Chapter 11
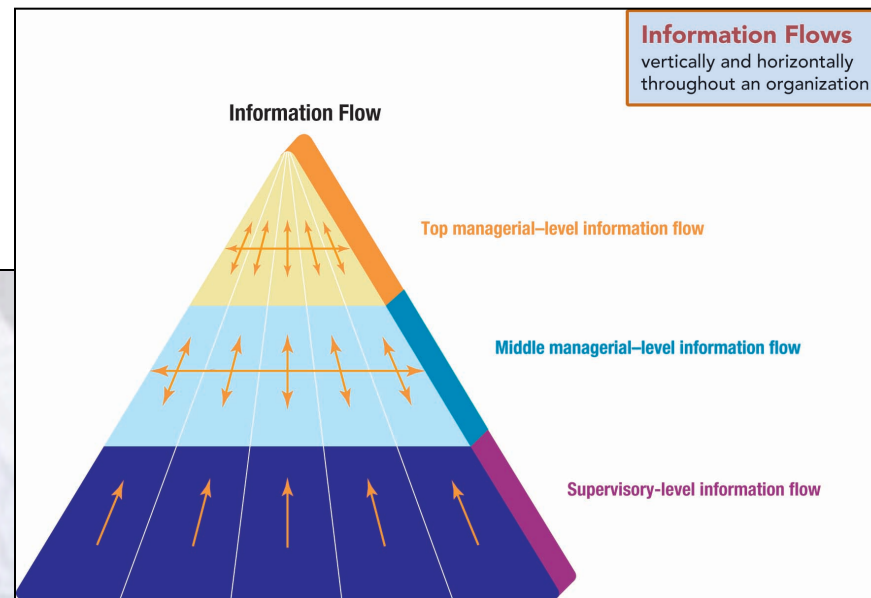
Information Systems

Competencies

- **Explain how organizations can be structured according to five functions and three management levels**

- **Describe how information flows in an organization**

- **Distinguish among a transaction processing system, a management information system, a decision support system, and an executive support system**

Competencies (Page 2 of 2)

- **Distinguish between office automation systems and knowledge work systems**

- **Explain the difference between data workers and knowledge workers**

Information Systems

Information Systems support the natural flow of information within an organization

