INFORMATION SYSTEMS IN THE ENTERPRISE

What are the major types of systems in a business? What role do they play?

How do information systems support the major business functions?

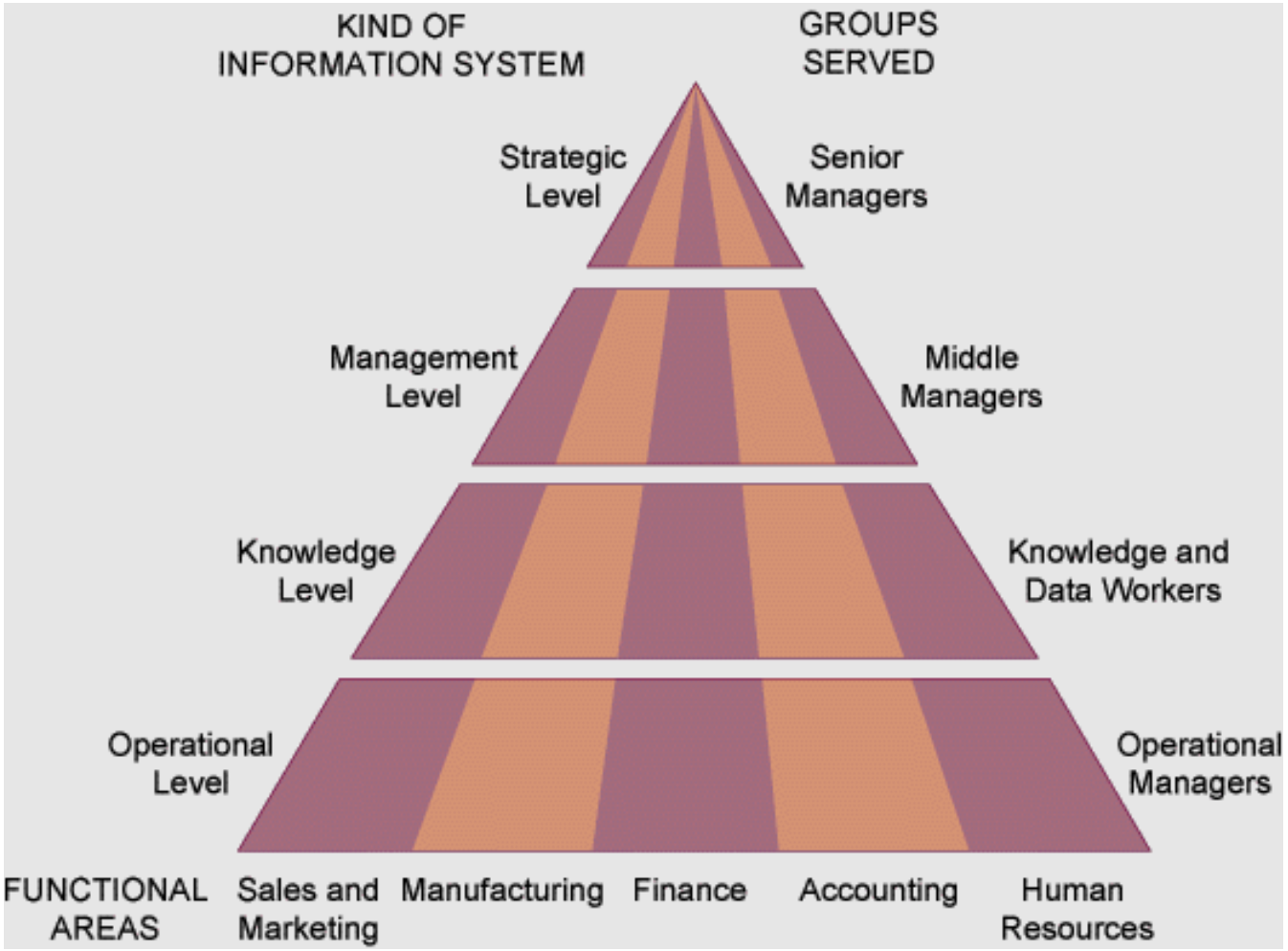
Why should managers pay attention to business processes?

MANAGEMENT CHALLENGES

1. Integration: Different systems serve variety of functions, connecting organizational levels difficult, costly

2. Enlarging scope of management thinking: Huge system investments, long development time must be guided by common objectives

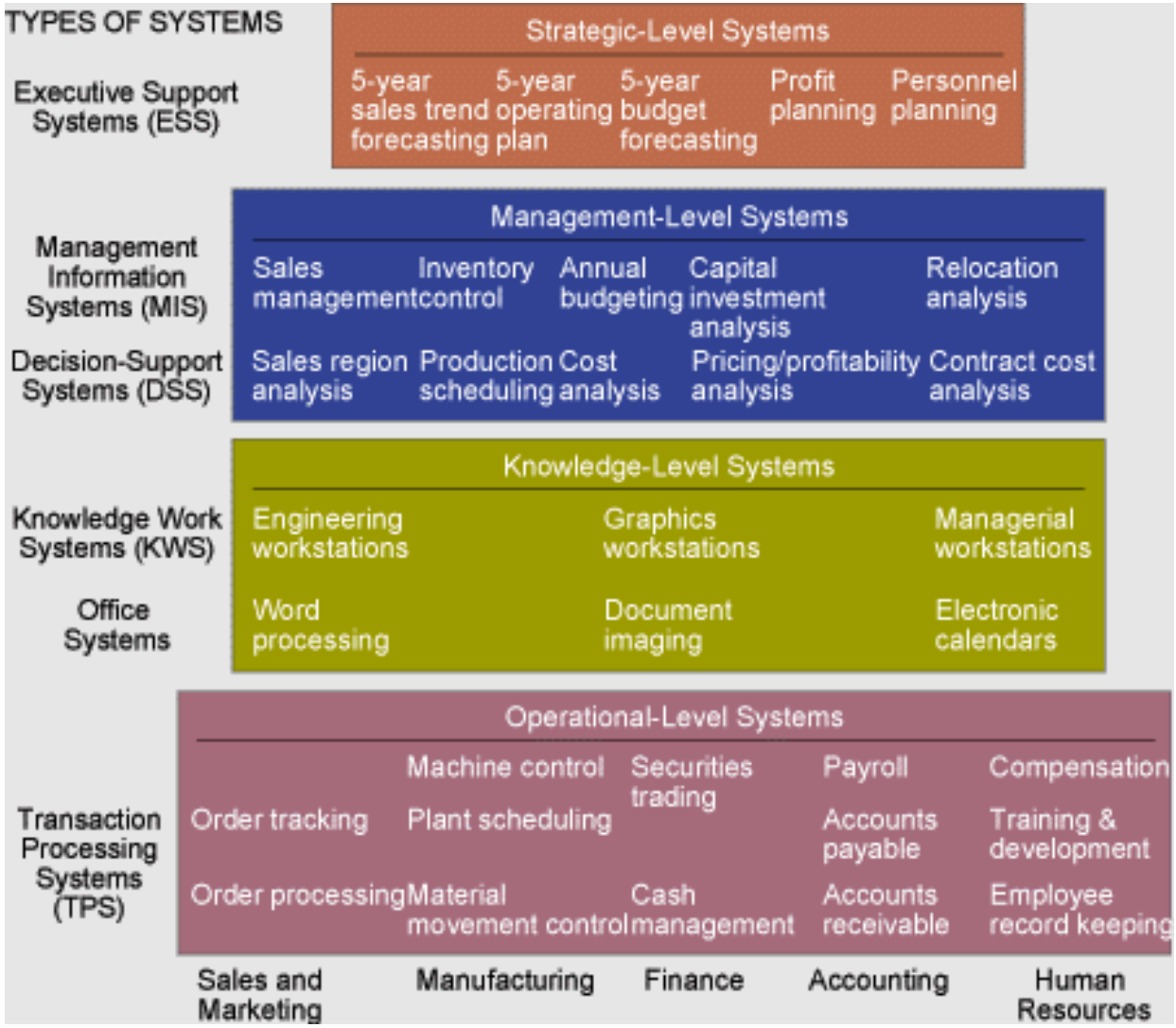
Types of Information Systems



Major Types of Systems

- Executive Support Systems (ESS)
- Decision Support Systems (DSS)
- Management Information Systems (MIS)
- Knowledge Work Systems (KWS)
- Office Systems
- Transaction Processing Systems (TPS)

