Introduction

- ERP stands for Enterprise Resource Planning.
- ERP systems are the kind of software tools which are used to manage the data of an enterprise.
- ERP system helps different organizations to deal with different departments of an enterprise. Different departments like receiving, inventory management, and customer order management, production planning, shipping, accounting, human resource management, and other business functions.

Define:

Enterprise resource planning (ERP) refers to a type of software that organizations use to manage day-to-day business activities such as accounting, procurement, project management, risk management and compliance, and supply chain operations.

ERP & Related Technologies

Enabling Technologies

• Some of these technologies which when integrated with the ERP system, will enable the companies to do business at Internet speed. These technologies used are:

1. Business Process Reengineering (BPR)
2. Data warehousing & data marts
3. Data mining
4. On-line analytical processing (OLAP)
5. Product life cycle management (PLM)
6. Supply chain management (SCM)
7. Customer relationship management (CRM)
8. Geographical information systems (GIS)

9. Intranets and extranets

10. Electronic data interchange (EDI)

11. Electronic Funds Transfer (EFT)

12. Cryptography

1. Business Process Reengineering (BPR)

BPR is the analysis and redesign of workflow within and between enterprises.

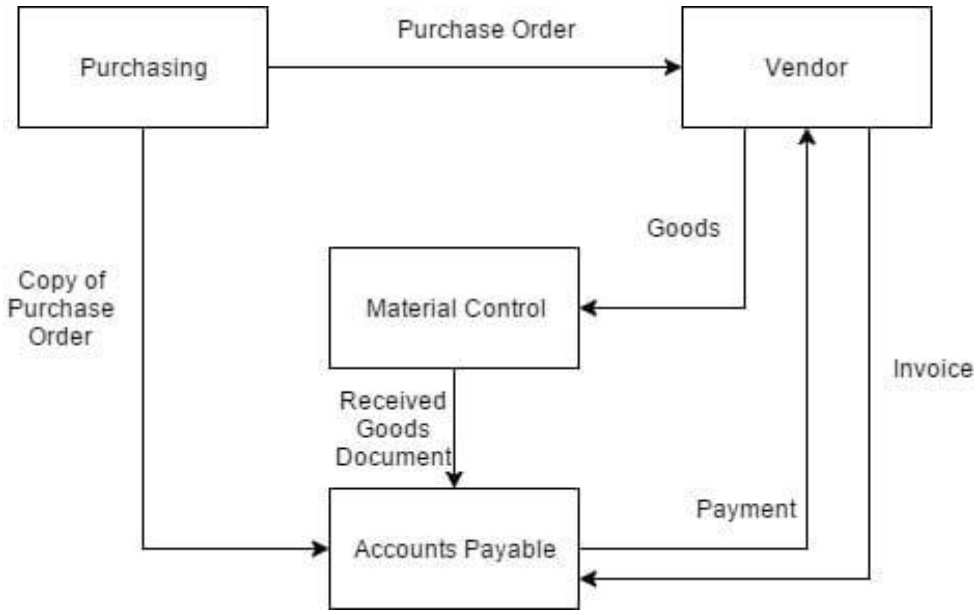
Business process reengineering is **the act of recreating a core business process with the goal of improving product output, quality, or reducing costs**.

Example: Older Payable process

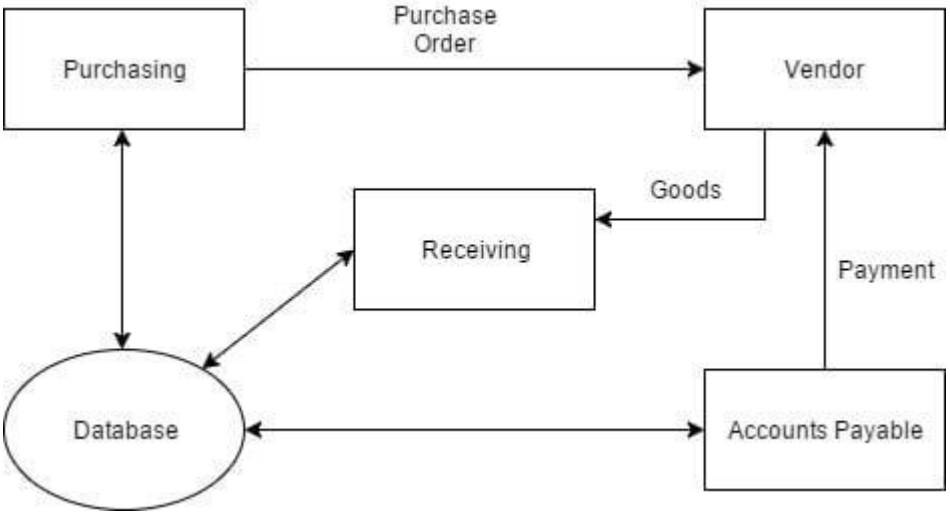
They analyzed the current system, and found out that it worked as follows:

