Information System

Lecture 1

Importance of the proper information systems management

The information systems function represents:

- Important to business success.
- The resources of an enterprise and its cost of doing business.
- Affects operational efficiencyالكفاءة العملية .
- Source of information and support for decision making by managers.
- Developing competitive products and services.
- A vital, dynamic and challenging career opportunity for millions of men and women.

System Concepts

- Computers are systems of information processing components.
- Business uses of computers are really interconnected business information systems.
- Developing ways to use computers in business includes designing the basic components of information systems.
- Managing information technology emphasizes the quality , business value, and security of an organization's information systems.

?What is a system

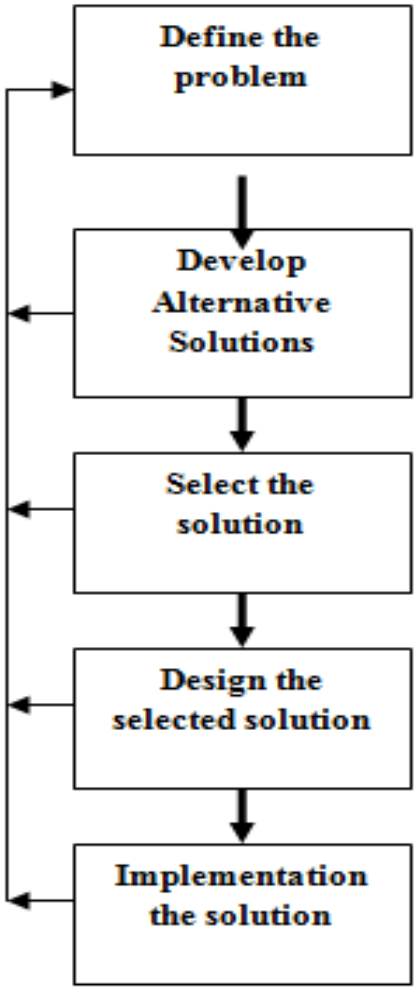
- A system is a group of interrelated components working together toward a common goal by accepting inputs and producing outputs in an organized transformation process.

- Such a system (sometimes called a " dynamic system“)

System components

- **Input** involves capturing and assembling elements that enter the system to be processed.
- **Processing** involves transformation processes that convert input into output.
- **Output** involves transferring elements that have been produced by a transformation process to their ultimate destination.
- **Feedback** is data about the performance of a system.
- **Control** involves monitoring and evaluating feedback to determine whether a system is moving toward the achievement of its goal. The control function then makes necessary adjustments to the system.

