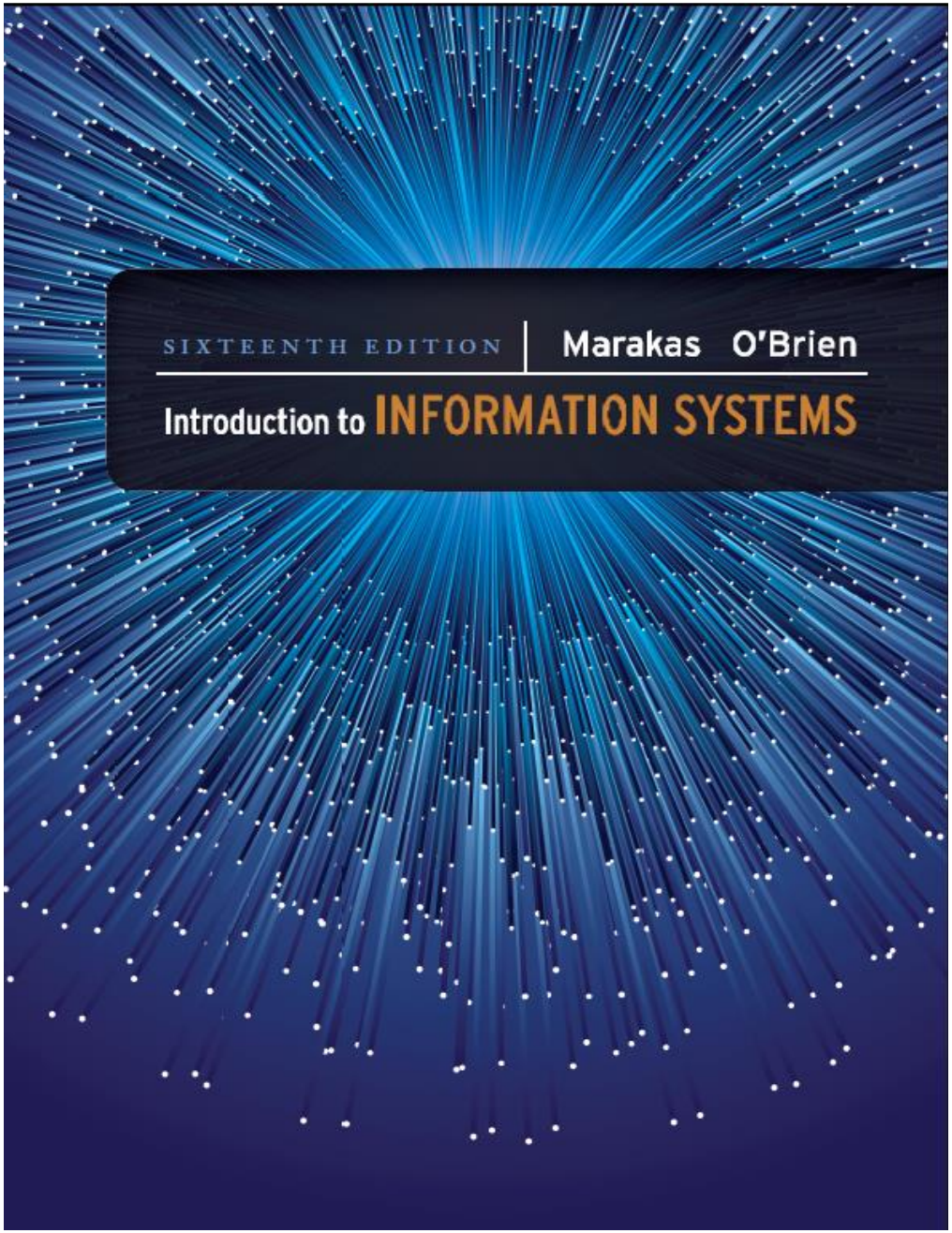

SIXTEENTH EDITION
Marakas O'Brien
Introduction to INFORMATION SYSTEMS

Chapter 1

Foundations of Information Systems in Business

Foundation Concepts

- Why study information systems and information technology?
  - Vital component of successful businesses
  - Helps businesses expand and compete
  - Improves efficiency and effectiveness of business processes
  - Facilitates managerial decision making and workgroup collaboration

Basic Questions

- What is information?
- What is a system?
- What is an information system?

Data Versus Information

- **Data** are raw facts about physical phenomena or business transactions
- **Information** is data that has been converted into meaningful and useful context for end users
- Examples:
  - Sales data is names, quantities, and dollar amounts
  - Sales information is amount of sales by product type, sales territory, or salesperson

Data vs. Information

DATA

Raw Facts

- Hours Worked
- Pay Scale
- Overtime def
- Overtime Scale

Applying Knowledge Base

INFO

Useful, valuable and arranged Facts:

- Total Paycheck

INFORMATION AS A KEY RESOURCE

- ***Data*** – raw facts
  - ***06/01/1999 – a date***
- ***Information*** – data that have a particular meaning within a specific context
  - 06/01/1999 the date an automobile was sold

- Click on the link below for next lecture on

Data and Information

Prepared by : Aamir Parre

What is a System?