1. When the purchasing department would write a purchase order, they sent a copy to accounts payable.
2. Then, the material control would receive the goods, and send a copy of the related document to accounts payable.
3. At the same time, the vendor would send a receipt for the goods to accounts payable.

Then, the clerk at the accounts payable department would have to match the three orders, and if they matched, he or she would issue the payment. This, of course, took a lot of manpower in the department.



Newer Payable Process



So, as is the case with BPR, Ford completely recreated the process digitally.

1. Purchasing issues an order and inputs it into an online database.
2. Material control receives the goods and cross-references with the database to make sure it matches an order.
3. If there's a match, material control accepts the order on the computer.

Business Process Reengineering is a dramatic change initiative that contains five major steps that managers should take:

- Refocus company values on customer needs
- Redesign core processes, often using information technology to enable improvements
- Reorganize a business into cross-functional teams with end-to-end responsibility for a process
- Rethink basic organizational and people issues
- Improve business processes across the organization

2. Data warehousing & data marts

A data warehouse is **a large collection of business data used to help an organization make decisions**.

Data Warehouse is vast in size.

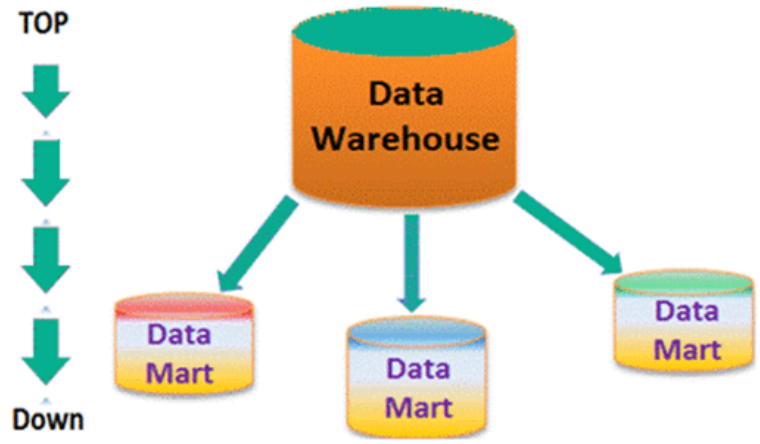
It collects data from various data sources.