- ESS — Executive support systems (ESS)
- DSS — Decision support systems (DSS)
- MIS — Management information systems (MIS)
- TPS — Transaction processing systems (TPS)
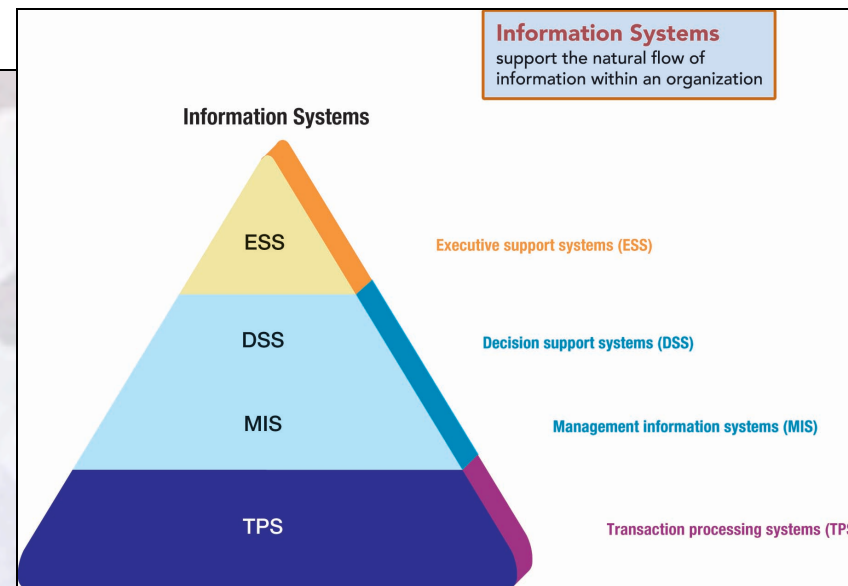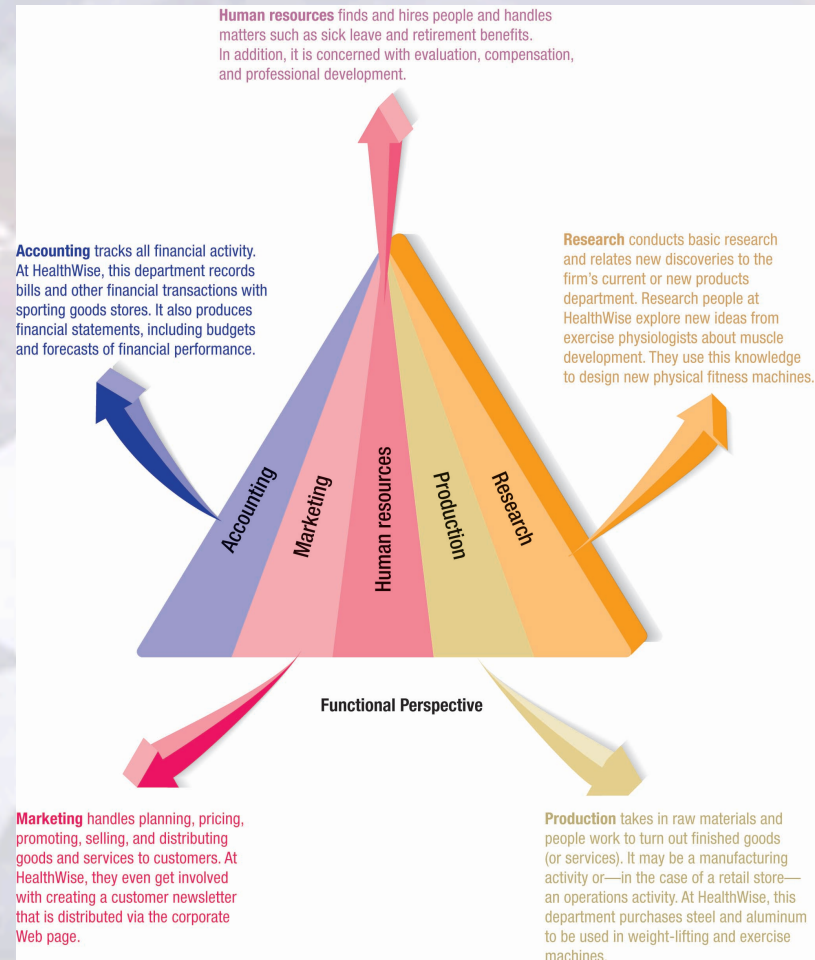
Introduction

- **An information system is a collection of people, procedures, software, hardware, and data**
  - **They all work together to provide information essential to running an organization**

