

High Importance Topics

ERP Systems (Ch.7, CE9)

Q7-2: How do enterprise systems solve the problems of departmental silos

Information silo

- Is the condition that exists when data are isolated in separated information systems.
- They come into existence as entities at one organisational level create information systems that meet only their particular needs.
- Although some departments use the same data, they process, catalogue, use and store it differently.
- It's completely natural for a workgroup to develop information systems solely for its own needs, but over time, the existence of these separate systems will result in information silos that cause numerous problems

What are the problems of information silos

- An overall data integrity problem
 - Data is duplicated because of separate databases
 - Data inconsistency
 - There is not the problem of wasted file space since data storage is cheap.
 - Changes to a customer's database in one department may take days or weeks to update it in another department
 - This takes time, and unnecessary delays
 - Many other problems eg.
 - Shipments sent to the wrong address
- Disjointment of business processes
 - Applications are isolated, there must be pre approved orders etc.
 - This makes it difficult for two departments to reconcile their data.
 - This reconciliation or approval process will be slow to grant and possibly erroneous.
 - Numerous phone calls and emails need to be sent.
- Limited information and lack of integrated information
 - Lack of integrated enterprise information.
 - In order for a department (sales and marketing) to check if someone is a preferred customer, they have to make a comparison of order history and payment history data.

- Since there are 2 databases, this can prove a challenge
- Isolated decision lead to organisational inefficiencies
 - When using functional applications, decisions are made in isolation.
 - Different departments all of the same company do not know what each other are doing.
- Increased expense
 - The total higher cost of the problems above in terms of staff wages and opportunity cost of time drawn away from other issues.

How do organisation solve the problems of information silos

- The obvious way to fix information silos is to integrate data into a single database and revise applications and business processes to use that database.
- If that is not possible or practical, another remedy is to allow the isolation, but to manage it in such a way so as to avoid problems.
- Business process reengineering
 - Altering existing and designing new business processes to take advantage of new information systems

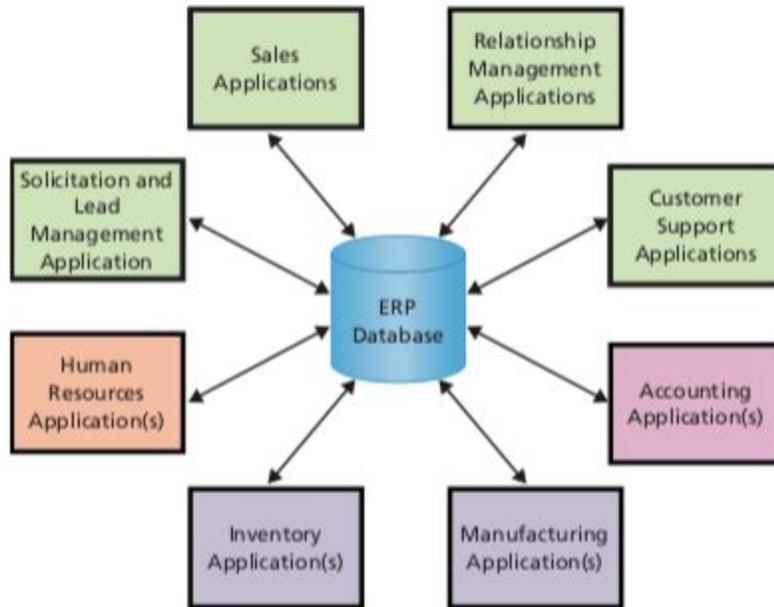
Q7-3 How does ERP support enterprise systems

ERP vendors offer standardised business processes known as inherent processes. These are predesigned procedures for using the software products that were based upon 'industry best practices'. However some parts did not fit because inherent processes are almost never a perfect fit for each unique business. CRM, ERP and EAI are the 3 categories of enterprise applications.

