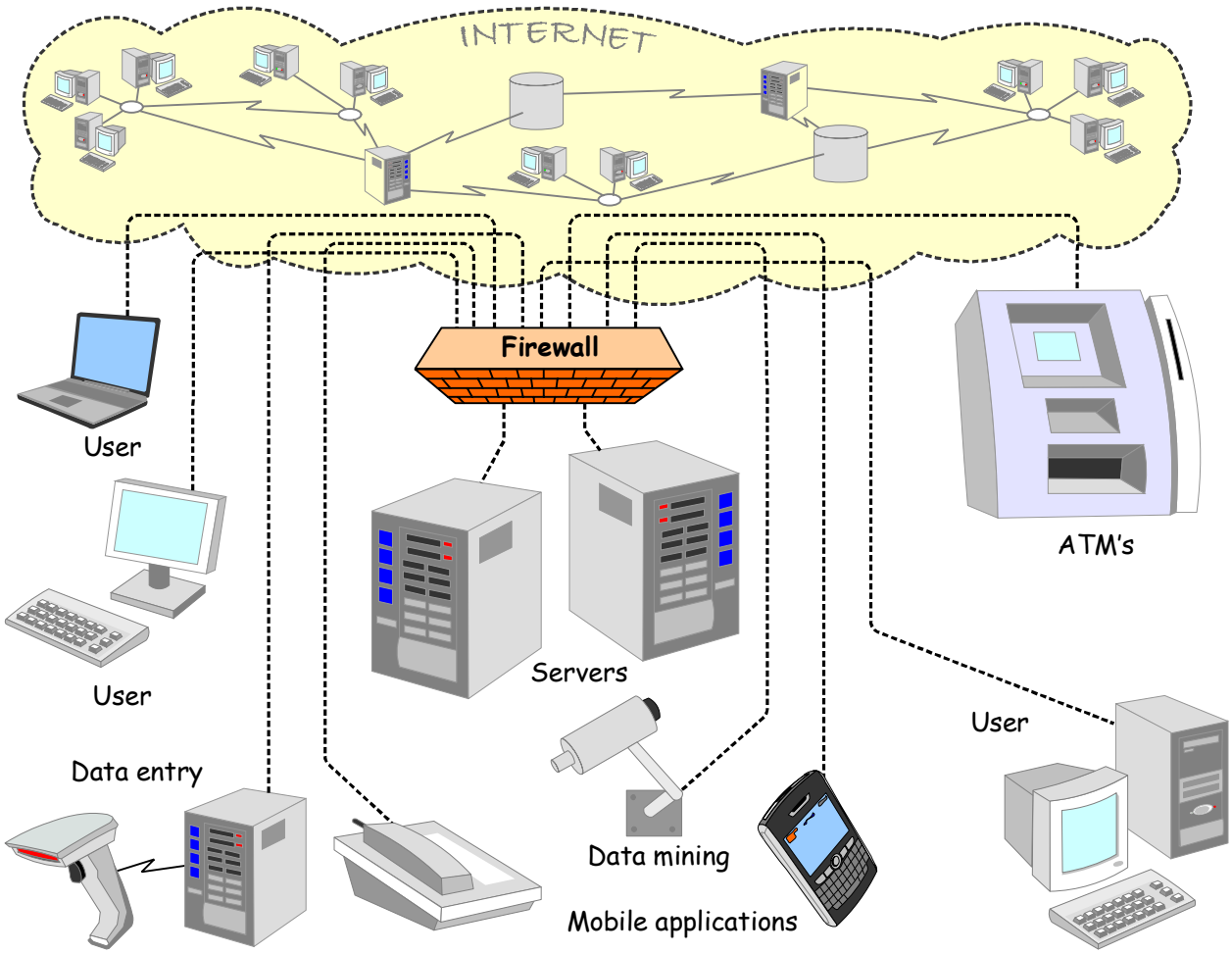
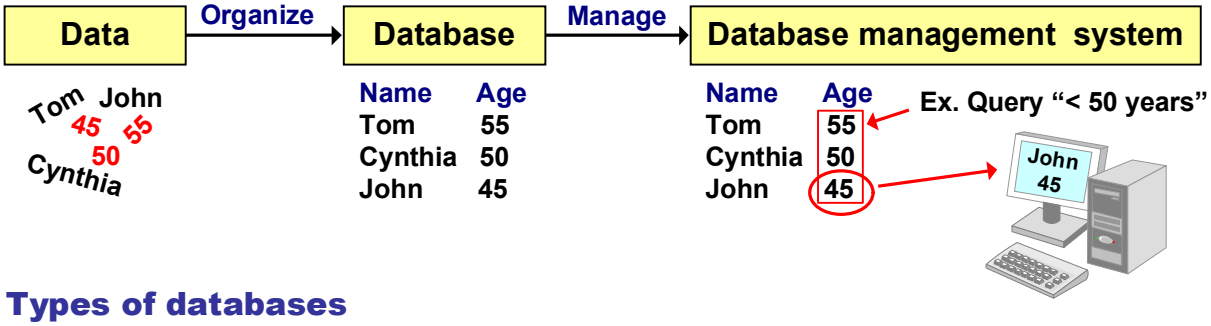
Section G

Information Technology



192 - Database Management Systems (DBMS)

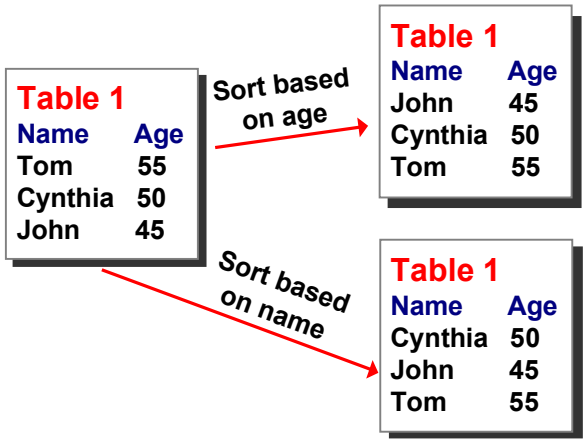
Data is represented by any form of unprocessed information. Data that has been organized and presented in a meaningful way provides information. A database is a collection or storehouse of data. A database management system (DBMS) is software with software tools to organize data in a flexible way. The software tools add, change or delete data from the database, query stored data and produce meaningful reports.



Types of databases

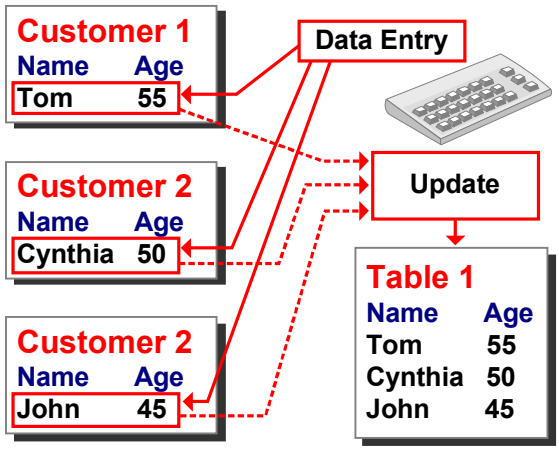
Non-relational databases

Data in a non-relational database is limited to a specific table and cannot be updated to other tables. Data is entered into fields in a table and is available for sorting in that table itself. All manipulation of data is restricted to that table alone.



Relational databases

In relational databases, fields are linked across several different tables. Database models make logical connections among tables by linking identifying data from one table to another table.



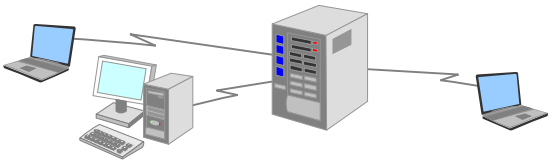
Categories of database management systems (DBMS)

Desktop databases

Desktop databases stay on personal computers and are structured for single-user applications.

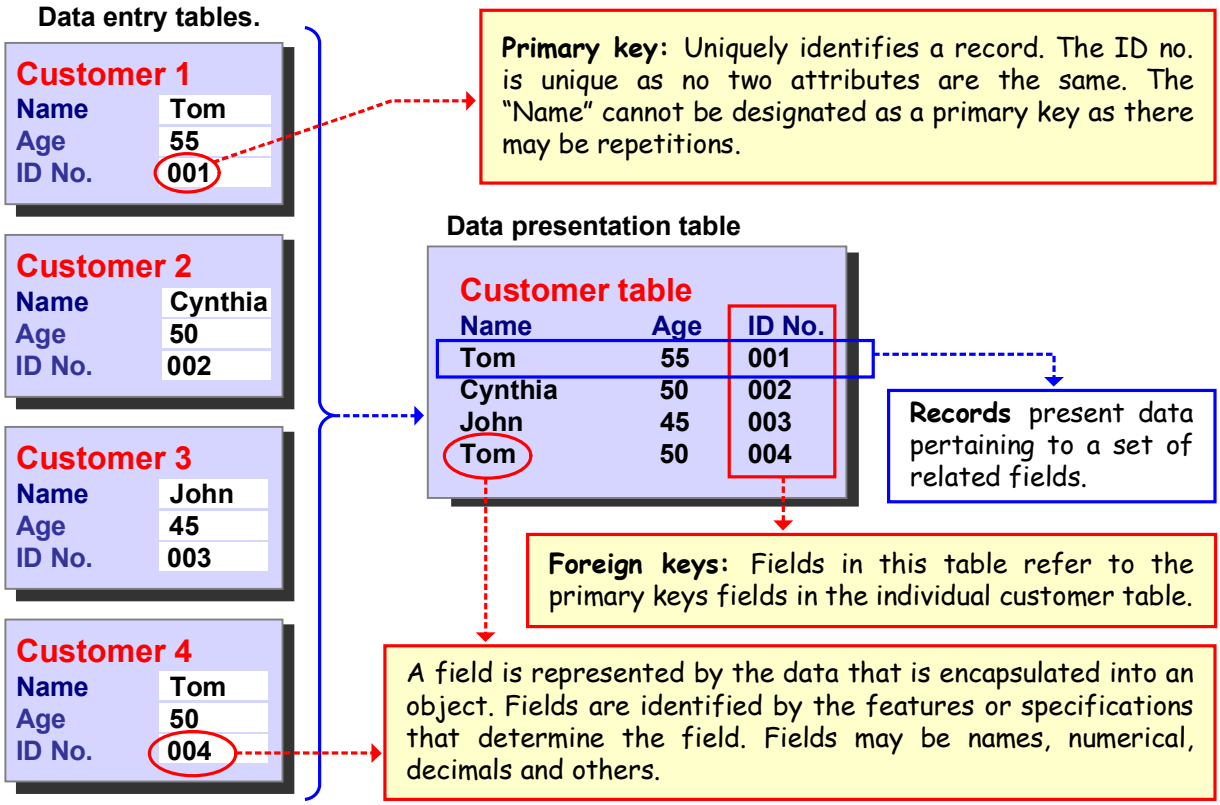
Server databases

Server databases stay on servers and are structured for multiuser applications.



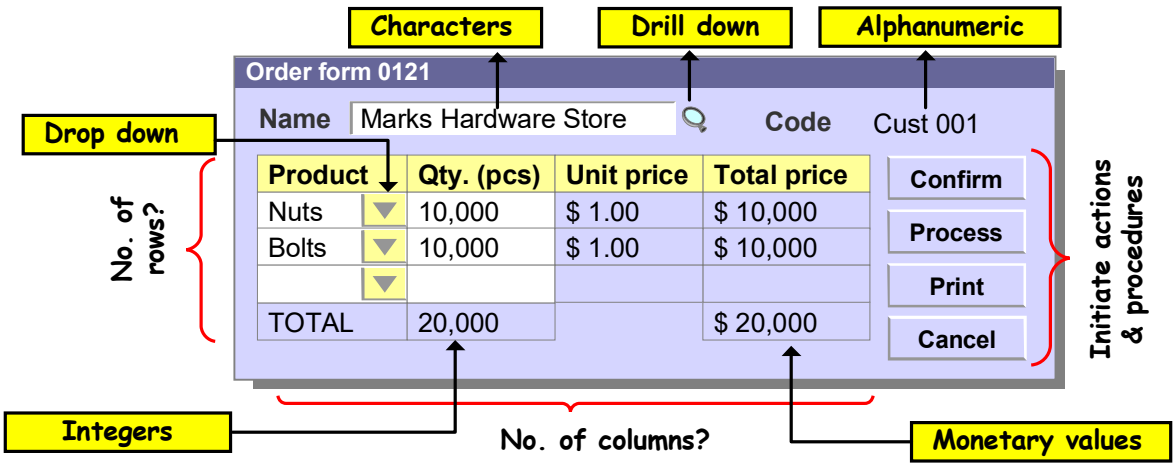
193 - Tables

Tables are used to input or present data. Tables are identified by table names. Data is input into fields and records represent relevant data about a set of related fields. Tables are related to one another thorough common fields earmarked as primary or foreign keys. Primary keys uniquely identify a record and foreign keys are fields in a table that refer to primary keys in another table.



Designing tables

A table needs to consider data types assigned to cells or fields. Depending on the type of cell, data types may be integers, characters, monetary values, dropdowns, executables and others. The structure also needs to consider actions that can be initiated from the table, using buttons.

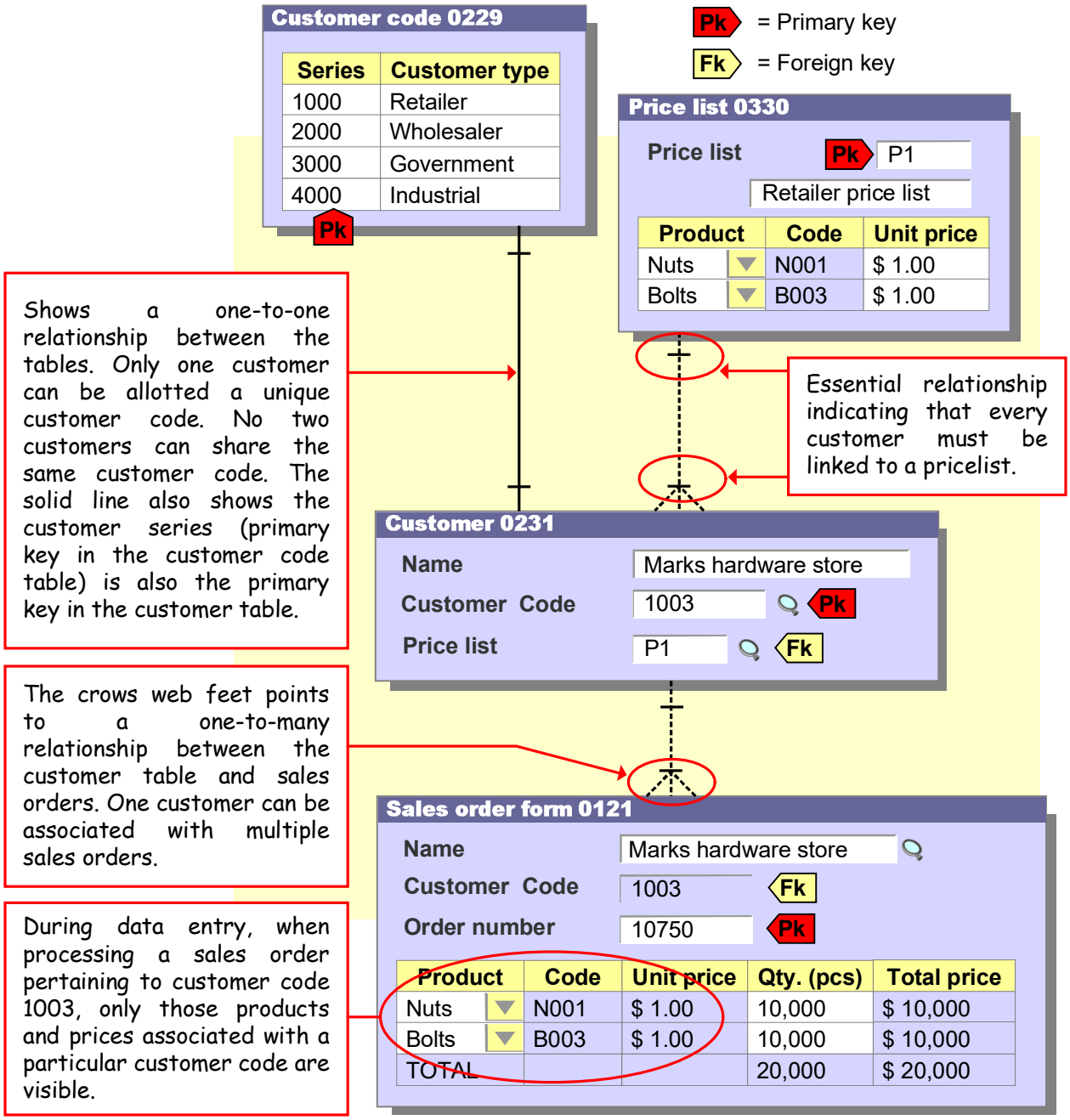


194 - Data Schema

Data schema represents the structure of a database system, usually in a graphic format. In a relational database, the schema defines tables, individual fields in each table and the relationships between fields and tables. Schemas are usually stored in data dictionaries.

Establishing relationships between tables and fields

Consider for example, the tables; customer code, price list, customer and sales orders. The relationships between the different tables can be established as shown below, for a given business scenario.



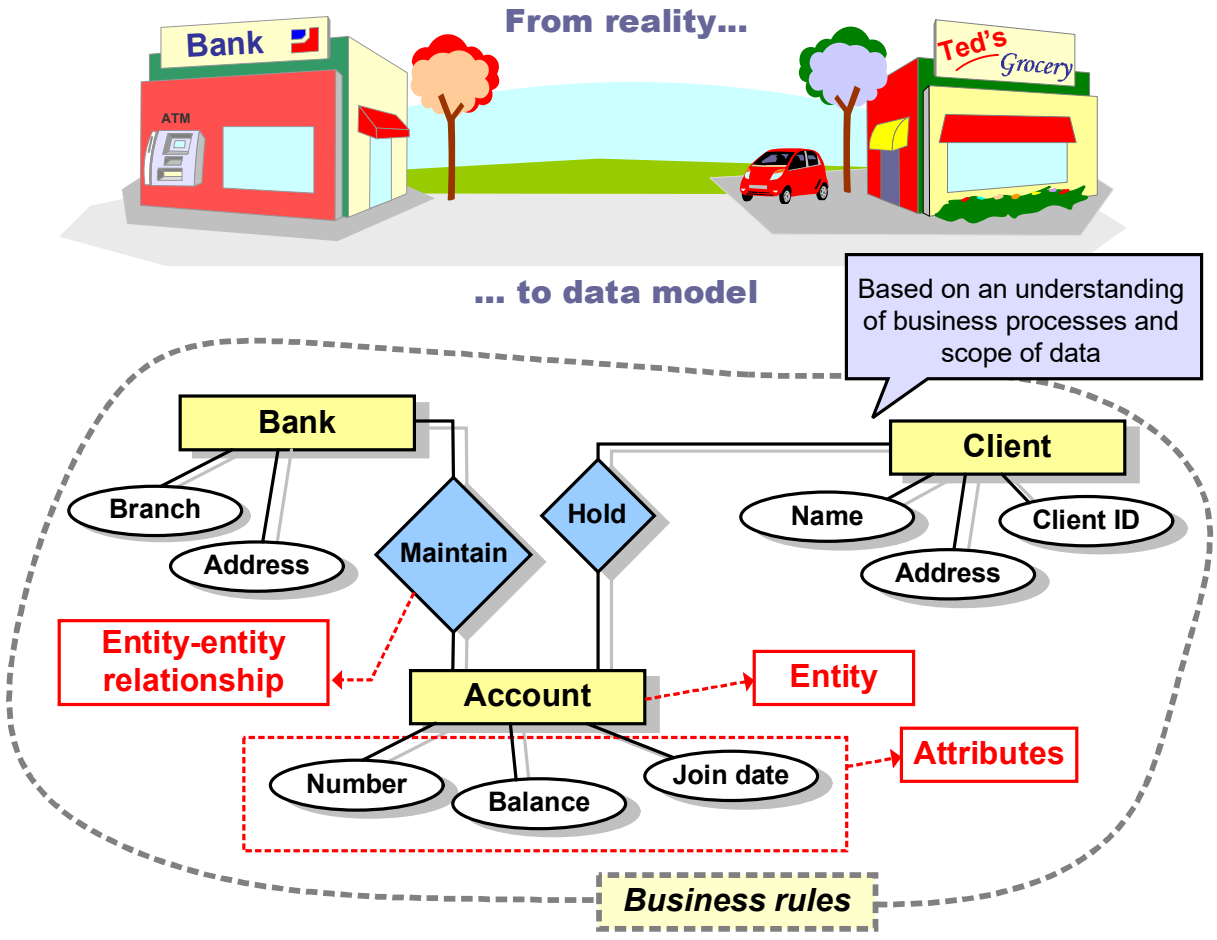
195 - Data Modelling

A data model shows how data is represented in an information system or a database management system. It represents specifications for designing and organizing data in database systems. It simplifies interactions between the designer of the data model, the applications programmer and end-users. It represents the way data is structured and depends on specific enterprise requirements and the way each enterprise carries out its functions.

Building blocks for data modelling

The basic building blocks to data modelling are:

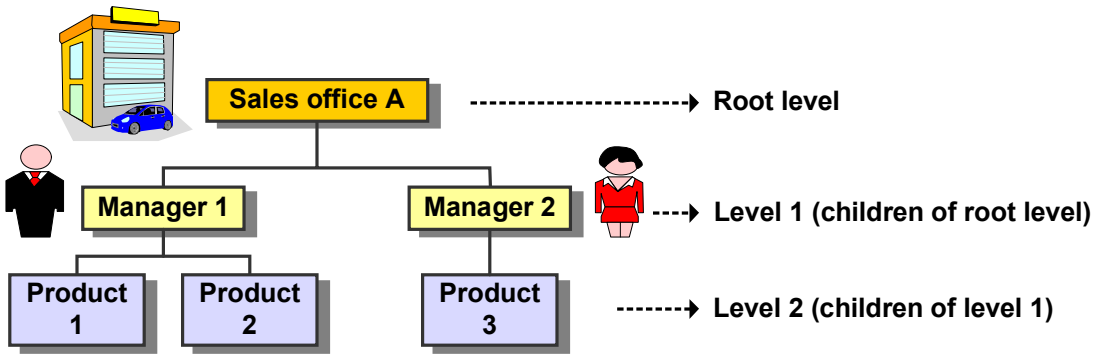
1. Entities: Any distinguishable object. (ex., account, client)
2. Entity sets: A collection of entities exhibiting similar characteristics.
3. Attributes: Characteristics that describe an entity.
4. Entity-entity relationships: The nature of relationship between entities.
5. Data constraints: The nature of restrictions placed on data.



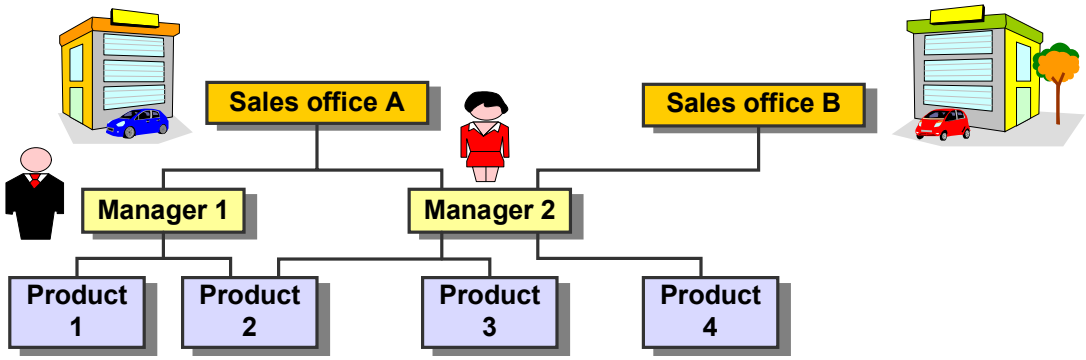
Data modelling is done within the framework of business rules laid out by an enterprise. Business rules are precise principles, policies and procedures that describe enterprise operations and data characteristics, as viewed by the enterprise.

Data model types

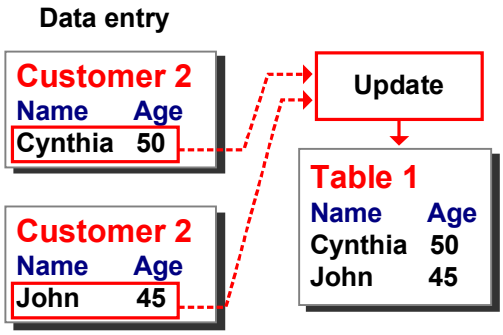
1. Hierarchical model: Logical levels are represented in an upside down tree structure. Such a model contains one-to-many relationships, where a parent can have many children and each child has one parent.



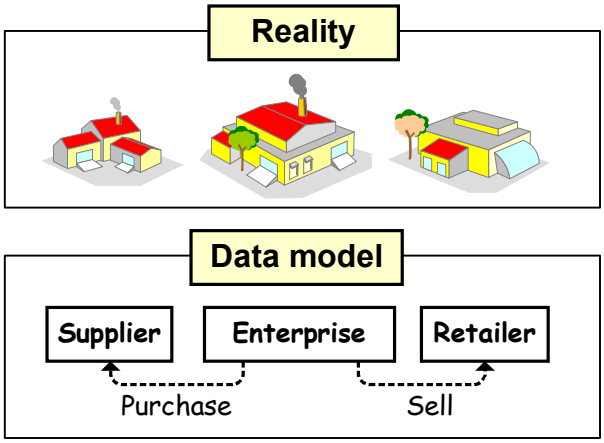
2. Network model: In this model, a child can have multiple parents. Records are represented in one-to-many relationships. This model can represent more complex data relationships when compared to a hierarchical model.