:A system Approach to Problem Solving



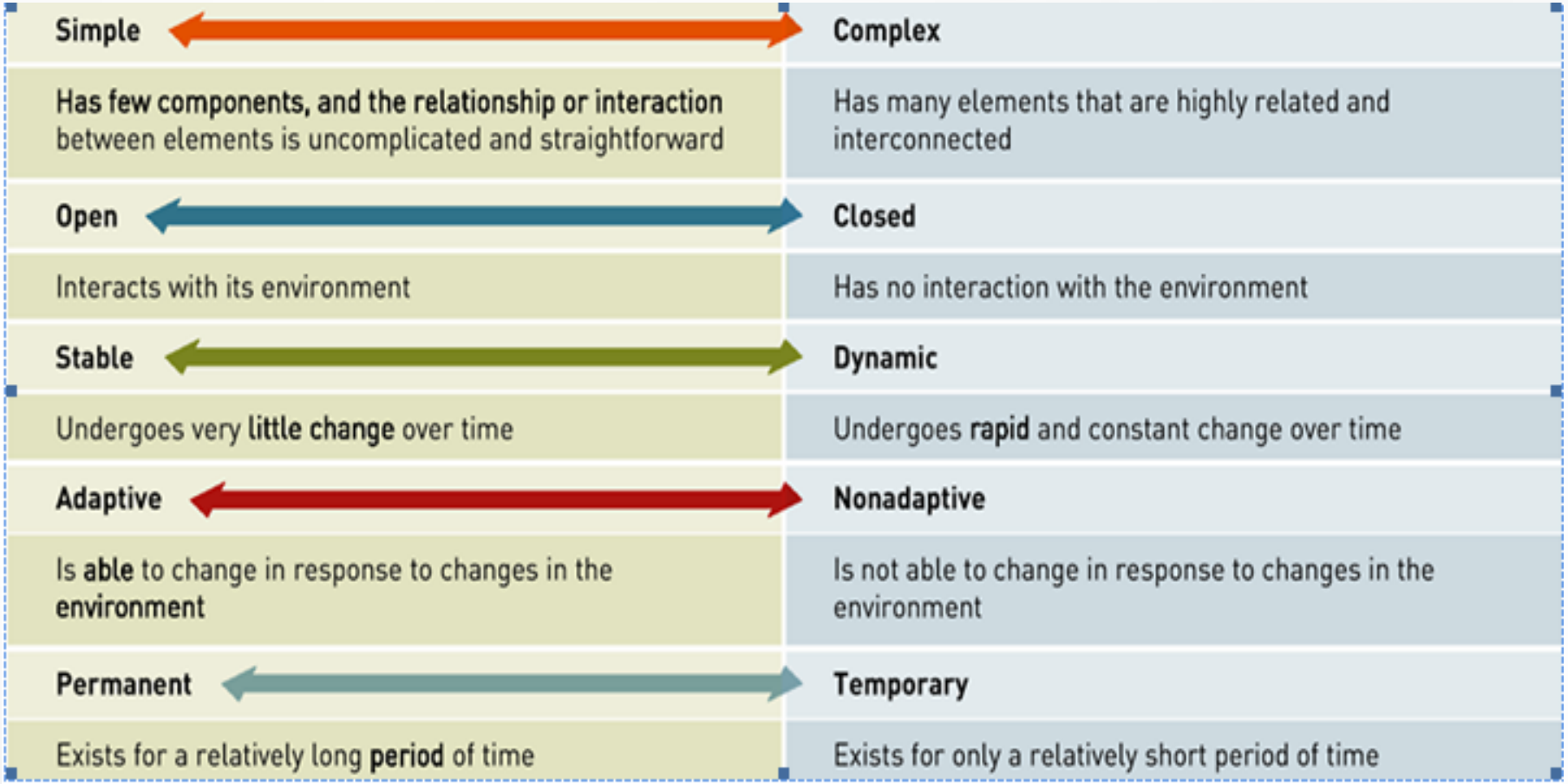
- Define a problem or opportunity in a system context.
- Develop and evaluate alternative system solutions
- Select the system solution that best meets your requirements.
- Design the selected solution to meet your requirements.
- Implement and evaluate the success of the designed system.

System Components and Concepts

- **System boundary:** defines the system and distinguishes it from everything else (i.e., the environment)

- **Configuration:** the way system elements are organized or arranged.
  - simple or complex,
  - open or closed,
  - stable or dynamic,
  - adaptive or non adaptive,
  - permanent or temporary

System configurations



Simple	**Complex**
Has few components, and the relationship or interaction between elements is uncomplicated and straightforward	Has many elements that are highly related and interconnected
Open	**Closed**
Interacts with its environment	Has no interaction with the environment
Stable	**Dynamic**
Undergoes very **little change** over time	Undergoes **rapid** and constant change over time
Adaptive	**Nonadaptive**
Is **able** to change in response to changes in the **environment**	Is not able to change in response to changes in the environment
Permanent	**Temporary**
Exists for a relatively long **period** of time	Exists for only a relatively short period of time

System Performance and Standards

- **Efficiency:** a measure of what is produced divided by what is consumed
- **Effectiveness:** extent to which system attains its goals
- **System performance standard:** a specific objective of a system
- **System variable**: quantity or item controlled by the decision maker
- **System parameter**: value or quantity that cannot be controlled (e.g., the cost of a raw material)

Efficiency Mindset	Effectiveness Mindset
Small-slice of our time to accomplish mor	Calculated use of our time applied to commitment
Short-term focus	Long-term focus
Feeling of accomplishment tied to quantity of tasks accomplished (quantity based	Feeling of accomplishment tied to goal achievement (quality based

What is the Information system (IS)

- A set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization.