ERP

- Comprises of:
 - A suite of applications
 - A database
 - A set of inherent process for consolidating business operations into a single, consistent, computing platform
- ERP includes the functions of CRM being:
 - Solicitation and lead management application
 - Sales applications
 - Relationship management applications
 - Customer support applications
- But ERP also includes additional functions of
 - Accounting applications
 - Manufacturing applications

- Inventory applications
- Humans resources applications

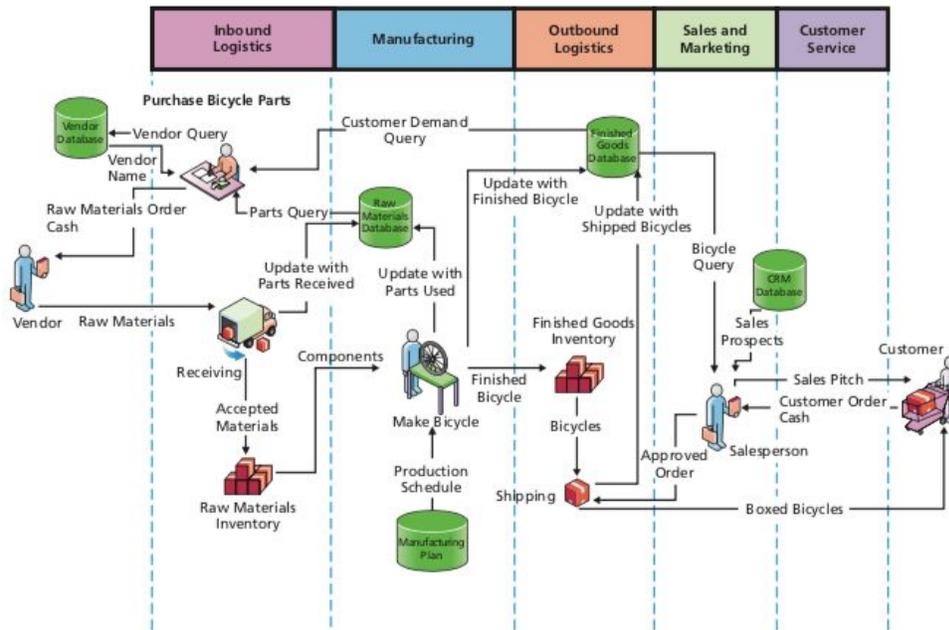


- ERP systems are used to forecast sales and create manufacturing plans and schedules to meet those forecasts
 - Manufacturing schedules include the use of material, equipment and personnel and thus need to incorporate inventory and human resources applications.
 - Because ERP includes accounting, all of these activities are automatically posted in the general ledger and other accounting applications
- SAP is the worldwide leader of ERP vendors.
 - In addition, it offers industry-specific packages that customise its product for particular users

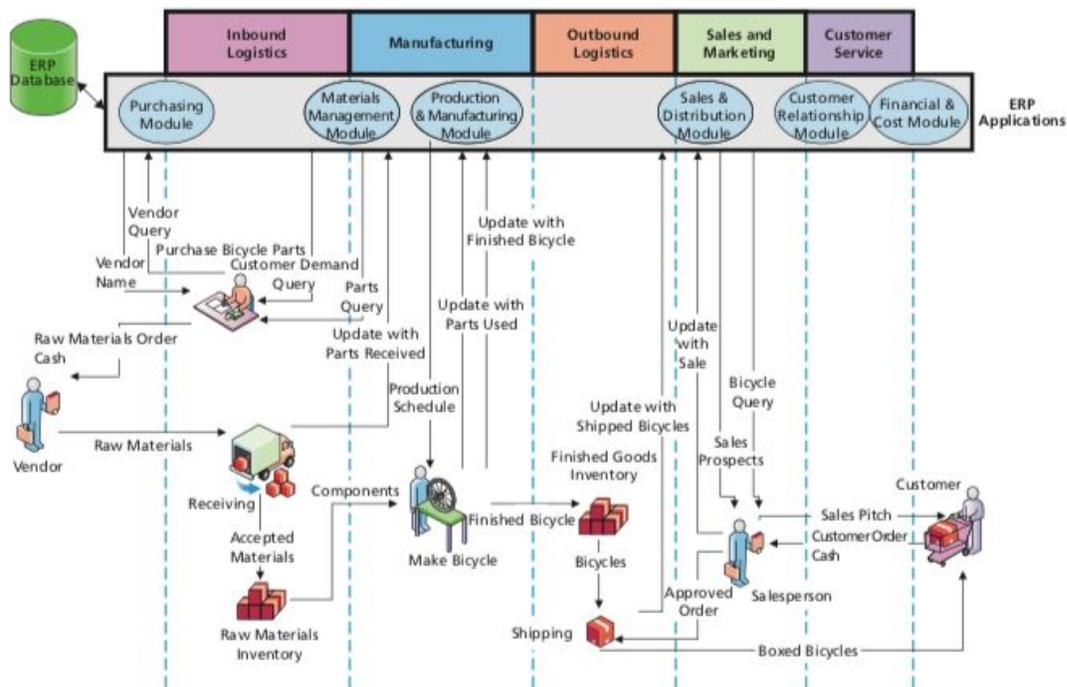
QCE9-1 The following are some questions that ERP aims to answer?

