Information System
ITEC-522
First Semester Third Year
Information Technology

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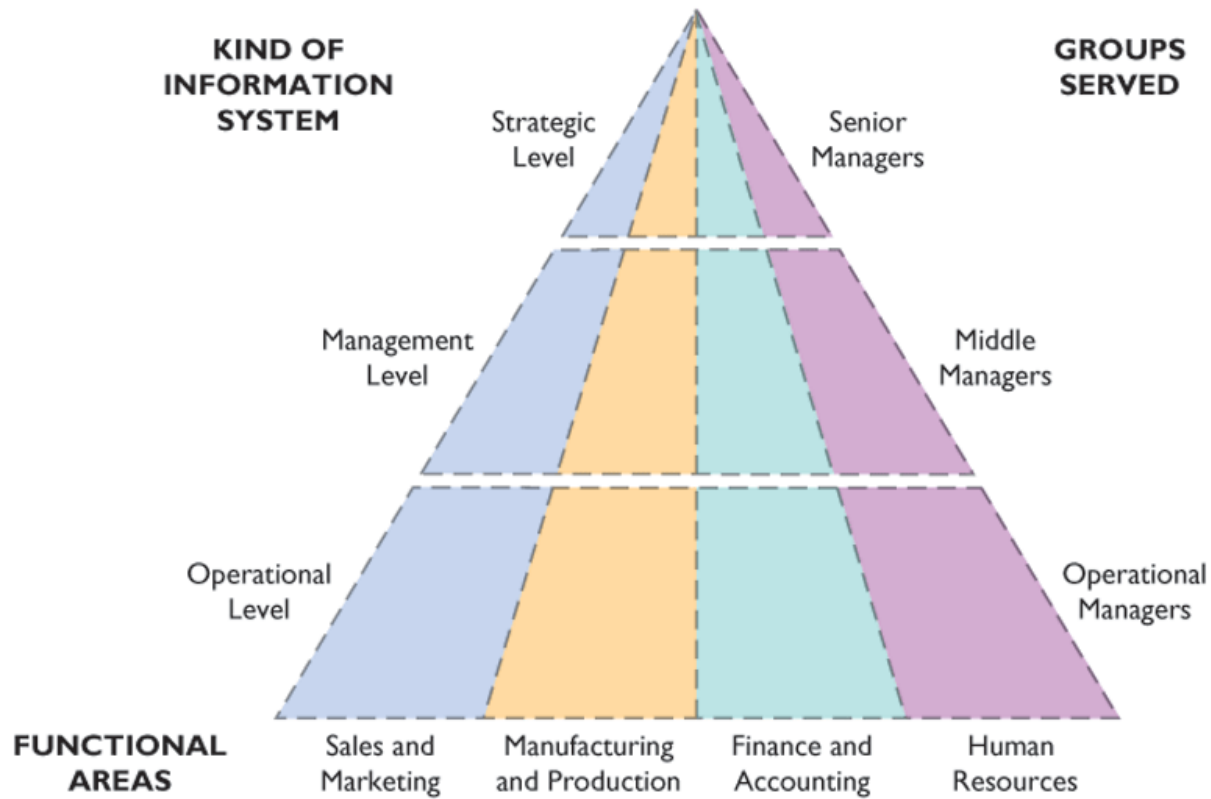## University of Sindh, Jamshoro

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Week #3

Information Systems in the Enterprise

Types of information systems

KIND OF INFORMATION SYSTEM

GROUPS SERVED

Strategic Level — Senior Managers

Management Level — Middle Managers

Operational Level — Operational Managers

FUNCTIONAL AREAS: Sales and Marketing | Manufacturing and Production | Finance and Accounting | Human Resources

