

ERP systems

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Definition

- Enterprise Resource Planning (ERP) refers to large commercial software packages that promise a seamless integration of information flow through an organization by combining various sources of information into a single software application and a single database.
- E.g. SAP, Oracle, IBM, PeopleSoft



Table 1: Advantage of ERP systems

What benefit

Reliable information access

Avoid data and operations redundancy

Delivery and Cycle time reduction

Cost reduction

Easy adaptability

Improved scalability

Improved maintenance

Global Outreach

E-Commerce, E-Business

How

Common DBMS, Consistent and accurate data, improved reports.

Modules access same data from the central database, avoids multiple data input and update operations.

Minimizes retrieving and reporting delays.

Time savings, improved control by enterprise-wide analysis of organisational decisions.

Changes in business processes easy to adapt and restructure.

Structured and modular design with "add-ons"

Vendor supported long term contract as part of the system procurement.

Extended modules such as CRM and SCM.

Internet Commerce, Collaborative culture.

Table 2: Disadvantages of ERP systems

Disadvantage	How to overcome
Time consuming	Minimize sensitive issues, internal politics and raise general consensus.
Expensive	Cost may vary from thousands of dollars to millions. Business process re-engineering cost may be extremely high.
Conformity of the modules	The architecture and components of the selected system should conform to the business processes, culture and strategic goals of the organisation.
Vendor dependence	Single vendor vs multivendor consideration, options for "best of breeds", long term committed support.
Feature and complexity	ERP system may have too many features and modules that the user needs to consider carefully and implement the needful only.
Scalability and global outreach	Look for vendor investment in R&D, long term commitment to product and services, consider Internet-enabled systems.
Extended ERP capability	Consider middle-ware "add-on" facilities and extended modules such as CRM and SCM

Different Modules

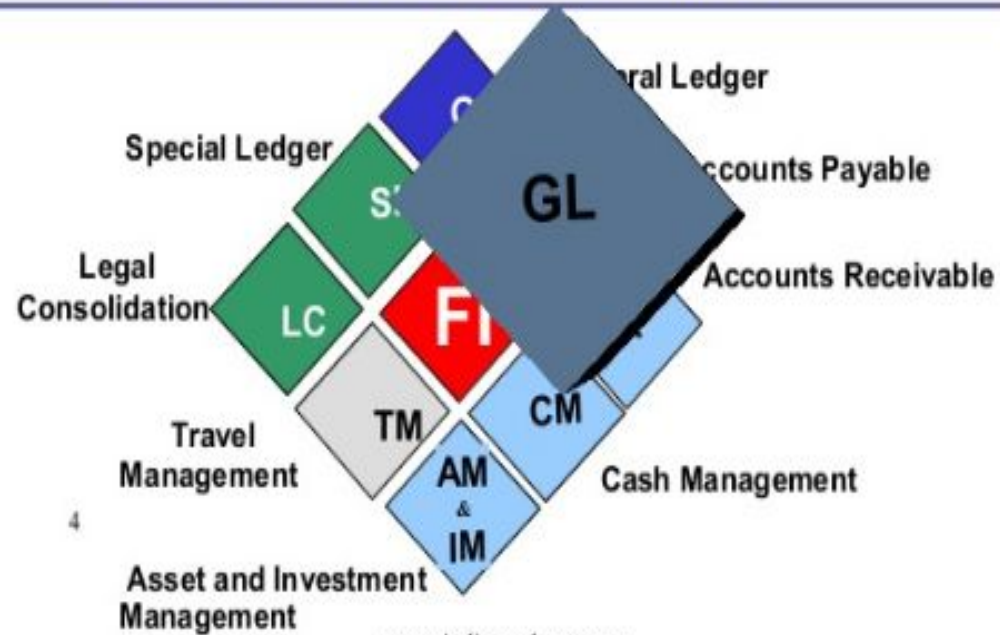
Different ERP vendors provide ERP systems with some degree of specialty but the core modules are almost the same for all of them. Some of the core ERP modules found in the successful ERP systems are the following:

