

Introduction to End-User Computing

CSU 08211

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Learning Objectives

- How historical changes in computer technology have affected computer use
- Ways to classify end users
- Computing resources end users need
- The major types of end-user applications software
- Common problems end users may encounter

Historical Changes in Computer Use

- **End-user computing** is the everyday use of computers for business and personal use
- Goal is to increase the productivity of employees, managers, students and home users
- When computers were first introduced in organizations, most workers used them indirectly, rather than directly

The 1950s and 1960s: Early Mainframe Computers

- A **mainframe** is a large, powerful computer system used by an organization to process high volumes of transactions, store large databases, and serve as the hub of a corporate network
- Operated by the **Data Processing** (DP) department

Mainframe features

- Uses:
 - **Transaction processing**
 - **Real-time processing**
 - **Batch processing**
 - **Management information systems (MIS)**
- Located at a central site in the organization
- Programmed and operated by computer professionals
- Used primarily to automate transactions and to prepare management reports

The 1970s: First Steps Toward Decentralized Computing

- Use of a **terminal** (keyboard plus display screen) to connect to mainframe systems permitted clerical workers to enter and access information in a mainframe system
- Growth in use of **minicomputers** (midsize between microcomputer and mainframe)

The 1980s and 1990s: Growth in Decentralized Computing

- **Applications development backlog**
- Increase in number of **knowledge workers**
- Availability of inexpensive **microcomputers**
- Availability of inexpensive productivity software
- Development of user-friendly **graphical user interfaces (GUIs)**

Late 1990s and 2000s:

Distributed & Network Computing

- **Distributed computing** is a way to organize computer equipment and resources
 - systems are physically located where processing is needed (combines centralized and decentralized)
 - relies on network technology).
- Data Processing Department is renamed to:
 - **Information Systems (IS)**
 - **Information Services (IS)**
 - **Information Technology (IT)**