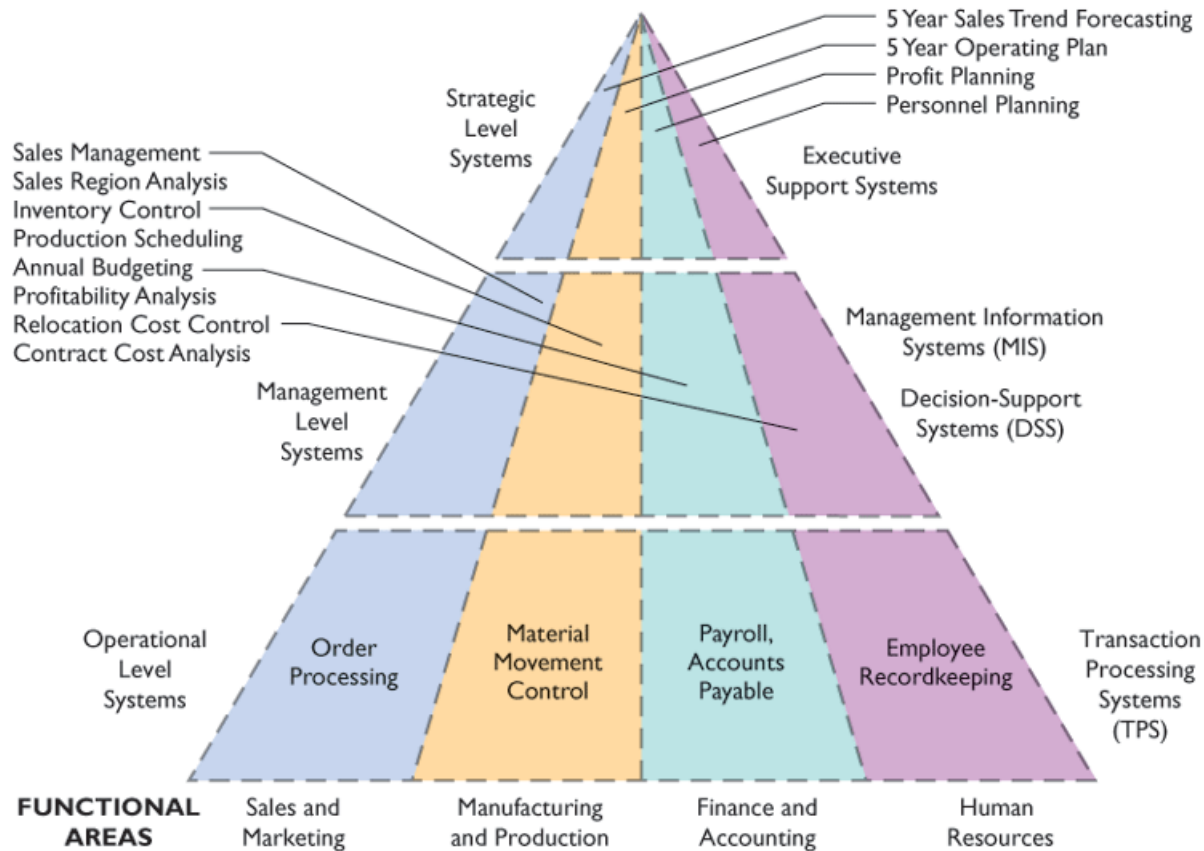# Three Main Categories of Information Systems

1. Operational-level systems

2. Management-level systems

3. Strategic-level systems

Four Major Types of Systems

1. Transaction Processing Systems (TPS)

2. Management Information Systems (MIS)

3. Decision-Support Systems (DSS)

4. Executive-Support Systems (ESS)

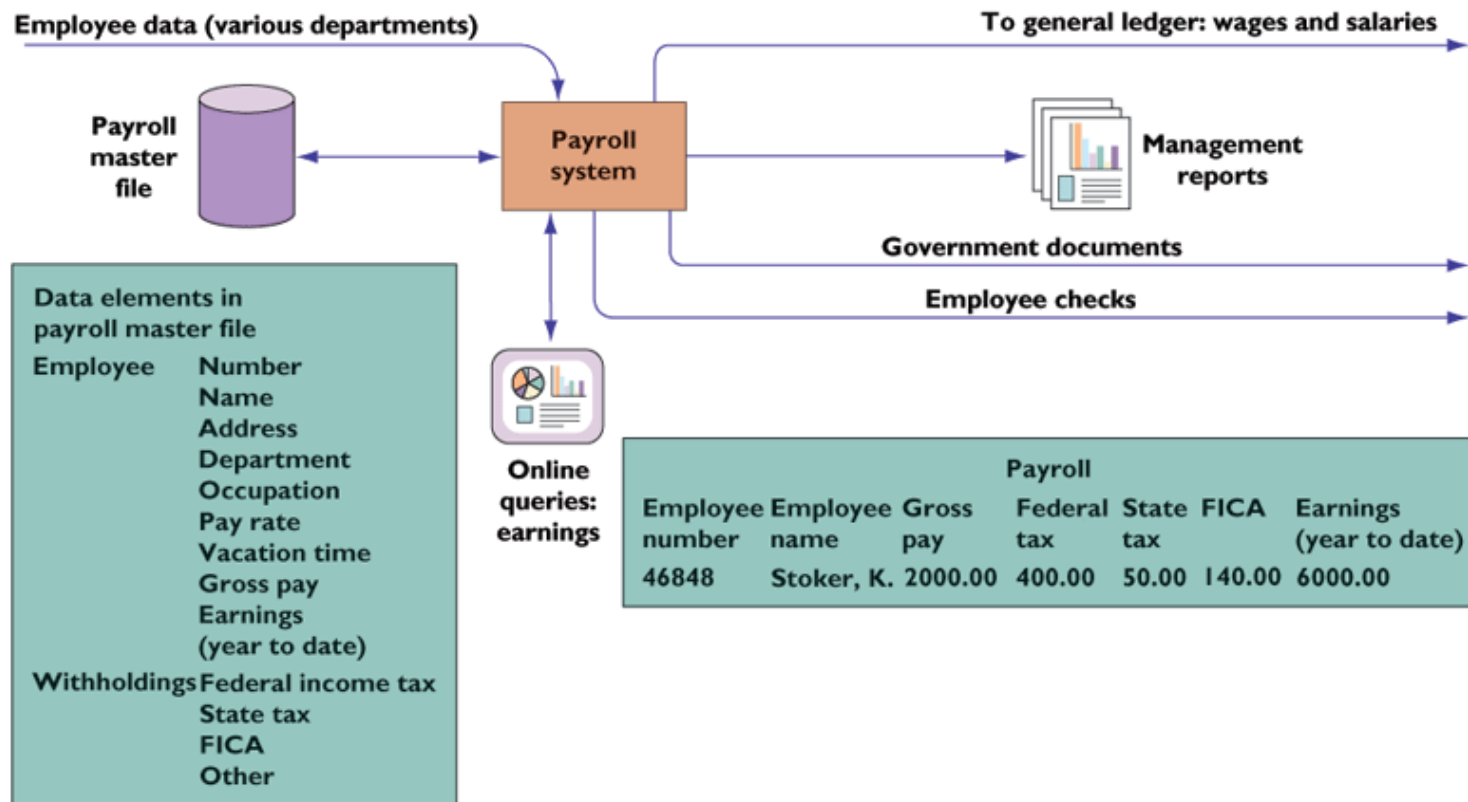# The four major types of information systems

