



ERP System

ACMA4022- Supply Chain Informatics

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Session overviews

- Definition & concept of ERP System
- Characteristics of ERP system
- Evolution of ERP
- ERP Implementation & expected results
- Challenges associated with ERP systems
- Key feature & modules of ERP
- Introduction to SAP ERP
- SAP ERP Modules & functionality



Enterprise resource planning (ERP) is a system that integrates all critical business processes in an organization under a single centralized database, then automizes & optimizes the flow of Information, Materials and Cash.

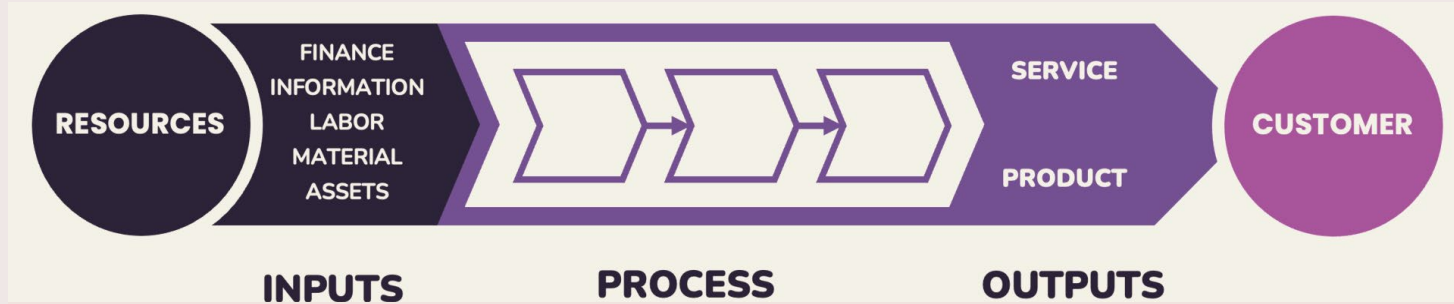
How ERP system works reflects from how business perform.

It supports the process workflows & utilization of resources from a comprehensive database with built-in analytics reports function

What is ERP?

The logo for Odoo, featuring the word "odoo" in a lowercase, rounded, purple font.The logo for Acumatica, featuring a blue location pin icon above the word "Acumatica" in a blue sans-serif font, with the tagline "The Cloud ERP" in a smaller blue font below it.The logo for NetSuite, featuring a blue stylized "N" icon followed by the word "NETSUITE" in a bold, blue, uppercase sans-serif font.The logo for Microsoft Dynamics 365, featuring a blue square icon with a white triangle inside, followed by the text "Microsoft Dynamics 365" in a blue sans-serif font.The logo for Oracle Cloud ERP, featuring the word "ORACLE" in a bold, red, uppercase sans-serif font, with "Cloud ERP" in a smaller, blue, lowercase sans-serif font below it.The logo for Workday, featuring a yellow arc icon above the word "workday" in a blue, lowercase sans-serif font.The logo for SAP, featuring the word "SAP" in a bold, blue, uppercase sans-serif font, with a blue diagonal line to the right of the letters.The logo for Epicor, featuring the word "EPICOR" in a bold, blue, uppercase sans-serif font.The logo for Infor Syteline Demo, featuring the word "infor" in a red square icon, followed by the text "Syteline Demo" in a blue sans-serif font.The logo for Genius ERP, featuring the word "Genius" in a bold, blue, sans-serif font, with "ERP" in a smaller, blue, uppercase sans-serif font below it, and a blue gear icon to the right.The logo for Where Four, featuring a purple gear icon above the word "WHERE" in a bold, black, uppercase sans-serif font, with "FOUR" in a smaller, black, uppercase sans-serif font below it.The logo for Syspro, featuring a green and blue square icon above the word "SYSPRO" in a bold, blue, uppercase sans-serif font.

Understanding Business Processes



- **Business process** is a collection of activities that takes one or more inputs and creates an output that is value to the customer in the form of product/service.
- The customer may be the external customer who buys the product or service, or an internal customer (a colleague in another department)
- Each business process starts with a trigger. For example, Sales business process starts with a Sales order creation.
- Common source of information and automated trigger points, therefore, are significant to ensure a process, involving multi-functions, is performed effectively within required time frame.



Suppliers



Customers

How ERP works?

Your Business

Supplier
Materials / sources
Pricing / Contracts

Customer
Product
Pricing

Sales
Forecast

Request for
Quotation

Purchase
Requisition

Production Planning

Sales
Quotation

INFORMATION

Purchase
Order

Finished product
Bill of materials
Routing

Production
Order

Sales
Order

Production
Execution

MATERIALS

Supplier
Invoice

Payable

Payment

CASH

Financial statements

Receivable

Customer
Invoice

Payment

The ERP system will optimize your processes more efficiently with the least possible costs.

Let's imagine...

You're running a manufacturing business here's what you need to do;

- You have to figure out which products to produce, how many of each and when to have them ready in inventory for sales.
- You also have to figure out which materials needed to make these products, how many of each where we have to buy from and when to have them already to be issued into production lines, taking the different materials are from different suppliers which have different procurement lead times into account.
- All of these materials have to be in inventory before production line can start.
- You will have to plan the production orders and give to the production line, taking into account all the demand from our customers,
- You also need to consider all the supply from existing production orders, in existing purchase orders and all existing inventory of materials work in progress and finish goods while spending the minimum amount of limited cash

How should you figure all this out?...

