Enterprise Information Systems

Mário Caldeira

caldeira@iseg.ulisboa.pt

Enterprise Information Systems

1. Business Processes

2. Enterprise Resource Planning Systems

3. Customer Relationship Management Systems

4. Supply Chain Management Systems

Business Processes

Business processes refer to the manner in which work is organized, coordinated, and focused to produce a valuable product or service.

Business processes are the collection of activities required to produce a product or service.

These activities are supported by flows of materials, information and knowledge and the performance of a business firm depends on how well its business processes are designed and coordinated.

Example of Business Processes

Buyer
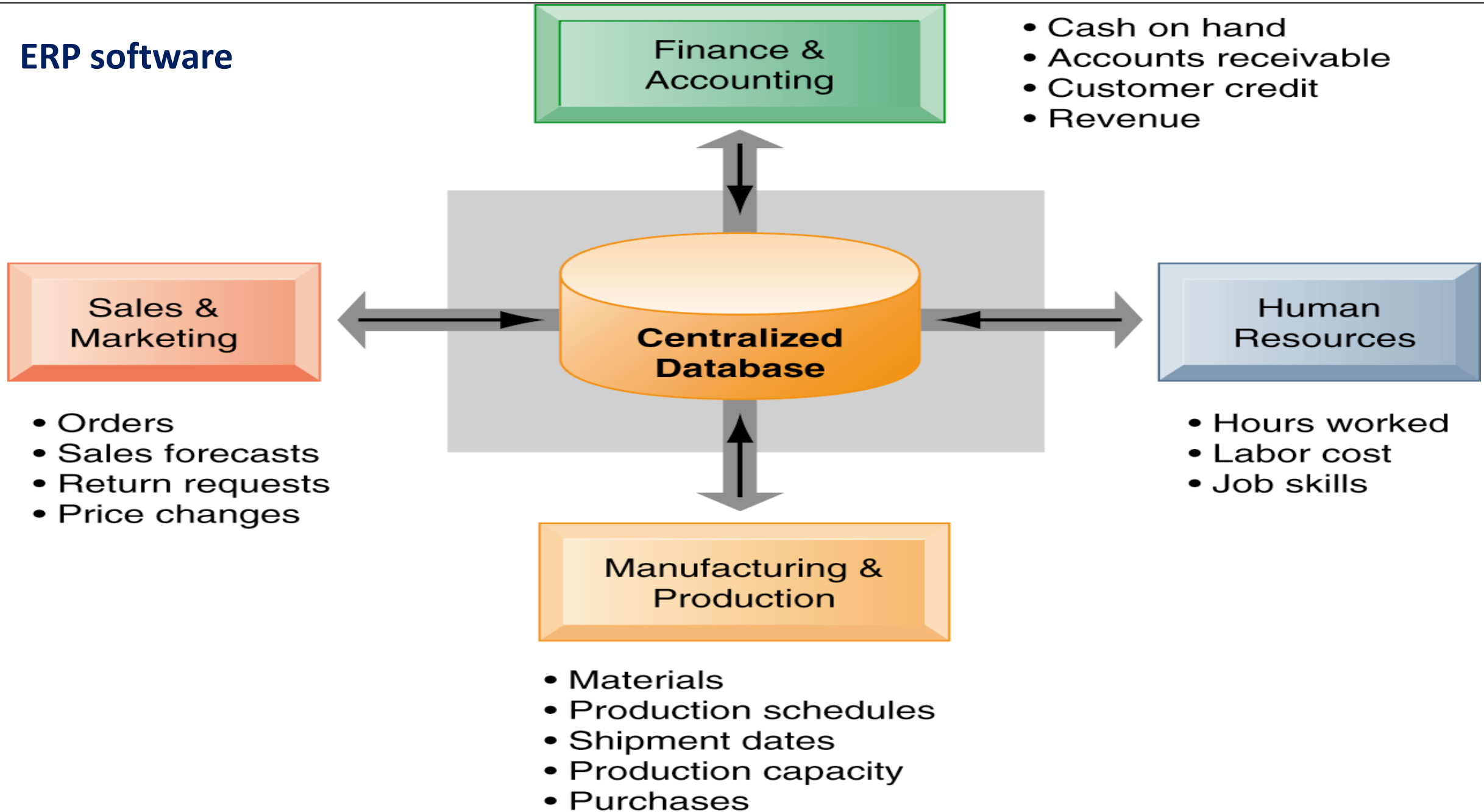
Seller
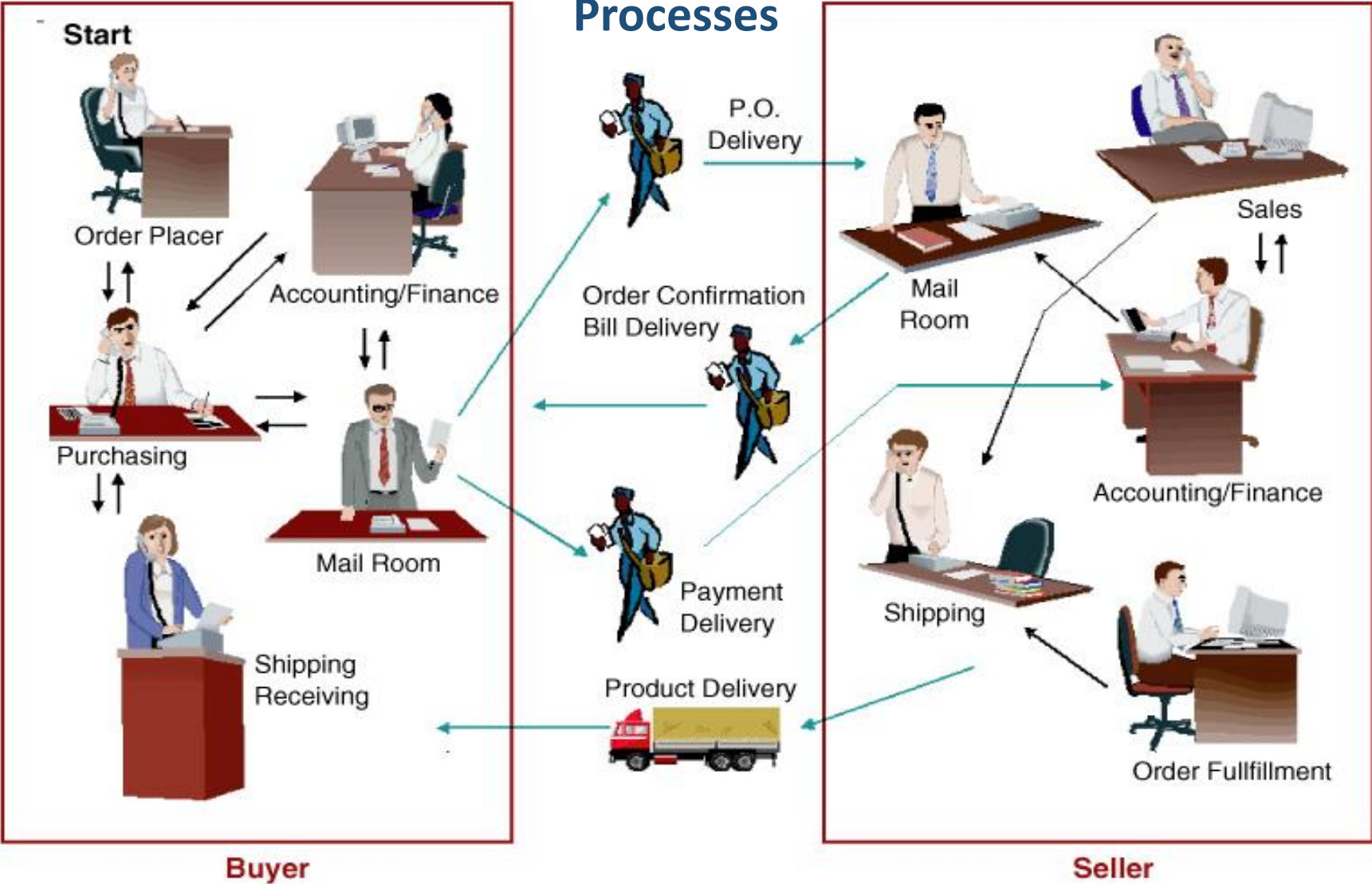
Enterprise Resource Planning (ERP)