- Jobs of IS : supporting decision making, coordination, control, analyze problems, visualize complex subjects, and create new products.

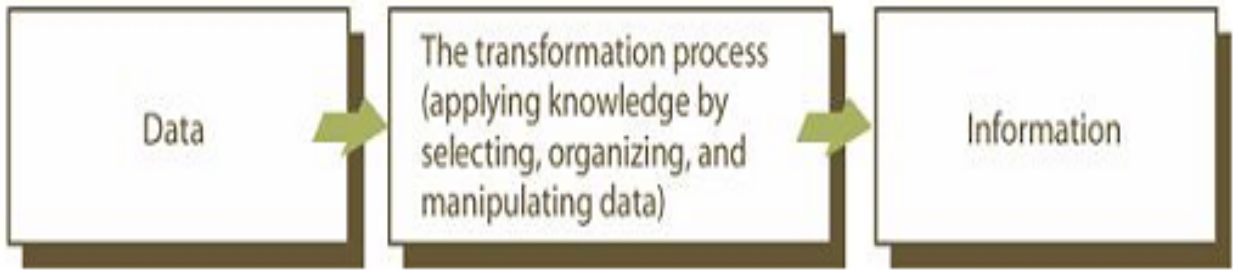
Examples: ATMs, airline reservation systems, course reservation systems

Data, Information and Knowledge

- **Data :**
  - Streams of raw facts representing events such as business transactions
- **Information :**
  - A collection of facts organized in such a way that they have additional value beyond the value of the facts themselves
- **Knowledge**
  - An awareness and understanding of a set of information & Experience and how that information can be made useful to support a specific task
- **Knowledge base**
  - The collection of data, rules, procedures, and relationships that must be followed to achieve value.

