Chapter 2

Introduction to Enterprise Systems

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Learning Objectives

1. Discuss the evolution and key business benefits of enterprise systems
2. Explain the role of enterprise systems in supporting business processes
3. Differentiate the different categories of data within SAP ERP
4. Understand the major options for reporting

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Enterprise Systems (ES)

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

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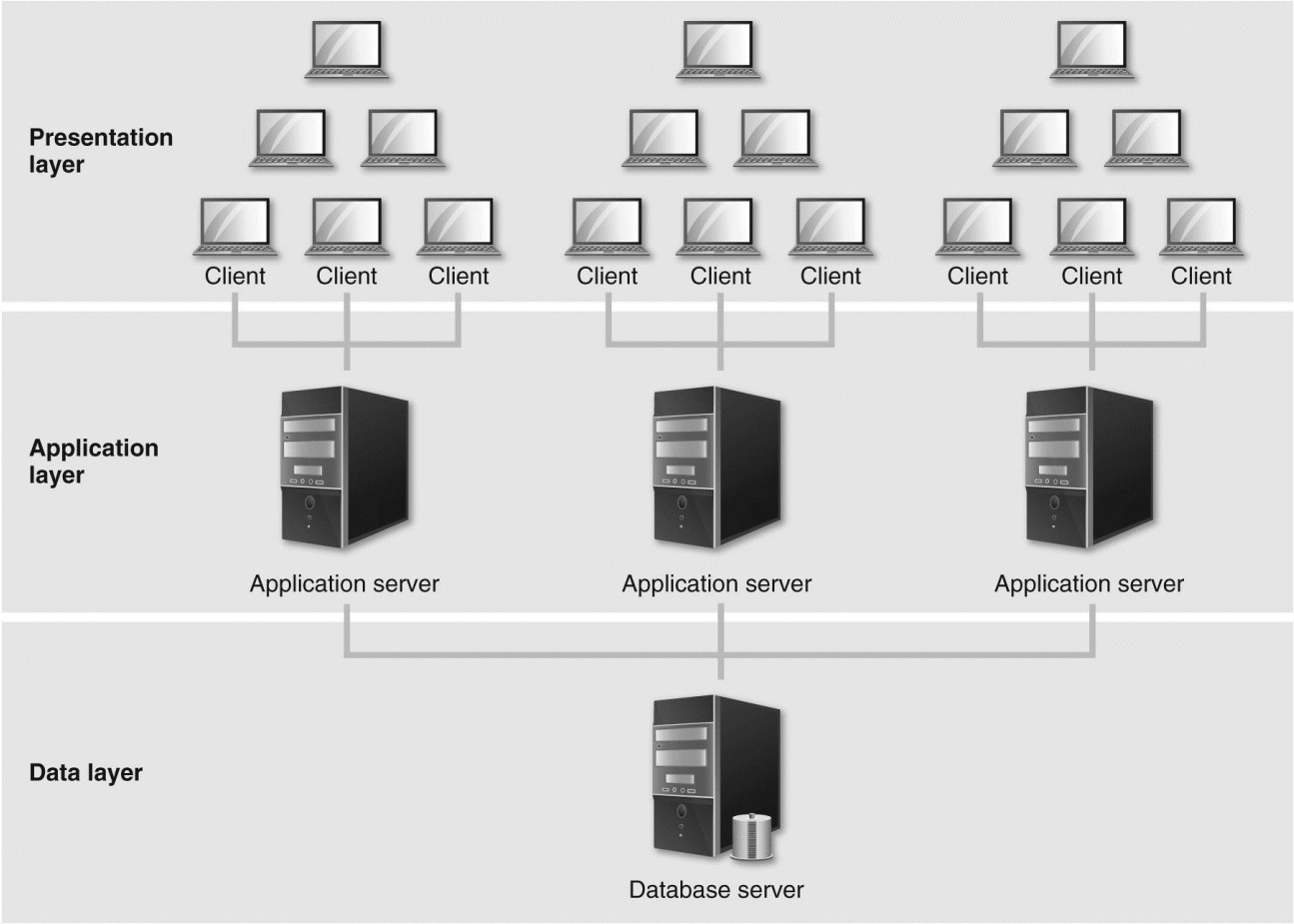
Architecture of Enterprise Systems

- Client-Server
- Service-Oriented

Three layers of the Client-Server Architecture



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
  - Build new capabilities without changing the underlying applications

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Enterprise Resource Planning Systems

- Focus primary on internal operations of an organization
- Integrate functional and cross-functional business processes
- SAP is a fully integrated, global ERP system
- Supports multiple languages and currencies

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The SAP ERP Solution Map

Human Capital Management	Talent Management	Workforce Process Management	Workforce Deployment	Travel Management			
Financials	Financial Supply Chain Management	Treasury	Financial Accounting	Management Accounting			
Product Development & Collaboration	Product Development	Product Data Management	Product Intelligence	Product Compliance	Document Management	Tool and Workgroup Integration	
Procurement	Purchase Requisition Management	Operational Sourcing	Purchase Order Management	Contract Management	Invoice Management		
Operations: Sales and Customer Service	Sales Order Management	Aftermarket Sales and Service					
Operations: Manufacturing	Production Planning	Manufacturing Execution	Manufacturing Collaboration				
Enterprise Asset Management	Investment Planning & Design	Procurement & Construction	Maintenance & Operations	Decommission & Disposal	Asset Analytics & Performance Optimization	Real Estate Management	Fleet Management
Operations: Cross Functions	Quality Management	Environment, Health, and Safety Compliance Management	Inbound and Outbound Logistics	Inventory and Warehouse Management	Global Trade Services	Project and Portfolio Management	