A

With a pencil,
a calculator
and a whole
lot of coffee

B

With an Excel
spreadsheet

C

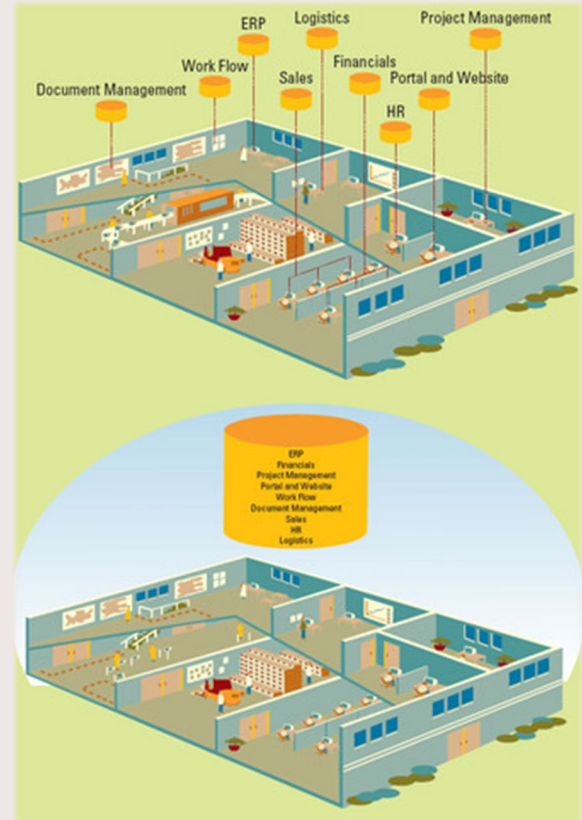
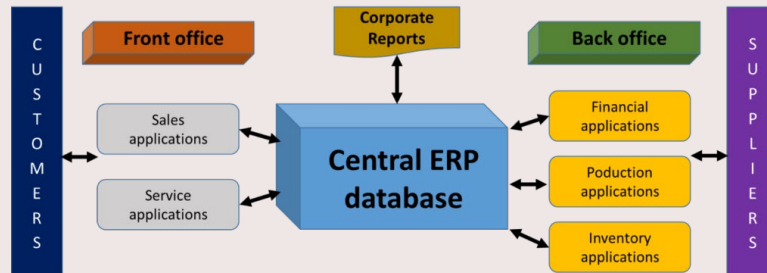
My head hurts
already at the
thought of this

D

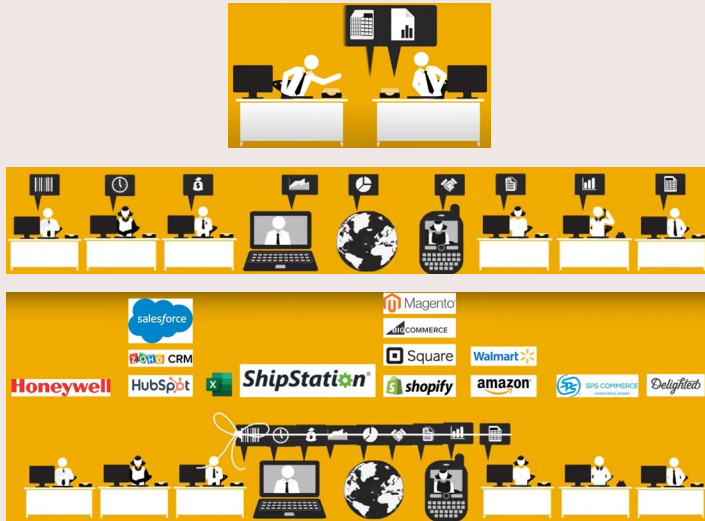
We could let
the ERP figure
it out for us

Why ERP is used?

- **Efficacy** deals with 'getting the right data', **Efficiency** stresses the focus of 'doing things right'. **Effectiveness** indicates 'doing the right things'
- Also, E-business capability should be built by:
 - Ensure quality and speed of information sharing within and between organizations; and
 - Streamline and optimize current business processes.
- When business is pressured to response faster, offer better product/service and spend less to survive in highly competitive market.
- So, ERP system have been developed to address these needs by providing a high level of automation and optimization, enhance collaboration, and better decision-making.