Transaction Processing Systems (TPS)

- Basic business systems that serve the organization's operational level
- Input: Transactions, events
- Processing: Sorting, listing, merging, updating
- Output: Detailed reports, lists, summaries
- Users: Operations personnel, supervisors

A symbolic representation for a payroll TPS

Employee data (various departments)

Payroll master file

Payroll system

To general ledger: wages and salaries

Management reports

Government documents

Employee checks

Online queries: earnings

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

			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

Typical applications of TPS

| 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				
Customer service Sales management Promotion tracking Price changes Dealer communications	Scheduling Purchasing Shipping/receiving Operations	General ledger Billing Cost accounting	Personnel records Benefits Compensation Labor relations Training	Admissions Grade records Course records Alumni records
Major application systems				
Sales order information system Sales commission system Sales support system	Machine control systems Purchase order systems Quality control systems	General ledger Payroll Accounts receivable/payable Funds management systems	Employee records Benefit systems Employee skills inventory	Registration system Student transcript system Curriculum class control systems Alumni benefactor system

Figure 2-4

9

Management Information Systems (MIS)

- Serve management level; provide reports and access to company data
- Input: Summary transaction data, high-volume data, simple models
- Processing: Routine reports, simple models, low-level analysis
- Output: Summary and exception reports
- Users: Middle managers

