INTERORGANIZATIONAL COMMERCE AND EDI

- EDI is defined as the Interprocess Communication [computer application to Computer Application] of business information in a standardized electronic form.
- EDI communicates information pertinent for business transactions b/w the Computer Systems of Companies, government Organizations, Small businesses and Banks.
- Many Industries EDI as essential for reducing cycle and order fulfillment times.
- The primary benefit of EDI to business is a considerable reduction in transaction costs, by improving the Speed and Efficiency of filling orders.

1. **Electronic Data Interchange (EDI)**

   * In E-Commerce, EDI techniques are aimed at improving the Interchange of Information b/w trading partners, suppliers and customers by bringing down the boundaries that restrict how they interact and do business with each other.

   * EDI is aimed at forging boundary less Relationships

   * EDI is one well-known example of structured document interchange which enables data in the form of document content to be exchanged b/w s/w Appln's that are working together to process a Business Transaction.

Defining EDI

1. EDI is the transmission, in a standard syntax of unambiguous information of business (or) strategic significance b/w computers of Independent Organizations.

2. EDI is the interchange of standard formatted data b/w computer application systems of trading partners with minimal manual intervention.

3. EDI is the electronic transfer from one computer to another of computer processable data using an agreed standard to structure the data.

EDI Layered Architecture

- EDI architecture specifies 4 layers
    1. Semantic (or) Application layer

2. Standards translation Layer
3. Packing (or) Transport Layer
4. Physical n/w infrastructure layer

Layer architecture of EDI

<table>
<tr><td>EDI Semantic Layer</td><td colspan="2">Application Level Services</td></tr>
<tr><td rowspan="2">EDI Standard Layer</td><td colspan="2">EDIFACT business from standards</td></tr>
<tr><td colspan="2">ANSI X12 business from Standards</td></tr>
<tr><td rowspan="3">EDI Transport Layer</td><td>Electronic mail</td><td>X.435, MIME</td></tr>
<tr><td>Point to Point</td><td>FTP, TELNET</td></tr>
<tr><td>World wide web</td><td>HTTP</td></tr>
<tr><td>Physical Layer</td><td colspan="2">Dial-up lines, Internet, I-way</td></tr>
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- EDI Semantic Layer describes the business application that is driving EDI.
- For a procurement Application, this translates into requests for quotes, price quotes, purchase orders, acknowledgements and invoices.
- This Layer specific to a company and the s/w it uses.
- The user interface and content visible on the screen are tailored (or) customized to local environments.
- Two competing standards that define the content and structure of EDI forms :
    1 ANSI X12
    2 EDIFACT
- EDI standard specify business from structure and to some extent influence content seen at the application layer.
- A purchase order name field in an X12 standard might be specified to hold a MAXI of 50 chars.
- An application using 75 character field lengths will produce name truncation during the translation from the application layer to the standard layer.