- A set of interrelated components
- With a clearly defined boundary
- Working together
- To achieve a common set of objectives
- 34 Best Definitions of system

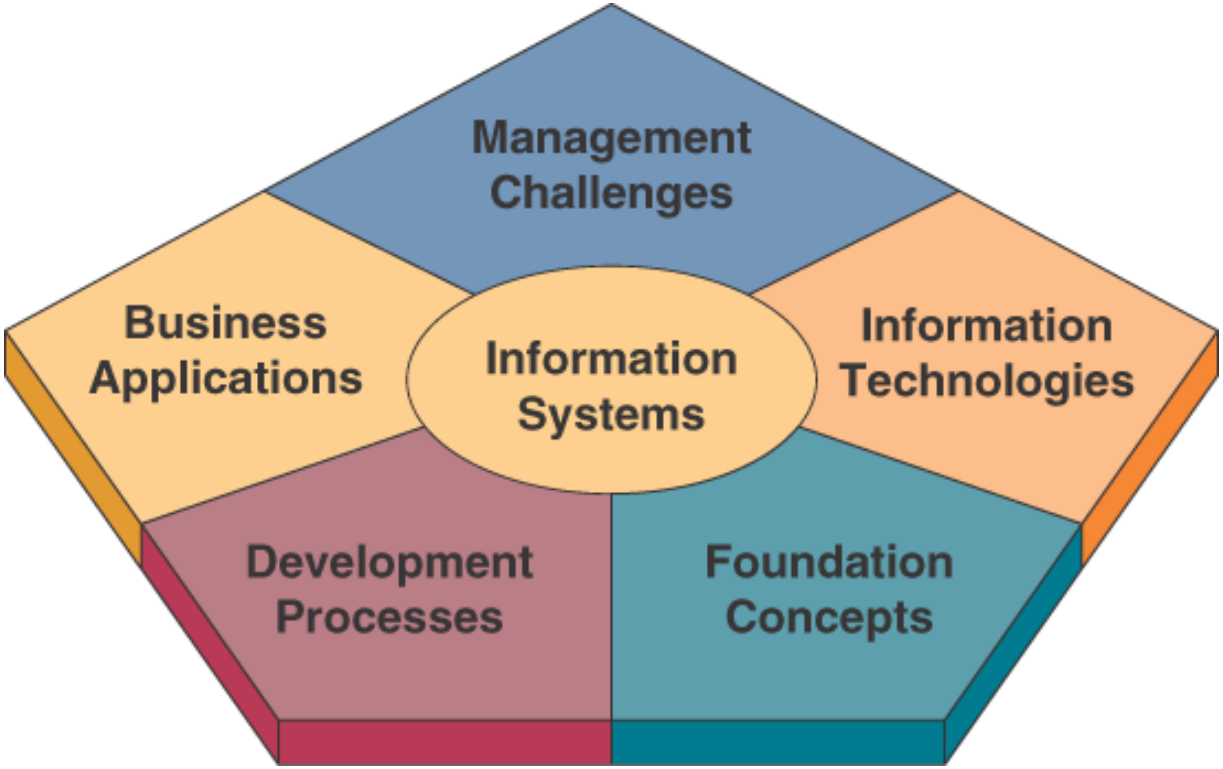
What is a Management Information System?

- An organized combination of…
  - People
  - Hardware and software
  - Communication networks
  - Data resources
  - Policies and procedures
- This system…
  - Stores, retrieves, transforms, and disseminates information in an organization
- Chapter 1: What Is an Information System?
- Information System - Wikipedia

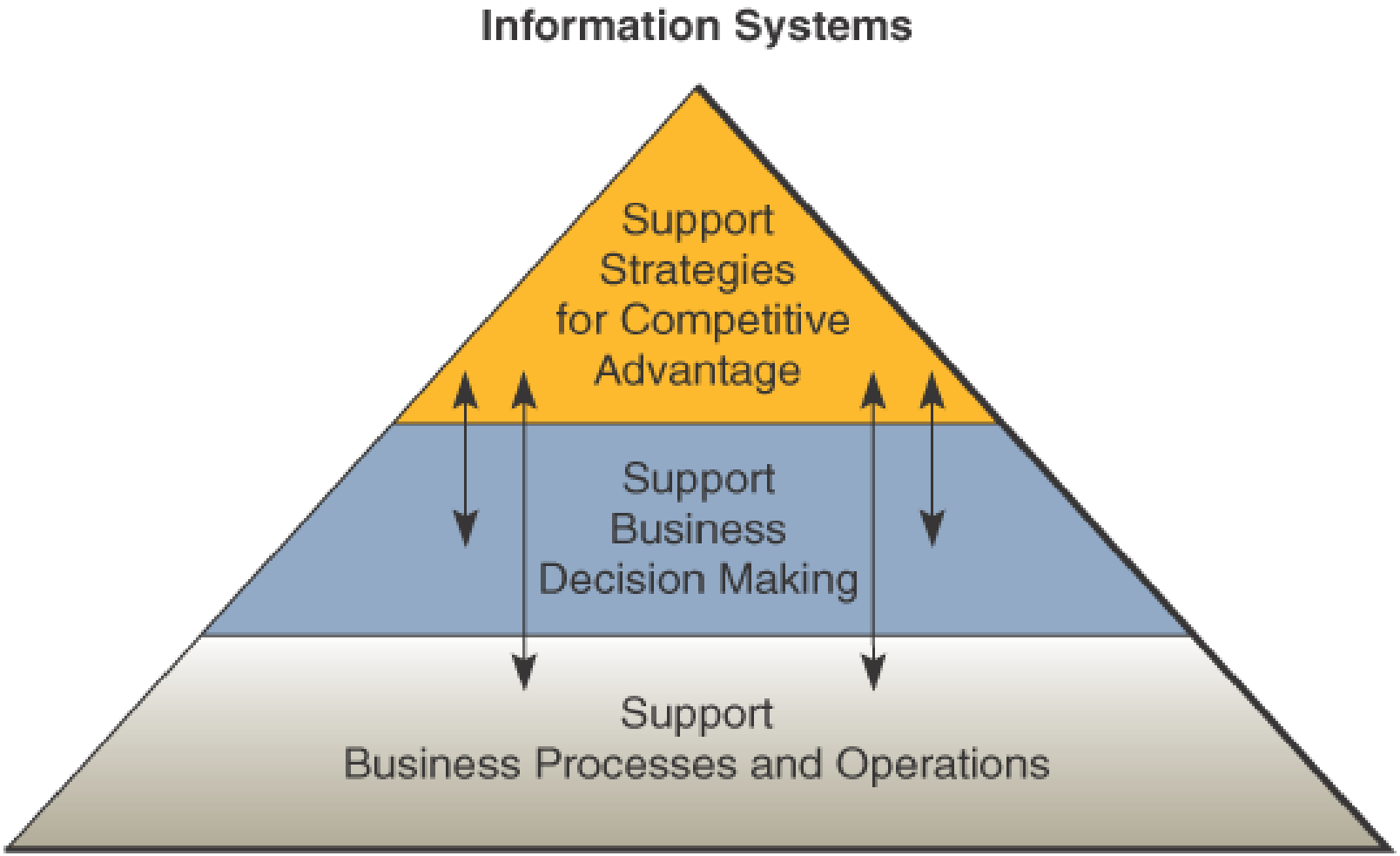
What is a Management Information System?

