

## **What Is An ERP?**

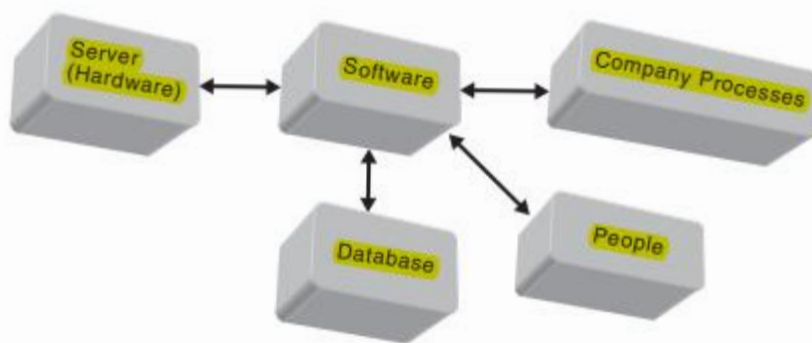
Enterprise resource planning (ERP) systems are the specific kind of enterprise systems to integrate data across and be comprehensive in supporting all the major functions of the organization.

### **ERP System Components:**

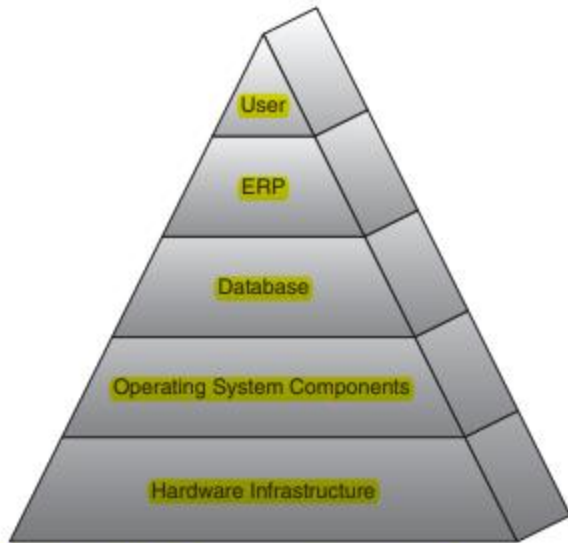
An ERP system, like its information system counterpart, has similar components such as hardware, software, database, information, process, and people. These components work together to achieve an organization's goal of enhanced efficiency and effectiveness in their business processes.

An ERP system depends on hardware (i.e., servers and peripherals), software (i.e., operating systems and database), information (i.e., organizational data from internal and external resources), process (i.e., business processes, procedures, and policies), and people (i.e., end users and IT staff) to perform the input, process, and output phases of a system.

The key components for an ERP implementation are hardware, software, database, processes, and people.



**FIGURE 1-3** ERP Components



**FIGURE 1-4** ERP Components Integration

## **ERP Architecture:**

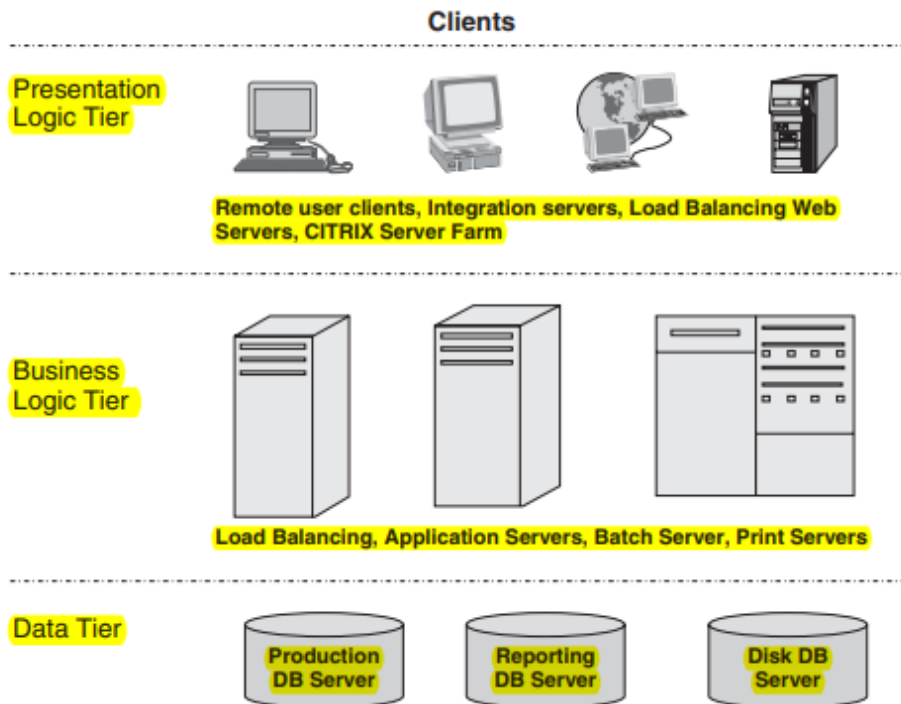
The architecture of the ERP implementation influences the cost, maintenance, and the use of the system. A flexible architecture is best because it allows for scalability as the needs of the organization change and grow. A system's architecture is a blueprint of the actual ERP system and transforms the high-level ERP implementation strategy into an information flow with interrelationships in the organization.

