

Introduction to Enterprise System



Learning Objectives

- ❖ Discuss the evolution and key business benefits of enterprise systems
- ❖ Explain the role of enterprise systems in supporting business processes
- ❖ Differentiate the different categories of data within SAP ERP
- ❖ Understand the major options for reporting

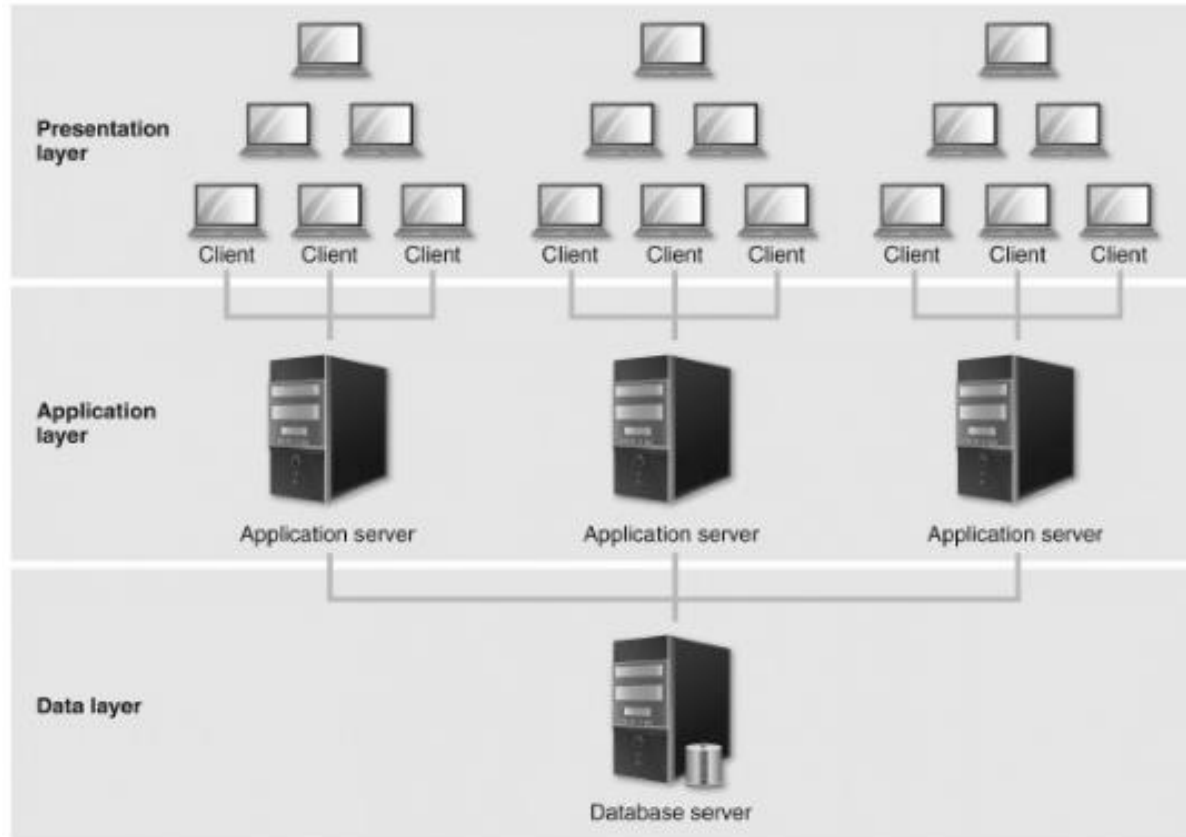
Enterprise System

- ❖ Complex and powerful information systems
- ❖ SAP Enterprise Resource Planning (ERP) system is the world's most popular

Architecture of Enterprise System

- ❖ **Client-server**
- ❖ **Server-oriented**

Three Layers of the Client-server Architecture



Client-server

- ❖ Internet uses a three-tier architecture
- ❖ Advantages:
 - Reduced costs
 - Scalability
- ❖ Scalability refers to the ability of software and hardware to support a greater number of users over time