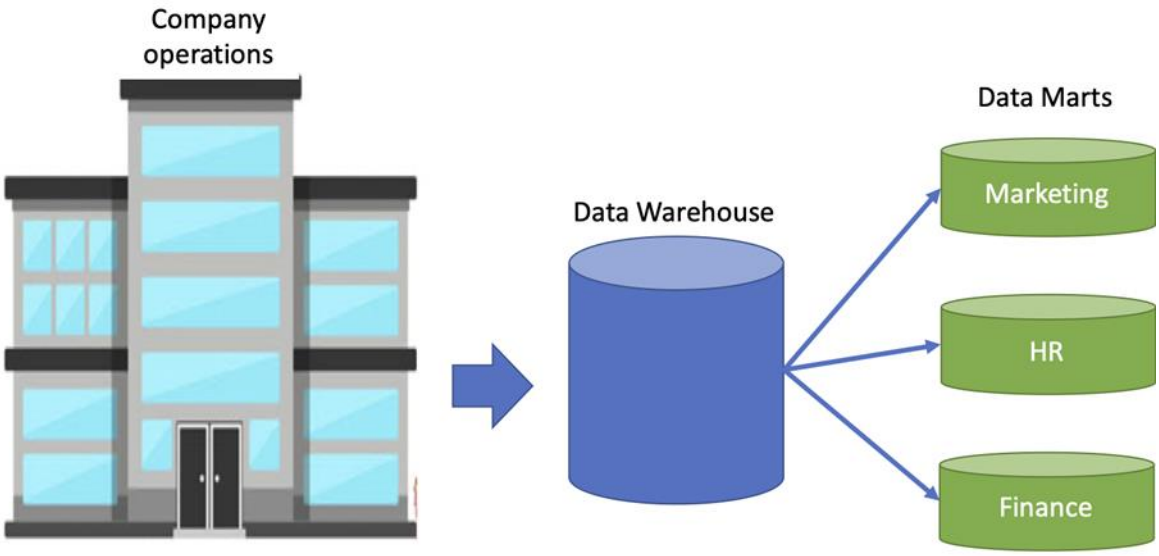
Data warehouse is top-down model.

Data warehouse is a Centralized system.

To build a warehouse is difficult.

Long time for processing the data because of large data.





DATA MARTS

A data mart is **a subset of a data warehouse focused on a particular line of business, department, or subject area**

Data Mart is subject-oriented, and it is used at a department level.

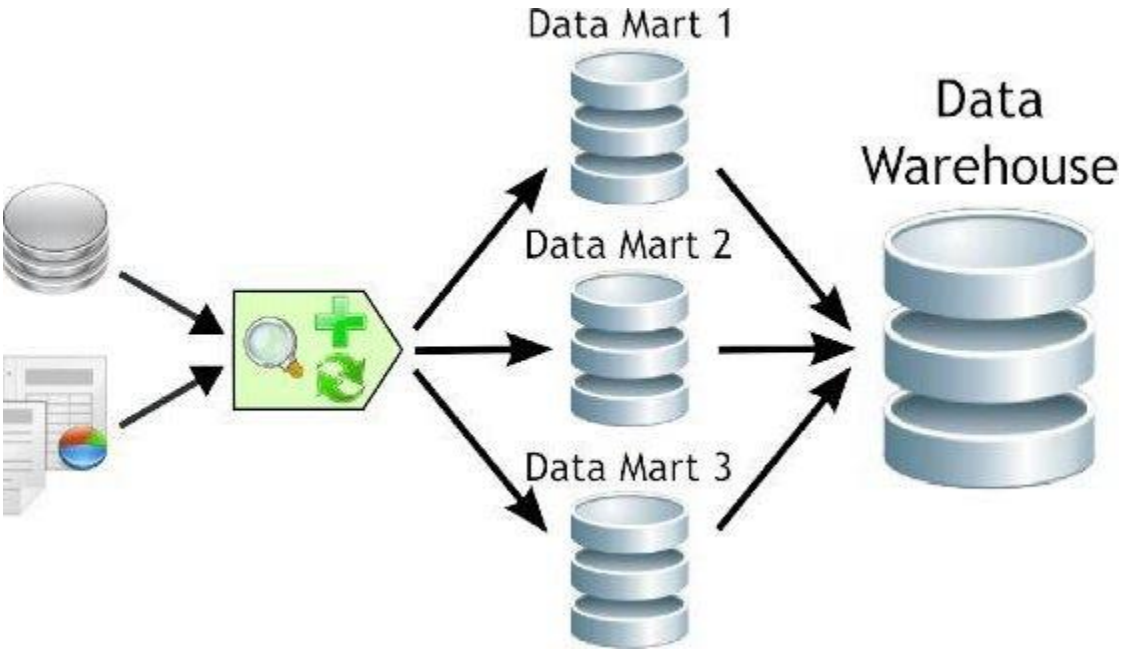
Data marts make specific data available to a defined group of users, which allows those users to quickly access critical insights without wasting time searching through an entire data warehouse.

Data Marts are built for particular user groups. Therefore, data short and limited.

To build a mart is easy.

Less time for processing the data because of handling only a small amount of data.