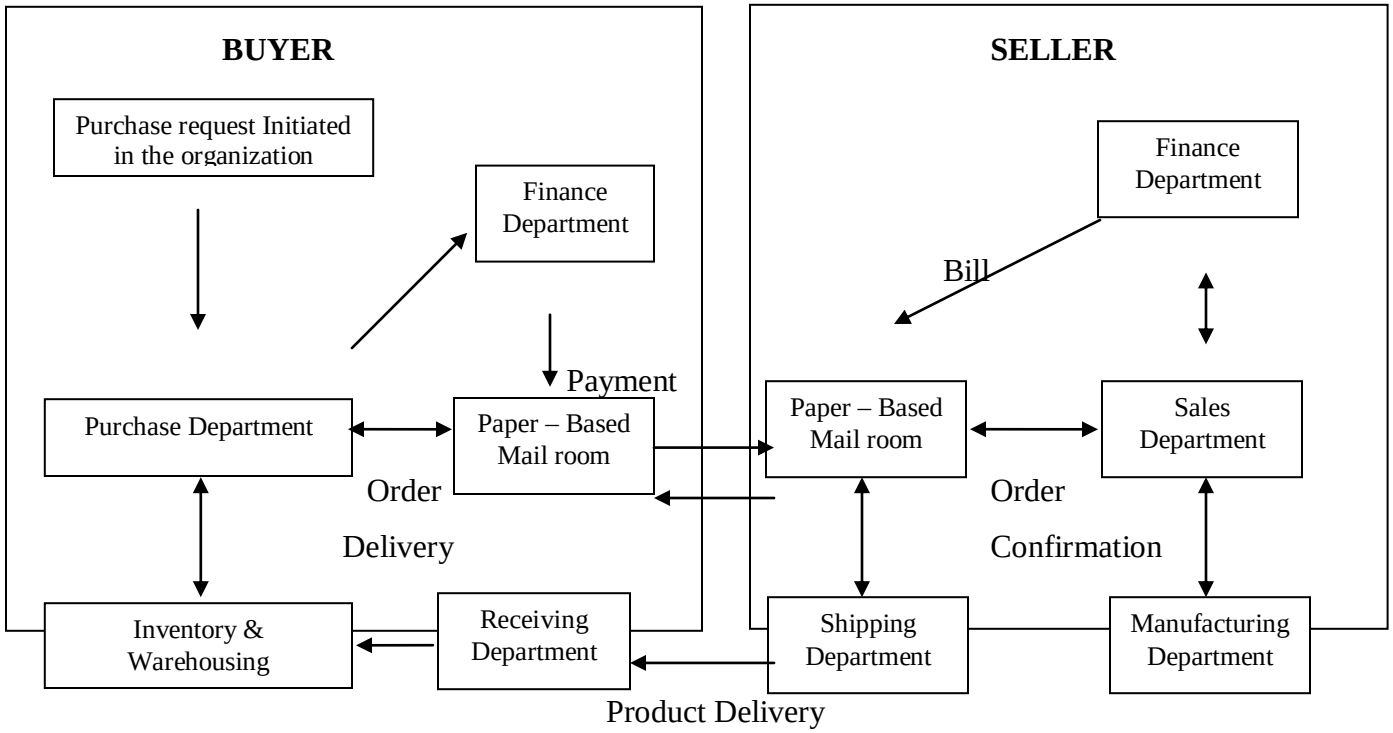
- EDI standards and Application level although separate are closely interwined.
- EDI transport layer corresponds closely with the non electronic activity of sending a business from one company A to company B
- EDI document transport is far more complex than simply sending e-mail messages (or) sharing files through a n/w, a modern (or) a Bulleting board
- Relationship b/w EDI and email can be ambiguous as a e-mail systems become very sophisticated and incorporate more and more form based features.
- Good example is Lotus Notes which started as a simple form-bases mail systems but has evolved into a very sophisticated environment.
- Lotus Notes lack flexibility and require trading partners to use the same s/w application at both ends. This goes against the EDI goal of openness.

