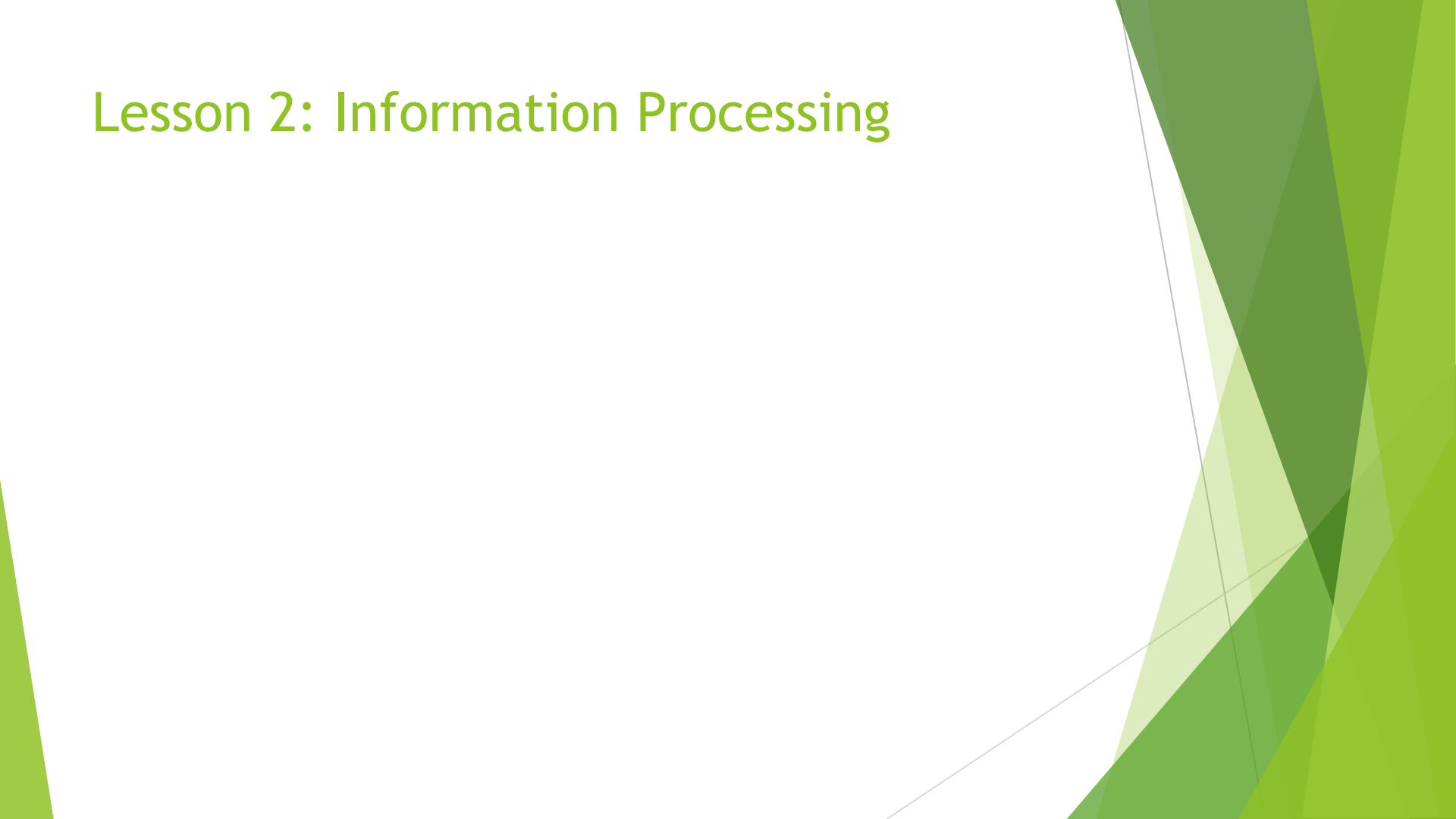



Lesson 2: Information Processing



Needs and objectives of information processing

- ▶ information processing is the acquisition, recording, organization, retrieval, display, and dissemination of information.
- ▶ Information processing beyond doubt is the dominant industry of the present century.
- ▶ Following factors states few common factors that reflect on the needs and objectives of the information processing:
 - ▶ Increasing impact of information processing for organizational decision making.
 - ▶ Dependency of services sector including banking, financial organization, health care, entertainment, tourism and travel, education and numerous others on information.
 - ▶ Changing employment scene world over, shifting base from manual agricultural to machine-based manufacturing and other industry related jobs. ▢ Information revolution and the overall development scenario.
 - ▶ Growth of IT industry and its strategic importance.
 - ▶ Strong growth of information services fuelled by increasing competition and reduced product life cycle.
 - ▶ Need for sustainable development and quality life.
 - ▶ Improvement in communication and transportation brought in by use of information processing.
 - ▶ Use of information processing in reduction of energy consumption, reduction in pollution and a better ecological balance in future.
 - ▶ Use of information processing in land record managements, legal delivery system, educational institutions, natural resource planning, customer relation management and so on.
 - ▶ In a nutshell:
 - ▶ Information is needed to survive in the modern competitive world.
 - ▶ Information is needed to create strong information systems and keep these systems up to date.

