) - Types - Designing EPS - Smart Cards and EPS - Credit Cards and EPS.

World wide web

- web is an information sharing architecture
- It integrates the online content and information servers.
- The activities are carried out quickly - less cost
- E-Commerce applications are based on this web technology.
- It is the software foundation
- www is a fine and attractive technology that has changed the network into colorful digital world.
- It has created a social, artistic, entertainment and business world.
- web is just like a big library with billions of data
- web technology has helped for the growth and development of electronic publishing, communication, business and commercial activities.
- web servers are the web sites
- The servers store the Hyper Text Markup Language files and respond to the request of the users.
- These files can be accessed by the personal computers using browsers.

Architecture of www

① client Browser - provides local or specific data by has mosaic or www browser and browser extensions.

- It is fixed on the users PC or workstation
- It provides are interface to the various types of contents

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(2) www server function – web servers provide information retrieval service, data and transaction management and secure messaging.

(3) Third party services – include the digital library of documents, data servers, information processing tools, electronic payment servers etc.,

web architecture Components

web browser is the software that enables the users to access the database. It is a graphical interface between the user and server or the provider.

(1) Hyper Text Markup Language (HTML) – is the Hyper Text Markup Language that is used for formatting web pages and for hyper links.

(2) Hyper Text Transfer Protocol (HTTP) – that enables communication between the web server and the clients.

(3) Common Gateway Interface (CGI) – that helps to invoke programs from the web servers.

www Concepts

Client Server concept – user and provider
Universal reader Concept
Global hypertext publishing Concept

web Tools – Functioning

- Uniform Resource Locator – addressing scheme URL
- Hyper Text Transfer Protocol – Network protocol HTTP
- Hyper Text Markup Language – (HTML)

Framwork of E-Commerce

The software framework necessary for building electronic Commerce applications is little understood in existing literature.

E-Commerce application architecture consists of 6 layers of functionality

Cor) Services

① Application

i. C2B - Consumer gets knowledge about the product, price, quality through electronic publishing.

ii. B2B - Market link transactions - Computer to computer Communications are fast, economical and dependable way to conduct business transactions by business firms, organisation and Government.

iii. Intra organizational - That transation that occurs within an organization is called as Intra organization transaction. The information relating to the firm, product, Competitors, decisions taken prices to be communicated.

② Brokerage and data management

- order processing - e-mail order houses
- Payment Schemes - Electronic Cash
- Clearing houses - Virtual mail

③ Interface Layer - search to information and access

- Interactive Catalogue - home shopping
- Directory Support function - Amount of data

Interacts direct with software applications

Not multimedia - they work on the screen

④ Secure messaging

- Secure HTTP - Secure and fast - no delay -
- Encrypted e-mail EDI - through the use of network, send, receive, fax
- Remote programming (RPG) - Messaging is to solve problems

⑤ Middle ware services

- structure documentation SGML/HTML

- Compounded documents OLE, Open Doc

Ultimate mediators between different Software programs that pass information.

Transparency - help to distributed computing environment

Transaction security and management

Security levels are authentication and automation

Distributed object management and services

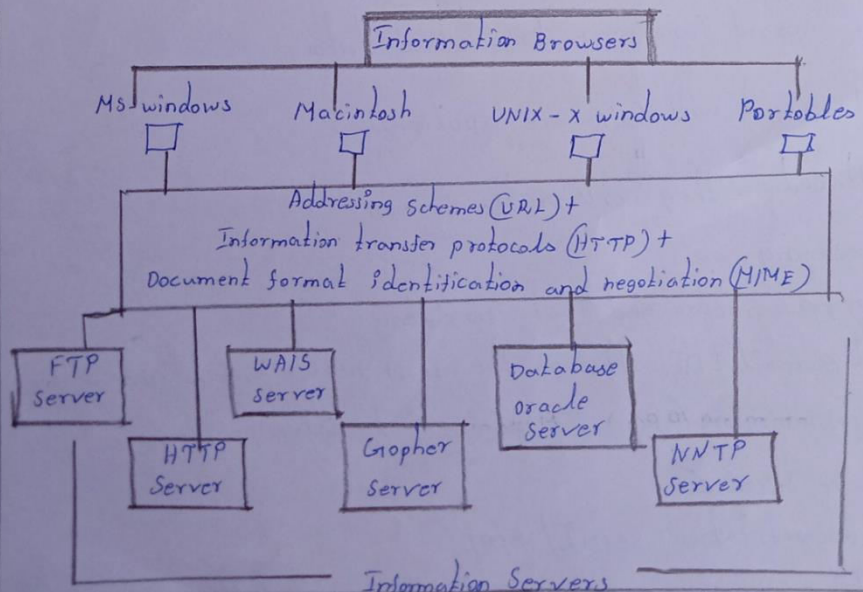
[Document oriented technology - document carries text, picture, video and audio]

⑥ Network infrastructure

- wireless - cellular, radio, PCs
- wire lines - POTs, Coaxical, Fiber optics.

Hypertext Publishing

During the last few years, interest in hypermedia on the internet - called distributed. Success web and browsers by more powerful workstation, high-resolution graphics displays, faster network communications and decreased cost for large on-line storage. brief induction



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Hypertext versus Hypermedia

* Hypertext is an approach to information management in which data are stored in a network of documents connected by links.
* links name Nodes
* Nodes one single concept or idea
* Nodes - text, graphics, animation, audio, video, images or programs.
* Nodes - Some systems network through interactive browser through structure editor.
* Nodes are connected to other nodes by links
* A link originates is called the reference or anchor
* Hypermedia combines qualities of hypertext and multimedia. For examples of hypermedia:
  - ⇒ You are reading a text on the Esperanto, language.
  - ⇒ You are a student studying trial room strategies. You are able to download video footage of the trial from an archive. Cross-referenced hyperlinks allow you to view any reference with audio annotations.
  - ⇒ You are a customer who had a complaint about a product. You are able to video conference in some other part of the country and discussion the problem.

The web facilitates the easy exchange of hypermedia through networked environments from anything as small as two Pc's connected to global Internet.

Benefits of Hypermedia Documents

⇒ Hypermedia documents are much more flexible than conventional documents.
one can read a hypermedia article and
one reads a conventional newspaper article
* different order depending on what captures the readers interest.

⇒ Hypermedia documents are also convenient offer sound

⇒ Hypermedia provides greater flexibility and convenience in computing

Environments that include networked micro computers and workstations, high-resolution display.

⇒ Another is dynamic organization.

Fixed at the time of printing, hypermedia links and notes can change dynamically.

⇒ Information in individual nodes can be updated, new nodes can be linked into the overall hypermedia structure, and new links can be added to show new relationships.

⇒ These systems allow people to create, annotate, graphics, audio, video, animation and programs.

Hypermedia system provide a non linear, innovative way of accessing and retrieving network documents.

Eletronic Payment Systems

Earlier system followed by the buyers were cash payments, payment by cheque, payment by demand draft, payment by bills.

EPS are becoming control to on-line business process innovation 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.

These demands by looking at the following issues

① Payment instruments
   1. Electronic Cash
   2. Electronic checks
   3. Credit/debit Cards

② Management of financial risks
   1. Privacy
   2. Fraud
   3. Mistake
   4. Risk like bank failure
   5. Authentication
   6. Authorization
   7. Anonymity

Types of Electronic Payment Systems

EPS is seen in banking, retailing, healthcare, online markets, govt. etc.,

⇒ Electronic payment origin in the year 1947 in form of Credit Cards - but without electronic application.

⇒ 1950 Magnetic Ink character Recognition (MICR) facility came up

⇒ 1967 - 1st Automated teller mechanic was installed

⇒ 1970 - clearing Houses Inter bank Payment System (CHIPS) was introduced for line settlement.

⇒ 1985 - EDI was Extensively used for inter bank transactions.

⇒ 1994 - Digital Cash was introduced

⇒ 1995 - Electronic Currency Trial begin in Swindon, England

Electronic Fund Transfer

Electronic Fund Transfer is the transfer of funds initiated through an electronic terminal, telephone, Computer.

It is different from the Conventional financial payment system.

Categories of Electronic Fund Transfer

I - Banking and financial transaction
- Business to business transfers
- Retail Payments
- Home Banking

II - Retailing Payments
- Credit Cards
- Debit Cards
- charge Cards

III - online Electronic Commerce Payments

① Token based payment System
- Electronic Cash
- Electronic Check
- Smart Cards

② Credit Card based Payment System
- Encrypted Credit Cards
- Third party authorization numbers

Digital Token based Electronic Payment System

Entirely new forms of financial instruments are also being developed. New financial instrument is "electronic tokens" in the form of electronic cash / money or checks.

① Cash / real time - Transactions are settled with the exchange of electronic currency. For ex: online currency exchange is electronic cash (E-Cash).

② Debit / Prepaid - the payment made in advance for getting information. For ex: Smart cards and Electronic Purses. [This is mechanism stored in Smart card]

③ Credit / Postpaid - The server authenticates the customers and verifies with the bank that funds are adequate before purchase.

This four dimension are useful for analyzing

① Nature of Transaction - The instruments are designed to handle micro payments in pieces.

② Means of settlement - The digital tokens are designed with the backing of Cash, Credit, electronic bill payment, Cashiers checks, IOUs, letter of Credit, promissory notes, wire transfers etc.

③ Security, anonymity and authentication

Privacy and Confidentially should be maintained. Encryption can help with authentication.

④ Risk element - always associated with business activities with EPS.

Electronic Cash

New concept in online payment systems because it combines computerized convenience with security and privacy that improve on paper cash.

opens up new markets and applications

Characteristics of E-Cash

① Monetary value

Storage value of e-Cash

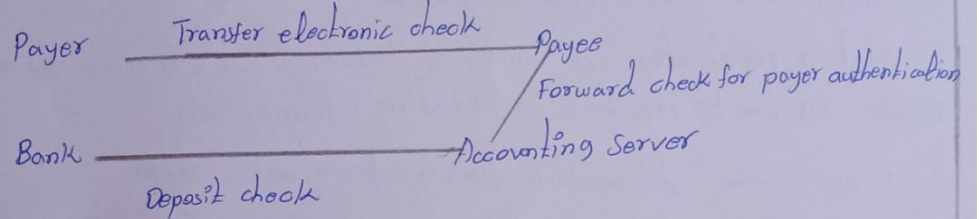
② Inter-operability - Exchange value of currency products, services, deposits etc.

③ Retrievability - storage and retrieval allow user to exchange e-cash.

④ Security - measures codes, passwards, user names etc. are provided for e-cash transactions.

Electronic checks

Electronic documents contains name of the payer, name of financial institution, payers account number, name of the payee and the amount of the check.



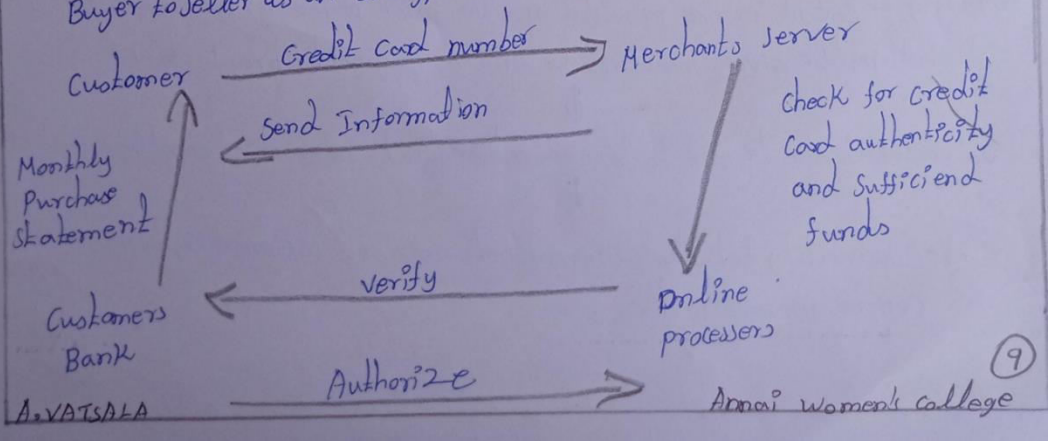
Smart Cards

Smart cards replace the ATM, debit, charge and credit cards. It is a plastic credit card containing a microprocessor and a storage unit. It holds much information about the cardholder. debit facility, credit facility, charge facility and electronic facility.

Cash management, foreign exchange services, transfer of funds etc done over the net to company users.

Encryption and credit Cards

Buyer to seller as an encrypted messages



Third party - depends upon the financial institution on-line.

Designing Electronic Payment Systems

These include several factors, many non technical in nature.

① Privacy - Proper electronic Payment system must give importance for privacy. The user expects to trust in a secure system.

