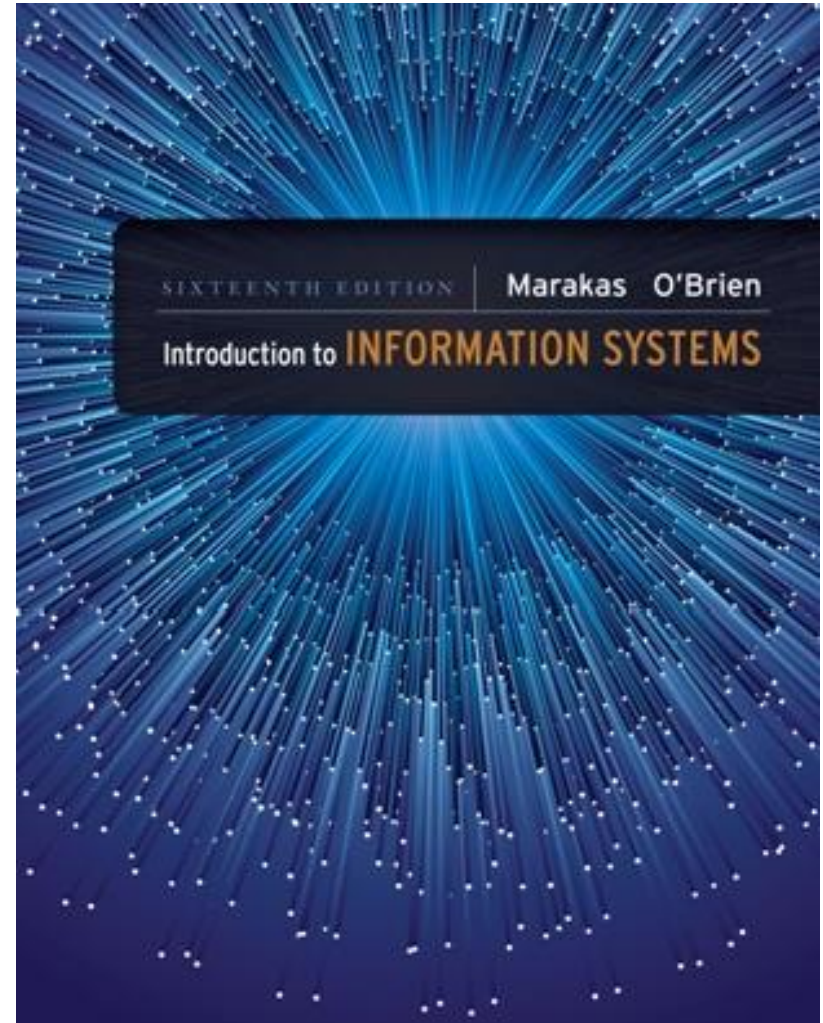


Chapter 1

Part 1

Foundations of Information Systems in Business

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Foundation Concepts: Information Systems in Business

**THE REAL WORLD OF INFORMATION
SYSTEMS**

System

- A system is a *set of **interrelated components**, with a clearly defined boundary, working together to achieve a common set of objectives.*
- Using this definition, it becomes easy to see that virtually everything you can think of is a system, and one system can be made up of other systems or be part of a bigger system.

Information system

- An ***information system*** (IS) can be any organized combination of people, hardware, software, communications networks, data resources, and policies and procedures that stores, retrieves, transforms, and disseminates information in an organization.
- People rely on modern information systems to communicate with one another using a variety of physical devices(*hardware*), information processing instructions and procedures(*software*), communications channels (*networks*), and stored data(*data resources*).

Information systems examples

- we have been using information systems since the dawn of civilization.

Smoke signals for communication were used as early as recorded history and can account for the human discovery of fire. The pattern of smoke transmitted valuable information to others who were too far to see or hear the sender.

Card catalogs in a library are designed to store data about the books in an organized manner that allows readers to locate a particular book by its title, author name, subject, or a variety of other approaches.

Major areas of information systems knowledge needed by business professionals

FIGURE 1.2

A framework that outlines the major areas of information systems knowledge needed by business professionals.