- Accounting management
- Financial management
- Manufacturing management
- Production management
- Transportation management
- Sales & Distribution management
- Human resources management
- Supply chain management
- Customer relationship management

ERP modules

Financial accounting	FI	Controlling	CO	Asset Management	AM
Project System	PS	Workflow	WF	Industry Solutions	IS
Human Resources	HR	Plant maintenance	PM	Quality Management	QM
Production Planning	PP	Materials Management	MM	Sales & Distribution	SD
Investment Management	IM	Enterprise Controlling	EC	Treasury	TR

FI - Financial Accounting Modules



Create Notification of Absence

Application Data

Number: 6973 Status: New

Personal Data

Name: Stanley Chai

Department:

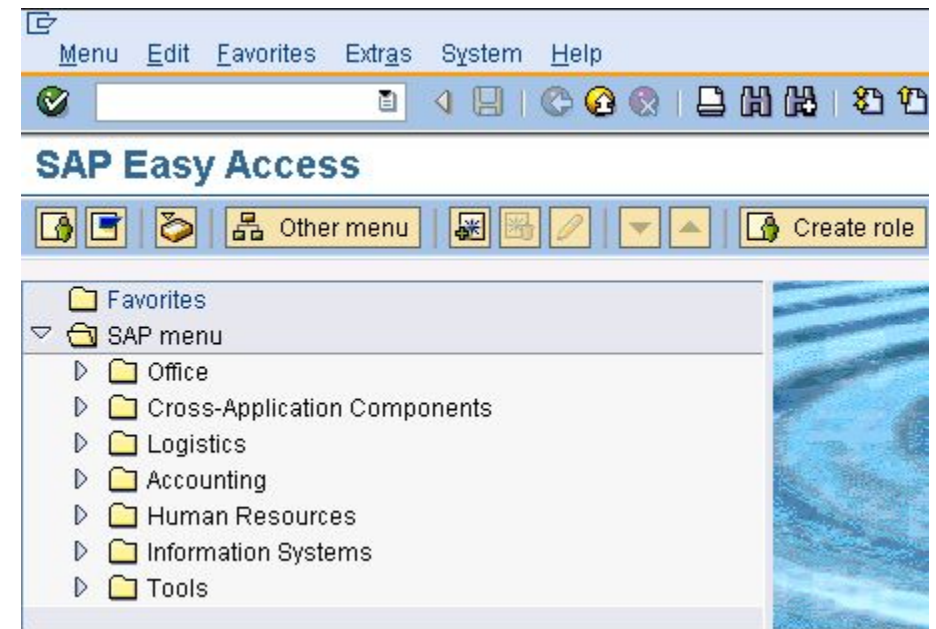
Personnel no.: Cost center:

Absence Data

	By	to	Hours	Leave Type
Leave 1	31.12.2009	31.12.2009		Vacation
Leave 2				Vacation
Leave 3				Vacation

Reason:

Contact at:




Components of SAP-CO

- Cost Center Accounting
- Profit Center Accounting
- Internal Orders
- Product Costing
- Profitability Analysis

Material Management

Plant data / stor. 2 Warehouse Mgmt 1 Warehouse Mgmt 2 Quality man...

Material 10599999 LCD TV 40" 

Plant 0001 **1** Werk 0001

Whse No. 001 **2** Central whse (full WM)

General data


Base Unit of Measure	PCS	Haz. material number	
WM unit	3	Gross Weight	26,988 KG
Unit of issue	4	Volume	
Proposed UoM frm mat	5	Capacity usage	/
Picking storage type		<input type="checkbox"/> Appr.batch rec. req.	
<input type="checkbox"/> Batch management			

Storage strategies

Stock removal	6	Stock placement	7
Storage Section Ind.	8	Bulk storage	9
Special movement		<input type="checkbox"/> Message to IM	
2-step picking		<input type="checkbox"/> Allow addn to stock	