② Security - Verification methods for user autherization should be proper and simple. There must be flexibility in operation. Frauds are to be controlled.

③ Intuitive interfaces - must be simple

④ Database registration - A combined database for all accounts of a single user can be provided for updating information.

Privacy — disturbpted by other - Private medium - wiretaps

⇓

Security — Two party transactions through user authentication - flexibility
Frauds are to be controlled

⇓

Intuitive Interfaces — The interface must be simple easy to use user telephone
Convenience more than anything

⇓

Database integration — For ex: home banking to allow customers access to any of them while keeping the data upto date

⇓

Brokers — broker type organisation is needed to settle - facilitate financial transactions effectively.

⇓

Procesing — cost of service provided and the price of the server should be checked, public given incentives for online payment transactions

⇓

universal standards are to be evolved - users to interack globally.

⇓

Inter operability between different networks and different system
Can be maintained.

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Consumer oriented electronic Commerce

The Convergence of money, Commerce, Computing and network is laying the foundation for a global Consumer marketplace.

Retailing is the end business transaction in the business chain. The information relating to the goods and services are provided to the consumer and then the goods are physically transported to the Consumers.

Some of the Factors on which they are Concentrating are:

1. Products that are suitable for online-retailing
2. Availability of software programs for transactions.
3. Providing effective business transactions
4. Complete transaction processes
5. The method of pricing the products in online marketing
6. The method of accepting payments or making payments.
7. Facing the Competition in online marketing
8. overcoming technological barriers in online transactions
9. Legal issues relating to online sales
10. Tax implications.

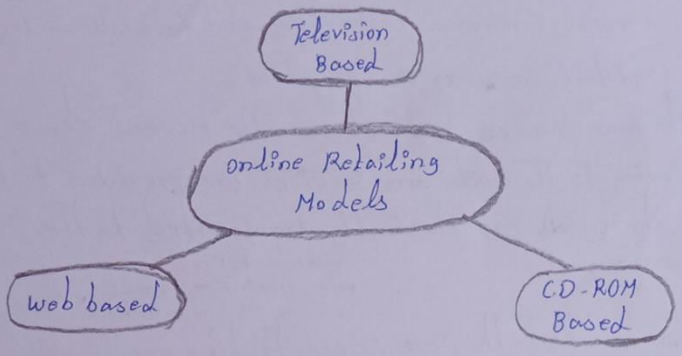
online Retailing

online retailing is the electronic retailing channel through which retailing activities are carried out. They are generally divided into three major categories. They are:

1. Television based retailing
2. CD-ROM based retailing
3. Web-based retailing

online retailing activities are attracting more significance due to the advancements in the field of Internet Technology.

Television based retailing



Consumer-oriented Applications

The wide range of applications for the consumer marketplace can be broadly classified into entertainment, financial services, information, essential services, and education and training.

The operational rule of evolution for Consumer-oriented E-Commerce. whenever the physical transfer of information is replaced with digital transmission, a winner might emerge as long as the cost is comparable or less use is more convienient or faster or the provider.

Personal Finance and Home Banking Management

The newest technologies - direct deposit of payroll, on-line bill payment and telephone transfers - do not yet have wide acceptance,

Home banking is one of the basic services offered in E-Commerce.

i. Basic-services - Personal finance, balance checking, account statements, reporting, ATM Fund Transfer, Bill Payment, Account verification.

ii. Intermediate services - Household budgeting, updating, stock, online portfolio values, tax returns.

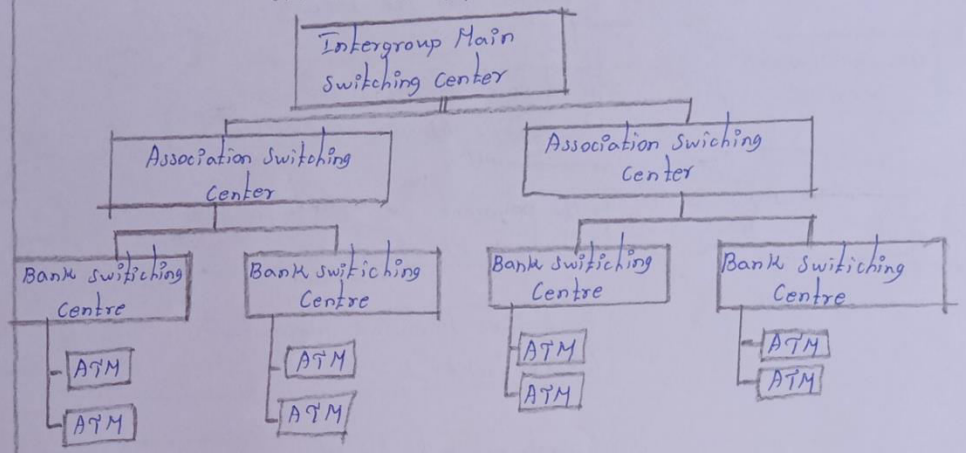
iii. Advanced services - Stock brokering, mutual funds, online trading, currency trading, Credit / Debit Card management etc.

1) ATM

ATMs were introduced during 1970s. It was used to deposits and Cash extractions. The first ATM was installed by city-Corp for low bank

balance customers. Now ATMs are more convenient to all types of customers.

Structure of ATM Network



II. Intermediate Services

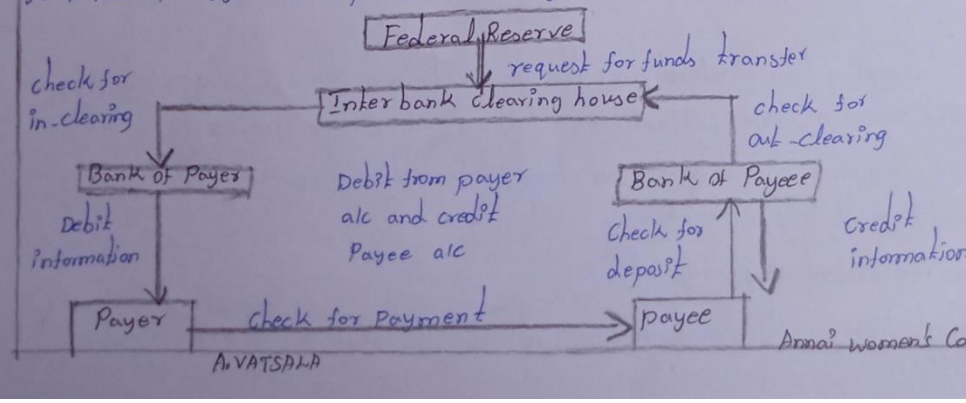
The problems associated with home banking that it is a relatively expensive service that requires a PC, modem and special software.

These problems are being solved rather quickly. Sophisticated customer, home banking offers the facility of paying bills, transferring funds, and opening new accounts from home.

III. Advanced Services

The goal of many financial services firms is to offer their on-line customers a complete portfolio of life, home and auto insurance along with mutual funds, pension plans, home financing, and other financial products.

Barriers to this goal lie not only on the customer's side but in the fact that the systems in place at many financial services.



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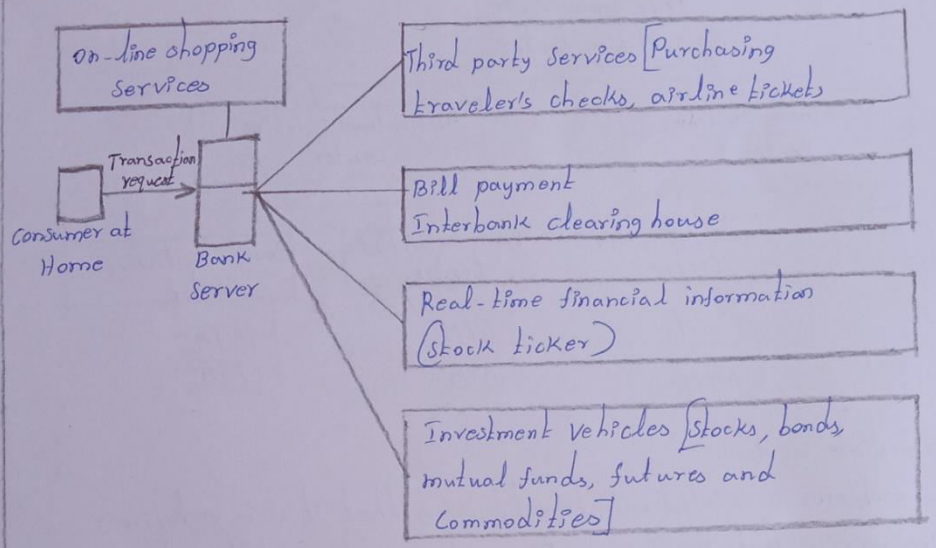
These services range from on-line shopping to real time financial information from anywhere in the world. Some of these services are already being offered and others are planned for the future.



Home shopping

electronic commerce, home shopping is already in wide use and has generated substantial revenues for many companies racing to develop on-line malls.

Customer to enter on-line stores, look at products, try on computerized clothes. And the current television and catalog based shopping processes are expected to undergo major changes to take advantage of the technology.

i. Television Based shopping

The home shopping gained ground with the amazing popularity of television based shopping. Launched in 1977 by the home shopping Network (HSN).

-> TV shopping has evolved over the years to provide a wide variety of goods ranging from collectibles, clothing, small electronics

-> cable shopping channels are not truly interactive because they use phone lines to take orders.

ii. Catalog based shopping

visualize in the on-line consumer marketplace of the future. A

Consumer is planning to buy a Car. using a Computer Connected to the Internet.

Home Entertainment:

Another application area of e-Commerce is that of home entertainment.

⇒ A customer wishes to watch a movie. she browses through an on-line movie, movies, music videos, award-winning documentaries.

⇒ Demand the movie that time to interactive games.

Impact of the Home Entertainment on Traditional Industries:

The impact of the new forms of entertainment on the tradional movie industry presents a Case study that is likely to be repeated in many other industries. For ex: movie company will receive another licensing fees when each film is delivered.

Microtransaction of information:

To serve the information needs of the consumer, service providers whose product is information delivered over the I-way are creating an entirely new industry.

⇒ Most sell any form of digital information can be sent down a network of one sort or another. For exa: data pictures Computer programs & Services.

Desirable characteristics of an Electronic Marketplace:

i. Critical mass of buyers and sellers:

The E-marketplace should be the first place customers go to find the products and services they need.

ii. Opportunity for independent evaluations and for customer dialogue and discussion: The marketplace, not only do users buy and sell products or services, they also compare notes on who has best products that ability customer.

iii. Negotiation and bargaining: Buyers and sellers need to be able to haggle over conditions of mutual satisfaction, including money, terms and conditions, delivery dates, and evaluation Criteria.

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IV. New products and services: An electronic marketplace is an interactive information service that supports the entire innovation process.

V. Seamless interface: Consumers to find benefit in making all transactions electronically, they need their bank statements delivered to them electronically.

VI. Recourse for disgruntled buyers: Markets typically include a provision for resolving disagreements by returning the product.

Mercantile Process Models

Mercantile process is the interaction model between consumers and merchants. A well-established standard process is necessary for the E-commerce model. Business is being done in the I-way. Measures to regulate Credit Card purchases have come up. The interest of consumers, sellers, banks and intermediaries are to be protected.

i. Consumer Based Model ii. Seller Based Model

The Business process model is online buying is from consumer perspective and it has 3 major phases various server activities.

I - Pre purchase preparation phase
II - Purchase Consummation phase
III - Post purchasing interaction

I - Pre purchase preparation phase: includes search and discovery for a set of products in the larger information space capable of meeting customer requirements and product selection from the smaller set of products based on attribute comparision.

Product/service search & discovery in the information space

↓

Comparision shopping and product selection based on various attributes

↓

Negotiation of terms e.g. price, delivery times

Consumers Can be Categorized into 3 types

Impulsive buyers - who purchase products quickly

Patient buyers - who purchase products after making some comparisions.

Analytical buyers - who do substantial research before making the decision to purchase products or services.

The Consumer Information Search Process

Purchase behaviour in electronic markets differs from traditional retail settings in two ways.

First - a retailer is concerned with simply inducing purchase through the use of marketing mix variables.

Second - Purchase now, rather than later. Thus Compon books and other tools likely to induce a Consumer to make decisions quickly.