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**THE FUNDAMENTAL ROLES OF IS IN
BUSINESS**

Information systems roles

- there are three fundamental reasons for all business applications of information technology.
- They are found in the three vital roles that information systems can perform for a business enterprise
 - Support of business processes and operations.
 - Support of decision making by employees and managers.
 - Support of strategies for competitive advantage.

Information systems roles

Today's organizations are constantly striving to achieve integration of their systems to allow information to flow freely through them, which adds even greater flexibility and business support than any of the individual system roles could provide.

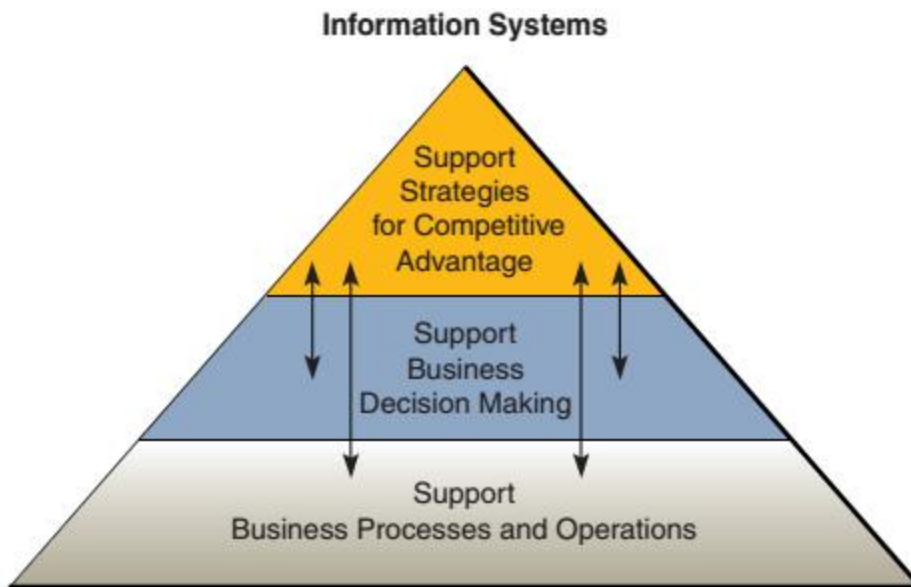


FIGURE 1.3

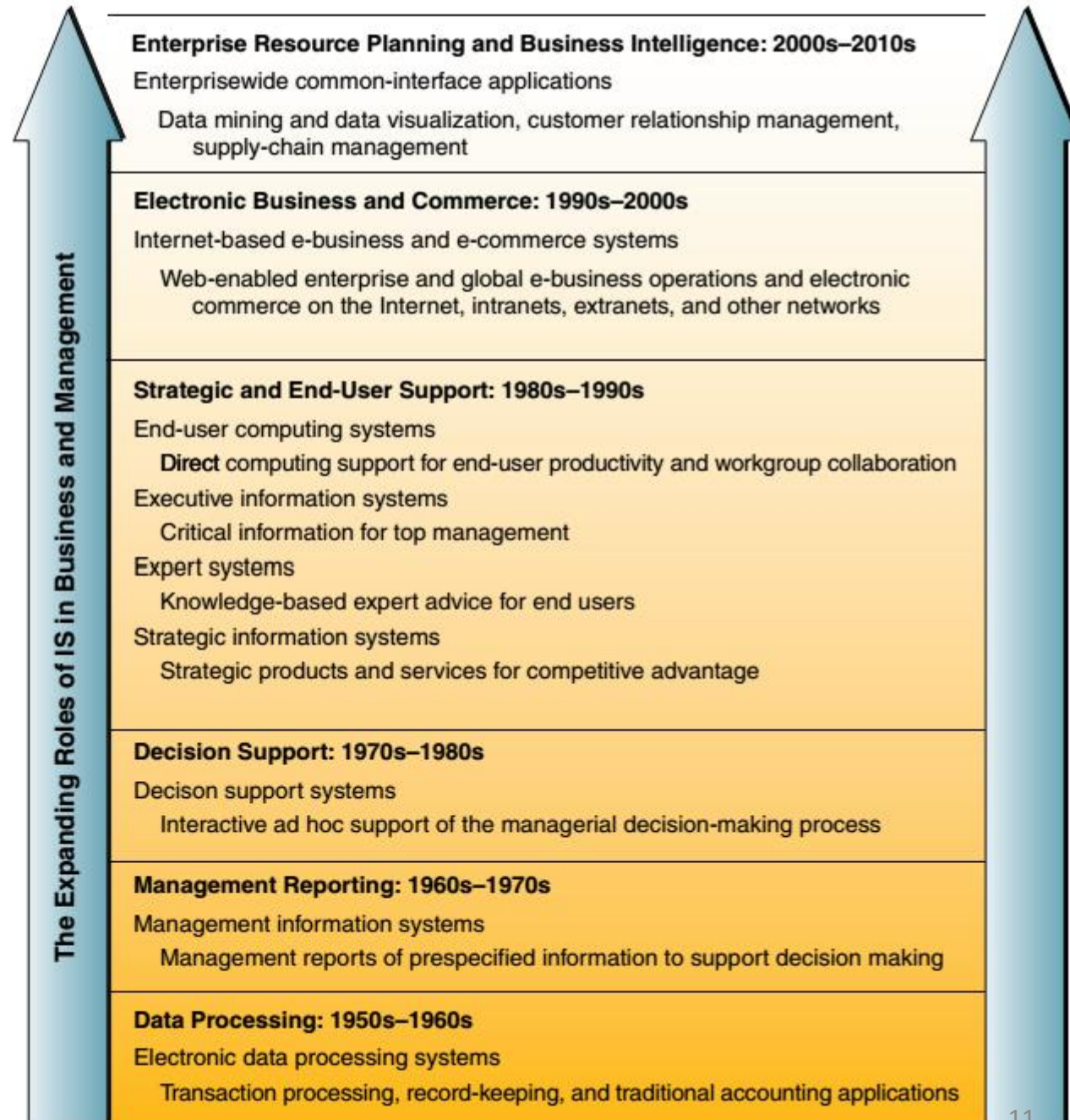
The three fundamental roles of the business applications of information systems. Information systems provide an organization with support for business processes and operations, decision making, and competitive advantage.

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**TRENDS IN INFORMATION
SYSTEMS**

FIGURE 1.4

The expanding roles of the business applications of information systems. Note how the roles of computer-based information systems have expanded over time. Also, note the impact of these changes on the end users and managers of an organization.



Business intelligence (BI)

- We are also entering an era where a fundamental role for IS is *business intelligence (BI)*.
- BI refers to all applications and technologies in the organization that are focused on the gathering and analysis of data and information that can be used to drive strategic business decisions.
- Through the use of BI technologies and processes, organizations can gain valuable insight into the key elements and factors—both internal and external—that affect their business and competitiveness in the marketplace.
- BI relies on sophisticated metrics and analytics to “see into the data” and find relationships and opportunities that can be turned into profits.