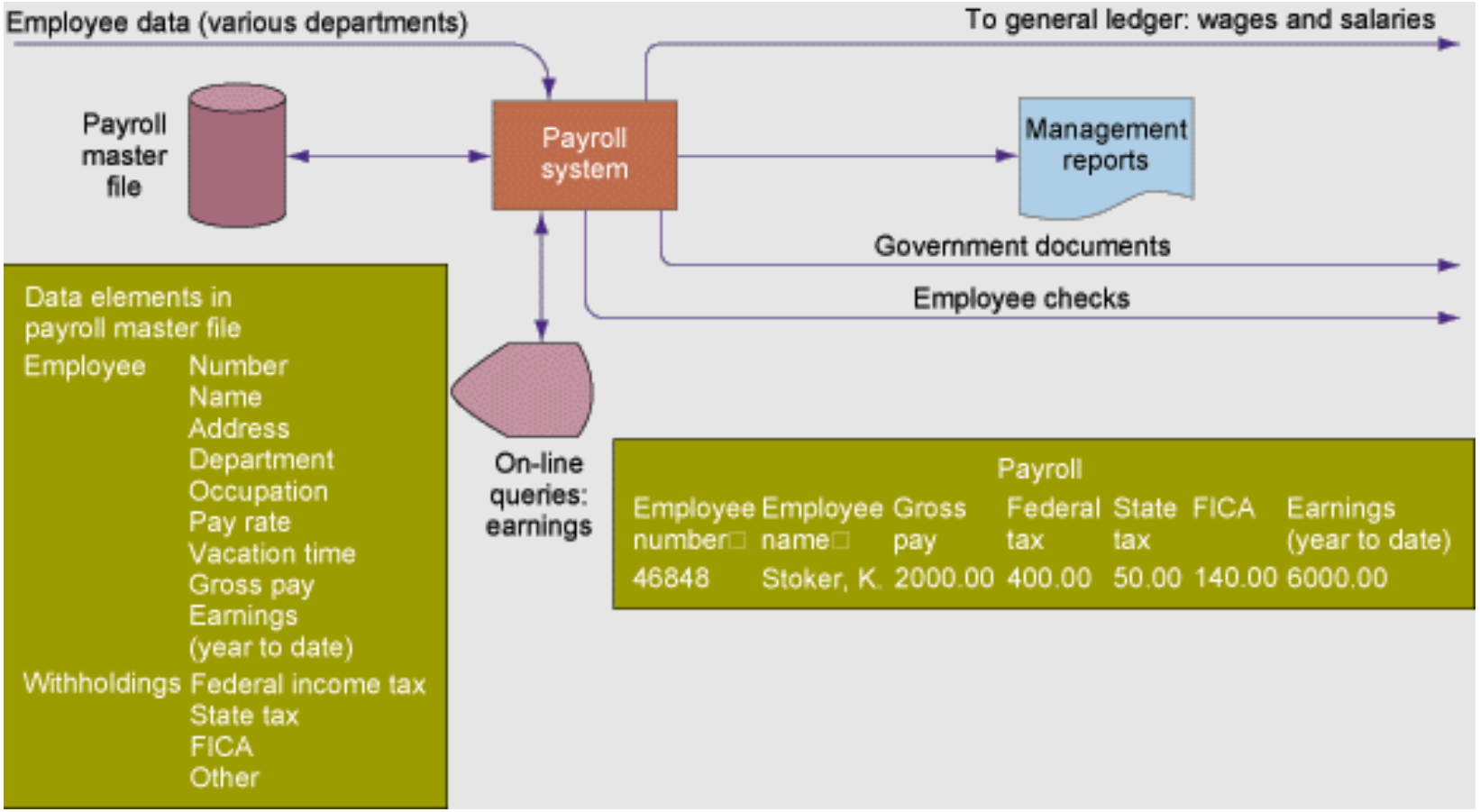
MAJOR TYPES OF SYSTEMS IN ORGANIZATIONS



Transaction Processing Systems (TPS):

- **Basic business systems that serve the operational level**
- **A computerized system that performs and records the daily routine transactions necessary to the conduct of the business**

Payroll TPS


Employee data (various departments)
To general ledger: wages and salaries
Payroll master file
Payroll system
Management reports
Government documents
Employee checks
Data elements in payroll master file
Employee
Number
Name
Address
Department
Occupation
Pay rate
Vacation time
Gross pay
Earnings (year to date)
Withholdings
Federal income tax
State tax
FICA
Other
On-line queries: earnings
Payroll
Employee number
Employee name
Gross pay
Federal tax
State tax
FICA
Earnings (year to date)
46848
Stoker, K.
2000.00
400.00
50.00
140.00
6000.00

Types of TPS Systems

	TYPE OF TPS SYSTEM				
	Sales/ marketing systems	Manufacturing/ production systems	Finance/ accounting systems	Human resources systems	Other types (e.g., university)
Major functions of system	Sales management	Scheduling	Budgeting	Personnel records	Admissions
	Market research	Purchasing	General ledger	Benefits	Grade records
	Promotion	Shipping/receiving	Billing	Compensation	Course records
	Pricing	Engineering	Cost accounting	Labor relations	Alumni
	New products	Operations		Training	
Major application systems	Sales order information system	Machine control systems	General ledger	Payroll	Registration system
	Market research system	Purchase order systems	Accounts receivable/payable	Employee records	Student transcript system
	Sales commission system	Quality control systems	Funds management systems	Benefit systems	Curriculum class control systems
				Career path systems	Alumni benefactor system

Knowledge Work Systems (KWS):

Knowledge level

- Inputs: Design specs
- Processing: Modeling
- Outputs: Designs, graphics
- Users: Technical staff and professionals

Example: Engineering work station

Management Information System (MIS):

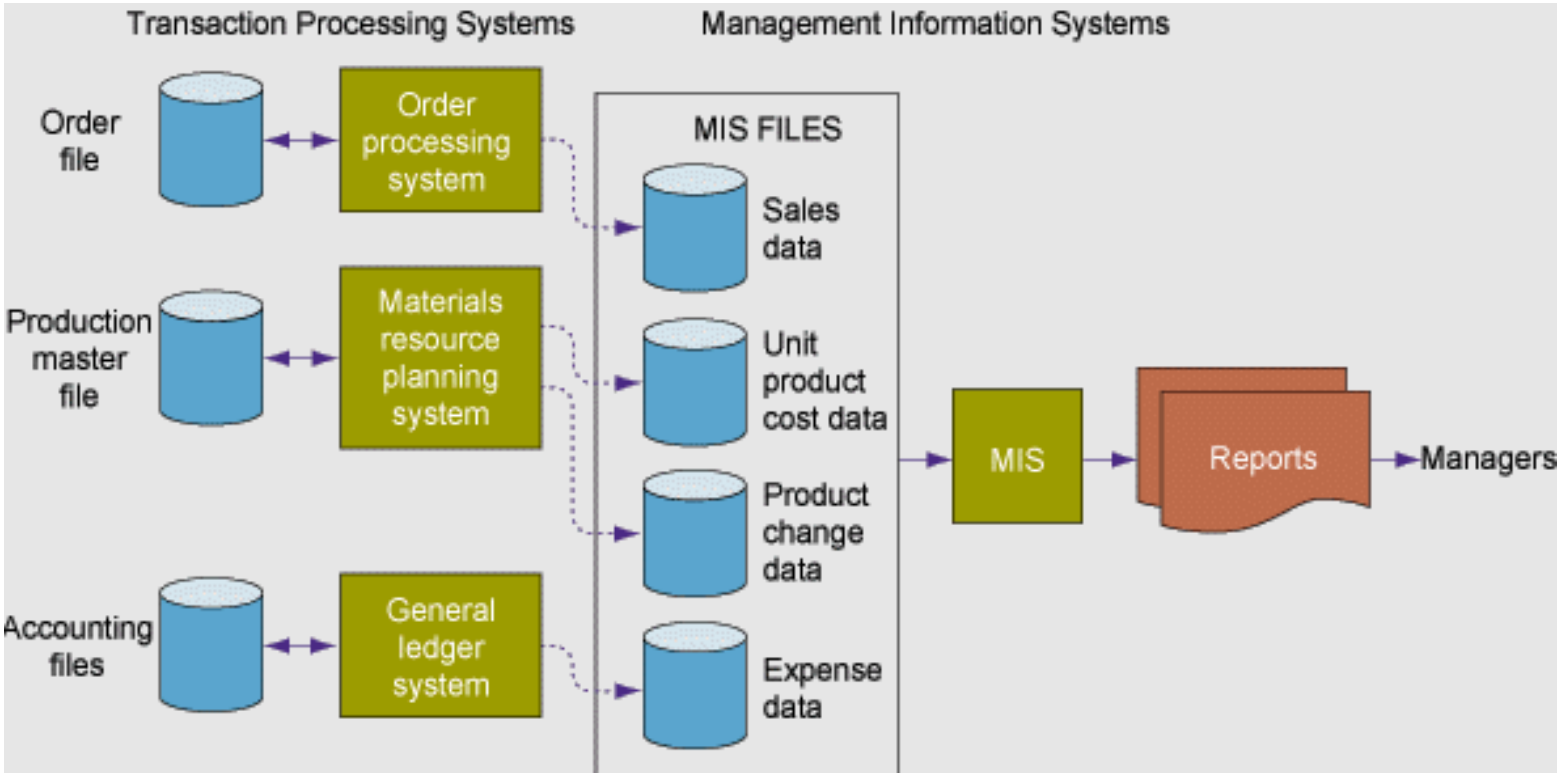
Management level

- Inputs: High volume data
- Processing: Simple models
- Outputs: Summary reports
- Users: Middle managers

Example: Annual budgeting

MAJOR TYPES OF SYSTEMS IN ORGANIZATIONS

Management Information System (MIS)



MAJOR TYPES OF SYSTEMS IN ORGANIZATIONS

Management Information System (MIS)

- Structured and semi-structured decisions
- Report control oriented
- Past and present data
- Internal orientation
- Lengthy design process