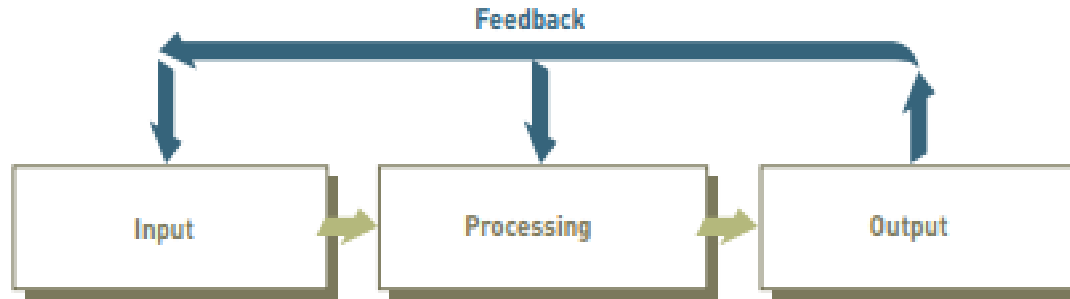
- 
- ▶ Implications of Information in Business Information processing has transformed our society in numerous ways.
 - ▶ From a business perspective, there has been a huge shift towards increasingly automated business processes and communication.
 - ▶ Access to information and capability of information processing has helped in achieving greater efficiency in accounting and other business processes.
 - ▶ A complete business information system accomplishes the following functionalities:
 - Collection and storage of data.
 - Transform these data into business information useful for decision making.
 - Provide controls to safeguard data.
 - Automate and streamline reporting.

Information system

An information system is a set of interrelated components that collect, manipulate, store data and disseminate information and provide a feedback mechanism to monitor performance

IS activities involve:

1. Input of Data Resources
2. Process Data into Information
3. Output of Information
4. Feedback



► Input of data resources:

- Data entry
- Editing
- Machine readable
- Source documents
 - Formal record of a transaction
- User interface
 - How users interact with information system
 - Optical scanning; menu; prompts; fill in blanks

► Process data into information

- Calculate
- Compare
- Sort
- Classify
- Summarize

► Output of information

- Transmit information to users
 - Display; paper; audio
- Storage of data
 - Data are retained in an organized manner
 - Fields; records; files; data bases
- Control of system performance
 - Feedback must be monitored and evaluated to determine if the information system is meeting established performance standards