Quality Management

Warehouse Mgmt 2 Quality management Accounting 1 Accounting 2

Material 10599999 LCD TV 40" 

Plant 0001 Werk 0001

General data

Base Unit of Measure	PCS	Piece	1 <input type="checkbox"/> Inspection setup	Insp. setup
Unit of issue			2 <input type="checkbox"/> Post to insp. stock	
QM material auth.	3		<input type="checkbox"/> Documentation reqd	
GR Processing Time	2	days	Inspection interval	4 days
Catalog profile				
Plant-sp.matl status			Valid from	

Procurement data

<input type="checkbox"/> QM proc. active	5	
QM Control Key	6	
Certificate type	7	
Target QM system	8	
<input type="checkbox"/> Tech. delivery terms		

Sales

Classification ☒ Sales: sales org. 1 ☐ Sales: sales org. 2 ☐ Sales: General/Plant

General data

Base Unit of Measure Piece Division Product Div...

Sales unit ☐ Sales unit not var.

Unit of Measure Grp

X-distr.chain status Valid from

DChain-spec. status Valid from

Delivering Plant

Material Group

☒ Cash discount Conditions

Tax data

C..	Country	T...	Tax category	Tax classification
DE	Germany	MWSI	Output Tax	1 Full tax

Entry 1 of 1

Quantity stipulations

Min.order qty PCS Min. dely qty PCS

Delivery unit PAL

Rnding Profile

Costing

Costing 1 ☒ Costing 2 ☐ Basic data 1

Material LCD TV 40"

Plant Werk 0001

Standard Cost Estimate

Cost Estimate Future Current Previous

Period / Fiscal Year

Planned price 0,00 0,00

Standard price 0,00

Planned prices

Planned price	Planned price date
Planned price 1 <input type="text"/>	Planned price date 1 <input type="text"/>
Planned price 2 <input type="text"/>	Planned price date 2 <input type="text"/>
Planned price 3 <input type="text"/>	Planned price date 3 <input type="text"/>

Valuation Data 1

Valuation Class <input type="text" value="7920"/>	Valuation Category <input type="text"/>
VC: Sales order stk <input type="text"/>	Proj. stk val. class <input type="text"/>
Price Control <input type="text" value="S"/>	Current period <input type="text" value="3 1998"/>
Price Unit <input type="text" value="1"/>	Currency <input type="text" value="EUR"/>
Moving price <input type="text"/>	Standard price <input type="text" value="0,00"/>

ERP life cycle

- **Adoption decision phase** During this phase managers examine the need for a new ERP system while selecting the general information system approach that will best address the critical business challenges and improve the organizational strategy. This decision phase includes the definition of system requirements, its goals and benefits, and an analysis of the impact of adoption at a business and organizational level.

- **Acquisition phase** This phase consists on the selection of a ERP product that best fits the requirements of the organization, thus minimizing the need for customization. A consulting company is also selected to help in the next phases of the ERP life-cycle especially in the implementation phase. Factors such as price, training and maintenance services are analyzed and, the contractual agreement is defined. In this phase, it is also important to make an analysis of the return on investment of the selected product.