- A **management information system** (**MIS**) provides information that organizations require to manage themselves efficiently and effectively
  - 1. Hardware
  - 2. Software
  - 3. Data (information for decision making),
  - 4. Procedures (design, development and documentation),
  - 5. People (individuals, groups, or organizations).

What Should Business Professionals Know?

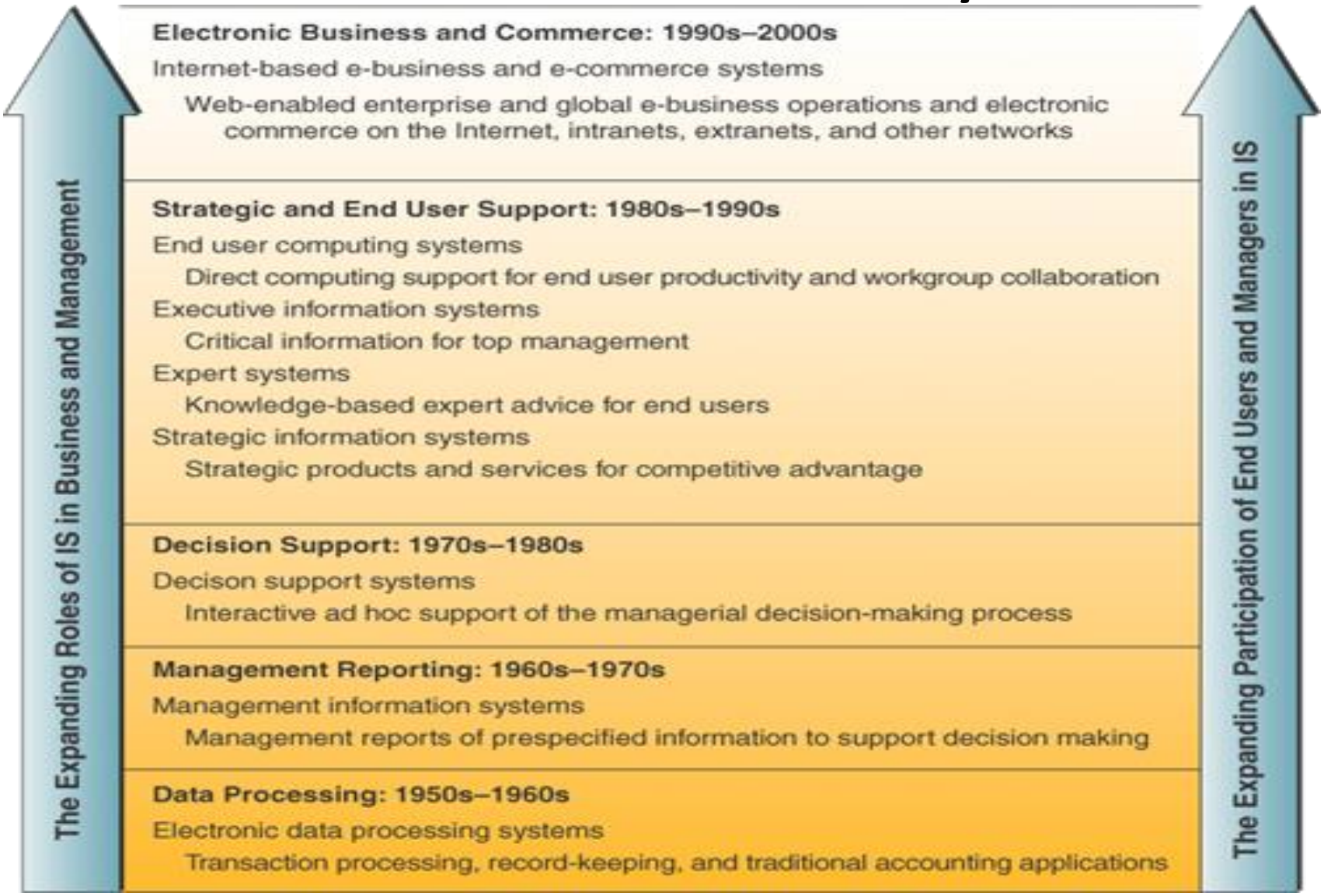


Fundamental Roles of IS in Business



- **Competitive Advantage Definition with Types and Examples**
- **What are Business Processes?**

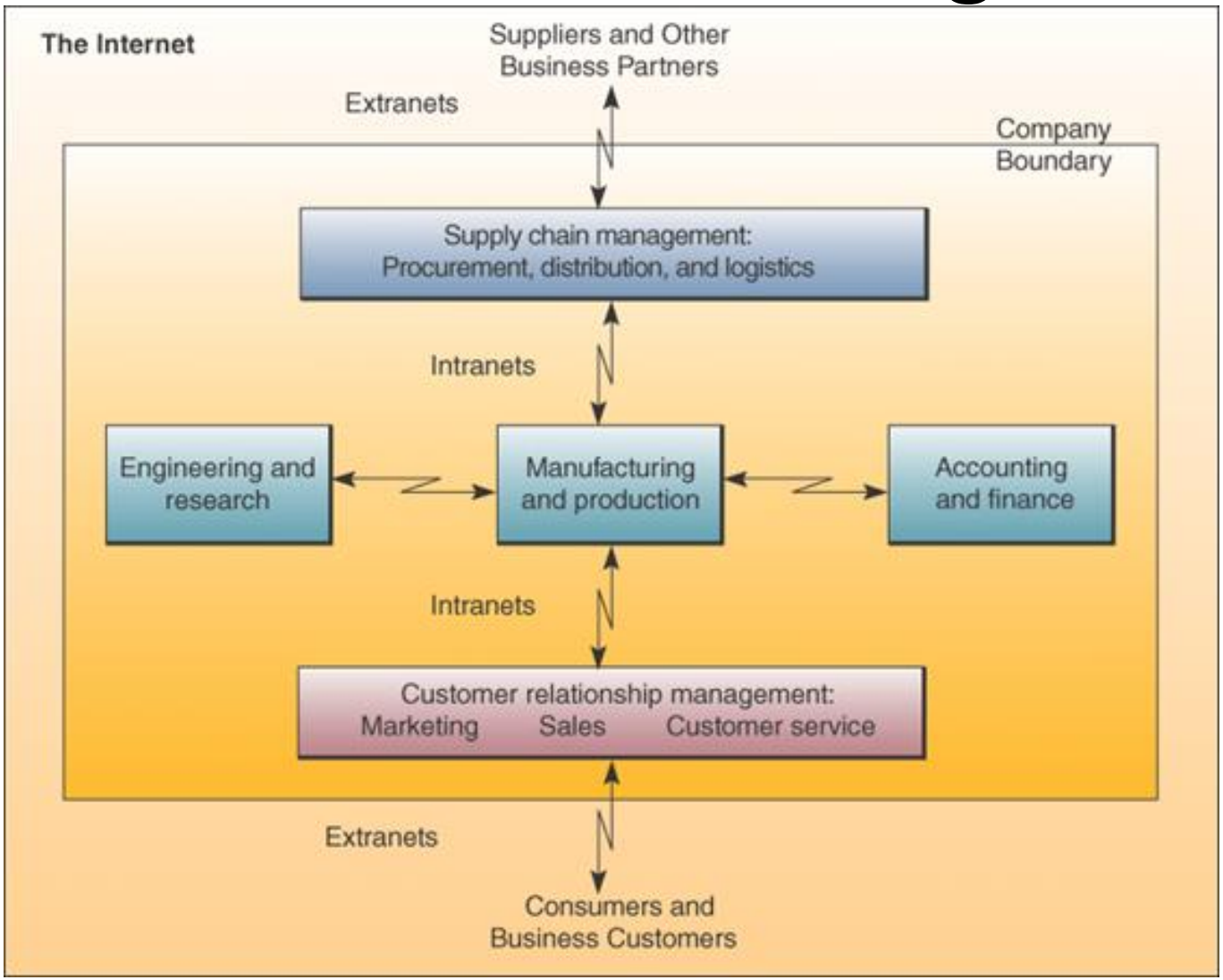
Trends in Information Systems



What is E-Business?

- Using Internet technologies to empower…
  - Business processes
  - Electronic commerce
  - Collaboration within a company
  - Collaboration with customers, suppliers, and other business stakeholders
- In essence, an online exchange of value
- What is E-Business | Meaning, Types, Components, Model and Features

How E-Business is Being Used



E-Business Use

- Reengineering
  - Internal business processes
- Enterprise collaboration systems
  - Support communications, coordination and coordination among teams and work groups
- Electronic commerce
  - Buying, selling, marketing, and servicing of products and services over networks

What is a System?