Shared Service Delivery

SAP NetWeaver

SAP ERP Modules

- Production Planning (PP)
- Materials Management (MM)
- Sales and Distribution (SD)
- Plant Maintenance (PM)
- Project Systems (PS)
- Quality Management (QM)
- Financial Accounting (FI)
- Management Accounting / Controlling (CO)
- Human Resources (HR)
- Business Intelligence (BI)

Enterprise Systems Application Suite

- Enterprise Resource Planning (ERP)
- Supply Chain Management (SCM)
- Supplier Relationship Management (SRM)
- Product Lifecycle Management (PLM)

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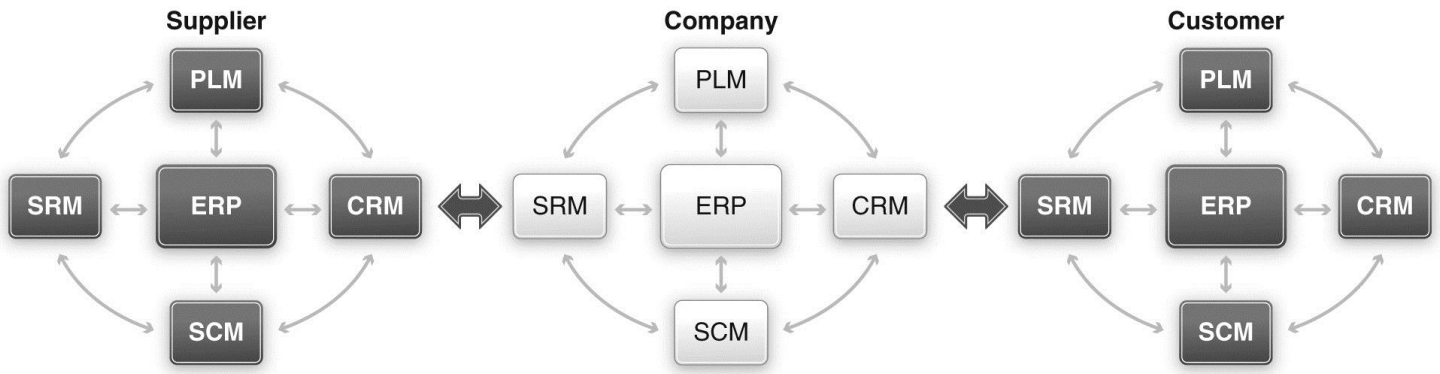
The ES Architecture Suite



Applications Platforms

- Enterprise Operating System
- SAP NetWeaver introduced in 2003
  - Integral part of SAP ERP and SAP Business Suite
  - Toolset for composite application and plug-in software
  - Integrates non-SAP applications

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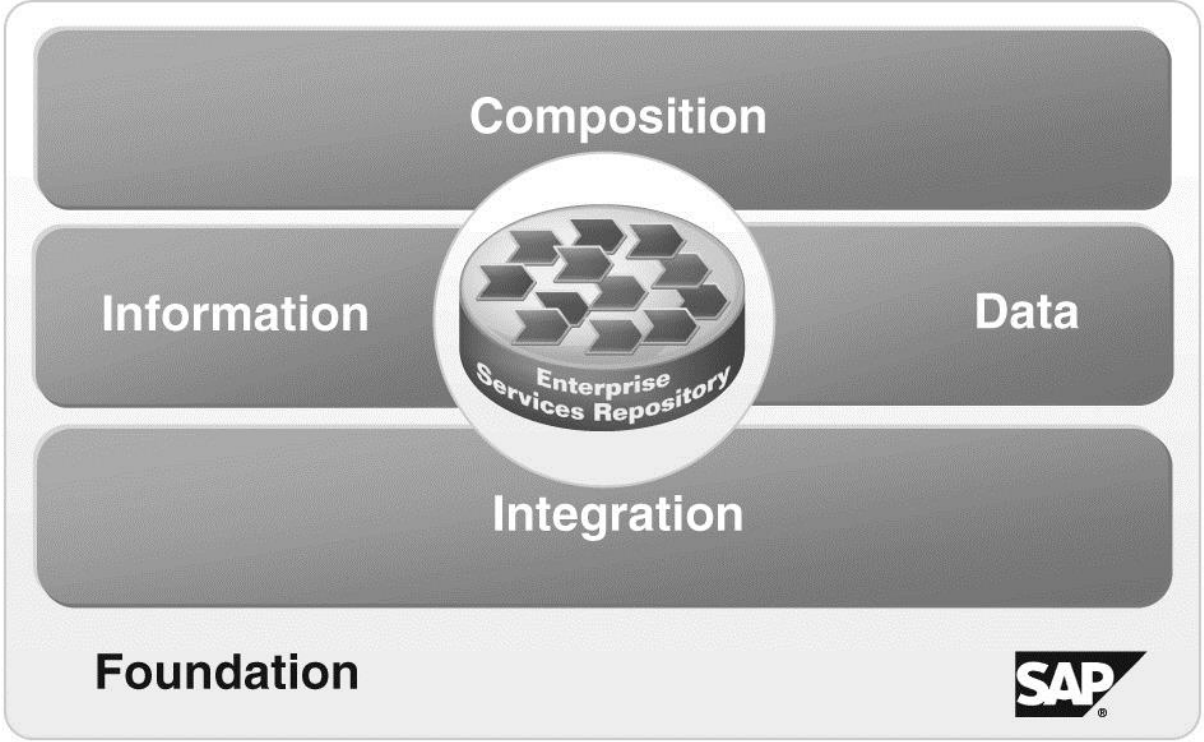
SAP NetWeaver



Data in an Enterprise System

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

Organizational Data

- Defines the structure of the enterprise in terms of legal or business purposes. Examples include:
  - Legal entities, plants, storage areas, sales organizations, profit centers
- Data rarely changes

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Organizational Level - Client

- 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

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Organizational Level - Plant

- Performs multiple functions
- Used by many processes
- Represents factory, warehouse, office, distribution center, etc.

