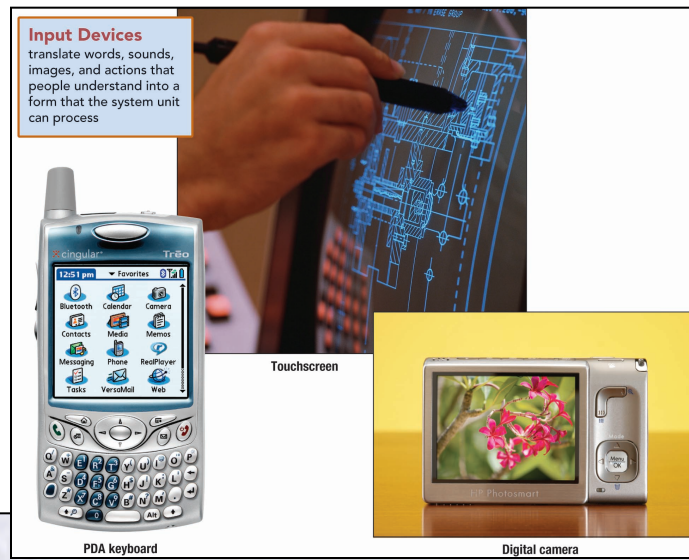


# Chapter 7

## Input and Output

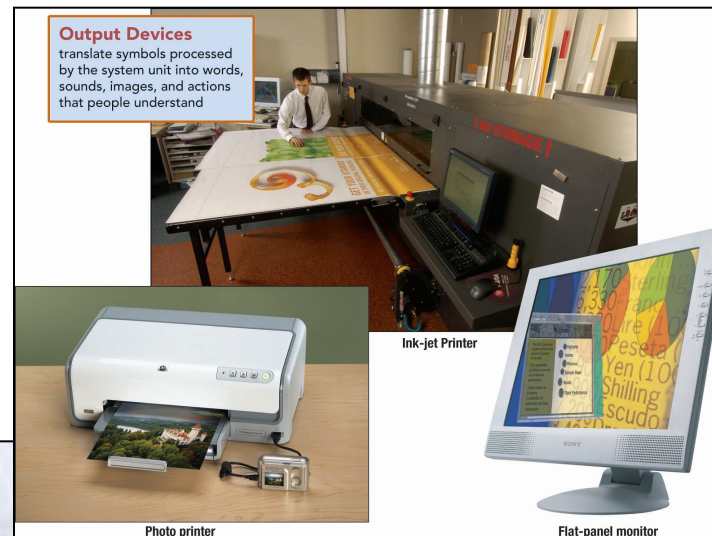
# Competencies (Page 1 of 2)

- Define input
- Describe keyboard entry, pointing devices, and scanning devices
- Discuss image capturing devices, including **digital cameras**, **digital video cameras**, and audio input devices



# Competencies (Page 2 of 2)

- Define output
- Describe **monitors**, **printers**, and audio output devices
- Discuss combination input and output devices, including **fax machines**, **multifunctional devices**, **Internet telephones**, and **terminals**



# Introduction

**Do you ever wonder how information gets into your computer and comes out in a form you can use?**

**Input devices convert what we understand into what the system unit can process.**

**Output devices convert what the system unit has processed into a form that we can understand.**

**Input and output devices are the focus of this chapter.**

# What is Input?

- **Any data or instructions used by a computer**
- **Input devices**
  - **Hardware**
    - [Keyboards](#)
    - [Pointing devices](#)
    - [Scanning devices](#)
    - [Other devices](#)
  - **Translates data into a form that the system unit can process**



# Keyboard Entry (Page 1 of 2)

- **Keyboards**

- Traditional keyboards
- Flexible keyboards
- Ergonomic keyboards
- Wireless keyboards
- PDA keyboards



- **Features**

- Typewriter keyboard with numeric keypad
- Special purpose keys
  - **Toggle** and **combination keys**



7-6

# Keyboard Entry (Page 2 of 2)

## Traditional Keyboard

### Escape Key

typically cancels a selection or a procedure.

### Function Keys

shortcut for specific tasks. F1, for example, typically displays online Help.

### Numeric Keypad

enters numbers and arithmetic symbols and controls cursor or insertion point.