3. Relational model: Has a linked table structure. It forms the basis of relational databases. Performs the functions of hierarchical and network models but hides the complexities of the relational model from the user.



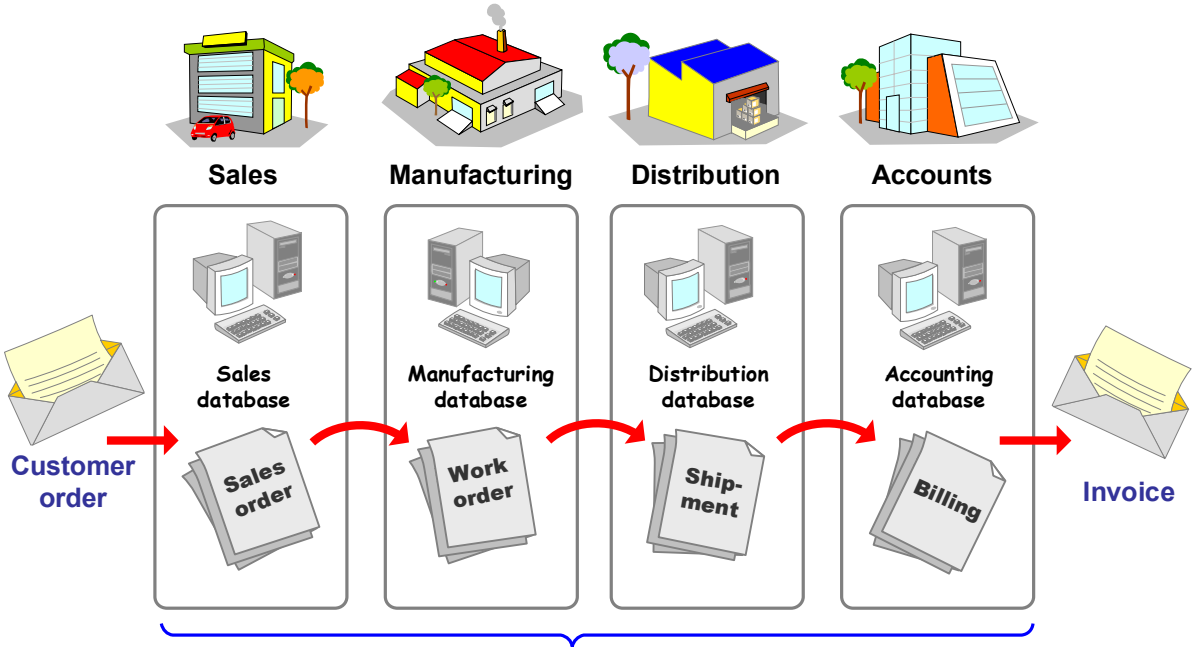
2. Object oriented model: Such a model makes use of objects occurring in reality which are reduced to a few features that are relevant.



196 - Enterprise Resource Planning (ERP)

ERP applications are integrated business application software used for managing manufacturing, distribution, financial and other functions of an enterprise. ERP applications integrate all data and processes of an enterprise into a unified system. Multiple components of software and hardware are used in ERP systems to achieve this integration. ERP employs a process driven approach to management, unlike the traditional approach of functioning in rigid functional compartments or silos.

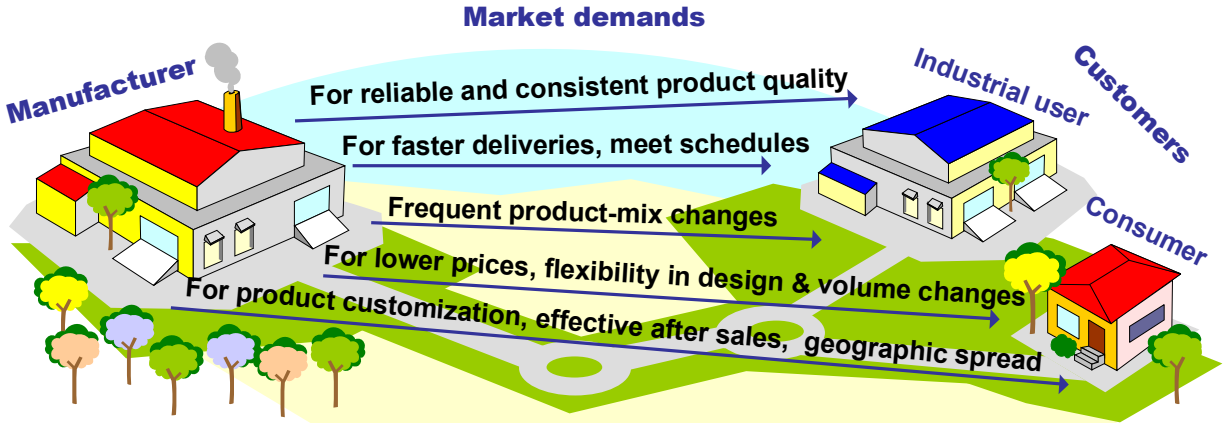
Before ERP....



Rigid compartmentalization of functions, data duplication and redundancy, errors in computing, lack of data integrity, little or no information sharing, functional priorities override organizational priorities. This approach resulted in organizational inefficiency.

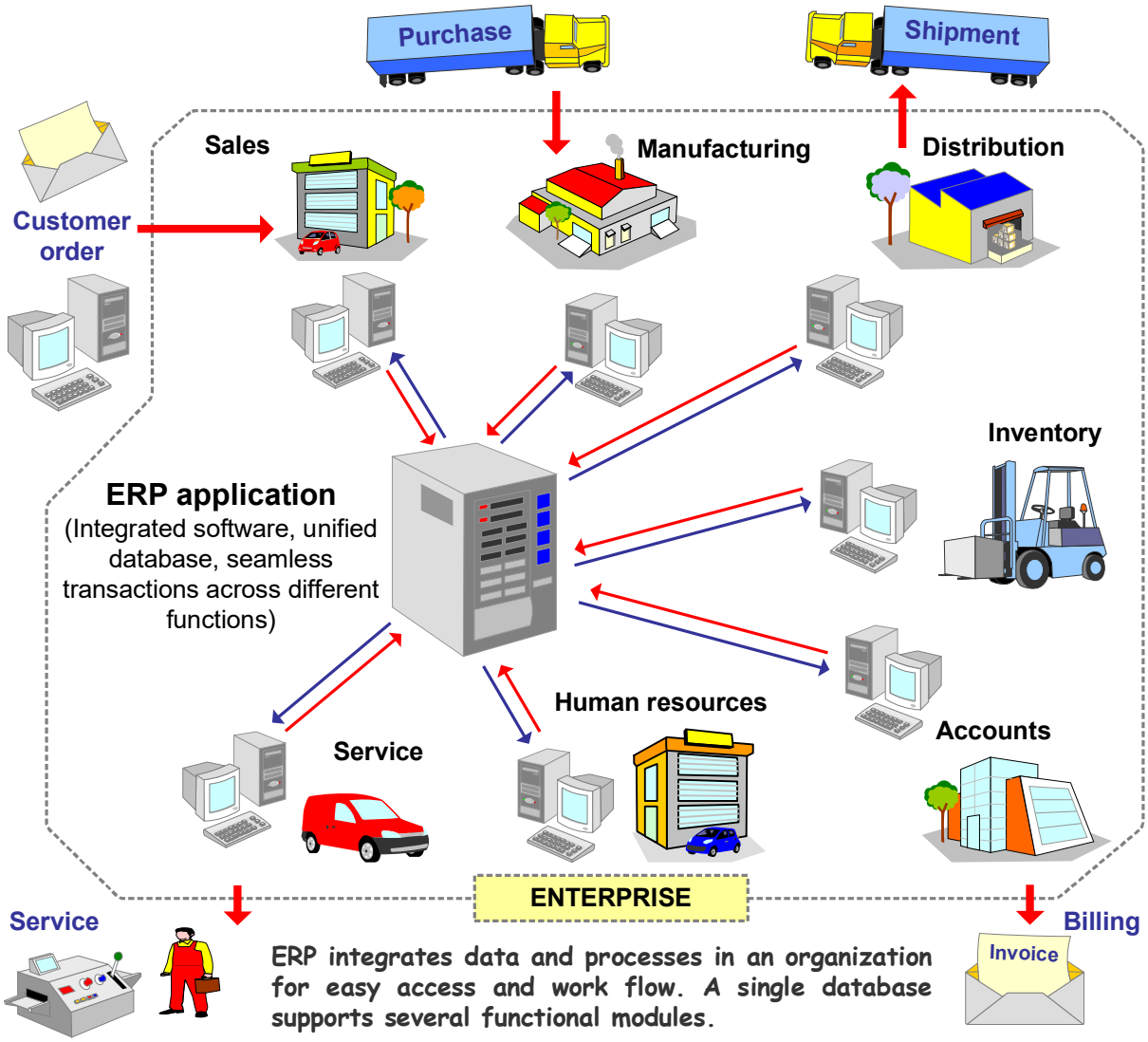
The need for an ERP application

Newer market demands forced the development and implementation of integrated application software that meet these demands. Legacy systems had serious limitations in responding to these newer market demands.



The need for an ERP application

By integrating several functions that access a unified database, ERP applications provide seamless transactional capability across functions with data transfer and access in real-time when conducted over the web. ERP applications follow a process driven approach to managing operations.

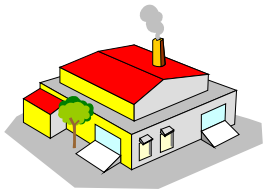


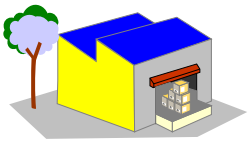
Features of an ERP system

1. Incorporates a 3-tier architecture designed for client server environments.
2. Runs on standard operating systems and databases. Supports enterprise-wide relational database and distributed networks.
3. Supports importing and exporting data from and to other systems while interfacing with other systems.
4. Is modular, each module represents a functional area. For example, purchase, sales, finance.
5. Is an integrated application, relationship between modules is in-built. Transaction updates work seamlessly. Supports multisite environments.
6. Flexible, allows both full-scale and incremental implementations.

Standard ERP modules

Manufacturing
1. Materials planning
2. Capacity management
3. Workflow management
4. Quality management
5. Bill of materials
6. Product definition
7. Planning & execution
8. Production scheduling
9. Routing operations
10. Equipment maintenance
11. Subcontracting
12. Shop floor control
13. Purchase management
14. Vendor management
15. Purchase order control
16. Lot control
17. Product data management
18. Engineering change control

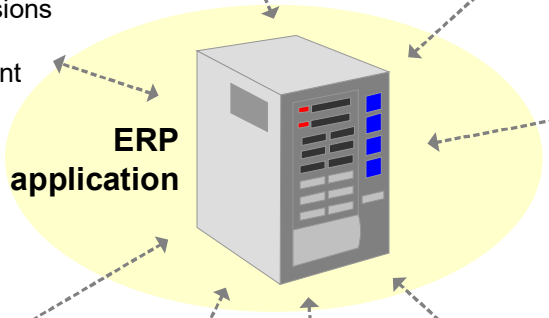


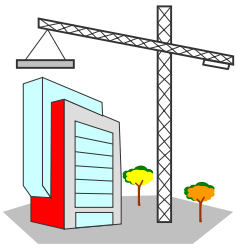


Distribution
1. Handling shipments
2. Packaging and kitting
3. Transport documentation
4. Managing carriers
5. Outbound processing

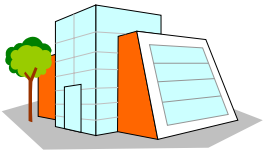
Sales
1. Sales order control
2. Sales quotations
3. Pricing and commissions
4. Sales forecasting
5. Demand management
6. Sales invoicing

Inventory
1. Inventory management
2. Inventory control
3. Warehouse setup
4. Stock analysis
5. Receipts, issues, transfers
6. Cycle counting
7. Stock returns
8. Stock analysis
9. Warehousing operations
10. Inventory tracking





Projects
1. Project costing
2. Billing
3. Activity management
4. Time and expense
5. Project accounting
6. Project resource planning
7. Project planning



Human resources
1. Training needs
2. Payroll management
3. Time and attendance
4. Organizational structure
5. Manpower succession
6. Employee master data
7. Handling transfers
8. Benefits management
9. Employee skill status
10. Appraisals
11. Personnel administration
12. Recruiting & staffing
13. Compensation mgt.
14. Expatriate mgt.
15. Compensation mgt.

Finance & accounting
1. Accounts payable
2. Accounts receivable
3. Fixed assets
4. General ledger
5. Cash management
6. Asset accounting
7. Working capital mgt.
8. Balance sheet
9. Profitability
10. Costing
11. Investments
12. Tax accounting
13. Bank accounts
14. Statements
15. Credit management

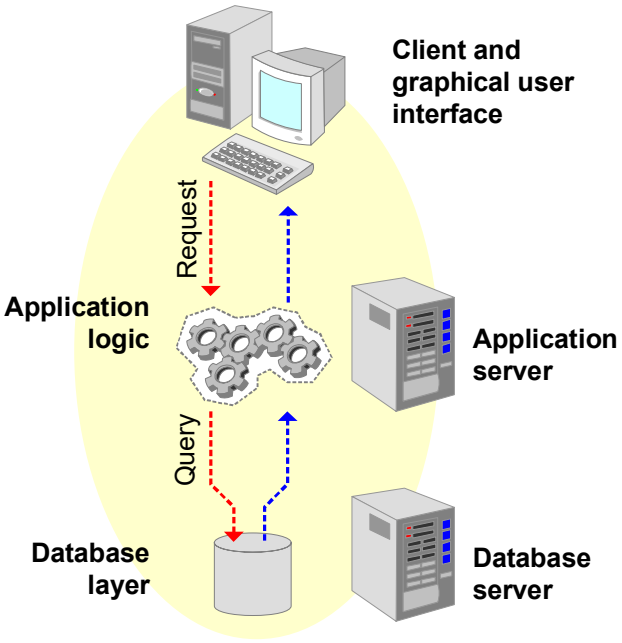
Service
1. Service scheduling
2. Service employee
3. Service documentation
4. Tooling requirements
5. Service order mgt.
6. Service history

ERP application architecture

ERP applications mostly use a three-tier, client-server architecture and a design pattern where the user interface, application logic, data storage and data access are developed and maintained as independent modules.

1. Client with GUI: The client requests application content according to user commands.
2. The application logic processes, coordinates and evaluates commands.
3. Database layer: Information is stored and retrieved from a database, passed onto the application logic for processing and then presented to the user.

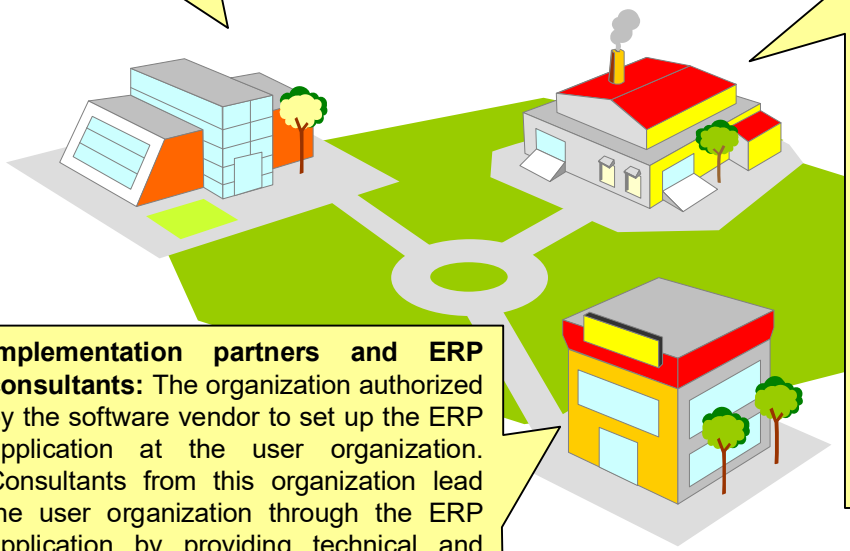
Most ERP's support remote and distributed databases.



The players in an ERP system

Any ERP implementation has three payers that have a stake in it. The ERP vendor is the software company that has developed the application. The implementation partner is the consulting company that sets up the ERP application and the user organization is the company where the application is installed.

The software vendor: The developer of the ERP application. Its employees include software designers, programmers, project managers, sales and customer support personnel. The ERP software is the intellectual property of the software vendor.



The user organization: The company where the ERP application is implemented. This organization includes end-users of the ERP application who will use it to carry out their daily business functions of sales, manufacturing, finance, distribution and others. This is the company that has paid for the ERP application. The IT function in this organization has the responsibility to maintain the ERP system and ensure its proper functioning.

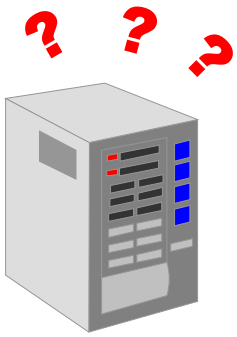
Implementation partners and ERP consultants: The organization authorized by the software vendor to set up the ERP application at the user organization. Consultants from this organization lead the user organization through the ERP application by providing technical and functional expertise.

Getting ERP into an organization (for the user organization)

The process of selecting an ERP application needs careful planning and deliberation as it involves a lot of investment and time to implement. Besides, user companies will likely be using the application for many years to come.

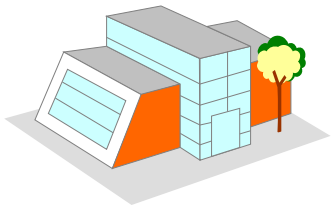
Identify if there is a need for an ERP application.

1. Evaluate status of current applications.
2. Are they meeting business objectives?
3. Are there too many complaints?
4. Are existing systems integrated into business processes?
5. Will existing systems handle future plans?



See what an ERP application can do.

1. Evaluate all aspects of improvement an ERP application can provide (standardization, business process integration).
2. Assess if it is better to buy an ERP application rather than develop an application in-house.
3. Define business drivers and objectives to be achieved (low cost, faster response, inventory reduction, others)
4. Prepare a comprehensive document regarding costs, time and others parameters. Get senior management approval for an ERP system.



Share requirements with vendors and invite proposals.

1. Share information about the company, existing systems in place, objectives, user expectations, functional areas to be covered, time to complete and cost of implementation.
2. Have vendors study and map some processes for evaluation.

Evaluate proposals from different ERP vendors.

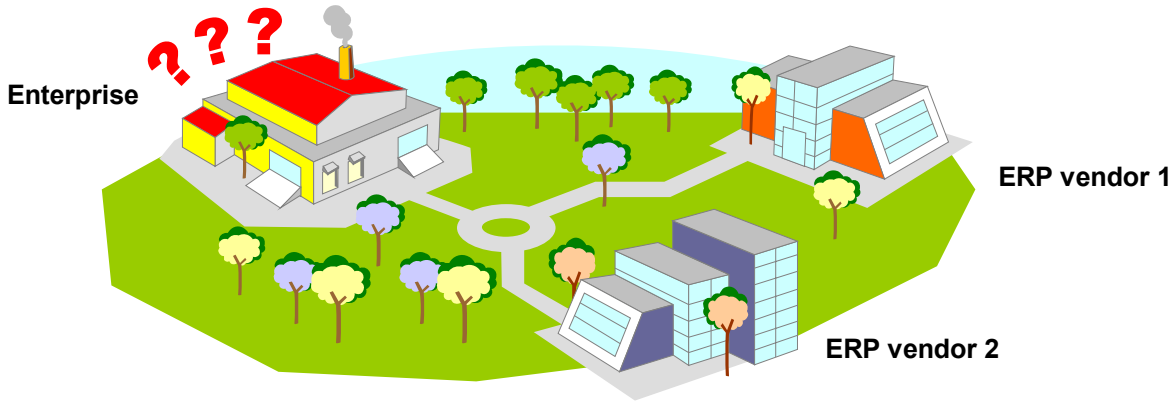
1. Receive proposals from ERP vendors and study them carefully. Compare features, alternatives, functionality and technical components of their ERP systems.
2. Shortlist vendors after evaluating their proposals and get quotations for a commercial implementation.

Final short listing and selection of implementation partner.

1. The final short listing is done by the CEO and top management after evaluating commercial proposals.
2. Tell managers in the company about selecting an ERP application and implementation partner.
3. Wrap-up contractual agreements and ask for organizational participation in the ERP implementation.

Selecting a software vendor

The final selection of an ERP application depends on several factors; user organization needs, compatibility of the system, cost and others.



Criteria for selection

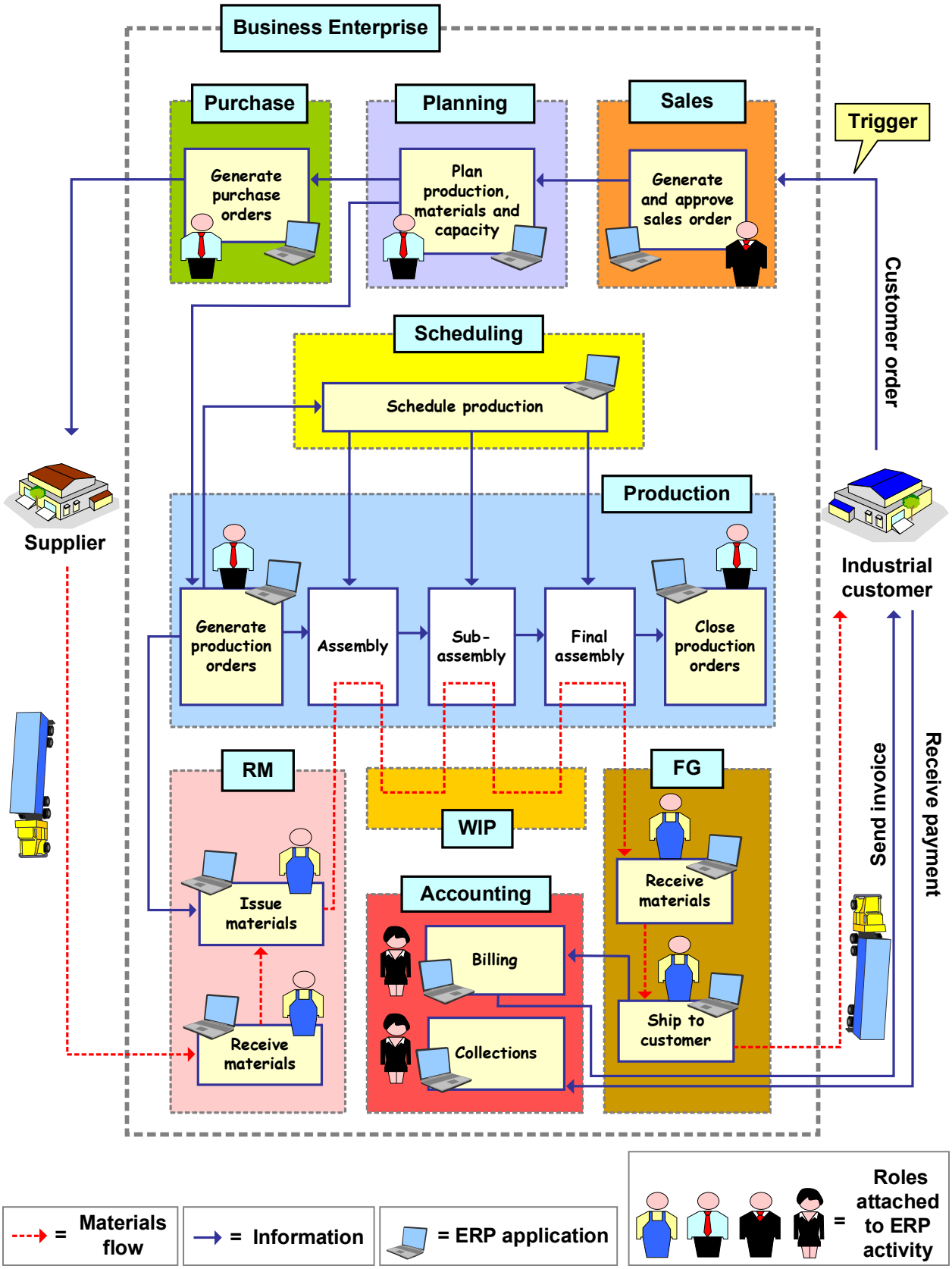
1. Is the ERP running in similar industries and environments?
2. Has the ERP application a track record of success for at least 3 years?
3. Is the vendor capable of providing support globally?
4. Is the ERP vendor financially sound?
5. Does the ERP application meet requirements of the user organization?
6. What is the level of customization needed to meet organizational specifications?
7. How long does it take for implementing the software application?
8. Are the functional and technical strengths of the ERP application useful to the needs of the user organization?
9. How flexible is the application to adapt to future emerging technologies?
10. Can the ERP application lessen the company's continual dependence on an elaborate IT department?
11. How does the ERP application 'look and feel' (ease of use).
12. Can the existing employees be easily trained to use the ERP application?
13. What does it cost to implement the ERP application (software costs, consulting fees, others)?