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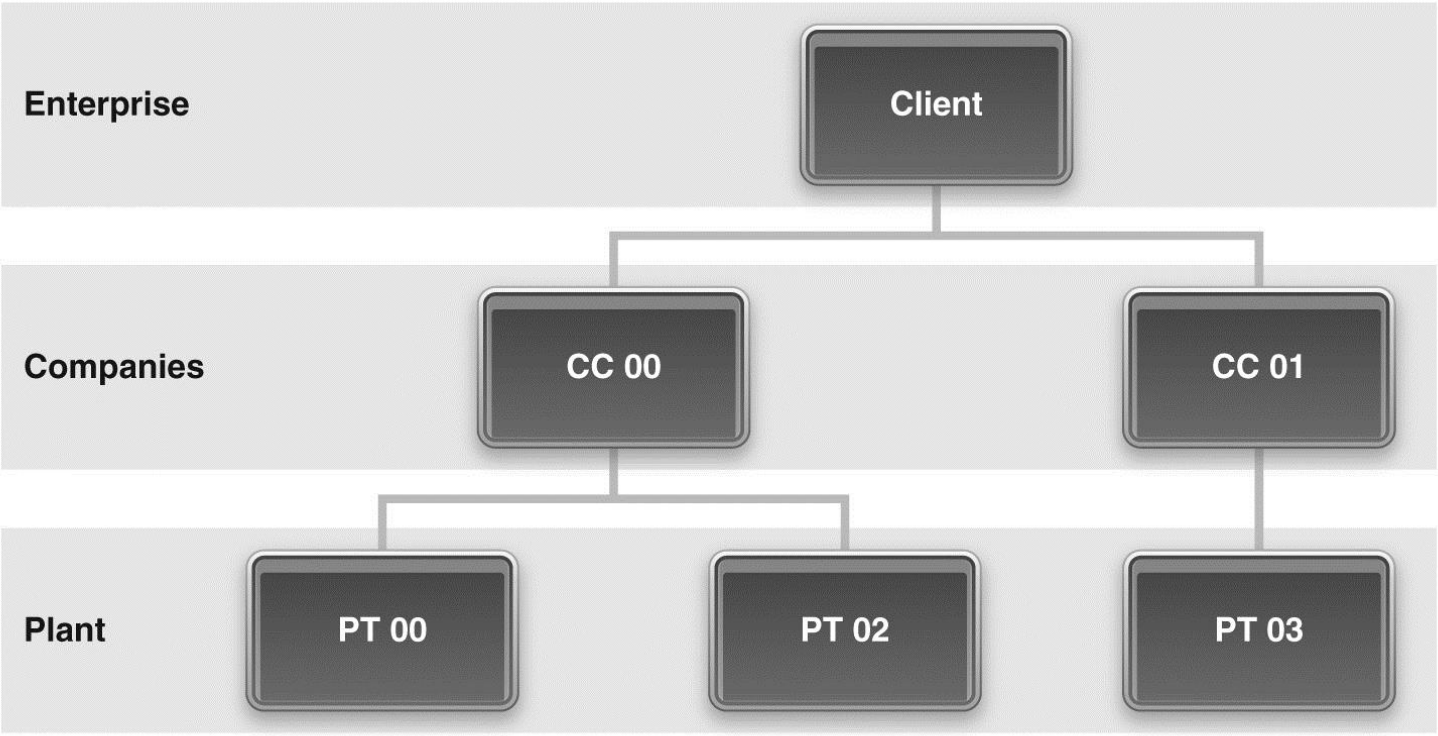
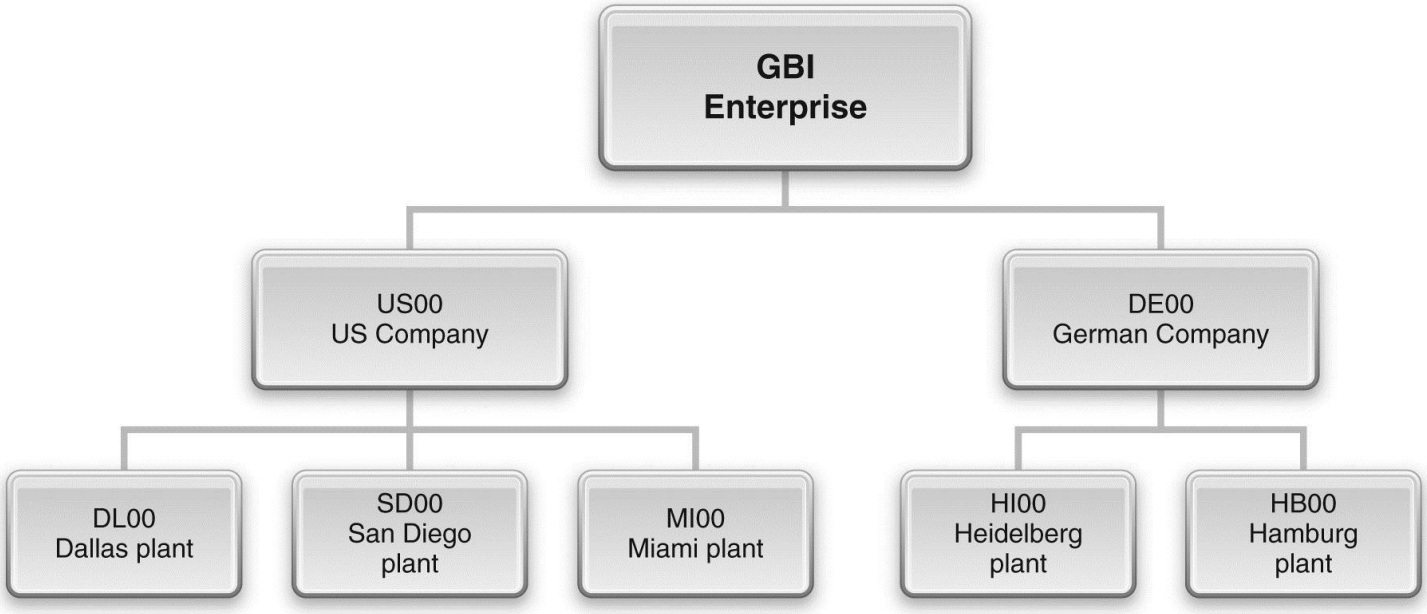
Organizational Data