While it is a bottom-up model.



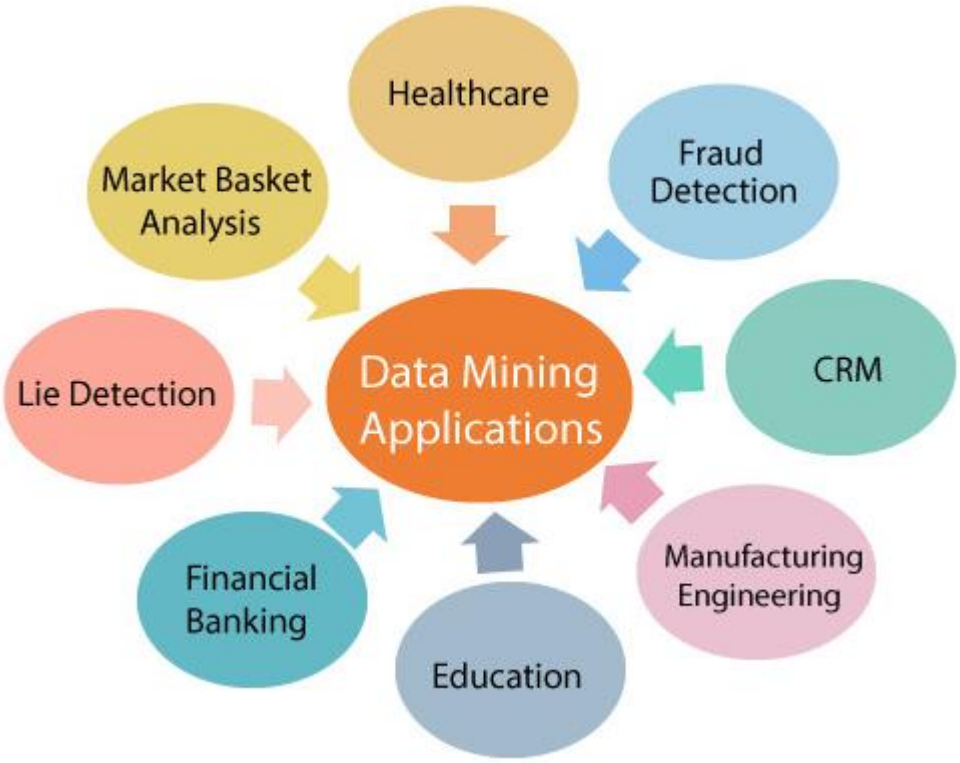
3. Data mining

Data mining is the process of analyzing dense volumes of data to find patterns, discover trends, and gain insight into how that data can be used.

Data miners can then use those findings to make decisions or predict an outcome.

Data mining is an interconnected discipline, blending the fields of statistics, machine learning, and artificial intelligence.

