

Introduction to Enterprise Resource Planning

Introduction to Enterprise Resource Planning (ERP)

Quick reference guide for students, new hires, and anyone getting started with ERP concepts.

1. What Is ERP?

Aspect	Description
Definition	Integrated suite of software applications that manage core business processes (finance, HR, manufacturing, supply chain, etc.) in a single, unified system.
Goal	Provide real-time visibility, streamline operations, and enable data-driven decision-making across the entire organization.
Key Characteristic	One source of truth – all modules share a common database.

2. Core Components (Modules)

Module	Primary Functions	Typical Users
Financial Management	General ledger, accounts payable/receivable, asset accounting, budgeting, reporting	CFO, accountants
Human Capital Management (HCM)	Payroll, talent acquisition, performance, training, benefits	HR staff
Supply Chain Management (SCM)	Procurement, inventory, order fulfillment, logistics, demand planning	Purchasing, warehouse, logistics
Manufacturing / Production	Bill of materials (BOM), shop floor control, work orders, scheduling, quality	Production planners, shop floor managers
Customer Relationship Management (CRM)	Sales pipeline, marketing campaigns, service tickets, customer analytics	Sales, marketing, service reps
Project Management	Project planning, resource allocation, time tracking, billing	Project managers
Business Intelligence (BI) / Analytics	Dashboards, ad-hoc reporting, KPI monitoring	Executives, analysts

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Note: Not every ERP includes every module; organizations select the ones that fit their processes.

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3. Architecture Overview

1. **Presentation Layer** – User interface (web browser, mobile app, thick client).
2. **Application Layer** – Business logic, workflow engine, integration services.
3. **Database Layer** – Central relational database (SQL Server, Oracle, PostgreSQL, etc.).

[User] ? [Presentation] ? [Application] ? [Database]

Modern ERP systems also expose APIs (REST, SOAP) for integration with external applications.

4. Deployment Models

Model	Description	Pros	Cons
On-Premise	Software installed on company servers.	Full control, custom security, no recurring SaaS fees.	High upfront CAPEX, longer implementation, internal IT maintenance.
Cloud (SaaS)	Hosted by vendor, accessed over the internet.	Lower upfront cost, rapid rollout, automatic updates.	Ongoing subscription, data residency concerns, limited deep customization.
Hybrid	Core modules on-premise, peripheral functions in the cloud.	Balances control & flexibility.	Complexity of integration, requires robust governance.

5. Benefits of ERP

Business Area	Benefit
Operational Efficiency	Reduces duplicate data entry, automates routine tasks.
Data Accuracy & Consistency	Single database eliminates reconciliation errors.
Real-Time Visibility	Instant access to KPIs, inventory levels, cash flow.
Scalability	Supports growth, new subsidiaries, additional product lines.
Regulatory Compliance	Built-in audit trails, financial reporting standards.

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Business Area

Benefit

Improved Collaboration

Cross-departmental workflows are transparent.

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6. Common Implementation Methodologies

Methodology Key Steps Typical Timeline