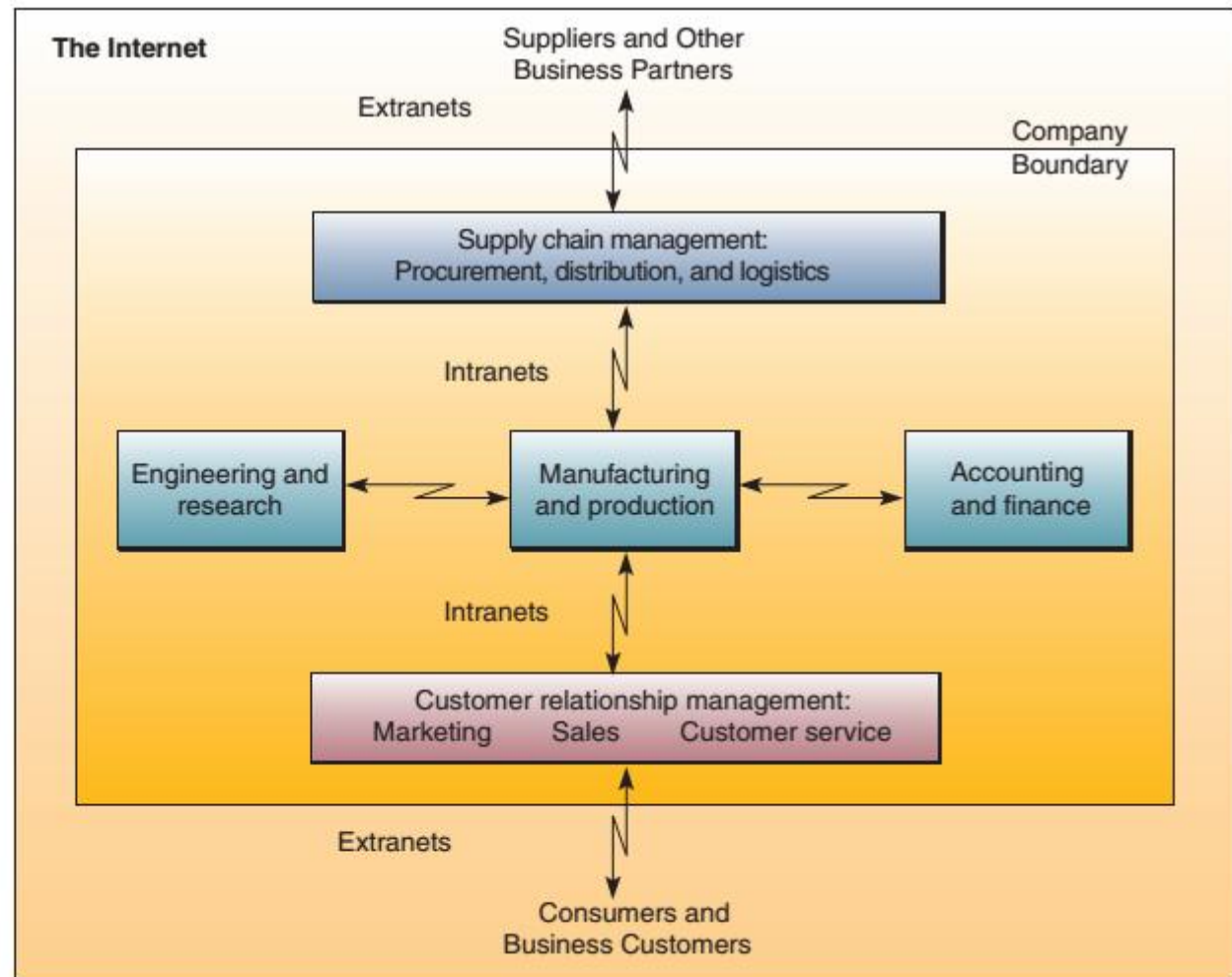
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**THE ROLE OF e-BUSINESS IN
BUSINESS**

The role of e-Business in business

FIGURE 1.5

Businesses today depend on the Internet, intranets, and extranets to implement and manage innovative e-business applications.



e-Business

- We define ***e-business*** as the use of Internet technologies to work and empower business processes, e-commerce, and enterprise collaboration within a company and with its customers, suppliers, and other business stakeholders.
- In essence, e-business can be more generally considered an ***online exchange of value***.

e-Business infrastructure and roles

- The Internet and Internet-like networks—those inside the enterprise (***intranet***) and between an enterprise and its trading partners (***extranet***)—have become the primary information technology infrastructure that supports the e-business applications of many companies.
- **These companies rely on e-business applications to:**
 - (1) reengineer internal business processes,
 - (2) implement e-commerce systems with their customers and suppliers,
 - (3) promote enterprise collaboration among business teams and workgroups.
- ***Enterprise collaboration systems*** involve the use of software tools to support communication, coordination, and collaboration among the members of networked teams and workgroups.

e-Commerce

- ***E-commerce*** is the buying, selling, marketing, and servicing of products, services, and information over a variety of computer networks.
- For example, e-commerce systems include Internet Web sites for online sales, extranet access to inventory databases by large customers, and the use of corporate intranets by sales reps to access customer records for customer relationship management.