Organizational Information Flow

- **Information flows vertically and horizontally throughout an organization**

- **Information Systems support the natural flow of information within an organization's structure**
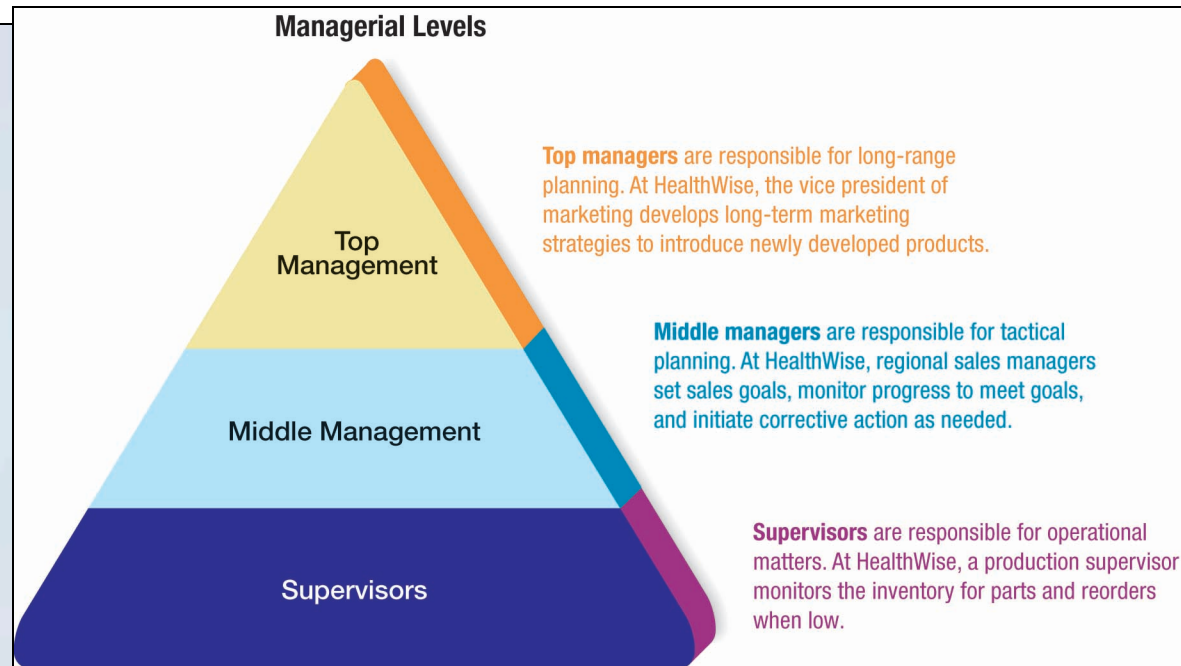
- **5 Functions**

- **Management Levels**

- **Information Flow**

Five Functions of an Organization

- **Accounting**

- **Marketing**

- **Human Resources**

- **Production**

- **Research**

Human resources finds and hires people and handles matters such as sick leave and retirement benefits. In addition, it is concerned with evaluation, compensation, and professional development.

Accounting tracks all financial activity. At HealthWise, this department records bills and other financial transactions with sporting goods stores. It also produces financial statements, including budgets and forecasts of financial performance.

Research conducts basic research and relates new discoveries to the firm's current or new products department. Research people at HealthWise explore new ideas from exercise physiologists about muscle development. They use this knowledge to design new physical fitness machines.

Accounting Marketing Human resources Production Research

Functional Perspective

Marketing handles planning, pricing, promoting, selling, and distributing goods and services to customers. At HealthWise, they even get involved with creating a customer newsletter that is distributed via the corporate Web page.

Production takes in raw materials and people work to turn out finished goods (or services). It may be a manufacturing activity or—in the case of a retail store— an operations activity. At HealthWise, this department purchases steel and aluminum to be used in weight-lifting and exercise machines.

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Management Levels

- **Management in many organizations is divided into three levels: Top, Middle, and Supervisors**