Selecting an implementation partner

Implementation partners are specialized ERP consulting firms who bring with them expert functional and technical knowledge about the ERP application. Consultants from such partners interact closely with the user organization to set up the software application. Selection criteria include:

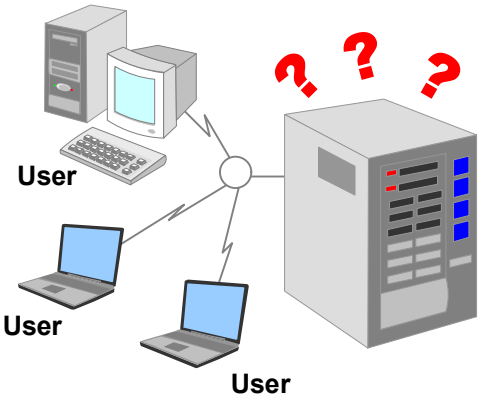
1. Method and approach to implementation.
2. Expertise of consultants who will set up the software.
3. Nature of resources committed to the implementation.
4. Nature of services extended for the implementation.
5. Experience and track record in previous implementations.
6. Knowledge of the particular industry.
7. Project plan, scope and approach to the implementation.
8. Reputation and financial standing.

Example – ERP business process flow (sales order fulfilment – MTO)



Server sizing for ERP applications

ERP implementations usually call for an overhaul of existing IT infrastructure including servers, data storage, networks and personal computers. Sizing of server hardware is critical and needs careful evaluation by IT departments.



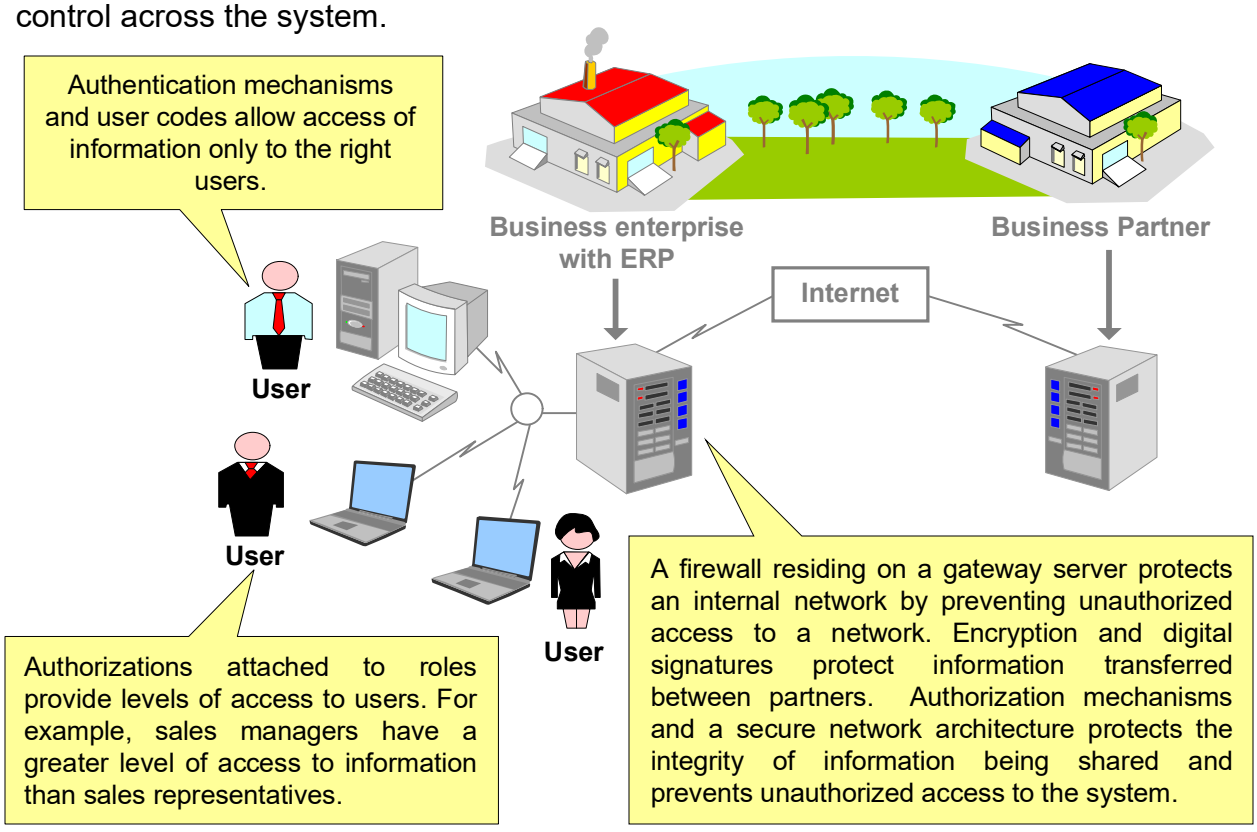
Server sizing depends on:
1. The nature of ERP package (vendor)
2. The number of modules being implemented.
3. The number of users operating the ERP application.

Application vendors help in deciding the overall computing power and server configuration. It is usually recommended to provide for additional resources than to undersize the hardware.

Post implementation, the IT infrastructure needs to be continually monitored as changes are unavoidable. Changes are needed because of increased transaction volumes, newer users, addition of more modules, growth in database, upgrades and changes in technology. With such changes, conventional infrastructure proves inadequate and back-up and recovery processes get stretched.

Securing the ERP system

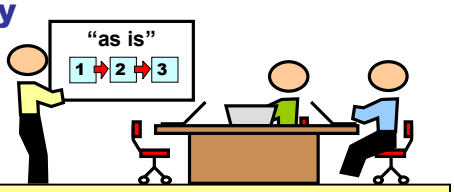
Access controls to the application need to be put in place to ensure the right people are accessing and manipulating data. Mechanisms built into the system help exercise control across the system.



ERP Implementation methodology

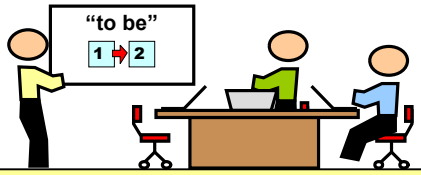
1. Project Kickoff
a. Build the ERP project team and establish communication protocols between the implementation team, IT team, key-user team.
b. Define roles and responsibilities, reporting structures, establish timelines, project deliverables, layout scope of project.
c. Configure hardware and software requirements.
d. Establish the application environment.
e. Plan for number of instances of ERP.
f. Deploy the development instance.
g. Evaluate training needs.

1. Kickoff project



2. Analyze existing business processes
a. Record current business process flows.
b. Draw process diagrams for current flows.
c. Cover all existing business process scenarios.
d. Brainstorm for improving processes.
e. Develop a blueprint of existing processes.
f. Record what can be covered by the standard ERP application and what needs to be customized.
g. Develop an understanding of how the user plans to integrate ERP into their operations.
h. Conduct initial key-user product training.

2. Analyze & design business processes

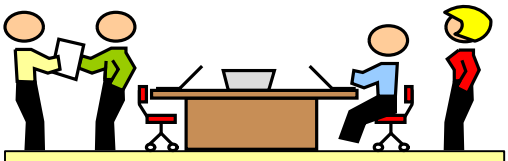


3. Design required processes
a. Functional teams and key-users chart out processes required for the desired state.
b. Cross-functional teams work out interfaces and end-to-end process flows.
c. Processes may be existing processes retained, modified or altogether new processes that use best practices. Gaps are indentified.
d. Required process design shapes configuration of initial setup data and drives data conversion.
e. Initiate a pilot project using data from the current application.

3. Designing required solutions

4. Configuration and data conversion
a. Configure master and transaction data.
b. Finalize and develop customizations, functional interfaces.
c. Assess implementation readiness.
d. Convert existing transaction data to the ERP system.
e. Develop and finalise reports.
f. Test the components developed to verify adherence to functional design.
g. Develop end-user training material and conduct product training.

4. Configuration and data conversion



5. Testing the ERP application
a. Conduct integration testing to verify if interfaces and customizations are performing as per the design.
b. Test the system to verify whether the load from all the users can be supported.
c. Conduct user acceptance testing to gauge if users can navigate through the many screens. Test the fully configured system with actual data.
d. Test main business processes of the user organization before going live. Provide patches for errors thrown up.

5. Testing the ERP application

6. Going live and transitioning
a. Move to a live operating environment from a production environment.
b. Populate opening balances and execute data conversions. The fully configured ERP system should be up and running.
c. Set up support for key and end-users to manage queries and problems.
d. Document the fully configured system for training needs and future reference.
e. Officially handover the fully configured ERP system to the user team.

6. Going live and transitioning

7. Post implementation review

Post implementation review and issues

Customer support needs to be up and running

a. To handle errors in entry and help navigate through the program.
b. To handle missing entries in the master data.
c. To handle errors in rules and parameters.
d. To create user profiles and authorizations.
e. To hold demonstrations and to walk through processes.
f. To deal individually with users who are blocked in the process.
g. To help with transactions and clear backlogs.
h. To handle program bugs and incorrect messages.

Dealing with changes

a. Changes that address critical business needs and solve immediate problems need to be addressed and carried out.
b. Immediately after going live, the system should be allowed to stabilize for some time before beginning changes.
c. Changes should be implemented only after it has gone though the entire process of examination and approval. When carried out changes should be documented.
d. Changes should be implemented against strict schedules.

Going live & transitioning

Post implementation review and issues

The process of familiarization

a. In the process of familiarization users may face errors that may be thrown up. Because of this, the application seems not to work as configured.
b. Over time, as users are more familiarized with the application, the number of errors decrease.
c. A few good users of the application can act as catalysts and stabilize the situation by providing guidance on using the application.

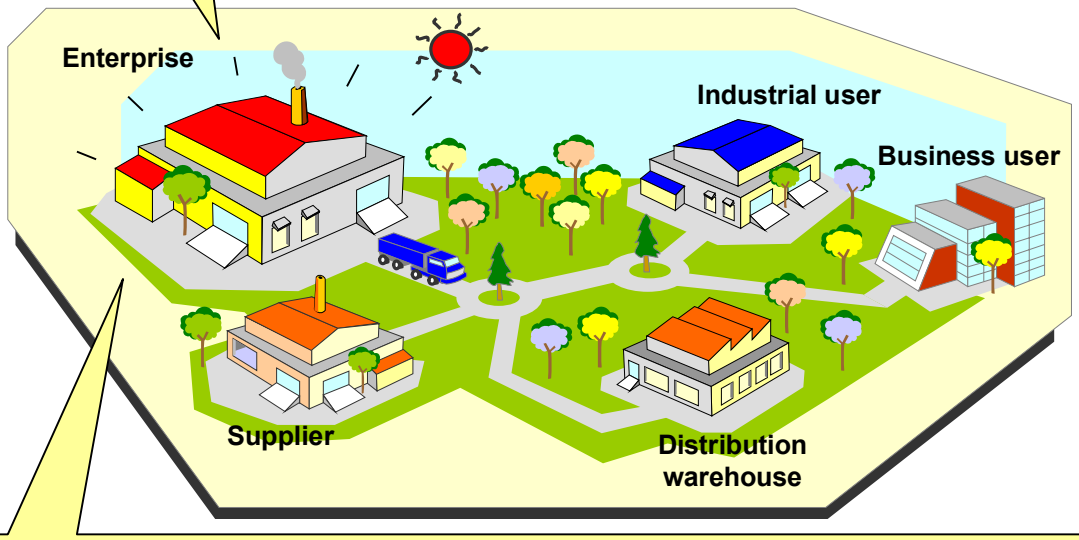
People issues with ERP

a. Some of the users are resistant to change and are indifferent towards the new ERP application. There is a constant comparison with legacy systems.
b. A change in roles and relationships may lead to some friction among employees. All problems are attributed to the ERP system.
c. Some users would want to bypass the system for handling emergencies or month-end situations.
d. People may want changes made in the program to suit their domain of work without regard to the effect it can have elsewhere.

Benefits from an ERP system

An ERP system, when installed correctly can largely improve efficiency and productivity within the enterprise. The system automates tasks and by adopting a process oriented approach to managing operations an enterprise can operate seamlessly across its several functions.

1. Integrates all functions within the enterprise.
2. Streamlines business processes.
3. Data sharing and increased transparency.
4. Improved efficiency and productivity.
5. Lower costs with improved customer service.
6. largely improved inventory and material tracking.
7. Standardizes operations and improves quality.
8. Technology enabled business process re-engineering.

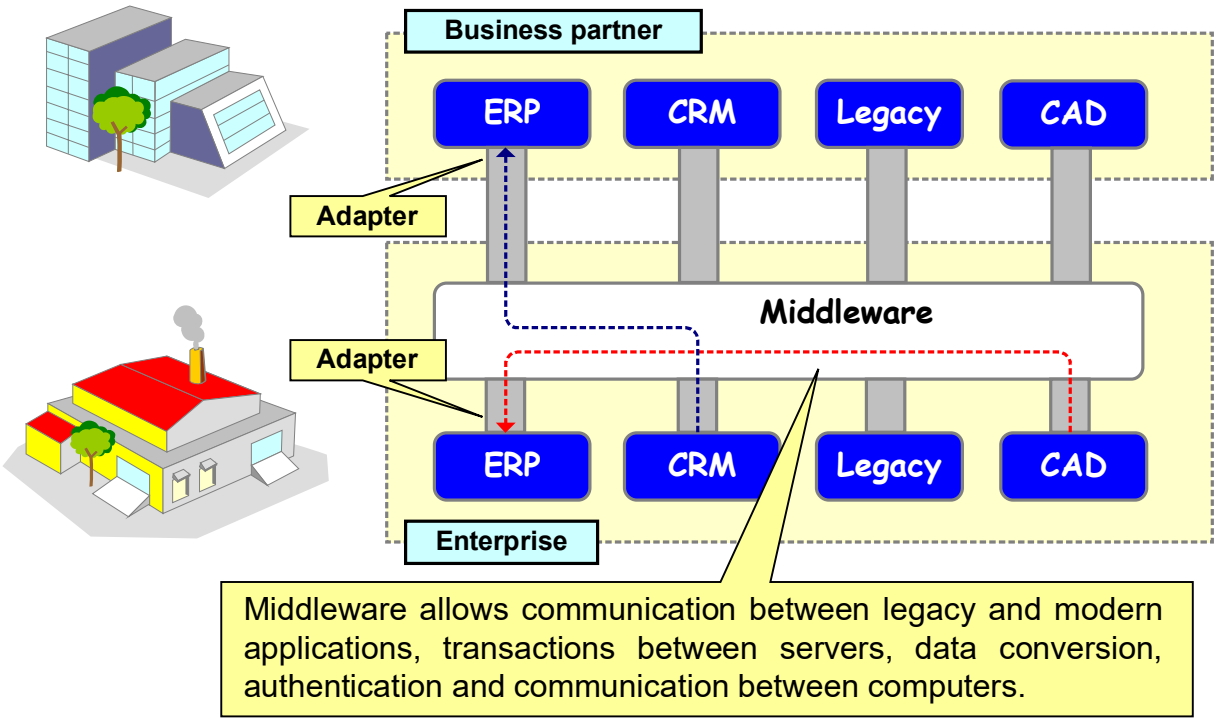


9. Transformation in the way business is done: to a process oriented approach rather than a functional oriented approach.
10. Provides on-line and real-time information when conducted over the web.
11. Drop in delivery lead times and time to market.
12. Helps in following a customize-to-order strategy.
13. Supports multisite operations and therefore can be deployed globally.
14. Adjusts to different standards applicable in different countries.
15. Ability to handle procurement, manufacturing and distribution of a wide product range.
16. Functional role conflicts are minimized because of a process oriented approach.
17. Time triggers, workflow control and business rules ensure that all activities and steps are carried out in a process, reducing rework and delays.
18. Promotes teamwork among different functions as each function sees the big picture about fulfilling a process rather than just fulfilling immediate functional objectives.

197 - Enterprise Application Integration (EAI)

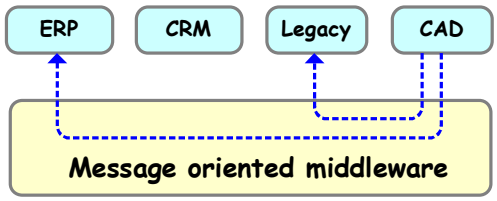
Enterprise application integration is a system consisting of software components that seamlessly link several different applications into one unified system. This enables data sharing across applications within an enterprise, or with software applications at business partners. EAI uses middleware technology that helps mediate between separate and existing programs without much change to the programs themselves. Messaging services provided by middleware software allow different applications to communicate with one another.

Integrating business processes and enterprise Information

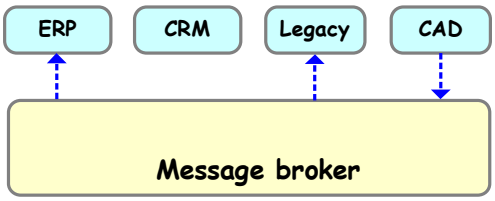


EAI components

Adapters: Map heterogeneous data formats and interfaces into a common format
Message brokers: Facilitate interaction between adapters



Sender specifies the identities of receivers



Routing logic defined at broker level

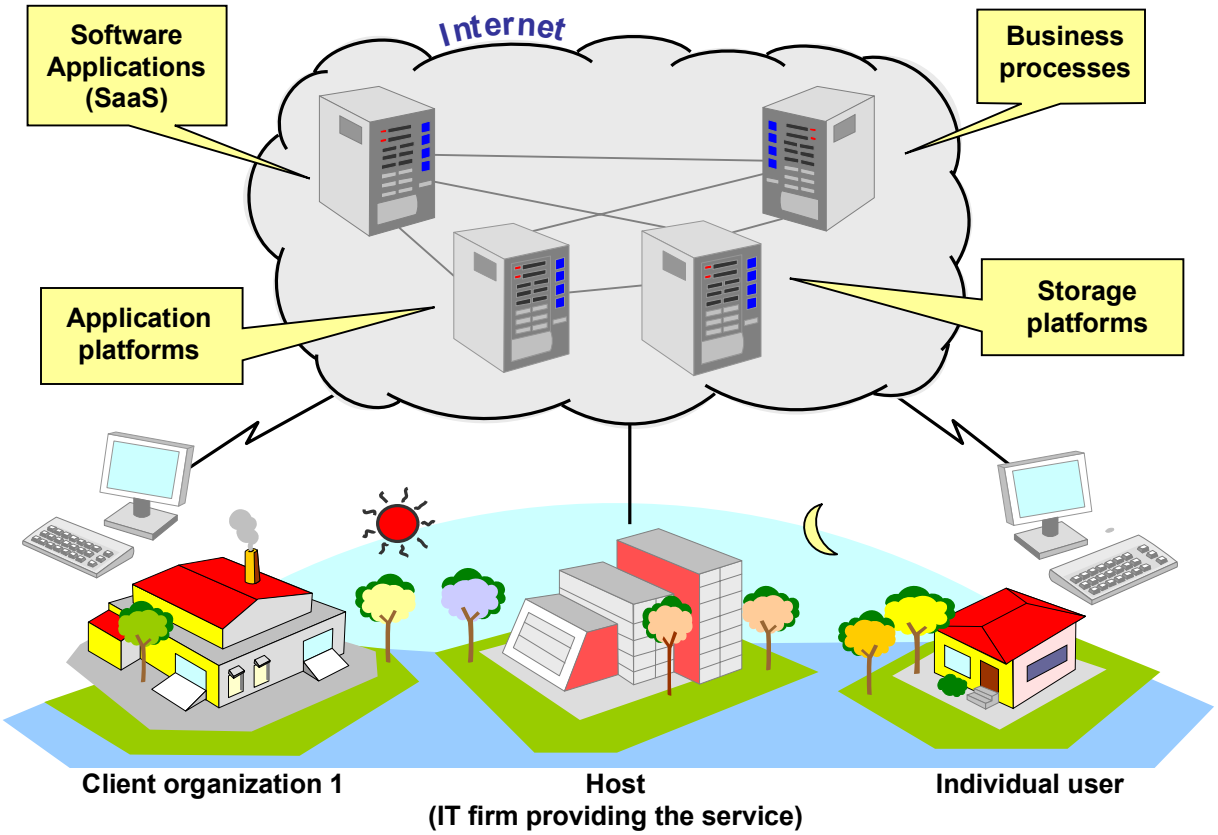
EAI helps collaborative networks, provides for extensibility of programs and applications, removes redundant data repositories, reduces IT expenditures and aids in managing business processes.

198 - Cloud Computing

A computing method, where IT-enabled capabilities are delivered as a service on virtualized and scalable platforms that use internet technologies. It allows client organizations to have access to IT services charged on use or subscription. Clients can access applications on the cloud and use servers within the cloud to process, store and manipulate data. It removes the need for client organizations to invest in expensive information technology equipment and software and lessens the risk of technology obsolescence.

The nature of a cloud

The cloud is a cluster of integrated and networked hardware and software that use the internet to provide hardware, software and networking services to clients. The cloud hides the complexity of the underlying infrastructure from users by providing a graphic interface or API (Applications Programming Interface).

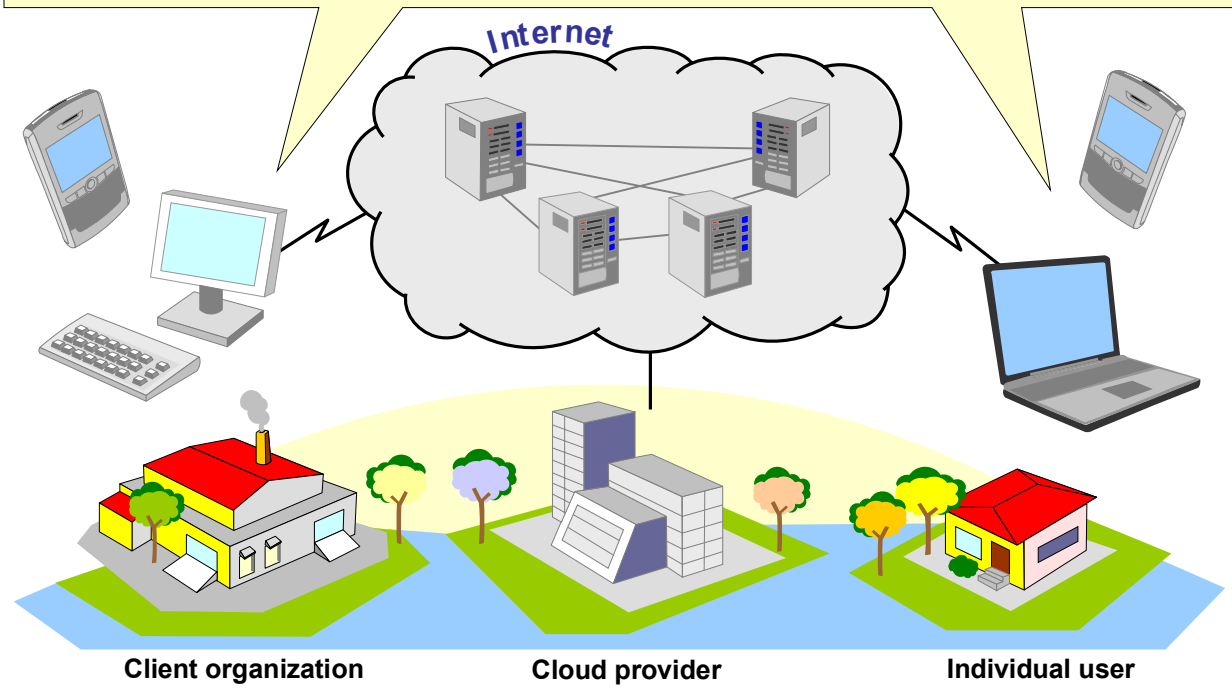


The cloud provides on demand services anywhere, anytime and at any place. Is it paid for as needed and can be scaled up or down in capacity and functionalities. The hardware and software services are available to individual users, businesses and other organizations. Some of the benefits of cloud computing are:

1. Provides a platform for collaboration and unlimited storage capacity.
2. Provides scalability to extreme workloads easily.
3. Enables client organizations to be infrastructure independent.
4. Simplifies IT management and reduces software costs.

Advantages of the cloud

1. Clients can use services without having any understanding of the underlying infrastructure. Expensive and high-powered computers are not required to access cloud computing services.
2. Start-up companies needn't invest in expensive software and servers that could go obsolete soon. Software updates take place automatically without clients having to pay for them. Latest software versions are available every time the cloud is accessed.
3. Lets client organizations have the flexibility to pay based on use.
4. Offers the flexibility to access data and services from anywhere.
5. Document and format compatibility allows access to all applications and operating systems.
6. Unlimited storage capacities help in scaling up, should the need arise.
7. Helps collaboration between multiple users on projects, documents and applications. Encourages collaboration between business partners.
8. Can be accessed by multiple devices; personal computers, PDA's and mobile devices.



Drawbacks of the cloud

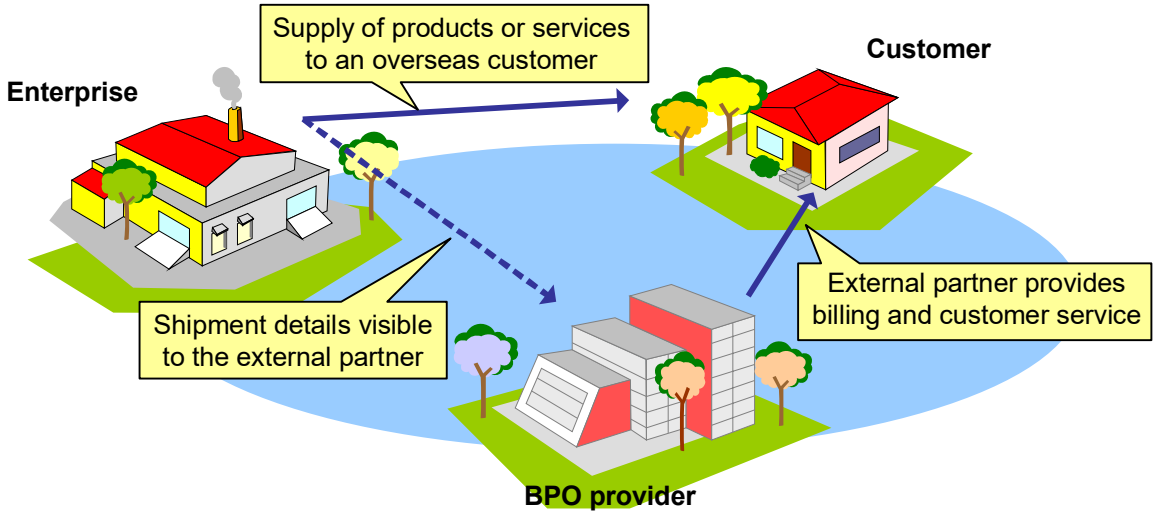
1. Unlike desktop applications, the cloud needs a constant high-speed internet connection to allow clients access to their own data and applications.
2. As the technology is fairly recent, a client cannot be fully sure about the security of data stored on the cloud.
3. As different clouds use different protocols, data transfer and business process management across clouds may not be possible.
4. If data disappears in the cloud it may be difficult or impossible to recover.