How management information systems obtain their data from the organization's TPS
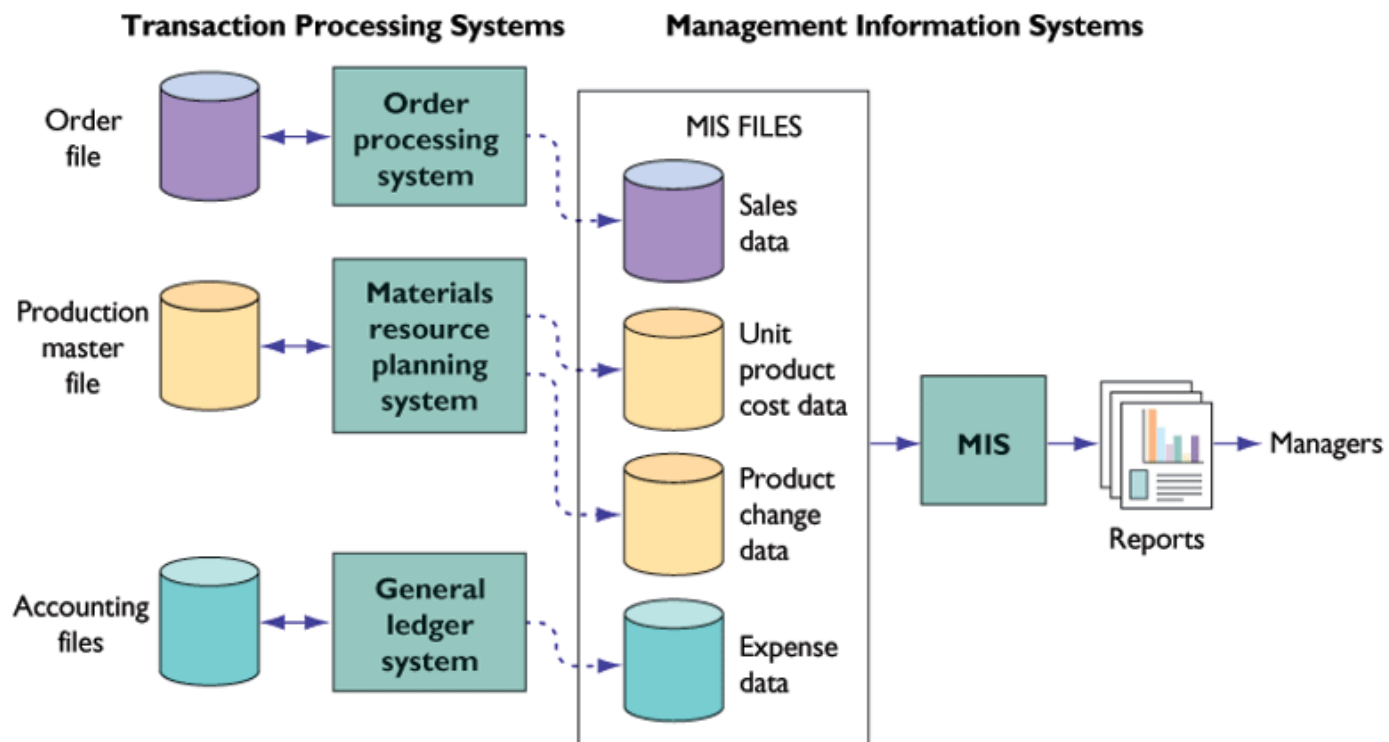
A sample report that might be produced by the MIS in Figure 2-5

Consolidated Consumer Products Corporation
Sales by Product and Sales Region: 2004

| 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

Four Major Types of Systems

Decision-Support Systems (DSS)

- Serve management level with data analysis for making decisions
- Input: Low-volume data or massive databases, analytic models, and data analysis tools
- Processing: Interactive, simulations, analysis
- Output: Special reports, decision analyses, responses to queries
- Users: Professionals, staff managers