From Centralization to Decentralization

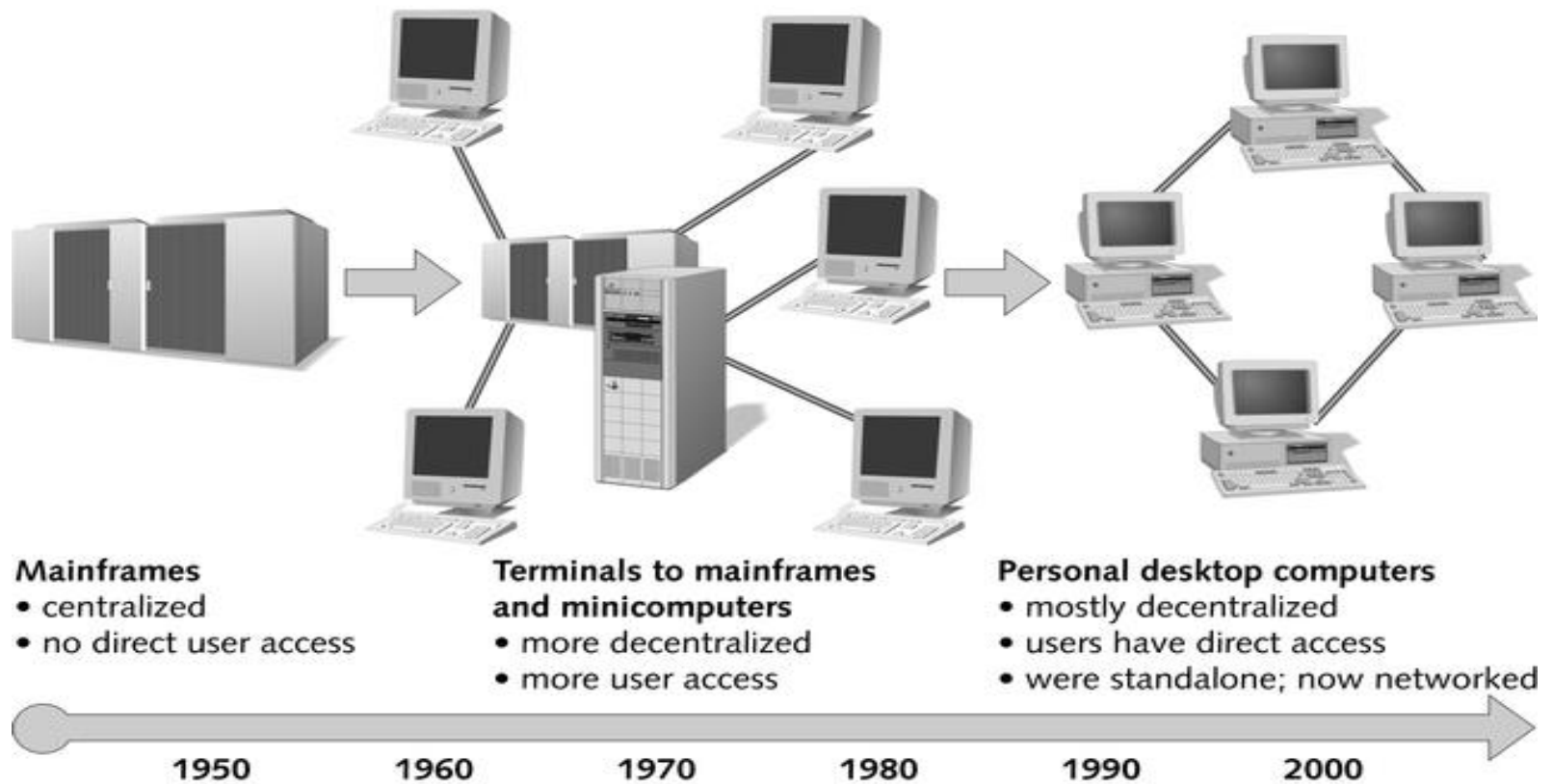


Figure 1-3 Timeline of computer decentralization

Milestones in Adoption of Computer Technology

- 1940s
 - Invention of central processing units and mainframe peripherals
- 1950s
 - Early use of mainframe computers in large corporations
- 1960s
 - Widespread use of mainframes
 - Early use of work group minicomputers

Milestones in Adoption of Computer Technology (continued)

- 1970s
 - Widespread use of minicomputers in work groups
 - Terminal access to mainframe and minicomputers
 - Early use of microcomputers

Milestones in Adoption of Computer Technology (continued)

- 1980s
 - Widespread use of home and business microcomputers
 - Availability of mass-market applications software and personal computer operating systems
 - Early use of data communications and networks to connect micro-to-micro and micro-to-mainframe

Milestones in Adoption of Computer Technology (continued)

- 1990s
 - Widespread use of data communications, local area and wide area computer networks
 - Distributed computing
 - Rapid growth of the Internet as a global network

Milestones in Adoption of Computer Technology (continued)

- 2000s
 - Increased Internet use for electronic business and business-to-business transactions
 - Availability of very low-cost PCs
 - *Can you think of others?*

Ways to Classify End Users

- *Environment*: home or personal user versus corporate or organizational user
- *Skill level*: novice, unskilled, semi-skilled, expert
- *Principal applications*: for example, word processing, e-mail, accounting
- *Frequency of use*: occasional, frequent, constant
- *Features used*: basic, intermediate, and advanced
- *Location*: internal user versus external user

Internal versus External users

- **Internal user** is an end user who is an employee of an organization
- **External user** is an end user who is outside of an organization, such as a customer of a hardware or software vendor, a home worker, or a personal user

Resources End Users Need (Overview)

- Basic Hardware
- Add-on Peripherals
- Hardware maintenance and upgrades
- Software and software upgrades
- Supplies
- Data and information
- Technical support
- Facilities, administration, and overhead

Basic Hardware

- Central processing unit (CPU)
- Internal memory
- Storage space
- Media player (CD, DVD, USB Drives)
- Display screen (monitor)
- Keyboard
- Pointing device
- Printer

Add-on Peripherals

- **Peripherals** are add-on devices that plug into a computer's system unit.
 - Modem
 - **Network interface card (NIC)**
 - Image scanner
 - Digital camera
 - Removable disk drive for backups
 - Other peripherals

Hardware Maintenance and Upgrades

- Hardware warranty period
 - Extended warranty
- Common Upgrades
 - Additional internal memory
 - Increased CPU speed
 - Additional hard disk drive space
 - Increased peripheral speed (e.g., modem or printer)
 - Enhanced sound system
 - CD burner
 - DVD player or burner
 - Other system components

Software and Software Upgrades

- Operating system
- Applications software packages
- Software upgrades to new versions

Supplies

- Printer paper
- Mailing labels
- Ink-jet or laser cartridges
- Cleaning supplies
- Media
 - removable hard disks
 - recordable CDs and DVDs
 - tape cartridges
- Cables
- Other supplies

Data and Information

- Internet information services
- Downloaded data from an information service
- CD-ROM databases
- Online databases
- Storage Media (Storage as a Service)

Technical Support

- Installation assistance
- Training courses
- Training materials
- Books and magazines
- Access to help desks and technical support

Facilities, Administration, and Overhead

- Furniture
- Ergonomic devices (e.g., keyboard wrist rests and antiglare screens)
- Electricity
- Air conditioning
- Power conditioner
- Space

Total cost of ownership

Total cost of ownership (TOC)

