Computers at Work

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Into the Information Age

- **Paradigm shift**—a change in thinking that results in a new way of seeing the world.
- Three Major Changes:
  - The Agricultural Economy
  - The Industrial Economy
  - The Information Economy
- Technology was central to each of these transformations.

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Businesses

- 40's-60's we used dumb terminals connected to big Mainframe computers
  - Processing was done on Mainframe
- 70's brought in the personal computer
- 80's-90's we had powerful workstations (Fat Client) connected to a server.
  - Most of processing done on workstation.
- Currently back to using Thin Client with Servers doing most of the processing.

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Networks

- Now have Distributed or Enterprise computing
- Database on one server
- Data on another
- Multimedia on another
- Email on another
- All personnel are connected and share resources
  - **Groupware** (Lotus Notes) allows groups of users to share calendars, send messages, access data, and work on documents simultaneously

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The Internet

- The **Internet** has allowed global connectivity
  - Allows the connection to many different platforms and operating systems
- Because many offices also have many different platforms and operating systems, some are using the Browser interface in their own networks called **Intranet**.
- Connecting to only their partners is called **Extranet**
  - **Penney's was one of first to open its database to suppliers**
- **Paperless offices ?????**

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Entertainment

Digital CD, DVD, TV, Movies.

Easy to dub foreign languages

Easy to change/remove scenes for different cultures

Does not wear out or reduce in quality no mater how many times it is run,

All digital movies can be sent to every theater

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Publishing

The newspaper industry has been radically transformed by computer technology.

- Reporters scan the Internet for facts, write and edit stories on location using notebook computers, and transmit those stories by satellite or modem to central offices.
- Artists design charts and drawings with graphics software.
- Photo retouchers use computers instead of brushes and magnifying glasses to edit photographs.

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Medicine

High-tech equipment plays a vital role in the healing arts.

Non evasive surgery

Reduced time for recovery

Medical students and professionals use this virtual emergency room to simulate processes of collecting vital signs and other patient data.

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Airlines

Without computers, today's airline industry simply wouldn't fly.

Now "fly by wire"

A flight simulator might have a graphical user interface that makes the computer screen look and act like the instrument panel of a real plane so that it can be run interactively by human pilots.

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Science

From biology to physics, every branch of science has been changed by the computer.

Scientists could not have cracked the DNA genetic codes without a super computer.

A botanist can enter and analyze data in remote locations.

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The Automated Factory

- In the modern **automated factory** robots are used for painting, welding, and other repetitive assembly-line jobs.
- Computers use RFID tags to help track inventory, time the delivery of parts,
- Control the quality of the production, monitor wear and tear on machines, and schedule maintenance.

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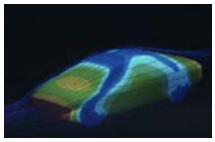
CAD and CAM

- Engineers use CAD (computer-aided design) and CAM (computer-aided manufacturing) technologies to design new products and the machines that build those products.



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Electronic Commerce

- **Business-to-business (**B2B**) -** transactions between corporations
  - Bank transactions
  - Supplier updates
- **Business-to-consumer** *(B2C)* **-** transactions between businesses and consumers
  - less need for catalogs, customer service
  - No middleman costs

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The Electronic Cottage Virtual Office

Futurist Alvin Toffler popularized the term **electronic cottage** to describe a home where technology allows a person to work at home.

"Telecommuting may allow us to redefine the issues so that we're not simply moving people to work but also moving work to people."

—Booth Gardner, former Washington governor

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Telecommuting

Arguments for:

- Reduces the number of automobile commuters, thus saving energy, reducing pollution, and decreasing congestion
- Saves time
- Allows for a more flexible schedule
- Can increase productivity
- Happier because more time with family
- Emphasis on product (results) rather than process

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Telecommuting

Arguments against:

- Doesn't fit those jobs requiring human interaction
- Requires self-discipline (workaholic)
- Office social life missing
- Low visibility

Most telecommuters report that the ideal work situation involves commuting to the office 1 or 2 days each week and working at home on the others.

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Computers and Jobs

De-skilling — **When a job is transformed so that it requires less skill.**

Up-skilling — **When jobs become more technical requiring the worker to have more skills.**

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Productivity and People

- All too often computers are introduced into the workplace without any consideration of the way people work and interact.
  - Workers expected to adjust to unyielding systems
  - User training and support often inadequate
  - Teachers are given tools, but little training
  - Office workers given computer and little to no training

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Monitoring and Surveillance

- Using computer technology to track, record, and evaluate worker performance, often without the knowledge of the worker.

Problems:

•Privacy

•Morale

•Devalued Skills

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Electronic Sweatshops

- A data-entry shop might contain hundreds of clerks sitting at terminals in a massive, windowless room.
- Workers are paid minimum wage to do boring, mindless keyboarding.
- Many experience headaches, backaches, serious wrist injuries (**carpal tunnel syndrome**), stress, anxiety, and other health problems

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Employment and Unemployment

Will we need a New Economy?

- The average workweek 150 years ago was 70 hours; for the last 50 years it has been steady at about 40.
- European workers work less hours and have more vacation time.
- Should governments and businesses encourage job-sharing and other systems that allow for less-than-40-hour jobs?
- What will people do with their time if machines do most of the work? What new leisure activities should be made available?
- How will people define their identities if work becomes less central to their lives?

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