

# Information Technology (IT) for Business

## chapter # 14

# Introduction

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- **In this chapter we**
  - discuss the various kinds of information technology, their functions, and the benefits and risks associated with each and their particular importance
  - explore how technology is used by and affects business, and how you can use it to your best advantage—as an employee, investor, manager, or as a business owner

# learning objectives

- 1. Discuss the impacts information technology is having on the business world*
- 2. Identify the IT resources businesses have at their disposal and how these resources are used*
- 3. Describe the role of information systems, the different types of information systems, and how businesses use such systems*
- 4. Identify the threats and risks information technology poses on businesses*
- 5. Describe the ways in which businesses protect themselves from the threats and risks information technology poses.*

# IT Impacts

- **Information Technology (IT)**
  - various appliances and devices for creating, storing, exchanging, and using information in diverse modes, including visual images, voice, multimedia, and business data
- **E-commerce**
  - use of the Internet and other electronic means for retailing and business-to-business transactions

# *IT Impacts (cont.)*

- **Creating Portable Offices**
  - providing remote access to instant information
- **Enabling Better Service**
  - coordinating remote deliveries
- **Creating Leaner, More Efficient Organizations**
  - allowing more work and customer satisfaction to be accomplished with fewer people
- **Enabling Increased Collaboration**
  - using collaboration software and other IT communication devices

# *IT Impacts (cont.)*

- **Enabling Global Exchange**
  - fostering collaboration on a worldwide scale
- **Improving Management Processes**
  - using enterprise resource planning (ERP) to change the nature of the management process
- **Providing Flexibility for Customization**
  - creating new manufacturing capabilities that offer customers greater variety (mass customization) and faster delivery cycles

# *IT Impacts (cont.)*

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- **Providing New Business Opportunities**
  - creating entirely new businesses where none existed before
- **Improving the World and Our Lives**
  - advancing medical and diagnostic techniques
  - Internet

# Networking for Mass Customization

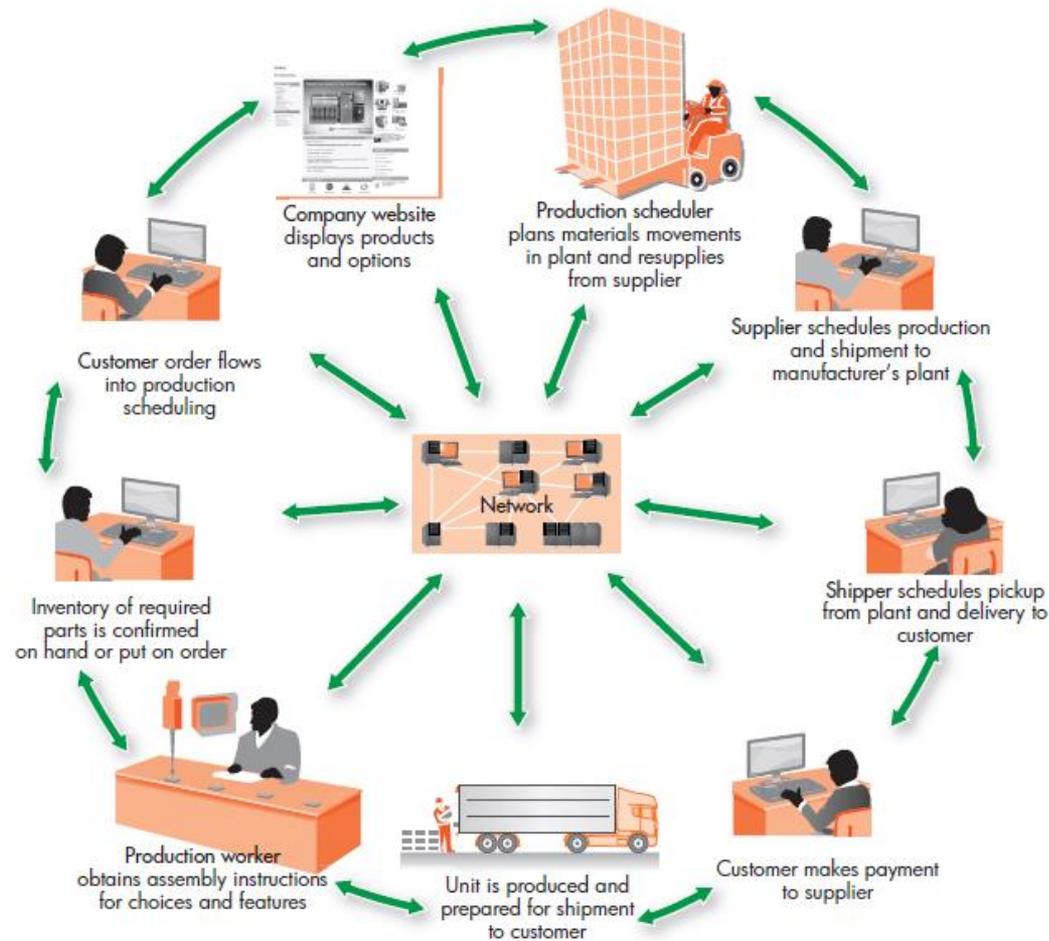


FIGURE 14.1 Networking for Mass Customization of a Physical Product

# The Internet and Other Communication Resources

- **Internet**

- gigantic system of interconnected computer networks linked together by voice, electronic, and wireless technologies