E-Commerce information search Can be classified into two categories:

I. Organization II. Consumer Search

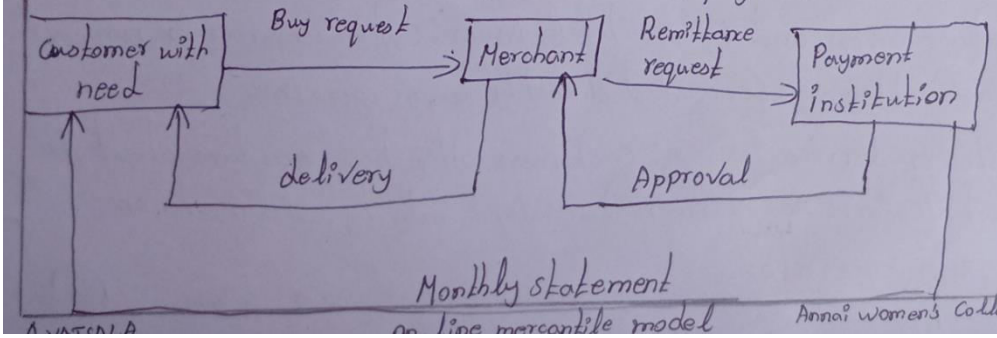
① Organizational Search Process: Organization adapts to such changes in its external Environment as new Suppliers, new products and new services.

② Consumer Search Experiences: An understanding of the nature of search and discovery in the context of on-line shopping necessitates knowing what motivates various types of search.

II - Purchase Consummation

After identifying the products to be purchased, the buyer and seller must interact in some way to actually carry out the mercantile transaction.

A mercantile transaction is defined as the exchange of information between the buyer and seller followed by the necessary payment.



On line mercantile model

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Two types of the mercantile protocols where the payment is the form of electronic and credit cards.

Mercantile Process Digital Cash:

1. Buyer obtains anonumous e-cash from issuing bank
2. Buyer contacts seller to purchase product
3. Seller states price
4. Buyer sends e-cash to seller
5. Seller contacts his bank
6. Bank gives okay signal to seller after ensuring that the e-cash hasn't been duplicated (or) spent on other products.
7. Seller delivers the product to buyer
8. Seller than tells bank to mark the e-cash as used currency.

Mercantile Transactions using Credit Cards:

Two major Components Compose credit Card transactions in the mercantile process: electronic authorization and settlement.

(iii) Post Purchase Interaction

As long as there is payment for services, there will be refunds, disputes, and other customer service issues that need to be considered.

Returns and claims are an important process part of the purchasing process that impact administrative costs, scrap and transportation expenses and customer relations.

Complex customer services challenges not fully understood/resolved:

① Inventory issues: To serve the customer properly when an item ordered is sold out - not customer find alternative products.

② Database access and Compatibility issues: when consumer 800 number purchased - they are Connected directly to an operator.

③ Customer service issues: Customers often have questions about the product (Color, size, shipment) resolved only by talking to an order entry operator.

Mercantile Models from the Merchant's Perspective

The order-to-delivery cycle from the merchant's perspective has been managed with an eye toward standardization and cost.

The strengths of this philosophy lie in

⇒ A company ability to take the position of low cast provider

⇒ Its stress on benchmarking service and

⇒ Its emphasis on responsiveness as well as continuous improvement.

This model is incomplete for e-commerce

⇒ Order planning and order Generation

Order planning - For eg: People close to the customer, either in the sales force or in a marketing group at company head quarters, develop a sales forecast.

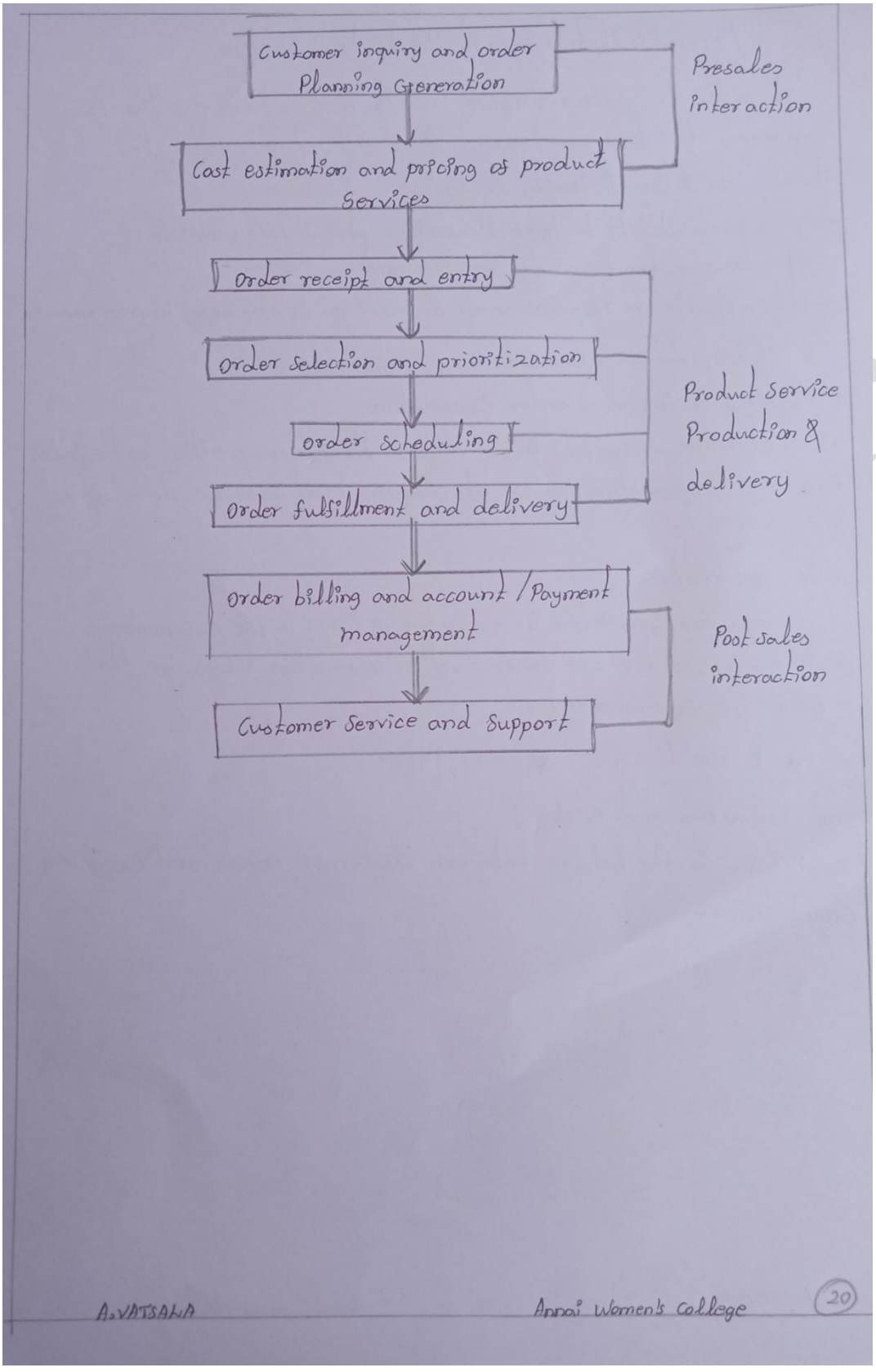
order generates :

Orders are generated in a number of ways in the e-commerce environment. order are generated in a number ways in the e-commerce environment.

* E-mail
* www Pages

Cost Estimation and Pricing :

Pricing is the bridge between customer needs and Company capabilities.


Customer inquiry and order Planning Generation
Cost estimation and pricing of product Services
Presales interaction
Order receipt and entry
Order selection and prioritization
order scheduling
Order fulfillment and delivery
Product service Production & delivery
order billing and account / Payment management
Customer service and support
Post sales interaction

III – UNIT
E-COMMERCE

What is EDI? Electronic Data Interchange (EDI) is the computer-to-computer exchange of business documents in a standard electronic format between business partners.

By moving from a paper-based exchange of business document to one that is electronic, businesses enjoy major benefits such as reduced cost, increased processing speed, reduced errors and improved relationships with business partners.

Electronic Data Interchange

• Electronic Data Interchange (EDI) - interposes communication of business information in standardized electronic form

• Prior to EDI, business depended on postal and phone systems that restrict

Why EDI

• Reduction in transaction costs

• Foster closer relationships between trading partners

EDI & Electronic Commerce

• Electronic commerce includes EDI & much more

• EDI forges boundary less relationships by improving interchange of information between trading partners, suppliers, & customers

EDI & Electronic Commerce

• Electronic commerce includes EDI & much more

• EDI forges boundary less relationships by improving interchange of information between trading partners, suppliers, & customers

Benefits of EDI

• Cost & time savings, Speed, Accuracy, Security, System Integration, Just-In-Time Support.

• Reduced paper-based systems, i.e. record maintenance, space, paper, postage costs

• Improved problem resolution & customer service

• Expanded customer/supplier base or suppliers with no EDI program lose business

EDI layered architecture

• Semantic (or application) layer

• Standards translation layer

• Packing (or transport) layer

• Physical network infrastructure layer

EDI semantic layer:

• Describes the business application

• Procurement example

– Requests for quotes

– Price quotes

– Purchase orders

– Acknowledgments

– Invoices

• Specific to company & software used

Standards translation:
• Specifies business form structure so that information can be exchanged
• Two competing standards
– American National Standards Institute(ANSI)X12
– EDIFACT developed by UN/ECE, Working Party for the Facilitation of International Trade Procedures

EDI transport layer
• How the business form is sent, e.g. post, UPS, fax
• Increasingly, e-mail is the carrier
• Differentiating EDI from e-mail
– Emphasis on automation
– EDI has certain legal status

Physical network infrastructure layer
• Dial-up lines, Internet, value-added network, etc.

EDI in Action
• The fig shows the information flow when paper documents are shuffled between organizations via the mailroom
• When the buyer sends a purchase order, then relevant data extracted & recorded on a hard copy
• This hard copy is forwarded to several steps, at last manually entered into system by the data entry operators
• This process is somewhat overhead in labor costs & time delays.

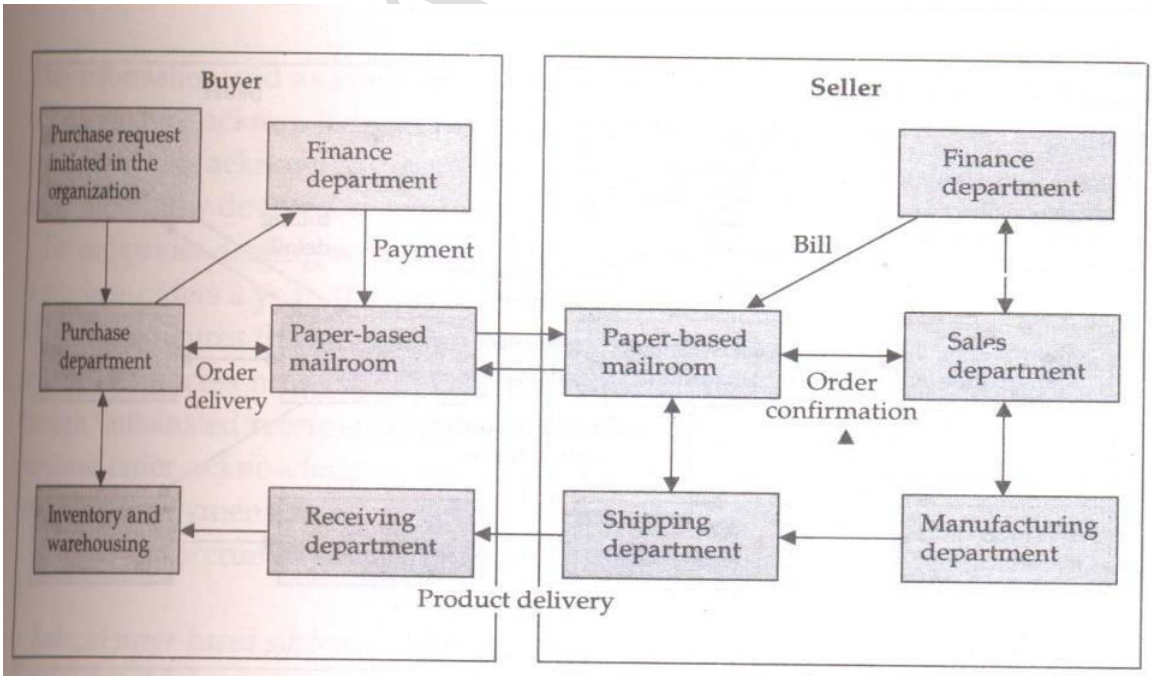


Figure 9.2 Information flow without EDI

EDI in Action

• Information flow with EDI are as follows:

1. Buyer sends purchase order to seller computer
2. Seller sends purchase order confirmation to buyer
3. Seller sends booking request to transport company
4. Transport company sends booking confirmation to seller
5. Seller sends advance ship notice to buyer.
6. Transport company sends status to seller.
7. Buyer sends Receipt advice to seller.
8. Seller sends invoice to buyer
9. Buyer sends payment to seller

EDI Applications in Business

Four different scenarios in industries that use EDI extensively:

1. International or cross-border trade
2. Electronic funds transfer
3. Health care EDI for insurance claims processing
4. Manufacturing & retail procurement
5. International or cross-border trade

• EDI has always been very closely linked with international trade.