Decision Support System (DSS):

Management level

- Inputs: Low volume data
- Processing: Interactive
- Outputs: Decision analysis
- Users: Professionals, staff

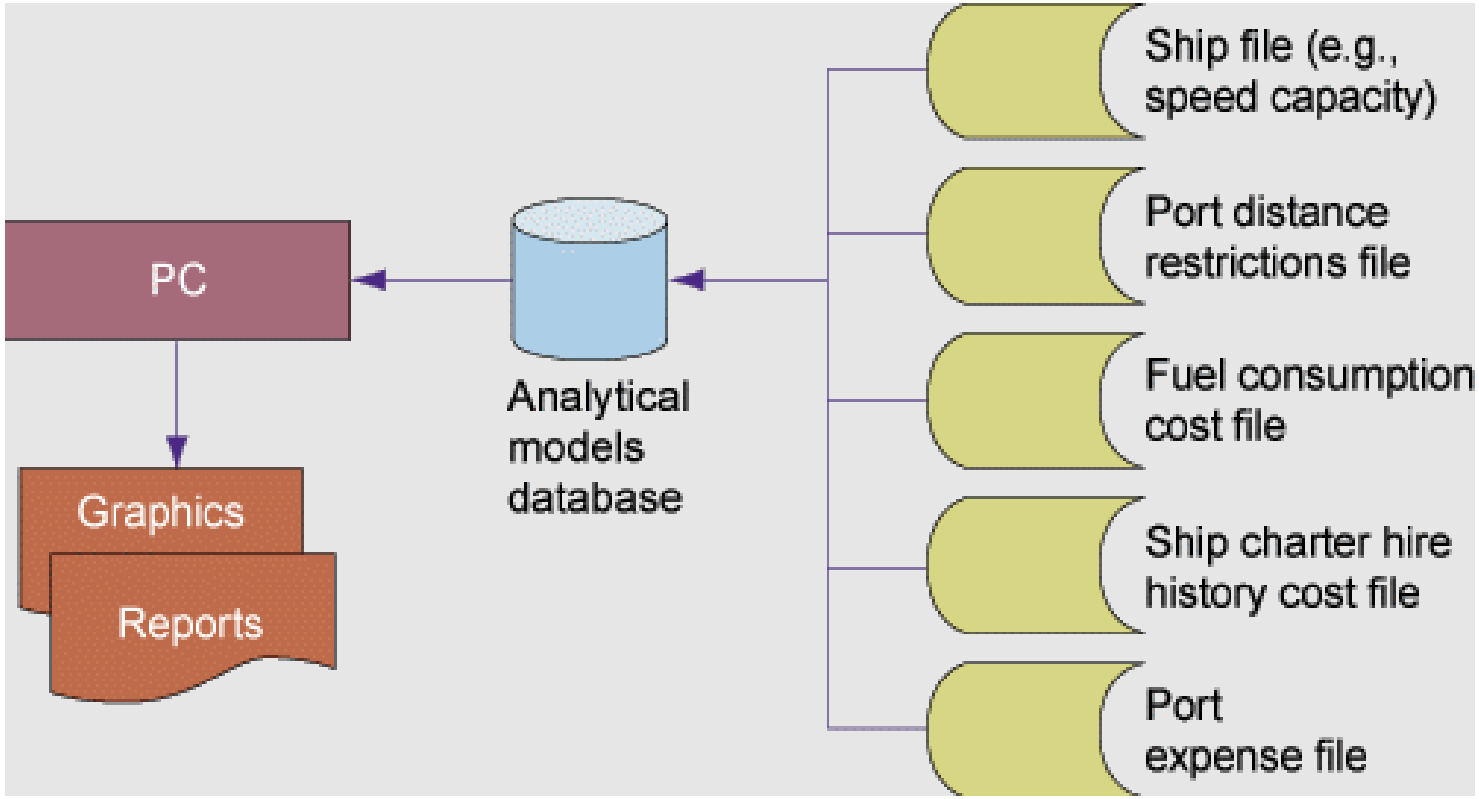
Example: Contract cost analysis

Decision Support System (DSS)

Consolidated Consumer Products Corporation
Sales by Product and Sales Region: 2001

PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL VS. PLANNED
4469	Carpet Cleaner	Northeast	4,066,700	4,800,000	0.85
		South	3,778,112	3,750,000	1.01
		Midwest	4,867,001	4,600,000	1.06
		West	4,003,440	4,400,000	0.91
	TOTAL		16,715,253	17,550,000	0.95
5674	Room Freshener	Northeast	3,676,700	3,900,000	0.94
		South	5,608,112	4,700,000	1.19
		Midwest	4,711,001	4,200,000	1.12
		West	4,563,440	4,900,000	0.93
	TOTAL		18,559,253	17,700,000	1.05

Decision Support System (DSS)



Executive Support System (ESS):

Strategic level

- Inputs: Aggregate data
- Processing: Interactive
- Outputs: Projections
- Users: Senior managers

Example: 5-year operating plan

Executive Support System (ESS)

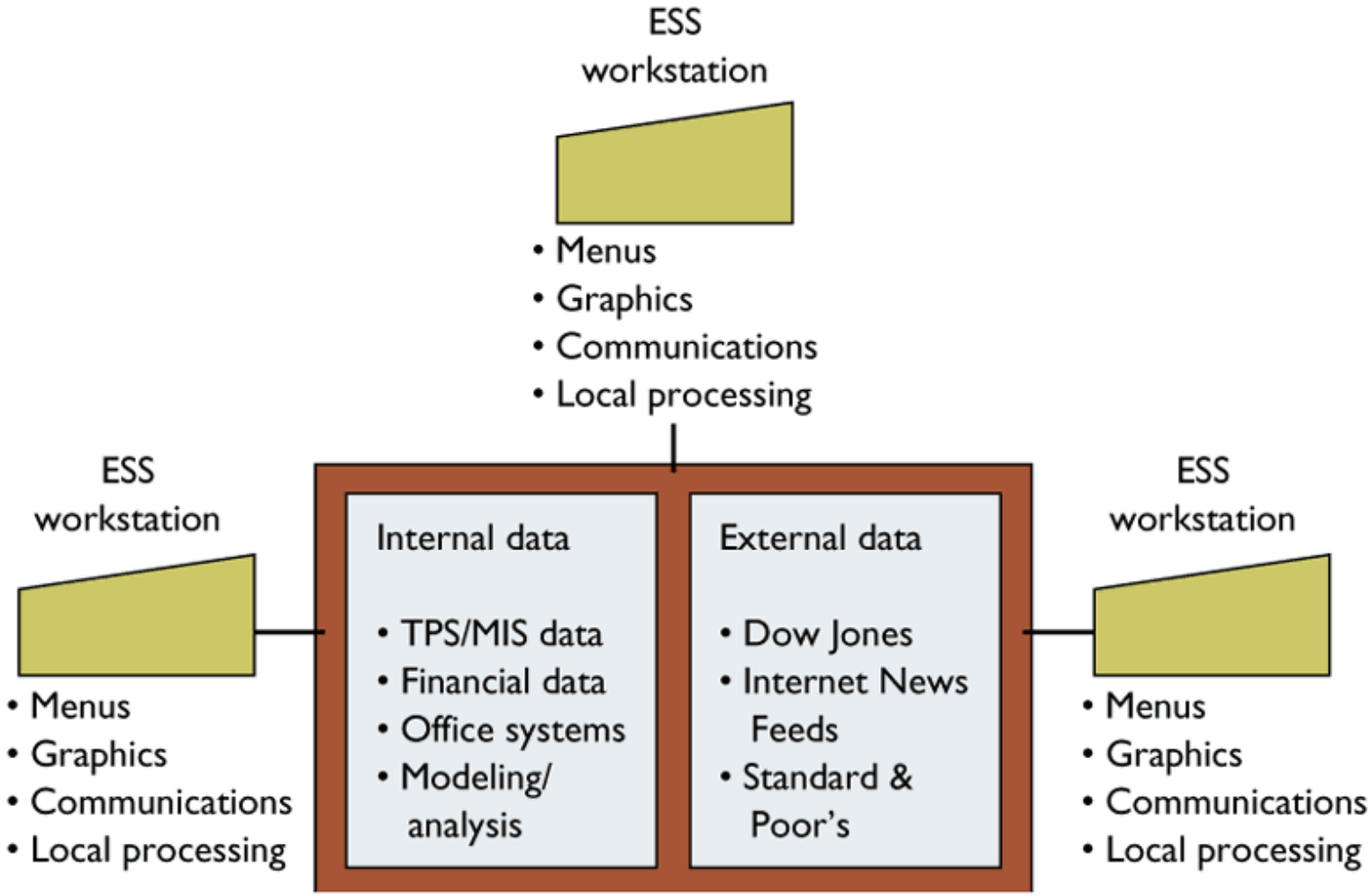


Figure 2-8

MAJOR TYPES OF SYSTEMS IN ORGANIZATIONS

Executive support system (ESS)