Managerial Levels

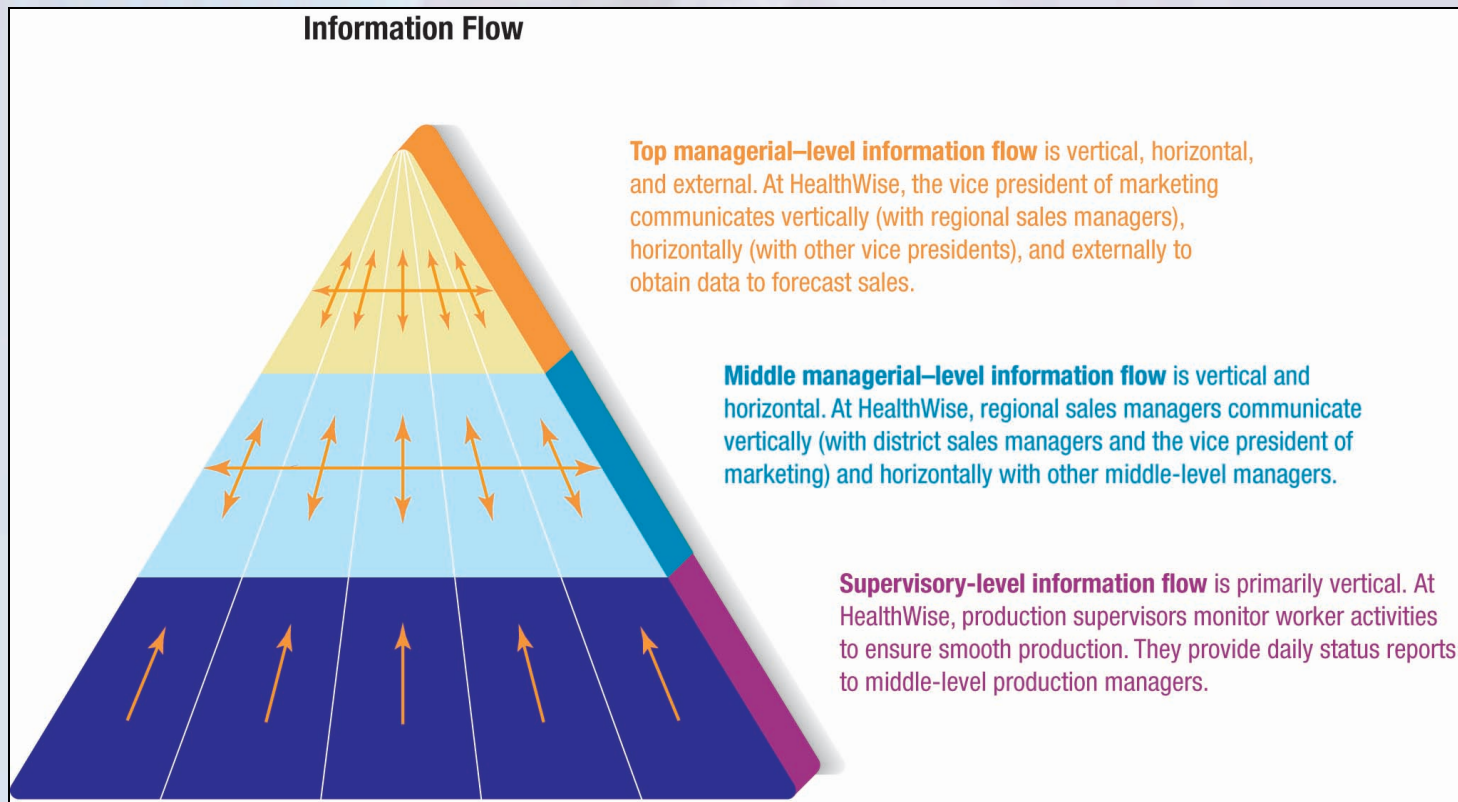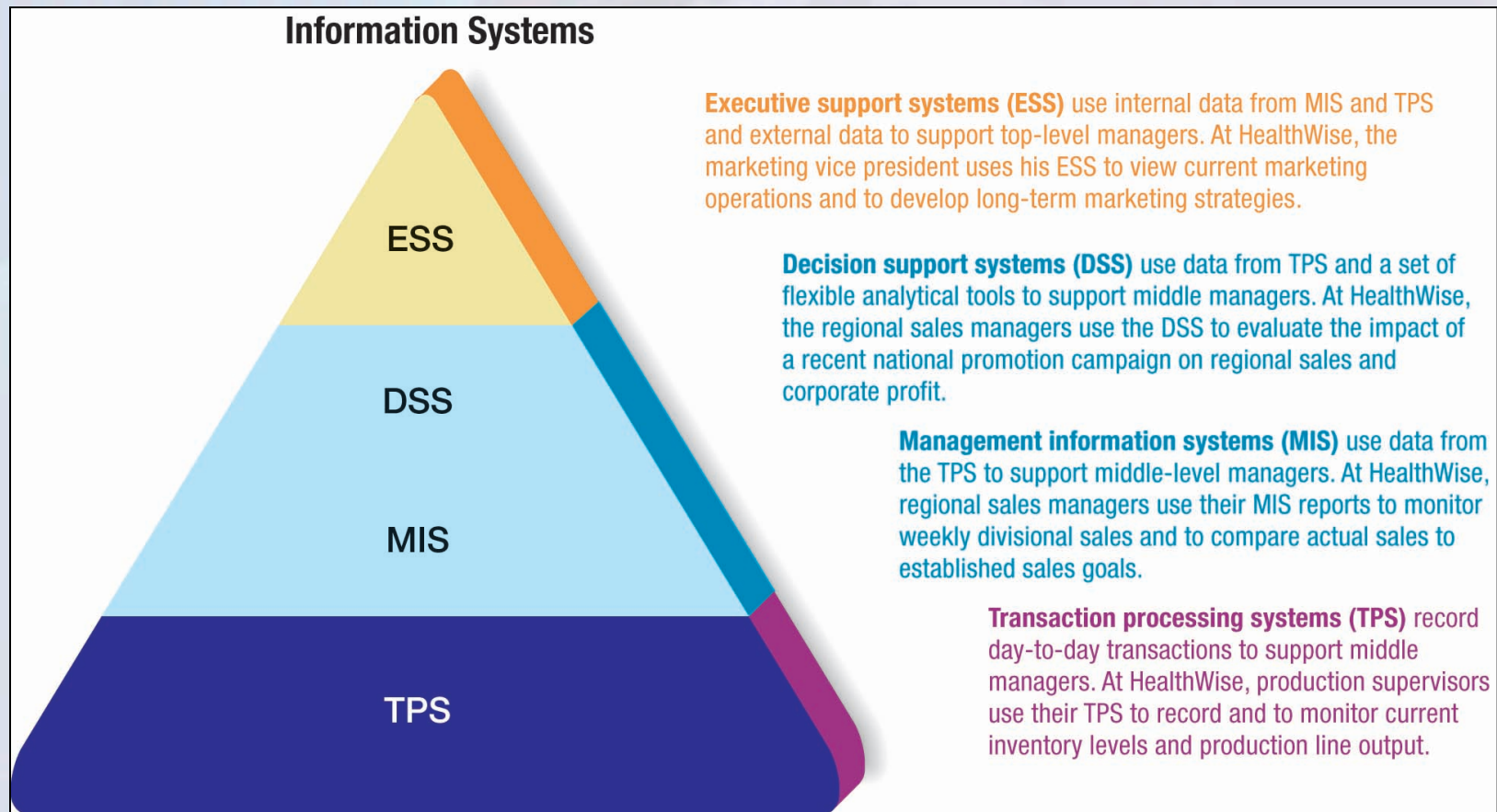**Top managers** are responsible for long-range planning. At HealthWise, the vice president of marketing develops long-term marketing strategies to introduce newly developed products.