GBI 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)

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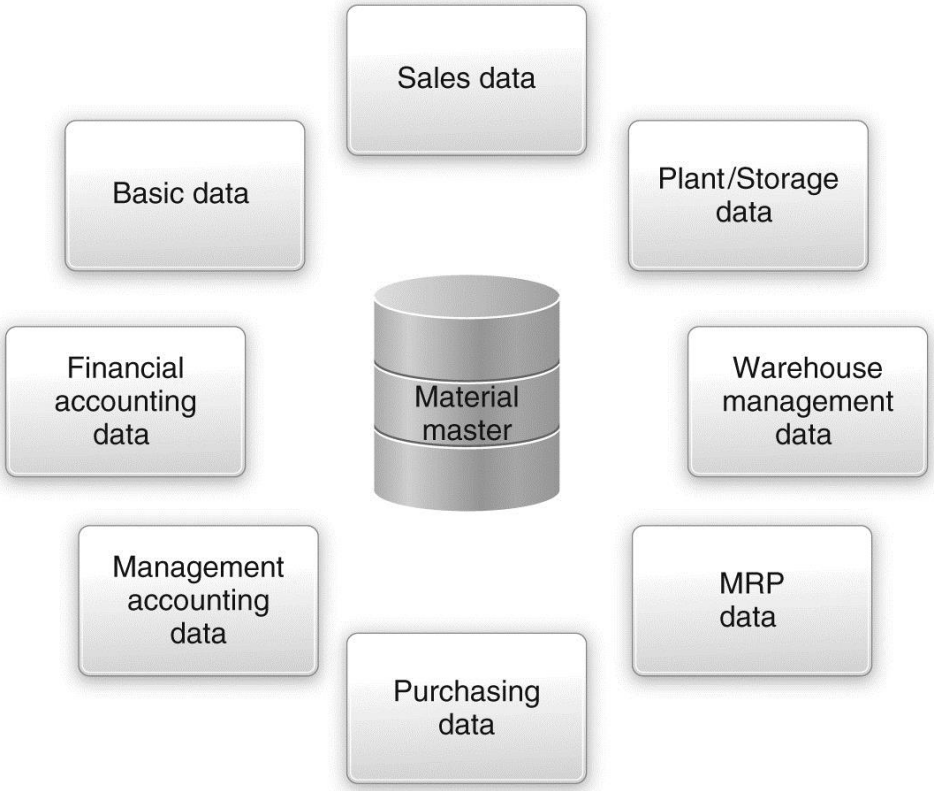
Material Master

- Material master data is used in numerous processes
  - Procurement
  - Fulfillment
  - Production
  - Material planning
  - Asset management
  - Project systems
  - Lifecycle data management

Material Master

- Data are grouped based on
  - Process
  - Material type
  - Organization element

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

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Material Types (Continued)

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

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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

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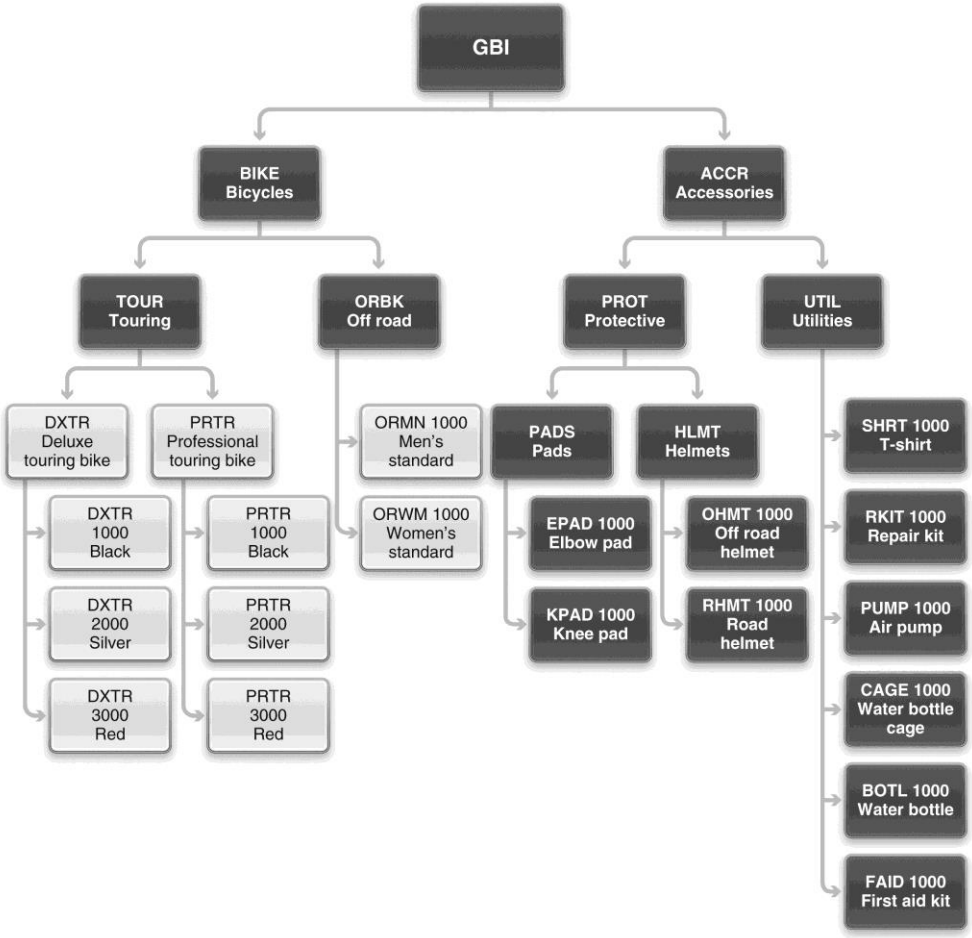
GBI Product Structure



Demo 2-1: Review Material Types

- Review some of the material types included in the material master.

