Sixth Edition
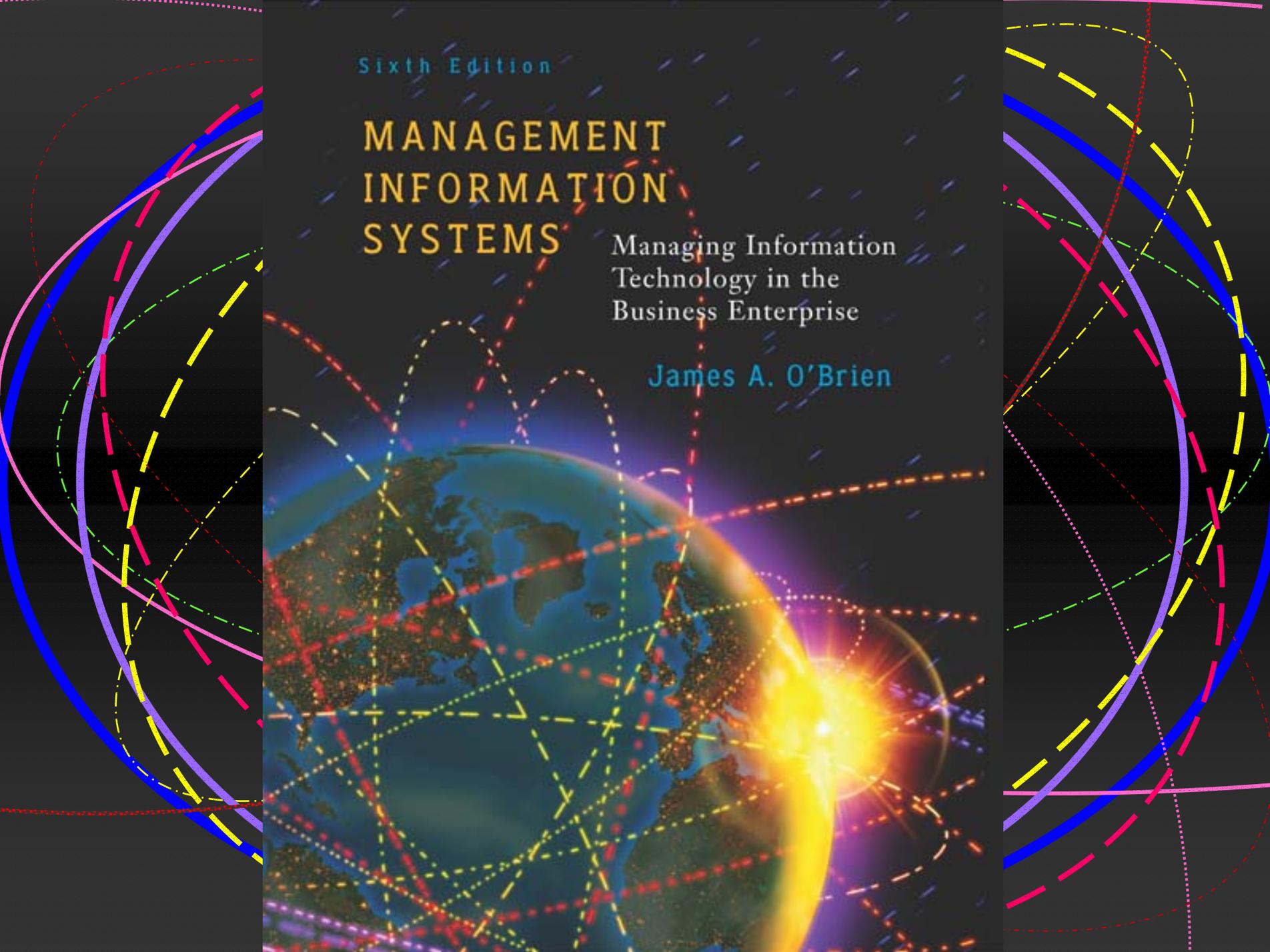
MANAGEMENT INFORMATION SYSTEMS