EDI VERSUS E-MAIL

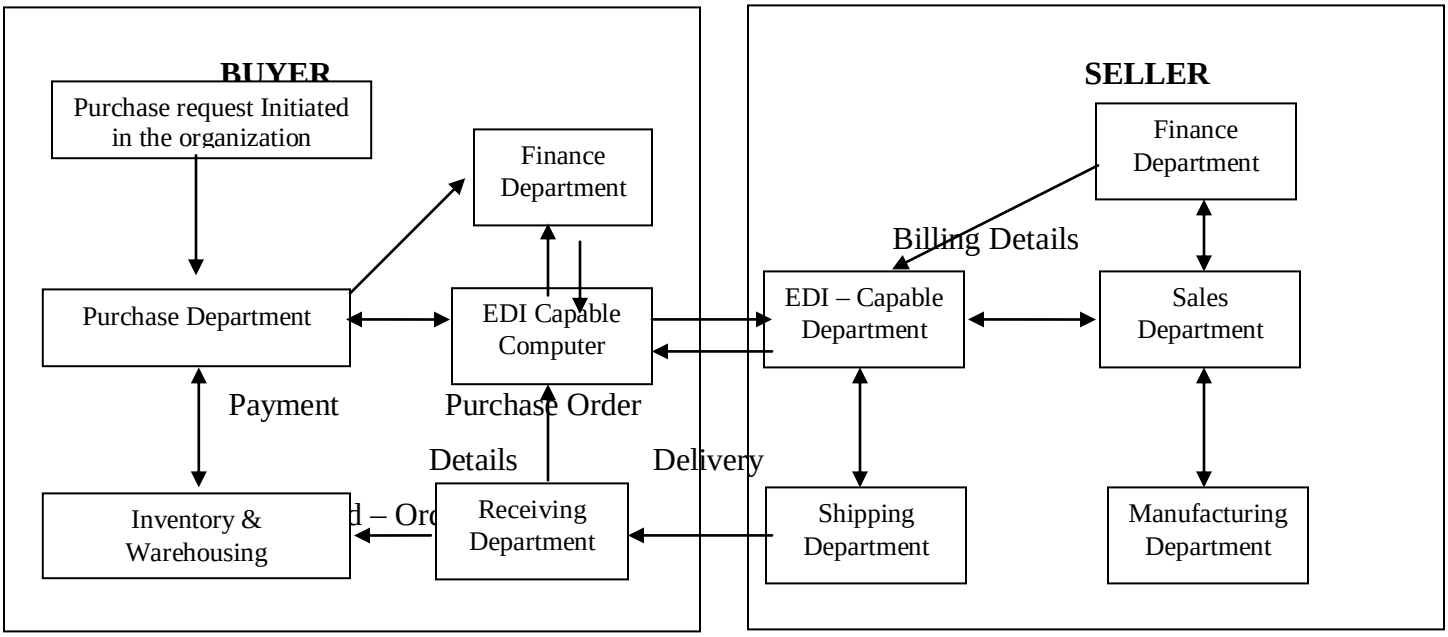
S.No	EDI	E-Mail
1	There is typically no human involvement in the processing of the information, as the interface has s/w-to-s/w orientation. The data are structures in a s/w understandable way.	The data are not necessarily structured to be s/w understandable. A human-to-s/w interface is involved at a minimum of one end of the interchange
2	The interchange is composed by one s/w for interpretation by another s/w. If a reply is involved, it's composed by a s/w to be interpreted by another s/w	The manage is composed by a human and or interpreted by a human and / or a reply is composed by a human and / or interpreted by a human.

EDI in Action

Information Flow Without EDI



Information Flow with EDI



- EDI transaction for a purchase, shipment & corresponding payment are as follows

Step 1 : Buyer's computer sends Purchase Order to seller's computer

Step 2 : Seller's computer sends Purchase Order Confirmation to buy's Computer

Step 3 : Seller's Computer sends Booking Request to transport Company's Computer.

Step 4 : Transport Company's Computer sends Booking confirmation to seller's computer.

Step 5 : Seller's Computer sends Advance Ship Notice to buyer's Computer

Step 6 : Transport Company's Computer sends status to seller's computer.

Step 7 : Buyer's Computer sends Receipt Advice to seller's computer.

Step 8 : Seller's Computer sends Invoice to buyer's computer.

Step 9 : Buyer's Computer sends Payment to seller's computer.

Tangible Benefits of EDI

- EDI can be a cost and time saving system for many reasons

- The automatic transfer of information from computer to computer reduces the need to relay information and as such reduces costly carry to near zero.
- Savings also accrue from the following improvements :-
  - Reduced paper-bases systems
  - Improved problem resolution and customer service
  - Expanded customer / supplier base.

2. EDI APPLICATIONS IN BUSINESS

* 4 Different Scenarios in industries that use EDI Extensively

i) International (or) cross-border Trade

ii) Electronic Funds Transfer (EFI).

iii) Health care EDI for insurance claims processing

iv) Manufacturing and Retail Procurement

International Trade And EDI

- EDI has always been very closely linked with international trade.
- Trade Efficiency which allows faster, simpler, broader and less costly transaction is a necessity.
- It's widely held view that trade efficiency can be a accomplished only by using EDI as a primary global transaction medium.