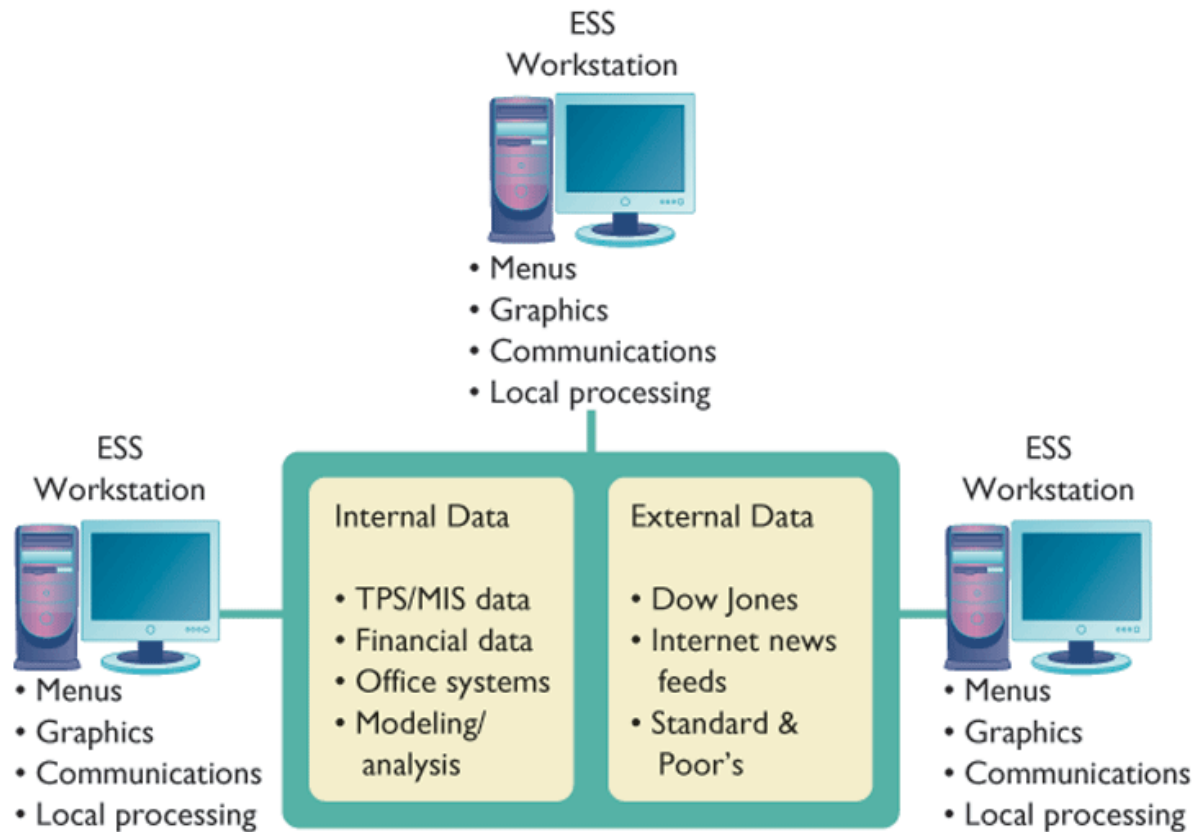# Voyage-estimating decision-support system
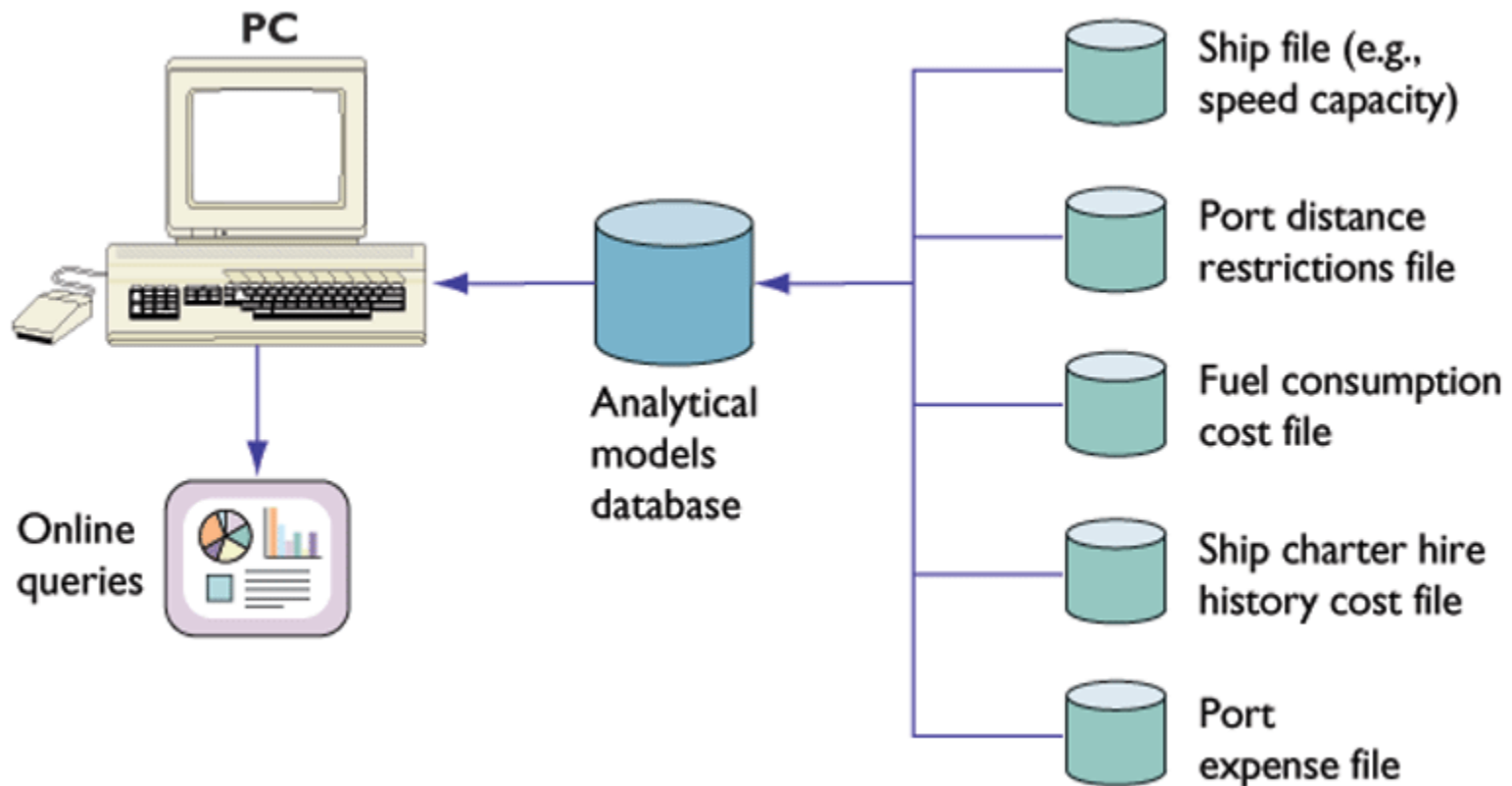
Four Major Types of Systems