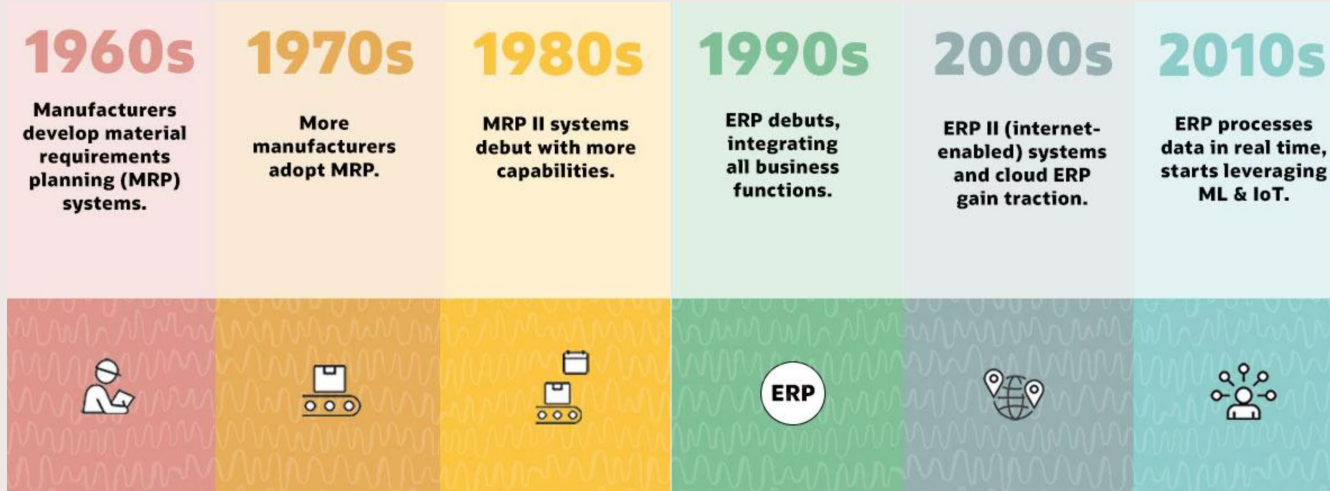


When ERP should be considered?



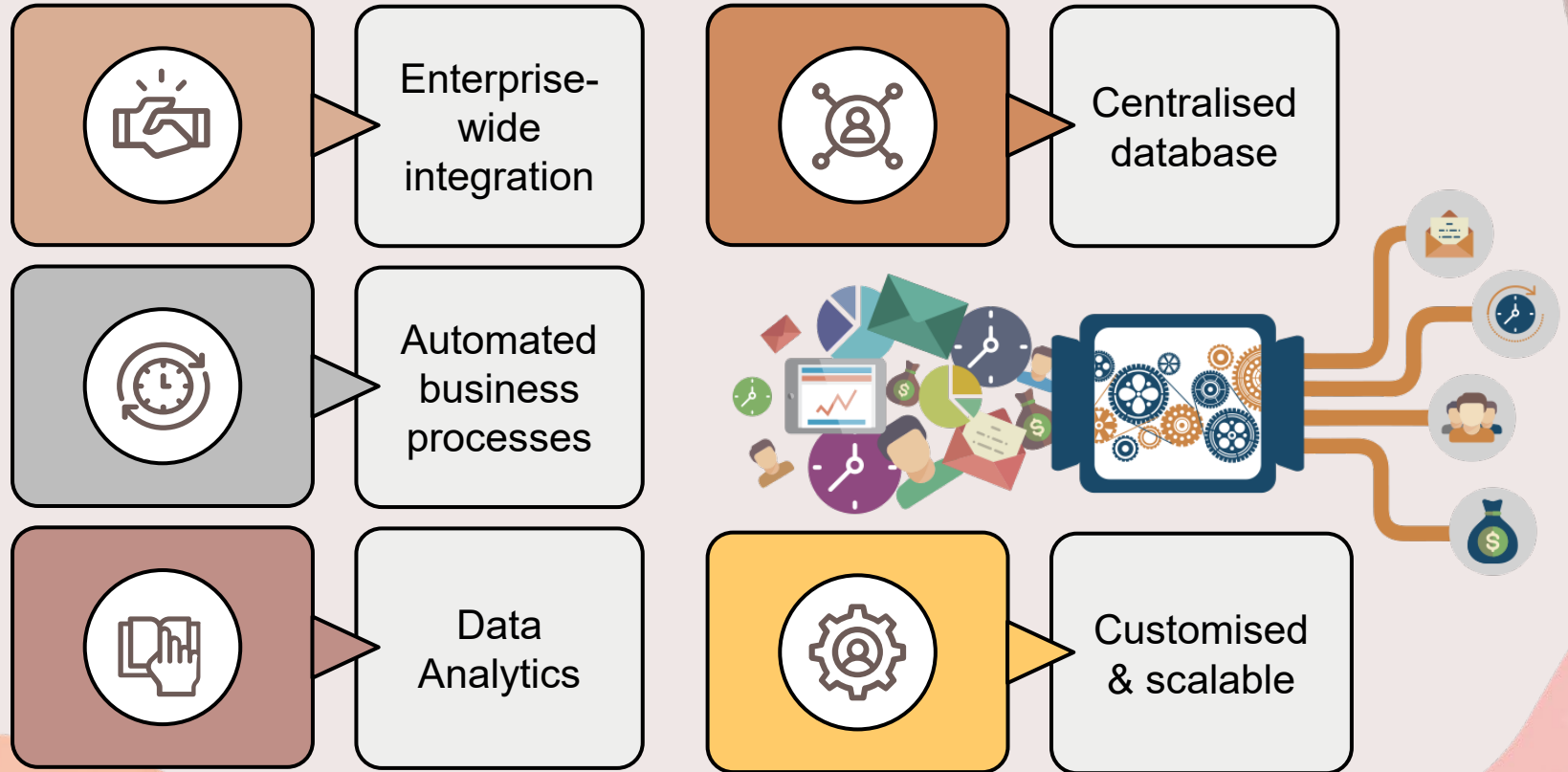
- ⚡ Underestimate the important of information flow and information system.
- ⚡ Many employees manage individual process from different apps.
- ⚡ Company has remoted workers, mobile apps, cloud apps.
- ⚡ Connecting with people in different geographies.
- ⚡ Suffer with many unpredictable issues from disconnectedness.
- ⚡ Cannot satisfy more customers

Evolution of ERP System



- Top 3 industry applying are Manufacturing, IT and healthcare.
- E-Commerce and Globalization makes more requirement in ERP to support inter-organizational processes.
- Some concerned factors limit the growth e.g. risk of a security breach, risk of data loss, connectivity, limited knowledge about cloud technology.