• Trade efficiency, which allows faster, simpler, broader & less costly transactions

Role of EDI in international trade

• EDI facilitates the smooth flow of information

• It reduces paper work

• EDI benefits for international trade are

1. Reduced transaction expenditures
2. Quicker movement of imported & exported goods
3. Improved customer service through "track & trace" programs
4. Faster customs clearance & reduced opportunities for corruption, a huge problem in trade

2. Interbank Electronic Funds Transfer (EFT)

• EFTS is credit transfers between banks where funds flow directly from the payer's bank to the payee's bank.

• The two biggest funds transfer services in the United States are the Federal Reserve's system, Fed wire, & the Clearing House Interbank Payments System (CHIPS) of the New York clearing house

Automated Clearinghouse (ACH) Transfers

• ACH transfers are used to process high volumes of relatively small-dollar payments for settlement in one or two business days

• It provides services: preauthorized debits, such as repetitive bill payments; & consumer-initiated payments.

3. Health care EDI for insurance EDI

• Providing good & affordable health care is a universal problem

• EDI is becoming a permanent fixture in both insurance & health care industries as medical provider, patients, & payers

• Electronic claim processing is quick & reduces the administrative costs of health care.

• Using EDI software, service providers prepare the forms & submit claims via communication lines to the value-added network service provider
• The company then edits sorts & distributes forms to the payer. If necessary, the insurance company can electronically route transactions to a third-party for price evaluation
• Claims submission also receives reports regarding claim status & request for additional information

4. Manufacturing & retail procurement using EDI
• These are heavy users of EDI
• In manufacturing, EDI is used to support just-in-time.
• In retailing, EDI is used to support quick response

Just-In-Time & EDI
• Companies using JIT & EDI calculates how many parts are needed each day based on the production schedule & electronically transmit orders.
• Delivery has to be responsive, or it will cost too much in money & time.
• Getting data to suppliers quickly
• A major benefit of JIT & EDI is a streamlined cash flow.

Quick Response & EDI
• For the customer, QR means better service & availability of a wider range of products
• For the retailer & supplier, QR may mean survival in a competitive marketplace
• Much focus of QR is in reduction of lead times using event-driven EDI.
• In QR, EDI documents include purchase orders, shipping notices, invoices, inventory position, catalogs, & order status

EDI: Legal, Security, & Privacy Issues
Legal Status of EDI Messages
• To understand the legal framework, let's take a look on three modes of communication types: Instantaneous communication, delayed communication via the U.S. Postal Service (USPS), & delayed communication via non-USPS couriers;
1. Instantaneous. If the parties are face to face or use an instantaneous communication medium such as the telephone
2. Delayed (USPS). The "mailbox rule" provides that an acceptance communicated via USPS mail is effectively when dispatched
3. Delayed (non-USPS). Acceptances transmitted via telegram, mailgram, & electronic messages, are communicated & operable upon receipt.

Digital Signatures & EDI
• Digital signatures might be time-stamped or digitally notarized to establish dates & times
• If digital signatures are to replace handwritten signatures, they must have the same legal status as handwritten signatures.
• It provides a means for a third party to verify that notarized object is authentic.

EDI & Electronic Commerce
• New types of EDI are traditional EDI & open EDI

Traditional EDI

• It replaces the paper forms with almost strict one-to-one mappings between parts of a paper form to fields of electronic forms called transaction sets.
• It covers two basic business areas:
1. Trade data Interchange (TDI) encompasses transactions such as purchase orders, invoice & acknowledgements.
2. Electronic Funds Transfer (EFT) is the automatic transfer of funds among banks & other organizations
• It is divided into 2 camps: old EDI & new EDI.
• Old EDI is a term created by those working on the next generation of EDI standards in order to differentiate between the present & the future.

Old EDI
• Automating the exchange of information pertinent to business activity
• It is referred as the current EDI-standardization process where it allows every company to choose its own, unique, proprietary version

New EDI
• It is refocusing of the standardization process.
• In this, the structure of the interchanges is determined by the programmer who writes a program.
• It removes long standardization process.

Open EDI
• It is a business procedure that enables e-commerce to occur between organizations where the interaction is of short duration.
• It is process of doing EDI without the upfront trading partner agreement that is currently signed by the trading partners.
• The goal is to sustain ad hoc business or short-term trading relationships using simpler legal codes.
• It is a law of contract within the context of e-commerce where transactions are not repeated over long period of time.

Standardization & EDI
Standards translation
• Specifies business form structure so that information can be exchanged
• Two competing standards
– American National Standards Institute (ANSI) X12
– EDIFACT developed by UN/ECE, Working Party for the Facilitation of International Trade Procedures

Structure of EDI transactions
– Transaction set is equivalent to a business document, such as a purchase order
– Data Segments are logical groups of data elements that together convey information
– Data elements are individual fields, such as purchase order no.

Comparison of EDIFACT & X.12 Standards
• These are comprised of strings of data elements called segments.
• A transaction set is a set of segments ordered as specified by the standard.

• ANSI standards require each element to have a very specific name, such as order date or invoice date.
• EDIFACT segments, allow for multiuse elements, such as date.
• EDIFACT has fewer data elements & segments & only one beginning segment (header), but it has more composites.
• It is an ever-evolving platform

EDI Software Implementation
• EDI software has 4 layers:
1. Business application
2. Internal format conversion.
3. EDI Translator.
4. EDI envelope for document messaging
• These 4 layers package the information & send it over the value-added network to the target business, which then reverses the process to obtain the original information

EDI Business Application Layer
1. It creates a document, an invoice.
2. Sends to EDI translator, reformats the invoice into an EDI standard.
3. If there are on the same type of computer, the data move faster

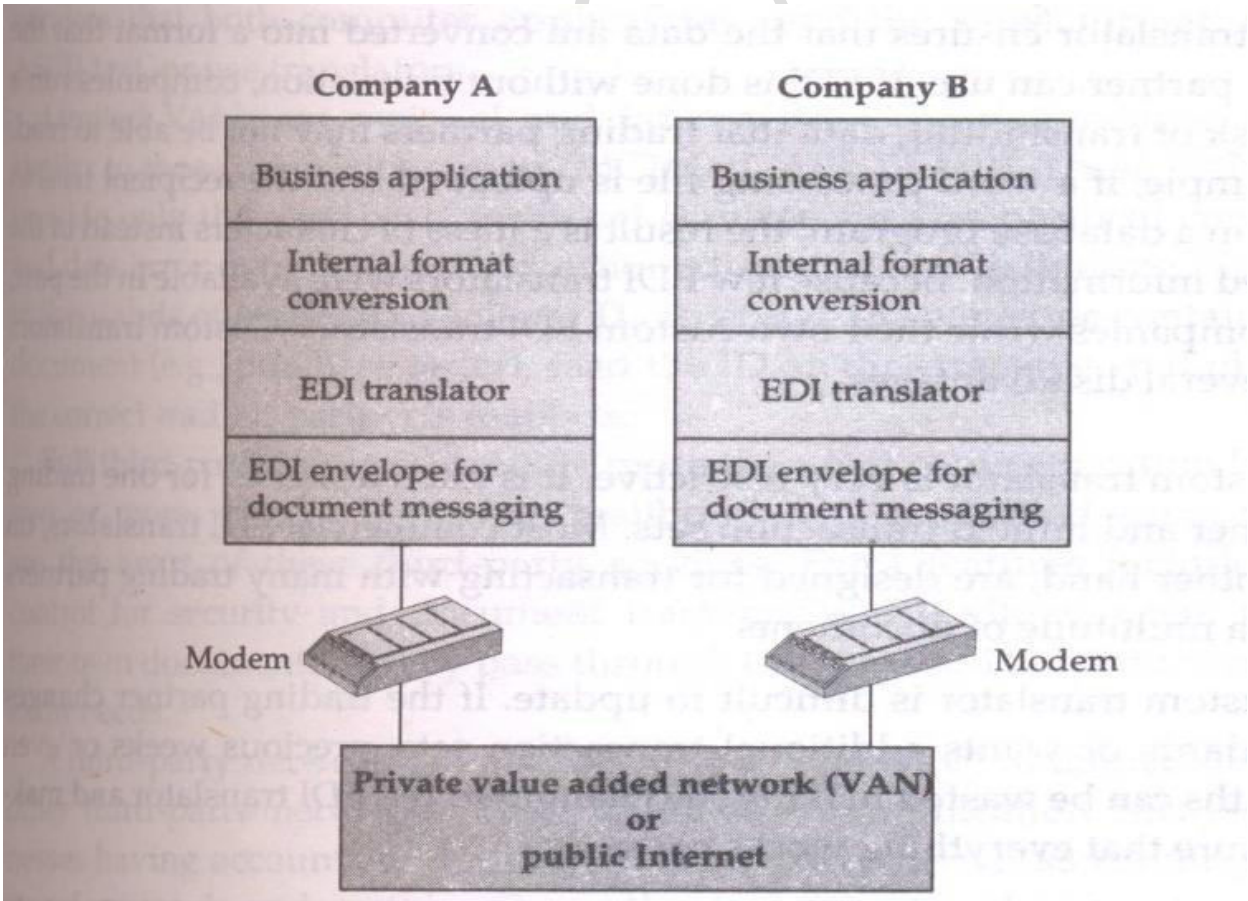


Figure 10.1 How EDI works

EDI Envelope for Message Transport

The X.400 & X.435 Envelopes
• The X.400 standard was meant to the universal answer to e-mail interconnectivity
• It promises much & to date, delivers little.
• The work on X.400 began in1980
• It is the open standard for mail interchange
• The standard exists in 3 versions: 1984, 1988, & 1992.

EDI Software Implementation
• The X.435 inserts a special field in an X.400 envelope to identify an EDI message
• It includes data encryption; integrity; notification of message delivery & non delivery; & Non repudiation of delivery.
• It is secure, reliable way to send EDI & accompanying files within the same message.
• Purchase orders, invoices, drawings, e-mail- all could be sent with end-to end acknowledgment of message receipt.

Value-Added Networks (VANs)
• A VAN is a communication network that typically exchanges EDI messages among trading partners.
• It provides services, including holding messages in "electronic mailboxes", interfacing with other VANs
• Disadvantage is EDI-enabling VANs is that they are slow & high-priced, charging by the no. of characters transmitted.

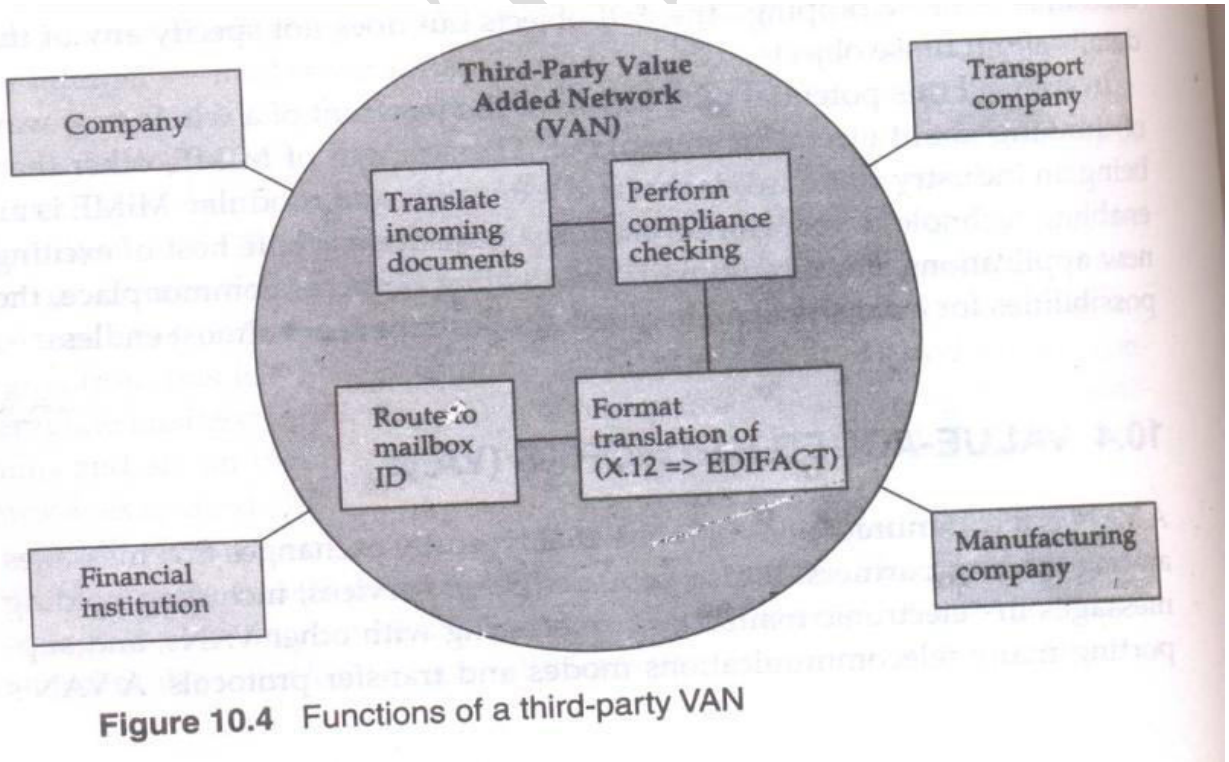


Figure 10.4 Functions of a third-party VAN

Internet-Based EDI
Several factors make internet useful for EDI:
• Flat-pricing that is not dependent on the amount of information transferred
• Cheap access with low cost of connection- often a flat monthly fee for leased line 0r dial- up access

• Common mail standards & proven networking & interoperable systems
• Security--public-key encryption techniques are being incorporated in various electronic mail systems.