Executive Support Systems (ESS)

- Provide communications and computing environment that serves the organization's strategic level
- Input: External and internal aggregate data
- Processing: Graphics, simulations, interactive
- Output: Projections, responses to queries
- Users: Senior Managers

Model of a typical executive support system

ESS Workstation
- Menus
- Graphics
- Communications
- Local processing

ESS Workstation
- Menus
- Graphics
- Communications
- Local processing

Internal Data
- TPS/MIS data
- Financial data
- Office systems
- Modeling/ analysis

External Data
- Dow Jones
- Internet news feeds
- Standard & Poor's

ESS Workstation
- Menus
- Graphics
- Communications
- Local processing
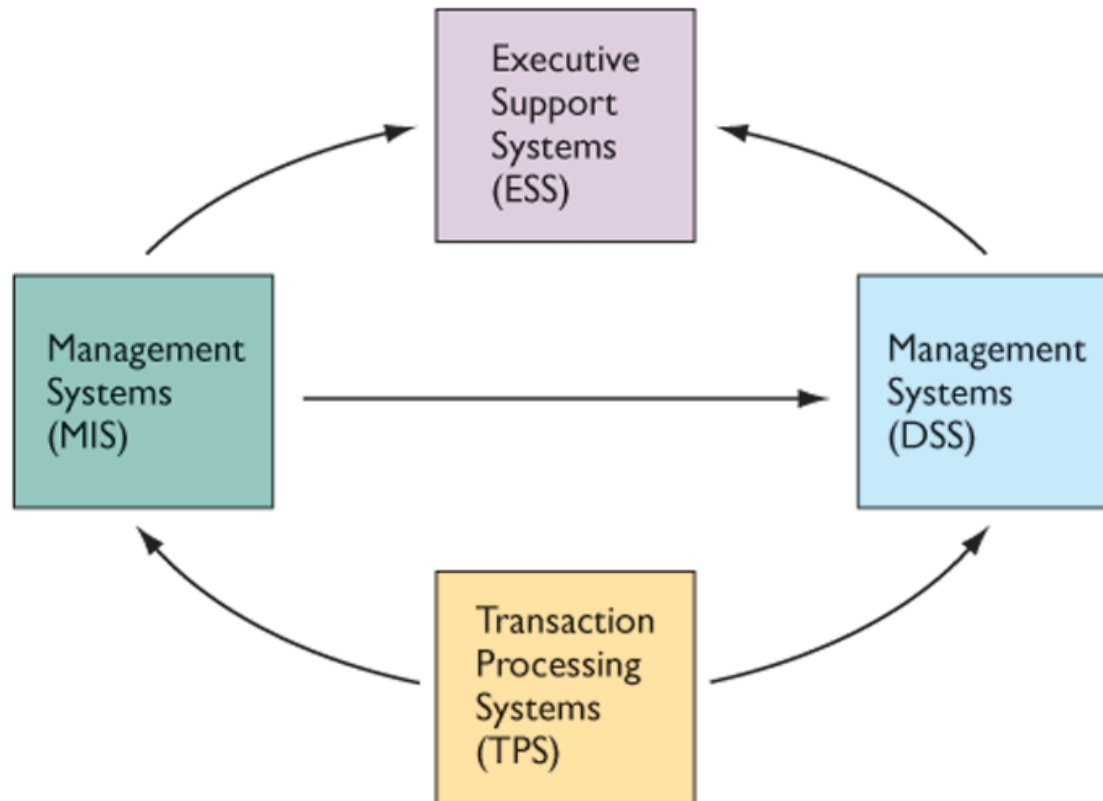
Interrelationships among systems

Figure 2-9

Major Business Functions

1. Sales and Marketing Systems
2. Manufacturing and Production Systems
3. Finance and Accounting Systems
4. Human Resource Systems

Sales and Marketing Systems

- Help identify customers
- Develop products and services
- Promote products and services
- Sell products and services
- Provide ongoing customer support