Characteristics of an ERP System

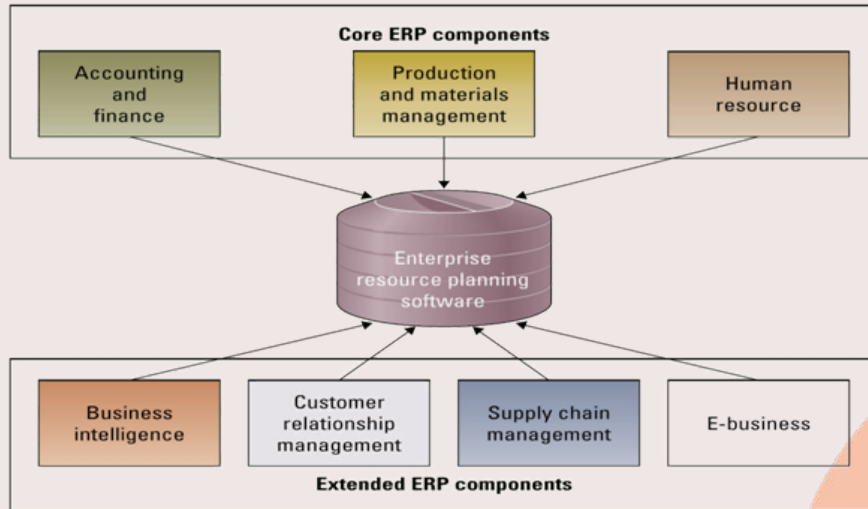


Features & Modules of ERP systems

As a company needs different departments to run the business, ERP system likewise comprises of different modules to support the operations of those functions.

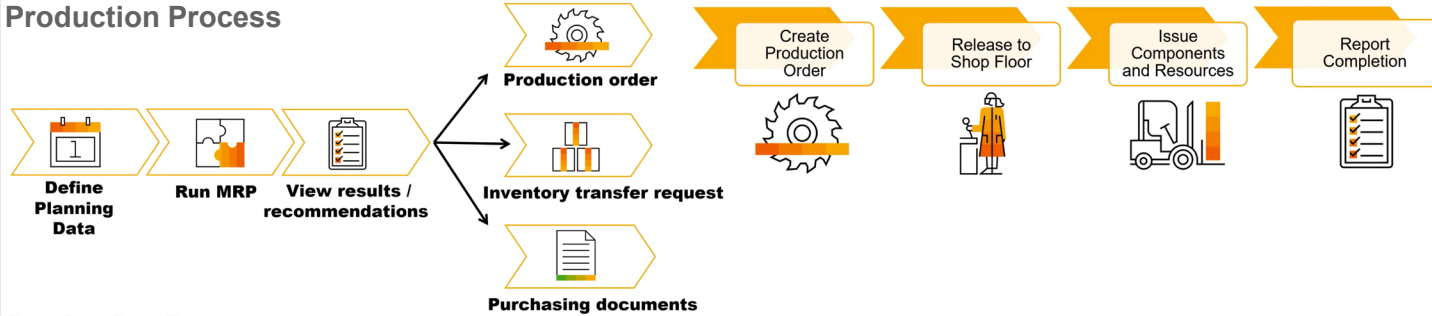
ERP software is evolving into a multi-module package that automates inter-organizational business processes across the supply chain which involve business partners, suppliers, customers, and more.

ERP system enable different modules talk to each other, using single database and can be accessed on-demand.



ERP for Core Business Processes

Production Process



Purchasing Process



Sales Process



Inventory Management



Choosing how to deploy an ERP system



On-Premises

- More investment
- Own hardware & software
- More control
- More security
- Better handling sensitive information
- Required internal IT resources
- Easier customization as per business requirements
- Less flexibility from physical in-house server
- High maintenance cost to keep server running



Cloud-Based

- Less investment
- Remotely hosted by vendor
- Less control
- Offer pay-as-you-go service fees
- Better business scalability
- Offer mobility & accessibility at ease
- No investment or maintenance cost in physical server
- No boundary of data storage capability
- Less in-house IT team
- Less authority on data management



Hybrid

- Some modules deployed in cloud and some modules deployed on-premise
- Enable businesses to benefit from both approaches to meet their needs
- More flexibility & deployment options
- Can use expertise of ERP vendors with a level of information access control
- Certain amount of IT staff still needed
- Lower implement cost & time



Open Source

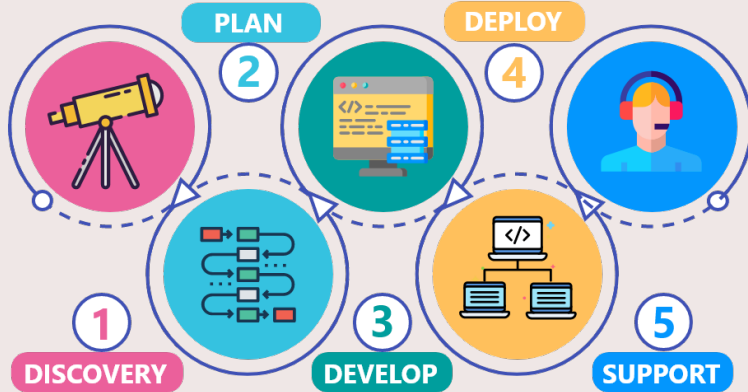
- The cost of ownership is next to zero.
- There is no vendor dependency.
- Minimum investment on resources
- Allow SMEs to gain benefits from ERP Software-as-a-service
- Offers minimal user supports from the provider
- Less information security as the server is shared
- Less flexibility & control
- Limited customization



ERP Implementation

ERP implementation describes the process of configuring ERP system into a company, it can be for a new or upgrading existing ERP, it is a complex procedures, take a lot of efforts & carefulness, and usually takes months up to a year to complete & stabilize depending on the project scale.