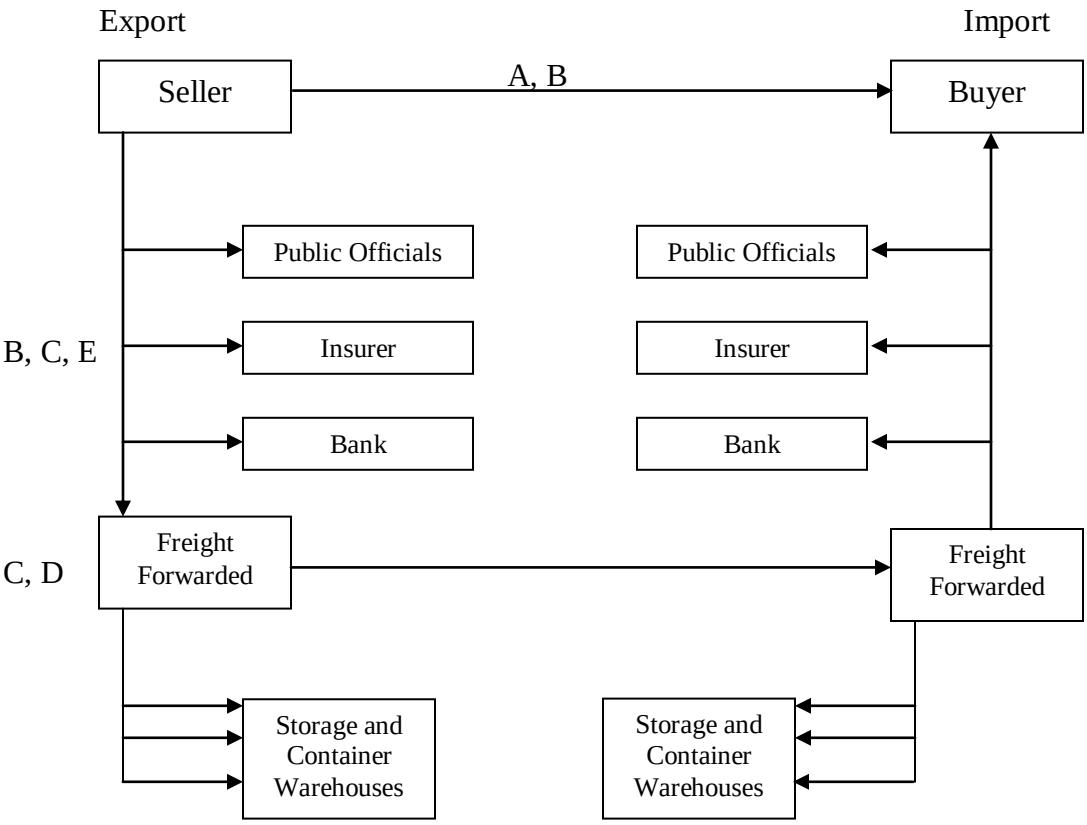
* **EDI benefits for international Trade Include**

1. Reduced transaction expenditures
2. Quicker Movement of imported and exported goods
3. Improved Customer service through "Track and Trace" program that quickly identify to the many participants in a trade deel-companies, customs, banks, insurers, Transport Agents and so on.
4. Faster customs clearance and reduces opportunities for corruption, a huge problem in trade.

The Components of International Trade

* These international trade agencies Shippers, Airlines, Forwarders and Customs in various countries are supported by EDI 4 computer networks that tie them together.

Internals of International Trade



A : Establishment of Commercial agreement (Commercial)

B : Arrangement of Payment (Financial)

C : Arrangement of Transport (Transport Intermediary)

D : Arrangement of Insurance (Insurance)

E : Clearance of Export (Customs)

F : Clearance of Import (Customs)

Customs and International Trade

- Customs plays a key role in international trade
- Every International trade transaction involves at least two customs clearances, export and import.
- The Environment in which customs operates is changing rapidly and many new challenges have emerged, including the following :
- A tremendous volume of goods is being traded in an increasingly global economy.
- More rapid means of transport have emerged that address the speed of delivery required by many industries.
- The scope of customs activities has been broadened into areas as diverse as intellectual property rights, toxic wastes and endangered species.
- The demands by economic planners for faster and more accurate statistics and projections have put many customs authorities into the data processing business.