- What procedures should employees and others use to process application programs?
 - Eg. What actions should salespeople take before they approve a large order?
- How does the sales department determine that an order is large? By dollars? By volume?
- Who approves customer credit and how?
- Who approves production capacity and how?
- What actions need to be taken if the customer modifies the order?
- How does management obtain oversight on sales activity?
- Many others also apply

Without an ERP system in place:



With an ERP system in place:



Note the key differences: there is only a singular database, which eliminates the potential problem of information silos from developing, which in turn causes all the associated problems listed above.

QCE9-2 What are the elements of an ERP solution?

For a product to be considered a true ERP product, it MUST include applications that integrate the following

- Supply chain: procurement, sales order processing, inventory management, supplier management and related activities
- Manufacturing: scheduling, capacity planning, quality control, bill of materials and related activities
- CRM: sales prospecting, customer management, marketing, customer support, call center support
- Human resources: payroll, time and attendance, HR management, commission calculations, benefits administration and related activities
- Accounting: general ledger, accounts receivable, accounts payable, cash management, fixed-asset accounting (depreciation).

Hardware

- Organisations are increasingly turning to cloud-based hosting in one of two modes:
 - PaaS - replace an organisation's existing hardware infrastructure with hardware in the cloud
 - Install ERP software and database on the leased cloud hardware
 - The using organisation then manages the ERP software on the cloud hardware.
 - SaaS - acquire a cloud-based ERP solution. SAP, Oracle, Microsoft amongst others.
 - Most ERP vendors offer their ERP software to the customer as a service
- But still in some industries, the law or other regulations require the organisation to maintain physical control over its data. This leads to what is known as a 'hybrid model'.
 - Hybrid model: many ERP customers will store most of their data on cloud servers managed by cloud vendors and store sensitive data on servers they manage themselves

Software: ERP application programs

- Program can be configured to specific ERP customer requirements.
- If this can't be done, then the business needs to adapt to the software, or pay another vendor to write application code to meet its requirements.
 - However this would be expensive both initially and in long-term maintenance costs

Data: ERP databases

- An ERP solution includes database design as well as initial configuration data. However, it does not contain the company's operational sensitive data.
- Larger operational databases contain two types of program code
 - Trigger
 - Computer program stored within the database that runs to keep the database consistent when certain conditions arise
 - Stored procedure
 - Computer program stored in the database that is used to enforce business rules

Procedures: business process procedures

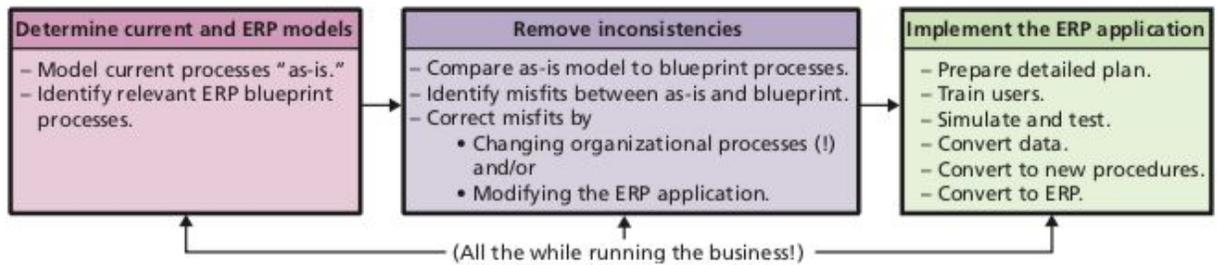
- The 3rd component of an ERP solution is a set of inherent procedures that implement standard business procedures. There are thousands of procedures that enable the ERP customer organisation to accomplish its work using the applications provided by the vendor.
- The inherent process that are defined in the ERP solution are referred to as “process blueprints”

People: training and consulting

- Because of the complexity and difficulty of implementing and using an ERP solution, vendors developed training curricula and numerous classes for preparing employees.
- SAP operates universities in which customers and potential customers receive training both before and after the ERP implementation
- For efficiency purposes, ERP vendors typically conduct classes with some of the organisation's employees, to become in-house-trainers.
- Consulting is also available as a method of support and knowledge.