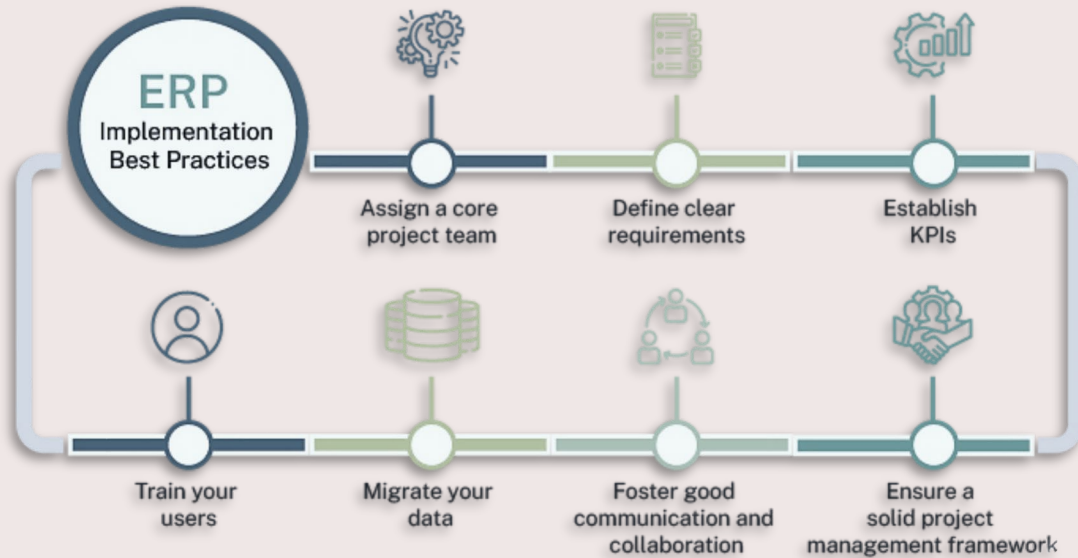
Communication is essential throughout implement process. Two-way communication is vital! From the goals, the plans, all the expectations and all the feedbacks have to be carefully assess by The **project team**.



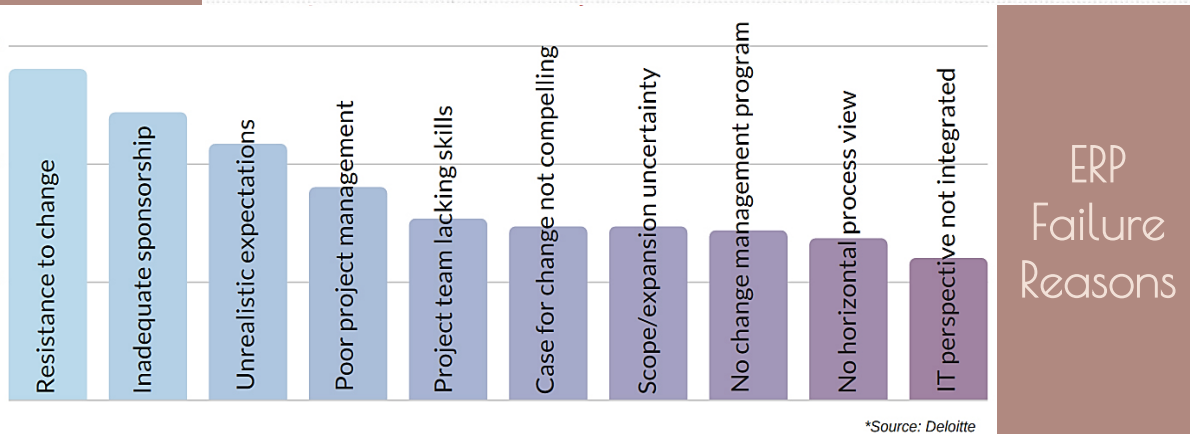
The Phases of an ERP Implementation

- 1. Discovery Phase** : The 1st phase includes researching and selecting a system, setting up a cross-functional project team and defining detailed system requirements.
- 2. Planning Phase** : Gap analysis for the current processes, plan & design how to customize the ERP software, or how to modify the processes to fit the software in order to close the gaps.
- 3. Development Phase** : Involves configuring and customizing the software to support the redesigned processes. User's training plan, data preparation & migration plan and UAT should also be done.
- 4. Deployment Phase** : The go-live period, when UAT is signed off & system configurations installed for real practice. Troubleshooting from data migration to user's problems needed to be tackled.
- 5. Support Phase** : Focusing on user's feedbacks & system adjustments to ensure desired results. Additional trainings can also be done.