Trade Point Global Network : The Future of Trade :

- A trade point typically consists of the following services :
    * A trade facilitation center, where participants in foreign trade transaction are grouped together under s single physical (or) virtual roof.
    * A source of trade-related information that provides actual and potential traders with date about business and market opportunities potential clients and suppliers, trade regulation and requirements.
    * A gateway to global networking, whereby all trade points will be interconnected and equipped with computing and telecommunication tools to linkup with other global networks

Financial EDI

- It's comprises the electronic transmission of payment and remittance information between a payer, payee, payee and their respective banks.

Types of Financial EDI

1. Checks
2. Electronic Funds Transfers (EFT)
3. Automated clearinghouse (ACH) transfers.

1. **Bank Checks**

   * Checks are instruments for debit transfers where payees collect funds from payers.

2. **EFT**

   * EFT are credit transfers b/w banks where funds flew directly from the payer's bank to the payee is bank.

3. **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.
   * ACH provides the following services : Preauthorized credits, such as the direct deposit of payrolls;
   * Preauthorized debits such as repetitive bill payments and consumer – initiated payments
   * This is primarily a high volume/ low dollar, consumer oriented product

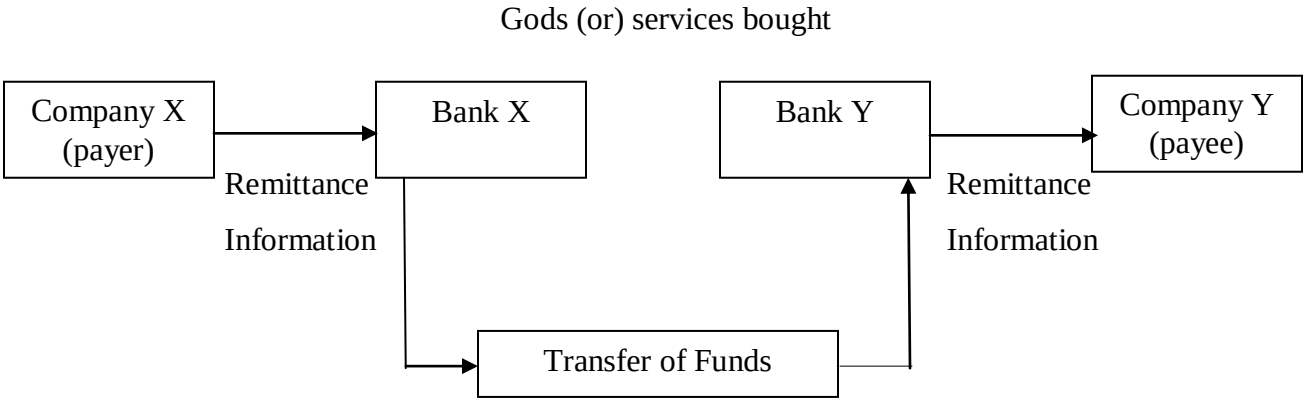
Two types of ACH transfers are used

1. Credit Transfers
2. Debit Transfers

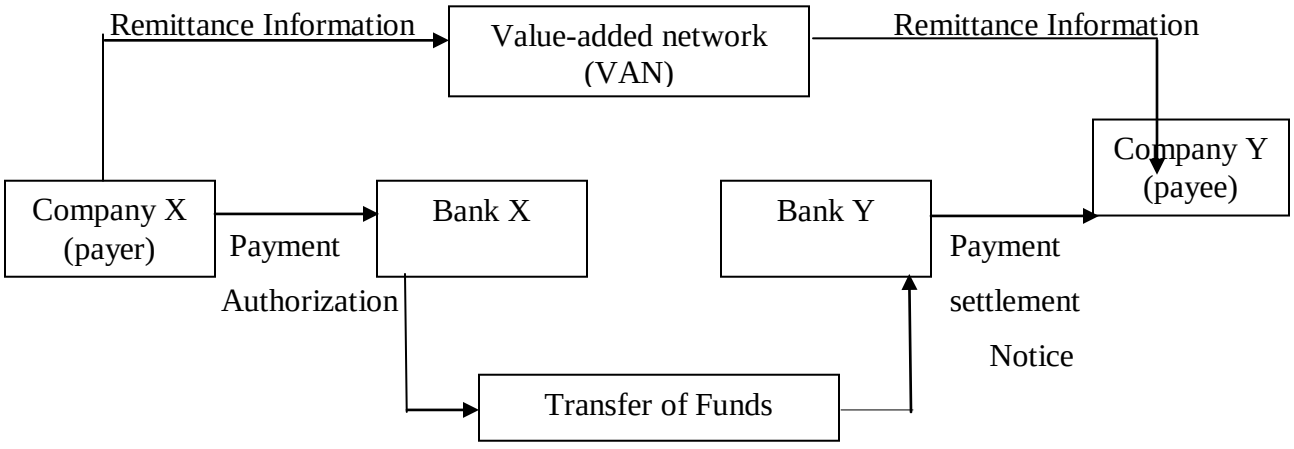
- Credit transfers are similar to large – dollar funds transfers in that funds how directly from the payer's bank to the payee's

- ACH debit transfers are used, the payee's bank initiates the transfer and receives funds immediately from the payer's
- ACH debit transfers are used loan often than credit transfers for Business-to-Business payments.

Payment and Remittance Information Following Together



Payment and Remittance Information Flowing Separately:



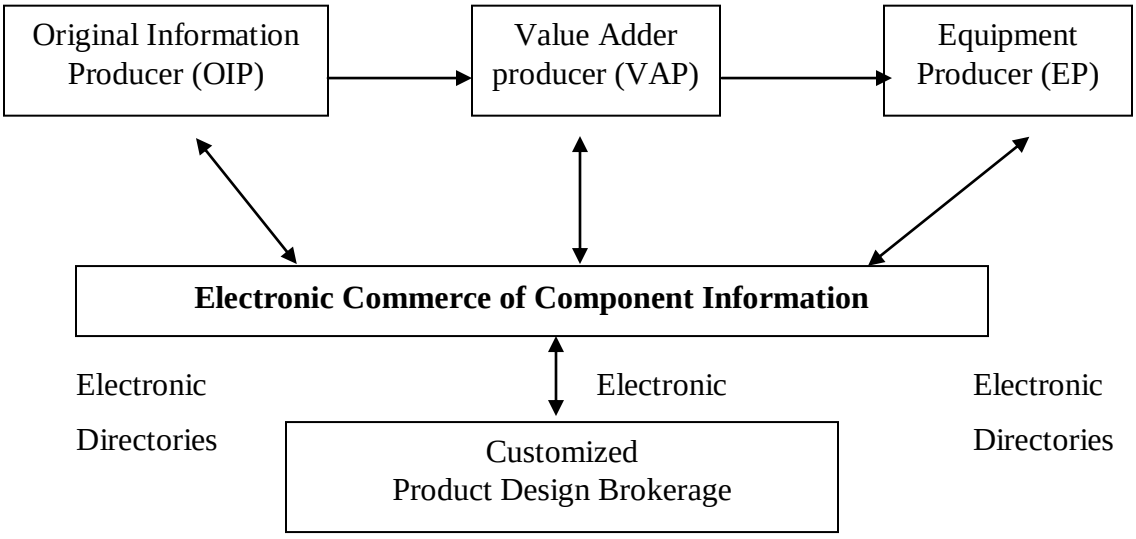
Financial EDI Standards

- The most commonly used formats in the industry today
- BAI Developed by the Bank Administration Institution (BAI) these proprietary standards have been used by U.S. Banks for sending and receiving invoice and remittance information (no funds transfers) for several decades.
- 820 & 823
- CCD
- CTP
- CCD^{+}
- CTX
- ERDIFACT.