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TYPES OF INFORMATION SYSTEMS

One-size-fits-all

- Information systems are a “**one-size-fits-all**” concept. IS can be developed to perform a wide variety of related tasks or just a single task;
- for example, several *types of information systems* can be classified either as **operations** or **management** information systems.

Types of Information Systems

- Information systems needed to process data generated by, and used in, business operations are called ***operations support systems***.
- **They do not emphasize the specific** information products that can best be used by managers. Further processing by management information systems is usually required.
- When information system applications focus on providing information and support for effective decision making by managers, they are called ***management support systems***.

Types of Information Systems (cont.)

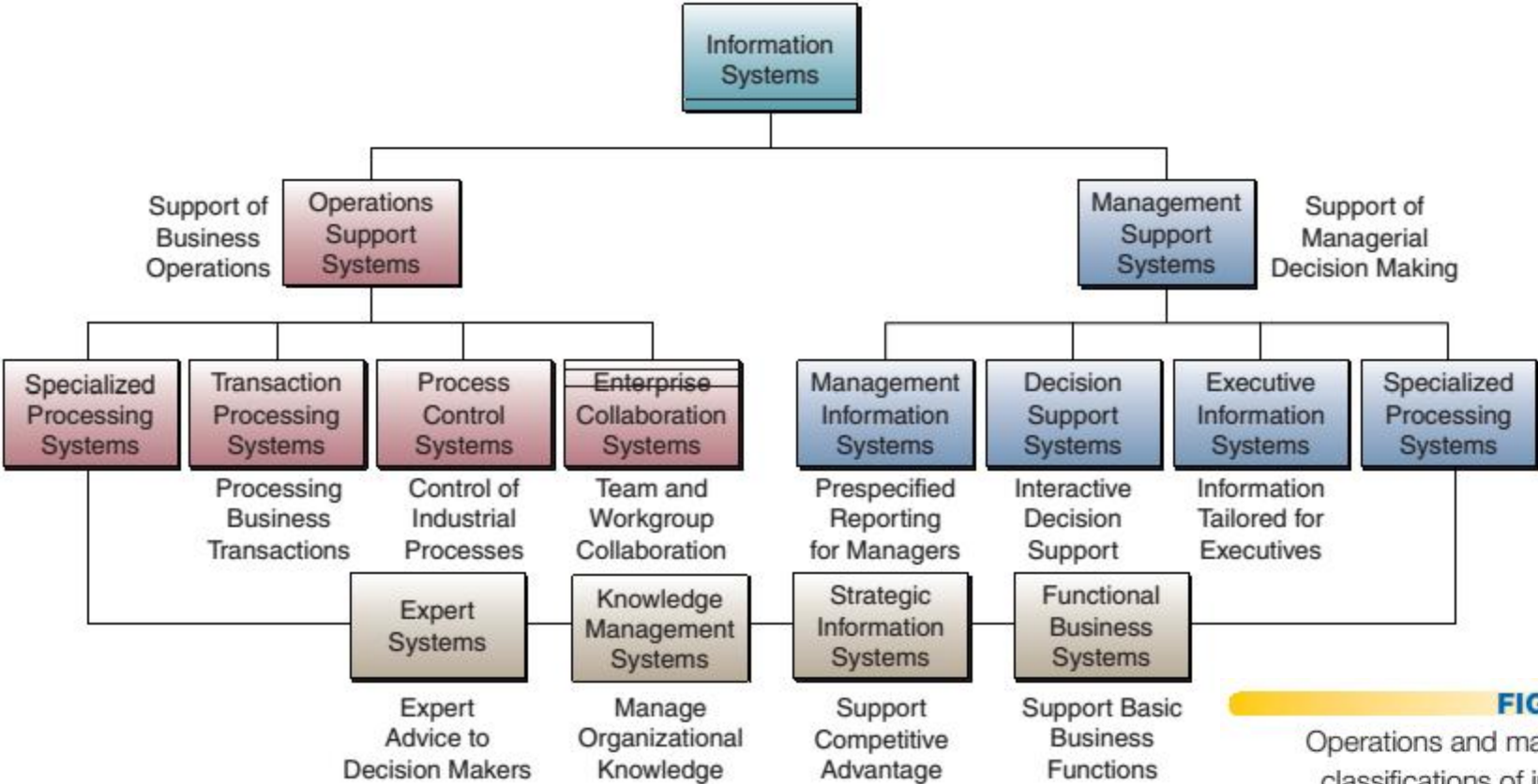


FIGURE 1.6 Operations and management classifications of information systems. Note how this conceptual overview emphasizes the main purposes of information systems that support business operations and managerial decision making.

Types of Information Systems (cont.)

Operations Support Systems
<ul style="list-style-type: none">• Transaction processing systems. Process data resulting from business transactions, update operational databases, and produce business documents. Examples: sales and inventory processing and accounting systems.
<ul style="list-style-type: none">• Process control systems. Monitor and control industrial processes. Examples: petroleum refining, power generation, and steel production systems.
<ul style="list-style-type: none">• Enterprise collaboration systems. Support team, workgroup, and enterprise communications and collaborations. Examples: e-mail, chat, and videoconferencing groupware systems.

FIGURE 1.7
A summary of operations support systems with examples.

FIGURE 1.9
A summary of management support systems with examples.

Management Support Systems
<ul style="list-style-type: none">• Management information systems. Provide information in the form of prespecified reports and displays to support business decision making. Examples: sales analysis, production performance, and cost trend reporting systems.
<ul style="list-style-type: none">• Decision support systems. Provide interactive ad hoc support for the decision-making processes of managers and other business professionals. Examples: product pricing, profitability forecasting, and risk analysis systems.
<ul style="list-style-type: none">• Executive information systems. Provide critical information from MIS, DSS, BI, and other sources tailored to the information needs of executives. Examples: systems for easy access to analyses of business performance, actions of competitors, and economic developments to support strategic planning.