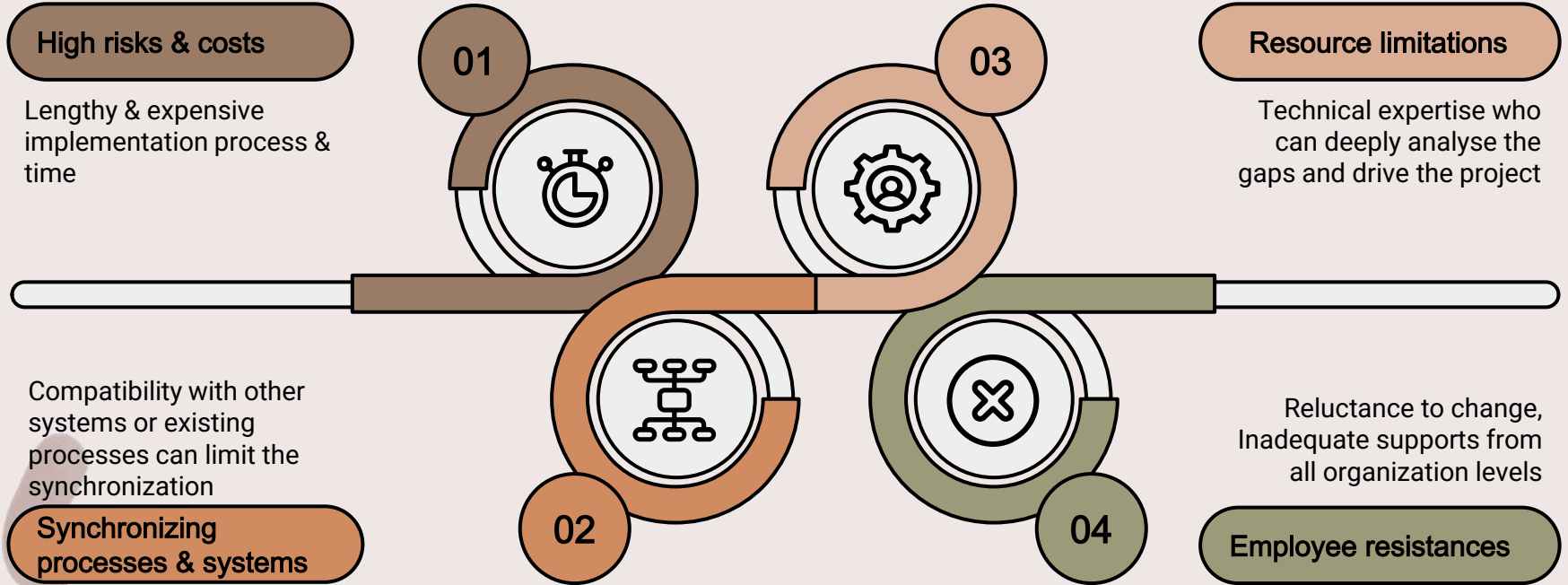
ERP Implementation Best Practice



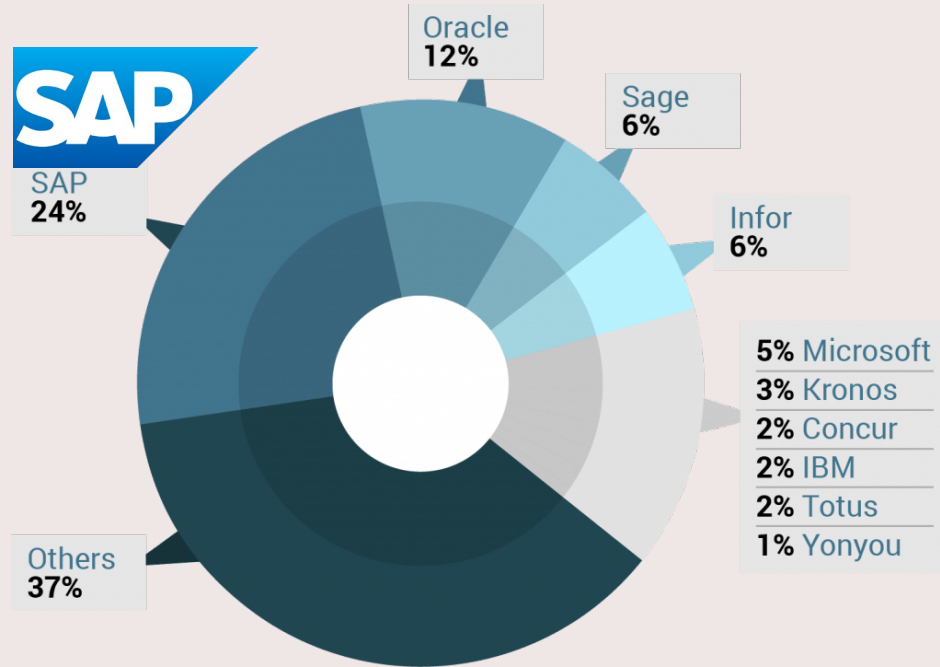
Results from ERP implementation



Challenges associated with ERP



Top ERP software providers





SAP overview

SAP stands for **S**ystem **A**pplications and **P**roducts

SAP by definition is also the name of the ERP software as well the name of the company originated in Germany, founded in 1972.