Data Mining Applications

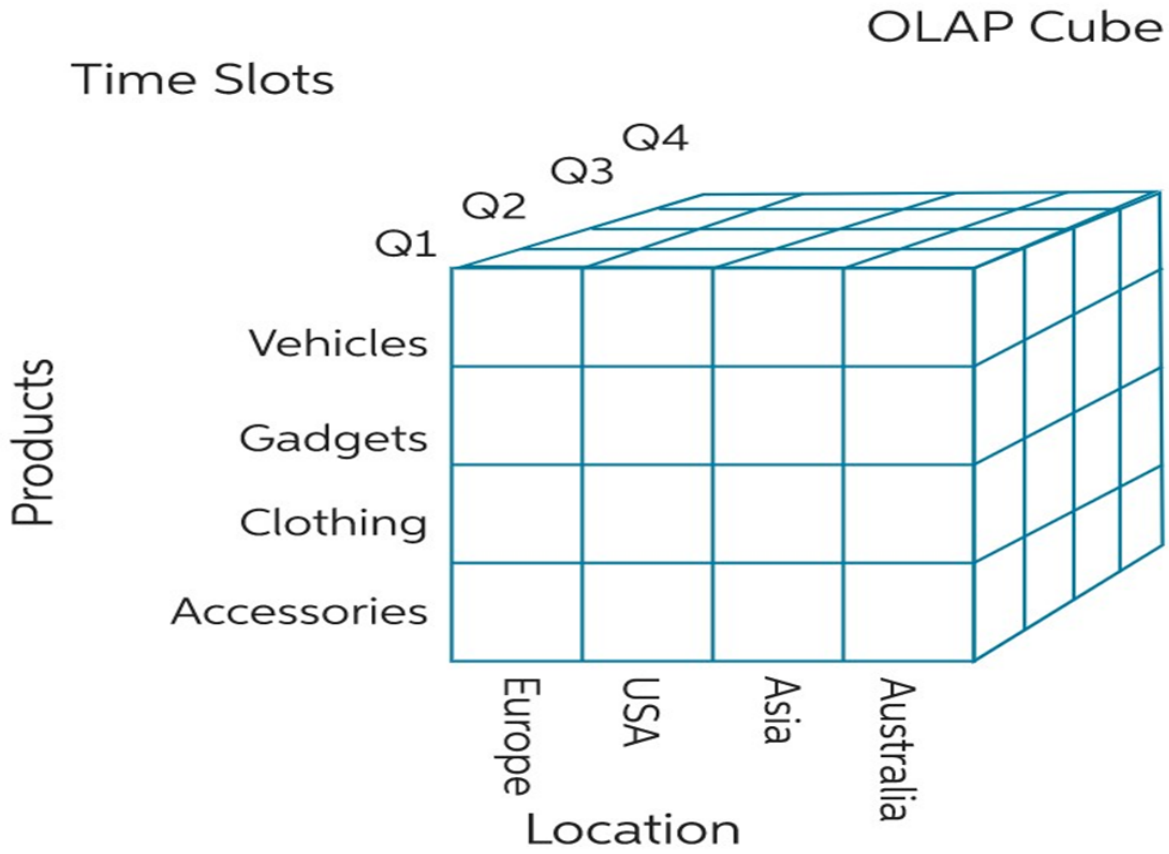


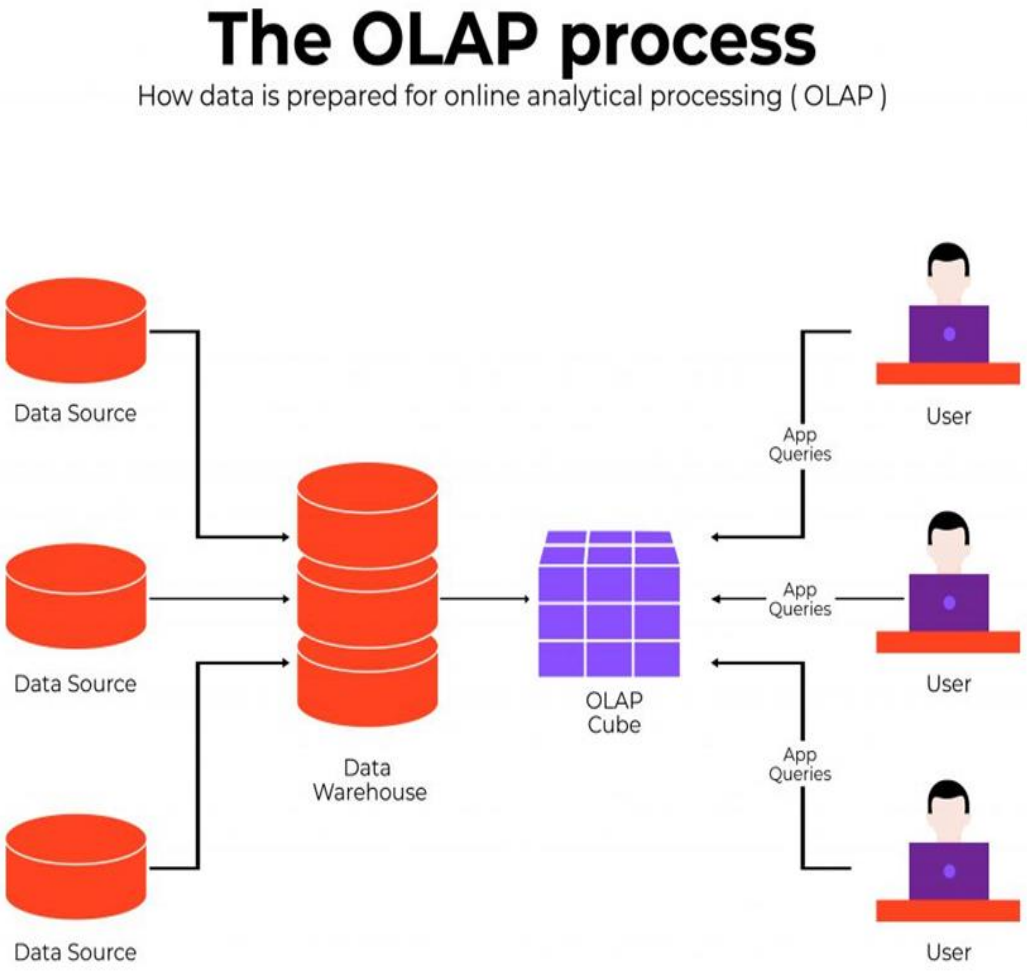
4. On-line analytical processing (OLAP)