199 - Business Process Outsourcing (BPO)

Business process outsourcing is the delegation of specific business tasks or processes to external partners (BPO providers), who manage such processes based on previously agreed terms. Usually, an enterprise outsources noncore but essential business processes such as customer service, accounting and management of human resources. The external partner carries out this service using an IT based delivery mechanism. This allows a company focus its effort and resources on core activities.

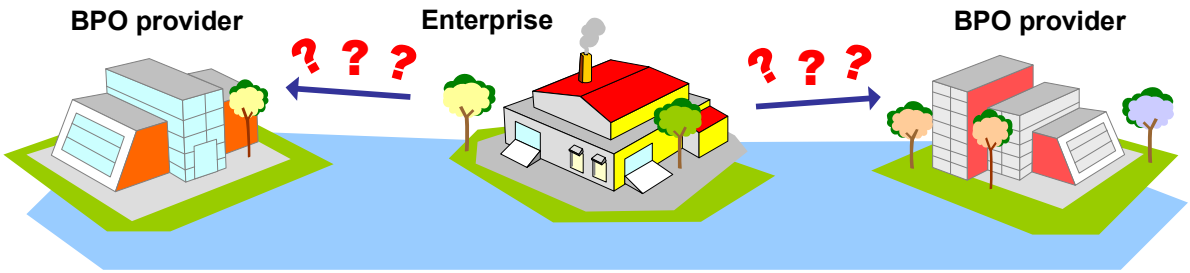
Outsourcing back-office and front-office operations

A company may outsource back-office operations such as billing and purchasing, or front-office operations like customer service, technical support and consulting.



Outsourcing operations

A company deciding to outsource some of its processes to external vendors needs to carefully identify the type of operations it wants to outsource.



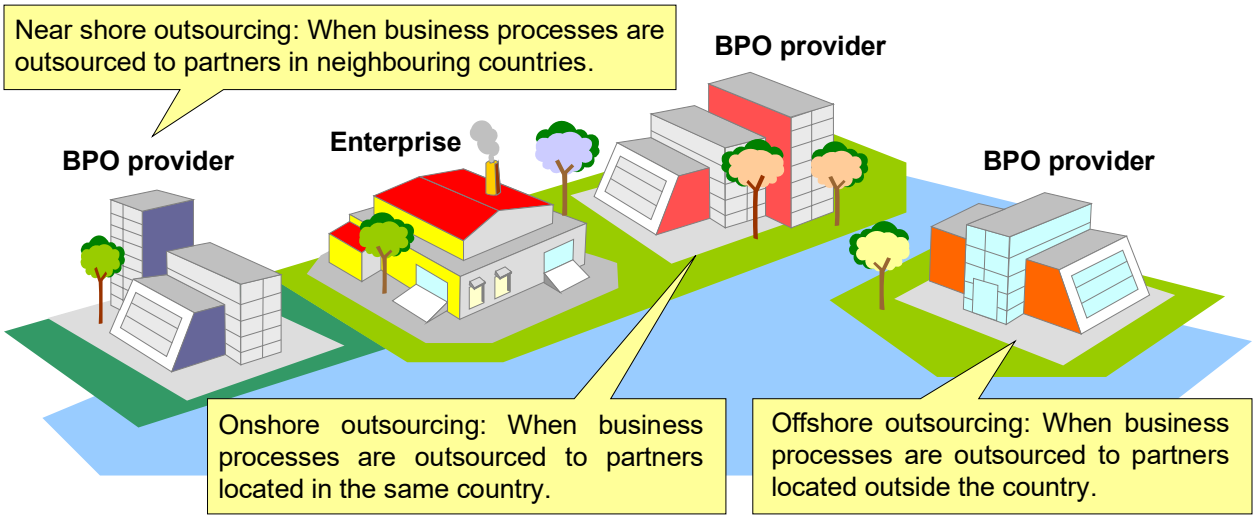
Processes to outsource

1. Non value adding processes the company cannot perform efficiently on its own.
2. Many routine operations that are labor-intensive.
3. Processes that do not deal with the company's core operations and strengths.
4. Non core processes that could tie up a company's important resources and assets in their operation.

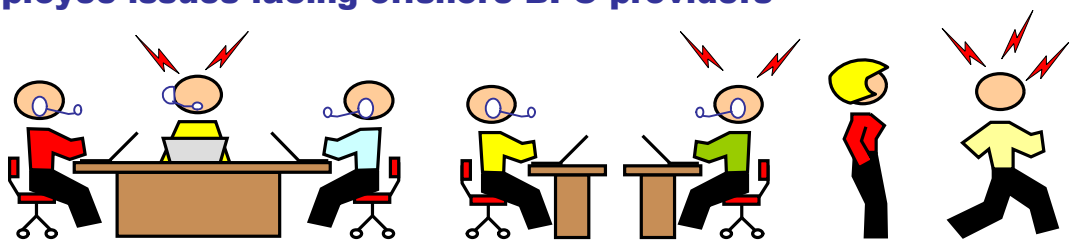
Processes not to be outsourced

1. Processes that use the intellectual property of a company.
2. Processes that form a core part of a company's business and reflect its strengths.
3. Processes that have a direct impact on the image of a company.

Outsourcing options

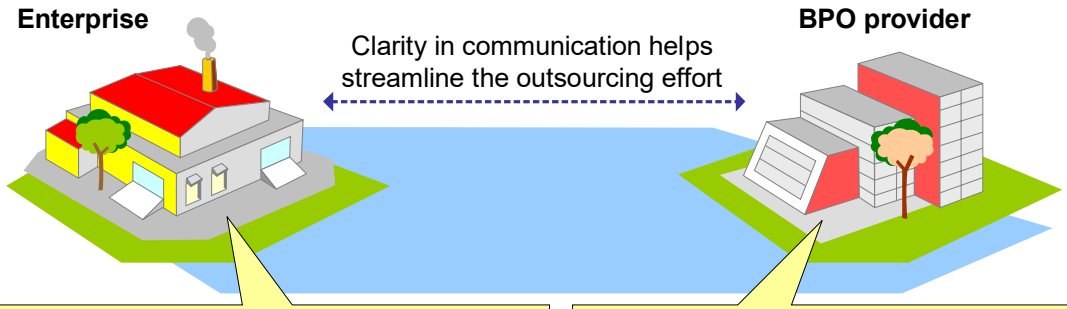


Employee issues facing offshore BPO providers



1. High employee turnover due to tedious and monotonous schedules.
2. Few career growth opportunities.
3. Work schedule upsets personal and family life.
4. Adapting to cultural differences between employees and customers.

Success factors in outsourcing processes



Communication with the provider
An enterprise needs to communicate clearly to BPO providers, to specify what is expected of them and the nature of infrastructure they should provide. The enterprise must be in a position to measure and gauge the quality of output being delivered. For an enterprise, restricting its outsourcing needs to one or two providers helps in streamlining and controlling the quality of output.

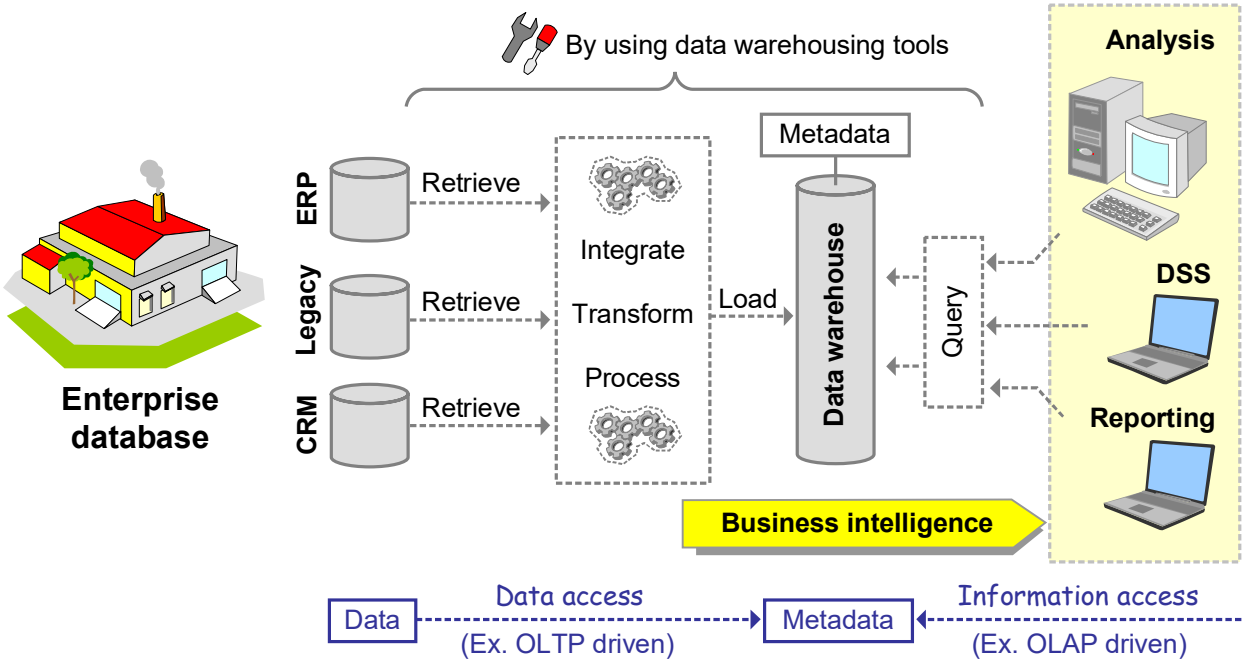
Keeping the workforce motivated
1. Performance based incentive system
2. Flexible work timing
3. Better employee benefits
4. Focussed training exercises
5. Better career growth opportunities

Understanding enterprise needs
BPO providers need to have a clear understanding of what is expected of them and the level of quality they must deliver.

200 - Data Warehousing

A data warehouse represents a diverse collection of data aimed to support managerial decision making, reporting and analysis. This collection of data is subject-based (sales, product, customer) and is often gathered from heterogeneous operational data. A data warehouse integrates and consolidates data from several sources to make it meaningful and consistent. The process of data retrieval, analysis, extraction, transformation and loading are all functions of the data warehouse. Data warehousing tools help in gathering data, cleaning, integrating, querying, reporting, analysing, mining, monitoring and administering the data warehouse.

Integrating several data sources



Advantages of data warehouses

1. Easier to analyze and report information as a common data model is derived from several different sources.
2. As information is queried from the data warehouse, operational databases are not slowed down.
3. Inconsistencies in information that may exist, because of data residing in several databases, are resolved.
4. Advanced reporting capabilities help managers make better informed decisions.

Data warehousing applications

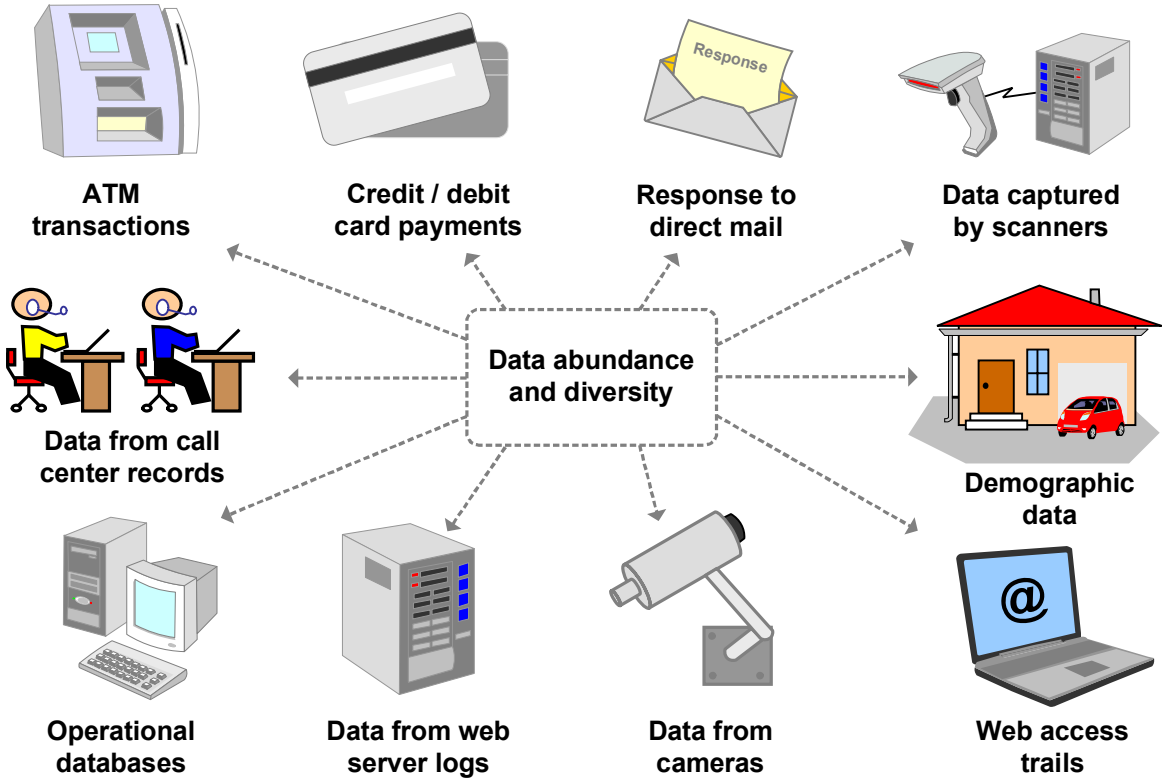
Risk management	Store operations	Sales orders	Medical management
Profitability management	Merchandizing	Sales invoices	Billing and finance

201 - Data Mining

Data mining is a process to discover patterns in data and eventually draw knowledge and information from it. Data mining explores and analyses large quantities of data to establish relationships and develop understandable patterns. It is an important tool in transforming data into information. It can help uncover patterns in data that are otherwise not identifiable.

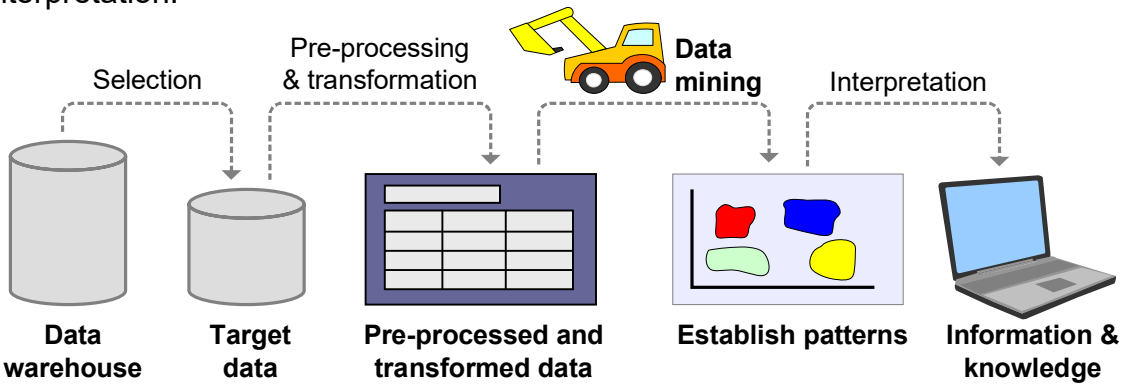
The need for data mining

The need for data mining is felt as meaningful patterns need to be interpreted from the plentiful data captured from diverse sources.

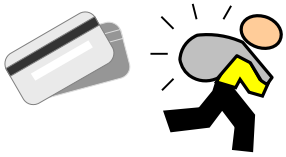


A data mining process

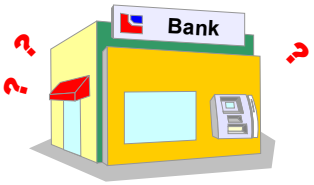
The traditional process to data mining includes pre-processing data, data mining and interpretation.



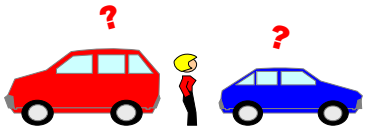
Targeted marketing & CRM
Identify potential and loyal customers likely to shift to competing brands.



Detecting credit card fraud
Identify fraudulent transaction types by mining purchase and demographic data.

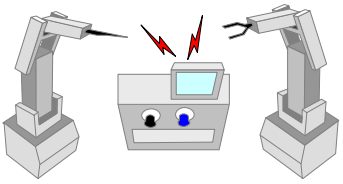


Credit rating
For loans and credit cards, identify potentially good prospects based on existing customer data.



Cross-selling and up-selling
Target customers based on profiles built-up, with new product offers that are likely to appeal to the target segment.

Using data mining for business applications



Manufacturing
Initiate changes automatically in the production process when changes in parameters are detected.

Target direct mail and offers
Identify prospects that are most likely to respond to a direct mail effort, or purchase products from offers made.

Store layout
To position items based on how customers navigate through stores. Identify frequently purchased items and item sets.

HR and recruitment
Identify traits and skills to match job requirements. Identify candidate profiles for recruitment.

Privacy and ethical concerns with data mining

Data mining technologies can raise ethical concerns if used to unfairly categorize and discriminate individuals and organizations.

Individuals who otherwise would remain anonymous may find themselves in the spotlight. Large amounts of personal data mined from different sources may lead to privacy concerns.

Privacy concerns may rise if all data (shopping habits, products purchased and personal details) about an individual is stored in a database.

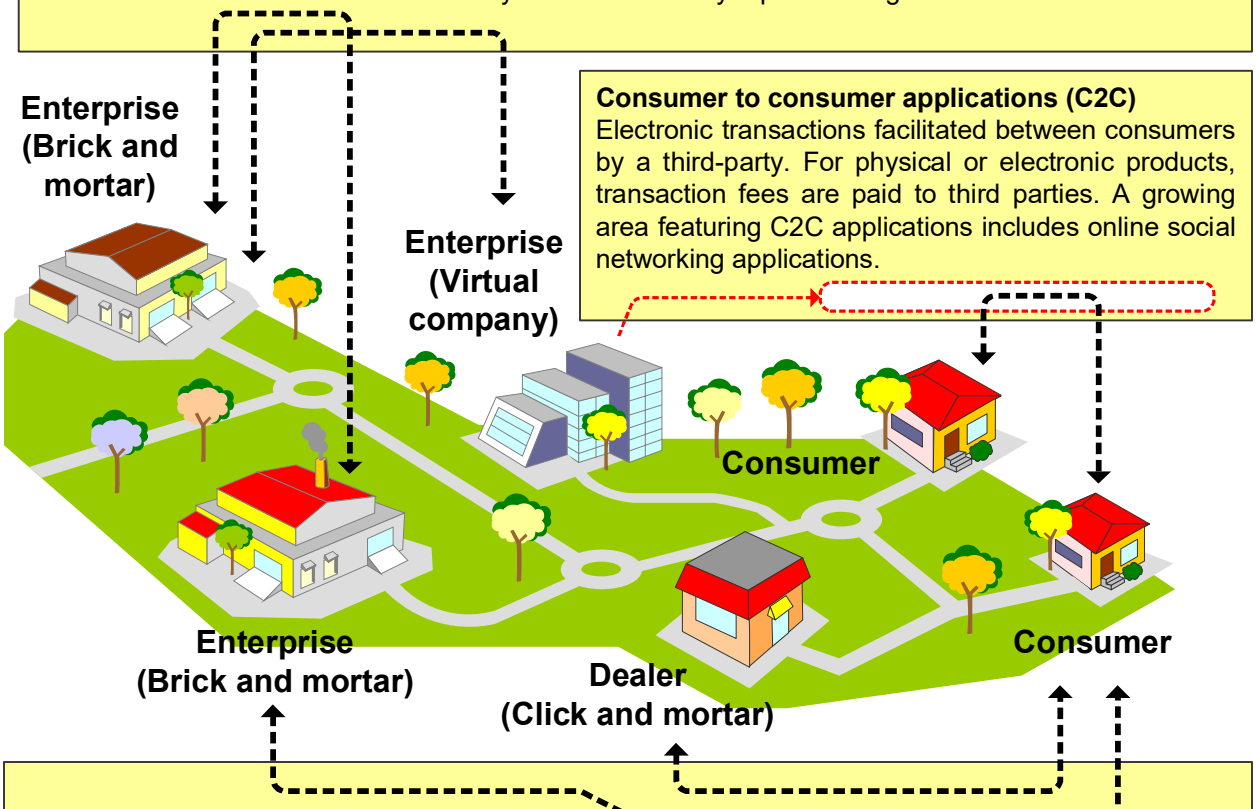
Some privacy and ethical concerns can be handled if companies tell customers about the kind of details being stored in databases and the purpose for which data is being stored.

202 - Electronic Business (E-business)

E-business or e-commerce is a domain where business transactions are carried out electronically. Transactions may represent buying and selling activities, where product delivery is either through traditional transport systems, or electronic transmissions for the delivery of digital products. Transactions also include the transfer of information using electronic mediums. The internet and the world wide web are mechanisms that facilitate e-business. E-business embodies not just the transactional component of businesses but the management of entire business processes, using electronic mediums. It includes tools that enable organizations use internet-based technologies and infrastructure to conduct business operations.

Types of e-business

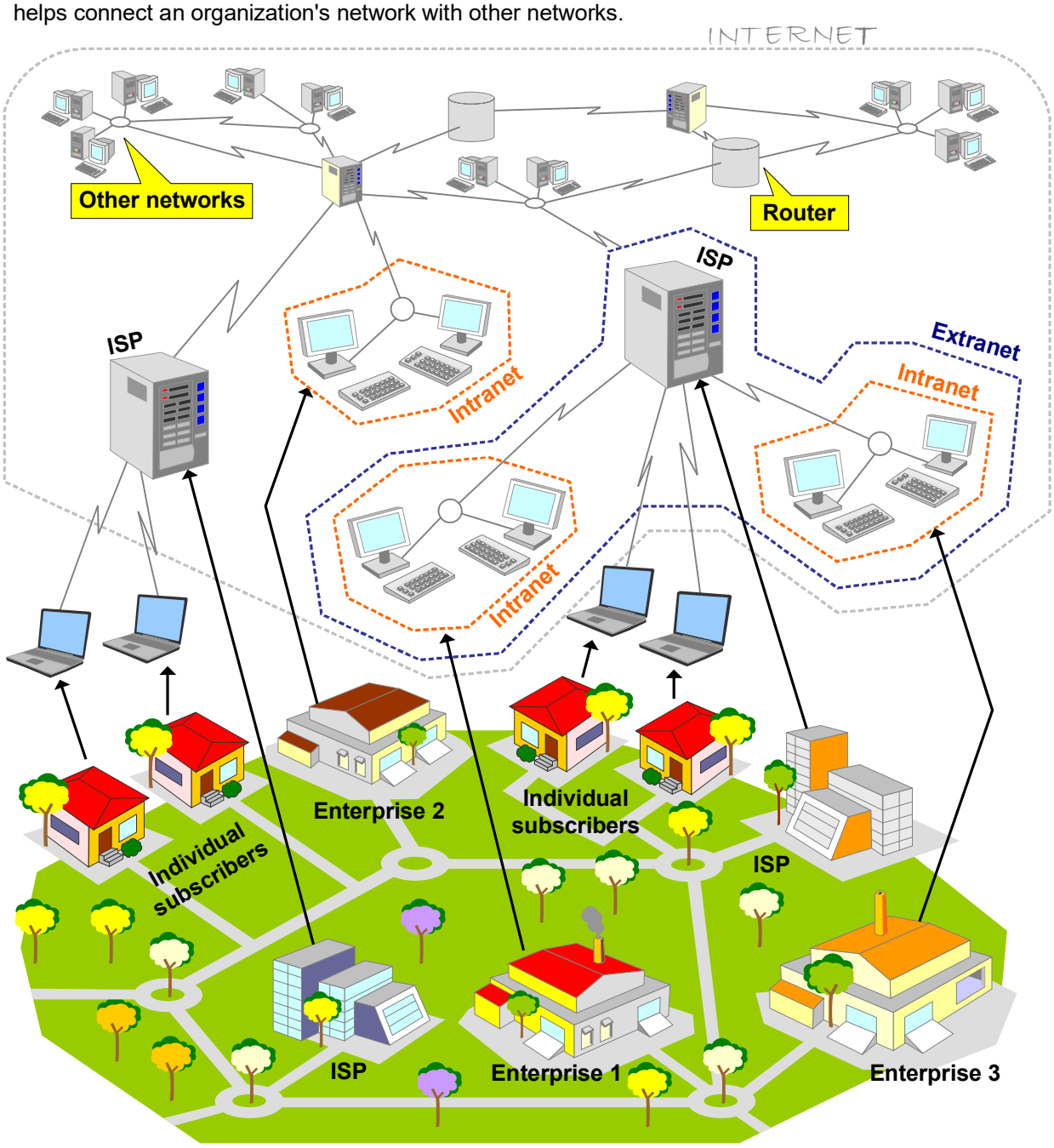
Business to business applications (B2B)
Electronically enabled transactions carried out between businesses, for example, between the enterprise and its suppliers or retailers. They represent the largest section of the e-business sphere. Even though orders are processed electronically, payments may still be made by checks deposited into banks. Such transactions are mostly carried out between businesses who have been partners for a while. The number of transactions may be few but mostly represent large values.