Workflow Automation Coordination

In last decade, a vision of speeding up or automating routine business tasks has come to be known as "work-flow automation.

This vision has its root in the invention of the assembly line and the application of Taylor's scientific management principles.

Today, a similar trend is emerging in the automation of knowledge-based business processes called work-flow automation.

The goal of work-flow automation is to offer more timely, cost-effective, and integrated ways to make decisions.

Typically, work-flows are decomposed into steps or tasks, which are task oriented. Work-flows can be simple or complex.

Simple work-flows typically involve one or two steps or tasks.

Another way of looking at work-flow is to determine the amount of cross-functional activity.

In other words, companies must adopt an integrated process view of all the business elements.

Organizational integration is extremely complex and typically involves three steps

Improving existing processes by utilizing technology where appropriate.

Integrate across the business function offer identifying the information needs for each process.

Integrating business functions, application program interface, and database across departments and groups.

Complex work-flows involve several other work-flows, some of which Executes simultaneously.

Work-Flow Coordination:

The key element of market-driven business is the coordination of tasks and other resources throughout the company to create value for customer.

To this end, effective companies have developed horizontal structures around small multifunctional teams that can move more quickly and easily than businesses that use the traditional function-by-function, sequential approach.

Some of the simplest work-flow coordination tools are electronic forms routing applications such as lotus notes.

As the number of parties in the work flow increases, good coordination becomes crucial

Work-flow related technologies:

Technology must be the "engine" for driving the initiatives to streamline and transform business interactions.

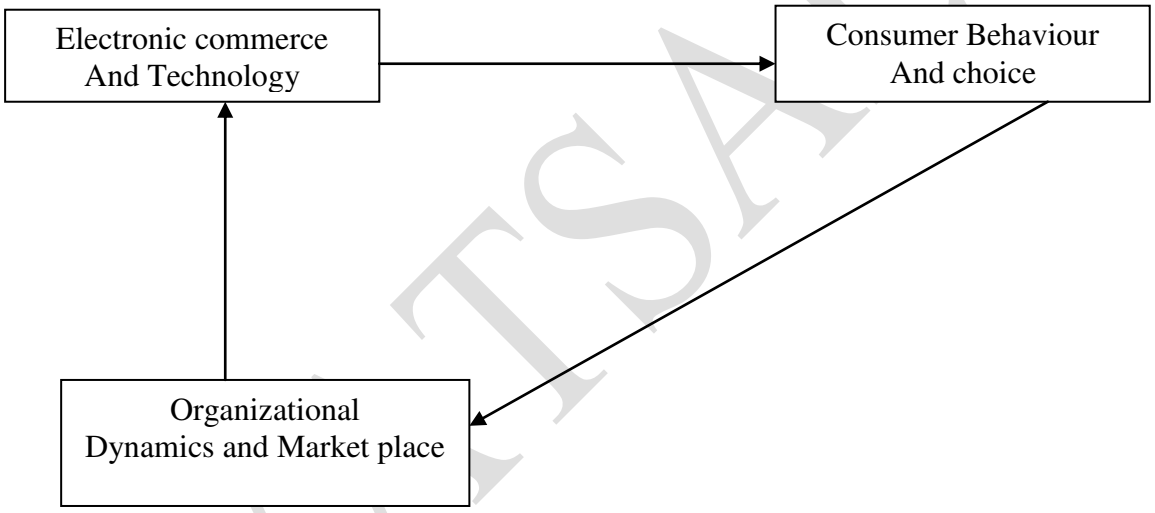
Large organizations are realizing that they have a middle-management offer all the drawn sizing and reorganization of fast few years.

Pressures for more comprehensive work-flow systems are building rapidly.

Work-flow system are limited to factory like work process.

Middleware is maturing:
By this users or third-party providers need to learn how to develop work-flow applications within middleware environment.
Organizational memory is becoming practical:
The new tools for memory becoming advancing towards what can be called the "corporate digital library".

CUSTOMIZATION AND INTERNAL COMMERCE
Technology is transforming consumer choices, which in turn transform the dynamics of the marketplace and organizations themselves.
Technology embodies adaptability, programmability, flexibility, and other qualities so essential for customization.
Customization is explained as:



Mass customization, in marketing, manufacturing, and management, is the use of flexible computer-aided manufacturing systems to produce custom output.
Those systems combine the low unit costs of mass production processes with the flexibility of individual customization
"Mass Customization" is the new frontier in business competition for both manufacturing and service industries.

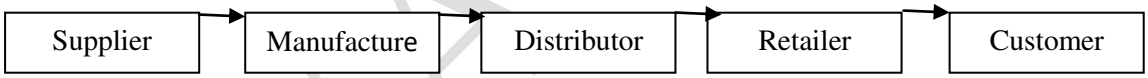
Implementation:
Many implementations of mass customization are operational today, such as software- based product configurations which make it possible to add and/or change functionalities of a core product or to build fully custom enclosures from scratch.
Companies which have succeeded with mass-customization business models tend to supply purely electronic products.
However, these are not true "mass customizers" in the original sense, since they do not offer an alternative to mass production of material goods.

Four types of mass customization:

Collaborative customization - Firms talk to individual customers to determine the precise product offering that best serves the customer's needs.
Adaptive customization - Firms produce a standardized product, but this product is customizable in the hands of the end-user.
Transparent customization - Firms provide individual customers with unique products, without explicitly telling them that the products are customized.

Cosmetic customization - Firms produce a standardized physical product, but market it to different customers in unique ways.
Most of the written materials and thinking about customization has neglected technology.
It has been about management and design of work processes.
Today technology is so pervasive that it is virtually impossible to make clear distributions among management, design of work, and technology in almost all forms of business and industry.
Technology has moved into products, the workplace, and the market with astonishing speed and thoroughness.
Mass customization, not mass production.
Today the walls that separated functions in manufacturing and service industries alike are beginning to fall like dominoes.
Customization need not be used only in the production of cars, planes, and other traditional products.
It can also be used for textiles and clothing.
Technology is also enabling new forms of customized production in apparel industry.

What is Supply chain?
Consists of all parties involved, directly or indirectly in fulfilling a customer request



SUPPLY CHAIN MANAGEMENT (SCM)

Supply chain management (SCM) is the management of a network of interconnected business involved in the ultimate provision of product and service packages required by end customers.
Supply Chain Management spans all movement and storage of raw materials, workin- process inventory, and finished goods from point-of-origin to point-of-consumption.
Supply Chain Management can also refer to supply chain management software which is tools or modules used in executing supply chain transactions, managing supplier relationships and controlling associated business processes.

The Management Components of SCM
The literature on business process re-engineering, buyer-supplier relationships, and SCM suggests various possible components that must receive managerial attention when managing supply relationships.
Lambert and Cooper (2000) identified the following components which are:
-Planning and control
-Work structure

-Organization structure
-Product flow facility structure
-Information flow facility structure
-Management methods

Power and leadership structure
-Risk and reward structure
-Culture and attitude

Reverse Supply Chain Reverse logistics is the process of planning, implementing and controlling the efficient, effective inbound flow and storage of secondary goods and related information opposite to the traditional supply chain direction for the purpose of recovering.

IV – UNIT

E-COMMERCE

ADVERTISING AND MARKETING ON THE INTERNET

- The new age of information-based marketing.
- Advertising on the internet.
- Marketing research.

The New Age of Information-Based Marketing

The new age of information-based marketing differentiate interactive marketing into four areas:

- Retailers vs manufacturers
- Target and micromarketing
- Small business vs large business
- Regulatory and legal implications of cyberspace marketing.

Retailers' vs Manufacturers:

- The role of Retailers and manufacturers are fast reversing in electronic commerce.

Retailer's vs Manufacturers have the fallowing methods:

- Market research and customer prospecting.
- Market presence method
- Product or services building method
- Information-based products pricing and priority method.

Target and Micromarketing:

- ✓ Electronic commerce, technology has put target and micromarketing within the research of small business.
- ✓ It gives information to the micro marketers not only about its own business but also consumer's information.
- ✓ Consumer target is two-way flow of communication between seller and buyer.
- ✓ Direct mail and telemarketing are two fast growing ways to micro market.
- ✓ Technology is an essential tool in micromarketing.

There are two main types of micromarketing:

- ✓ Direct-relationship micromarketing: is aimed at stimulating sales at retail establishments through direct contacts with consumers.
- ✓ Direct-order micromarketing: is focused on selling products directly to consumers in their homes or businesses.

Small vs large: Thread avoid vs goliath syndrome

- ➢ The key distinction between small and large business remains access to national and international marketing for advertising purposes.
- ➢ Today, exorbitant advertising cost represents the barrier to reaching the customer effectively. Internet and other networks plays good role in advertising.
- ➢ The major difference between the internet and other I-way advertising media are ownership and membership fees.
- ➢ Due to the empowering effect of internet-facilitated advertising however, the balance of power between large and small companies may change in future.

Advertising on the Internet

- ➢ The notion of advertising and marketing became inevitable after 1991 when the internet was opened for commercial traffic.
- ➢ There are very good reasons for embracing the inevitability of growing of commercial advertising on the internet:
    - Advertising conveys much needed information
    - Advertising generates significant revenue

Key components for making internet advertising effectively are:

1. Advertising process
2. Core content
3. Supporting content
4. Market and consumer research
5. Repeat customers

On-line advertising paradigms:

Two different advertising paradigms are emerging in the on-line world, they are:

1. Active or push-based advertising

2. Passive or pull-based advertising

Active or push-based advertising:

Active or push-based advertising is of two types they are :

The broadcast model:

- Broadcasting message provides a means for reaching a great number of people in short period of time.
- It mimics the traditional model, in which customer id exposed to the advertisement during TV programming.
- It basically uses direct mail, spot television, cable television.
- Text-based broadcast messages also used in advertising in Usenet news groups.

The junk mail model:

- ✓ Disadvantage of the direct mail include relatively high cost per contact.
- ✓ Junk mail is the just poorly targeted direct mail.
- ✓ It is most intrusive of all forms of internet advertising, because it is easily implemented using electronic mail.
- ✓ Junk mail creates unwanted expense as well as an annoyance.

Passive or pull-based advertising

Pull-based advertising provide a feedback loop, company and customers.

On-line pull-based advertising includes the following:

- Billboards
- Catalogs or yellow pages directories:
- endorsements

Based on the above three we have the fallowing models:

The billboards or www model:

1. Billboard advertising is often used to remind the customer of the advertising messages communicated through other media.
2. The advantage of this model is no customer charges.
3. In this message must be simple, direct.

Catalog and yellow pages directory model:

- Traditionally, the most visible directory service of advertising is the yellow pages.
- Catalog model is the least intrusive model but requires active search on the part of customer.
- Yellow pages are low in cost in terms of production and placement.
- Disadvantage of yellow page include lack of timeliness and little creative flexibility.

Customer endorsement model:

- In endorsements people tell their experiences with products and services.
- These are in question and answer format.

Marketing Research

- ✓ Market research is extremely important for companies in terms of how they allocate their advertising dollars in sales promotions, how they introduce new products, how they target new markets.

Broadly marketing research is divided into three faces:

- Data collection
- Data organization
- Data analysis and sense making

Data collection:

1. Markets mainly relied on source database for understanding consumer behavior.
2. Source data base mainly comprise of numeric information.
3. Delivery of source database services fallows two main patterns.
4. Data collect and collate data, making it available by data base producers.
5. Data collect and collate data, making it available by central hosts like CompuServe, American online..etc.

Data organization:

- ✓ Everyone is collecting data from electronic commerce, but very few are organizing it effectively for developing a marketing strategy.

The key abilities in their environment are:

- ✓ Leverage its established database into customized offerings by audience and markets.