Demo 2-2: Review Material Master Data

- Review some of the data provided in the material master.

Transaction Data

- Data generated during execution of process steps
- Requires
  - Organizational data
  - Master data
  - Situational data
- Example: Sales order creation
  - Organizational elements: Client, Company Code, Sales Area
  - Master Data: Customer, Material
  - Situational data: Date, Time, Person

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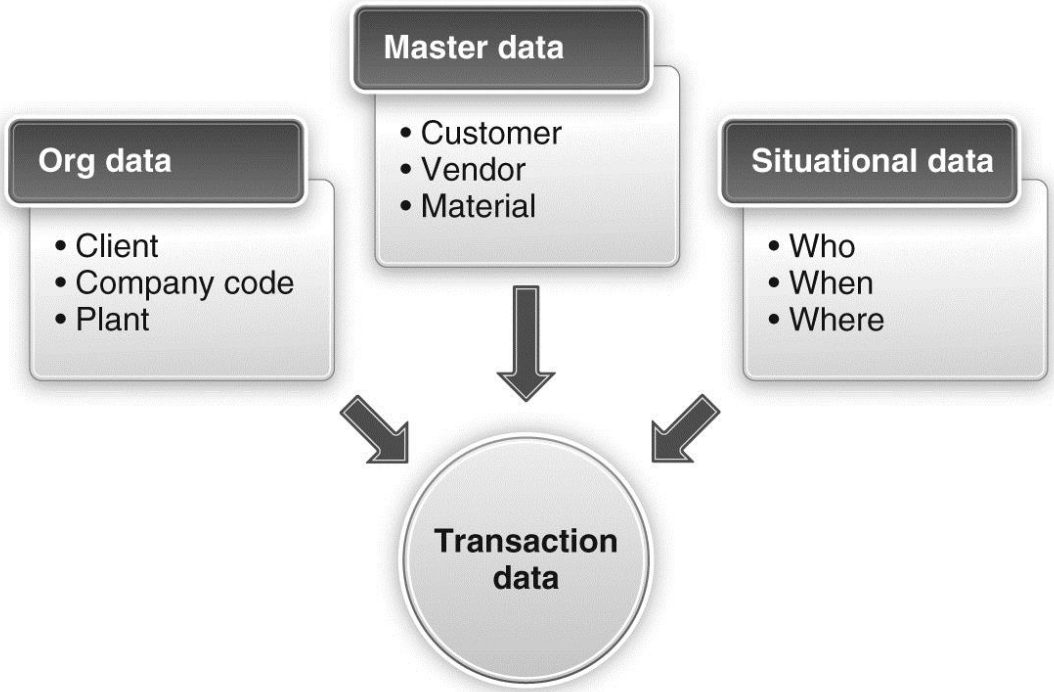
Transaction Data



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)

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Purchase Order

Global Bicycle Incorporated

5215 N. O'Conner Blvd.
Dallas, Texas, 75039
Phone: +1.972.555.2000 Fax: +1.972.555.2001

PURCHASE ORDER
Purchase Order Number: 4546

THE PURCHASE ORDER NUMBER MUST APPEAR ON ALL RELATED CORRESPONDENCE, SHIPPING PAPERS, AND INVOICES

TO:
Olympic Protective Gear
2100 Summit Boulevard
Atlanta, GA, 30319

SHIP TO:
GBI San Diego Distribution Center
150 Spear Street
San Diego, 94105
+1.415.555.7700

Header

Purchase Order #	P.O. Date	Delivery Date	Shipped VIA	F.O.B. Point	Payment Terms
4546	July 11, 2009	July 27, 2009	Ground	Destination	Net 30

Quantity	Material #	Material Description	Unit Type	Unit Price	Item Total
100	KPAD 1000	Knee Pads	Each	37.50	3,750.00
100	EPAD 1000	Elbow Pads	Each	37.50	3,750.00
50	OHMT 1000	Off-road Helmets	Each	25.00	1,250.00

Line items

SUBTOTAL	$8,750.00
SALES TAX	Exempt
SHIPPING AND HANDLING	Included
OTHER	N/A
ORDER TOTAL	$8,750.00

Authorized by: _____ Date: _____
Purchasing Manager

Demo 2-3: Review a Purchase Requisition or Order

- Review some of the items that are contained in a purchase requisition or purchase order.