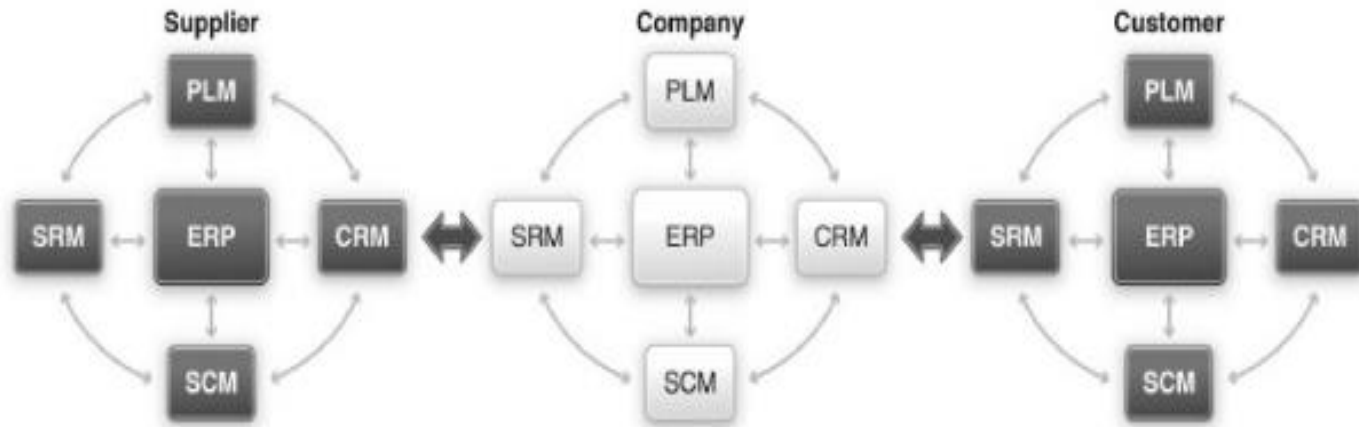
Service-oriented Architecture

- ❖ Web services
 - Used to expose ES (and other system) functionality
 - Standard interface – input and output
- ❖ Composite applications
 - Connect multiple applications via Web services (including mashups or composite applications)
 - Build new capabilities without changing the underlying applications
- ❖ Main advantages:
 - Standardization is easy
 - Lower costs & complexity of integration
 - Reuse
 - Flexibility

Enterprise Systems Application Suite

- ❖ Collection of inter-company systems and intra-company ERP system is called an application suite
- ❖ Enterprise Resource Planning (ERP)
- ❖ Supply Chain Management (SCM) and Supplier Relationship Management (SRM) – production planning, transportation, logistics, quotation, contracts
- ❖ Product Lifecycle Management (PLM) – research, design, and product management
- ❖ Customer Relationship Management (CRM) – marketing, sales, service

The ES Architecture Suite



Data in an Enterprise System

- ❖ Organizational data (levels, elements)
- ❖ Master data
- ❖ Transaction data
 - Associated with process steps

Organizational Data/Level/Element

- ❖ Defines the structure of the enterprise in terms of legal or business purposes.
Examples include:
 - Legal entities, plants, storage areas, sales organizations, profit centers, subsidiaries, factories, warehouses
- ❖ Client, Company, and Plant
- ❖ Data rarely changes (static data)

Organizational Level - Client

- ❖ Highest organizational level
- ❖ Represents the enterprise; comprised of many companies