- ✓ Leverage its established database in terms of horizontal growth.

Data analysis and sense making:

- ➢ The ability to link database to analytic tools like econometric programs and forecasting models is called data analysis.
- ➢ Market research is undergoing major changes; the next generation of source database will definitely include multimedia information.

SEARCH AND RESOURCE DISCOVERY PARADIGMS

Three information search and resource discovery paradigms are in use:

- ➢ Information search and retrieval
- ➢ Electronic directories & catalogs.
- ➢ Information filtering.

Information search and retrieval:

- ✓ Search and retrieval begins when a user provides a description of the information being to an automated discovery system.
- ✓ Using the knowledge of the environment, the system attempts to locate the information that matches the given description.
- ✓ An information retrieval method depends on the libraries.
- ✓ The challenge is to develop user in domains such as electronic shopping.
- ✓ Search and retrieval methods that refine queries through various computing techniques such as nearest neighbors, them variants of original query.

Electronic catalogs and directories:

- ✓ Information organizing and browsing is accomplished using directories or catalogs‘
- ✓ Organizing refers to how to interrelate information, by placing it in some hierarchy.
- ✓ Maintaining large amount of data is difficult.

Information filtering:

- Goal of information filtering if selecting of data that is relevant, manageable and understandable.
- Filters are of two types

1. Local filter
2. Remote filter

- Local filters: local filters work on incoming data to a PC, such as news feeds.
- Remote filters: remote filters are often software agents that work on behalf of the user and roam around the network from one data base to another.

CONSUMER SEARCH AND RETRIVAL

1. SEARCH AND RESOURCE DISCOVERY PARADIGMS
2. INFORMATION SEARCH AND RETRIEVAL
3. ELECTRONIC COMMERCE CATALOGS OR DIRECTORIES
4. INFORMATION FILTERING

INFORMATION SEARCH AND RETRIEVAL

- Information search is sifting through large volumes of information to find some target information.
- Search & retrieval system are designed for unstructured & semi structural data.
- The process of searching can be divided into two types:

The end-user retrieval phases: consists of three steps

- First is, the user formulates a text based query to search data.
- Second is, the server interprets users query, performs the search and returns the user a list of documents.
- Third is, the user selects documents from the hit list and browses them, reading and perhaps printing selected portions of retrieved data.

.

The publisher indexing phase:

- It consists of entering documents in to the system and creating indexes and pointers to facilitate subsequent searches.
- The process of loading a document and updating indexes is normally not a concern to the user.
- These two phases are highly interdependent

WAIS (Wide Area Information Service):

- ✓ It enables users to search the content of the files for any string of text that they supply.

WAIS has three elements:

- Client
- Sever
- Indexer
- It uses an English language query front end a large assortment of data bases that contains text based documents.
- It allows users search the full text of all the documents on the server.
- Users on diff platforms can access personal, company, and published information from one interface I.e. text, picture, voice, or formatted document.
- Anyone can use this system because it uses natural language questions to find relevant documents.
- Then the servers take the user questions and do their best to find relevant documents.
- Then WAIS returns a list of documents from those users selects appropriate documents.
- Today, the Netscape or NCSA mosaic browser with the forms capability is often used as a front-end to talk to WIAS sever.

Search Engines:

- WAIS is a sophisticated search engine.
- The purpose of the search engine in any indexing system is simple
- To find every item that matches a query, no matter where it is located in the file system.
- Search engines are now being designed to go beyond simple, broadband
- Searches for which WIAS is so popular.
- It uses both keywords and information searching to rank the relevance of each document.
- Other approaches to data searching on the web or on other wide area networks are available.

Indexing methods:

- To accomplish accuracy and conserve disk space, two types of indexing methods are used by search engines.

They are:

1. File-level indexing
2. Word-level indexing

File-level indexing:

- It associates each indexed word with a list of all files in which that word appear at least once.
- It does not carry any information about the location of words within the file.

Word-level indexing:

- It is more sophisticated and stores the location of each instance of the word.
- The disadvantage of the word-level indexing is that all the extra information they contain gobbles up a lot of disk space, it is 35-100 percent of the original data.
- The process of indexing data is simple one ,it has large number of indexing packages:
- These indexing packages are categorized into three types, they are:
  1. The client-server approach
  2. The mainframe-based approach
  3. The parallel-processing approach

Search and new data types:

We have the following search technologies for effective search:

Hypertext: richly interwoven links among items in displays allow users to move in relatively ad

hoc sequences from display to display with in multimedia.

Sound: speech input and output, music and wide variety of acoustic cues include realistic sounds

that supplement and replace visual communication.

Video: analog are digital video input from multiple media, including video tapes, CD-ROM, incorporated broadcast videos turners, cables and satellites.

3D-images: virtual reality displays offer a 3D environment in which all portions of the user interface are 3D.

Searching using these new types of information poses interesting challenges that need to be addressed soon.

_ Www Robots, wanderer, and Spiders

_ Robots, Wanderer, And Spiders are all programs that traverse the www automatically gathering information.

ELECTRONIC COMMERCE CATALOGS OR DIRECTORIES

- A directory performs an essential support function that guides customers in a maze of options by enabling the organizations of the information space.

Directories are of two types:

1. The white pages
2. Yellow pages

- The white pages are used to people or institutions and yellow pages are used to consumers and organizations.

Electronic white pages:

- Analogues to the telephone white pages, the electronic white pages provide services from a static listing of e-mail addresses to directory assistance.
- White pages directories, also found within organizations, are integral to work efficiency.
- The problems facing organizations are similar to the problems facing individuals.
- A **white pages schema** is a data model, specifically a logical schema, for organizing the data contained in entries in a directory service, database, or application, such as an address book.
- A white pages schema typically defines, for each real-world object being represented:
- What attributes of that object are to be represented in the entry for that object.
- What relationships of that object to other objects are to be represented?
- One of the earliest attempts to standardize a white pages schema for electronic mail use was in X.520 and X.521, part of the X.500 a specification that was derived from the addressing requirements of X.400.
- In a white pages directory, each entry typically represents an individual person that makes the use of network resources, such as by receiving email or having an account to log into a system.
- In some environments, the schema may also include the representation of organizational divisions, roles, groups, and devices.
- The term is derived from the white pages, the listing of individuals in a telephone directory, typically sorted by the individual's home location (e.g. city) and then by their name.

White pages through x.500:

- One of the first goal of the X.500 project has been to create a directory for keeping track of individual electronic mail address on the internet.
- X.500 offers the following features:
- Decentralized maintenance

- Each site running x.500 is responsible only for its local part of the directory.

Searching capabilities: x.500 provides powerful searching capabilities i.e. in the white pages; you can search solely for users in one country. From there you can view a list of organizations, then departments, then individual names.

This represents the tree structure.

- **Single global name space**: x.500 provides single name space to users.
- **Structured information framework**: X.500 defines the information framework used in the directory, allowing local extensions.
- **Standards-based directory**: X.500 can be used to build directory applications that requires distributed information.

ELECTRONIC YELLOW PAGES:

- The term ***Yellow Pages*** refers to a telephone directory of businesses, categorized according to the product or service provided.
- The traditional term *Yellow Pages* is now also applied to online directories of businesses.
- To avoid the increasing cost of yellow paper, the yellow background of the pages is currently printed on white paper using ink. Yellow paper is no longer used.
- The name and concept of "Yellow Pages" came about in 1883, when a printer in Cheyenne, Wyoming working on a regular telephone directory ran out of white paper and used yellow paper instead.
- In 1886 Reuben H.Donnelley created the first official yellow pages directory, inventing an industry.
- Today, the expression *Yellow Pages* is used globally, in both English-speaking and non- English speaking countries.
- In the US, it refers to the category, while in some other countries it is a registered name and therefore a proper noun.
- **Third-party directories can be categorized variously:**
- **Basic yellow pages:** These are organized by human-oriented products and services.
- **Business directories**: This takes the extended information about companies, financial health, and news clippings.

- **State business directories**: this type of directory is useful in businesses that operate on a state or geographic basis.
- **Directories by SIC** :(standard industrial classification) directories are compiled by the government.
- **Manufacturer's directories**: if your goal is to sell your product or service to manufacturers, then this type of directory is used.
- **Big-business directory:** This directory lists companies of 100 or more employees.
- **Metropolitan area business directory**: It develops sales and marketing tools for specific cities.
- **Credit reference directory**: this directory provides credit rating codes for millions of US companies.
- **World Wide Web directory**: this **lists** the various hyperlinks of the various servers scattered around the internet.

INFORMATION FILTERING

- An **Information filtering system** is a system that removes redundant or unwanted information from an information stream using (semi)automated or computerized methods prior to presentation to a human user.
- Its main goal is the management of the information overload and increment of the semantic signal-to-noise ratio. To do this the user's profile is compared to some reference characteristics.
- A notable application can be found in the field of email spam filters.
- Thus, it is not only the information explosion that necessitates some form of filters, but also inadvertently or maliciously introduced pseudo-information.
- On the presentation level, information filtering takes the form of user-preferences-based newsfeeds, etc.
- Recommender systems are active information filtering systems that attempt to present to the user information items (movies, music, books, news, webpage) the user is interested in.
- Information filtering describes a variety of processes involving the delivery of information to people who need it.
- This technology is needed as the rapid accumulation of information in electronic databases.

- ❖ Information filtering is needed in e-mails, multimedia distributed system and electronic office documents.

The features of the information filtering are:

- ➢ Filtering systems involves large amounts of data (gigabits of text).
- ➢ Filtering typically involves streams of incoming data, either being broadcast by remote sources or sent directly by other sources like e-mails.
- ➢ Filtering has also been used to describe the process of accessing and retrieving information from remote database.
- ➢ Filtering is based on descriptions of individual or group information preferences, often called profiles.
- ➢ Filtering system deal primarily with textual information.

Email filtering:

- ➢ It is the processing of e-mail to organize it according to specified criteria.
- ➢ Most often this refers to the automatic processing of incoming messages, but the term also applies to the intervention of human intelligence in addition to anti-spam techniques, and to outgoing emails as well as those being received.
- ➢ Email filtering software inputs email.
- ➢ For its output, it might pass the message through unchanged for delivery to the user's mailbox, redirect the message for delivery elsewhere, or even throw the message away.
- ➢ Some mail filters are able to edit messages during processing.
- ➢ Common uses for mail filters include removal of spam and of computer viruses.
- ➢ A less common use is to inspecting outgoing e-mail at some companies to ensure that employees comply with appropriate laws.
- ➢ Users might also employ a mail filter to prioritize messages, and to sort them into folders based on subject matter or other criteria

Mail-filtering agents:

- ✓ Users of mailing-filtering agents can instruct them to watch for items of interest in e-mail in-boxes, on-line news services, electronic discussion forums, and the like.
- ✓ The mail agent will pull the relevant information and put it in the users personalized newspapers at predetermined intervals.

- ✓ Example of Apple's Apple Search software. Mail filters can be installed by the user, either as separate programs (see links below), or as part of their e-mail program (*e-mail client*).
- ✓ In e-mail programs, users can make personal, "manual" filters that then automatically filter mail according to the chosen criteria.
- ✓ Most e-mail programs now also have an automatic spam filtering function.
- ✓ Internet service providers can also install mail filters in their mail transfer agents as a service to all of their customers. Corporations often use them to protect their employees and their information technology assets.

News-filtering agents:

- ➢ These deliver real-time on-line news.
- ➢ Users can indicate topics of interest, and the agent will alert them to news stories on those topics as they appear on the newswire.
- ➢ Users can also create personalized news clipping reports by selecting from news services.
- ➢ Consumers can retrieve their news from through the delivery channel of their choice like fax, e-mail, www page, or lotus notes platform.

E – Commerce

V - Unit

Multimedia and Digital Video: Concepts – Digital Video and E-Commerce – Video Conferencing – Frame Relay – Cell Relay – Mobile Computing – Frame Work – Wireless Delivery Technology – Cellular – Data Communication Protocols.

Multimedia: the use of digital data in more than one format, such as the combination of text, audio and image data in a computer file. The theory behind multimedia is digitizing traditional media like words, sounds, motion and mixing them together with elements of database.

Multimedia data compression:

Data compression attempts to pack as much information as possible into a given amount of storage. The range of compression is 2:1 to 200:1.

Compression Methods:

_ **Sector-oriented disk compression** (integrated into the operating system, this compression is invisible to end user)

_ **Backup or archive-oriented compression**(Compress file before they are downloaded over telephone lines)

_ **Graphic & video-oriented compression**(Compress graphics & video file before they are downloaded)

_ **Compression of data being transmitted over low-speed network**(tech used in modems, routers)

Data compression in action:

_ Data compression works by eliminating redundancy.