Middle managers are responsible for tactical planning. At HealthWise, regional sales managers set sales goals, monitor progress to meet goals, and initiate corrective action as needed.

Supervisors are responsible for operational matters. At HealthWise, a production supervisor monitors the inventory for parts and reorders when low.

Top Management

Middle Management

Supervisors

Information Flow

- **Each level of management has different information needs and the information flow supports meeting these needs**
  - Top Management
    - Vertical, horizontal & external
  - Middle Management
    - Vertical & horizontal
  - Supervisor
    - Vertical-primarily

Information Flow

Information Flow

Top managerial–level information flow is vertical, horizontal, and external. At HealthWise, the vice president of marketing communicates vertically (with regional sales managers), horizontally (with other vice presidents), and externally to obtain data to forecast sales.

Middle managerial–level information flow is vertical and horizontal. At HealthWise, regional sales managers communicate vertically (with district sales managers and the vice president of marketing) and horizontally with other middle-level managers.

Supervisory-level information flow is primarily vertical. At HealthWise, production supervisors monitor worker activities to ensure smooth production. They provide daily status reports to middle-level production managers.

Computer-Based Information Systems

Information Systems

Executive support systems (ESS) use internal data from MIS and TPS and external data to support top-level managers. At HealthWise, the marketing vice president uses his ESS to view current marketing operations and to develop long-term marketing strategies.

Decision support systems (DSS) use data from TPS and a set of flexible analytical tools to support middle managers. At HealthWise, the regional sales managers use the DSS to evaluate the impact of a recent national promotion campaign on regional sales and corporate profit.

Management information systems (MIS) use data from the TPS to support middle-level managers. At HealthWise, regional sales managers use their MIS reports to monitor weekly divisional sales and to compare actual sales to established sales goals.