The software is built around thousands of predefined business processes that are supposed to reflect best practices in an industry. The cost is usually divided in licenses (40%) and implementation services (60%).

It includes integrated models for:

- Finance and accounting;

- Human resources;

- Manufacturing and production;

- Sales and marketing;

- etc.

ERP software

Finance & Accounting
- Cash on hand
- Accounts receivable
- Customer credit
- Revenue

Sales & Marketing
- Orders
- Sales forecasts
- Return requests
- Price changes

Centralized Database

Human Resources
- Hours worked
- Labor cost
- Job skills

Manufacturing & Production
- Materials
- Production schedules
- Shipment dates
- Production capacity
- Purchases

ERP Systems benefits and implementation approaches

Benefits:

- Increase operational efficiency;
- Provide firm-wide information to support decision making;
- Enable rapid responses to customer requests for information or products;
- Include analytical tools to evaluate overall organizational performance.

Implementation alternatives:

- On-premises
- Cloud
- Hybrid

When implementing the software the customer selects the functions of the system that wishes to use. Business processes are mapped against software processes. There are configuration tables for customization.
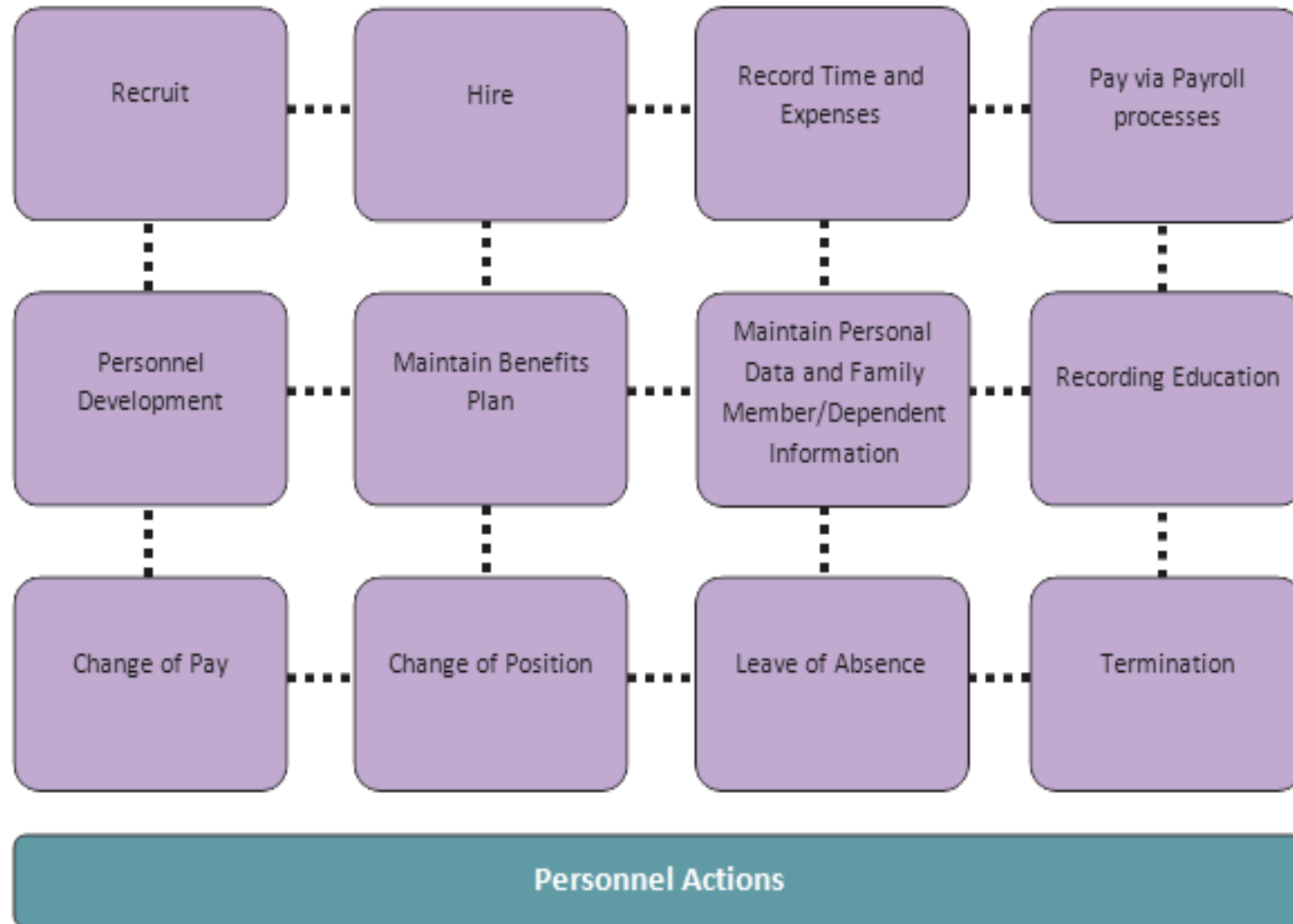
Example: SAP – Traditional Modules

SD – Sales and Distribution;

FI – Financial Accounting;

MM – Materials Management;

LE - Logistics Execution;

PP – Production Planning;

QM – Quality Management;

PM – Plant Management;

HR – Human Resources;

CO – Controlling;

FSCM - Financial Supply-Chain Management;

AM – Asset Management;

PS – Project System;

WF – Workflow.

Example: SAP – Vertical solutions

- SAP for Aerospace & Defense

- SAP for Automotive

- SAP for Banking

- SAP for Chemicals

- SAP for *Consumer Products* (clothes, footwear, etc)

- SAP for Defense & Security

- SAP for Engineering, Construction & Operations

- SAP for Healthcare

- SAP for Higher Education & Research

- SAP for High Tech (IT firms)

- SAP for Industrial Machinery & Components

- SAP for Insurance

- SAP for Life Sciences (pharmaceutical companies, etc)

- SAP for Logistics Service Providers

- SAP for Media

- SAP for Mill Products (florest products, textile, etc)

- SAP for Mining

- SAP for Oil & Gas

- SAP for Postal Services

- SAP for Professional Services

- SAP for Public Sector

- SAP for Railways

- SAP for Retail

- SAP for Telecommunications

- SAP for Utilities

- SAP for Wholesale Distribution

Example: SAP HR (hire to retire process)

Recruit	Hire	Record Time and Expenses	Pay via Payroll processes
Personnel Development	Maintain Benefits Plan	Maintain Personal Data and Family Member/Dependent Information	Recording Education
Change of Pay	Change of Position	Leave of Absence	Termination

Personnel Actions

Customer Relationship Management (CRM)

CRM systems examine customers from a multifaceted perspective.