Top level management

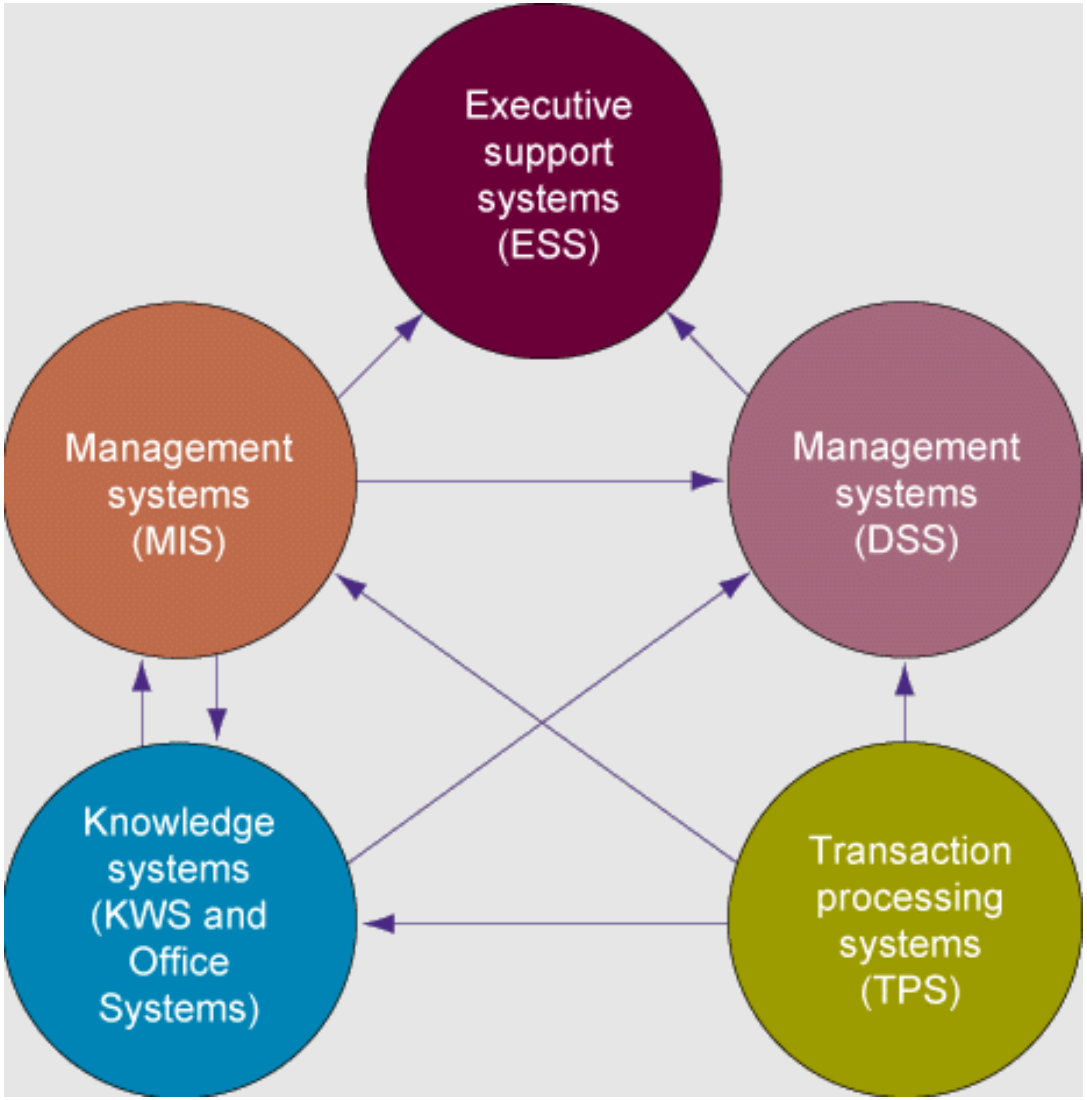
Designed to the individual

Ties CEO to all levels

Very expensive to keep up

Extensive support staff

INTERRELATIONSHIPS AMONG SYSTEMS



Sales and Marketing Systems

Major functions of systems:

Sales management, market research, promotion, pricing, new products

Major application systems:

Sales order info system, market research system, pricing system

Sales and Marketing Systems

SYSTEM	DESCRIPTION	ORGANIZATIONAL LEVEL
ORDER PROCESSING	ENTER, PROCESS, TRACK ORDERS	OPERATIONAL
MARKET ANALYSIS	IDENTIFY CUSTOMERS & MARKETS	KNOWLEDGE
PRICING ANALYSIS	DETERMINE PRICES	MANAGEMENT
SALES TRENDS	PREPARE 5-YEAR FORECASTS	STRATEGIC

Manufacturing and Production Systems

Major functions of systems:

Scheduling, purchasing, shipping, receiving, engineering, operations

Major application systems:

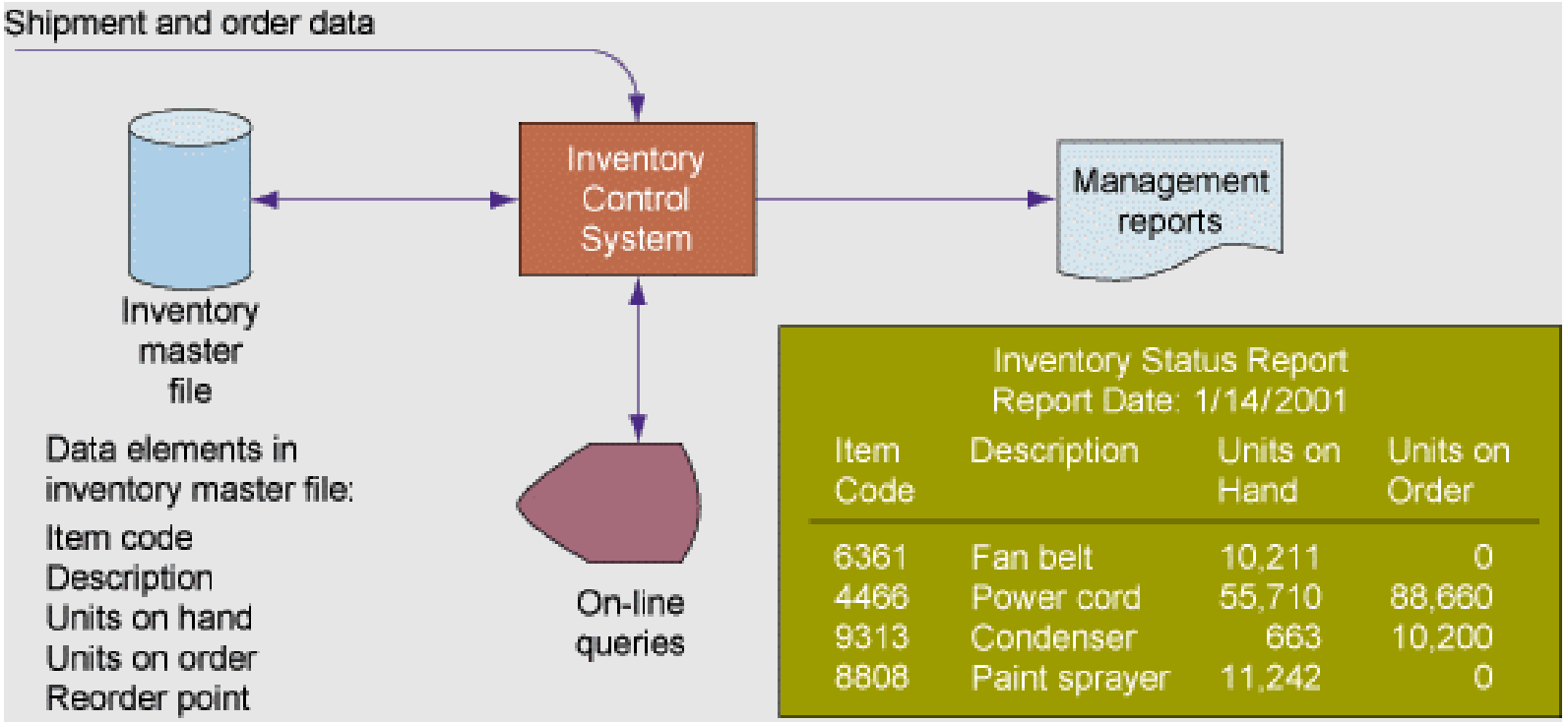
Materials resource planning systems, purchase order control systems, engineering systems, quality control systems

Manufacturing and Production Systems

SYSTEM	DESCRIPTION	ORGANIZATIONAL LEVEL
MACHINE CONTROL	CONTROL ACTIONS OF EQUIPMENT	OPERATIONAL
COMPUTER-AIDED-DESIGN	DESIGN NEW PRODUCTS	KNOWLEDGE
PRODUCTION PLANNING	DECIDE NUMBER, SCHEDULE OF PRODUCTS	MANAGEMENT
FACILITIES LOCATION	DECIDE WHERE TO LOCATE FACILITIES	STRATEGIC

Table 2-3

Overview of Inventory Systems



Financing and Accounting Systems

Major functions of systems:

Budgeting, general ledger, billing, cost accounting

Major application systems:

General ledger, accounts receivable, accounts payable, budgeting, funds management systems