- A system is…
  - A set of interrelated components
  - With a clearly defined boundary
  - Working together
  - To achieve a common set of objectives
  - By accepting inputs and producing outputs
  - In an organized transformation process

System Concepts: A Foundation

- System concepts help us understand…
  - Technology: hardware, software, data management, telecommunications networks
  - Applications: to support inter-connected information systems
  - Development: developing ways to use information technology includes designing the basic components of information systems
  - Management: emphasizes the quality, strategic business value, and security of an organization's information systems

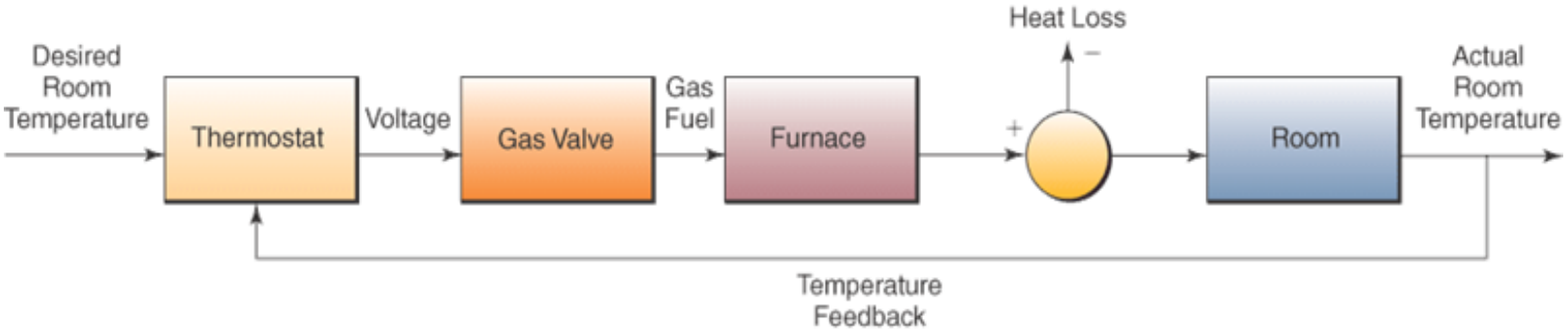
Basic Functions of a System

- Input
  - Capturing and assembling elements that enter the system to be processed
- Processing
  - Transformation process that converts input into output
- Output
  - Transferring transformed elements to their ultimate destination