### Windows Key

displays the Start menu.

### Spacebar

enters blank spaces between characters.

### Navigation Keys

control the cursor or insertion point on the screen.

# Pointing Devices (Page 1 of 2)

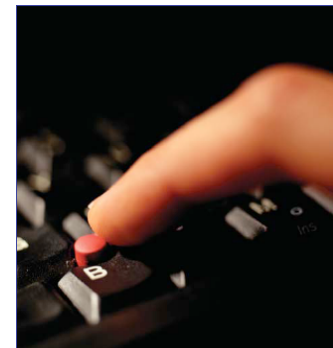
- **Mice**

- Mechanical
- Optical
- Cordless or wireless



- **Three similar devices to mice**

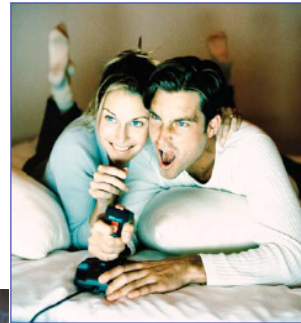
- **Trackball**
- **Touch pads**
- **Pointing stick**





# Pointing Devices (Page 2 of 2)

- Joystick
- Touch Screen
- Light Pen
- Stylus



# Scanning Devices (Page 1 of 2)

- **Optical scanners**
  - Flatbed scanners
  - Portable scanners
- **Card Readers**
  - Magnetic card readers
  - Radio Frequency card readers



# Scanning Devices (Page 2 of 2)

- **Bar code readers**
  - Handheld **wand readers** or **platform scanners**
  - Contain photoelectric cells that read **bar codes**
- **Character and mark recognition devices**
  - **Magnetic ink character recognition (MICR)**
  - **Optical-character recognition (OCR)**
  - **Optical-mark recognition (OMR)**