Financing and Accounting Systems

SYSTEM	DESCRIPTION	ORGANIZATIONAL LEVEL
ACCOUNTS RECEIVABLE	TRACK MONEY OWED TO FIRM	OPERATIONAL
PORTFOLIO ANALYSIS	DESIGN FIRM'S INVESTMENTS	KNOWLEDGE
BUDGETING	PREPARE SHORT TERM BUDGETS	MANAGEMENT
PROFIT PLANNING	PLAN LONG-TERM PROFITS	STRATEGIC

Table 2-4

Human Resource Systems

Major functions of systems:

Personnel records, benefits, compensation, labor relations, training

Major application systems:

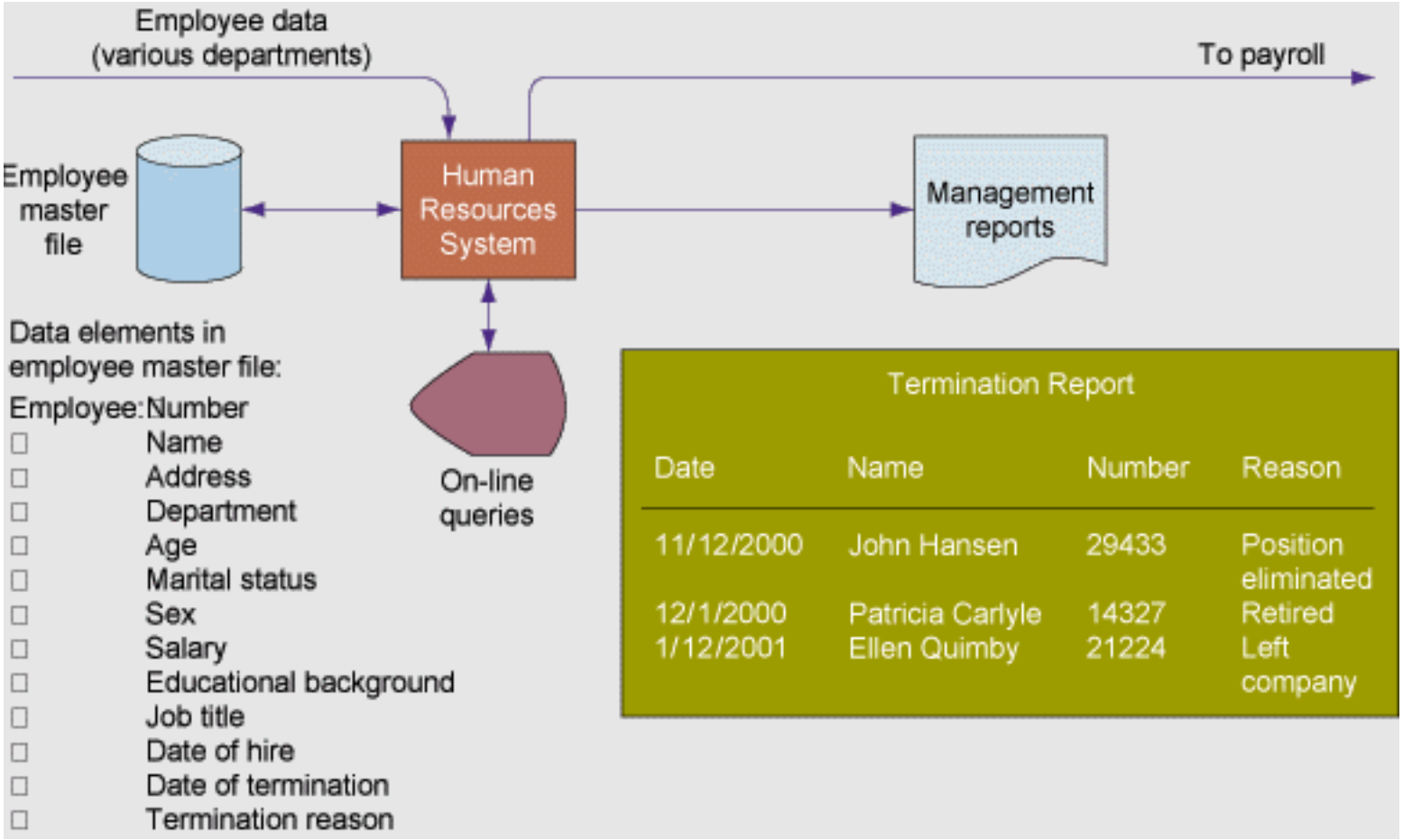
Payroll, employee records, benefit systems, career path systems, personnel training systems

Human Resource Systems

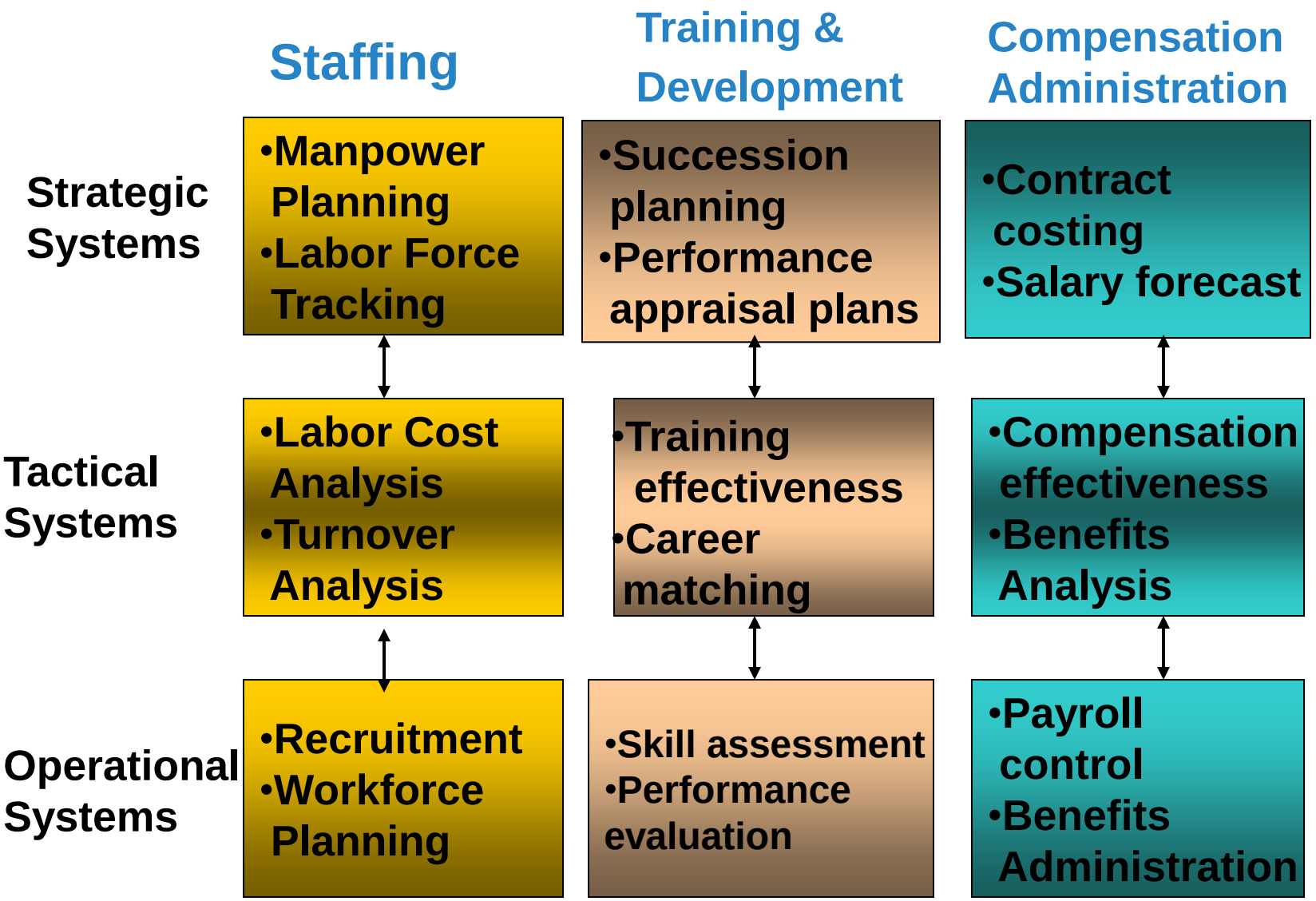
SYSTEM	DESCRIPTION	ORGANIZATIONAL LEVEL
TRAINING & DEVELOPMENT	TRACK TRAINING, SKILLS, APPRAISALS	OPERATIONAL
CAREER PATHING	DESIGN EMPLOYEE CAREER PATHS	KNOWLEDGE
COMPENSATION ANALYSIS	MONITOR WAGES, SALARIES, BENEFITS	MANAGEMENT
HUMAN RESOURCES PLANNING	PLAN LONG-TERM LABOR FORCE NEEDS	STRATEGIC

Table 2-5

Human Resource Systems



HUMAN RESOURCE MANAGEMENT



Business Processes and Information Systems

Business processes

Manner in which work is organized, coordinated, and focused to produce a valuable product or service

Concrete work flows of material, information, and knowledge—sets of activities

Business Processes and Information Systems

Unique ways to coordinate work, information, and knowledge

Ways in which management chooses to coordinate work

Business Processes and Information Systems

Information systems help organizations

Achieve great efficiencies by automating parts of processes

Rethink and streamline processes

Examples of Business Processes

Manufacturing and production: Assembling product, checking quality, producing bills of materials