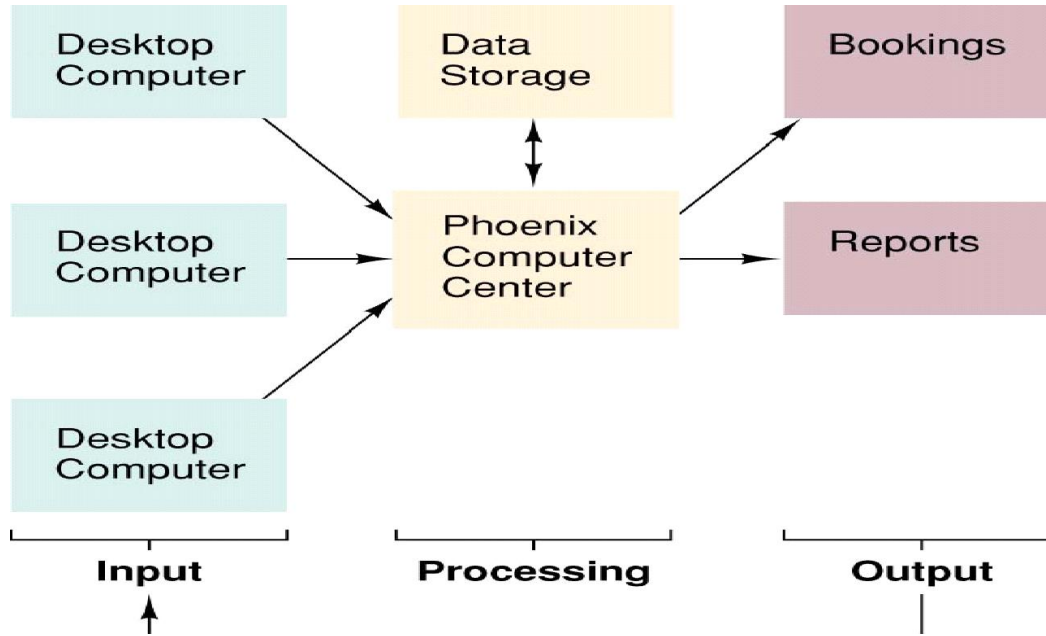
Cont...

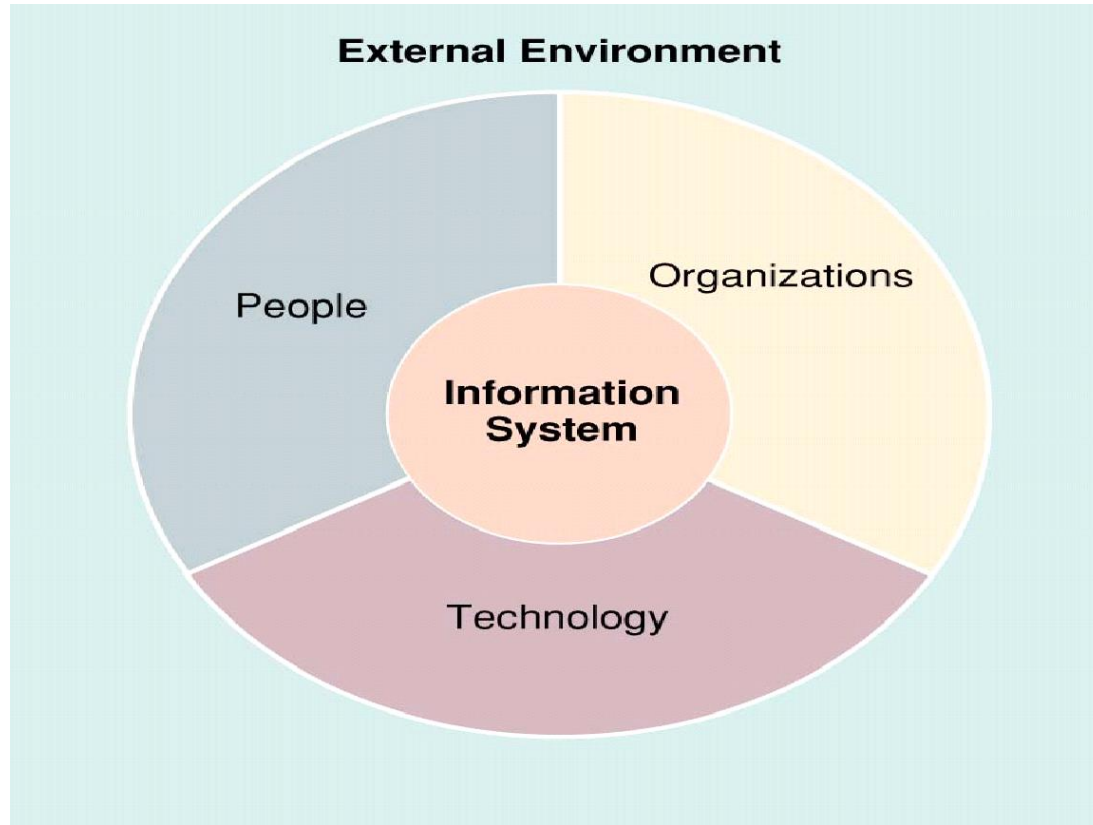
► **Feedback**

In information systems, feedback is information from the system that is used to make changes to input or processing activities. For example, errors or problems might make it necessary to correct input data or change a process. Consider a payroll example.