These systems use a set of integrated applications to address all aspects of the customer relationship, including customer service, sales and marketing.

Sales
- Telephone sales
- Web sales
- Retail store sales
- Field sales

Customer

Marketing
- Campaign data
- Content
- Data analysis

Service
- Call center data
- Web self-service data
- Wireless data
- Field service data
- Social networking data

Source: Laudon & Laudon, 2016

Customer Relationship Management

- **Customer Relationship Management:**
  - The main objective of CRM is to know customers better;
  - In large businesses, there are too many customers and many ways in which the customer interacts with the firm.

- **CRM systems:**
  - Capture and integrate customer's data from different processes of the organization;
  - Consolidate, integrate and analyze customer data;
  - Distribute customer information to several systems and customer touch points across enterprise;
 - Provide single customer view.

# Customer Relationship Management Systems

- **Operational CRM:**

    - Customer-facing applications such as sales force automation, call center and customer service support and marketing automation.

- **Analytical CRM:**

    - Is based on data warehouses, populated by operational CRM systems and customer touch points.

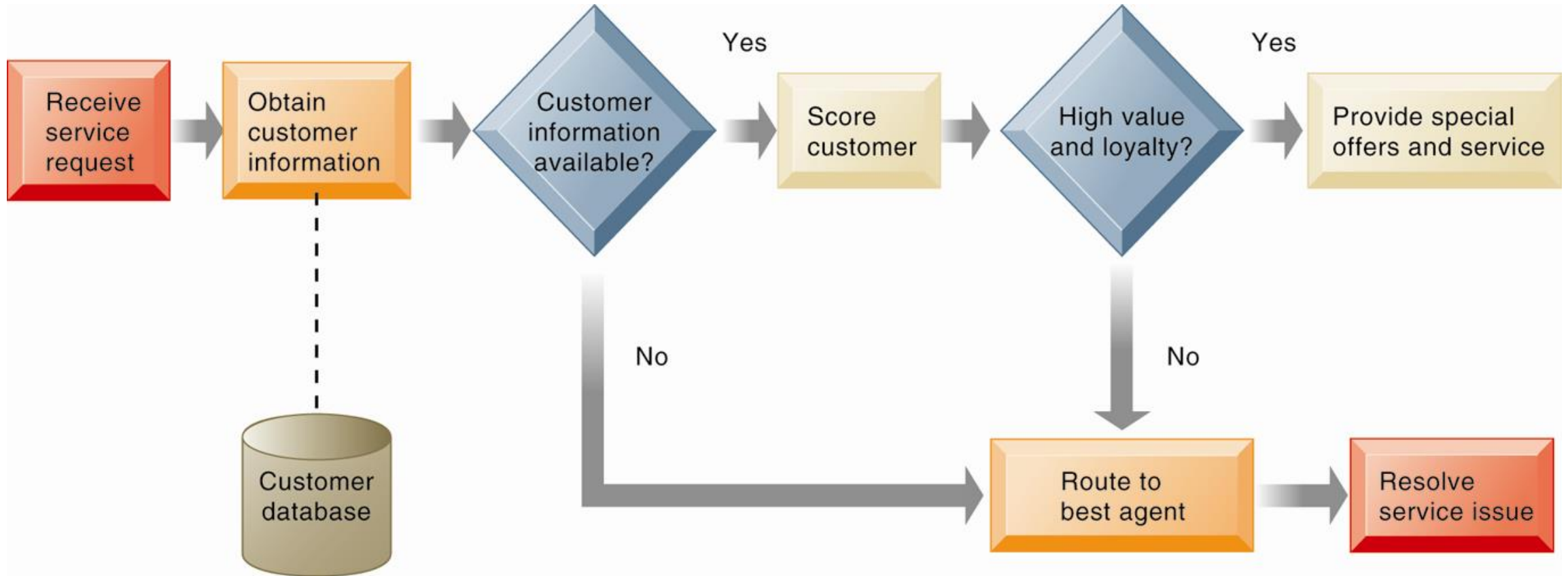   - Analyze customer data to produce reports.
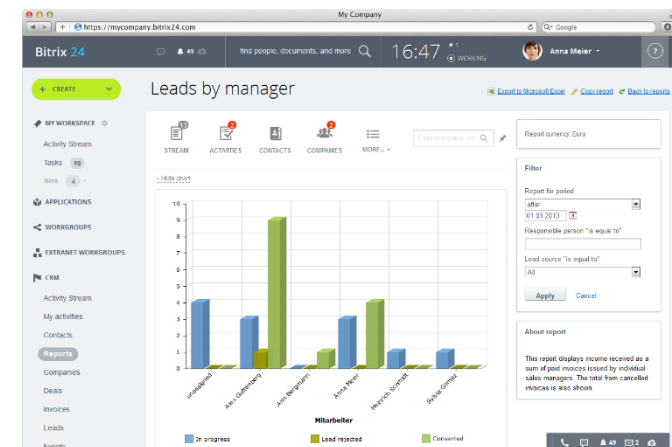
CRM Software Capabilities
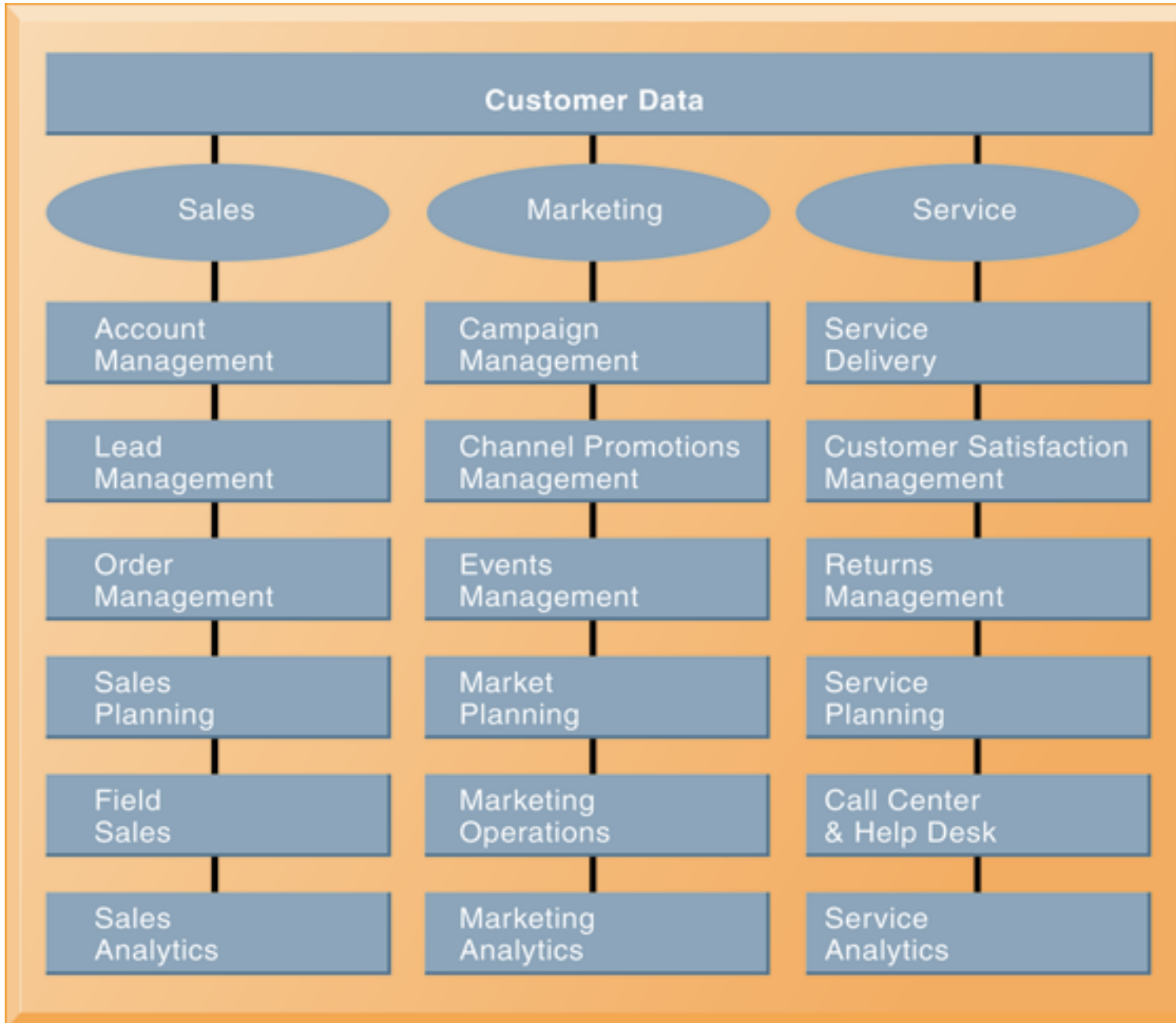
CRM software products support business processes in sales, service, and marketing, **integrating customer information from many different sources**.
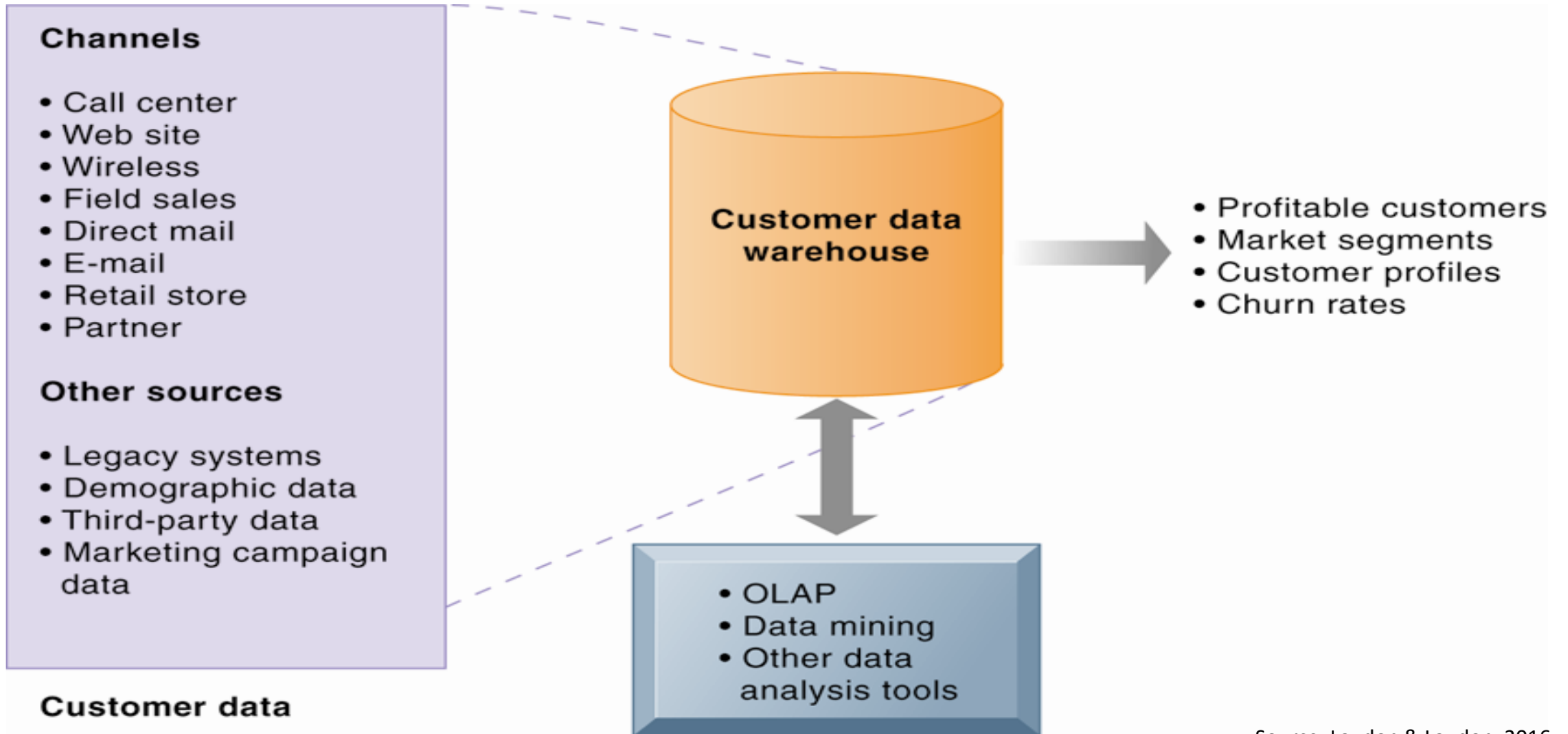
Included are support for both the **operational** and **analytical** aspects of **CRM**.