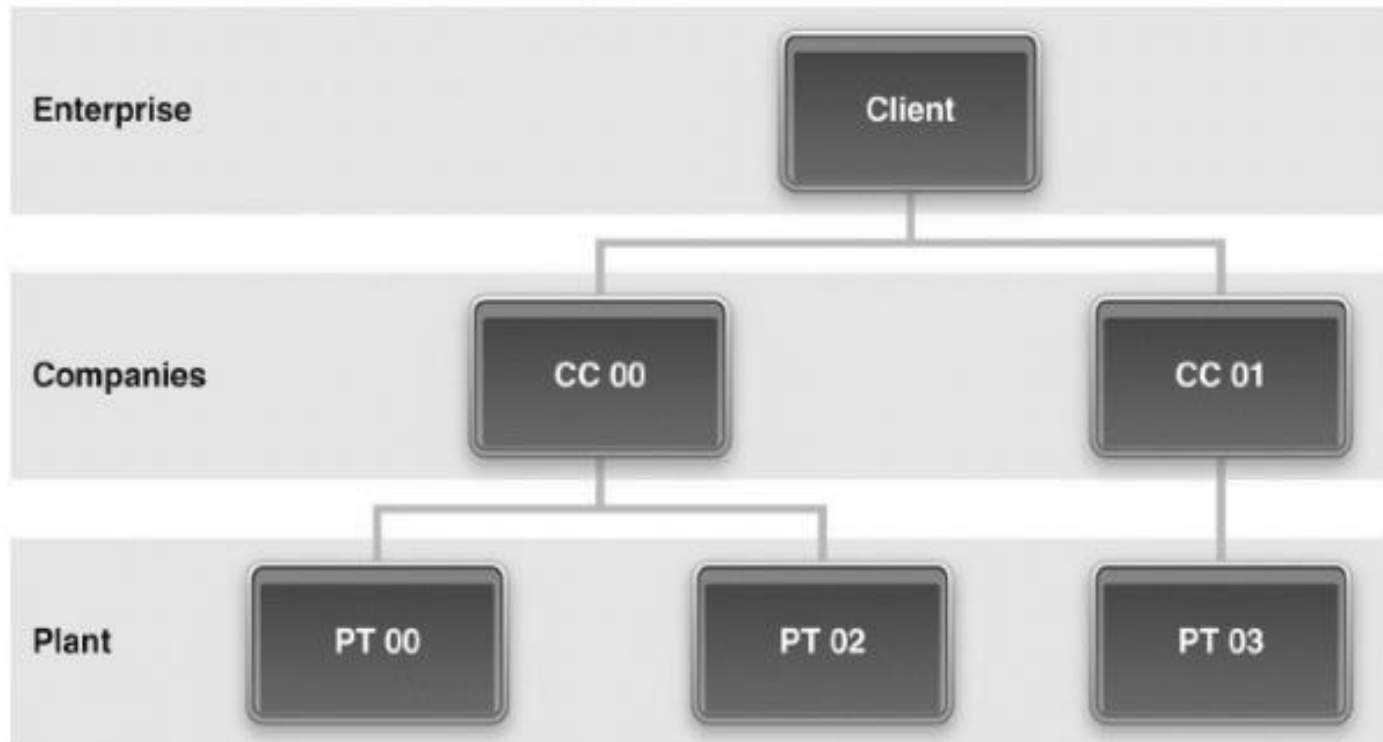
Organizational Level – Company Code

- ❖ Central organizational element in financial accounting
 - Books are maintained at this level for legal reporting
- ❖ Identifies legal entities in an enterprise (Client)
- ❖ Legally independent from other companies in the enterprise
- ❖ Client can have multiple company codes
- ❖ Company code must belong to only one client

Organizational Level - Plant

- ❖ Performs multiple functions
- ❖ Used by many processes
- ❖ Represents factory, warehouse, office, distribution center, etc.
- ❖ Following functions are typically performed:
 - Products/services are created
 - Materials are stored and used for distribution
 - Production planning is carried out
 - Service or maintenance is performed

Organizational Data



Master Data

- ❖ Long-term data that typically represent entities associated with various processes?
 - Customer
 - Vendor
 - Material
- ❖ Typically include
 - General data (across company codes)
 - Financial data (CC specific)
 - Area-specific data (Sales, Purchasing, Plant)