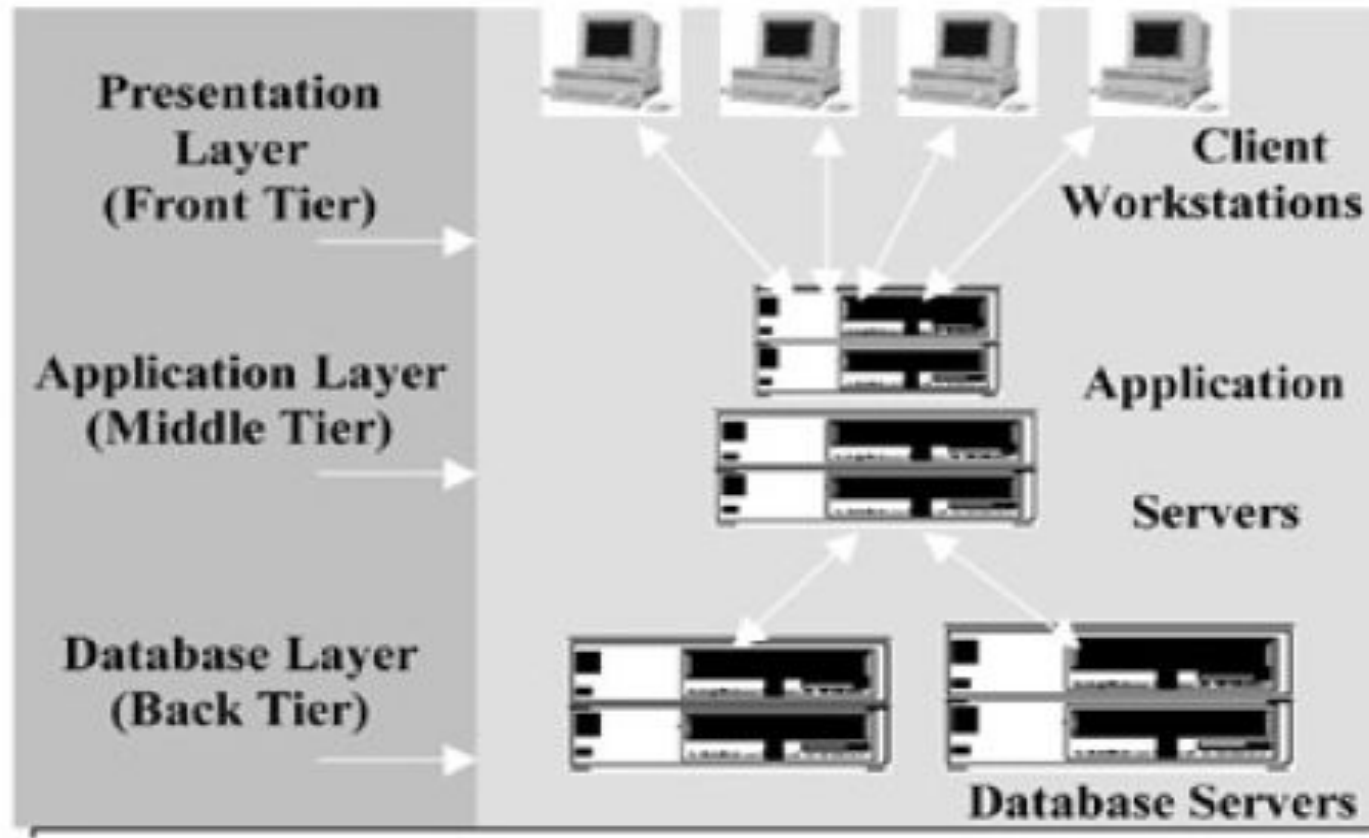
- **Implementation phase** This phase include the customization or parameterization and adaptation of the ERP package to the needs of the organization. Usually this task is made with the help of consultants who provide implementation methodologies, know-how and training.
- **Use and maintenance phase** This phase covers the personal of time where the ERP product is selected in a way that returns benefits and minimizes disruption. During this phase, one must be aware of the aspects related to functionality, usability and adequacy to the organizational and business processes. Once a system is implemented, it must be maintained, because malfunctions have to be corrected, special optimization requests have to be met, and general systems improvements have to be made.

- **Evolution phase** This phase corresponds to the integration of more capabilities into the ERP system, providing new benefits, such as advanced planning and scheduling, supply-chain management, customer relationship management, workflow, and expanding the frontiers to external collaboration with other partners.
- **Retirement phase** This phase corresponds to the stage when, with the appearance of new technologies or the inadequacy of the ERP system or approach to the business needs, managers decide if they will substitute the ERP software with other information system approach more adequate to the organizational needs of the moment.