Managing Information Technology in the Business Enterprise

James A. O'Brien

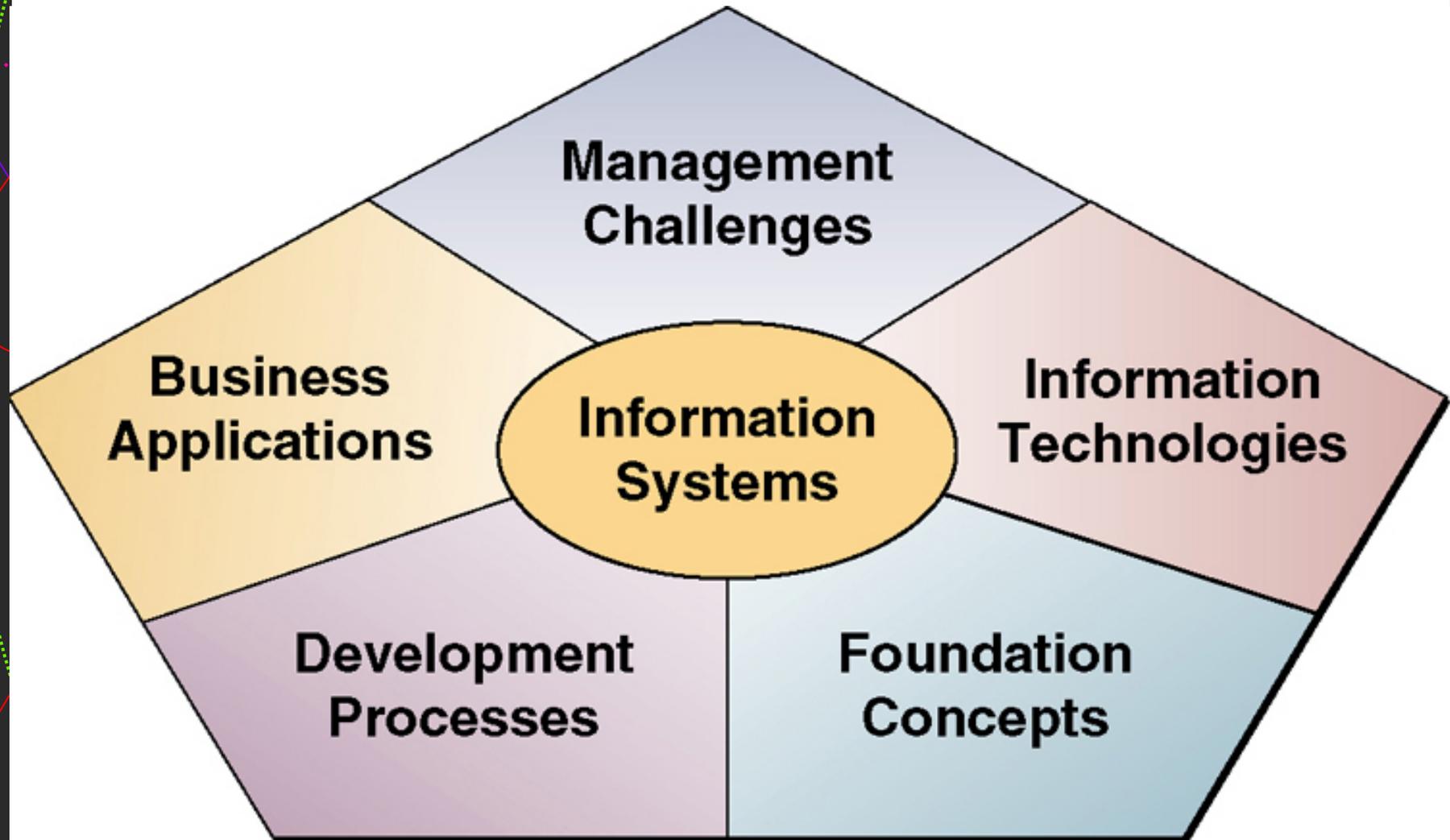# Foundations of Information Systems in Business

Learning Objectives

○ **Explain why knowledge of information systems is important for business professionals and identify five key areas of information systems knowledge.**

○ **Give examples to illustrate how the business applications of information systems can support a firm's business processes, managerial decision making, and strategies for competitive advantage.**

Learning Objectives (Continued)

o **Provide examples of the components of real world information systems.**

o **Provide examples of several major types of information systems.**

o **Identify several challenges that a business manager might face in managing the successful and ethical development and use of information technology in a business.**

Information Systems Framework

○ **Foundation Concepts**

　○ **Fundamental concepts about the components and roles of information systems.**

○ **Information Technologies**

　○ **Major concepts, developments, and management issues in information technology.**

o **Business Applications**

   o **The major uses of information systems for operations, management, and competitive advantage.**

o **Development Processes**

   o **How business professionals and information specialists plan, develop, and implement information systems.**

o **Management Challenges**

   o **The challenge of managing ethically and effectively.**

What IS a system?

o **A group of interrelated or interacting elements forming a unified whole, OR**

o **A group of interrelated components working together toward a common goal by accepting inputs and producing outputs in an organized transformation process (dynamic system).**