- **World Wide Web**

- branch of the Internet consisting of interlinked hypertext documents, or web pages

- **Hypertext Transfer Protocol (HTTP)**

- communications protocol used for the World Wide Web, in which related pieces of information on separate web pages are connected using hyperlinks

# *The Internet and Other Communication Resources (cont.)*

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- **Intranet**

- organization's private network of internally linked websites accessible only to employees

- **Extranet**

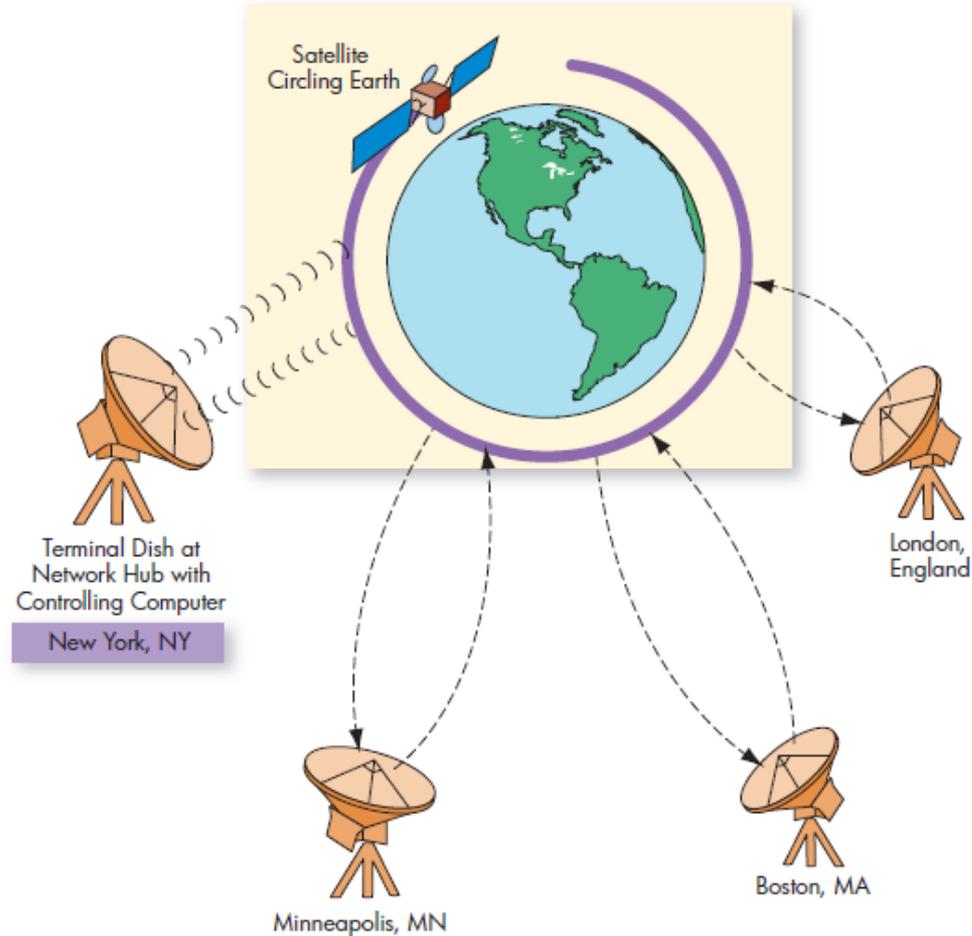
- system that allows outsiders limited access to a firm's internal information network

# *The Internet and Other Communication Resources (cont.)*

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- **Electronic Conferencing**
  - IT that allows groups of people to communicate simultaneously from various locations via e-mail, phone, or video
- **VSAT Satellite Communications**
  - network of geographically dispersed transmitter-receivers (transceivers) that send signals to and receive signals from a satellite, exchanging voice, video, and data transmissions

# A VSAT Satellite Communication Network



**FIGURE 14.2** A VSAT Satellite Communication Network

# Networks: System Architecture

- **Computer Network**
  - group of two or more computers linked together by some form of cabling or by wireless technology to share data or resources, such as a printer
- **Client-Server Network**
  - common business network in which **clients** make requests for information or resources and **servers** provide the services