Reporting

- Transactional system (OLTP) vs. informational system (OLAP)
- Types of reporting (options)
  - Work lists in SAP ERP
  - Online lists in SAP ERP
  - Analytics in SAP ERP
  - Analytics in SAP BW

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Transactional vs. Informational

- 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

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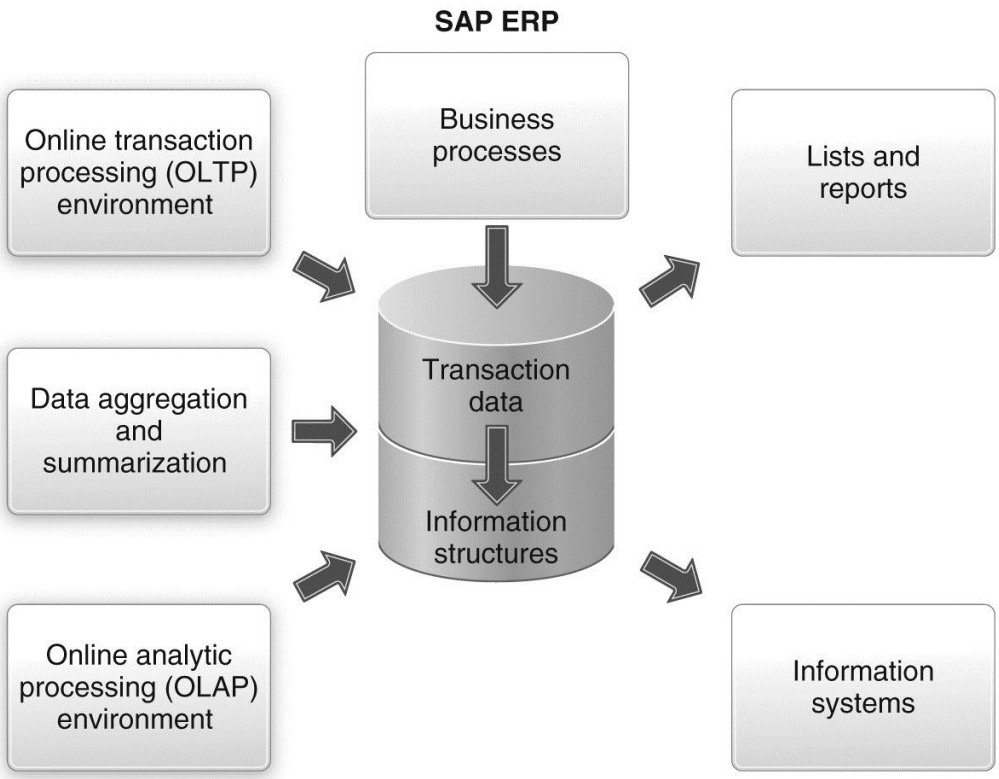
Reporting Options within SAP ERP



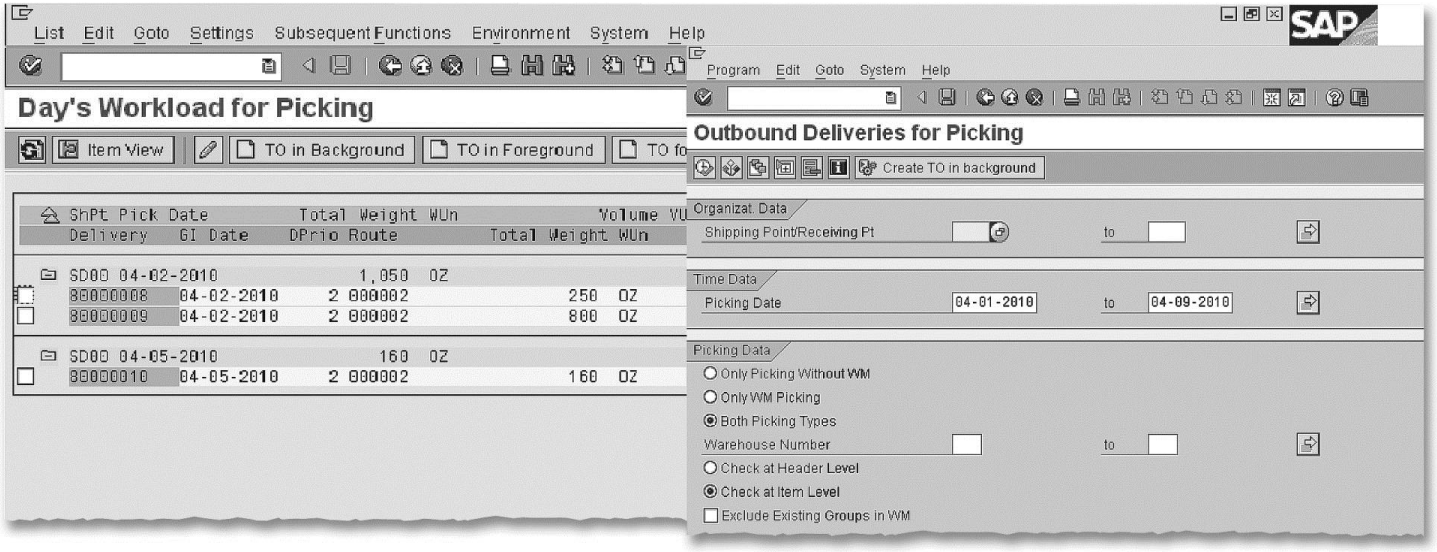
Components of Information Structures

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
....	....	....	....	....

Work Lists

- List of work to be completed
  - Picking due list
  - Billing due list
  - Delivery due list