o **Three basic interacting components:**

- o **Input**
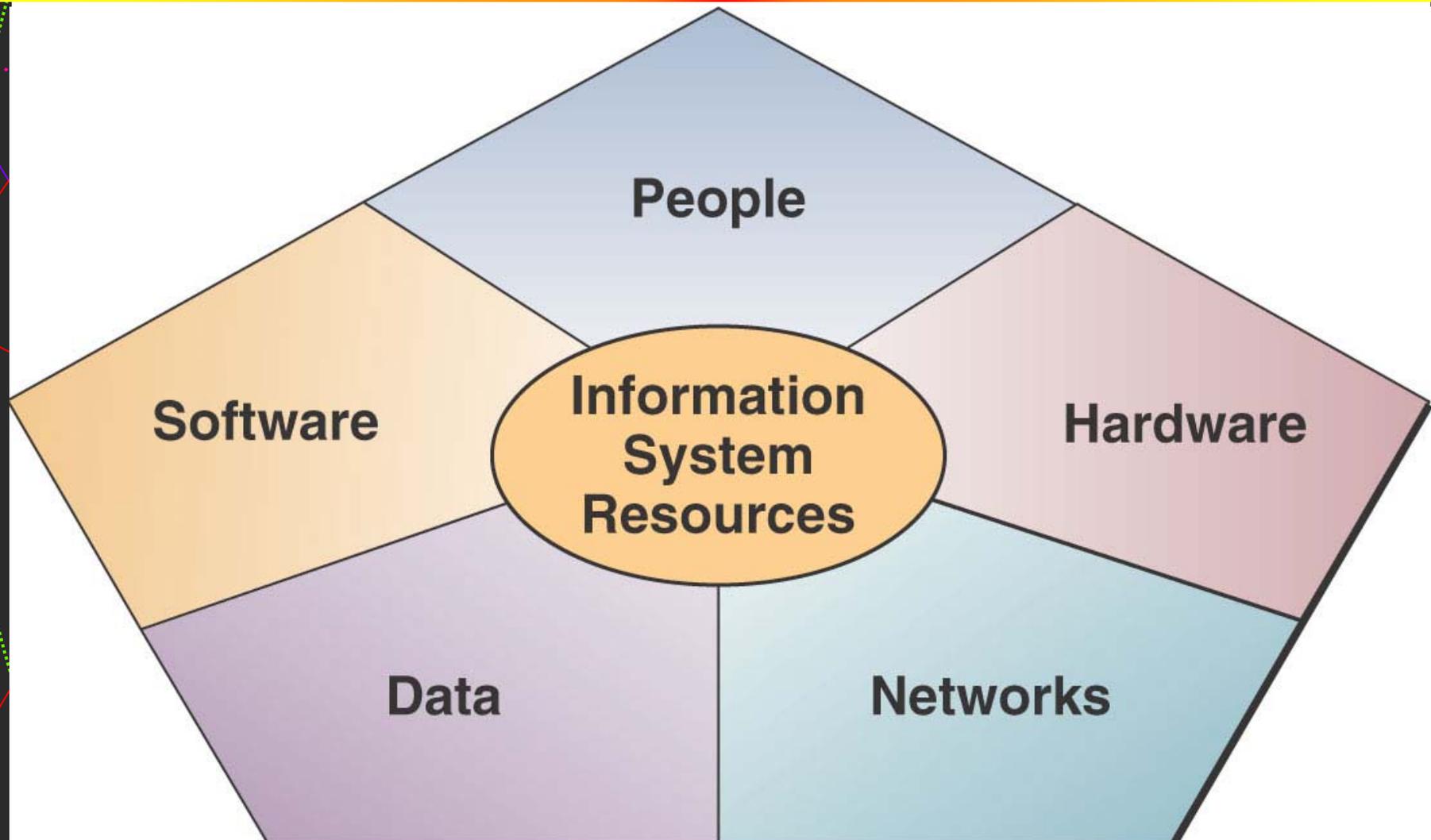- o **Processing (transformation process)**
- o **Output**

Add Feedback and Control Loops..

○ **And the system, now called a cybernetic system, becomes even more useful.**

  ○ **Self-monitoring**

  ○ **Self-regulating**

Other System Characteristics

o **A system exists and functions in an environment containing other systems.**

o **Subsystem – a component of a larger system.**

o **Systems that share the same environment may be connected to one another through a shared boundary, or interface.**

o **Open versus closed system.**

o **Adaptive system**

Components of an INFORMATION System

o **People Resources**
- o **End Users**
- o **IS Specialists**

o **Hardware Resources**
- o **Computer systems**
- o **Peripherals**

o **Software Resources**
- o **System software**
- o **Application software**
- o **Procedures**

Components of an Information System (Continued)

- **Data Resources**
  - **Data versus Information**
- **Network Resources**
  - **Communication media**
  - **Network support**