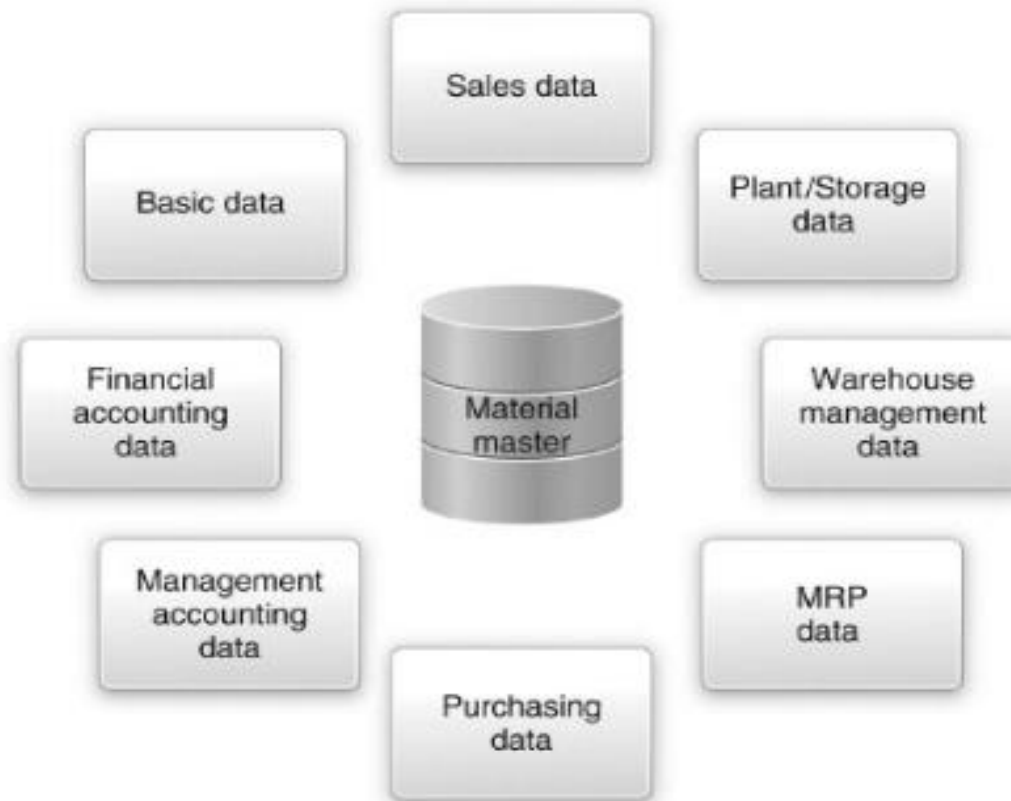
Material Master

- ❖ Material master data is used in numerous processes
 - Procurement – who and how much
 - Fulfillment – product availability and shipping conditions
 - Production
 - Material planning
 - Asset management
 - Project systems
 - Lifecycle data management

Material Master [2]

- ❖ Materials data may be grouped into *views* relevant to one or more processes
- ❖ Basic data (materials number, description, weight) are relevant to almost all processes
- ❖ Data are grouped based on
 - Process
 - Material type
 - Organization element
- ❖ Material type can impact screens, department/function data to be maintained, material numbers, appropriate procurement, and general ledger accounts

Material Master Data



Material Types

❖ Raw materials (ROH)

- Purchased, not sold, used in production
- Purchasing- and production-related views
- No sales-related view

❖ Semi-finished goods (HALB)

- Produced using other materials (ROH, HALB)
- Used in the production of other materials (HALB, FERT)
- Not purchased or sold

Material Types [2]

- ❖ Finished goods (FERT)
 - Produced using other materials (ROH, HALB)
 - Sold to customers
- ❖ Trading goods (HAWA)
 - Purchased and resold without additional processing
- ❖ Numerous other types

Material Groups

- ❖ Materials with similar characteristics
- ❖ For example, materials used in production or in sales
- ❖ In retail, we may have categories such as footwear, clothing, beverages
- ❖ Materials are grouped so that they can be managed collectively (e.g., planning)

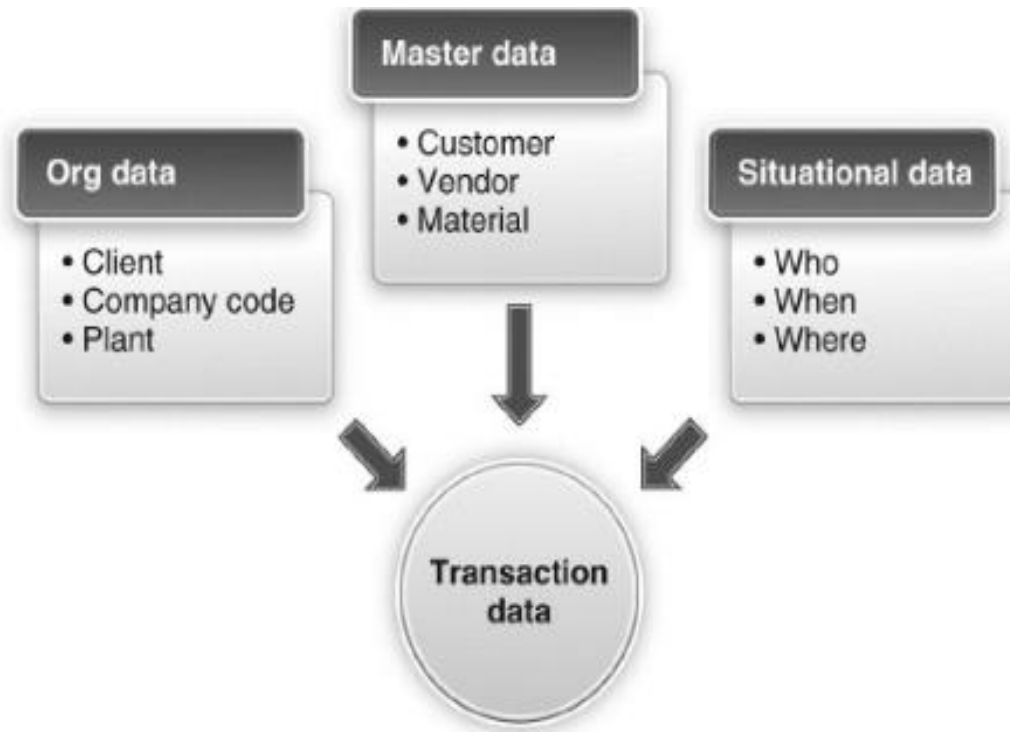
Organizational Level

- ❖ Same material can be used differently by different organizational levels
 - Different company codes
 - HALB in one, FERT in another
 - Different plants
 - Only exports or imports in specified plants, not all
 - Different sales-related organizational elements
 - Wholesale vs. retail