In the architecture of a large university, an ERP system can be very complex and must be designed and tested thoroughly before implementing it in the organization.

Many organizations often make the mistake of ignoring the system architecture stage and jumping directly into ERP implementation because they have planned a "vanilla" or "as-is" implementation.

The **two types of architectures** for an ERP system are **logical and physical or tiered**. The logical architecture, shown in Figure 1-6, focuses on supporting the requirements of the end users, whereas the physical architecture focuses on the efficiency (cost, response time, etc.) of the system. The logical architecture provides the database schemas of entities and relationships at the lowest tier, followed by the core business processes and business logic handled by the system

at the second tier. The third tier provides details on the applications that support the various business functions built in to the ERP system. The end users do not ever see the first and second tiers because they interact primarily with the client–user interface application tier that provides them access to the functional applications.

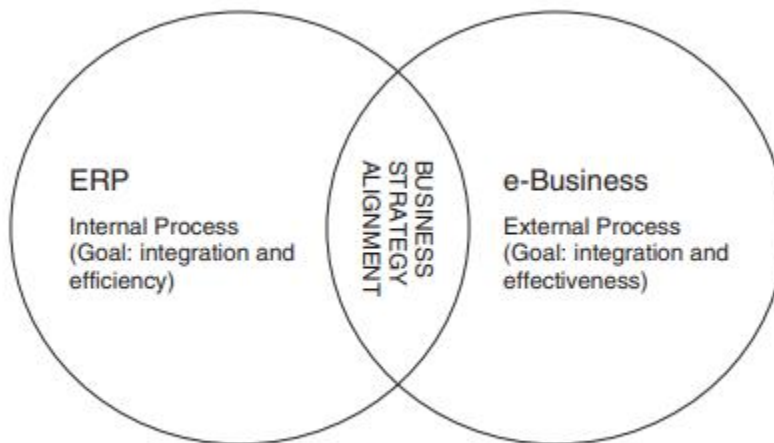


**FIGURE 1-7** Tiered Architecture Example of ERP System

## **e-Business and ERP:**

| <b>e-Business:</b>  | <b>ERP:</b>   |
|---|---|
| e-Business technology focus has been on linking a company with its external partners and stakeholders.                                      | ERP focus has been on integrating the functional silos of an organization into an enterprise application. |
| e-Business is a disruptive technology.  | ERP is adaptive technology.   |
| Finally, the early focus of e-Business was on communication (e-mail), collaboration (calendaring, scheduling, group support), marketing and | The focus of ERP systems was mainly on data sharing, systems integration, business process change, and    |

|  |  |
|--|--|
| promotion (Web sites), and electronic commerce. These can all be considered front-office functions that involve user and/or customer interactions. | improving decision making through the access of data from a single source. |
|--|--|



**FIGURE 1-8** e-Business and ERP

### The system benefits and limitations of ERP systems:

| <b>Benefits:</b>  | <b>Limitations:</b>  |
|---|--|
| Integration of data and applications across functional areas of the organization. This means data can be entered once and used by all applications in the organization, improving accuracy and quality of the data. | Data conversion and transformation from an old to a new system can be extremely tedious and complex process.                     |
| Consistency of the user interface across various applications means less employee training, better productivity, and cross-functional job movements.  | Consolidation of IT hardware, software, and people resources can be cumbersome and difficult to attain.                          |
| Maintenance and support of the system improves as the IT staff is centralized and is trained to support   | Retraining of IT staff and personnel to the new ERP system can produce resistance and reduce productivity over a period of time. |

|   |   |
|---|---|
| the needs of users across the organization.   |   |
| Security of data and applications is enhanced due to better controls and centralization of hardware, software, and network facilities | Complexity of installing, configuring, and maintaining the system increases, thereby requiring specialized IT staff, hardware, network, and software resources. |

### **Business Benefits and Limitations of ERP:**

| <b>Benefits</b>   | <b>Limitations:</b>   |
|---|---|
| Agility of the organization in terms of responding to the changes in the environment for growth and maintaining its market share in the industry. | Change of business roles and department boundaries can create upheaval and resistance to the new system.  |
| Linking and exchanging information in real time with its supply chain partners can improve efficiency and lower costs of products and services.   | Retraining of all employees with the new system can be costly and time consuming.   |
| Efficiency of business processes are enhanced due to business process reengineering of organization functions.                                    | High initial costs of purchasing software, consultant costs, and disrupting the work flow of employees.   |
| Quality of customer service is better and quicker as information flows both up and down the organization hierarchy and across all business units  | To a degree, the company implementing vanilla (as-is) ERP may lose its competitive advantage when all businesses have the same standardized business processes. |
| Sharing of information across the functional departments means employees can collaborate easily with each other and work in teams.                |   |
| Reduction in cycle time in the supply chain from procurement of raw materials to production, distribution, warehousing, and collection.           |   |

## **ERP IMPLEMENTATION:**

ERP systems are continuously changing and evolving to provide the organization with a new way of looking at business processes and decision making.