Data Versus Information
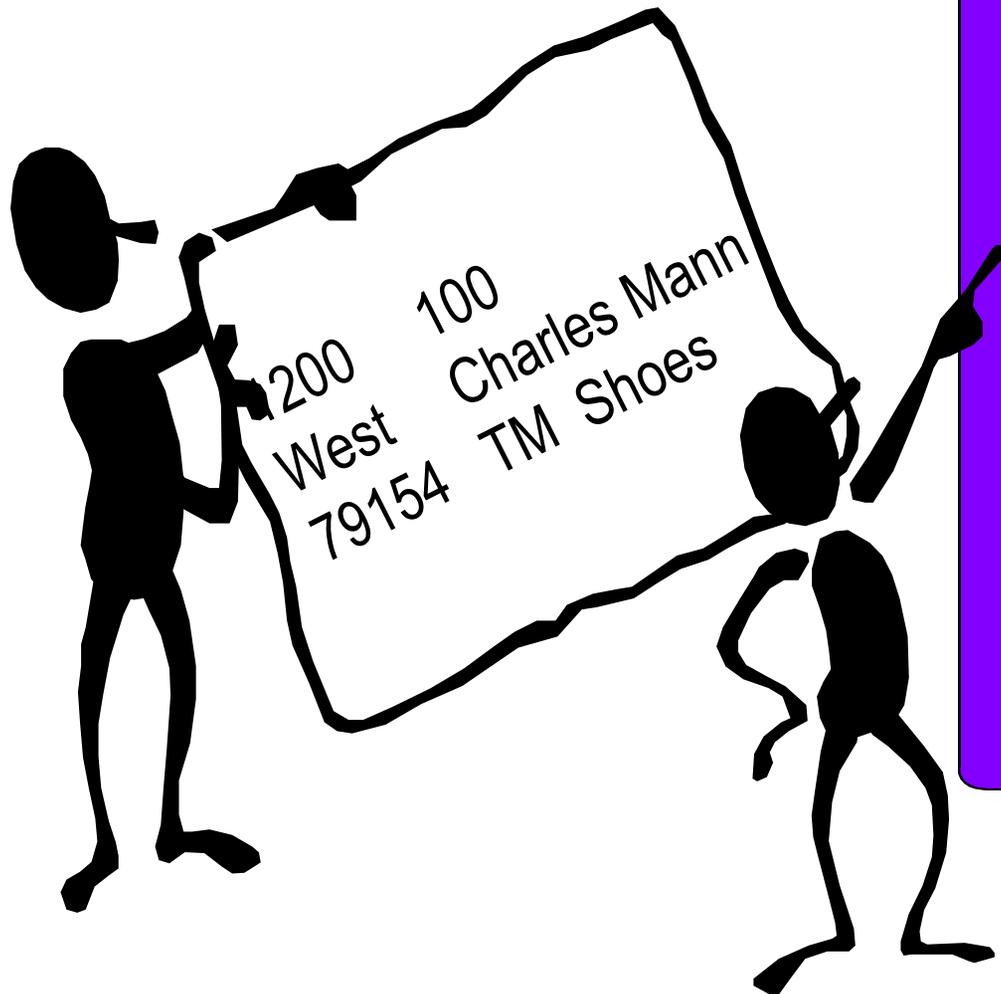
**Monthly Sales Report
for West Region**