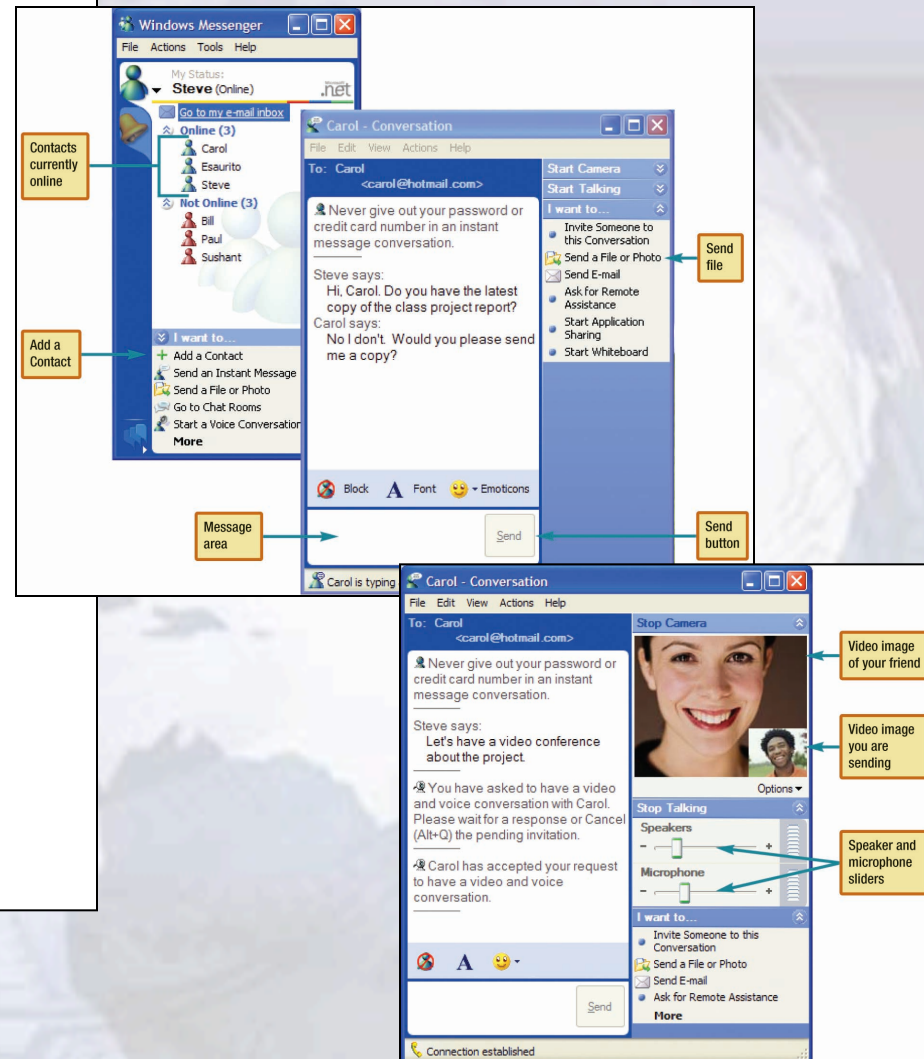
# Image Capturing Devices

- **Digital cameras**
  - Images recorded digitally on a disk
  - Images can be downloaded to a computer
- **Digital video cameras**
  - Records motion digitally
  - Can take still images as well
  - **WebCams**
    - Specialized digital video cameras
    - Broadcast images over the Internet



# Webcams And Instant Messaging

- Exchange messages and files with friends
- Voice and video capabilities
- Application sharing



# Audio-Input Devices

- **Voice recognition systems**
  - Use a microphone, a sound card, and special software
  - Users can operate computers and create documents using voice commands



# What is Output?

- **Processed data or information**
- **Types of output**
  - Text
  - Graphics/Photos
  - Audio & video
- **Output devices**
  - Monitors
  - Printers
  - Other Devices



# Monitors (Page 1 of 2)

- **Known as screens or display screens**
- **Output referred to as soft copy**
- **Features**
  - **Resolution/pixels**
  - **Dot pitch**
  - **Refresh rate**
  - **Size**

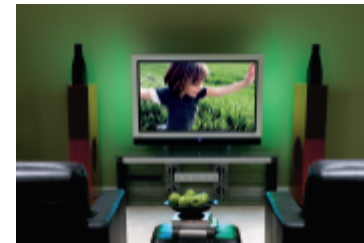
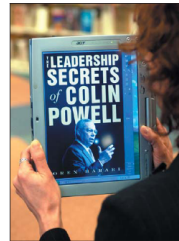
Standard	Pixels
SVGA	800 × 600
XGA	1,024 × 768
SXGA	1,280 × 1,024
UXGA	1,600 × 1,200
QXGA	3,048 × 1,536





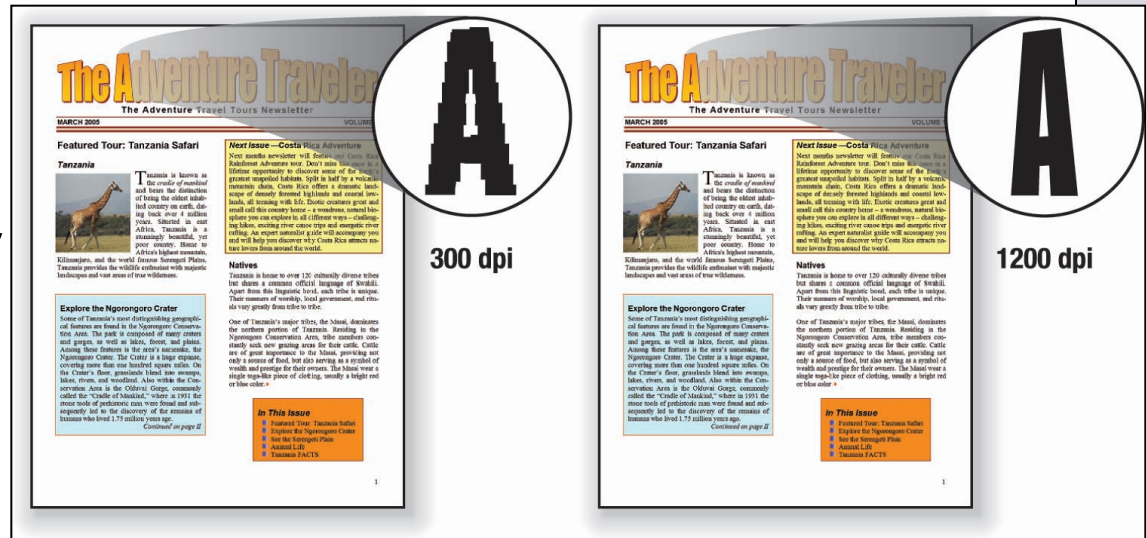
# Monitors (Page 2 of 2)