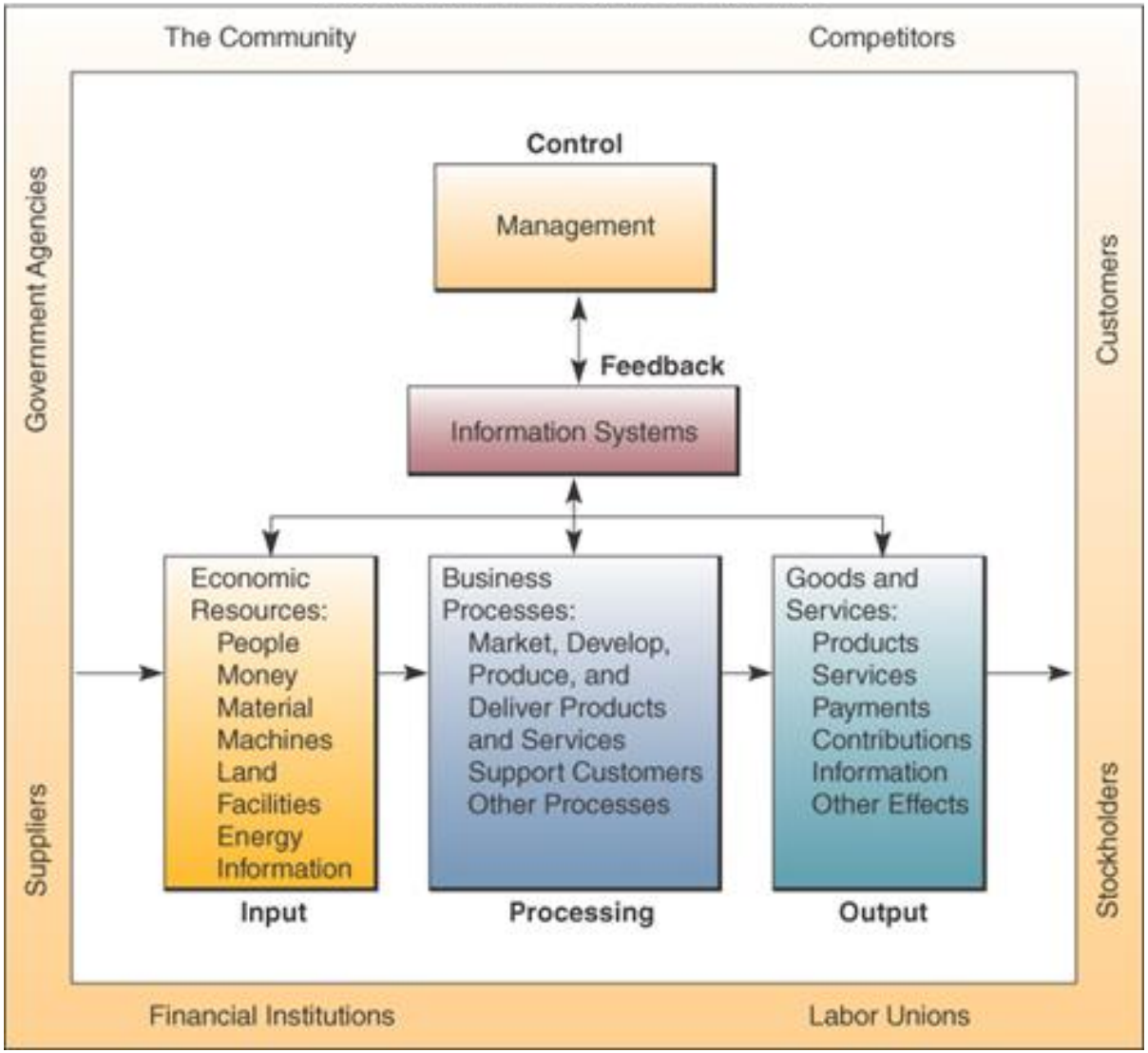
Cybernetic System

- All systems have *input*, *processing*, and *output*
- A **cybernetic system**, a self-monitoring, self-regulating system, adds feedback and control:
  - **Feedback** is data about the performance of a system
  - **Control** involves monitoring and evaluating feedback to determine whether a system is moving toward the achievement of its goal

A Cybernetic System



A Business as a System



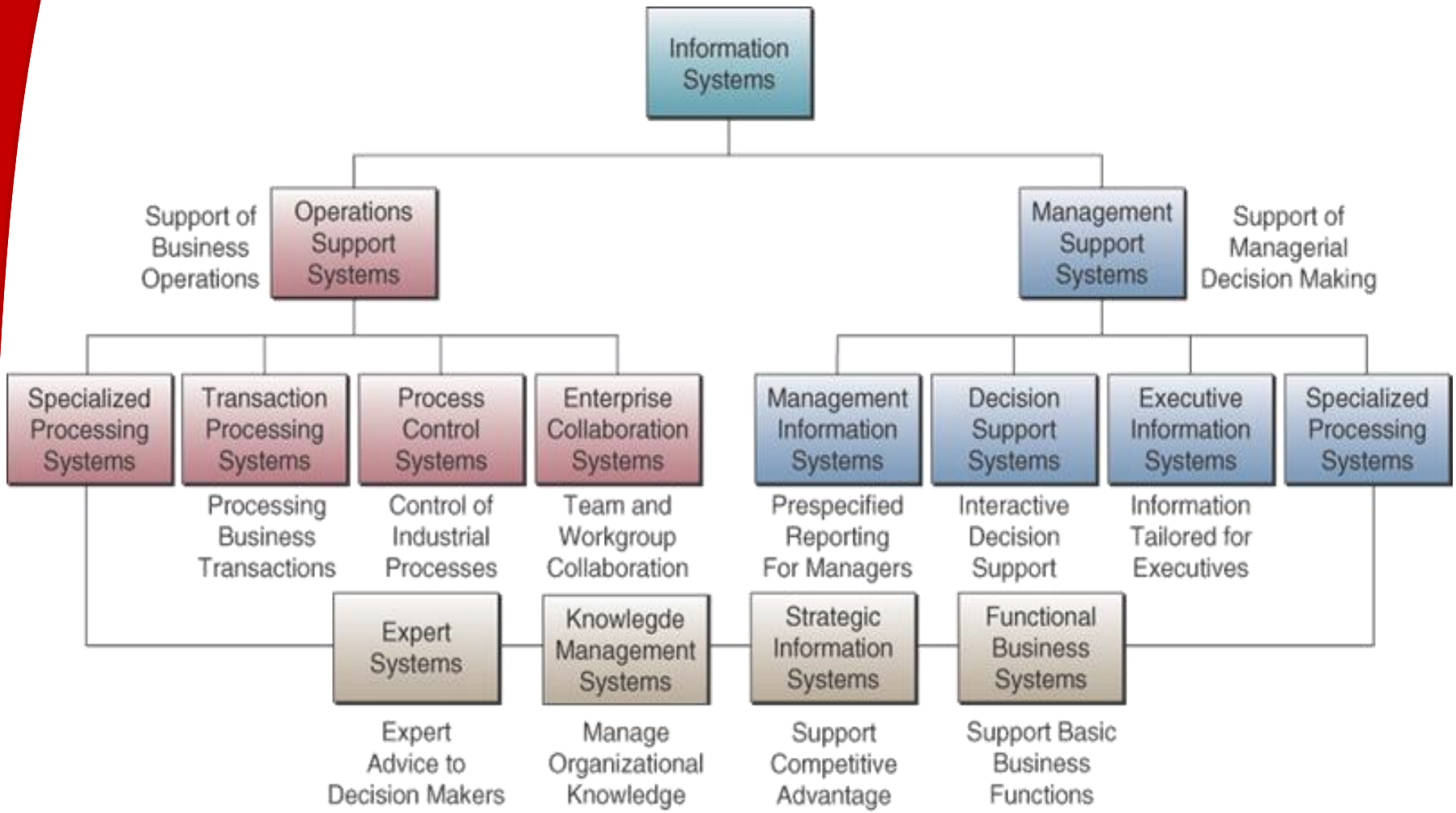
Other System Characteristics

- If a system is one of the components of a larger system, it is a **subsystem**
  - The larger system is an **environment**
- Several systems may share the same environment
  - Some may be connected via a shared boundary, or **interface**
- Types of systems…
  - Open
  - Adaptive