Transaction processing systems (TPS) record day-to-day transactions to support middle managers. At HealthWise, production supervisors use their TPS to record and to monitor current inventory levels and production line output.

ESS

DSS

MIS

TPS

Transaction Processing Systems (TPS)

- **Tracks operations**
- **Creates and records events in databases**
- **Also called data processing systems (DPS)**
- **One of the most essential uses of a TPS are accounting activities**

TPS database

Accounting Activities TPS

- **Sales order processing**
- Accounts receivable
- Inventory and purchasing

- Accounts payable
- Payroll
- **General ledger**

Accounting Activities

- **Sales order processing**
  - Keep track of business activity, customer requests
- **Accounts receivable**
  - Money owed to company & money paid to company
- **Inventory** – what is in the warehouse, on shelves
  - Inventory Control System
- **Purchasing** – goods, services bought by the company
- **Accounts Payable**
  - Money owed by company to its suppliers
- **Payroll** – calculating employee paychecks
- **General Ledger**
  - keep track of all financial transactions
  - Produce income statement & balance sheet
- **Misc** (e.g., ATM, Student Registration)

Income Statement

Shows a company's financial performance

Covers a specific time period

"January 1, 2008 through December 31, 2008"

Second Quarter (Q1, Q2, Q3, Q4)

Shows income, expenses, profits

Income	(e.g., sales receipts)
- Expenses	(cost of doing business)
Profit	(for that period)

Balance Sheet

Overall financial condition of the company

As of a specific date

"as of December 31, 2008"

Shows assets, liabilities, and equity

Assets (Buildings, inventory, what the company owns)

- Liabilities (debt, what the company owes)

Equity (the value of the company, owner's share)

Management Information Systems (MIS)

- **Used to support middle managers**

- **Uses databases**

- **Integrates data across areas**

- **Produces predetermined reports**

  - **Periodic reports**

  - **Exception reports**

  - **Demand reports**

The Sports Company
Regional Sales Report

Region	Actual Sales	Target	Difference
Central	$166,430	$175,000	($8,570)
Northern	137,228	130,000	7,228
Southern	137,772	135,000	2,772
Eastern	152,289	155,000	(2,711)
Western	167,017	160,000	7,017

Management information system report

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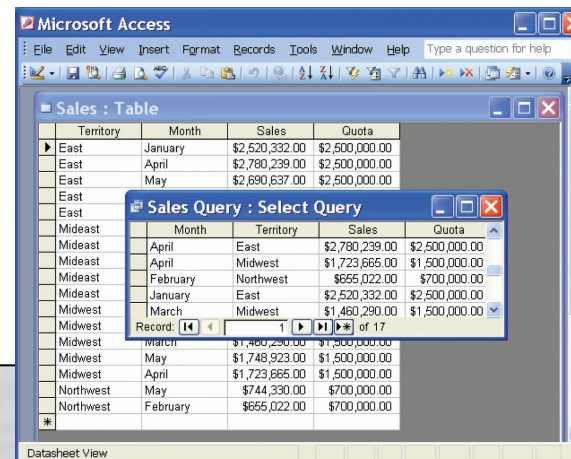
Decision Support Systems (DSS)