Business to consumer applications (B2C)
Electronically enabled transactions carried out by an enterprise to serve its customers. Orders and payments are processed electronically while the delivery of products may take place through traditional distribution outlets, direct deliveries or over the internet (for digitally enabled products). Customers usually are onetime buyers. The number of transactions is many with each transaction representing a small value. Payment processing is done online through credit and debit cards using secure payment gateways and networks.

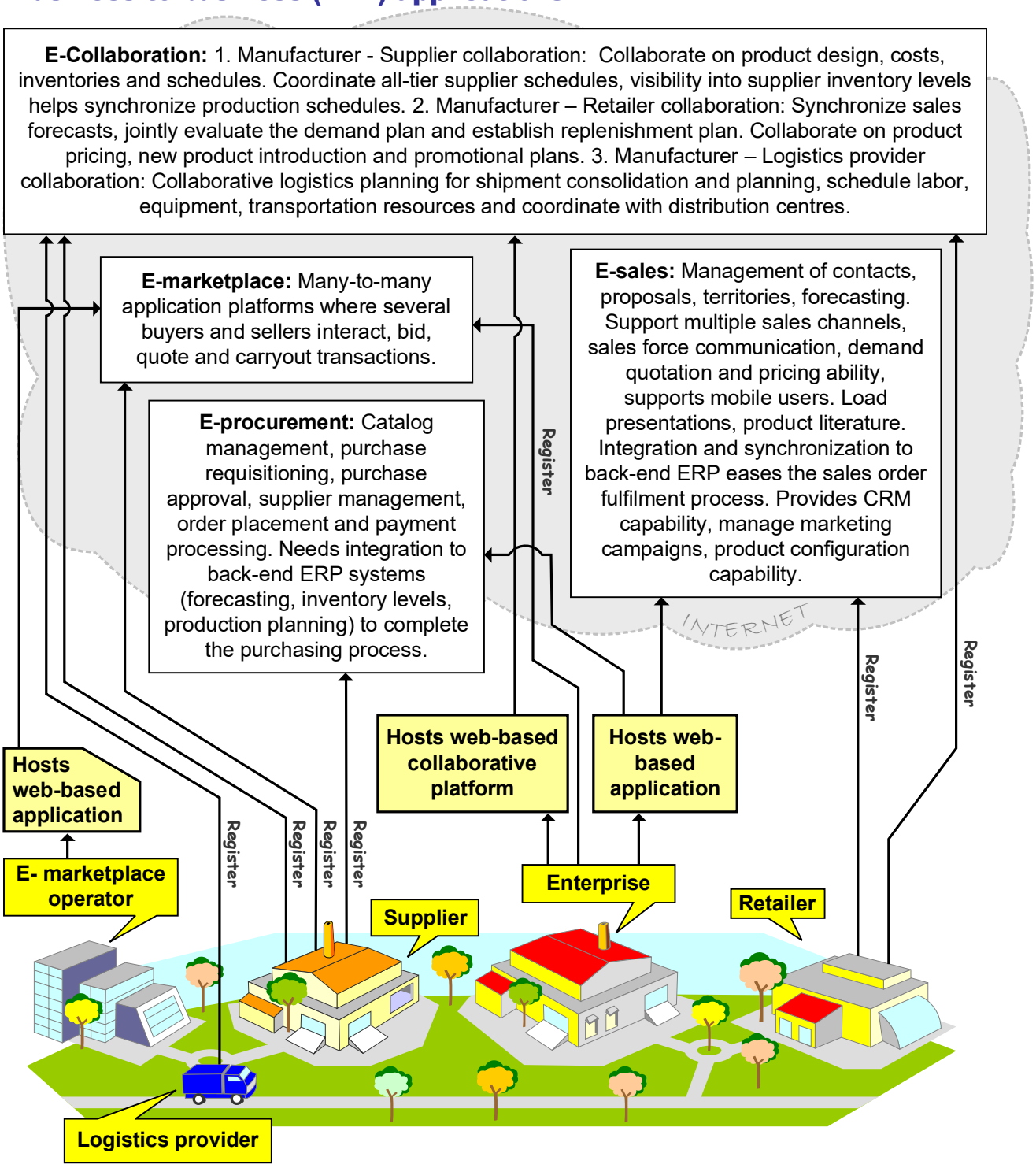
The internet is a highly integrated and decentralized global computer system that uses electronic and optical networking technologies to interconnect several business, institutional, private and governmental computer systems. It helps carry out business operations and transfer information in digital formats. Routers direct internet traffic by using the best possible path. The web is one of the services on the internet.

An intranet is a private network existing within an organization that uses internet technologies to share information within an organization. An extranet is a private network using internet technologies that helps connect an organization's network with other networks.



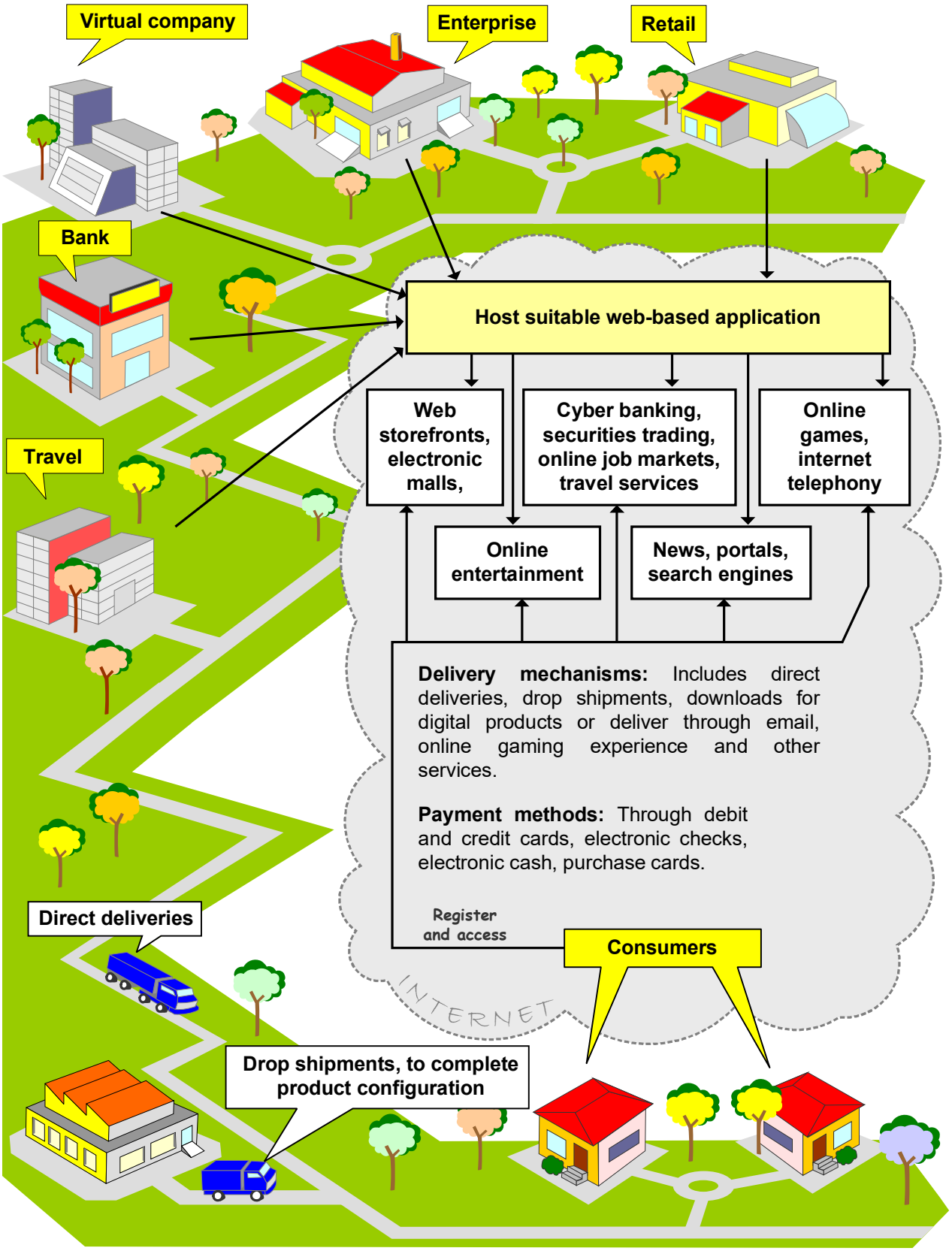
The Internet Service Provider (ISP) offers an access to the Internet. For a fee, service providers offer this access to the internet by dial-up, broadband, cable, Wi-Fi, Ethernet or other high-speed connections. ISP's may provide email accounts to users, remotely store data for them, host software applications that customers can access and offer other services as well.

Business to business (B2B) applications



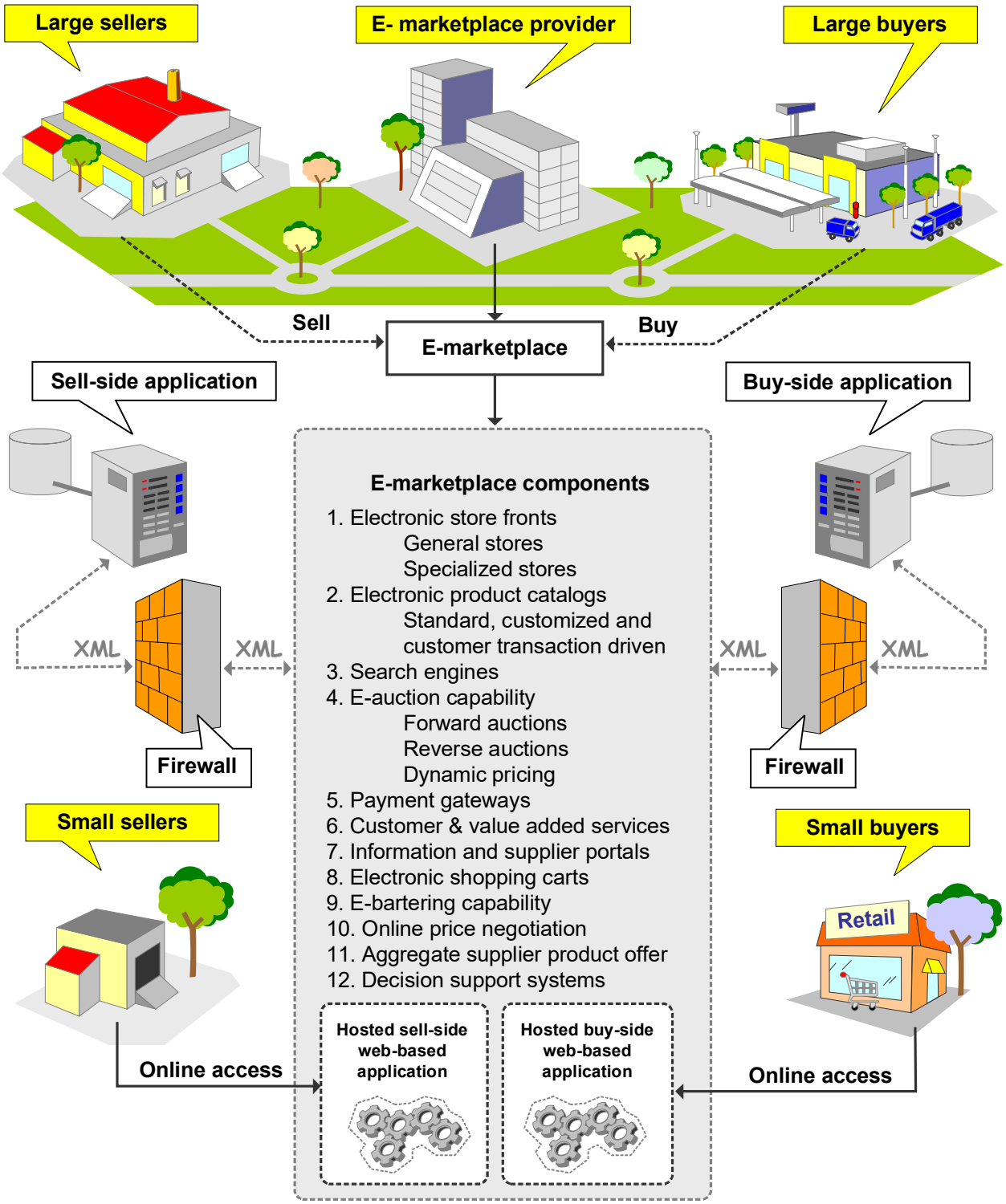
E-marketplaces may be buyer driven, supplier driven or managed by third parties who have specialized knowledge about a particular industry. Pricing may be based on subscription, percentage of value transacted, advertising or on other pricing methods. E-marketplaces offer buyers and sellers a low cost medium to interact. Web-based collaborative platforms, electronic procurement and sales application software are usually hosted by dominant industry players. Partner organizations would need to register into the applications as the dominant players business is important to them.

Business to consumer (B2C) applications

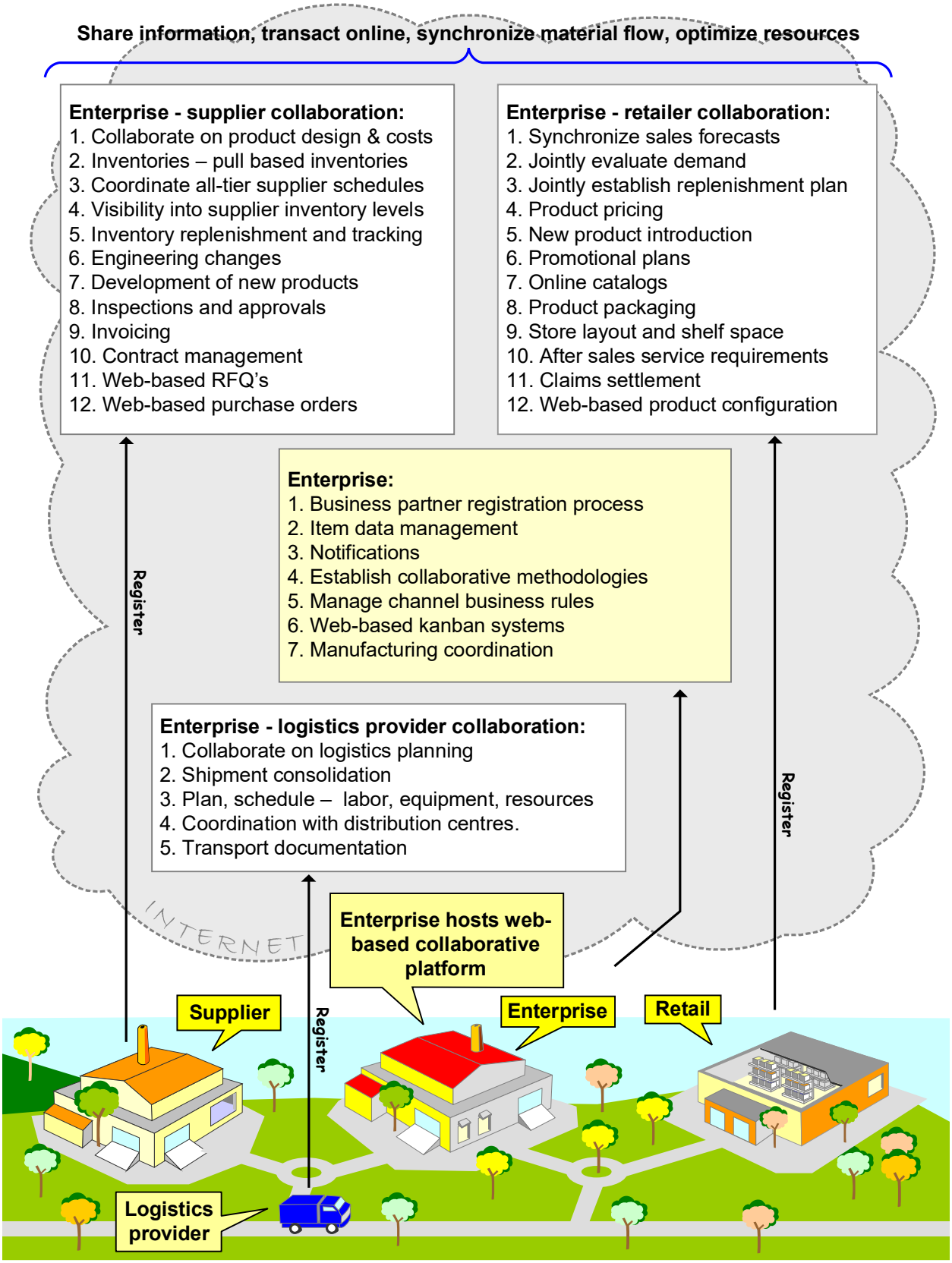


E-marketplaces

E-marketplaces are internet based marketplaces where buyers and sellers of products and services interact and carry out business transactions. E-marketplaces provide an arena where buyers and sellers transact and exchange information in a legal and regulated framework. E-marketplaces reduce the cost of doing business.



E-collaboration via a web-based platform



203 - Electronic Procurement (E-procurement)

E-procurement applications help companies carry out the buying process electronically. The features included in such applications help in finding items in supplier catalogs, creating and transmitting orders online and in the automatic payment of invoices. E-procurement applications, however, need to be integrated with back-end ERP applications to complete the entire procurement process handled by such back-end applications.

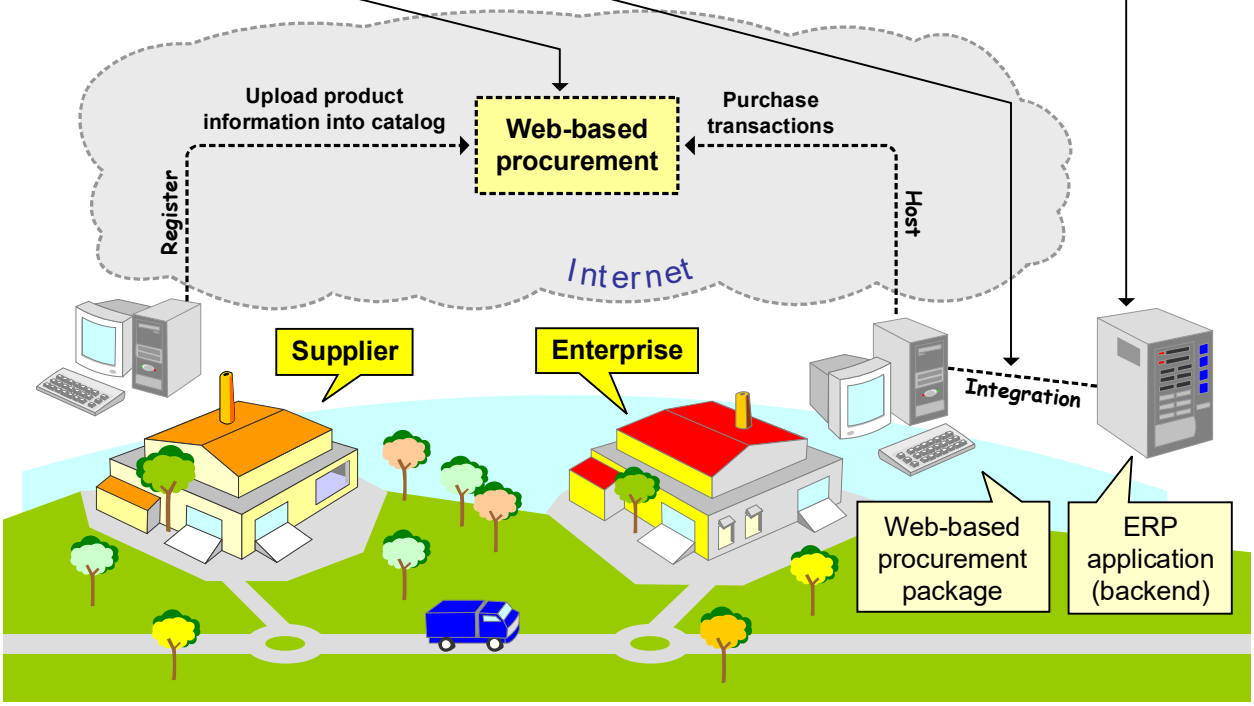
Integrating online procurement with backend applications

E-procurement applications enable users in an enterprise navigate product catalogs, select specific items, create requests, obtain approvals, enter and send orders and trigger payment of supplier invoices. Usually, web-based procurement applications are integrated with back-end applications to complete the ordering and procurement process.

Depending on the nature of items purchased (MRO or MRP items), and the value involved, e-procurement applications will need integration with back-end applications to complete the procurement process. Back-end integrations help in;

1. Developing and maintaining user profiles from back-end HR modules (purchaser, approver, others).
2. Ordering items automatically over the web, based on back-end inventory and material planning systems.
3. Leveraging product information from the product catalog.
4. Completing the purchase ordering process.
5. Accounting and financial processing of purchase transactions.
6. Using forecasting data, supplier constraint information in the procurement process.

Item data, financials, material planning, HR, scheduling, forecasting data



204 - Electronic Sales (E-sales)

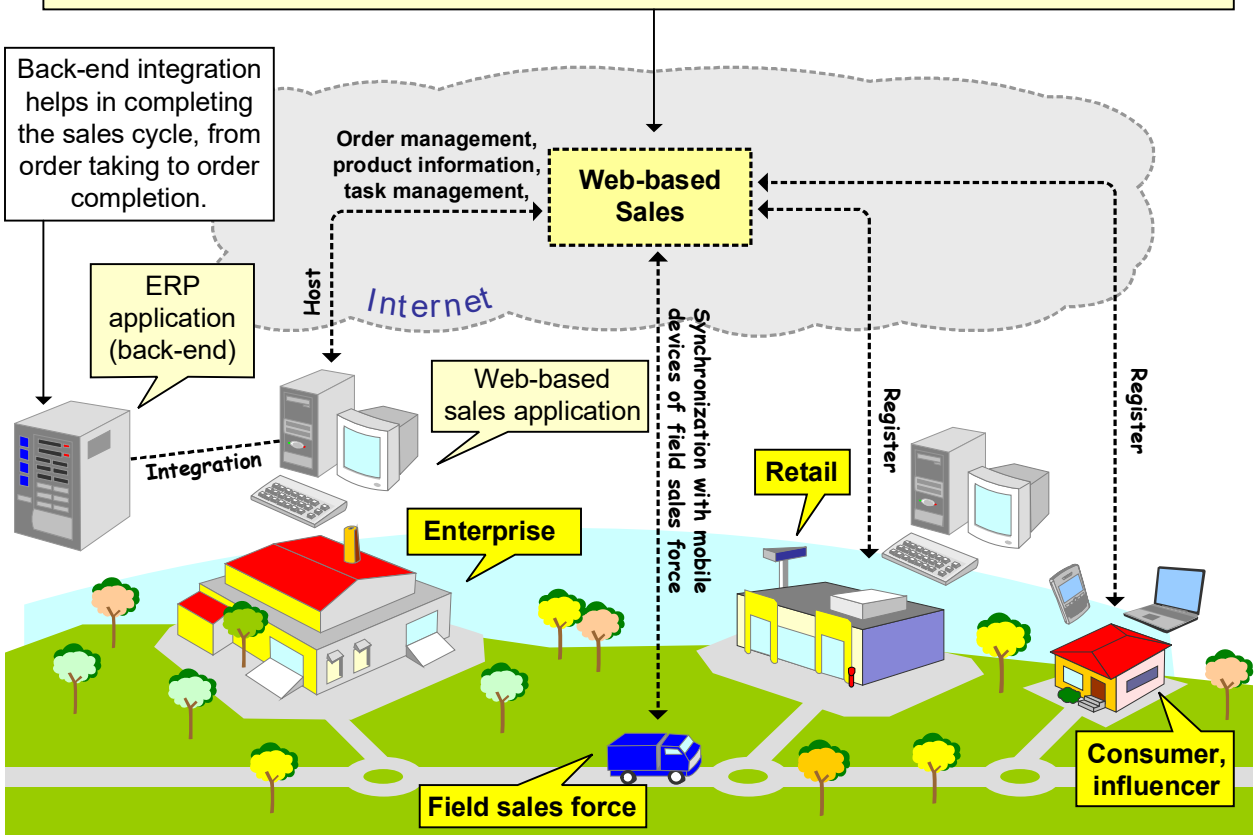
E-sales applications carried out over the internet help enterprises manage customer relationships and automate sales functions. They help manage sales activities with distributors, dealers, influencers, specifiers and consumers. It improves the efficiency of a field sales team by providing updated information in real-time at the point of sales. Integration to back-end ERP systems helps in completing all tasks involved in the sales cycle, from order taking to order completion.

Streamlining field sales activities and office operations

E-sales applications help in targeting specific customers with proposals that contain information suitable to them. It helps in communicating with customers and prospects across several device types (laptops, handheld and other devices).