Online Analytical Processing (OLAP) is a category of software that allows users to analyze information from multiple database systems at the same time.

It is a technology that enables analysts to extract and view business data from different points of view.

Analysts frequently need to group, aggregate and join data. These OLAP operations in data mining are resource intensive. With OLAP data can be pre-calculated and pre-aggregated, making analysis faster.

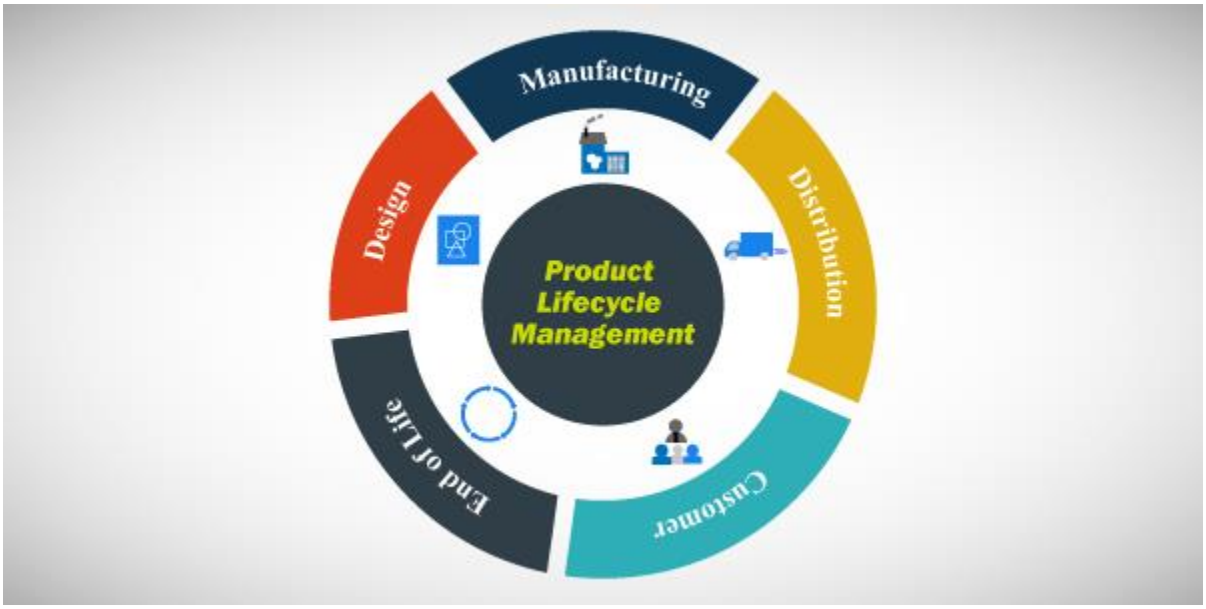



The OLAP process
How data is prepared for online analytical processing (OLAP)
Data Source
Data Source
Data Source
Data Warehouse
OLAP Cube
App Queries
App Queries
App Queries
User
User
User

5. Product life cycle management (PLM)

Product lifecycle management (PLM) is **the process of managing a product's lifecycle from inception, through design and manufacturing, to sales, service, and eventually retirement**. As a technology, PLM software helps organizations to develop new products and bring them to market.