Common SAP objectives

- Cost Control & increased profitability
- Increased productivity of all resources – man, material & money
- Transparency in operations, resulting in better communication within the organization
- Improvement in quality of information – eliminate redundant data & have single source of truth
- Standardization & Integration of business processes
- Reduction in standalone systems
- Online data entry and data transparency
- Online reporting for decision making

SAP characteristics

- Highly Integrated solution covering entire business processes
- Technically capable of utilizing the network infrastructure
- Provides multiple ways of configuring business processes
- Enables to exploit the power of Intranet and Internet
- Solutions in areas where currently no systems
- Open system to ensure freedom to choose
- Scalability to business from standardization

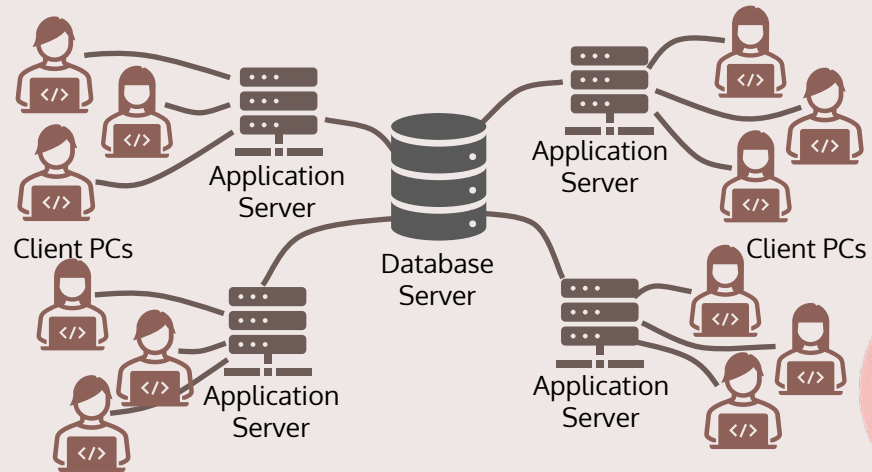


3-Tier architecture in SAP ERP

Client/Server software architecture that separates an application into 3 distinct layers, or tiers.

The purpose is to improve modularity, maintainability, scalability, reliability and flexibility of the software system.

- **Client-tier:** User Interface for presenting data
 - GUI (Graphical User Interface) such as webpage, apps, widgets
 - Command usage via transaction codes
- **Server-tier:** Application server for data processing
 - Contains the business logics and performs the core data processing according to user's request input
- **Database-tier:** (single location)
 - Managing the data storage and retrieval in the system



Security in SAP ERP



- Security is paramount in SAP system.
- Access control is managed through user roles & authorization profiles.
- Users are assigned roles base on their responsibilities, these roles determine the level of access on which modules, which processes or which transactions they are allowed to execute or be presented.
- Audit trails & monitoring tools also help tracking user activities to ensure corporate compliance & security policy are followed.
- Authorizations are combined in profiles which are recorded in a user's master record.

SAP ECC Include Core Components

Sales And Distribution

SAP SD is a module that can be used to store customer and product-related data. SAP SD Module can be integrated with other modules in SAP such as SAP MM (Material Management), SAP PP (Production Planning), SAP FICO (Financial Accounting), SAP HR (Human Resource), etc.

ABAP Programming

ABAP is a programming language that runs in the SAP ABAP runtime environment which is created and used by SAP (System Application Products in data processing) for the development of application programs.

SAP ABAP is used for data processing in business applications and helps to solve time-consuming manual processes and data overflow challenges.

Human Resource

SAP HR- (Human Resource) is one of the largest functional modules in SAP. It is also known as "Human Capital Management". It is a software application that enables administrators and manages their data.



Financial Accounting

SAP fico is the finance and cost-controlling module in SAP ERP. It is used for financial transactions in the company. It is a powerful module that can cover the business processes in every industry.

Production Planning

The SAP Production Planning Module is the largest module in SAP. This module enables production planning based on both business demand and production capacity.

The SAP PP Module creates a schedule for production and procurement in the company and ensures that raw materials are available for production as per requirement.

Material Management

SAP MM is a Functional Module in SAP that deals with Procurement Handling and Material Management in a company. SAP Material Management Module includes Master Data, Invoice Verification, MRP Planning (Material Requirement Planning), System Configuration, Payment Planning, Material Valuation, etc.