Types of Information Systems

- Operations Support Systems
  - Efficiently process business transactions
  - Control industrial processes
  - Support communication and collaboration
  - Update corporate databases
- Management Support Systems
  - Provide information as reports and displays
  - Give direct computer support to managers during decision-making

Purposes of Information Systems



Operations Support Systems

- What do they do?
  - Efficiently process business transactions
  - Control industrial processes
  - Support communications and collaboration
  - Update corporate databases

∞Operations support system – Wikipedia

∞Learn about Operation Support System - OSS | Udemy

Types of Operations Support Systems

- Transaction Processing Systems
  - Record and process business transactions
  - Examples: sales processing, inventory systems, accounting systems
- Process Control Systems
  - Monitor and control physical processes
  - Example: using sensors to monitor chemical processes in a petroleum refinery
- Enterprise Collaboration Systems
  - Enhance team and workgroup communication
  - Examples: email, video conferencing

Two Ways to Process Transactions

- Batch Processing
  - Accumulate transactions over time and process periodically
  - Example: a bank processes all checks received in a batch at night
- Online Processing
  - Process transactions immediately
  - Example: a bank processes an ATM withdrawal immediately

Management Support Systems

- What do they do?
  - Provide information and support for effective decision making by managers
    - Management information systems
    - Decision support systems
    - Executive information systems

Types of Management Support Systems

- Management Information Systems (MIS)
  - Reports and displays
  - An IS used in for day to day working.
  - Example: daily sales analysis reports
- Decision Support Systems (DSS)
  - Interactive and ad hoc support
  - Example: a what-if analysis to determine where to spend advertising dollars
- Executive Information Systems (EIS)
  - Critical information for executives and managers
  - Example: easy access to actions of competitors

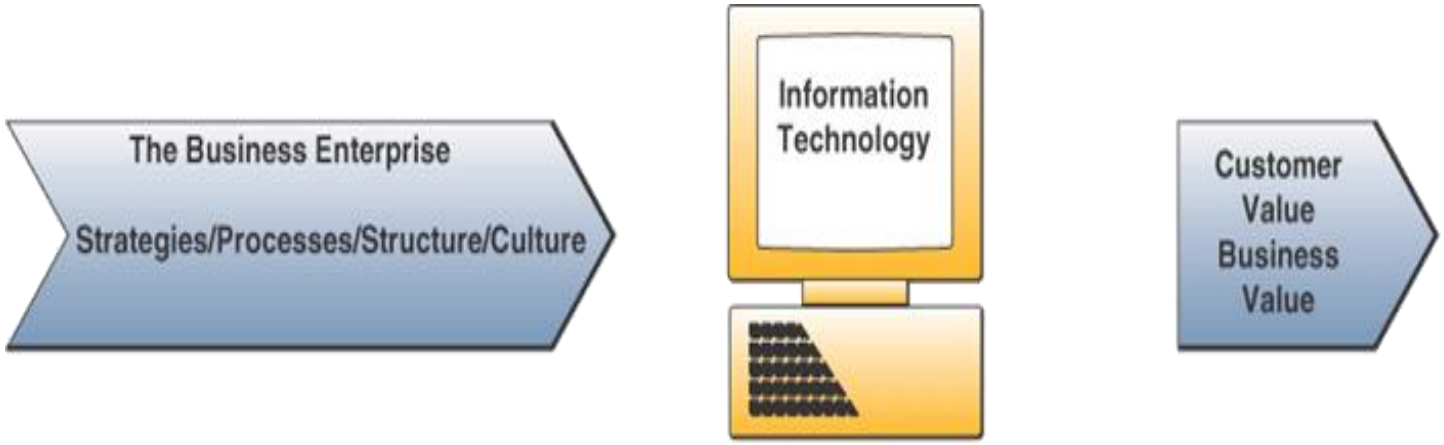
Other Information Systems

- Expert Systems
  - Provide expert advice
  - Example: credit application advisor
- Knowledge Management Systems
  - Support creation, organization, and dissemination of business knowledge throughout company
  - Example: intranet access to best business practices

Other Information Systems

- Strategic Information Systems
  - Help get a strategic advantage over customer
  - Examples: shipment tracking, e-commerce Web systems
- Functional Business Systems
  - Focus on operational and managerial applications of basic business functions
  - Examples: accounting, finance, or marketing

IT Challenges and Opportunities



Business / IT Challenges

- Speed and flexibility requirements of product development, manufacturing, and delivery cycles.
- Reengineering and cross-functional integration of business processes using Internet technologies.
- Integration of e-business and e-commerce into the organization's strategies, processes, structure, and culture.

Business / IT Developments

- Use of the Internet, intranets, extranets, and the Web as the primary IT infrastructure.
- Diffusion of Web technology to internetwork employees, customers, and suppliers.
- Global networked computing, collaboration, and decision support systems.

Business / IT Goals

- Give customers what they want, when and how they want it, at the lowest cost.
- Coordination of manufacturing and business processes with suppliers and customers.
- Marketing channel partnerships with suppliers and distributors.