# *Networks: System Architecture (cont.)*

- **Wide Area Network (WAN)**
  - computers that are linked over long distances through telephone lines, microwave signals, or satellite communications
- **Local Area Network (LAN)**
  - computers that are linked in a small area, such as all of a firm's computers within a single building
- **Wireless Wide Area Network (WWAN)**
  - network that uses airborne electronic signals instead of wires to link computers and electronic devices over long distances

# *Networks: System Architecture (cont.)*

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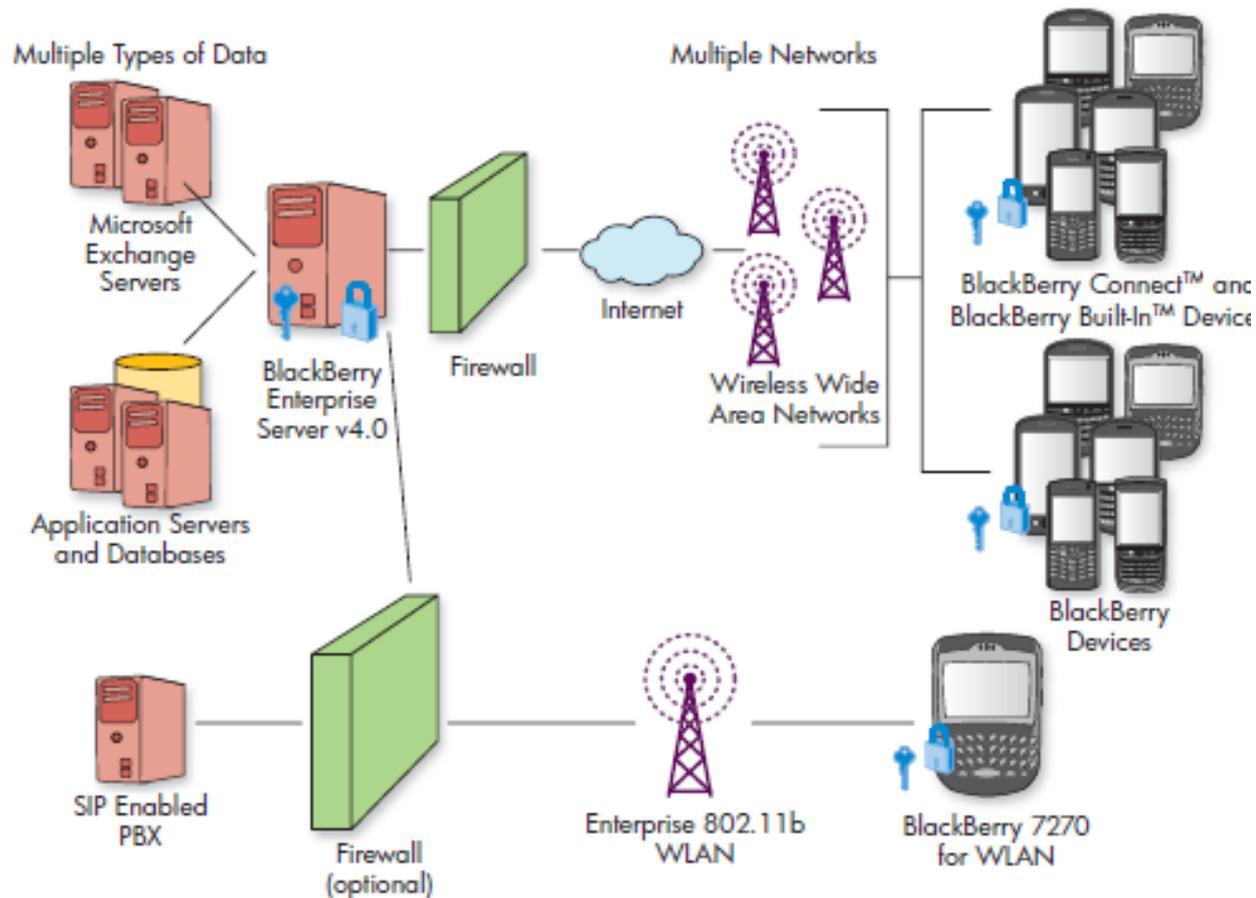
- **Wi-Fi**
  - technology using a wireless local area network
- **Wide Area Network (WAN)**
  - computers that are linked over long distances through telephone lines, microwave signals, or satellite communications
- **Local Area Network (LAN)**
  - computers that are linked in a small area, such as all of a firm's computers within a single building

# *Networks: System Architecture (cont.)*

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- **“Super Wi-Fi” Network**
  - a powerful Wi-Fi network with extensive reach and strong signals that flow freely through physical objects such as walls