_ In general a block of text data containing 1000 bits may have an underlying information content of 100 bits, remaining is the white space.

_ The goal of compression is to make the size of the 1000-bit to 100-bit (size of underlying information).this is also applicable to audio and video files also.

Compression Techniques:

_ Compression techniques can be divided into two major categories:

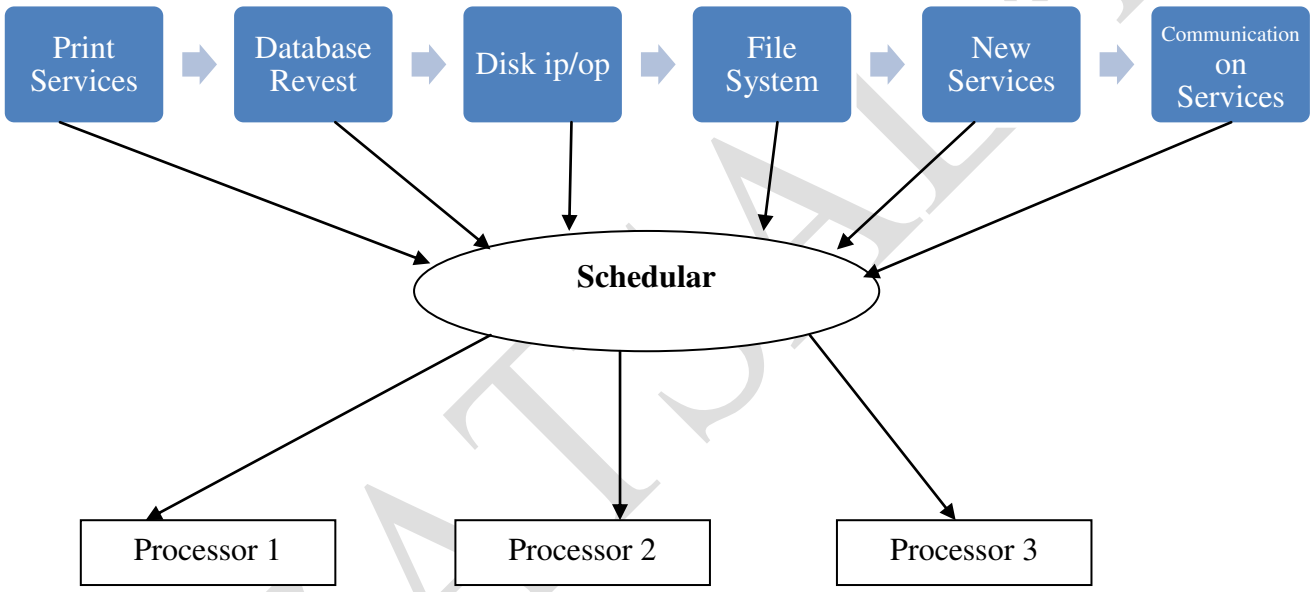
Lossy:

_ Lossy compression means that it given a set of data will undergo a loss of accuracy or resolution after a cycle of compression and decompression. it is mainly used for voice, audio and video data.

_ The two popular standards for lossy tech is MPEG, JPEG.

Lossless:

_ Lossless compression produces compressed output that is same as the input. It is mainly used for text and numerical data.



Multimedia Server:

_ A server is h/w & s/w systems that turns raw data into usable information and provide that to users when they needed.

_ E-commerce application will require a server to manage application tasks, storage, security, transaction management and scalability.

To manage multimedia information we need the fallowing.

Multiprocessing:

_ Current execution of several tasks on multiple processors. this implies that the ability to use more than one CPU for executing programs. processors can be tightly or loosely coupled.

Symmetric multiprocessing:

_ Symmetric multiprocessing treats all processors as equal I.e. any processor can do the work of any other processor. It dynamically assigns work to any processor.

Multitasking:

_ Multitasking means that the server operating systems can run multiple programs and give the illustration that they are running simultaneously by switching control between them.

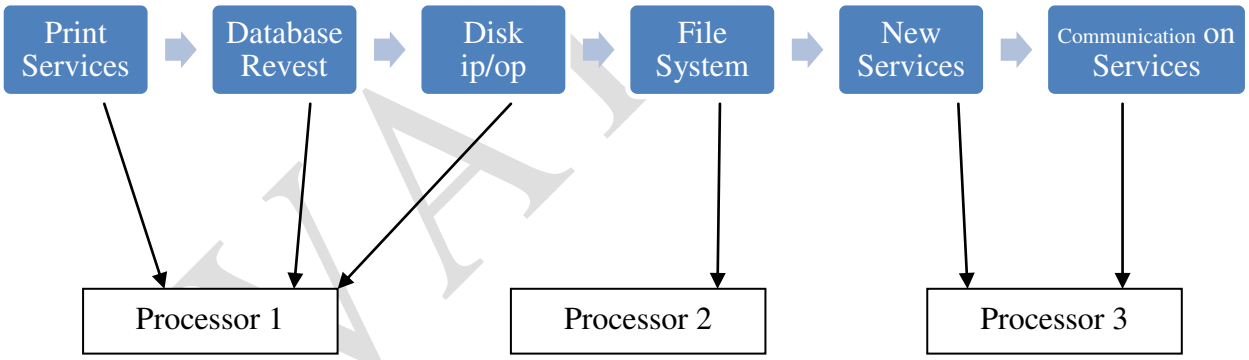
_ Two types of multitasking are:

1. Preemptive
2. Non preemptive

Multithreading:

_ Multithreading is a sophisticated form of multitasking and refer to the ability to support separate paths of execution within a single address space.

_ In this a process broken into independent executable tasks called threads



Multimedia Storage Technology

_ Storage technology is becoming a key player in electronic commerce because the storage requirements of modern-day information are enormous.

_ Storage technology can be divided into two types:

1. Network-based (disk arrays)
2. Desktop-based (CD-ROM)

_ Disk arrays store enormous amounts of information and are becoming an important storage technologies for firewall servers and large servers.

_ Range provided for small arrays is 5-10 gigabytes.

_ Range provided for large arrays is 50-500 gigabytes

_ Technology behind disk array is RAID(redundant array of inexpensive disk)

_ RAID offers a high degree of data capacity, availability, and redundancy.

_ Current RAIDs use multiple 51/2 –inch disks.

CD-ROM:

_ CD-ROM is premiere desktop stop storage.

_ It is a read only memory, to read CD-ROM a special drive CD-ROM drive is required.

_ The mail advantage is the incredible storage density.

_ That allows a single cd-rom disc contains 530MB for audio CD.

_ That allows a single cd-rom disc contains 4.8 GB for video CD.

CD-ROM Technology Exhibits The Following:

High information density:

_ It is with optical encoding, the CD can contain some 600-800 MB of data.

Low unit cost:

_ Unit cost in large quantities is less than two dollars, because CDs are manufactured by well-developed process.

Read only memory:

_ CD-ROM is read only memory so it cannot be written or erased.

Modest random access performance:

_ Performance of the CDs is better than floppies because of optical encoding methods.

The Process of CD proceeds as follows:

_ CD-ROM spiral surface contains shallow depressions called **pits.** These pits used to scatter light.

_ CD-ROM spiral surface contains spaces between indentations called **lands** .these lands are used to reflect light.

_ The laser projects a beam of light, which is focused by the focusing coils.

_ The laser beam penetrates a protective layer of plastic & strikes the reflective aluminum layer on the surfaces

_ Light striking a land reflects back to the detector.

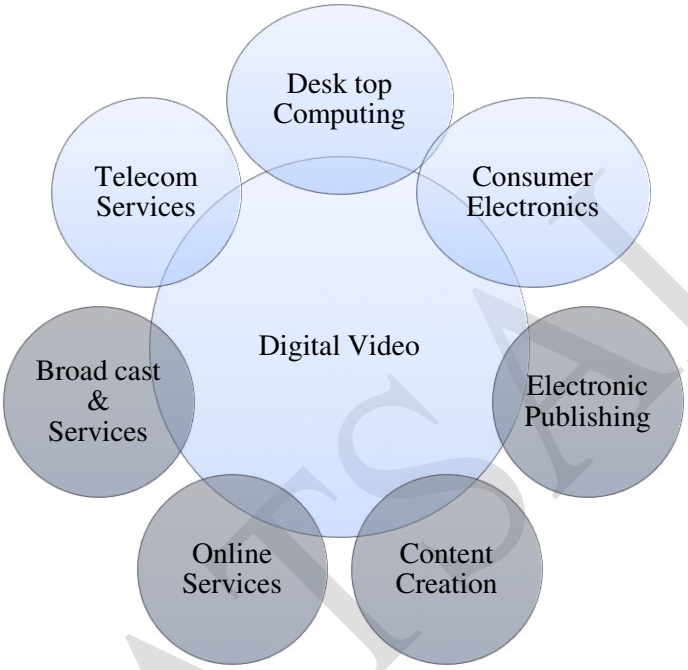
_ Light pulses are translated into small electrical voltage to generate 0's & 1's.

DIGITAL VIDEO AND ELECTRONIC COMMERCE

_ Digital video is binary data that represents a sequence of frames, each representing one image.

_ The frames must be shown at about 30 updates per sec.

_ Digital video as a core element:



Characteristics of Digital Video:

Several Characteristics of digital video differentiate it from traditional analog video.

_ It can be manipulated, transmitted and reproduced with no discernible image generation.

_ It allows more flexible routing packet switching technology.

_ Development of digital video compression technology has enabled the of new applications in consumer electronics, multimedia computers and communications market.

_ It poses interesting technical challenges; they are constant rate and continuous time media instead of text, image, audio and video.

_ Compression rate are 10 mb /min of video.

Digital video compression/decompression:

_ Digital video compression takes the advantage of the fact that a substantial amount of redundancies exist in video. The hour-longer video that would require 100 CDs would only required one CD if video is compressed.

_ The process of compression & decompression is commonly referred to as just compression, but it involves both processes.

_ Decompression is inextensible because once compressed, a digital video can be stored and decompressed many time.

_ The adaptations of international standards are called codec.

_ Mostly used codec today's are loss compression.

Types of Codec's:

_ Most codec schemes can be categorized into two types:

1. Hybrid
2. Software-based.

Hybrid: hybrid codec use combination of dedicated processors and software. It requires specialised add-on hardware.

Best examples of hybrid codec are

_ MPEG (moving picture expert group)

_ JPEG(joint photographic expert group)

MPEG (moving picture expert group):

_ Moving Picture Expert Group is an ISO group; the purpose of this is to generate high quality compression of digital videos.

MPEG I (Moving Picture Expert Group I):

_ MPEG I defines a bit steam for compressed video and audio optimized to a bandwidth of 1.5 Mbps, it is the data rate of audio CDs & DATs.

_ The standard consists of three parts audio, video, and systems. A system allows the synchronization of video & audio.

_ MPEG I implemented in commercial chips .resolution of the frames in MPEG I is 352X240 pixels at 30 frames per second.

_ The video compression ratio for this is 26:1

MPEG II (Moving Picture Expert Group II):

_ MPEG II specifies compression signals for broadcast-quality video. It defines a bit steam for high-quality “entertainment-level” digital video.

_ MPEG-2 supports transmission range of about 2-15 Mbps over cable, satellite and other transmission channels.

_ The standard consists of three parts audio, video, and systems. A system allows the synchronization of video & audio.

_ MPEG II implemented in commercial chips.

_ Resolution of the frames in MPEG I is 720X480 pixels at60 frames per second.

_ A data rate of the MPEG-2 is 4 to 8 Mbps.

_ Future promising of this is rapid evolution of cable TV's news channels.

_ Two other MPEG standards are

MPEG-3(1920X1080 and data rates are 20 to 40)

MPEG-4(consisting of speech and video synthesis)

JPEG (Joint Photographic Expert Group):

_ JPEG is a still-image compression algorithm defined by the joint photographic expert group and serves as the foundation for digital video.

_ JPEG is used in two ways in digital video world:

1. as apart of MPEG
2. as motion JPEG

_ JPEG standard has been widely adopted for video sequences.

_ JPEG compression is fast and can capture full-screen, full-rate video.

_ JPEG was designed for compressing either full-color or gray-scale Digital images of realworld

scenes.

_ JPEG is a highly sophisticated technique that uses three steps:

The first step, a technique known as DCT (discrete cosine transformation).

Next, a process called quantization manipulates the data and compresses strings of identical pixels by run length encoding method.

Finally, the image is compressed using a variant of Huffman encoding.

_ A use full property of the JPEG is the degree of looseness.

DESKTOP VIDEO PROCESSING

_ Video on the desktop is a key element in turning a computer into a true multimedia platform.

_ PC has steadily become a highly suitable platform for video.

_ DESKTOP VIDEO PROCESSING includes upgrade kits, sound cards, video playback accelerator board, video capture hardware and editing software.