PLM software is a solution that manages all of the information and processes at every step of a product or service lifecycle across globalized supply chains. This includes the data from items, parts, products, documents, requirements, engineering change orders, and quality workflows.



6. **Supply chain management (SCM)**

A supply chain is a network that connects a company to suppliers of raw materials. It is also used to deliver a product to customers. The better the supply chain management, the more of a competitive advantage the company has

Supply chains are steps that are required to get raw materials, products or services from the original state to the customer and improve customer relations. Large companies and projects usually have more than one supply chain, which is known as a supply network.

7. Customer relationship management (CRM)

Customer relationship management (CRM) is a technology for managing all your company's relationships and interactions with customers.

A CRM system helps companies stay connected to customers, streamline processes, and improve profitability.

CRM is a combination of business strategies, software and processes that enable companies to build long-lasting relationships with their customers.

The goal is to improve customer service relationships and assist in customer retention and drive sales growth. CRM systems compile customer data across different channels, or points of contact, between the customer and the company, which could include the company's website, telephone, live chat, direct mail, marketing materials and social networks.

8. Geographical information systems (GIS)

A Geographic Information System (GIS) is **a computer system that analyzes and displays geographically referenced information**. It uses data that is attached to a unique location.

Geographical information system (GIS) is basically defined as a systematic integration of hardware and software for capturing, storing, displaying, updating manipulating and analyzing data.

GIS relies on progress made in fields such as computer science, databases, statistics, and artificial intelligence.

Components of GIS:

People, Hardware & Software, Data & Methods

9. Intranets and extranets

An intranet is an online network only company employees can access

Intranet is a tool for sharing information throughout the organization.

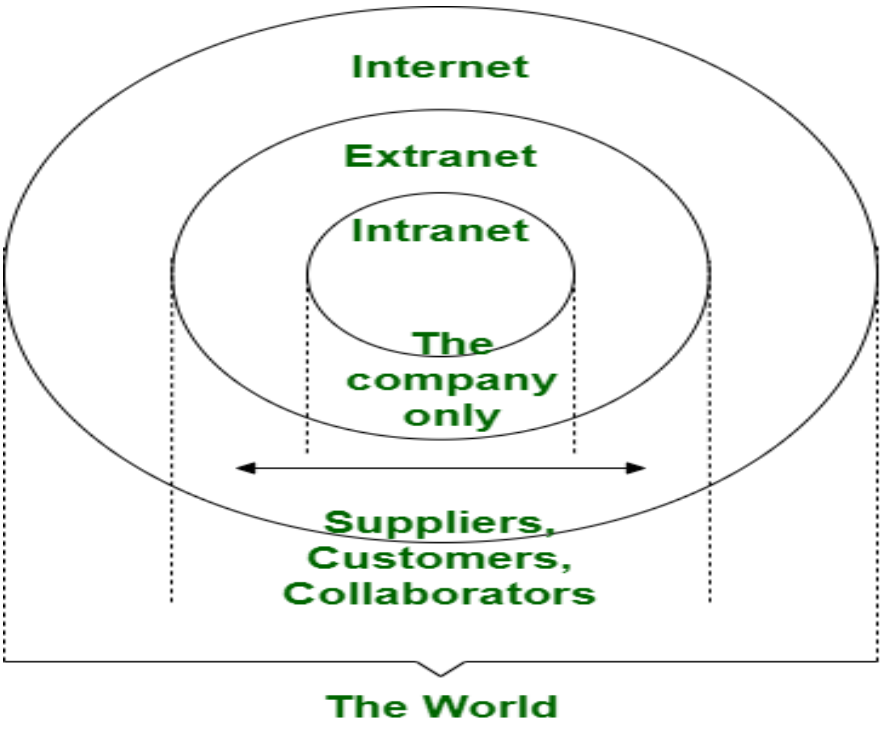
Example: WIPRO using internal network for its business operations.