Sales Rep: Charles Mann
Emp No. 79154

Item	Qty Sold	Price
TM Shoes	1200	$100

200   100   Charles Mann
West   79154   TM Shoes

Attributes of Information Quality

Logical Data Elements

Name Field

Payroll Record

Payroll File

Personnel Database
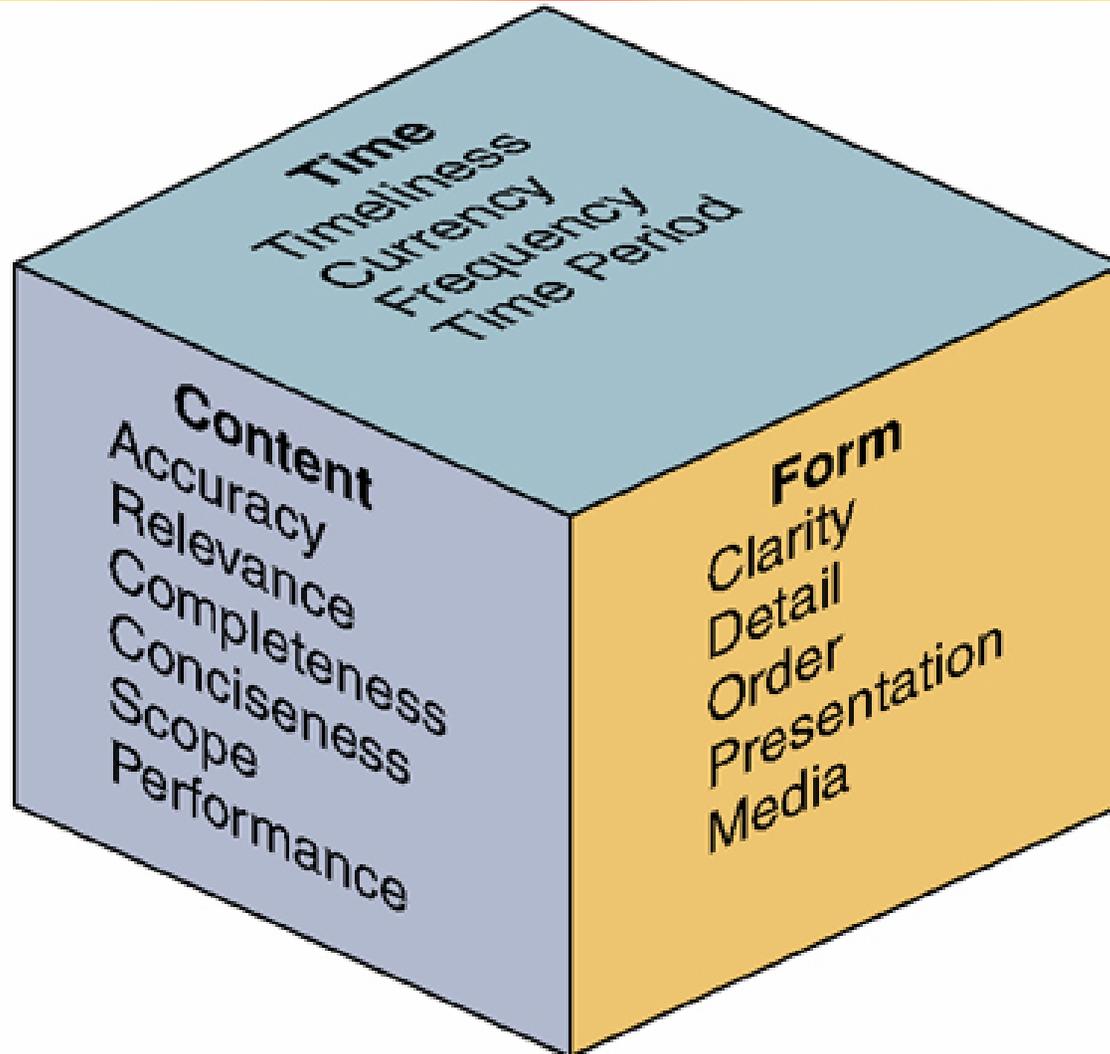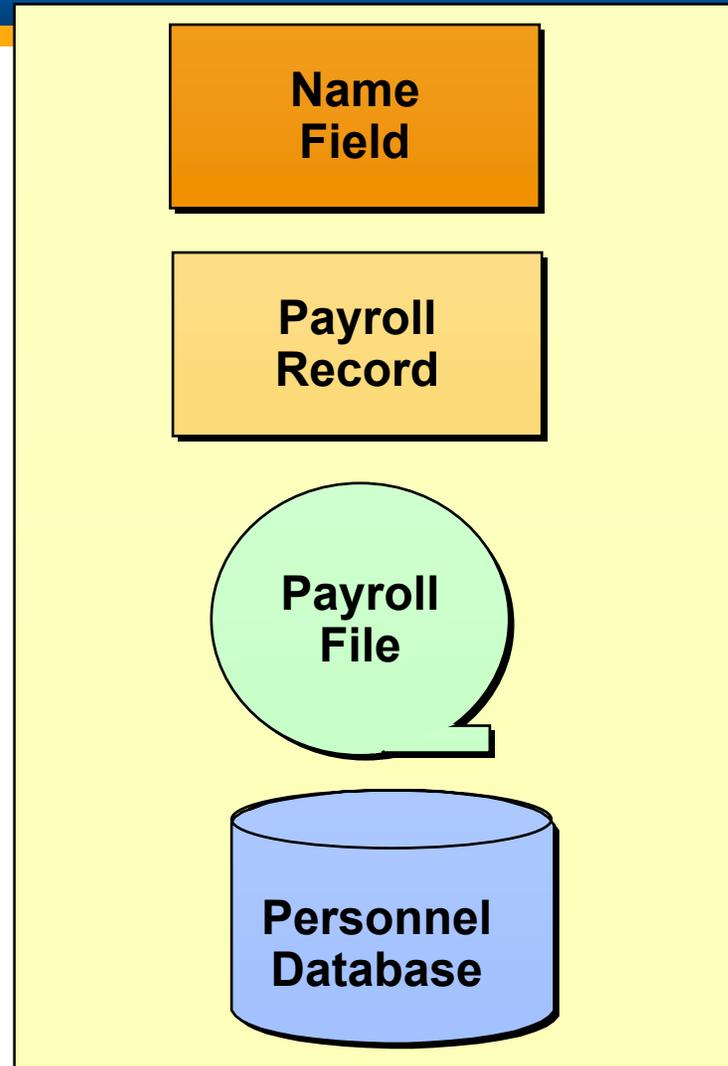
Information Products