Examples of Sales and Marketing Information Systems

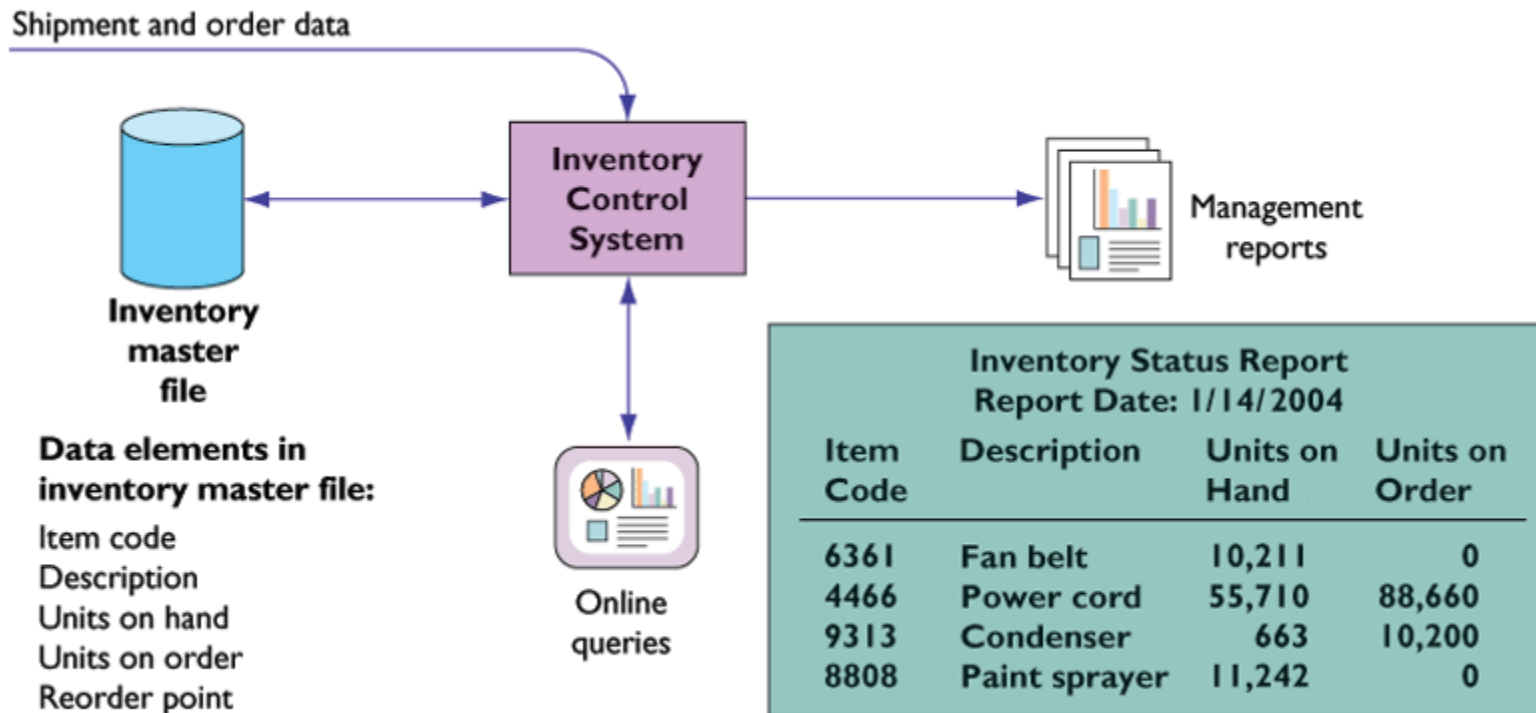| System	Description	Organizational Level
Order processing	Enter, process, and track orders	Operational
Pricing analysis	Determine prices for products and services	Management
Sales trend forecasting	Prepare 5-year sales forecasts	Strategic

Manufacturing and Production Systems

- Planning, development, production of products and services
- Planning, development, maintenance of production facilities
- Acquisition, storage, availability of materials
- Scheduling materials, facilities, labor
- Controlling the flow of production

Examples of Manufacturing and Production Information Systems

System	Description	Organizational Level
Machine control	Control the actions of machines and equipment	Operational
Production planning	Decide when and how many products should be produced	Management
Facilities location	Decide where to locate new facilities	Strategic

Overview of an inventory system

Shipment and order data

Inventory Control System

Inventory master file

Management reports

Data elements in inventory master file:

Item code
Description
Units on hand
Units on order
Reorder point

Online queries

	Inventory Status Report Report Date: 1/14/2004		
Item Code	Description	Units on Hand	Units on Order
6361	Fan belt	10,211	0
4466	Power cord	55,710	88,660
9313	Condenser	663	10,200
8808	Paint sprayer	11,242	0

Finance and Accounting Systems

- Manage firm's financial assets: cash, stocks, bonds, etc.