Cost Controlling

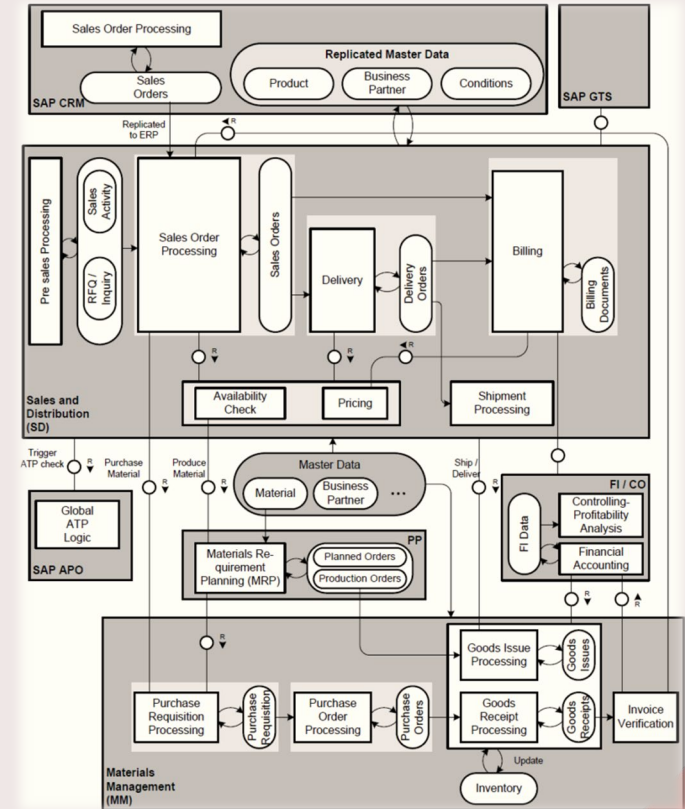
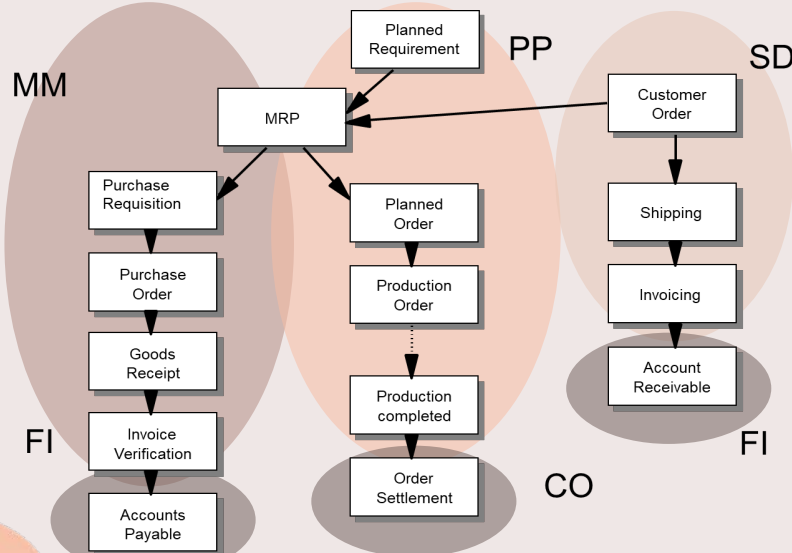
SAP CO is a separate module in SAP called SAP FICO Module. SAP CO Module is essential to improve the profitability of an organization.

SAP ERP Modules



SAP ERP modules functionality

- SAP can be configured & customized at module level.
- Each modules can be integrated to another or even interface with 3rd party software.
- Each module is specialized & synergized
- Two-ways of communication happens between modules but not always the case. Not all modules could talk to each other
- Master data or entities are shared among modules.
- Data can also be transferred from one to another module.



SAP Enterprise Structure

Purchasing Organization

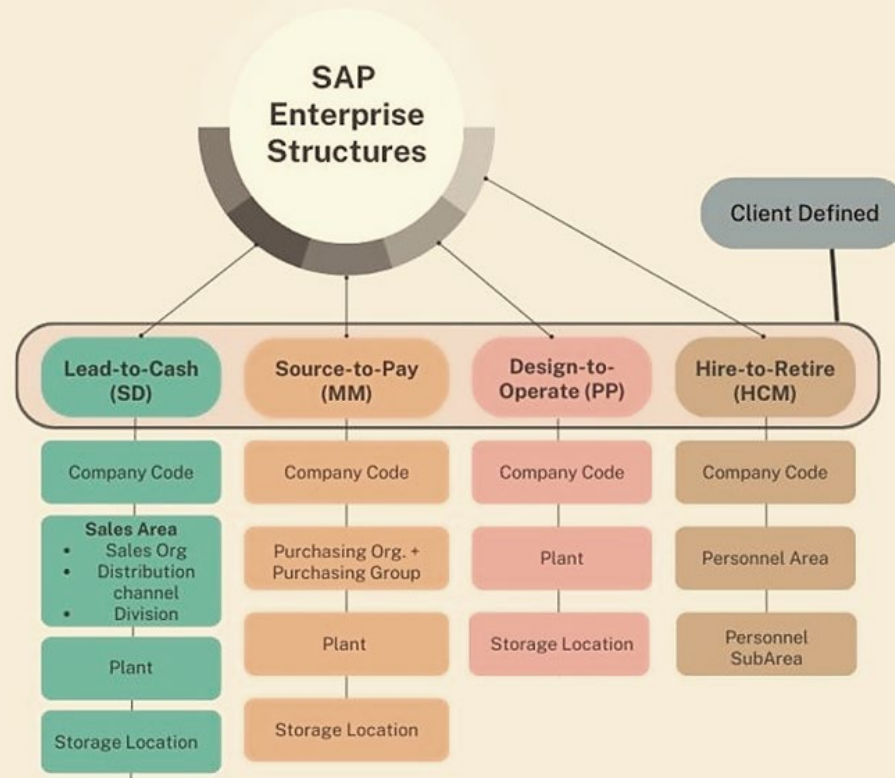
- Represent buyer group for procuring materials to a plant
- Can be a central buying group responsible for companywide purchases to several plants

Sales Area

- Logical selling units combine of sales organization, distribution channel (sales channel), and division (product line)
- Customers, sales representative, materials, pricings and documents will be assigned to each sales area to support execution of processes in SAP

Storage Location

- A physical or "virtual" location that the system uses to manage inventory.
- Defines the location of materials or products within a Plant
- Inventory is managed in storage locations at the quantity level.
- warehouse, storeroom, or a specific area can be assigned as a storage loc



Client

- Highest hierarchical level in SAP ERP represents the company or business entity, work independently
- Can't use many clients in same time.
- Allow some common data for everyone across the client, such as master files, material ID, customer ID

Company Code

- Represents independent account entity
- Consists of an organized list of all General Ledger accounts for an organization
- Financial statement such as BL, P&L statements, required by law, can be created at this level, maintained in many languages

Plant

- The central organizational unit to the production planning and inventory management concept
- Typically represents a manufacturing location or distribution centre

Thank
You