o **Focus is on the end-user.**

o **They are the result of IS activities…**

  o **Input**

  o **Processing**

  o **Output**

  o **Storage**

  o **Control**

Section II

○ **Foundation Concepts: Business Applications, Development, and Management**

Major Roles of IS

Support
Competitive
Advantage

Support
Business
Decision Making

Support of
Business Processes and Operations
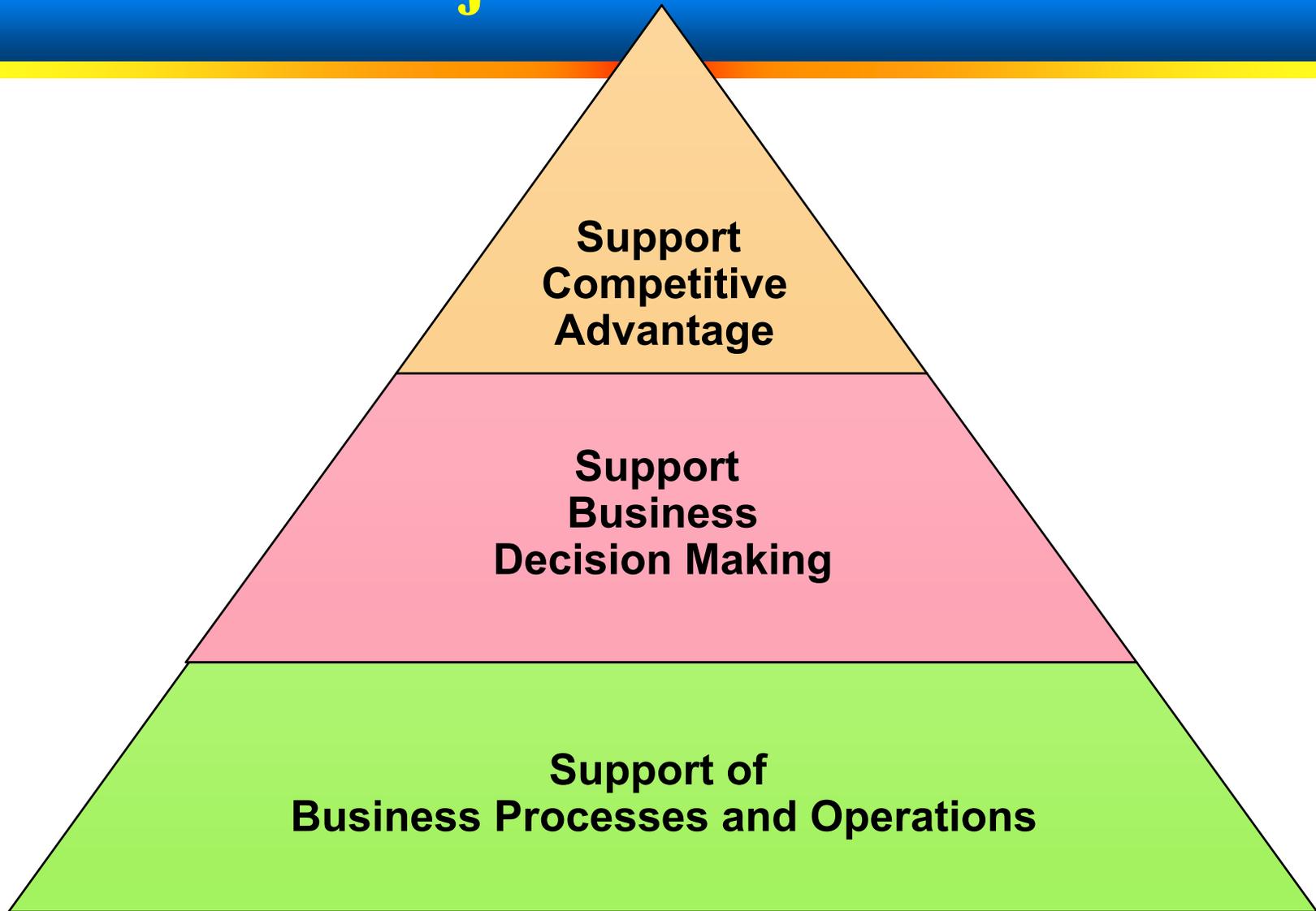
Major Roles of IS (continued)

o **Support Business Processes**

o **Support Decision Making**

o **Support Competitive Advantage**

The Present and the Future

○ **E-Business**

  ○ **The use of Internet technologies to internetwork and empower…**

    ○ **Business processes**

    ○ **Electronic commerce, and**

    ○ **Enterprise communication & collaboration**

  ○ **Within a company & with its customers, suppliers, & other business stakeholders.**

IS in the E-Business Enterprise

○ **Every business competes globally (whether they realize it or not)**

○ **IS supports business operations through the use of:**

   ○ **Intranets**

   ○ **Extranets**

   ○ **Internet**

   ○ **Other information technologies**

- **Enterprise Collaboration Systems**
  - **Support communication, coordination, & collaboration.**
    - **Virtual teams**
- **Electronic Commerce**
  - **Buying & selling, and marketing & servicing of products, services, & information.**

Trends in Information Systems

The Expanding Roles of IS in Business and Management → **The Expanding Participation of End Users and Managers in IS**

Electronic Business and Commerce: 1990s–2000s

Internetworked e-business and e-commerce systems

Internetworked enterprise and global e-business operations and electronic commerce on the Internet, intranets, extranets, and other networks