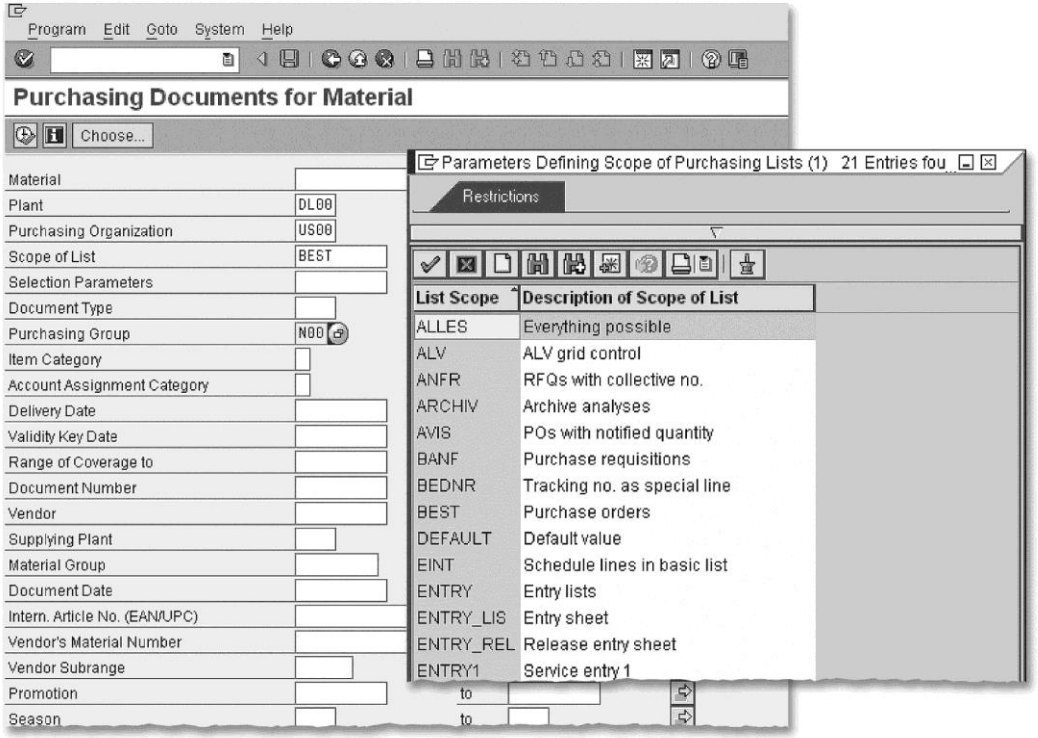
Work List – Picking Due List



Demo 2-4: Review a Work List

- Review the items that are contained in a work list.

Online Lists – List Display for Documents



Report Using SAP List Viewer

List Edit Goto Settings Environment System Help

Material Document List

Material		Material Description				Plnt Name 1
SLoc MvT S Mat. Doc.		Item Pstng Date	Quantity in UnE	EUn		
ALWA6050		Touring Aluminum Wheel Assembly				DL00 Plant Dallas
SF00 261	4900000028	1 03-09-2010	2	EA		
SF00 101	5000000014	1 03-09-2010	2	EA		
SF00 562	4900000021	1 03-03-2010	100	EA		
SF00 561	4900000002	1 02-03-2010	100	EA		
ALWH4250		Touring Aluminum Wheel				DL00 Plant Dallas
RM00 561	4900000025	3 03-09-2010	2	EA		
RM00 261	4900000026	3 03-09-2010	2	EA		
RM00 562	4900000021	2 03-03-2010	50	EA		
RM00 561	4900000001	1 02-03-2010	50	EA		
BOLT5300		Socket Head Bolt 5x20mm				DL00 Plant Dallas
RM00 261	4900000026	6 03-09-2010	2	EA		
RM00 561	4900000025	6 03-09-2010	2	EA		
RM00 562	4900000021	3 03-03-2010	140	EA		
RM00 561	4900000010	6 02-04-2010	100	EA		
RM00 261	4900000011	6 02-04-2010	10	EA		
RM00 561	4900000001	4 02-03-2010	50	EA		

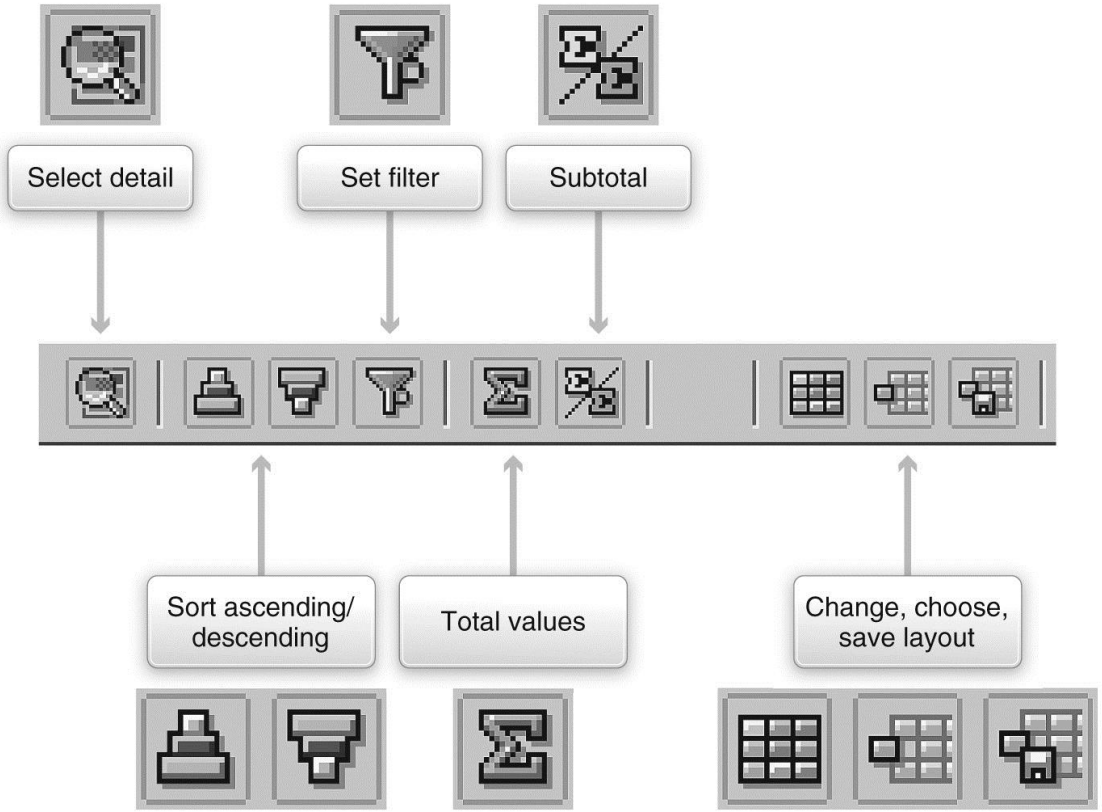
Online Lists – Report Using ALV Grid Control