Data, Information

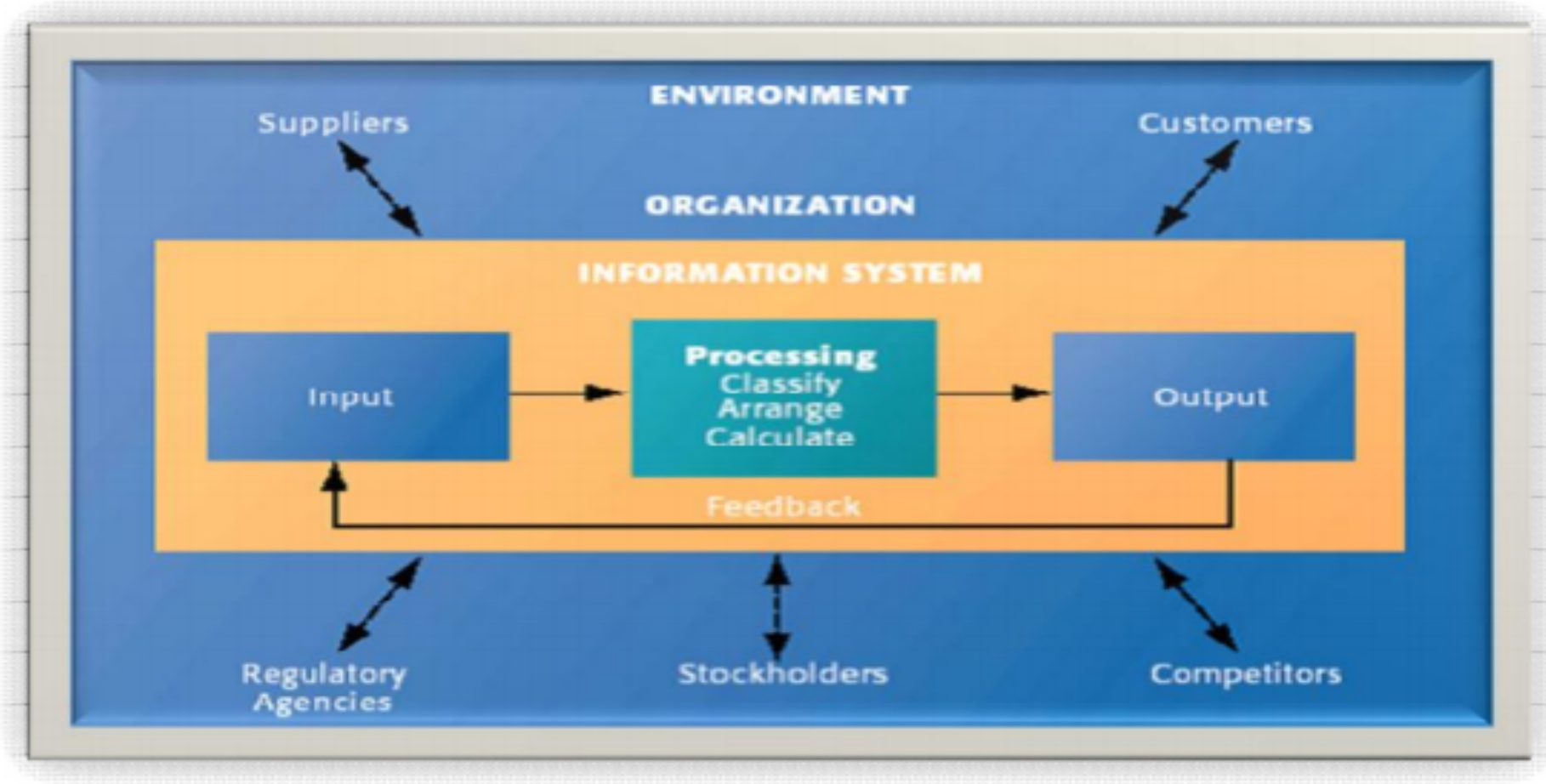
Data	Represented By
Alphanumeric data	Numbers, letters, and other characters
Image data	Graphic images and pictures
Audio data	Sound, noise, or tones
Video data	Moving images or pictures



Characteristics	Definitions
Accurate	Accurate information is error free. In some cases, inaccurate information is generated because in accurate data is fed into the transformation process (this is commonly called garbage in, garbage out [GIGO]).
Complete	Complete information contains all the important facts. For example, an investment report that does not include all important costs is not complete.
Economical	Information should also be relatively economical to produce. Decision makers must always balance the value of information with the cost of producing it.
Flexible	Flexible information can be used for a variety of purposes. For example, information on how much inventory is on hand for a particular part can be used by a sales representative in closing a sale, by a production manager to determine whether more inventory is needed, and by a financial executive to determine the total value the company has invested in inventory.
Reliable	Reliable information can be depended on. In many cases, the reliability of the information depends on the reliability of the data collection method. In other instances, reliability depends on the source of the information. A rumor from an unknown source that oil prices might go up may not be reliable.

Relevant	Relevant information is important to the decision maker. Information that lumber prices might drop may not be relevant to a computer chip manufacturer.
Simple	Information should also be simple, not overly complex. Sophisticated and detailed information may not be needed. In fact, too much information can cause information overload, whereby a decision maker has too much information and is unable to determine what is really important.
Timely	Timely information is delivered when it is needed. Knowing last week's weather conditions will not help when trying to decide what coat to wear today.
Verifiable	Information should be verifiable. This means that you can check it to make sure it is correct, perhaps by checking many sources for the same information.
Accessible	Information should be easily accessible by authorized users to be obtained in the right format and at the right time to meet their needs.
Secure	Information should be secure from access by unauthorized users.