Three layers of ERP

- **Presentation Layer:** Graphical User Interface (GUI) or browser for data entry or accessing system functions.
- **Application Layer:** Business rules, functions, logic, programs acting on data received/transferred from/to the database servers.
- **Database Layer:** Management of the organizations' operational or transactional data including metadata. Mostly employs industry standard RDBMS with structured query language (SQL) provisions

Diagram



ERP and Internet

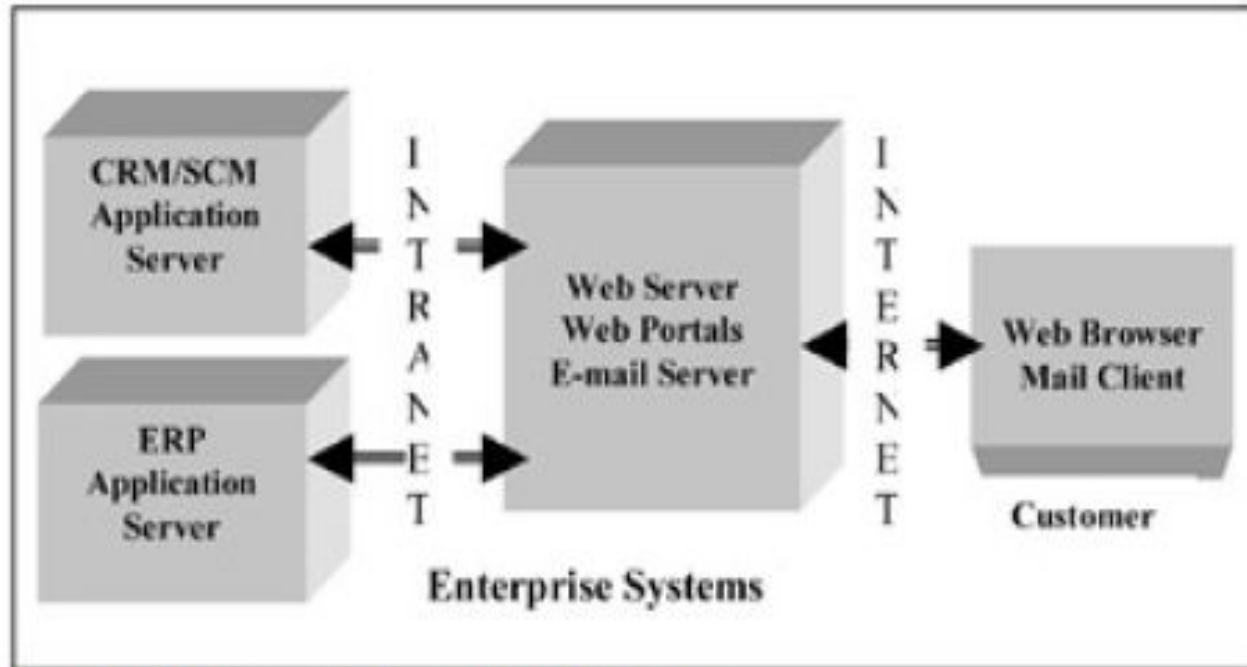


Figure 4: Web-enabled extended ERP system

Costs and ERP life cycle

Table 1: Costs items along the ERP life-cycle

Phase	Tangible Costs	Intangible Costs
Adoption		Decision making costs
Acquisition	Consultancy Hardware Software licenses	Decision making costs Opportunity costs
Implementation	Consultancy Training Human resources System specification	Customization, conversion and da Time dedicated by staff Business process re.engineering
Usage and Maintenance	System Reconfiguration System adaptation Cost of system failure	Indirect costs of system failure Lost of competitiveness
Evolution	Cost of new applications	
Retirement		Opportunity costs Decision making costs