Transaction Data

- ❖ Data generated during execution of process steps
- ❖ Requires
 - Organizational data
 - Master data
 - Situational data
 - Who, what, when and where.....*
- ❖ Example: Sales order creation
 - Organizational elements: Client, Company Code, Sales Area
 - Master Data: Customer, Material
 - Situational data: Date, Time, Person

Transaction Data [2]



Documents

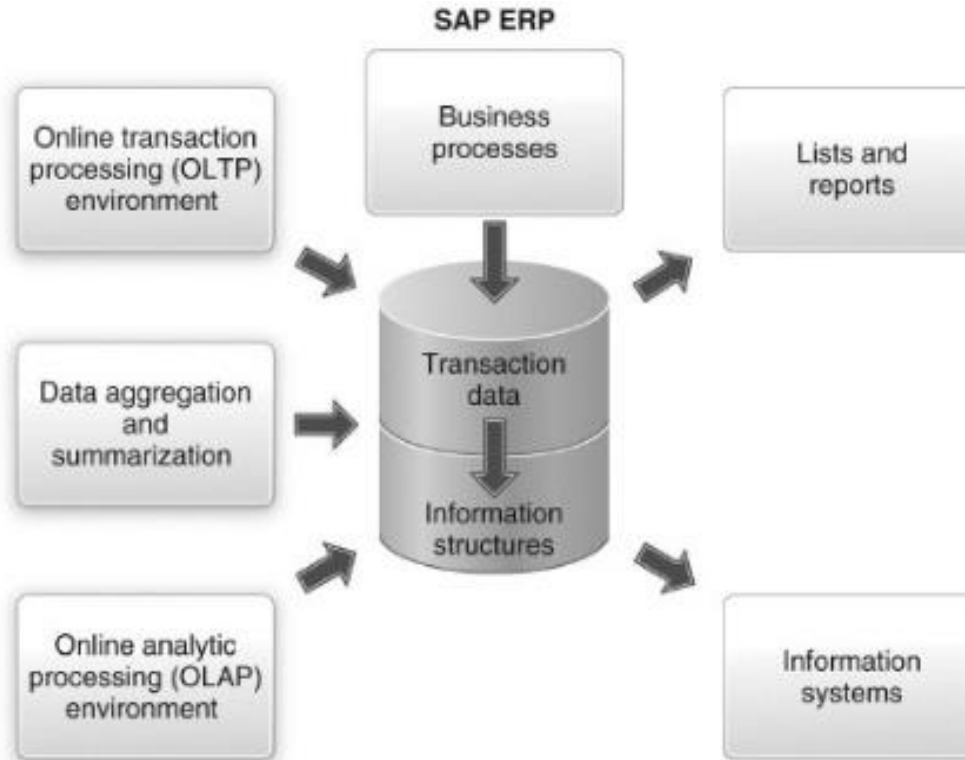
❖ Record of transactions

- Transaction documents
 - Requisition, purchase order, invoice, delivery document, etc.
- FI documents
 - Record the impact on financial accounting
- CO documents
 - Record the impact on management accounting
- Material documents
 - Record the impact on material status (value, location)

Reporting

- ❖ Transactional system (OLTP) vs. informational system (OLAP)
 - OLTP (transactional)
 - Detailed, transactional data
 - Data warehouse
 - Data aggregation and reduction using
 - Qualitative reduction by aggregating by time period
 - Quantitative reduction by selecting key figures (KPI)
 - In ERP: Information structures
 - In BW: Infocubes, info providers, etc.
 - OLAP (informational)
 - Various analysis tools
 - In ERP: Information systems (OLAP lite)
 - In BW: Various reporting tools

Reporting Options within SAP ERP



Components of Information Structures

Period	Characteristic		Key figures	
Date	Customer	Material	Sales quantity	Sales amount
5/12/09	Rocky mountain bikes	DXTR8000	23	\$64,400
5/19/09	Philly bikes	PRTR8000	45	\$135,000
5/23/09	Beantown bikes	DXTR8000	34	\$95,200
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References

- ❖ E.F.Monk and B.J. Wagner. *Concepts in Enterprise Resource Planning*, 4th edition. Course Technology, 2013
- ❖ Magal and Word. *Integrated Business Processes with ERP Systems*. Wiley, 2012
- ❖ Sumner, Mary. *Enterprise Resource Planning*. Prentice Hall, 2005.
- ❖ Teaching Materials from SAP University Alliances