Strategic and End User Support: 1980s–1990s

End user computing systems

Direct computing support for end user productivity and work group collaboration

Executive information systems

Critical information for top management

Expert systems

Knowledge-based expert advice for end users

Strategic information systems

Strategic products and services for competitive advantage

Decision Support: 1970s–1980s

Decison support systems

Interactive ad hoc support of the managerial decision-making process

Management Reporting: 1960s–1970s

Management information systems

Management reports of prespecified information to support decision making

Data Processing: 1950s–1960s

Electronic data processing systems

Transaction processing, record-keeping, and traditional accounting applications

Types of Information Systems

○**Operations Support Systems**

  ○**Transaction processing systems**

    ○**Batch – transaction data accumulate over time, processed periodically.**

    ○**Real-time – data processed immediately after a transaction occurs.**

  ○**Process Control Systems – monitor & control physical processes.**

  ○**Enterprise Collaboration Systems**

❍ **Management Support Systems**

   ❍ **Management Information Systems – pre-specified reports & displays to support decision-making.**

   ❍ **Decision Support Systems – provide interactive ad hoc support.**

   ❍ **Executive Information Systems – critical information tailored to the information needs of executives.**

Types of Information Systems (continued)

○ **Other Classifications**

  ○ **Expert systems – expert advice**

  ○ **Knowledge management systems – support the creation, organization, & dissemination of business knowledge**

  ○ **Functional business systems – support the basic business functions**

  ○ **Strategic information systems – strategic advantage**

Developing IS Solutions to Business Challenges

Developing
Information
System
Solutions

- Investigate
- Analyze
- Design
- Implement
- Maintain
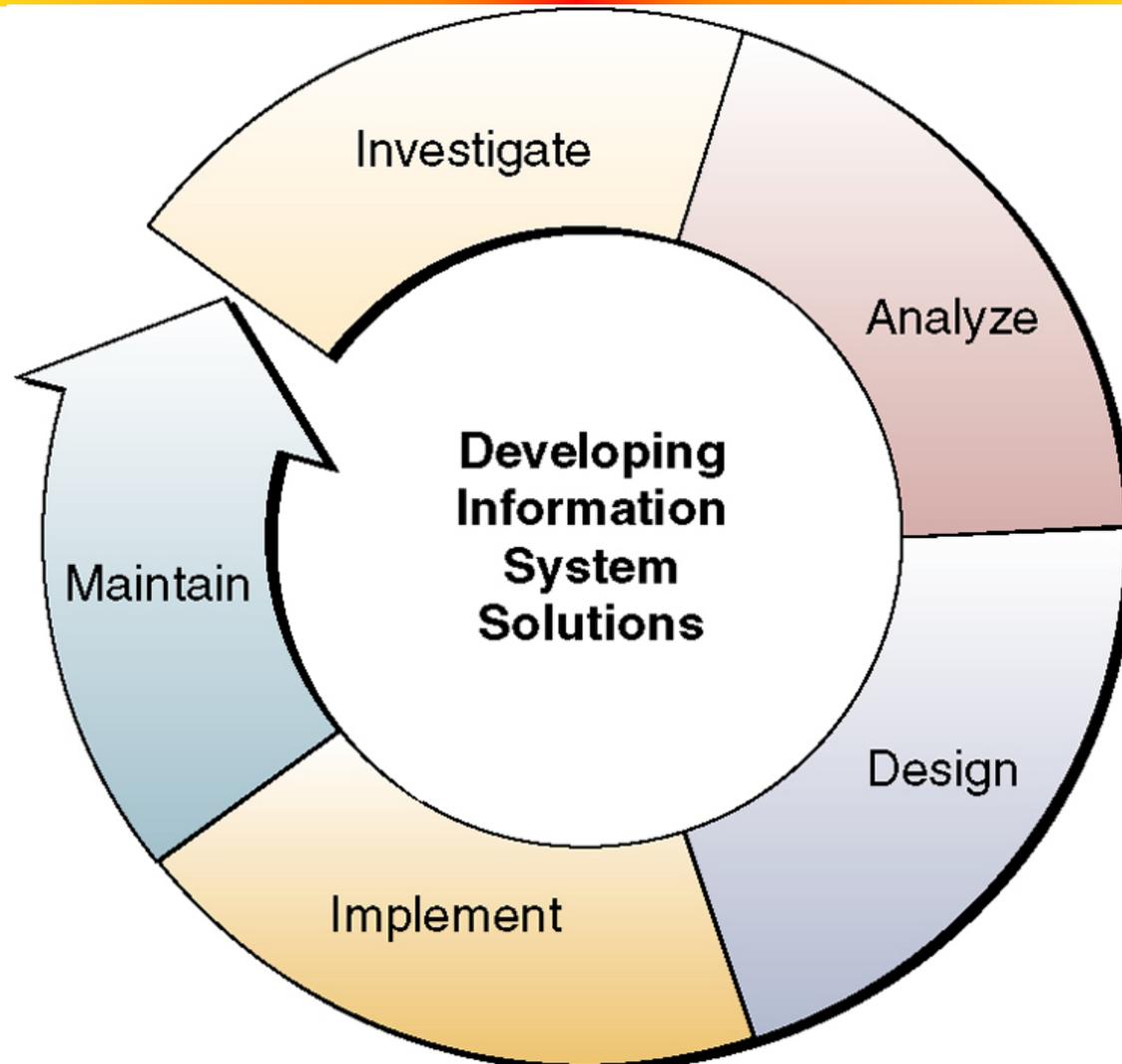
Ethical Challenges