Measuring IT Success

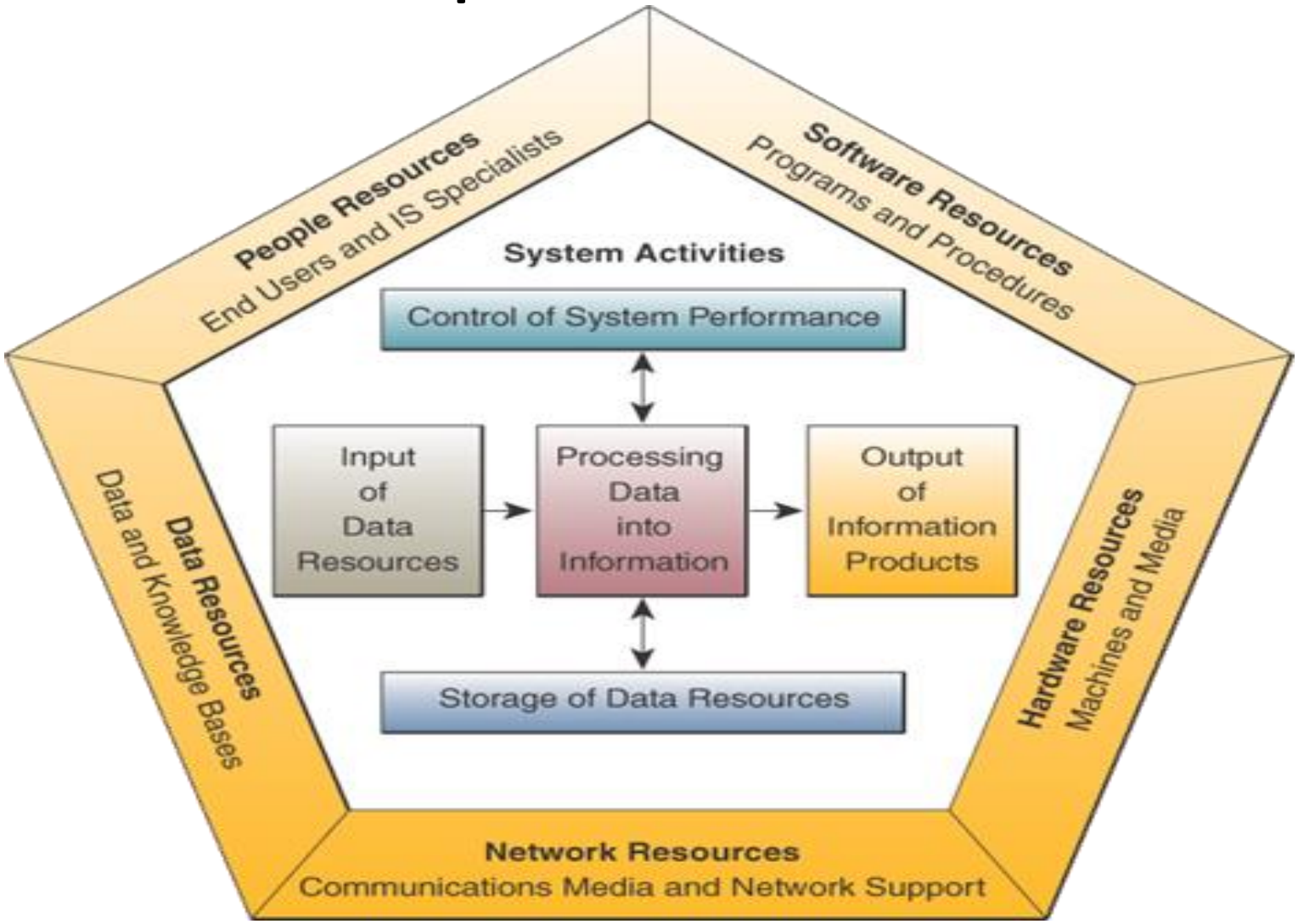
- Efficiency
  - Minimize cost, time, and use of information resources
- Effectiveness
  - Support business strategies
  - Enable business processes
  - Enhance organizational structure and culture
  - Increase customer and business value

Developing IS Solutions

The IS Function

- The IS function is…
  - A major functional area of business
  - An important contributor to operational efficiency, employee productivity, morale, customer service and satisfaction
  - A major source of information and support for decision making
  - A vital ingredient in developing competitive products and services in the global marketplace
  - A dynamic and challenging career opportunity
  - A key component of today's networked business

Components of an IS



Information System Resources

- People Resources
  - Specialists
  - End users
- Hardware Resources
  - Machines
  - Media
- Software Resources
  - Programs
  - Procedures

Information System Resources

- Data Resources
  - Product descriptions, customer records, employee files, inventory databases
- Network Resources
  - Communications media, communications processors, network access and control software
- Information Resources
  - Management reports and business documents using text and graphics displays, audio responses, and paper forms

IS Activities

- **Input** of data resources
  - Data entry activities
- **Processing** of data into information
  - Calculations, comparisons, sorting, and so on
- **Output** of information products
  - Messages, reports, forms, graphic images
- **Storage** of data resources
  - Data elements and databases
- **Control** of system performance
  - Monitoring and evaluating feedback

Recognizing Information Systems

- Business professionals should be able to look at an information system and identify…
  - The people, hardware, software, data, and network resources they use
  - The type of information products they produce
  - The way they perform input, processing, output, storage, and control activities