Sales and marketing: Identifying customers, creating customer awareness, selling

Examples of Business Processes

Finance and accounting: Paying creditors, creating financial statements, managing cash accounts

Human Resources: Hiring employees, evaluating performance, enrolling employees in benefits plans

Business Processes and Information Systems

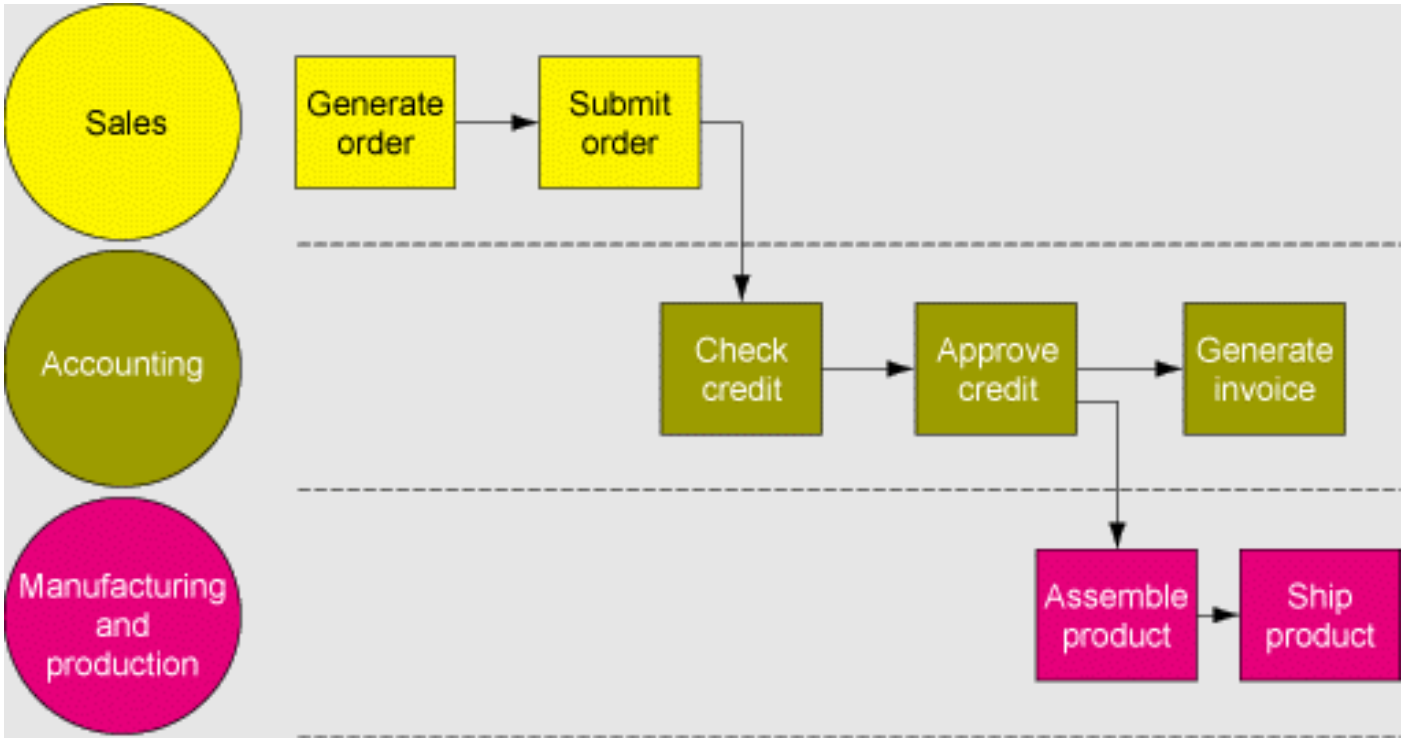
Cross-Functional Business Processes

Transcend boundary between sales, marketing, manufacturing, and research and development

Group employees from different functional specialties to a complete piece of work

Example: Order Fulfillment Process

The Order Fulfillment Process



Enterprise Applications

- Enterprise systems
- Supply chain management systems
- Customer relationship management systems
- Knowledge management systems

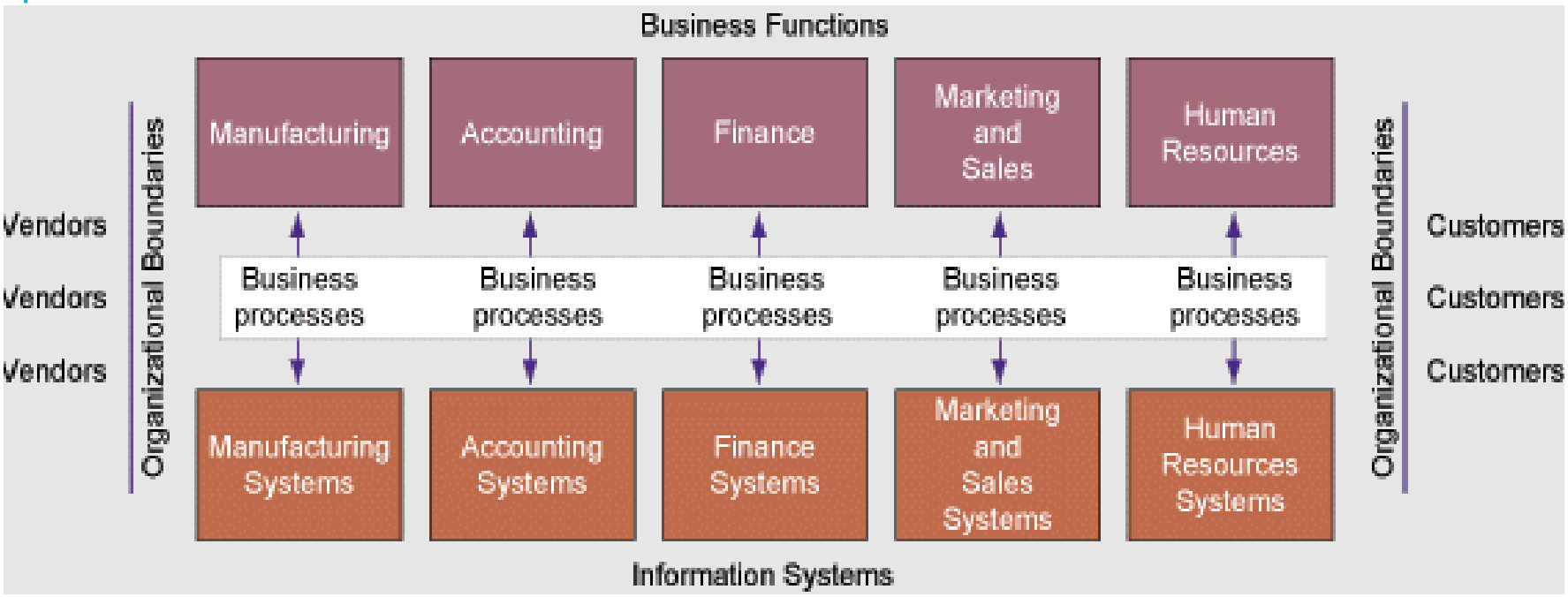
Traditional View of the Systems

Within the business: There are functions, each having its uses of information systems

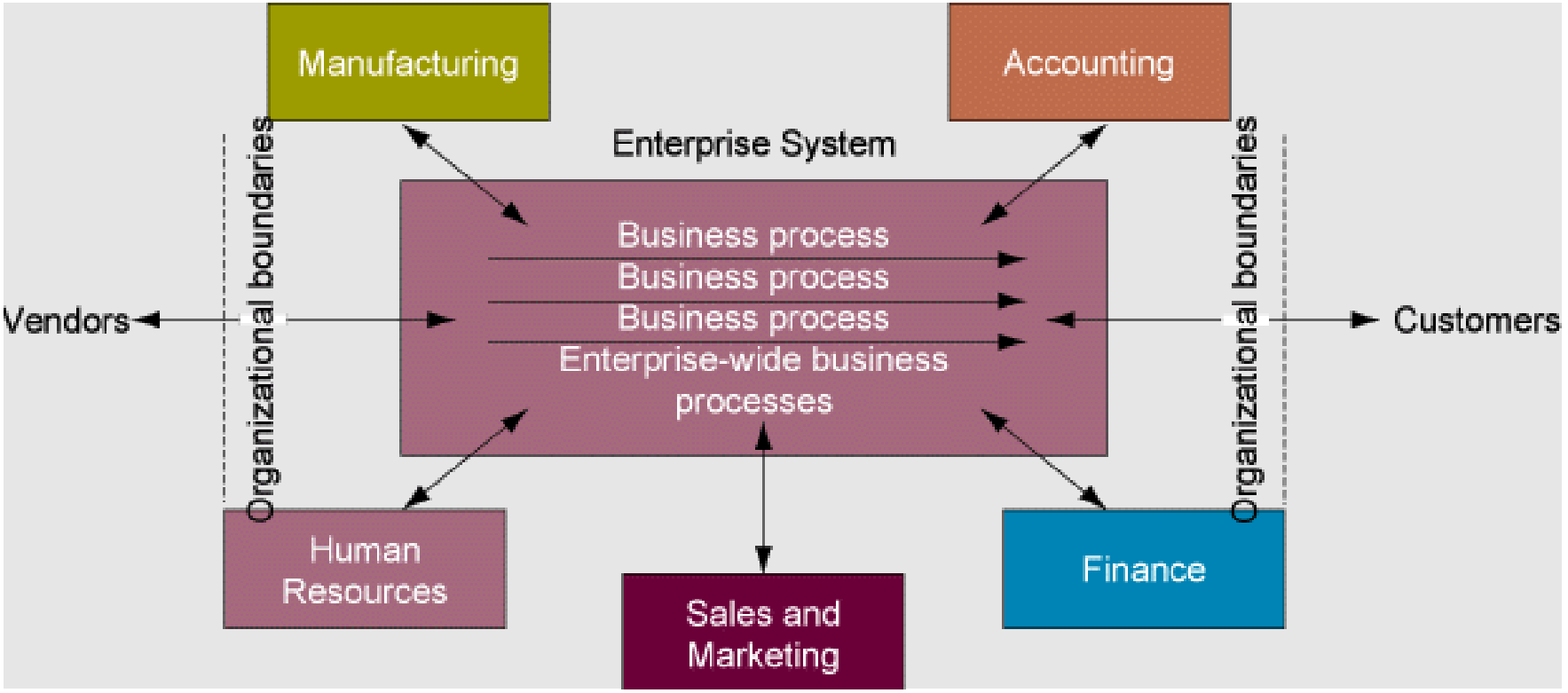
Outside the organization's boundaries: There are customers and vendors