Customer Data

Sales	Marketing	Service
Account Management	Campaign Management	Service Delivery
Lead Management	Channel Promotions Management	Customer Satisfaction Management
Order Management	Events Management	Returns Management
Sales Planning	Market Planning	Service Planning
Field Sales	Marketing Operations	Call Center & Help Desk
Sales Analytics	Marketing Analytics	Service Analytics

Source: Laudon & Laudon, 2016

Customer Loyalty Management Process Map

This process design shows how a "best practice" for **promoting customer loyalty through customer service** would be modeled by customer relationship management software.
The CRM software helps firms identify high-value customers for preferential treatment.

Source: Laudon & Laudon, 2016

Analytical CRM uses a customer data warehouse and tools to analyze customer data collected from the firm's customer touch points and from other sources.

Channels

- Call center
- Web site
- Wireless
- Field sales
- Direct mail
- E-mail
- Retail store
- Partner

Other sources

- Legacy systems
- Demographic data
- Third-party data
- Marketing campaign data

Customer data

Customer data warehouse

- OLAP
- Data mining
- Other data analysis tools

- Profitable customers
- Market segments
- Customer profiles
- Churn rates

Source: Laudon & Laudon, 2016

CRM systems benefits

- **Business value of CRM systems:**
  - Increased customer satisfaction;
  - Reduced direct-marketing costs;
  - More effective marketing;
  - Lower costs for customer acquisition/retention;
  - Increased sales revenue.
  - Reduce churn-rate (number of customers who stop using or purchasing products or services from a company. Indicator of growth or decline of firm's customer base.
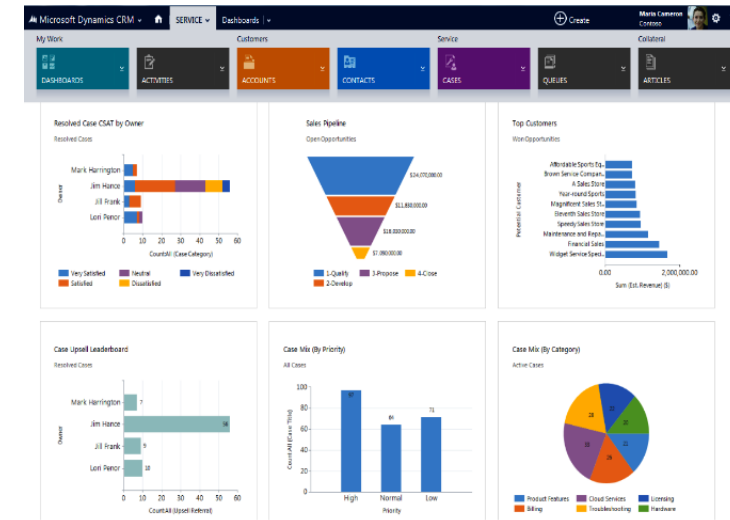
Supply Chain Management Systems

A Supply-Chain is a network of organizations and processes for procuring materials, transforming them into products, and distributing the products.
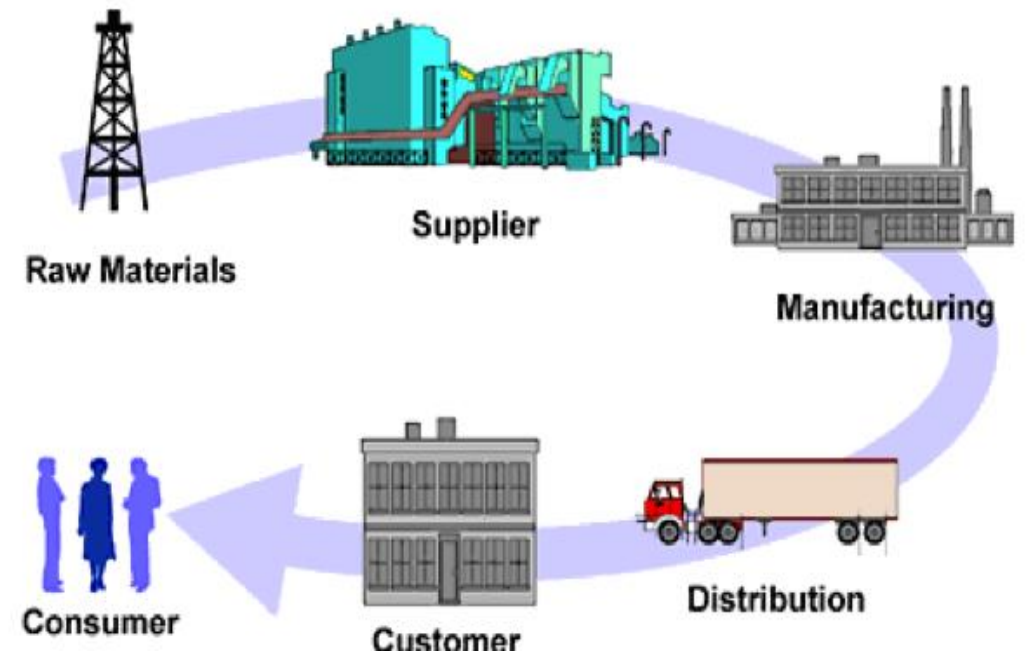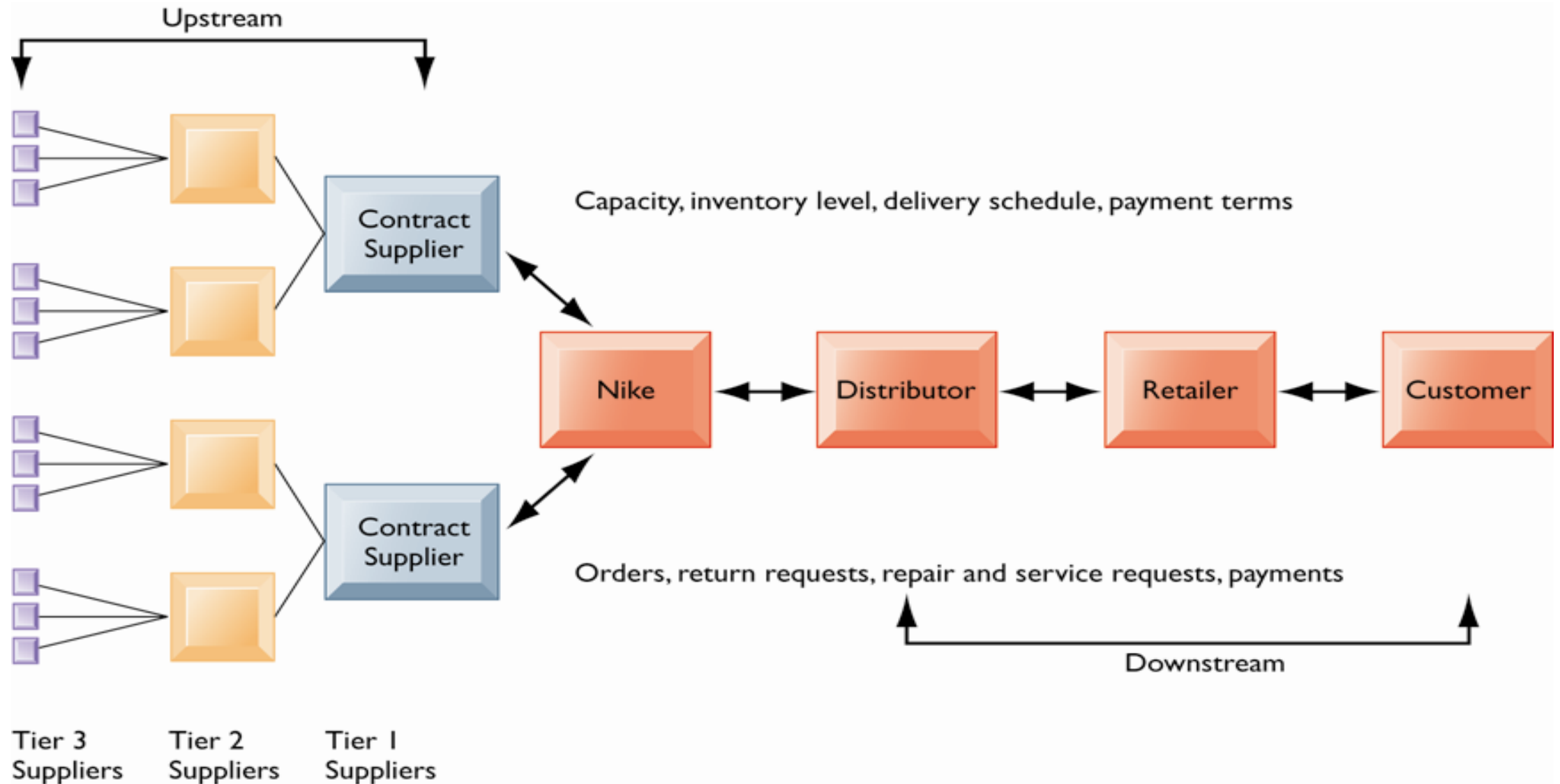
Supply Chain Management Systems