Other Classifications of Information Systems

FIGURE 1.11

A summary of other categories of information systems with examples.

Other Categories of Information Systems
<ul style="list-style-type: none">• Expert systems. Knowledge-based systems that provide expert advice and act as expert consultants to users. Examples: credit application advisor, process monitor, and diagnostic maintenance systems.
<ul style="list-style-type: none">• Knowledge management systems. Knowledge-based systems that support the creation, organization, and dissemination of business knowledge within the enterprise. Examples: intranet access to best business practices, sales proposal strategies, and customer problem resolution systems.
<ul style="list-style-type: none">• Strategic information systems. Support operations or management processes that provide a firm with strategic products, services, and capabilities for competitive advantage. Examples: online stock trading, shipment tracking, and e-commerce Web systems.
<ul style="list-style-type: none">• Functional business systems. Support a variety of operational and managerial applications of the basic business functions of a company. Examples: information systems that support applications in accounting, finance, marketing, operations management, and human resource management.

Cross-functional informational systems

- It is important to realize that business applications of information systems in the real world are typically **integrated combinations of the several types of information systems** just mentioned.
- In practice, these roles are combined into **integrated** or ***cross-functional informational systems*** that provide a variety of functions.

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**MANAGERIAL CHALLENGES OF
INFORMATION TECHNOLOGY**

Challenges and opportunities

FIGURE 1.12

Examples of the challenges and opportunities that business managers face in managing information systems and technologies to meet business goals.



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.

Success and Failure with IT

- By now you should be able to see that the success of an information system should not be measured only by its *efficiency* in terms of minimizing costs, time, and the use of information resources.
- Success should also be measured by the *effectiveness* of the information technology in
 - supporting an organization's business strategies,
 - enabling its business processes,
 - enhancing its organizational structures and culture,
 - Increasing the customer and business value of the enterprise.
- It is important to realize, however, that information technology and information systems can be mismanaged and misapplied in such a way **that IS performance problems** create both **technological and business failures**.