Organizations are also continuously changing to match their environments. Both need the flexibility to adapt with each other in order to be successful. System implementations are generally very complex, time consuming, and resource intensive. Because of its size and impact on the organization, an ERP system only increases this complexity; therefore, before implementing ERP, an organization has to plan and understand the life cycle of these systems.

### **Business Process Management:**

Business process management is the understanding, visibility, and control of business processes. A business process represents a discrete series of activities or tasks that can span people, applications, business activities, and organizations.

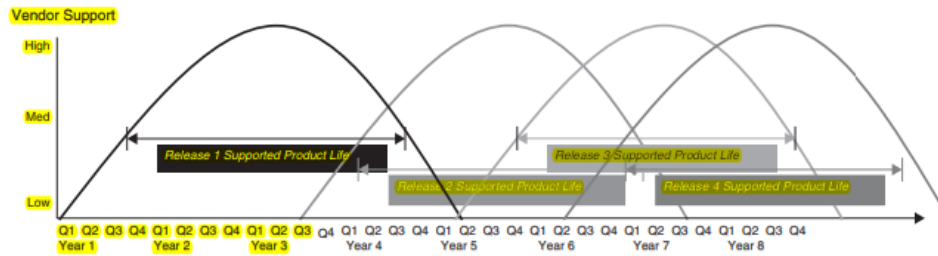
The real value of BPM comes from gaining visibility and control of the business process. BPM can activate the process, orchestrate the people, data, and systems that are involved in the process, give the business managers a detailed view into how the process is operating and where the bottlenecks are occurring, and highlight possible process optimization.

### **ERP Life Cycle:**

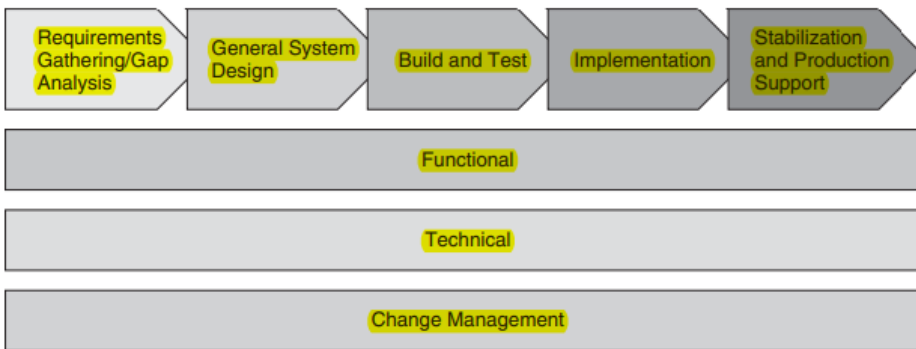
ERP system implementations are very risky, and using a well-defined project plan with a proven methodology will assist in managing those risks.

There must be a strong well-communicated need to make the change from the existing information systems/applications to an ERP system before starting any ERP development or implementation.

There are many methodologies documented and used in system implementations. Figure 1-10 shows a sample ERP implementation methodology in which there are five phases of the life cycle from requirement gathering analysis to stabilization and production support, which are applied to the three levels of ERP implementation: functional, technical, and organizational.



## ERP Implementation Strategies:



Every ERP vendor upgrades their system on a regular basis, adding functionality, fixing problems, and generally keeping the product current with the ever-changing technology innovations to remain competitive.

## Software and Vendor Selection:

The vendor needs to be evaluated on the following:

- Business functions or modules supported by their software
- Features and integration capabilities of the software
- Financial viability of the vendor as well as length of time they have been in business
- Licensing and upgrade policies
- Customer service and help desk support
- Total cost of ownership
- IT infrastructure requirements
- Third-party software integration

- Legacy systems support and integration
- Consulting and training services
- Future goals and plans for the short and long term

## **PEOPLE AND ORGANIZATION:**

### **Project Management:**

A successful project manager must be process driven and understand the value of an implementation methodology.



### **Role of Consultants:**

This model has five levels of organizational capability, with level one being the least capable and level five the most capable. If an organization's assessment criterion is on the lower end of the model, the organization should look seriously at hiring a consulting company as an implementation partner to assist and possibly lead the organization through the implementation.