Functions tend to work in isolation

Traditional View of the Systems



Enterprise Systems



Benefits of Enterprise Systems

Firm structure and organization: One organization

Management: Firm-wide knowledge-based management processes

Technology: Unified platform

Business: More efficient operations and customer-driven business processes

Challenges of Enterprise Systems

Difficult to build: Require fundamental changes in the way the business operates

Technology: Require complex pieces of software and large investments of time, money, and expertise

Centralized organizational coordination and decision making: Not the best way for the firms to operate

Supply Chain Management (SCM)

Supply Chain Management (SCM)

Close linkage and coordination of activities involved in buying, making, and moving a product

Integrates supplier, manufacturer, distributor, and customer logistics time

Reduces time, redundant effort, and inventory costs

Supply Chain Management (SCM)

Supply Chain

Network of organizations and business processes

Helps in procurement of materials, transformation of raw materials into intermediate and finished products

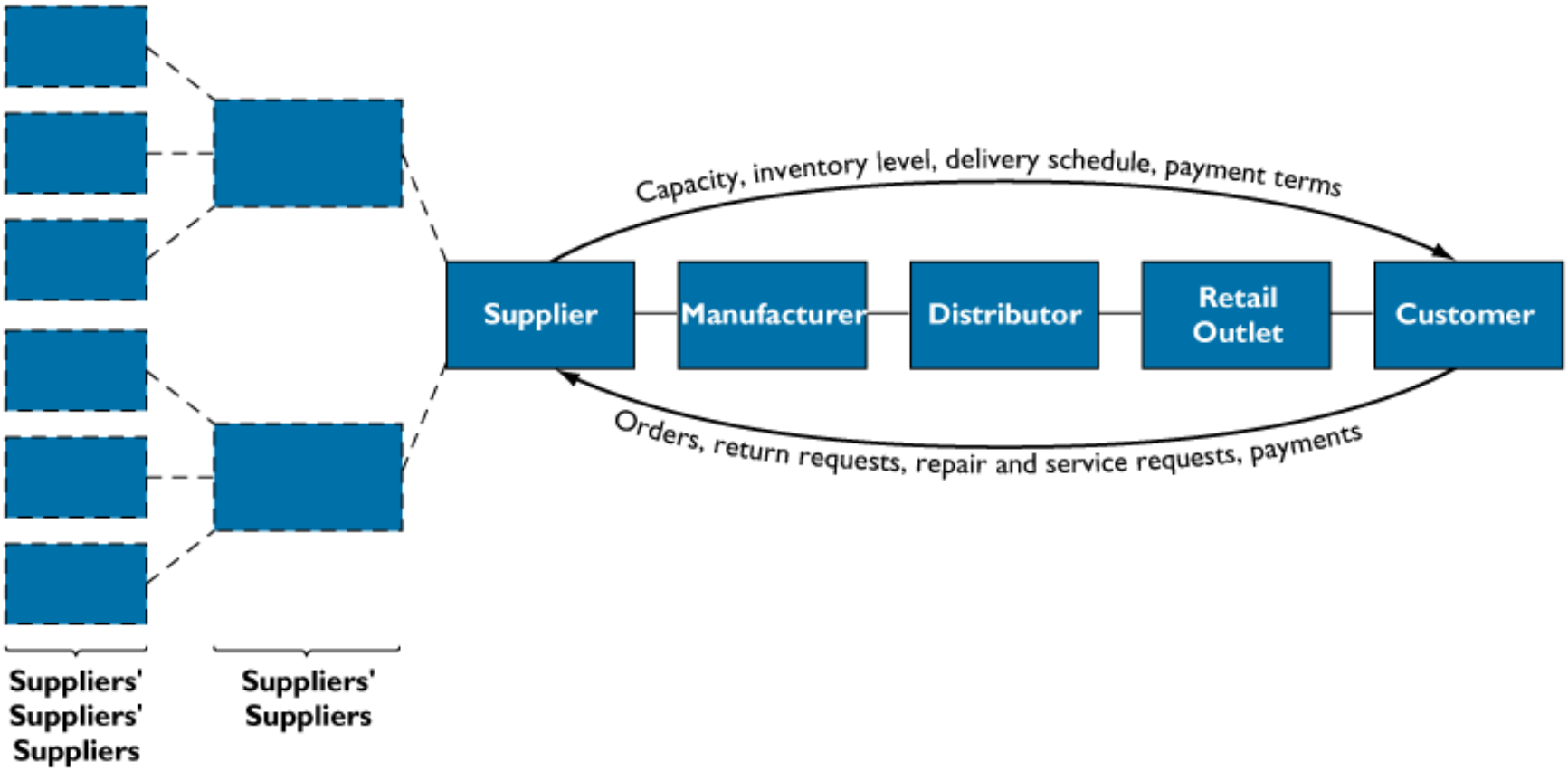
Supply Chain Management (SCM)

Limitations:

Inefficiencies can waste as much as 25% of company's operating costs

Bullwhip Effect: Information about the demand for the product gets distorted as it passes from one entity to next

Supply Chain Management



SUPPLY CHAIN MANAGEMENT

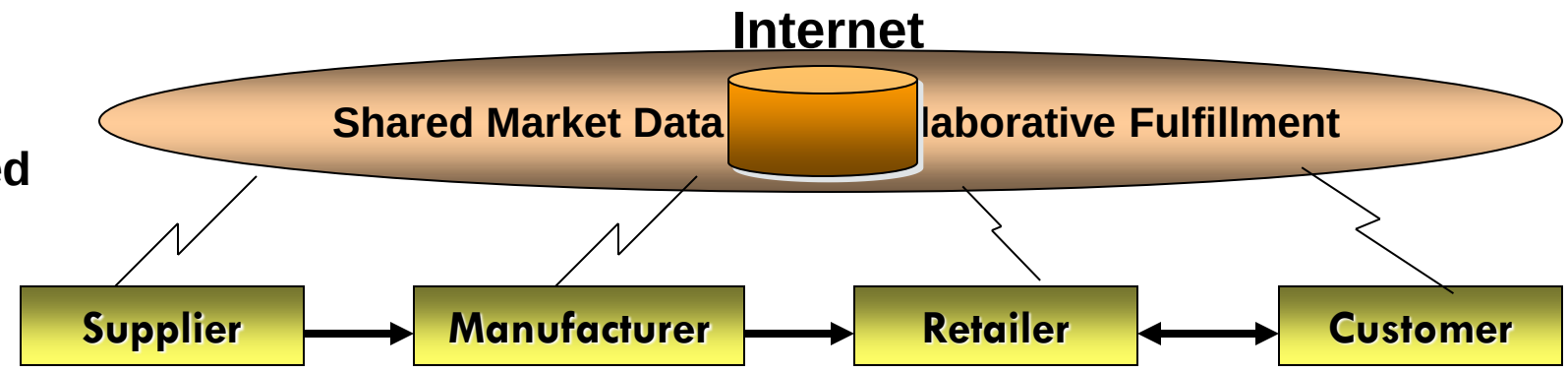
Supply Chain Life Cycle

Commit → Schedule → Make → Deliver

SCM Functional Processes

Order Commitment	Demand Planning	Manufacturing Planning
Advance Scheduling	Transportation Planning	Distribution Planning

SCM Integrated Solution



Supply Chain Management (SCM)

Helps in distribution of the finished products to customers

Includes reverse logistics - returned items flow in the reverse direction from the buyer back to the seller

How Information Systems Facilitate Supply Chain Management

Decide when, what to produce, store, move

Rapidly communicate orders

Communicate orders, track order status

Check inventory availability, monitor levels

Track shipments

Plan production based on actual demand

Rapidly communicate product design change

Provide product specifications

Share information about defect rates, returns

Supply Chain Management (SCM)