Extranet in simple terms **provides a secure network for an organization to share information with relevant people outside the organization**.

It is a tool for sharing information between the internal members and external members.

Examples: An e-commerce site exchanges information with its retailers, a supplier's through an extranet network.

Example: DELL and Intel using network for business related operations.



10. Electronic data interchange (EDI)

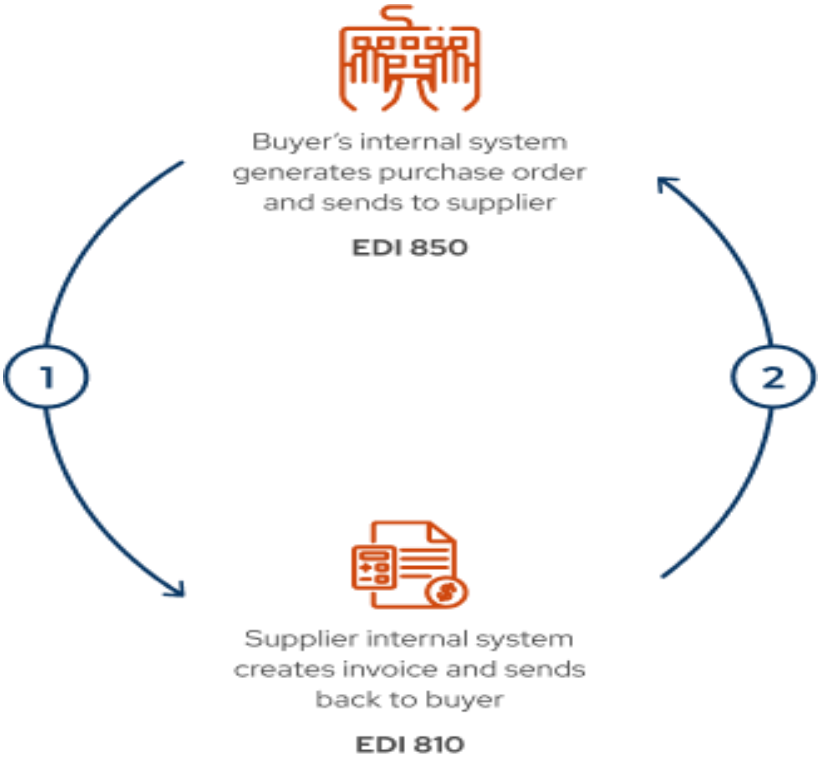
Electronic Data Interchange (EDI) is the exchange **of business information in a standard and structured format**.

It is a process which allows one company to send information to another company electronically rather than with paper.

Electronic data interchange (EDI) is defined as computer-to-computer exchange of business information in a standard and structured format.

Organizations are moving to electronic data interchange to streamline and improve operational efficiency of business processes and communications by exchanging data electronically.

Example:



A common transaction such as (EDI 850) Purchase Order and (EDI 810) Invoice, help simplify and streamline the entire data interchange process, form order purchasing to invoice sending.

11. Electronic Funds Transfer (EFT)

An electronic funds transfer is the process of moving money from one bank account to another using computer-based technology.

For business owners, from small to enterprise, taking and making payments is a regular and vital part of their everyday activities. Whether it's paying staff or vendors, or receiving payments from customers, the ability to make quick, seamless, and secure payments is a key component in business.

Electronic payments offer an easy payment solution that allow businesses to take payments quickly and securely.

Transactions are processed by the bank through the Automated Clearing House (ACH) network, the secure transfer system that connects the different financial institutions. For payments, funds are transferred electronically from one bank account to the billing company's bank, usually less than a day after the scheduled payment date.

Example:

Automatic teller machines (ATM)

12. Cryptography

Cryptography is **technique of securing information and communications through use of codes so that only those person for whom the information is intended can understand it and process it**.

The encryption algorithm uses a "key," which is a binary number that is typically from 40 to 256 bits in length.

The greater the number of bits in the key (cipher strength), the more possible key combinations and the longer it would take to break the code. The data are encrypted, or "locked," by combining the bits in the key mathematically with the data bits. At the receiving end, the key is used to "unlock" the code and restore the original data.