- **Flexible tool for analyzing data**

- **Enables managers to get answers to problems**

  – **Produces reports that do not have a fixed format**

- **Must be easy to use**

- **Has four parts**

  Query results for SALES < QUOTA

Parts of a DSS

- **User**
  - **Someone who makes decisions**
  - **Could be you**

- **System software**
  - **Operating system**
  - **Easy to use**

- **Data**
  - **Internal data**
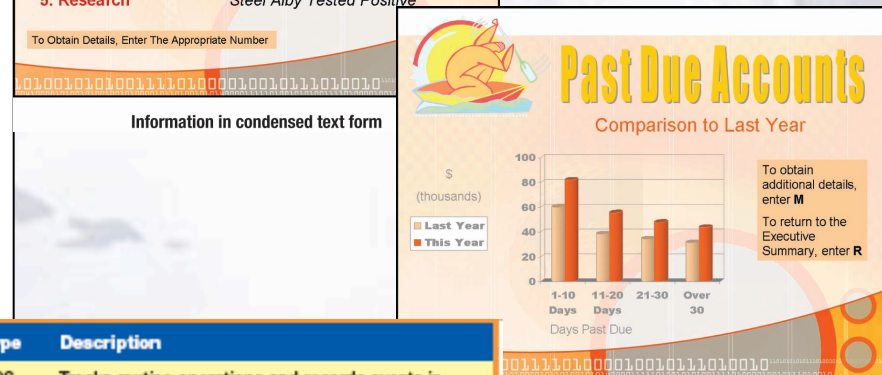 - **External data**

- **Decision models**

Decision Models

- **Strategic models - assists top level management and long-range planning**

- **Tactical models - assists middle-management, financial and sales promotional planning**

- **Operational models - assists lower-level managers**

Executive Support Systems (ESS)

- **Designed for top management and easy use**

- **Consists of sophisticated software**

- **Provides immediate access to a company's performance**

The Healthwise Group
Executive Summary

1. Accounting   Past Due Accounts + 3%
2. Marketing   Total Sales + 5%
3. Production   On Schedule
4. Human Resources   Labor Contract Proceeding
5. Research   Steel Alby Tested Positive

To Obtain Details, Enter The Appropriate Number

Information in condensed text form

Past Due Accounts
Comparison to Last Year

$ (thousands)

■ Last Year
■ This Year

To obtain additional details, enter **M**

To return to the Executive Summary, enter **R**

1-10 Days   11-20 Days   21-30 Days   Over 30

Days Past Due

Details in graphic form

Type	Description
TPS	Tracks routine operations and records events in databases, also known as data processing systems
MIS	Produces standardized reports (periodic, exception, and demand) using databases created by TPS
DSS	Analyzes unanticipated situations using data (internal and external) and decision models (strategic, tactical, and operational)
ESS	Presents summary information in a flexible, easy-to-use, graphical format designed for top executives

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Other Information Systems

- **Information workers**
  - **Data workers**
    - Secretaries
    - Clerks
  - **Knowledge workers**
    - Engineers
    - Scientist

- **Office automation systems (OASs)**
  - Project managers
  - Videoconferencing systems

- **Knowledge work systems (KWSs)**
  - Use specialized systems
  - CAD/CAM

Careers In IT

- **Information systems managers** oversee the work of programmers, computer specialist, systems analysts, and other computer professionals
- Employers look for individuals with strong technical backgrounds with a master's degree in business and…
  - Strong leadership skills
  - Excellent communication skills
- Information systems managers can expect to earn $72K - $118K annually

A Look to the Future Oftentimes, More Information is Too Much Information?

- **Information overload**
  - Could have a negative effect on getting work done
  - According to recent studies e-mail is the major source of information overload

- **How to handle e-mail**
  - Be selective
  - Remove
  - Protect
  - Be brief
  - Stop spam
  - Don't respond
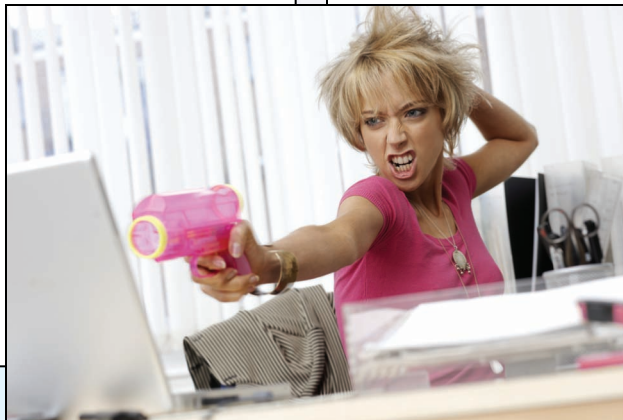
Discussion Questions

- **Name and discuss the five common functions of most organizations.**
- **Discuss the roles of the three kinds of management in a corporation.**
- **What are the four most common computer-based information systems?**
- **Describe the different reports and their roles in managerial decision making.**
- **What is the difference between an office automation system and a knowledge work system?**