_ Microphones, speakers, joystik, and other peripherals are also needed.

Desktop video hardware for playback and capture:

_ Desktop video require a substantial amounts of disk space and considerable CPU horsepower.

_ It also requires specialized hardware to digitize and compress the incoming analog signal from video tapes.

_ .The two lines of video playback products become available in the marketplace I.e. video ASIC chips and board level products.

Video playback:

_ The two lines of video playback products become available in the marketplace I.e. video ASIC chips and board level products.

_ Broadly speaking, two types of accelerator boards are available:

-Video

-Graphics

Video capture and editing:

_ Video capture board are essential for digitizing incoming video for use in multimedia presentations or video conferencing

_ Video capture program also include video-editing functions that allows users crop, resize and converts formats and add special effects for both audio and video like fade-in, Embosses, zooma and echo's.

_ Developers are crating next generation editing tools to meet business presenters and video enthusiasts.

_ The best graphical editing tools make complex procedures accessible even to novice users.

Desktop video application software:

_ The text that appear in the movie. Any PC wants to handle digital video must have a digital-video engine available.

_ Two significant digital video engines are :

1. Apple’s QuickTime
2. Microsoft’s video for windows

_ These two are software's only; they don’t need any special hardware. Apple’s QuickTime:

_ QuickTime is a set of software programs from apple that allows the operating system to pay motion video sequences on a PC without specialized hardware.

_ QuickTime has it s own set of compression/decompression drivers.

_ Apple's QuickTime was the first widely available desktop video technology to treat video as a standard data type.

_ In this video data could not be cut, copied, and pasted like text in a page composition program.

_ Apple's QuickTime movie can have multiple sound tracks and multiple video tracks.

_ Apple's QuickTime engine also supports synchronize

Microsoft's video for windows:

_ Microsoft's video for windows is a set of software programs from Microsoft that allows the operating system to pay motion video sequences on a PC without specialized azhardware.

_ Microsoft video for windows has its own set of compression/decompression drivers.

_ Microsoft chooses a frame-based model, in contrast to QuickTime-based model.

Desktop video conferencing

_ Desktop video conferencing is gaining momentum as a communication tool. Face-to-face video conferences are already a common practice, allowing distant colleagues to communicate without the expense and inconvenience of traveling.

_ Early video conferencing utilized costly equipment to provide room-based conferencing, but now it becoming fast due to desktop video conferencing in this we participated by sit at their own desks, in their own offices, and call up others using their PCs much like telephone.

_ **The Economics:**

_ Three factors have made desktop video conferencing:

_ Price: The price fallen from 500,000$ to 500-1000$

_ Standards: standards allowing interoperable communications between machines from diff vendors.

_ Compression: It uses better and faster compression methods.

Types of desktop video conferencing:

_ Desk top video conferencing system coming onto the market today are divided into Three types they are based on plain old telephone lines:

1. POST
2. ISDN
3. Internet

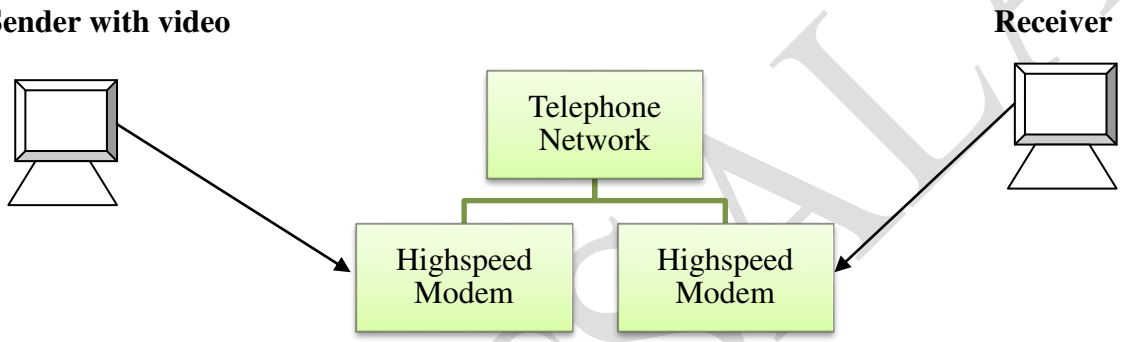
Using POST for video conferencing:

_ POST systems are especially attractive for Point-to-Point conferencing because no additional monthly charges are assessed and special arrangements with the telephone company are unnecessary.

_ The drawback with a POST solution is a restriction to the top speed of today's modems of 28.8 Kbps.

_ It need a s/w ,once properly installing a s/w users allows to pipe video, audio, and data down a standard telephone line.

Point-to-Point video conferencing using POTS



Using ISDN for video conferencing:

_ ISDN lines mostly offer considerable more bandwidth up to 128 Kbps, but it require the installation of special hardware.

_ The use of ISDN has been restricted to companies especially in private residence.

_ The fallowing fig explains the basic architecture for television or video conferencing using ISDN network transport switching.

_ This architecture is commonly found in videophones. Networks required for video conferencing are fiber optic cable or analog POST.

_ For video compression and decompression, the ISDN networks uses the H.261 technology, it is specified by the international telegraph and telephone consultative committee algorithm.

ISDN video or teleconferencing architecture

Using the Internet for Video Conferencing:

_ The two video conferencing programs are available on the internet:

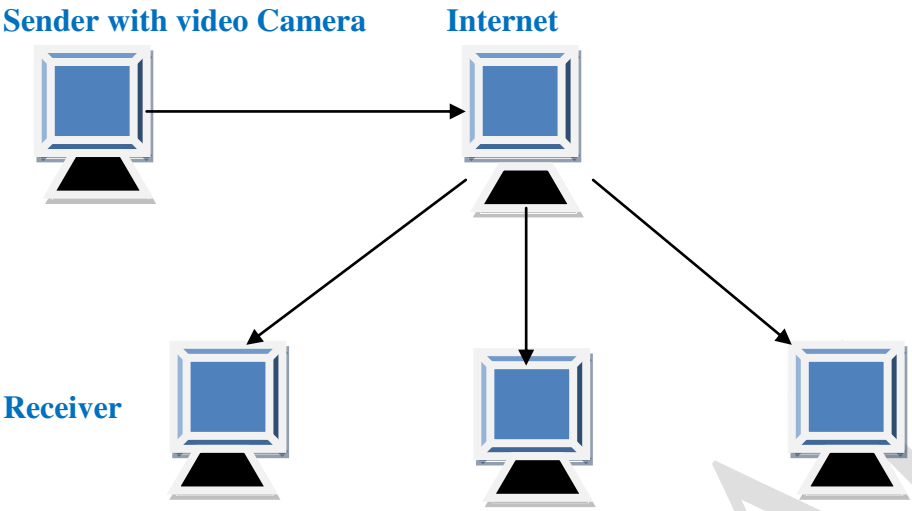
1. CU- See Me
2. MBONE

CU- See Me:

_ CU- See Me is the first software available for the Macintosh to support real-time multiparty video conferencing on the internet.

_ CU- See Me provides a one-to-one , one-to-many , several-to- several and several-to many conferencing depending on the user needs with minimal cost.

One-to-many video conferencing



MBONE:

_ It is a virtual network built on top of the Internet

_ Invented by Van Jacobson, Steve Dearing and Stephen Caner in 1992.

_ The purpose of MBONE is to minimize the amount of data required for multipoint audio video-conferencing

_ MBONE is free; it uses a network of m routers that can support IP Multicast.

_ It enables access to real-time interactive multimedia on the Internet

_ MBONE uses a small subset of the class D IP address space(224.0.0.0 - 239.255.255.255) assigned for multicast traffic.

_ MBONE uses 224.2.0.0 for multimedia conferencing

Characteristics:

_ topology: combination of mesh and star networks

_ IP addresses: 224.2.0.0; routing schemes: DVMRP, MOSPF

_ session registration: IGMP protocol

_ traffic requirement: audio 32-64 kbit/s, video 120 kbit/s

MBONE tools:

_ Videoconferencing: vic -t ttl destination-host/port (supports: NV, H.261, CellB, MPEG, MJPEG)

_ Audio conferencing: vat -t ttl destination-host/port (supports: LPC, PCMU, DVI4, GSM)

_ Whiteboard: wb destination-host/port/ttl

_ session directory: sdr

FRAME RELAY

Communication is the one of the prime objects of E-Commerce. The information is to be sent to various users in the midst of traffic volume. The following factors are to be considered for broadband communication.

Areas of Traffic	Nature of information
Volume of Traffic	Quickness needed and
Bandwidth requirements	Error control level

There are two models in packet switching method. They are: (i) Frame Relay and (ii) Cell Relay

The main aims of packet switching methods are:

1. High speed data transmission
2. Pricing
3. Priority
4. Multi-casting services
5. Multiple recipients
6. Reduce the number of transport network for data, text, audio, video and graphics
7. Integration services

The following are to be understood first to study Frame relay

Narrow band: Narrow band provides a single channel for communication on a cable.

Broad band: Broad band is ability to frequencies on single transmission medium providing multiple channels on the same wire.

ISDN: The process of using the fiber optic level. It deals with the nature of highway surface.

Switching Technique

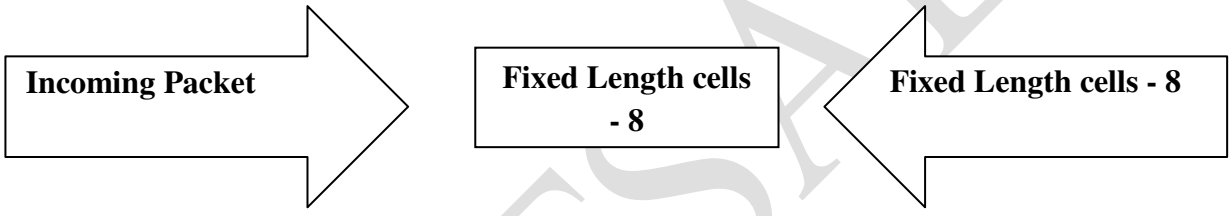
There are two types of primary switching technologies.

- Circuit Switching Technology
- Packet Switching Technology

CELL RELAY STRUCTURE

Cell relay switch is one of the methods of Fast Packet Switching. ATM is a type of cell relay. Cell Relay is used for Voice and data network or mixed data.

a. All data should be transmitted in fixed length packets
b. Cells are fitted at the router by data packets at irregular intervals
c. In the receiving side, the cells are emptied of their data packets
d. Traffic moves in the form of digital pipes
e. More efficient in allocation of bandwidth in frame relay
f. There is problem of serialization delay
g. Delay in sending video pictures, the picture quality will be low



FRAME RELAY STRUCTURE

There are two types of cell relay. They are:

1. Switched Multi-megabit Data Service (SMDS)
2. Asynchronized Transmission Mode (ATM)

MOBILE COMPUTING

Meaning

Mobile computers are part of the computing system. Mobile computer supports mobility of the computing equipment. Wireless Network is used to access the resources. Mobile computers can access information at any time and from any place.

Characteristics of Mobile Computing

There are two main characteristics in mobile computing technology

1. Portability: Wired Communication: Though the computer still need a wire and cable to link up to network, it provides the portability. This means that user computer is simply being restricted to the network port in used office but can be extended portable to anywhere with a network port.

2. Mobility: Wireless Communication: True mobility is allowed here and it uses the radio (or infrared) signals for communication. As such, users can read and send e-mail while commuting or boating.

Definition of Mobile Computing

Mobile computing is the use of computing devices – which usually interact in some fashion with a central information system – while away from the normal, fixed workplace. Mobile computing technology enables the mobile worker to:

a) create
b) access
c) process
d) store and
e) communicates information without being constrained to a single location.

MOBILE COMPUTING FRAMEWORK

Mobile computing has developed in various areas or dimensions. They are:

1. Wireless Delivery
2. Switching mode
3. Mobile Information Access Devices
4. Mobile Data Inter networking
5. Data Equipments
6. Mobile Computing based Business Applications

Wireless delivery technology is the method of delivery of information through wireless mode such as paging, radio, infrared, cellular service, satellite etc.,

WIRELESS DELIVERY TECHNOLOGY

wireless delivery technology contains the following:

- Radio based systems
- Cellular communication
- Wireless packet data network

- Satellite network
- Very small aperture terminals VSAT
- Paging network
- Infrared mobile computing

CELLULAR DATA COMMUNICATION PROTOCOL

Cellular data communication is done in two way (i) Circuit switching and (ii) Packet switching. Circuit switching is like telephone line where connection is established each other. In packet switching, the data are sent in packets, broken, transmitted and then reassembled.

GSM is the global system for mobile communication. It offers teleservices and wireless data services.

Cellular digital packet data (CDPD) is a digital data transmission system that provides packet data access.