The scope of a web-based sales application (along with back-end integration)

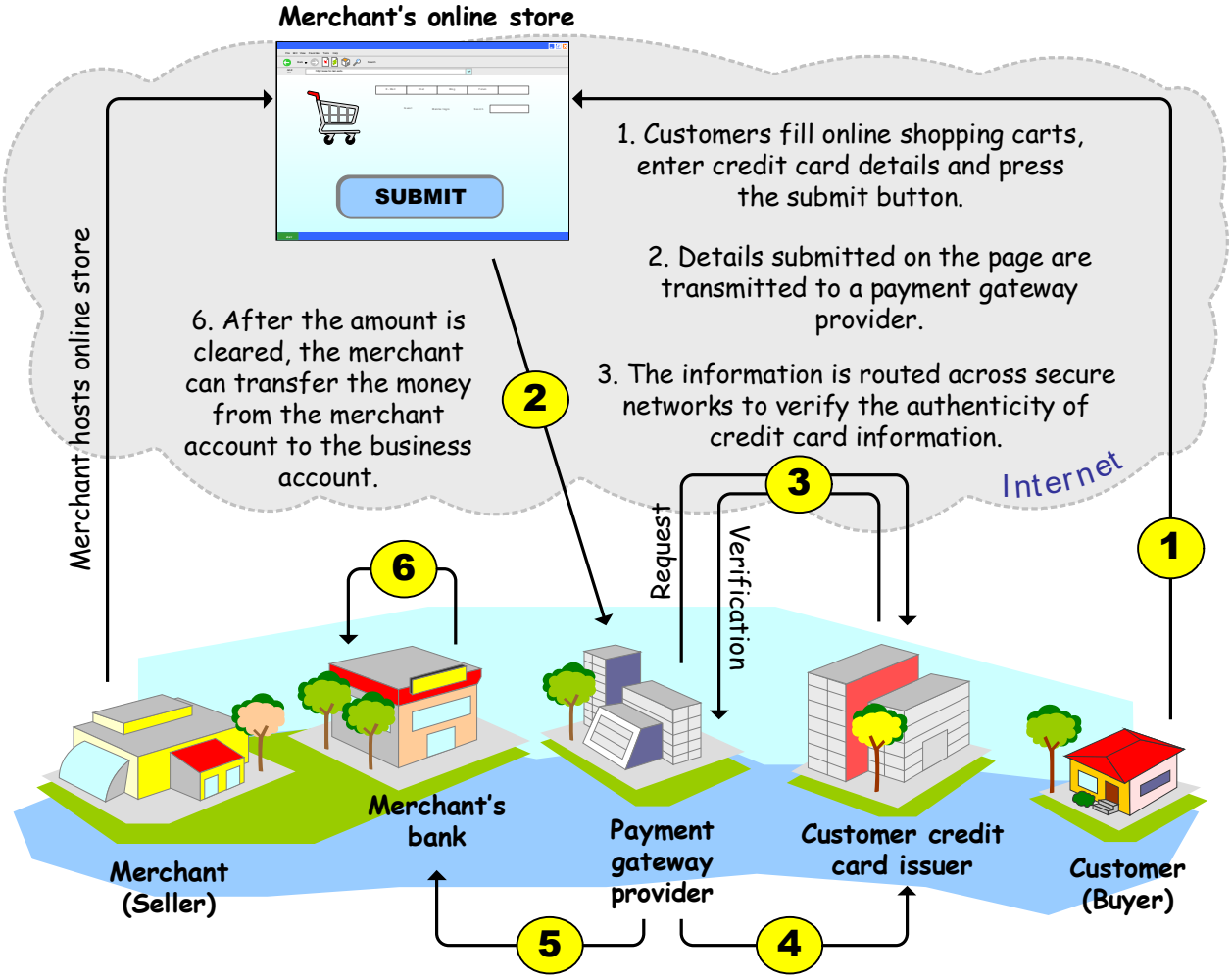
1. Customized proposal generation and communication (fact sheets, presentations)
2. Customer specific product and pricing configuration ability.
3. Synchronization of central database to local databases and field force devices to ensure availability of latest updated information (contracts, orders, invoices, payments).
4. Manage individual profiles (manager, representative) with profile based access mechanisms.
5. Collaboration between field force team members - for follow-ups, order closing, others.
6. Manage campaigns and communication across several web-based devices.
7. Induce up-selling and cross-selling with better product configuration capability.
8. Create and display reports to managers and field force (orders, outstanding, forecasts)
9. Ability to model complex pricing structures based on product configurations and customer profiles (distributor, dealer, end-user), handle multiple currencies.



205 - Payment Gateways

A payment gateway is a payment processing service, usually managed by a third-party, to process, verify, accept or decline online transactions on behalf of a seller. Transactions are carried out over secure electronic communication networks. A payment gateway automates online payments between buyers and sellers. It allows sellers accept online payments made through credit cards, debit cards, direct debits, real-time bank transfers and other methods. It works as an intermediary between the seller's shopping cart and all the financial networks involved with a transaction, including the customer's credit card issuer and the seller's account. It encrypts transaction details and ensures they are sent to the correct destination.

Facilitating online payment transactions



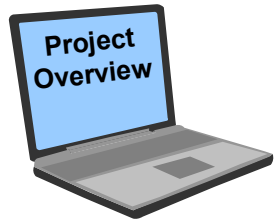
4. Upon verification, the customer's credit card account is debited.
5. The merchant's internet merchant account is credited.

Shopping carts are configured to transfer data in a format compatible to a particular payment gateway. Payment gateways that offer address verification services, where the cardholders billing address is verified with the card issuer, decrease the risk of accepting and processing fraudulent transactions.

206 - Software Development

Developing software for business applications usually involves the expertise of several people having different skills. They work in teams to guide software development though the several stages of production. Software development starts with setting up a structure for the software process. This usually involves following a project oriented approach, needing the completion of many tasks and activities in the entire software development cycle. Some organizations follow an approach where much planning and documentation is put into place before coding and testing. Others manage with loosely held structures where the scope for redesign and change is kept wide open.

Stages in the software development process

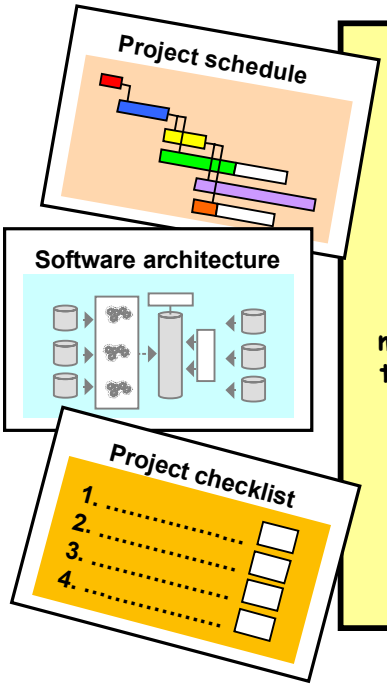


Preparation, introduction and project overview document

Outline the need for the project. Specify activities, deliverables, resources required, project schedules, budgeted costs. Determine whether the project is related to any other software being developed?

State objectives, risks, constraints, dependencies, assumptions, control & monitoring mechanisms

Describe management objectives, priorities, risks associated, use of third party software, modification of existing software, project assumptions, time and quality audits, software testing procedures, reporting formats, project time accounting.

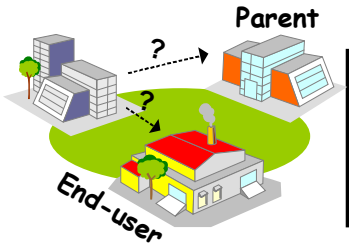


Establish the software development methodology and the management plan

Describe project milestones with their content & timing, development methodology and the project lifecycle model.

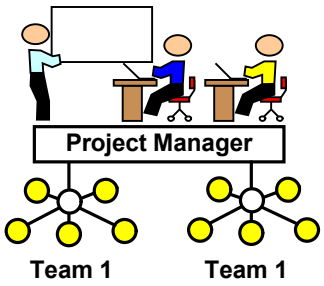
The software management plan

1. Detailed functional design plans
2. Detailed software architecture
3. Cost and schedule estimates
4. Requirements specifications
5. Change control plans
6. Coding standards to be followed
7. Software delivery plan
8. User manuals and technical documents
9. Quality plan and assurance
10. Deployment handbook
11. Integration procedures
12. Release checklist and sign-off
13. Project log and history documents



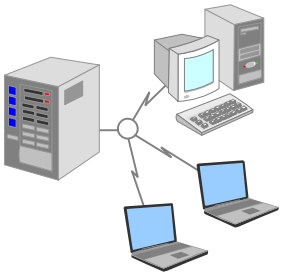
Describe how the project is related to and influenced by other entities.

Project relationship with the parent company, subcontractors, end-user organization, technical documentation organization, quality assurance, marketing and others.



Setup project organization, reporting relationships & assign responsibilities

Identify skills, recruit or place from within the organization (programmers, functional consultants), design the team structure and reporting relationships, assign project responsibilities, organize training, establish start and end times, plan for phasing out personnel.



Describe technical processes & methods, tools & techniques, documents, support activities

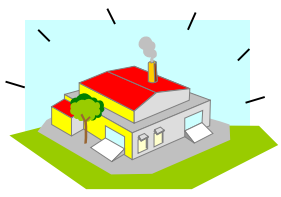
Define technical processes and methods, development environment (hardware & software), facilities needed, coding & documentation standards, integration procedures, unit testing, systems testing, peer reviews, quality plan and procedures, support functions to the process.

Execute the project, begin actual coding of the software package

Breakdown work packages into sub-packages, complete each work package and identify them with unique ID numbers, complete all tasks and activities involved. Monitor and control schedule, content and quality. Handle changes in functional and technical specifications.

Release alpha version, review and conduct testing. Release a beta version.

Release an alpha version, conduct reviews. Conduct functional, unit, acceptance and integration testing. Find defects and bugs and fix them. Check software compatibility, verify and validate software. Freeze features and release a beta version.



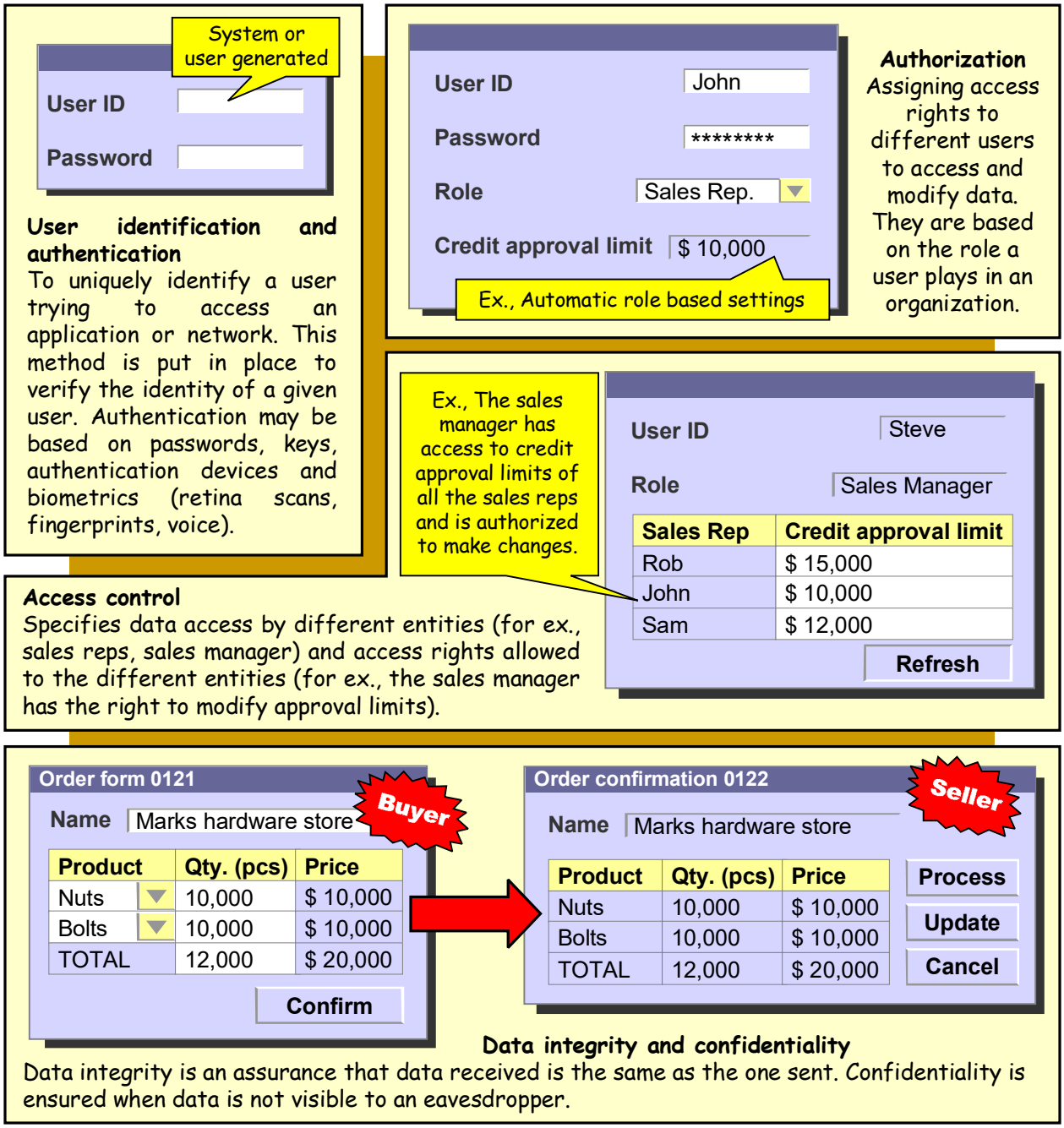
Beta testing (prototyping, previewing) at end-user organization.

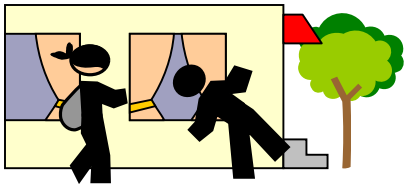
Release a feature complete software from the development environment. Transfer the software package to the customer's site. Activate the software package. Create a software history document.

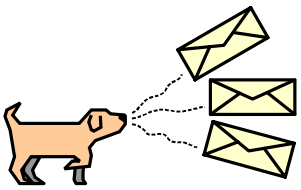
207 - Network & Application Security

Network and application security are crucial for protecting data and IT resources of an enterprise. The risks associated with transferring data over insecure networks and applications include data theft, viruses in the system, financial fraud and corruption of data and application logic. The damages resulting from insecure systems include loss of finances, loss of reputation and lawsuits. An organization needs to employ the right tools and update security measures regularly to protect its IT network, data and applications.

Establishing application security







Intruders on the network
1. Decrypt or encrypt messages
2. Intercept or emit messages
3. Generate fresh messages
4. Share or split messages

Spyware
1. Embedded programs
2. Browser hijackers
3. Trojan viruses
4. Malware & worms

Other threats
1. Phishing
2. Denial of service
3. Packet sniffing
4. Customer impersonation

Security risks and concerns from the outside

Internet

Web-based transactions & communication

Purchase transactions

Sales transactions

Firewall – Hardware or software that permit only one access point into the network. They filter what comes in and what goes out.

Firewall

Firewalls facilitate the transmission of only authorized traffic over the network and thereby protect the system.

Supplier

Enterprise

Customer

Inside hijackers who misuse and exploit critical customer information for personal gains?

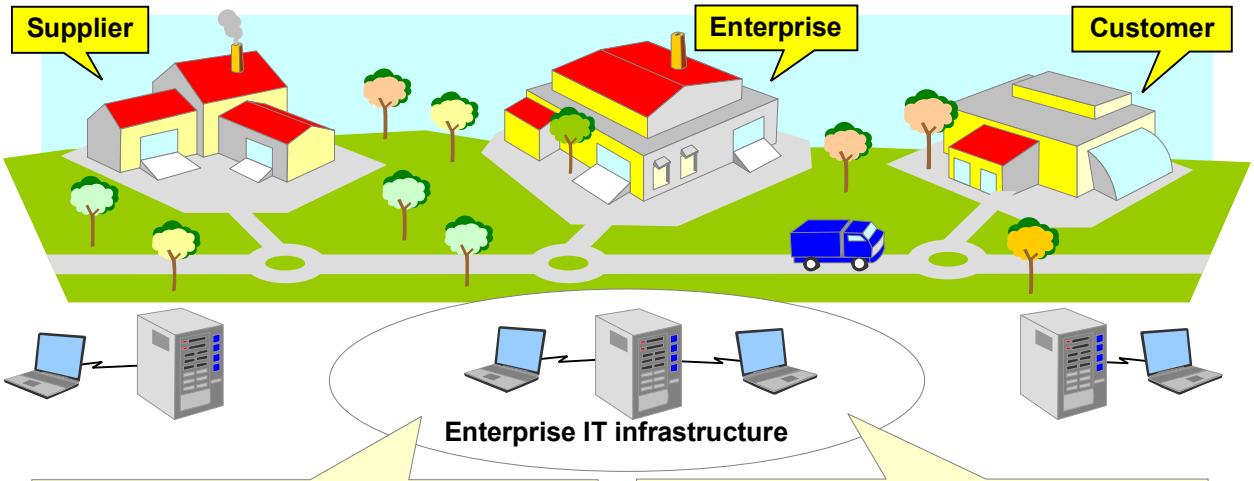
Employees who try to steal company information and sell it to the competition?

Disgruntled former employees who have information on passwords and procedures and are bent on wreaking havoc on the company's IT infrastructure.

Quality of support & maintenance to the existing IT infrastructure?

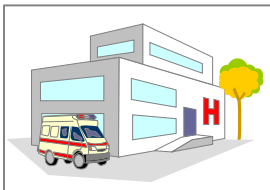
Network security threats from within the enterprise

Putting security into place...

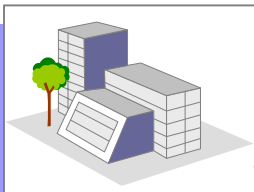


1. Use whole system data encryption to protect data being transferred and to provide the needed privacy.
2. Incorporate periodic automatic backup of all data to servers so sensitive data can be recovered in case of an attack
3. Employ cryptographic tools to encrypt sensitive communication over the network.
4. Install software updates regularly to protect the system from hackers and eavesdroppers.
5. Encourage employees to use secure passwords to protect against automated brute force software attacks. Stress the importance of not sharing passwords and login information with colleagues.
6. Have a policy on downloading of data and applications from the web. Only use licensed software always.
7. Put a detailed security policy in place and educate all employees about it. Guard against attacks from external devices (for ex., sales presentations by suppliers who use their own laptops over the company network.
8. Oversee the network regularly for attacks and security breaches by employing system monitoring tools and techniques.
9. Put a strong firewall in place and oversee it regularly. Explore honeypot computing.
10. Set up procedures for the access and handling of sensitive company information.
11. Use secure antivirus software.

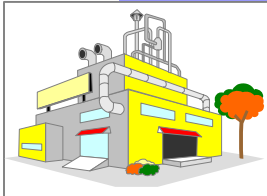
Areas at risk by a breach in network and application security



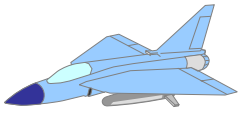
Hospitals
1. Patient medical records
2. Dosage administration
3. Medical procedures
4. Medical prescriptions



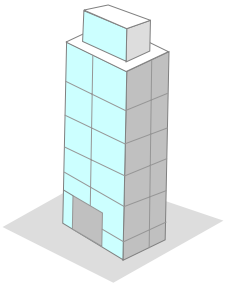
Tech companies
1. Source codes
2. Data integrity
3. Intellectual property
4. Server capacity



Pharmaceutical companies
1. Patent information
2. New products
3. Formulations
4. Medical prescriptions



Defence contractors
1. Tenders and sales plans
2. Specification data

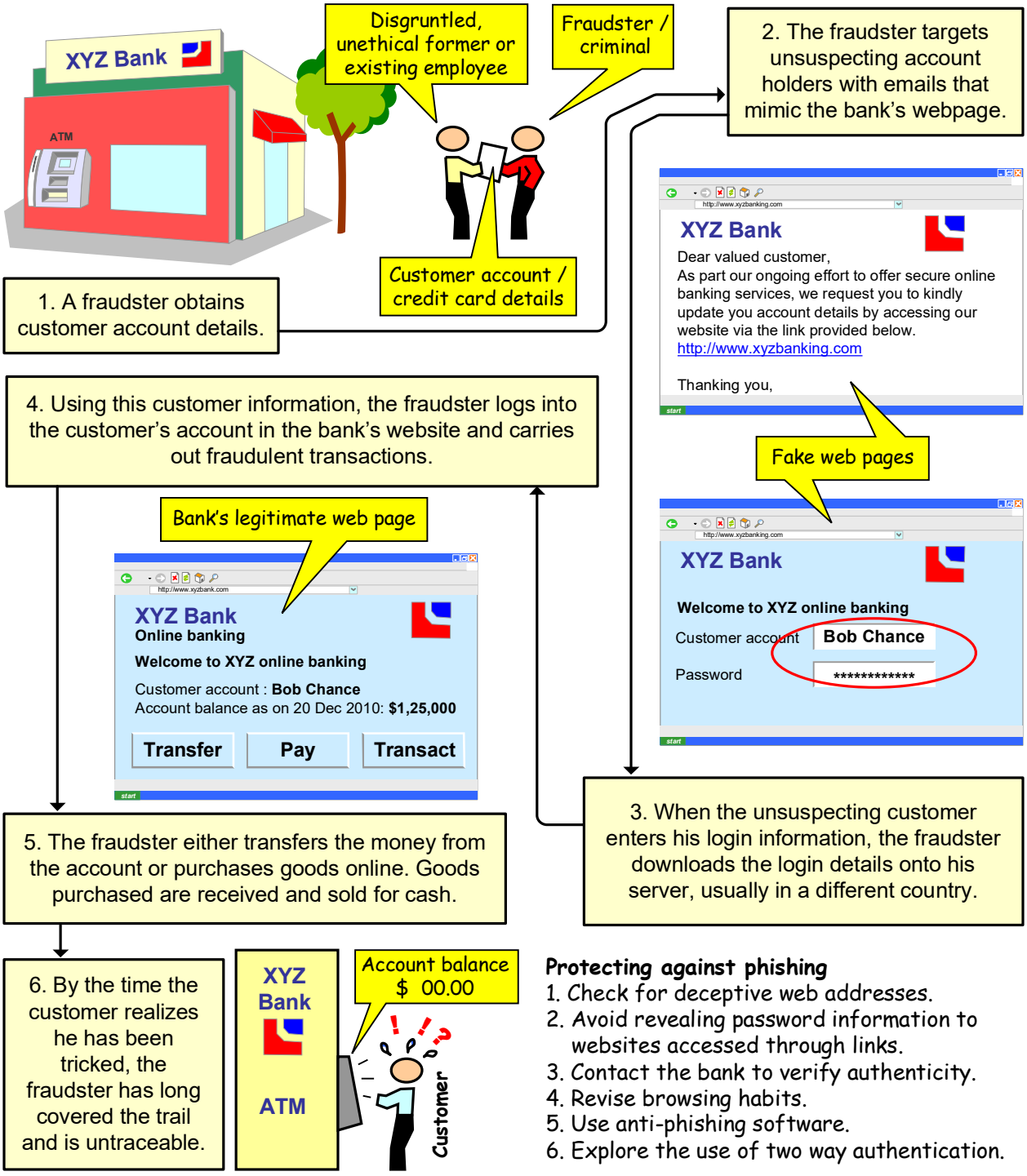


Banking / Insurance / Financial services
1. Customer information
2. Financial records
3. Transaction details
4. Login & passwords
5. Credit & debit cards
6. ATM cards

The growing menace of phishing

Phishing is the process by which a user tries to pick up sensitive information like customer login, password, credit card and bank details by posing as a legitimate organization. The identity of such unsuspecting customers is stolen, usually, by encouraging them to enter sensitive information onto web pages that mimic the web pages of banks and companies that hold their accounts.

An example of phishing



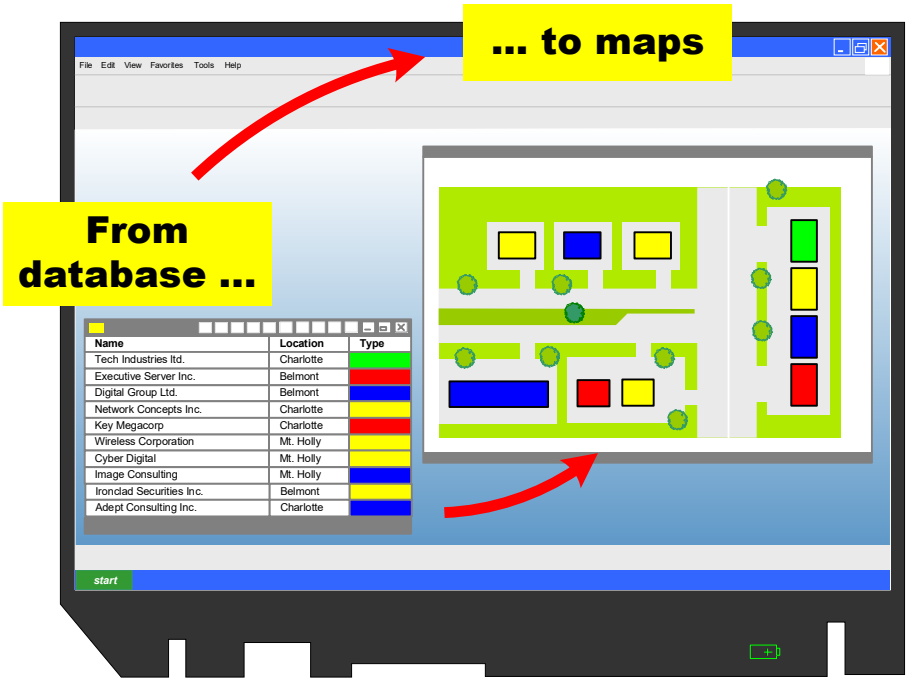
Protecting against phishing

1. Check for deceptive web addresses.
2. Avoid revealing password information to websites accessed through links.
3. Contact the bank to verify authenticity.
4. Revise browsing habits.
5. Use anti-phishing software.
6. Explore the use of two way authentication.