Developing IS Solutions

FIGURE 1.13

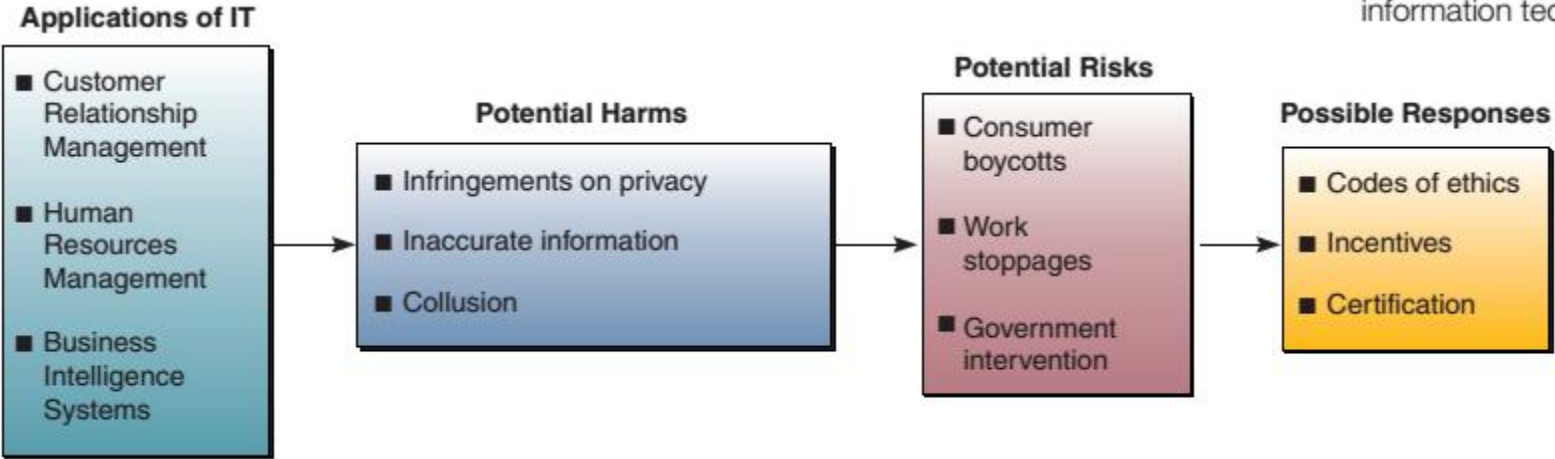
Developing information systems solutions to business problems can be implemented and managed as a multistep process or cycle.



Challenges and Ethics of IT

FIGURE 1.14

Examples of some of the ethical challenges that must be faced by business managers who implement major applications of information technology.



Challenges of IT and IS Careers

FIGURE 1.15

Careers in IS are as diverse and exciting as the technologies used in them; IS professionals have career opportunities in every business environment and activity throughout the world.

Systems Analyst	System Consultant	Business Applications Consultant
Chief Information Officer	Computer Operator	Computer Serviceperson
Network Administrator	Data Dictionary Specialist	Network Manager
Database Administrator	Database Analyst	Documentation Specialist
IS Auditor	End-User Computer Manager	Equipment Manufacturer Representative
PC Sales Representative	Programmer	Program Librarian
Project Manager	Records Manager	Hardware Sales Representative
Scheduling and Control Person	Security Officer	Office Automation Specialist
Senior Project Leader	Service Sales Representative	Software Sales Representative
Technical Analyst	Software Quality Evaluator	Technical Writer
Telecommunications Specialist	Training & Standards Manager	User Interface Specialist

The IS Function

- The **information systems function** represents:
 - An important contributor to operational efficiency, employee productivity and morale, and customer service and satisfaction.
 - A recognized source of value to the firm.
 - A major source of information and support needed to promote effective decision making by managers and business professionals.
 - A vital ingredient in developing competitive products and services that give an organization a strategic advantage in the global marketplace.
 - A dynamic, rewarding, and challenging career opportunity for millions of men and women.
 - A key component of the resources, infrastructure, and capabilities of today's networked business enterprises.
 - A strategic resource.