# Core Components in BlackBerry Wireless Internet Architecture



**FIGURE 14.3** Core Components in BlackBerry Wireless Internet Architecture

# Hardware and Software

- **Hardware**

- physical components of a computer network, such as keyboards, monitors, system units, and printers

- **Software**

- programs that tell the computer how to function, what resources to use, how to use them, and application programs for specific activities

# Information Systems: Harnessing the Competitive Power of IT

- **Information System (IS)**
  - system that uses IT resources to convert data into information and to collect, process, and transmit that information for use in decision-making
- **Data**
  - raw facts and figures that, by themselves, may not have much meaning
- **Information**
  - meaningful, useful interpretation of data

# Leveraging Information Resources: Data Warehousing and Data Mining

- **Information Systems Managers**
  - managers who are responsible for the systems used for gathering, organizing, and distributing information
- **Data Warehousing**
  - the collection, storage, and retrieval of data in electronic files
- **Data Mining**
  - the application of electronic technologies for searching, sifting, and reorganizing pools of data to uncover useful information

# Information Systems for Knowledge Workers

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- **Knowledge Information System**
  - information system (IS) that supports knowledge workers by providing resources to create, store, use, and transmit new knowledge for useful applications

# *Information Systems for Knowledge Workers* *(cont.)*

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- **Computer-Aided Design (CAD)**
  - IS with software that helps knowledge workers design products by simulating them and displaying them in three-dimensional graphics
- **Computer-Aided Manufacturing (CAM)**
  - IS that uses computers to design and control equipment in a manufacturing process

# Information Systems for Managers

- **Management Information System (MIS)**
  - computer system that supports managers by providing information—reports, schedules, plans, and budgets—that can be used for making decisions
- **Decision Support System (DSS)**
  - interactive system that creates virtual business models for a particular kind of decision and tests them with different data to see how they respond

# IT Risks and Threats

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- **Hacker**

- cybercriminal who gains unauthorized access to a computer or network, either to steal information, money, or property or to tamper with data
- DoS attacks, wireless mooching

## *IT Risks and Threats (cont.)*

- **Identity Theft**

- unauthorized use of personal information (such as Social Security number and address) to get loans, credit cards, or other monetary benefits by impersonating the victim
  - ↳ phishing, pharming

- **Intellectual Property**

- something produced by the intellect or mind that has commercial value

## *IT Risks and Threats (cont.)*

- **Spyware**

- program unknowingly downloaded by users that monitors their computer activities, gathering e-mail addresses, credit card numbers, and other information that it transmits to someone outside the host system

- **Spam**

- junk e-mail sent to a mailing list or a newsgroup

# IT Protection Measures

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- **Firewall**

- security system with special software or hardware devices designed to keep computers safe from hackers

- **Anti-Virus Software**

- product that protects systems by searching incoming e-mails and data files for “signatures” of known viruses and virus-like characteristics

## *IT Protection Measures (cont.)*

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- **Encryption System**

- software that assigns an e-mail message to a unique code number (digital fingerprint) for each computer so only that computer, not others, can open and read the message

# Areas for Ethical Concerns in Information Technology and Its Uses

## table 14.1 Areas for Ethical Concerns in Information Technology and Its Uses

- In a now-classic case of cyber-bullying, a 13-year-old girl hanged herself after being taunted by a hoax message on her MySpace page.
- Secret webcasts of other people's behavior have resulted in embarrassment and even death: A university student, leaving a final message on his Facebook page, jumped from a bridge to his death after other students covertly webcast his sexual activities with another student.
- IT is used increasingly for sending out cries for help. Many college students have posted public messages requesting physical and emotional support. Others, having read those messages, are unsure if they should respond, or not.
- Employers and employees struggle about the extent of personal use of the company's IT. Many employees admit they use social networking and personal e-mailing at work, but should they? Many company's say "no," adding that employees should know that the company has access to all e-mails sent, received, and stored on its IT system.
- States are forming database pools, sharing information to check on suspicious prescription drug activities. Data are gathered on purchases at pharmacies, physicians' prescriptions, and police records to identify drug abuse by individuals and companies within states, and are being shared across state lines.
- The Department of Homeland Security abandoned one of its major data-mining tools for combating terrorism after questions about its compliance with privacy rules. It was discovered that DHS had tested the data-mining program using information about real people, without ensuring the privacy of that information.
- To save money, IT users retrieve and share intellectual property—movies, articles, books, music, industrial information—with others, ignoring copyright, trademark, and patent protections. Written content is often taken from the Internet, inserted into the user's written work and is represented as the user's own original creation without citing its true source.
- Job seekers are being asked to answer unexpected questions by interviewers: "What is your Facebook username and password?" Some applicants are responding, "No, that's a terrible privacy invasion." Others are revealing the requested information to interviewers.

# Applying What You've Learned

1. **Discuss** the impacts information technology is having on the business world
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