208 - Geographic Information Systems (GIS)

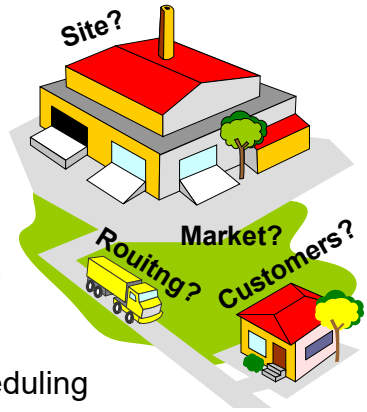
A computer based system that uses hardware and software to capture, manipulate, analyze and display data that is spatially referenced to the earth. Information is referenced by its location on earth. It provides a framework for understanding spatially referenced objects. Most GIS applications provide a graphic interface to databases, where information from databases is placed onto a map. Among other uses, the information displayed helps in business related decision making as well.

The technology



The GIS puts data from a database onto a map to visually depict locations. It allows decision makers and managers view, interpret, analyze and visualize data in ways not possible by simply looking at a database. A GIS helps in analyzing data, making maps and displaying results. The visual depiction of data helps an enterprise understand and manage information on customers, business partners, sales, demographics and warehousing facilities.

Uses of a GIS



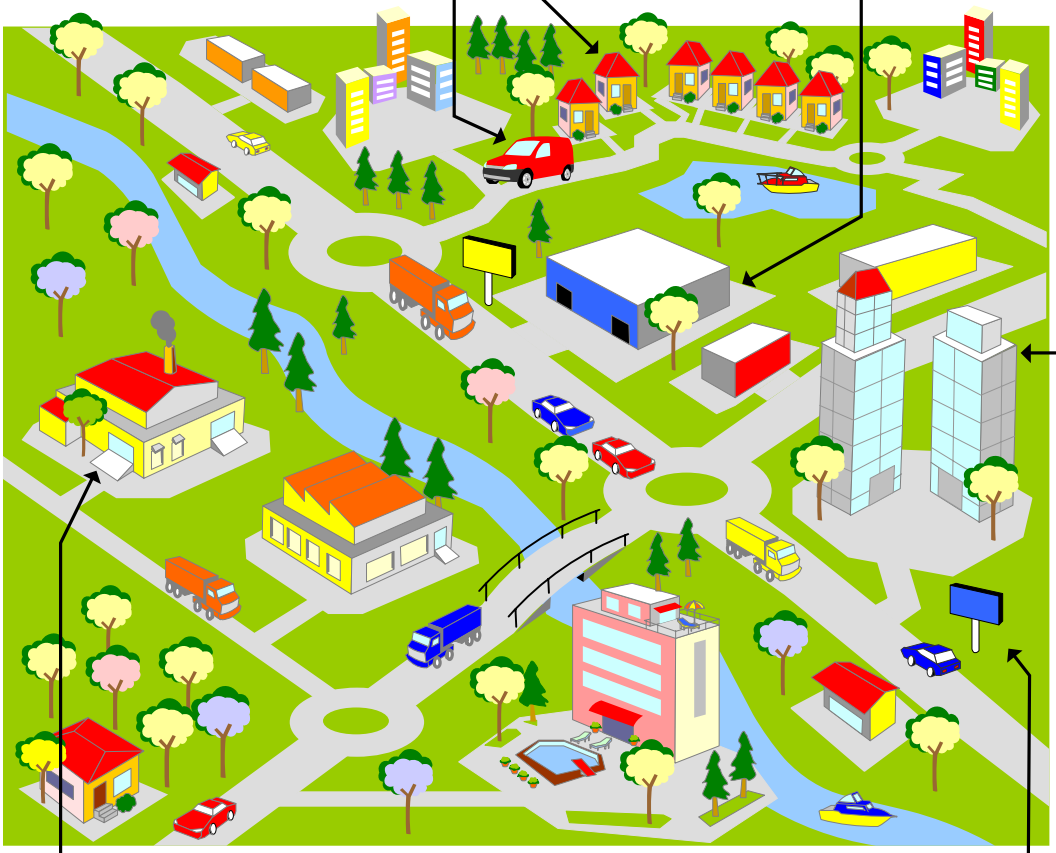
1. Asset management
2. Facilities management
3. Site selection
4. Store selection
5. Customer mapping
6. Analyzing demographics
7. Market analysis
8. Sales territory allocation
9. Vehicle routing and scheduling
10. Analyzing competition
11. Analyzing markets
12. Finalizing dealer locations
13. Understanding trade areas
14. Assessment of risk
15. Acquisition of property
16. Customer profiling
17. Sales leads
18. Forecasting

GIS applications in enterprise management

Customer mapping: Analyze markets and customers, map trends and demographics. Evaluate potential in the target area and identify products for sale. Geocode customers and understand their likes, dislikes and motivation to purchase. Identify valuable customers, focus target marketing effort to prospects with similar demographic classifications. Focus all promotional effort to the needs of the target area. Integrate web-based store locators to help customers locate stores.

Route selection: Use GIS for routing and scheduling optimization and fleet management. Work out best possible delivery routes for faster deliveries. Analyze and understand traffic patterns.

Store selection: Visually identify store locations for a business. Rank store locations by type of customer and products. Segment customers based on buying habits and lifestyle. Generate a customer database, evaluate cross-selling and up-selling opportunities. Evaluate store specific merchandising.



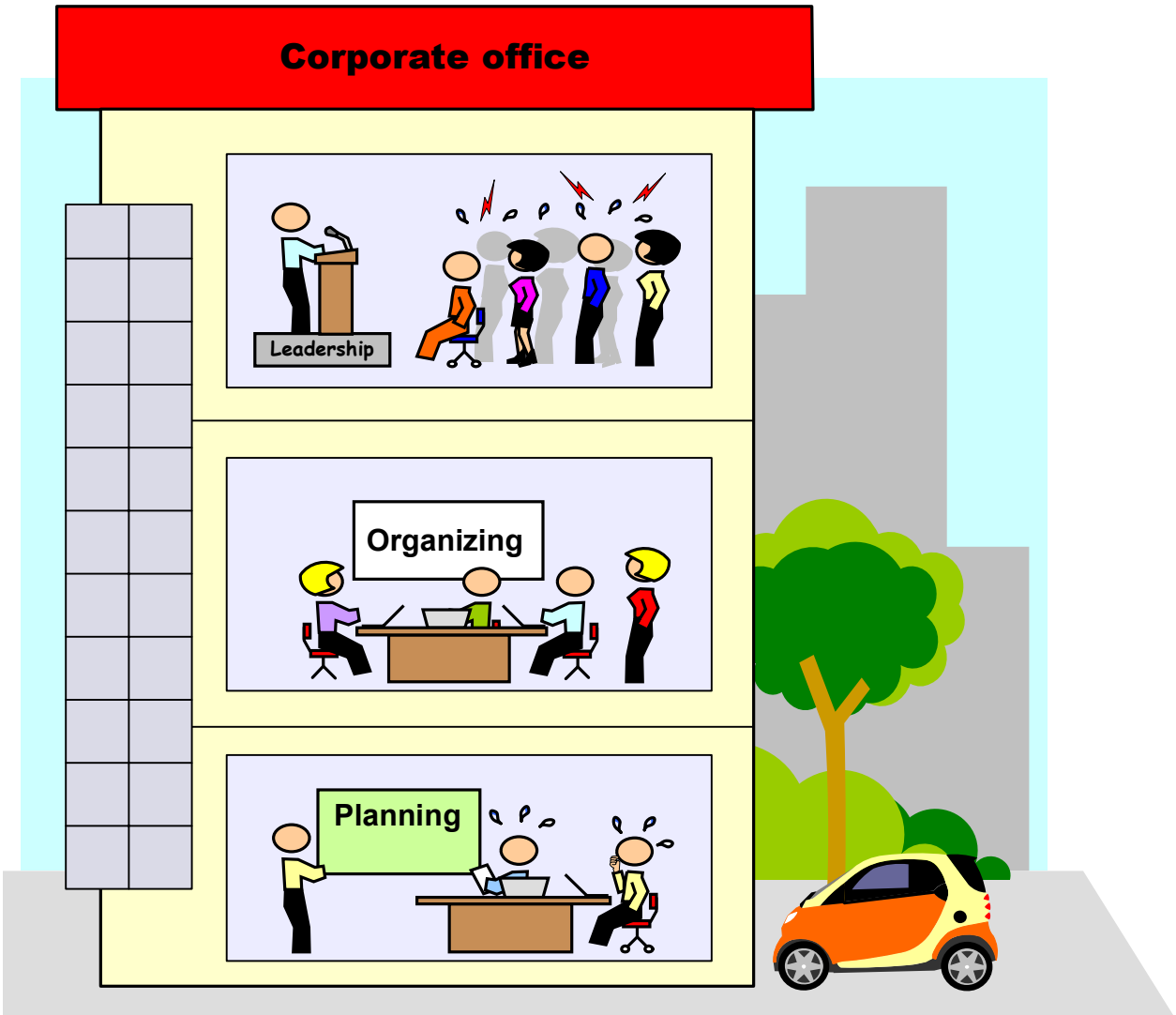
Facilities mapping: Map facilities within an organization. Provide information about layout of premises, location of elevators, conference facilities, stairwells, emergency exits, parking areas, fire extinguishers and others.

Advertising and promotion: Define target segments and focus advertising and promotional effort. Understand customer spending and target direct mail. Evaluate advertising and direct mail effectiveness. Design sales territories more effectively with a visual reference of dealers, routes and access points. Know where the competition is located.

Site selection: Use for selecting sites for manufacturing facilities, distribution centers, warehousing facilities and offices. Have a better understanding of resources and facilities available when selecting sites (availability of human resources, infrastructure, transport, roads, electricity and communication) and services. Evaluate scope for just-in-time manufacturing and supplies. Evaluate risks and benefits with a visual reference of surrounding areas. Evaluate security aspects of the site.

Section H

Management Skills and Practice



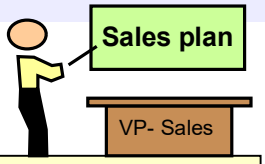
209 - The Process of Management

The process of management deals with the effective use of enterprise resources, to manufacture products, distribute them and provide services. Enterprise resources include human resources, machinery, technology and finances. Management practices need to put these resources to effective use in an environment of constant economic change and increased competition. They also need to consider the physical environment and its dwindling natural resources. The process of management also needs to generate revenues and profits to make a business sustainable and viable.

Managerial tasks

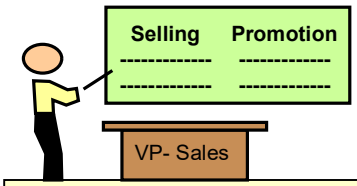
The managerial process

1. Planning



Set objectives and define means to achieve them. Ex., V.P- Sales sets an increase of 25% in sales, to be achieved by introducing a new range of products.

2. Organizing



Grouping and assignment of activities to meet objectives. Ex., V.P-Sales identifies, groups and assigns promotional and selling activities needed for the new range of products.

3. Staffing

Identify, select, recruit, train and place human resources. Ex., V.P-Sales places a product manager, district managers and sales reps for the new product range.

4. Directing

Provide leadership, guidance and direction. Ex., V.P-Sales conducts meetings, provides promotional, pricing and logistical support to the sales team. Provides answers to challenges faced in the market.

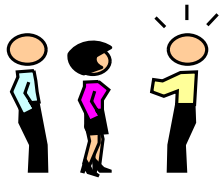
5. Controlling

Measure performance against objectives. Identify reasons for deviations and initiate remedial action. Ex., V.P-Sales regularly analyzes sales records - for a district, product and sales rep and takes corrective action.

210 - Managerial Skills & Abilities

To perform the several managerial functions needed in an enterprise, managers have to develop the necessary skills and abilities needed for the job. Every industry places differing demands on the nature of skills needed from its managers. Every enterprise expects its managers to develop and hone their managerial skills, through training and practice. However, most people hold some unique intrinsic skills suited for a particular industry.

Nature of managerial skills and abilities



Leadership & decision making
Direct, motivate and guide a team to realize enterprise objectives. Make decisions and provide solutions.

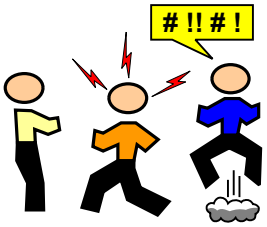
Communication skills
Written and spoken. Communicate within and outside the organization. Effective report writing and documentation. Good public speaking and presentation skills.

H R skills
Interact with employees and peers. Conduct interviews, select, place and appraise employees.

Conceptual ability
To develop an understanding of challenges, for decision making, planning and directing.

Technology skills
Understand latest information technologies, put technology to work in the job sphere, automate processes.

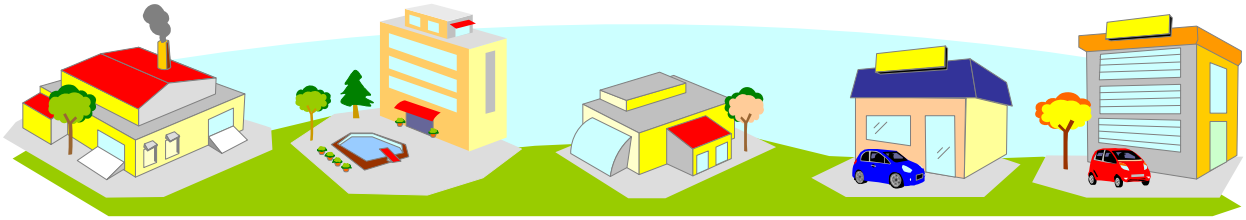
Negotiating skills
Finalizing terms, conditions, prices and contracts with customers. Negotiate work conditions and terms with employees.



Conflict resolution
Ability to resolve conflicts between employees and with customers. Provide a stable work environment.

Handle pressure
Ability to keep clam and handle challenges from the market, workplace, regulating authorities, peers and superiors.

Skills and abilities required across business sectors



Manufacturing
Technology skills
H R skills
Communication
Leadership

Hotels
H R skills
Communication
Leadership

Retail
Communication
H R skills
Negotiating
Technology

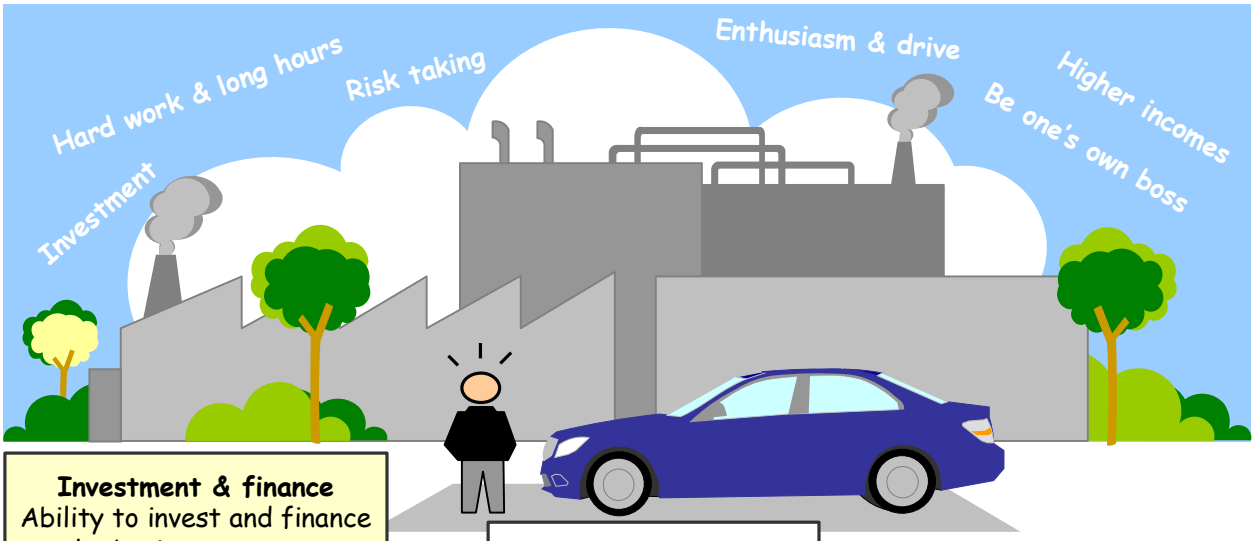
Sales management
Communication
Handle pressure
Negotiating
Leadership

Consulting
Communication
Technology
Conceptual
Negotiating

211 - Entrepreneurs & Professional Managers

Entrepreneurs are individuals who come up with ideas about businesses and invest money into their ideas of products and services. They employ people and manage and grow their businesses. Entrepreneurs show a lot of initiative and drive in furthering their ideas and goals. Professional managers are individuals who work for companies and business enterprises, usually on a salaried basis. They help a company realize its long-term goals and manage day-to-day operations.

Entrepreneurial traits



Investment & finance
Ability to invest and finance the business venture, nurture it and make it grow.

The Entrepreneur

Be one's own boss
Has a desire to be his own boss. Not content taking directions and instructions from others.

Risk taking
Ability to take risks. Forging ahead when about 75% of the parameters are met.

Puts in long hours
Ability to sacrifice personal requirements and pleasures for the sake of long work hours.

Drive and commitment
Shows a sense of energy and provides the needed push to take the venture ahead.

Not content with a salaried job
The entrepreneur seeks to earn a high income and invests time, effort and money for it.

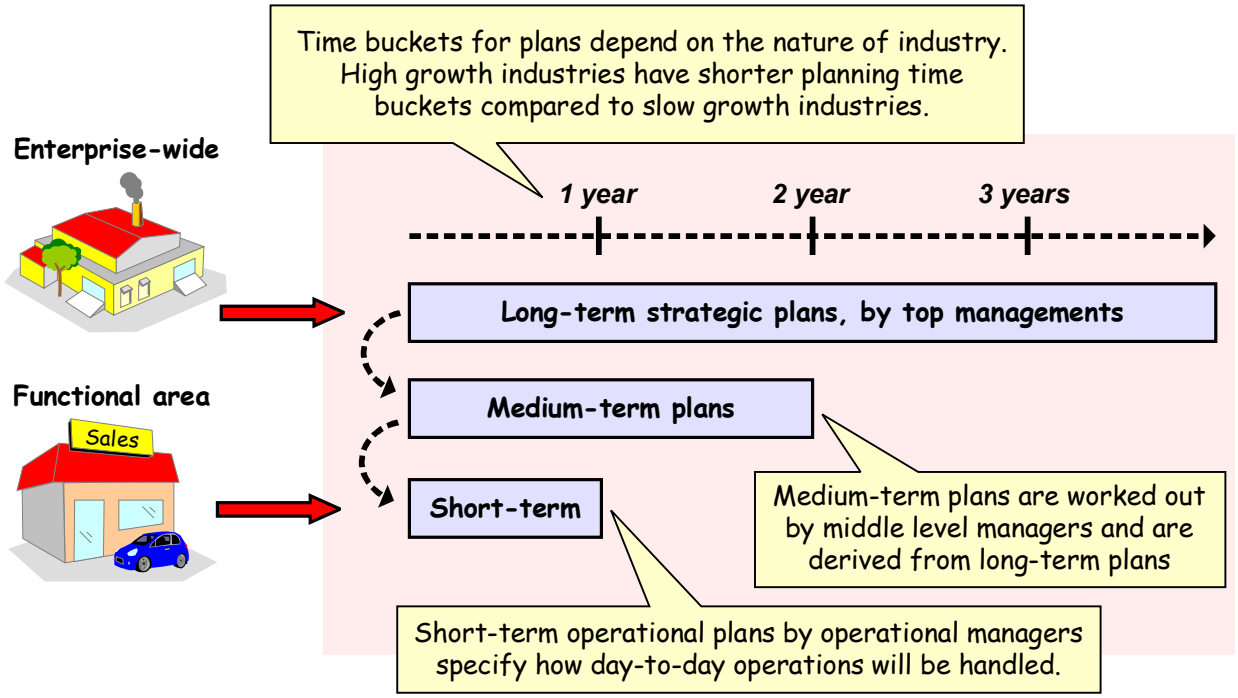
Professional managers hold specialist functional skills that help them perform in their sphere of work. They are accountable for their area of work and are appraised based on results delivered in their respective areas. Entrepreneurs, on the other hand, have a general idea of all functional areas, as well as some specialized functional knowledge. They are accountable for the business as a whole.

An entrepreneur's job is a 24x7 job. A motivated entrepreneur is fully committed to the success of the business and is willing to devote much time, effort and investment into the business. Entrepreneurial qualities can be inculcated into professional managers through training and orientation.

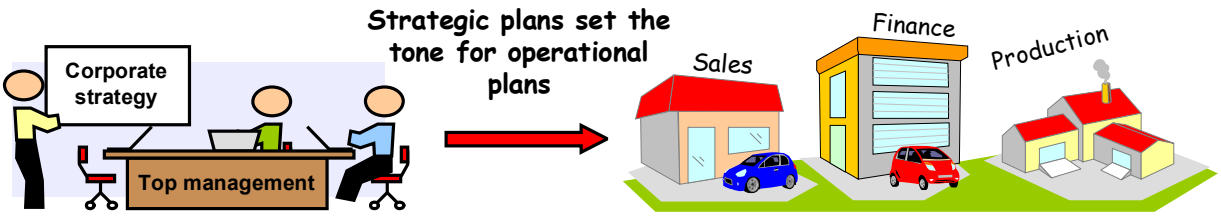
212 - Planning

Planning is the managerial function that involves setting goals for the future and specifying ways to achieve them. It is the starting point of all managerial initiatives and involves the participation of managers from all levels of management. The top management in an organization specifies long-term and strategic plans. Middle level and operational managers chart out medium-term and operational plans. Planning provides the basis for all business and organizational action.

Types of plans



Strategic and operational plans



Strategic plans set the pace at which an organization performs. They include:

1. The corporate plan: Which businesses to aim for, resource allocations?
2. The business plan: Course of action to be followed for a certain line of business.
3. Growth and expansion plans: Strategy to grow into profitable businesses?
4. Contingency plans: Strategy to handle deviations and developments.

Operational plans focus on the day-to-day functioning of the organization.

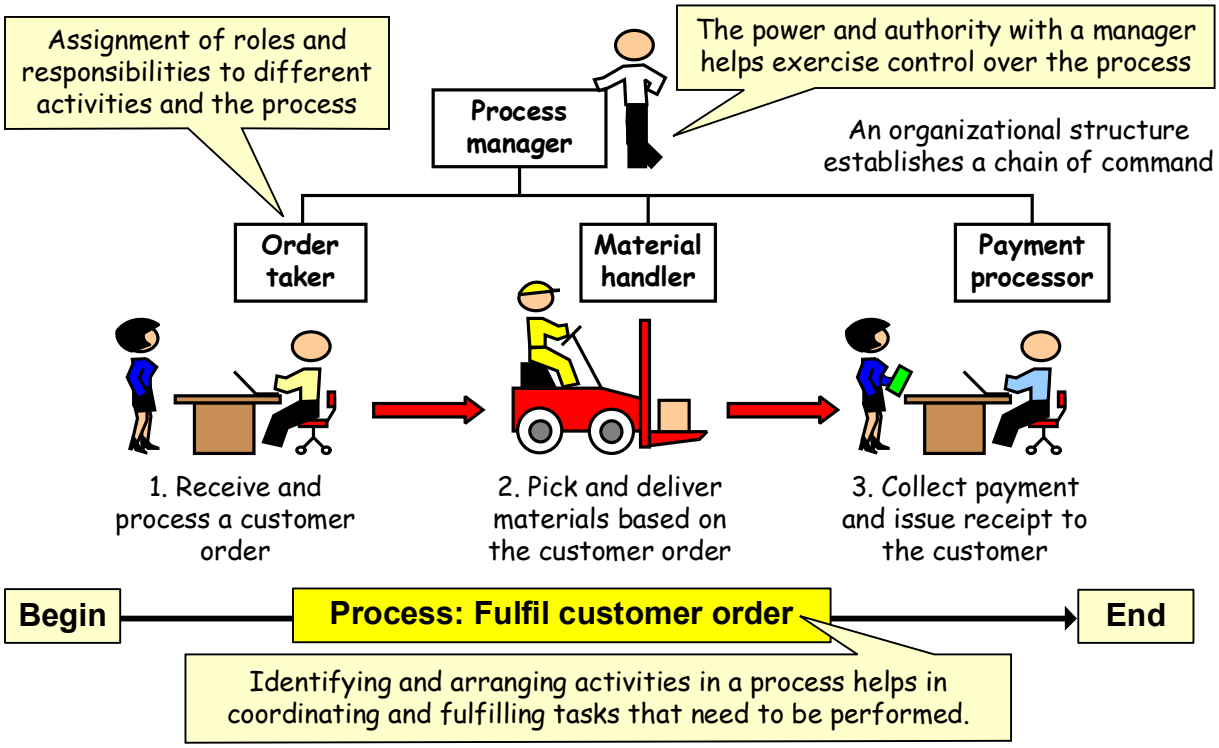
1. Sales plan: Products, markets, salespersons, commissions and discounts, others?
2. Production plan: Products, routing operations, scheduling, capacities?
3. Financial planning: Payables, receivables, cash flow?
4. HR planning: Requirements, wages and salaries, skills training?

213 - Organizing

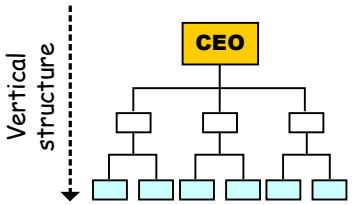
Organizing is the function in which activities and processes to be performed within an enterprise are identified, arranged and assigned, to meet enterprise objectives. This enables better coordination and tighter control over the many activities and processes that need to be performed, to deliver products and services. Organizing helps in delivering a company's products efficiently and at lower costs.

Organizing work

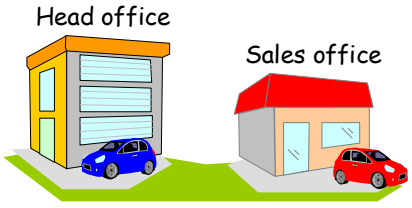
Consider, for example, the process of selling products to customers. The activities identified to complete the process of fulfilling customer orders include order processing, material handling and payment processing.