Supply chain planning system: Enables firm to generate forecasts for a product and to develop sourcing and a manufacturing plan for the product

Supply chain execution system: Manages flow of products through distribution centers and warehouses

Collaborative Commerce

Uses digital technologies to enable multiple organizations to collaboratively design, develop, build, move, and manage products

Increases efficiencies in reducing product design life cycles, minimizing excess inventory, forecasting demand, and keeping partners and customers informed

Collaborative Commerce

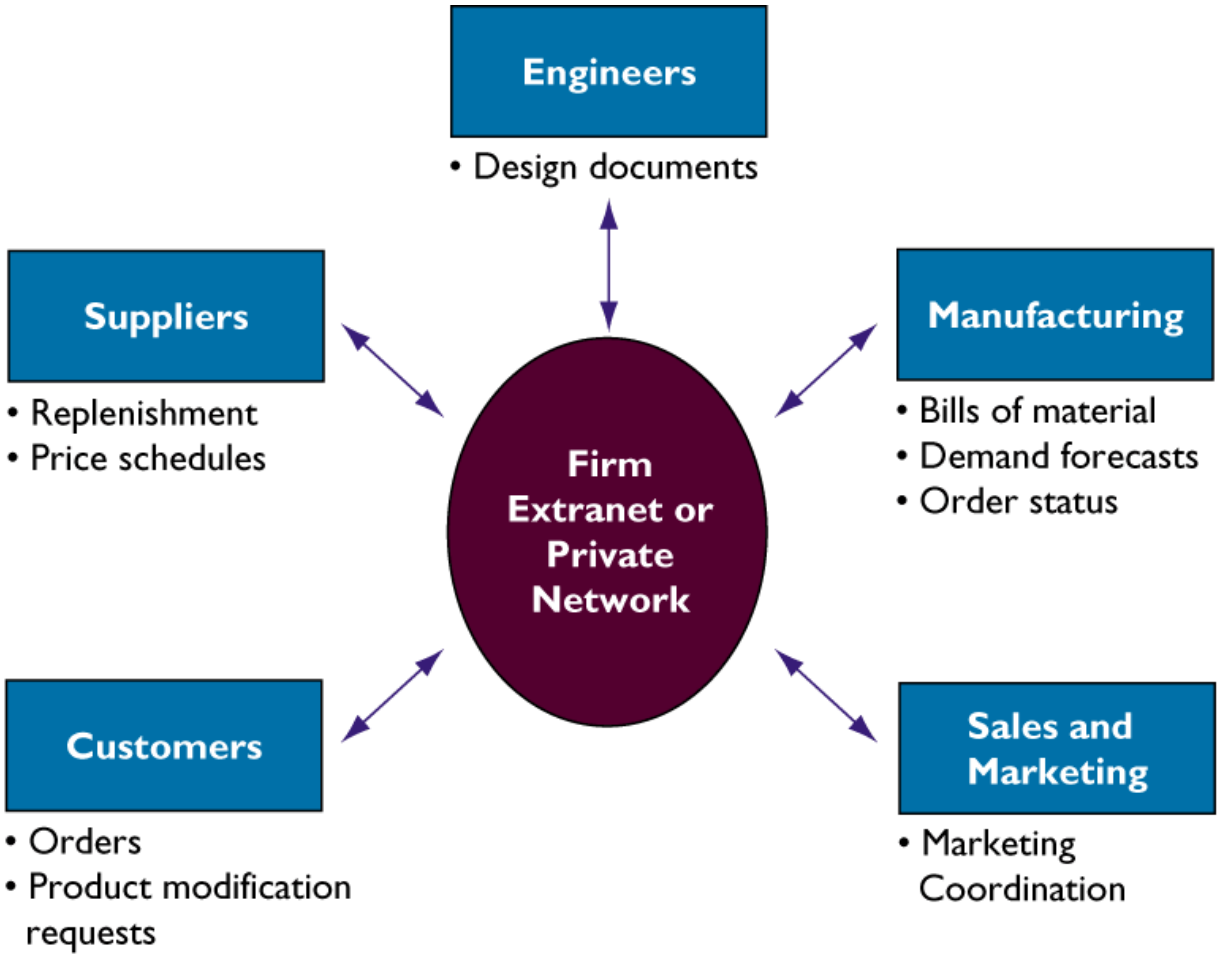


Figure 2-16

Industrial Networks

Private Industrial Networks

Web-enabled networks

Link systems of multiple firms in an industry

Coordinate transorganizational business processes

Customer Relationship Management (CRM)

Customer Relationship Management (CRM)

Manages all ways used by firms to deal with existing and potential new customers

Business and Technology discipline

Uses information system to coordinate entire business processes of a firm

CUSTOMER RELATIONSHIP MANAGEMENT

- It costs 6 times more to sell to a new customer than to an existing one.
- A typical dissatisfied customer will tell 8 to 10 people about it.
- A company can boost its profit 85% by increasing its annual customer retention by 5%.
- The odds of selling a product to a new customer are about 1 in 7, to a existing customer 1 in 2.
- 70% of complaining customers will do business again if service problems are quickly solved.
- More than 90% of existing companies don't have the necessary sales and service integration to support E-Commerce (but they will).

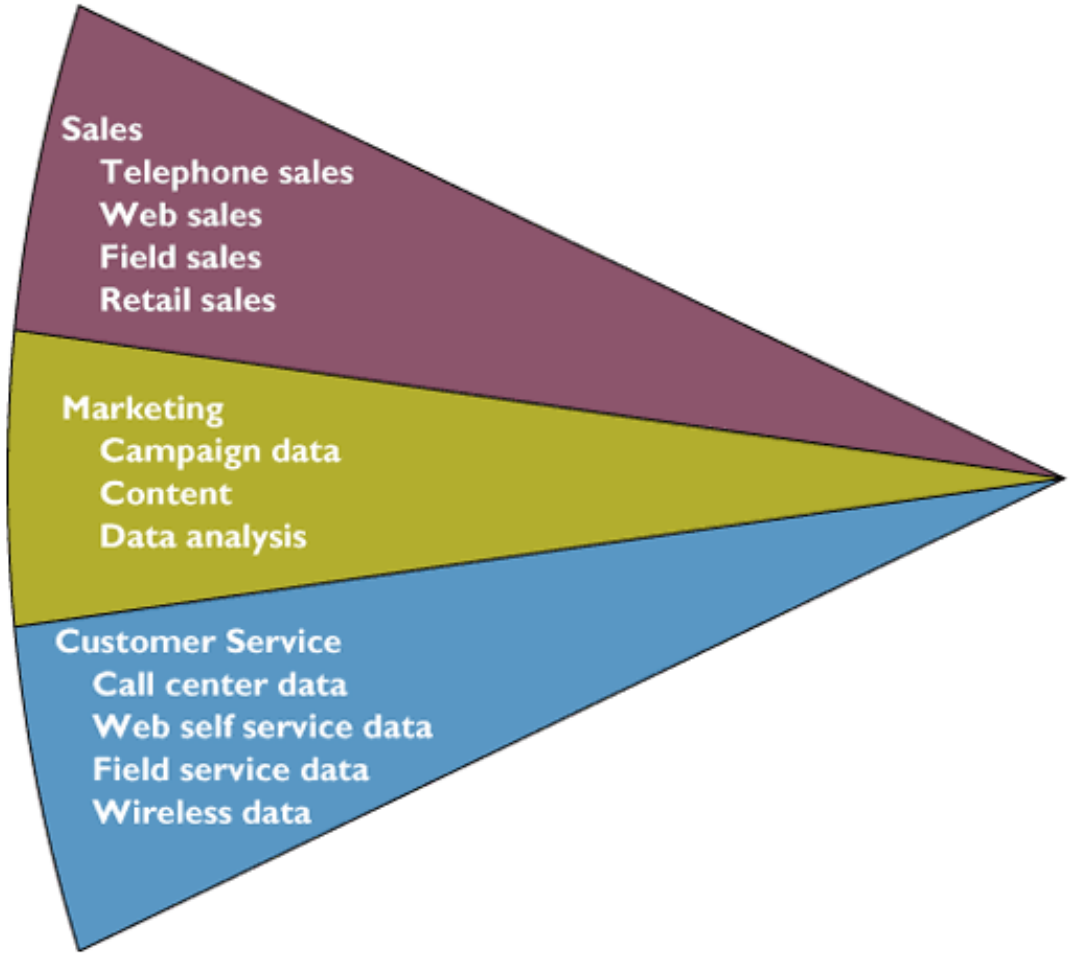
Customer Relationship Management (CRM)

Provides end-to-end customer care

Provides a unified view of customer across the company

Consolidates customer data from multiple sources and provides analytical tools for answering questions

Customer Relationship Management (CRM)



- Unified view of customers
- Consistent message to customers
- End-to-end customer care
- Long-term customer relationships
- Identification of best customers

Knowledge Management Systems

- Creating knowledge
- Discovering and codifying knowledge
- Sharing knowledge
- Distributing knowledge

INFORMATION SYSTEMS IN THE ENTERPRISE