- Manage capitalization of firm and finding new financial assets

- Maintain and manage financial records

Examples of Finance and Accounting Information Systems

System	Description	Organizational Level
Accounts receivable	Track money owed the firm	Operational
Budgeting	Prepare short-term budgets	Management
Profit planning	Plan long-term profits	Strategic

Human Resources Systems

- Identify potential employees

- Maintain employee records

- Track employee skills, job performance, and training

- Support planning for employee compensation and career development

Table 2-5: Examples of Human Resources Information Systems

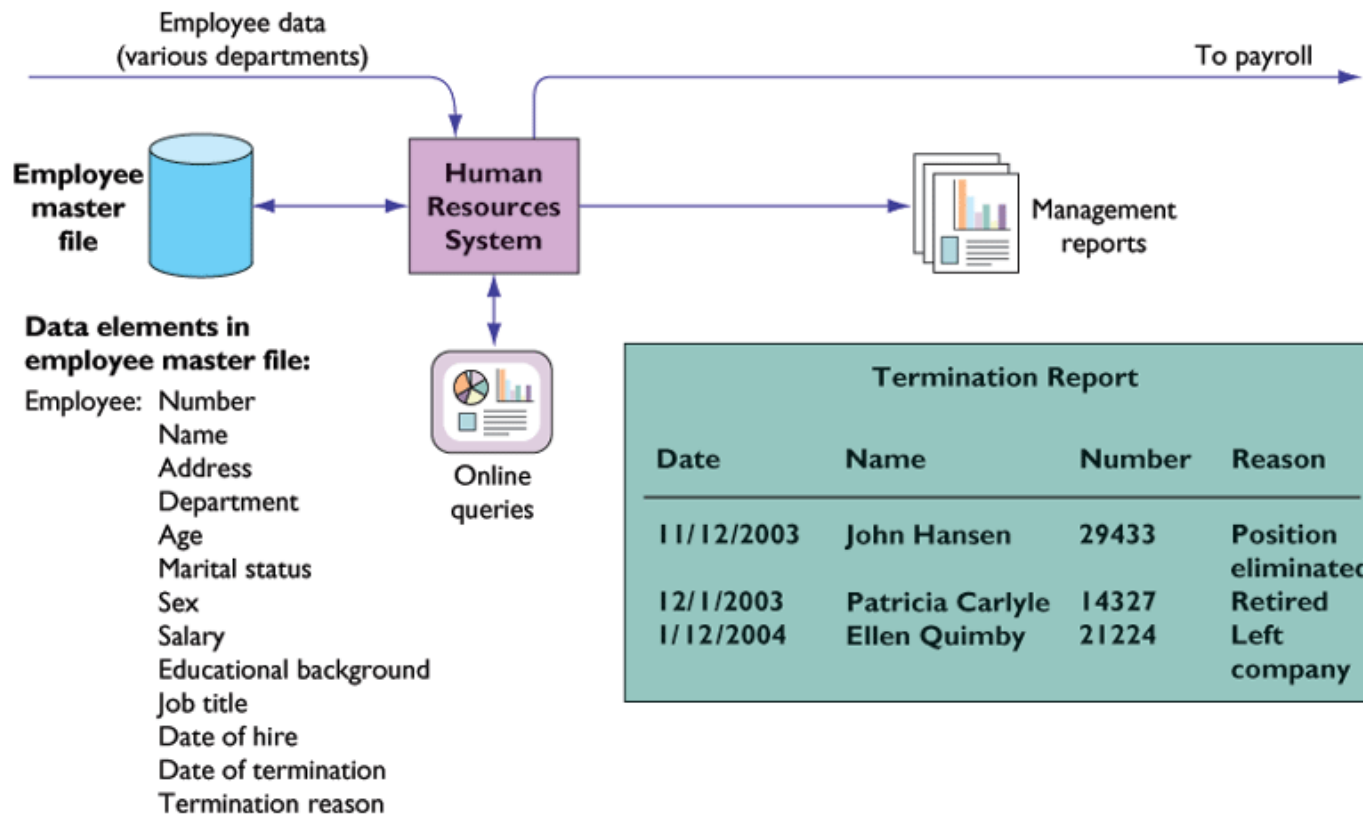| System	Description	Organizational Level
Training and development	Track employee training, skills, and performance	Operational
Compensation analysis	Monitor wages, salaries, benefits	Management
Human resources planning	Plan long-term labor force needs	Strategic

Employees Serve Themselves Online

- What are the management benefits of employee self-service systems for human resources and benefits administration?

- How do these systems provide value for businesses?

- What management, organization, and technology issues should be addressed when installing self-service human resources and benefits systems?

An employee record-keeping system

Discussion

Questions?