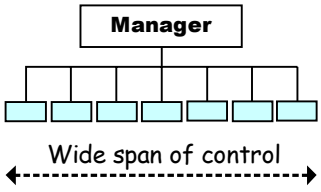
Factors affecting the organization of work



Vertical or horizontal organizational structures?
Horizontal work structures are better suited for jobs where contact with customers is high and employee empowerment is crucial, such as in service based industries.



Centralization & decentralization
While decentralization provides the ability to respond faster to dynamic business situations, centralization helps exercise tighter controls over quality of operations. This is also influenced by the nature of industry and company policy.

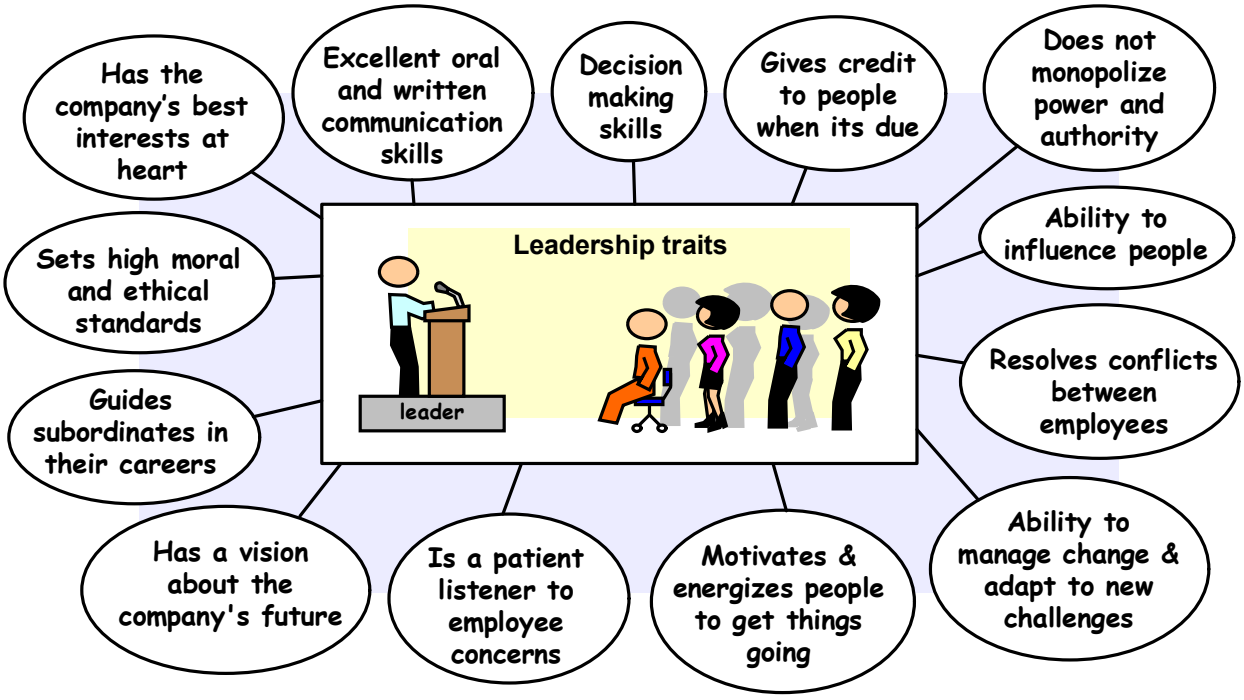


Span of control
A narrow span suggests many organizational levels and higher employee costs. A wide span of control is indicative of greater autonomy and a flat organizational structure.

214 - Leadership in Enterprise Management

Managers with leadership traits and skills can help lead an enterprise effectively while satisfying customer and stakeholder needs. Such managers can motivate and influence employees to perform and realize enterprise objectives while enabling them achieve their personal goals as well. The leadership style a manager employs affects the way an organization performs.

Leadership traits and qualities



Leadership styles

Authoritative
The leader sets goals, issues orders and micro-manages. He has little faith in the ability of his employees. Discussion and participation is not encouraged. Work goes on mainly when the leader is around.

Participative
The leader has faith in the employees and encourages participation and discussion. Employees feel responsible and turn in work of good quality. A sense of belonging prevails within the group. The morale of the group is high.

Laissez-faire
A hands-off approach, where the leader leaves most decision making to employees and is not an active participant in the decision making process. Decision making is left to people taking the initiative.

215 - Communication

Communication is one of the most important managerial skills needed to inform, direct, persuade and motivate employees, customers, suppliers and other stakeholders to an organization. Good communication skills help managers understand and assimilate views of employees, co-workers and business partners. The manner in which a manager communicates affects organizational performance and productivity. It also determines how successful a manager is within the organization, with customers and with other entities.

Understanding the dynamics

Effective communication includes:
1. Listening
2. Speaking
3. Eye contact
4. Positive body language

Communication is also influenced by the surroundings in which it is carried out.

Manager Employee

A manager needs to be aware of:
1. The perception levels and emotional state of the receiver.
2. Nonverbal responses

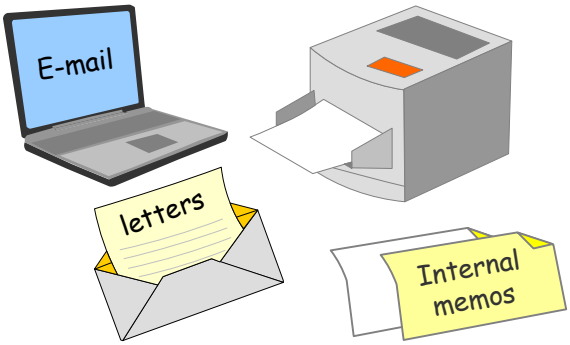
Communicating with an audience

Use the right visual displays, understand what the audience wants. What is their capacity to absorb? Are they positive towards you? Listen to them, invite questions and clarify doubts.

Pick the right surroundings to communicate effectively. Politely ask for all electronic gadgets to be switched off. Focus a group's attention with presentations and visual displays. Engage the audience actively.

When communicating with an audience, preparation is the key. Know the subject and be aware of questions that will likely be asked. Allow for breaks when presentations stretch into long hours. Be a keen listener and respond politely to questions asked. Avoid confrontations with a group. Engage the audience actively and gauge whether they are assimilating what is being communicated. Understand cultural differences when communicating with an international audience.

Effective written communication



1. What is the document going to achieve? Is it to inform, initiate some action or get a response?
2. Who will read it? Is the language and tone appropriate?
3. Is the document brief and concise? Is the main subject stated clearly? Is the right meaning getting across?
4. Are there sensitivities involved that need to be considered? Are there cultural differences that have to be considered?

216 - Decision Making

The most important of all jobs a manager needs to do is to make decisions. Decision making takes place across all the managerial functions of planning, organizing, staffing, directing and controlling. Decision making involves selecting a choice from several different alternatives. The flexibility a manager has on decision making depends on the level he occupies in the organizational structure. In today's highly volatile and dynamic business environments, managers have to rely heavily on information technology for decision making. In reality, most business decisions are made though a combination of intuition, instinct, research, rationality, verification and creativity.

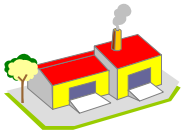
Nature of decisions

Manager

Purchase materials?

Routine decisions : Made on a regular basis and are less ambiguous

From supplier A

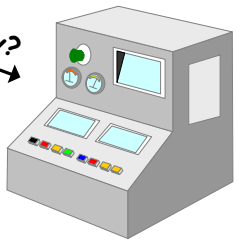


... or supplier B

Such decisions are made routinely and have a precedent that can be followed. The risks and uncertainties associated are low as the outcome of the decision is known.

Introduce new technology?

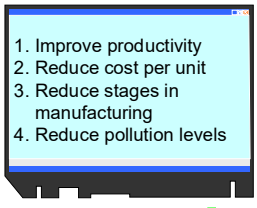
Non-routine decisions : Decisions that are not made on a regular basis.



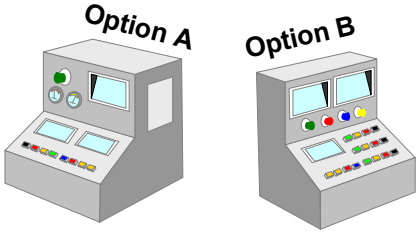
Such non-routine decisions have no precedent to be followed and induce much uncertainty, risk and ambiguity into the decision process. Most critical decision making falls into this category where there is no past knowledge to aid in decision making.

The decision making process

Awareness that a decision has to be made. Ex., technology improvement at the manufacturing facility.

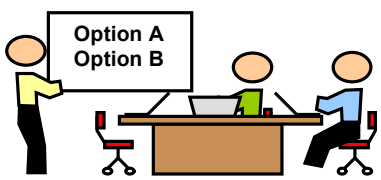


Establish decision criteria. Weigh each criteria and rank them.

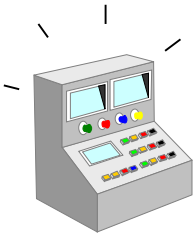


Gather data and shortlist alternatives that meet the criteria.

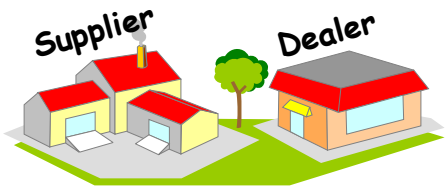
Evaluate options that meet the criteria. Involve all necessary groups and individuals.



Select the alternative that best meets criteria.



Ethical concerns in decision making

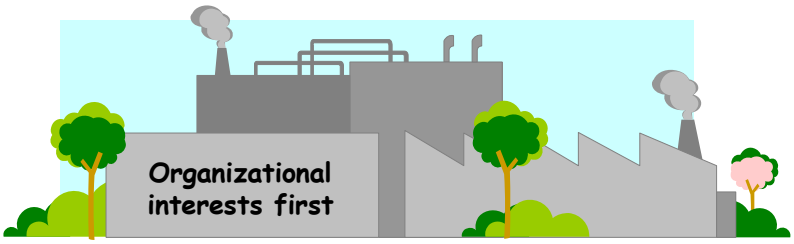


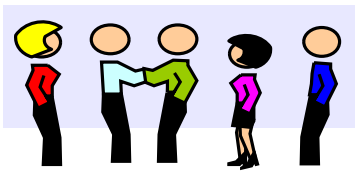
Are managerial decisions prompting ethical business practices with suppliers and customers? Are decisions leading to a stable working environment?

Are all decisions made purely on economic factors, or, are environmental and social factors being considered as well?

Are organizational objectives and requirements being prioritized over personal objectives? Are decisions being taken within the legal framework?

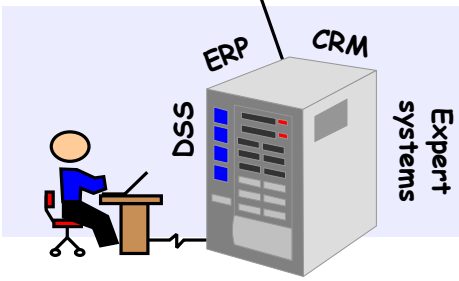
Are decisions fostering a climate of openness and understanding with employees and co-workers? Are other peoples interests considered?

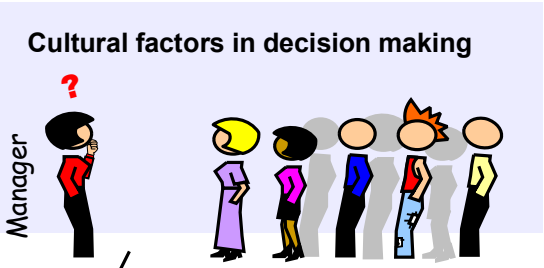




Factors influencing decision making

Technology: Enterprise software technologies like ERP, CRM and others have made many previously non-routine decisions routine. This is especially in the areas of manufacturing, materials, customer qualification and accounting. Artificial intelligence, expert systems, fuzzy logic, neural networks and decision support systems that can be programmed to follow rules and reason intuitively are technologies that are increasingly assuming the role of decision maker.





Culture: As the workplace goes more global, the presence of a diverse workforce from different cultural backgrounds presents new challenges to managers. While some cultures favor a group approach to managing, others prefer an individual approach. A manager also needs to take note of cultural sensitivities when making decisions. Some cultures prefer speed in decisions and actions, while others favor a more thought-out and less risky approach to decision making.

217 - Managerial Control

The managerial function involved with verifying whether activities, tasks and processes within an organization are advancing according to plans and fixed standards. The controlling function also takes corrective actions against deviations from plans and established standards. All forms of managerial control is to avoid, detect or correct problems that stand in the way of meeting enterprise objectives. Budgets, performance reports, authorizations, automated workflows, systems, standards and reports are ways to exercise control.

How does control help?

Consider for example, Mounty bikes, whose sales report for a territory for the quarter January to March is shown below. The sales manager handing that sales rep is analyzing the situation.

Sales report for the quarter Jan-March / Territory : J / Rep: Bob

Product	Plan (Units)	Actual (Units)	+ / - (Units)	Planned dealer visits	Actual dealer visits
Mountain bike	100	75	-25	30	20
Kids bike	200	125	-75	50	25

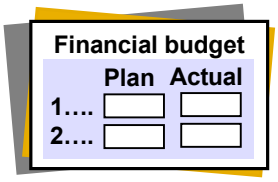
1. Detect & correct bad results
Early information can help take corrective action. The sales manager can take remedial action to fill the shortfall in sales during the first quarter.

2. Verify conformance to standards
Control helps measure whether standards have been met to achieve objectives. In this case, the rep has not kept up the standard number of dealer visits to meet the sales target.

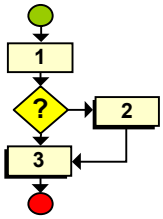
3. Performance appraisal
Control measures help in objectively appraising employee performance. It can be established that the lower number of dealer visits by the rep has resulted in the shortfall in sales.

4. Update and evaluate plans
Control measures help in verifying whether plans reflect business and operational realities. In this example, the sales manager can verify whether the number of dealer visits is possible by a single sales rep, or, whether more reps are needed.

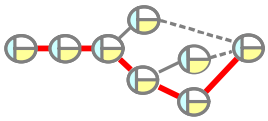
Control measures



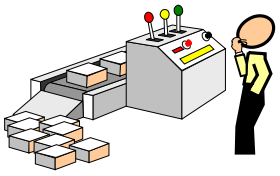
Budgets and reports
1. Production budgets
2. Financial budgets
3. Sales Budgets
4. Admin. Budgets



Automated workflows
1. For authorizations
2. For approvals
3. Set time triggers
4. Process integrity



Control charts
1. Gantt charts
2. PERT charts
3. CPM
4. Break-even charts



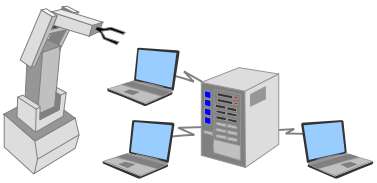
Direct observations
1. Facility tour
2. Handle deviations
3. Record constraints
4. Improve processes

218 - Managing Change

The manager of today needs to handle and manage change on an ongoing basis. Unlike the past, where markets, technologies, habits and business environments were more or less stable, today's scenario is a lot more dynamic and different. Successful managers recognize and deal with such change in a positive way. The ability to manage change in today's business environment to a large extent determines the success of a manager and the organization.

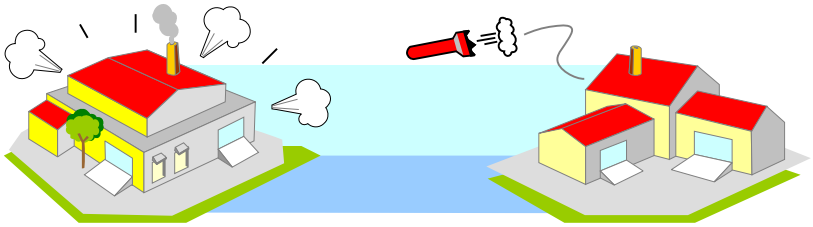
Recognizing change

In products and services
1. Rapid product introductions
2. Increased product obsolescence
3. Increased product customizations
4. Value added services
5. Lesser product maintenance



In technology and processes
1. Increased automation
2. Information technology driven
3. Newer machines
4. Workflow enablement
5. Composite materials

In people and habits
1. Changing habits
2. Global marketplace
3. Buying power
4. Fashion and trends
5. Informed customers

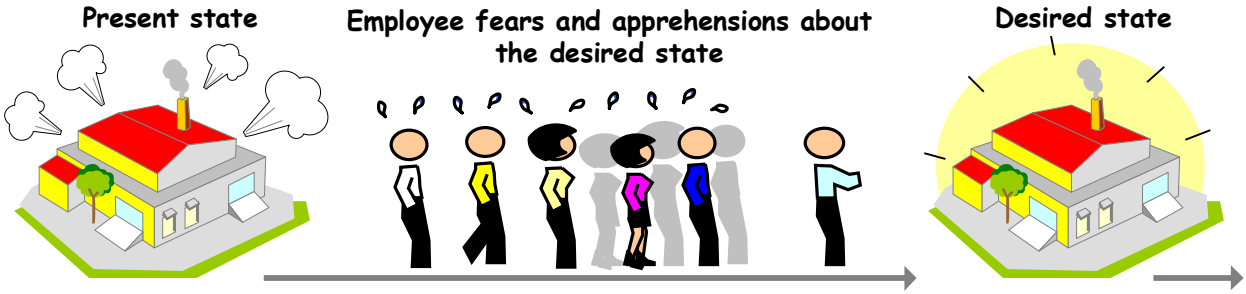


In the organization
1. Systems and processes
2. Structures and procedures
3. Reporting relationships
4. Management style & ownership
5. Methods and approach

Nature of competition
1. Increased global competition
2. Increased product range
3. Cheaper prices
4. Quicker competitive response
5. Financial muscle

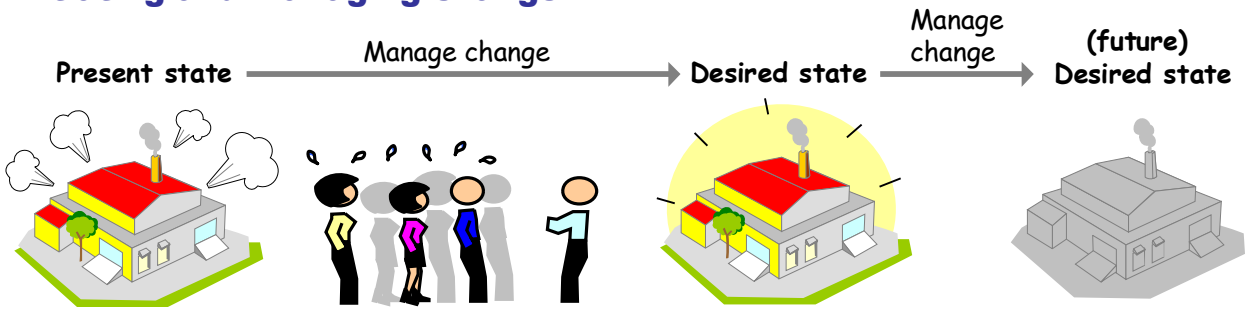
Business environments
1. Increased taxation
2. Environmental concerns
3. Stricter regulations
4. Security concerns
5. Changing policies

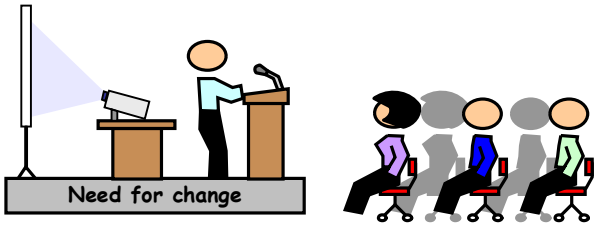
Understanding resistance to change



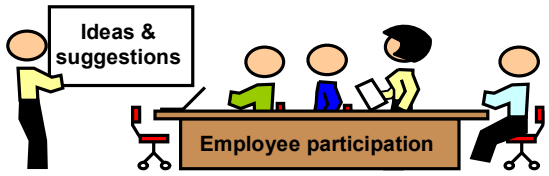
When trying to introduce changes, managers need to be aware of the resistance they are going to face. Most resistance to change arises from employee fears, apprehensions and ambiguity about their roles, incomes, and their ability to handle their new work environment. Employees may try to resist these changes as they fear for their jobs, incomes and the uncertainty associated with having to give up their old working patterns and reporting relationships.

Initiating and managing change

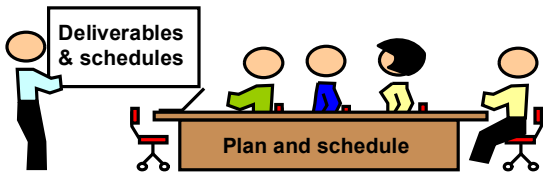




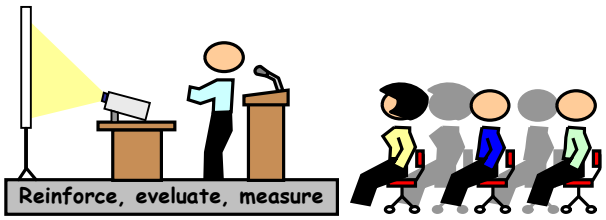
1. Address the need for change
State the nature of change expected; in systems and processes, implementation of enterprise software systems, new products and services, organizational restructuring, others.



2. Encourage employee participation
Allow employees to air their thoughts and views on the nature of change. Encourage them to take an active part in the change process. Aim for changes that are practical. Address employee fears and apprehensions.



3. Plan the change and set a time schedule
Develop a formalized program for change with deliverables and milestones to be reached. Appoint a person fully committed to seeing the changes through. Provide for training and reskilling of employees wherever needed.



4. Implement, evaluate and measure
Carry out the necessary planned changes to the organizational structure, reporting relationships, systems, processes, technologies and others. Reinforce the changes. Develop a system of evaluation and measurement for the changes initiated.

The organization that is able to manage change on a continuous basis is able to:
Better manage its product portfolio, respond faster to the competition, keep existing customers, launch and carry out better value added processes, make use of new technologies to further business interests, develop its market share, create a better working environment and post higher sales and profits.

219 - Contract Management

An international contract is an agreement that stipulates the rights and responsibilities of buyers and sellers in the international sale of goods. The United Nations Vienna convention on contracts has the binding power of law for all contracts between parties located in countries that have ratified this convention. Although the convention does not specify that a written contract is mandatory, most buyers and sellers opt for contracts drafted with the help of legal advisers. This is done to avoid any ambiguity later.

The process of forming a contract

A buyer expresses an intention to buy, through a request for quotation.

Buyer communicates to seller

1

The seller receives and acknowledges the buyer's request.

The buyer receives the seller's offer and evaluates the offer.

Seller sends an offer

2

The seller may also send a proforma invoice which determines the broad guidelines of sales

The seller makes an offer which is firm, precise and addressed to specific people.

The buyer either accepts the offer or makes a counteroffer.

3

Buyer communicates to seller

As long as an offer has not been accepted by a buyer it can be retracted.

The seller receives the counteroffer by the buyer.

The buyer enters into further negotiations with the seller.

Negotiations between the two parts

4

The seller evaluates the counteroffer and enters into further negotiations

Letter of intent between the two parts

After a process of negotiation; on price, quantity, terms of payment and shipment, handling of transit damages and others, buyers and sellers, if satisfied, may then sign a letter of intent before the agreement is finalized.

5

Final contract between the parts

Buyers and sellers then sign a binding contract based on terms that have been mutually agreed on. This process of contract forming and the final signing of contracts needs to be carried out between the legally authorized representatives of both the parts.

6

220 - Nature of a Contract

Although several standard contractual formats exist for the international sale of goods, they have the inconvenience of being nonnegotiable. In practical business scenarios, contracts drawn up keeping the common interests of both parties tend to be more workable. The final contract is a legally binding document which specifies the role of the seller on shipment of goods and the role of the buyer on acceptance of goods and payment. Contracts are entered into only by the authorized legal representatives representing both the parts.

The body of a contract

The contract must mention details of the company and people who are representing them.

The exact nature of products being sold, their units, quantity and price. This is the main reason for the contract and needs to be stated plainly.

The terms and conditions cover important points that govern the contract. They include validity, INCOTERMS, payment details and others terms. It is important for the parties to stamp and sign the document.

Contract for the sale of goods

Contract number: 10031
Contract Date: March 15, 2011

	Seller:	**Buyer:**
	Sams Industries, 101, Marine drive, Genoa – 023474 Italy	Pam Enterprises 202, Str. Pop Savu, Bucharest – 20230 Romania
Tel. No:	+39 2374850	+40 8576705
Fax. No:	+39 2039489	+40 8348558
Represented by:	Bob Villa (Manager)	Radu Ion (Proprietor)
E-Mail	bob.villa@samind.com	radu.ion@pament.ro
Regn. No.	102043	94857
VAT No.	84751	94958

Place of signature: Sinaia, Romania

The buyer and seller have agreed to the sale of goods as per the conditions mentioned below.

Product	Units	Quantity	Unit price	Total price
Item X201	Pieces	1000	EUR 20	EUR 20,000
Item B701	Pieces	1000	EUR 30	EUR 30,000

Terms and conditions:

1. Deliveries to be made DDU to be made as per buyers schedule.
2. Products to be shrink-wrapped to pallet size.
3. Contract is valid for the period: 1 May 2011 to 31 Dec 2011.
4. Payment: 100% advance before dispatch of goods.
5. Payment mode: Wire transfer to sellers account.
6. All additional taxes and expenses will be borne by the buyer.
7. Disputes, if any, will be refereed to an arbitrator.

Sellers signature & stamp **Buyers signature & stamp**