o **Just because we can, should we?**

o **Where do we draw the line between customer privacy and collecting business information?**

o **Do we owe it to society to use this technology wisely and responsibly? Why? Isn't our job to make a profit?**

In Summary, the IS Function…

o Is a major functional area of business.

o Is an important contributor to operational efficiency, employee productivity and morale, and customer service & satisfaction.

o Is a major source of information and support for decision making.

o Provides a strategic advantage in developing competitive products & services.

Discussion Questions

o **How can information technology support a company's business processes and decision making, and give it a competitive advantage?**

o **How does the use of the Internet, intranets, and extranets by an e-business enterprise support their e-commerce activities?**

o **Why do big companies still fail in their use of information technology? What should they be doing differently?**

Discussion Questions (continued)

o **How can a manager demonstrate that he or she is a responsible end user of information systems?**

o **What are some of the toughest management challenges in developing IT solutions to solve business problems and meet new e-business opportunities?**

o **Why are there so many conceptual classifications of information systems? Why are they typically integrated in information systems found in the real world?**

o **In what major ways have the roles of information systems applications in business expanded during the last 40 years? What is one major change you think will happen in the next 10 years?**

o **Can the business use of Internet technologies help a company gain a competitive advantage?**

Real World Case 1 – BellSouth Corporation

○ **We understand that ROI is a key component of business decision-making.**

○ **We also understand the importance of choosing projects that help us achieve business goals.**

○ **How is BellSouth Corporation measuring ROI for technology projects?**

BellSouth (continued)

○ **How well is IT supporting the business goals of BellSouth?**

○ **How has IT improved efficiency and effectiveness of BellSouth's business processes?**

○ **How has IT helped BellSouth improve managerial decision-making?**

○ **How has IT helped BellSouth improve workgroup collaboration?**

BellSouth (continued)

o **What resources were used?**

o **What activities were performed?**

o **What information products were produced?**

o **Explain BellSouth's "technology transfer roadmap."**

    o **What is it?**

    o **What function does it serve?**

BellSouth (continued)

○ **Is BellSouth's technology transfer map a good way to determine IT investment priorities? Why or why not?**

  ○ **What are the strengths of this approach?**

  ○ **What are the possible drawbacks to this approach?**

BellSouth (continued)

○ **What else might BellSouth do to guarantee the strategic business value of potential IT investment projects?**

Real World Case 2 – Royal Caribbean International

○ **What problems did Tom Murphy encounter?**

○ **Why did the IT group at Royal Caribbean have such poor performance and business status in the company?**

Royal Caribbean (continued)

o **What did Murphy do to resolve the IT problems?**

o **What do you see as the top three factors in Murphy's turnaround of the IT function?**

Royal Caribbean (continued)

o **What does Murphy see as the foundation for change in a diverse workgroup?**

o **What are Murphy's four keys to managing a diverse workforce?**

Real World Case 3 – Clariant International

○ **How has the focus of business managers toward IT projects changed according to this case?**

○ **What factors drove that change in focus?**

Clariant (continued)

o **How does the change in focus impact the near-term future of IT?**

o **What types of challenges did Clariant encounter?**

o **How did they resolve those challenges?**

Clariant (continued)

o **Are Web-enabling business processes a cost effective strategy? Always?**

o **What role did management play in Clariant's IT success?**

o **Had management not been involved, would you have expected the same level of success? Why or why not?**

Real World Case 4 – Hershey Foods Corp.

○ **How could Hershey have avoided the failure of its first implementation of their major new IT system?**

○ **Did timing contribute to the problem?**

Hershey Foods (continued)

○ **Do you see the failure of the first implementation to be a software issue or a project management issue? Why?**

○ **Why did Hershey's major upgrade of that system succeed?**

○ **Was it a matter of learning from past mistakes?**

Hershey Foods (continued)

O **What did Hershey do differently with the upgrade?**

O **Why do failures in major business/IT projects continue to occur to large companies with so much IT expertise and financial resources?**

❍**What business pressures contribute to those failures?**

  ❍**Internal**

  ❍**External**

❍**How might end-user involvement have helped with the implementation process?**

WH Smith (continued)

o **How well does WH Smith's new CRM system support its business goals?**

o **How has the staff been included in the process?**

o **Do you believe that including the staff is important? Why?**

○ **In what other ways could IT help WH Smith support its retail managers, marketers, and customers?**