- **Cathode-ray tube (CRT) monitors**
- **Flat-panel monitors**
  - Require less power to operate
  - Portable and thinner than CRTs
- **Other monitors**
  - **E-books**
  - **Data projectors**
  - **High-definition television (HDTV)**



# Printers (Page 1 of 2)

- Translates information that has been processed by the system unit
- Output referred to as **hard copy**
- Features
  - Resolution
  - Color capability
  - Speed
  - Memory



# Printers (Page 2 of 2)

- **Ink-jet printer**
- **Laser printer**
  - Personal laser printers
  - Shared laser printers
- **Thermal printer**
- **Other printers**
  - Dot-matrix printers
  - Plotters
  - Photo printers
  - Portable printers



# Audio-Output Devices

- **Translates audio information from the computer into sounds that people can understand**
- **Common devices**
  - Speakers
  - Headphones
- **Digital Music Players**
  - iPod, iRiver, Zune



# Multifunctional Devices (MFD)

- Many devices combine input and output capabilities and offer cost and space advantages
- Fax machines
- Internet telephones
  - known as **Internet telephony**
  - **IP telephony**
  - and Voice-over IP (VoIP)
  - Three approaches
- Terminals



# Internet Telephone Approaches

- **Computer-to computer**
  - Free long distance calls
  - Requires computers to be connected to the Internet
  - MSN is most widely used software
- **Computer-to traditional telephone**
  - Place the call from a computer to a phone
  - Requires an Internet phone service provider
    - Software requirements
    - Small monthly and/or per-minute fee
- **Traditional telephone-to-traditional telephone**
  - Does not require a computer
  - Subscription required to a special Internet phone service provider
    - Special hardware adapter
    - Cost is similar to the computer-to-traditional telephone approach

# Terminals

- **An input and output device**
- **Connects to a mainframe or server**
- **Types of terminals**
  - **Dumb terminal** →
  - **Intelligent terminal**
  - **Network terminal**



# Careers In IT

- **Technical writers** prepare instruction manuals, technical reports, and other scientific or technical documents
- Typically requires a college degree
  - Communications
  - Journalism
  - English
  - Specialization or familiarization with a technical field
- Technical writers can expect to earn \$41K to \$69K annually.

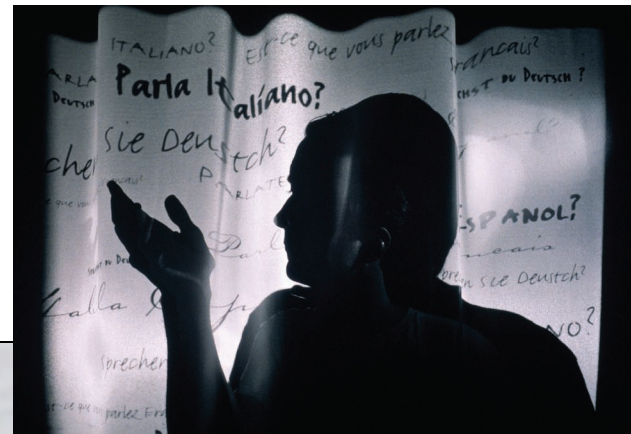




# A Look to the Future

## Electronic Translators May Be in Your Future

- **Electronic Interpretation may soon exist to provide personal interpretation for foreign languages and images**
- **Prototype portable handheld electronic interpreters are currently in a testing phase at the U.S. Office of Naval Research**
- **Creating is labor intensive using both linguists and programmers**



# Discussion Questions (Page 1 of 2)

- **Define input and input devices.**
- **Describe the different types of pointing, scanning, image capturing, and audio-input devices.**
- **Describe the three categories of output devices.**

# Discussion Questions (Page 2 of 2)

- **Define output and output devices.**
- **What are combination input and output devices? Describe four such devices.**