Manufacturing Retail Procurement Using EDI

- In manufacturing EDI is used to support Just – in – time.
- In retailing EDI is used to support Quick Response
- A Major benefit of JIT & EDI is a streamlined cash flow
- Quick Response means better service and availability of a wider range of products
- Much of the focus of QR is in reduction of Lead times using event- driven EDI.

Business Information in Product Design



3. EDI : LEGAL, SECURITY AND PRIVACY ISSUES

- In EDI, legal issues and computer security are important.
- Companies that deal with EDI should take the services of a lawyer during the design of EDI applications, so that evidentiary/admissibility safeguards are implemented.

* 3 Modes of Communication Types

1. Instantaneous:
   If the parties are face to face or use an instantaneous communication medium such as telephone
2. Delayed with postal Service:
   The mailbox rule provides that an acceptance communicated via postal service mail is effectively communicated when dispatched or physically deposited
3. Delayed with non postal service: EX: – Couriers, telegram

NOTE:

- Messaging systems combine features of delayed and instantaneous
- Messaging delay is a function of the specific applications, message routing, networks traversed, system configuration and other technical factors.

Digital signature and 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..

- It should have greater Legal authority than hand written signatures.

EDI AND ELECTRONIC COMMERCE

- The economic advantages of EDI are widely recognized
- Goal of new EDI Services is to reduce the cost of setting up and EDI relationship.
- New types of EDI are emerging that can be broadly categorized as Traditional EDI and Open EDI.

Traditional EDI

- It replaces the paper forms with almost strict one-to-one mappings b/w parts of a paper form to fields of electronic forms called Transaction Sets.
- **Traditional EDI covers 2 Basic Business areas** :

1. Trade Data Interchange (TDI) encompasses transaction such as Purchase orders, invoices and acknowledgements.
2. Electronic Funds Transfer (EFT) is the automatic transfer of funds among banks and other organizations.

- Traditional EDI is divided into two camps : Old EDI & New EDI

Old EDI

- It refers to the current practice of automating the exchange of information pertinent to the business activity.
- Old EDI is also used to refer to the Current EDI. Standardization Process (e.g., X12, EDIFACT) where terns of thousands of people in groups all around the world are attempting to define generic document interchanges that allow every company to choose it's own, unique, proprietary version.

New EDI

- It's really a refocus of the standardization process
- With OH EDI, the standardization is focused on the interchange structure, on the transaction set in X12 (or) the manage in EDIFACT.

- With new EDI, the structure of the interchanges in determined by the pgmer who writes the business application program, not by the lengthy standards process.
- New EDI makes Edi work for electronic commerce by removing the Long standardization process that is impeding it
- Goal of new EDI is to produce standardization at the document processing level, in the context of a business work flow rather than at the document interchange level.
- New EDI is proposing constructs similar in many ways to the document type definition (DTD) used in SGML and HTML.

Steps :

1. Shift the focus of the EDI standardization process away from the Low Level interchange structure and onto more high-level business work flows involving many Low-Level interchange activities,
2. Allow customization of Information by enabling application programs to use the interchange structures best suit their local environment.
3. Another aspect of new EDI is the interactive query response (called Interactive EDI), which is a form of EDI used by travel agents to book airline fights.

Open EDI

- Open EDI is a business procedure that enables electronic commerce to occur b/w organizations where the interaction is of short duration.
- To implement open EDI, the ISO has developed an open EDI reference model, which consists of two distinct views .
- The first of them, Business Operational View (BOV), supports the semantics of
    1. Business data in Business transactions and the associate and Data Interchange.
    2. Business conventions and Business rules in Business Transactions
- The second, the functional service view (FSV), addresses the framework for services meeting the mechanistic needs of open EDI.
- In short, the first class of standards addresses the Business Problems of open EDI and the second class of standards addresses the Information Technology Problems