QCE9-3 How are ERP systems implemented and upgraded

- Use of the “as-is model” helps to summarise the major tasks in the implementation of an ERP application
 - Managers and analysts compare the as-is process to the ERP process blueprints and note the differences. The company then must find ways to reconcile the differences by either changing existing business processes or adjusting the ERP application.

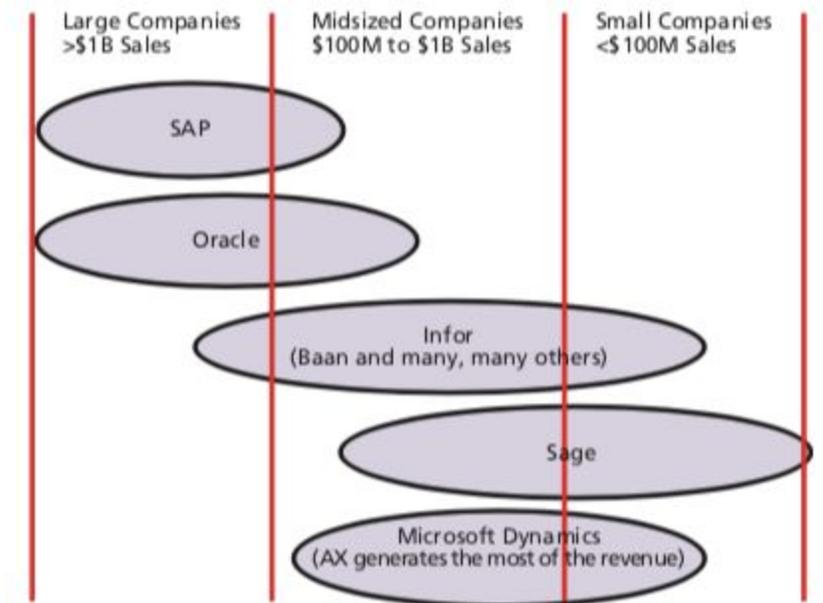


QCE9-4 What types of organisations use ERP

- ERP by industry type
 - These days, ERP vendors offer industry-specific solutions
 - Eg. SAP has 24 industry-specific versions of its ERP products
- ERP by organisation size
 - The value chains and business processes are similar for small and large organisations.
 - However there is one important difference:
 - Larger companies have a wide availability of skilled IT personnel headed up by the CIO.
 - Smaller businesses may only employ 1 or 2 IT specialists who do not only manage the ERP system but the entire IS department as well.
 - Therefore, for small businesses, smaller and simpler ERP solutions are common

QCE9-5 How do the major ERP vendors compare

Company	Market Share	Remarks
SAP	25 percent	Market leader in client-server implementations. Expensive. Many consider it to be the gold standard of ERP.
Oracle	13 percent	Intensely competitive company with strong technology base. Large customer base. Flexible SOA architecture. Leveraging technology base into innovative and effective cloud-based solutions. Strong challenge to SAP market leadership. Claims number 1 in CRM.
Sage	6 percent	Sage adapted many of its legacy applications and solutions for the cloud and for mobile computing. Offers inexpensive, cloud-based solutions for startups and small businesses. Broad product suite.
Infor	6 percent	Many solutions, not integrated, particularly specialized for manufacturing and supply chain management. Will evolve with revolution in 3D manufacturing practices.
Microsoft	5 percent	Microsoft AX, which is popular in Europe, is primarily used in manufacturing. Other products have smaller revenue. Dynamics CRM is offered as SaaS, but no full ERP solution is offered in the cloud.



Specifics of each vendor

- SAP
 - Gold standard of ERP products
 - Uses thick-client, client/server architecture
 - Because of its installed base, it cannot dramatically move out of classic SAP to cloud-based solutions.
 - SAP HANNA
 - However, SAP recently announced SAP HANNA, which is a PaaS ERP offering, that serves as the foundation of their long-term cloud solution.
 - It can be used as an ERP solution by itself or it can be integrated with existing, on-premises SAP installations.
 - Problems
 - Expensive, because of gold standard
 - Providing the benefits of the cloud to customers who want the economic benefits of the cloud on one hand, but don't want to disrupt their organisation and go through the installation of a whole new ERP system
- Oracle
 - Intensely competitive company with a deep base of technology and high-quality technical staff.
 - Once developed some of its ERP products in-house and complemented those products with the acquisition of high quality HR products and high quality CRM products
 - Typically produce fully featured products with superior performance.