Objectives of Supply Chain Management Systems:

- Match supply to demand;

- Reduce inventory levels;

- Improve delivery service;

- Speed product time to market;

- Use assets more effectively;

- Reduced supply chain costs lead to increased profitability;

- Increase sales.

Example: Nike's Supply Chain

Source: Laudon & Laudon, 2016

Like in any Enterprise System data management is critical

PART

Part_Number	Part_Name	Unit_Price	Supplier_Number
137	Door latch	22.00	8259
145	Side mirror	12.00	8444
150	Door molding	6.00	8263
152	Door lock	31.00	8259
155	Compressor	54.00	8261
178	Door handle	10.00	8259

Select Part_Number = 137 or 150

SUPPLIER

Supplier_Number	Supplier_Name	Supplier_Street	Supplier_City	Supplier_State	Supplier_Zip
8259	CBM Inc.	74 5th Avenue	Dayton	OH	45220
8261	B. R. Molds	1277 Gandolly Street	Cleveland	OH	49345
8263	Jackson Components	8233 Micklin Street	Lexington	KY	56723
8444	Bryant Corporation	4315 Mill Drive	Rochester	NY	11344

Join by Supplier_Number

Part_Number	Part_Name	Supplier_Number	Supplier_Name
137	Door latch	8259	CBM Inc.
150	Door molding	8263	Jackson Components

Project selected columns

Supply Chain Management challenges

- **Inefficiencies cut into a company's operating costs**
    - Can waste up to 25% of operating expenses.

- **Just-in-time strategy:**
    - Components arrive when needed;
    - Goods are shipped immediately after leaving the assembly line.

- **Safety stock:** A buffer for lack of flexibility in the supply chain.

- **Bullwhip effect:**

    - Information about product demand gets distorted as it passes from one entity to the next across supply chain.

    - Inaccurate information can cause minor fluctuations in demand for a product to be amplified as one moves further back in the supply chain, and creates excess inventory for distributors, manufacturers, and suppliers.

Supply Chain Management Systems

Supply chain management software:

- **Supply chain planning systems:**
    - Model existing supply chain;
    - Enable demand planning;
    - Optimize sourcing, manufacturing plans;
    - Establish inventory levels;
    - Identify transportation modes.

- **Supply chain execution systems:**
    - Manage flow of products through distribution centers and warehouses.

The Emerging Internet-Driven Supply Chain

The emerging **Internet-driven supply chain** provides multidirectional communication among firms, networks of firms, and e-marketplaces so that entire **networks of supply chain partners** can immediately adjust inventories, orders, and capacities.

Distributors

Manufacturers

Retailers

Suppliers

Logistics Providers

Customers

Virtual Manufacturers

Private Industrial Networks / Net Marketplaces

Contract Manufacturers

Logistics Exchanges

Source: Laudon & Laudon, 2016