- All of the accumulated costs to purchase, upgrade, and support a personal computer system over its expected useful lifetime.
- The total cost of ownership includes
 - Hardware
 - Software
 - Network
 - Information
 - Training
 - Technical support costs

End User Application Software

- Electronic Mail
- Instant Messaging
- Web Browser
- Word Processor
- Spreadsheet
- Database Management
- Graphics
- Planning and Scheduling
- Desktop Publishing
- Web Site Development
- Educational Software
- Entertainment software
- Mainframe applications

Electronic Mail and Instant Messaging

- Allows workers to communicate with others inside and outside an organization
- Requires connection to a network
- E-mail – one user connected at a time
- Instant Messaging – both users connected at the same time

Web Browser

- Enables end users to find and display information stored as HTML pages on the Internet.
- One of the most popular application software packages

Word Processing

- Permits users to enter, edit, format, store, and print text information
- User can integrate graphics, numbers, and reference information
- One of most frequently used types of software applications

Spreadsheets

- Used to prepare budgets, sales reports and forecasts, financial statements, and other reports consisting of numbers and requiring calculations
- Data organized in row and column format
- A popular application with financial analysts, bookkeepers, accountants

Database Management

- Allows a user to enter, update, store, format, and print reports from information stored as a series of records in a database
- Tracks information that relates to business activities and projects
- Examples:
 - client lists
 - mailing lists
 - personnel records
 - office supply inventories
 - class rosters

Graphics

- Graphics software helps users create illustrations and charts that analyze trends, show relationships, and summarize large amounts of data
- **Presentation graphics programs** let users create attractive electronic slides shows for training and sales purposes

Planning and Scheduling

- **Personal information managers** help workers maintain:
 - electronic calendar
 - to-do list
 - address book
- **Project management programs** allow managers to plan, schedule, and monitor the status of group project tasks

Desktop Publishing

- **Desktop Publishing (DTP)** software combines features of a word processor and a graphics program
- Helps users prepare brochures, newsletters, posters, and other printed material at relatively low cost

Web Site Development

- **Web site development software** lets users design, develop and maintain an organizational or personal Web site.
- Advanced features include
 - e-mail links
 - chat rooms
 - FTP
 - password protection

Educational and Entertainment Software

- Provide supplemental learning experiences
- Test and give feedback to students
- Tutor users on features of new software packages
- Entertain and challenge users

Mainframe Applications

- Common mainframe applications
 - Legacy applications (payroll, accounting, inventory)
 - Customer relationship management (CRM)
 - Enterprise resource planning (ERP)
- Personal computers are used as terminals to connect to company mainframes
- **Client-server computing:** A form of distributed computing
 - processing tasks are shared between a mainframe system or powerful desktop system (the server) and a local PC (the client)

Problems with End User Computing

- Waste
- Mistakes
- Computer crime
- Piracy
- Invasion of privacy
- Loss of data
- Computer viruses
- Health problems

Waste

- Purchase of software that does not operate on a user's hardware configuration
- Purchase of software that does not meet needs as well as a competing program, but that costs more
- Use of company Internet access or e-mail for personal use

Mistakes

- Carelessness
- Lack of proper training
- Failure to perform operational procedures, such as media backups

Computer Crime

- Examples
 - Information theft
 - Fraud
 - Sabotage
 - Embezzlement

Piracy

- **Piracy** is a form of computer crime
- Software theft
 - Illegal copying, distribution or use of software
 - Impact on the price vendors charge for software

Invasion of privacy

- Invasion of privacy is any unauthorized access to information about employees, clients, students, patients, etc.

Loss of Data

- Infrequent backups
- Ineffective backups
- Cost to recover and re-enter lost data

Computer Viruses

- **Computer virus** is a computer program created with malicious intent that can destroy information, erase or corrupt other software, or adversely affect the operation of a computer
- Transmitted
 - from computer to computer via networks
 - through exchange of media between computers

Health Problems

- Physical injury to computer operators can result from improper lighting, space, furniture, and environmental safeguards
- Common ailments
 - Headaches
 - Nausea
 - Eyestrain
 - Hand or wrist pain
 - **Carpal tunnel syndrome**
 - Repetitive stress injury
 - Back and neck aches

Health Problems

- **Ergonomics** is a field that studies how to design a workplace that promotes employee
 - Health
 - Safety
 - Productivity

Chapter Summary

- Changes in computer technology over the last 50 years have affected the way computers are used by end users
- End users can be classified or categorized in a variety of ways to identify different kinds of users
- End users need several kinds of computing resources that add to the total cost of ownership of a system
- Several types of end-user applications software are available to make users more productive
- Users may encounter several kinds of common problems that affect their computer use.