- Perhaps the number of hours an employee worked was entered as 400 instead of 40. Fortunately, most information systems check to make sure that data falls within certain ranges. For number of hours worked, the range might be from 0 to 100 because it is unlikely that an employee would work more than 100 hours in a week. The information system would determine that 400 hours is out of range and provide feedback. The feedback is used to check and correct the input on the number of hours worked to 40. If undetected, this error would result in a very high net pay on the printed paycheck!

example: Hotel Reservation System





System Performance and Standards

- ▶ System performance can be measured/evaluated in various ways.
 - ▶ Efficiency is a measure of what is produced divided by what is consumed. It can range from 0 to 100 percent. For example, the efficiency of a motor is the energy produced (in terms of work done) divided by the energy consumed (in terms of electricity or fuel). Some motors have an efficiency of 50 percent or less because of the energy lost to friction and heat generation
 - ▶ Effectiveness is a measure of the extent to which a system achieves its goals. It can be computed by dividing the goals actually achieved by the total of the stated goals. For example, a company might want to achieve a net profit of \$100 million for the year using a new information system. Actual profits, however, might only be \$85 million for the year. In this case, the effectiveness is 85 percent ($85/100 = 85$ percent)
 - ▶ A system performance standard is a specific objective of the system. For example, a system performance standard for a marketing campaign might be to have each sales representative sell \$100,000 of a certain type of product each year. A system performance standard for a manufacturing process might be to provide no more than 1 percent defective parts. After standards are established, system performance is measured and compared with the standard. Variances from the standard are determinants of system performance.

Computer-based Information systems

- ▶ A computer-based information system (CBIS) is a single set of hardware, software, databases, telecommunications, people, and procedures that are configured to collect, manipulate, store, and process data into information.
- ▶ A company's payroll, order entry, or inventory-control system is an example of a CBIS
- ▶ *Information technology (IT)* refers to hardware, software, databases, and telecommunications.
- ▶ A business's technology infrastructure includes all the hardware, software, databases, telecommunications, people, and procedures that are configured to collect, manipulate, store, and process data into information.
- ▶ The technology infrastructure is a set of shared IS resources that form the foundation of each computer-based information system.

- Technology - the means by which data is transformed and organized for business use:
 - ▶ Hardware
 - ▶ Software
 - ▶ Database
 - ▶ Telecommunication
- People - the users of IS
- Organization -- a collection of functional units working together to achieve a common goal

Components of CBIS

1. Computer hardware

- ▶ This is the physical technology that works with information. Hardware can be as small as a smartphone that fits in a pocket or as large as supercomputer that fills a building. Hardware also includes the peripheral devices that work with computers, such as keyboards, external disk drives, and routers. With the rise of the Internet of things, in which anything from home appliances to cars to clothes will be able to receive and transmit data, sensors that interact with computers are permeating the human environment.

▶ 2. Computer software

- ▶ The hardware needs to know what to do, and that is the role of software. Software can be divided into two types: system software and application software. The primary piece of system software is the operating system, such as Windows or iOS, which manages the hardware's operation. Application software is designed for specific tasks, such as handling a spreadsheet, creating a document, or designing a Web page.

3. Telecommunications

- ▶ This component connects the hardware together to form a network. Connections can be through wires, such as Ethernet cables or fibre optics, or wireless, such as through Wi-Fi. A network can be designed to tie together computers in a specific area, such as an office or a school, through a local area network (LAN). If computers are more dispersed, the network is called a wide area network (WAN). The Internet itself can be considered a network of networks.

4. Databases and data warehouses

- ▶ This component is where the “material” that the other components work with resides. A database is a place where data is collected and from which it can be retrieved by querying it using one or more specific criteria. A data warehouse contains all of the data in whatever form that an organization needs. Databases and data warehouses have assumed even greater importance in information systems with the emergence of “big data,” a term for the truly massive amounts of data that can be collected and analyzed.

5. Human resources and procedures

- ▶ The final, and possibly most important, component of information systems is the human element: the people that are needed to run the system and the procedures they follow so that the knowledge in the huge databases and data warehouses can be turned into learning that can interpret what has happened in the past and guide future action.

END