List Edit Goto Settings Environment System Help

Material Document List

Material	Plant	SLoc	MvT	S	Material Doc.	Item	Posting Date	Qty in Un. of Entry	EUn
ALWA6050	DL00	SF00	261		4900000028	1	03-09-2010	2	EA
ALWA6050	DL00	SF00	101		5000000014	1	03-09-2010	2	EA
ALWA6050	DL00	SF00	562		4900000021	1	03-03-2010	100	EA
ALWA6050	DL00	SF00	561		4900000002	1	02-03-2010	100	EA
ALWH4250	DL00	RM00	561		4900000025	3	03-09-2010	2	EA
ALWH4250	DL00	RM00	261		4900000026	3	03-09-2010	2	EA
ALWH4250	DL00	RM00	562		4900000021	2	03-03-2010	50	EA
ALWH4250	DL00	RM00	561		4900000001	1	02-03-2010	50	EA
BOLT5300	DL00	RM00	261		4900000026	6	03-09-2010	2	EA
BOLT5300	DL00	RM00	561		4900000025	6	03-09-2010	2	EA
BOLT5300	DL00	RM00	562		4900000021	3	03-03-2010	140	EA
BOLT5300	DL00	RM00	561		4900000010	6	02-04-2010	100	EA
BOLT5300	DL00	RM00	261		4900000011	6	02-04-2010	10	EA
BOLT5300	DL00	RM00	561		4900000001	4	02-03-2010	50	EA
BRKT5000	DL00	RM00	561		4900000027	7	03-09-2010	1	EA
BRKT5000	DL00	RM00	261		4900000028	8	03-09-2010	1	EA
BRKT5000	DL00	RM00	562		4900000021	5	03-03-2010	98	EA
BRKT5000	DL00	SF00	562		4900000021	4	03-03-2010	50	EA
BRKT5000	DL00	RM00	261		4900000020	8	02-08-2010	1	EA

Functions of the List Viewer and Grid Control



Demo 2-5: Review an Online List

- Review the items contained in an online list

Demo 2-6: Review ERP Reports

- Review the reports provided by ERP

Information Systems

- Logistics information systems
  - Purchasing IS
  - Sales IS
  - Inventory control IS
  - Shop floor IS
- Financial information systems
  - GL reporting (B/S, I/S, Cash flows)
  - Receivables, payables
- Human resource information systems
  - Personnel, positions, payroll

Information Systems

- Information Structures
  - Standard (predefined)
  - User-defined information structures
  - Standard analysis (predefined analytics)
  - Flexible analysis (user-define content and format)
- OLAP provides reporting based on aggregated data in information structures
- SAP BW receives data from SAP ERP, SAP Business Suite, and non-SAP systems

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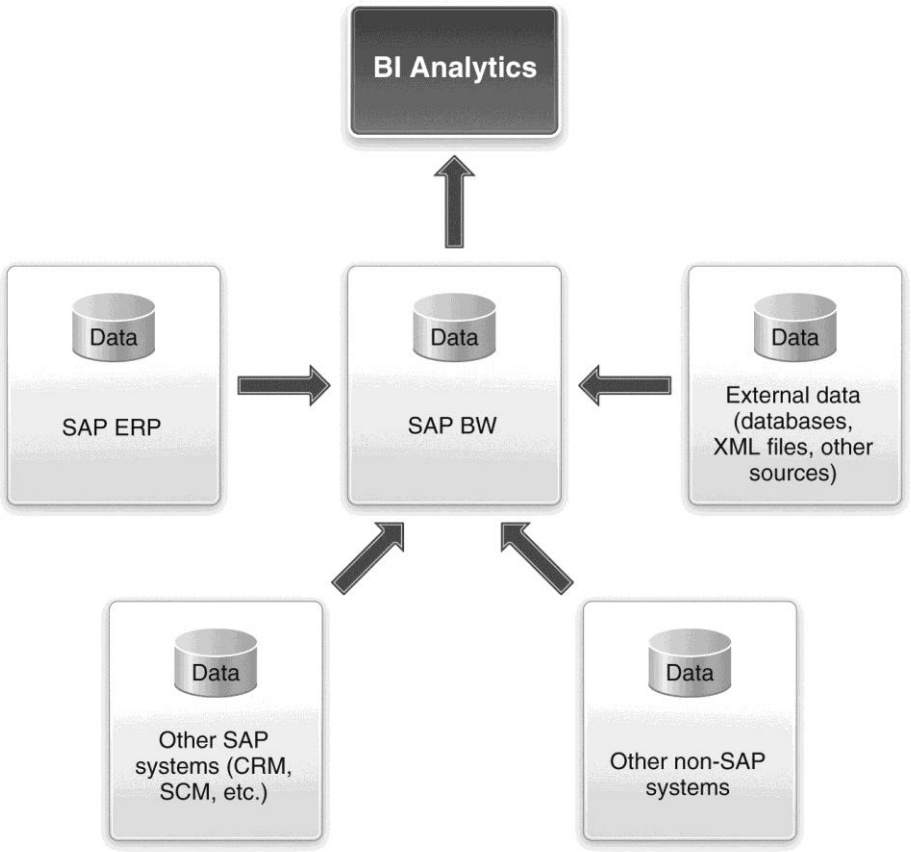
Reporting Using SAP BW