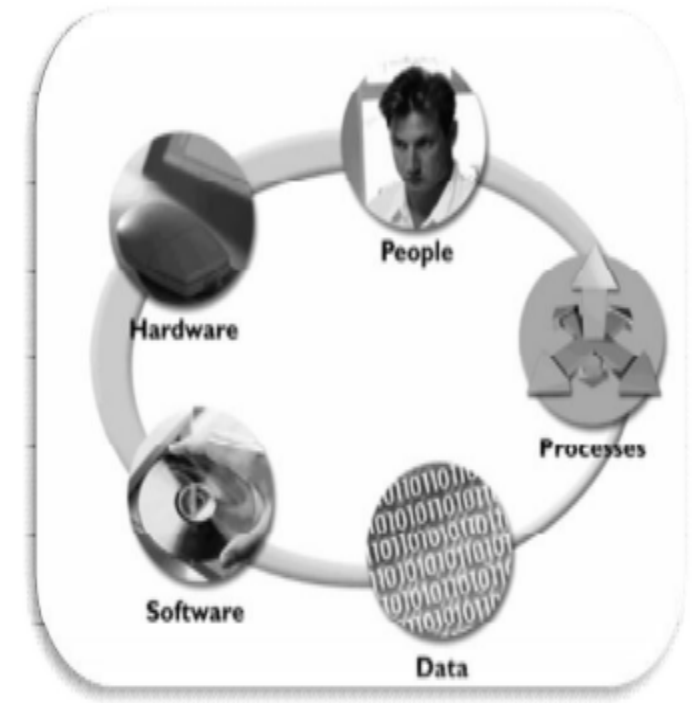
:The Components of an Information System



:The Components of an Information System

1- Hardware:

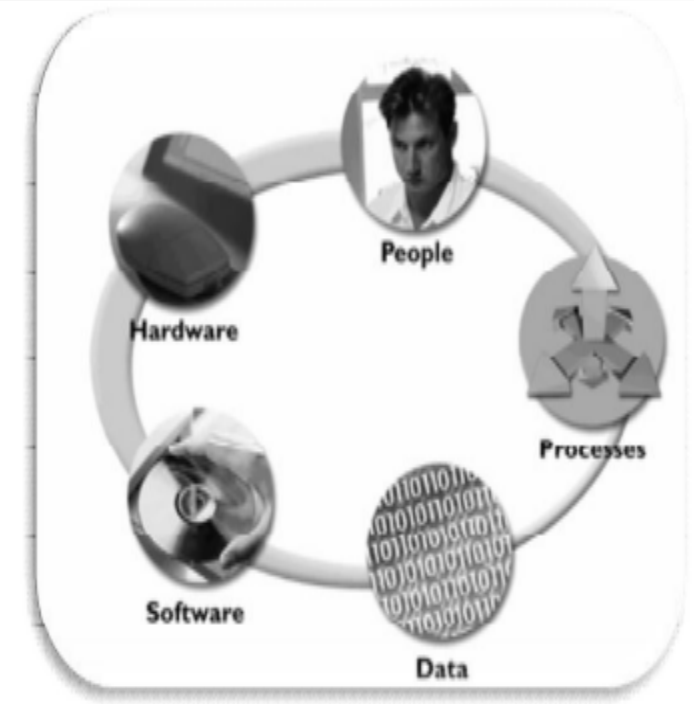
- computers, networks
- communications equipment
- Scanners
- digital capture devices
- other technology based infrastructure.



:The Components of an Information System

2- Software:

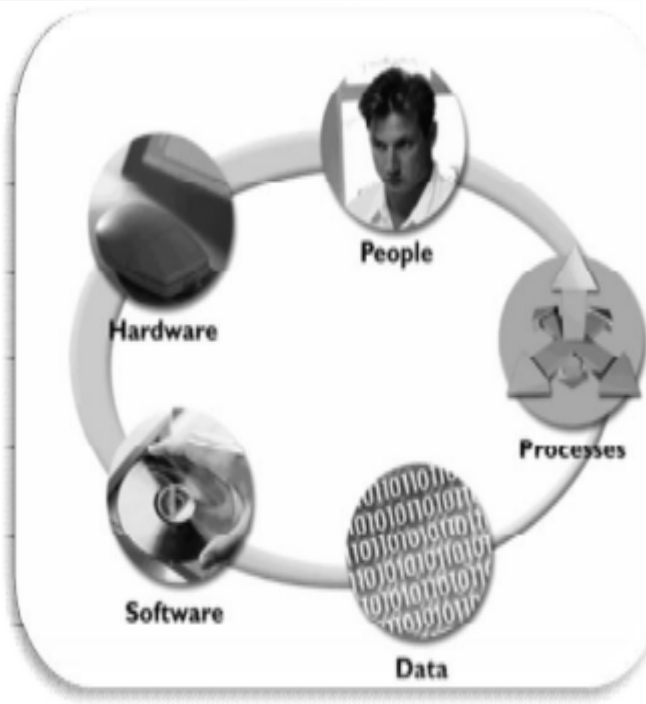
- System software controls the computer and includes the
  - operating system,
  - Utilities
  - network operating system (NOS)
- Application software consists of programs that support users and enable companies to carry out business functions.
  - A horizontal system is a basic system for use in many companies, such as an inventory or payroll program.
  - A vertical system is designed to meet the unique requirements of a specific business or industry.



:The Components of an Information System

3- Data Resources:

- traditional alphanumeric data, Text data, image data, audio data,
- The data resources of information systems are typically organized into:
  - **Databases**, which hold processed and organized data.
  - **Knowledge bases,** which hold knowledge in a variety of forms such as facts, and rules of inference about various subjects.



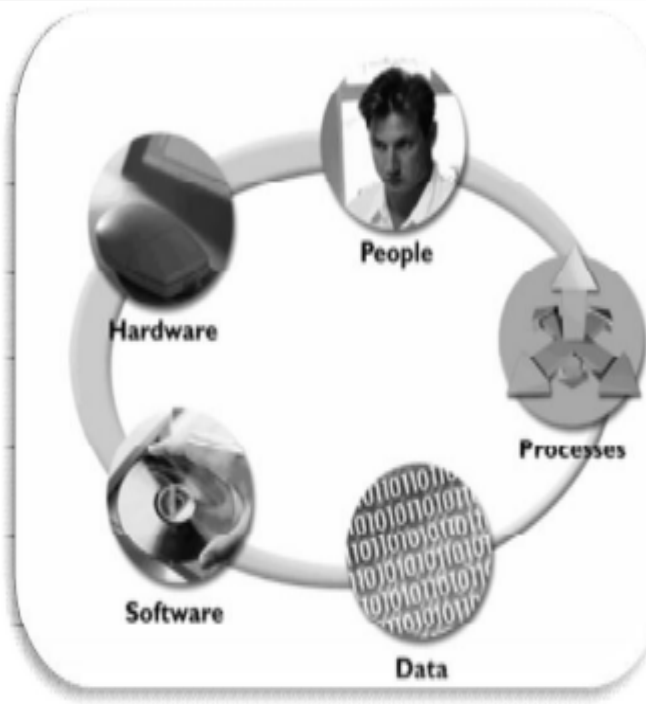
:The Components of an Information System

4- Procedures (Process):

- Describe the tasks that users, managers, and IT staff members perform processes necessary to support a specific business model are described in written documentation manuals and online reference materials.

5- People Resources:

- People are required for the operation of all information systems. These people resources include end users and IS specialists.



Strategic Business objectives of information systems:

- Specifically, business firms invest heavily in information systems to achieve five strategic business objectives:

  - **Operational excellence.**
  - **New products, Services, and Business models.**
  - **Customer and Supplier intimacy (getting familiar)**
  - **Improved decision making**
  - **Competitive Advantage, and Survival.**

Discussion

1. Define the dynamic system and its components?
2. What is the Information system (IS)?
3. Discuss the system Approach to Problem Solving? With drawing.
4. What is the difference between:
   - Efficiency & Effectiveness.
   - System boundary & System configuration.
   - System variable & System parameter.
   - Knowledge and Knowledge Base.
   - Data and Information
5. List five characteristics of data in information system?
6. What are the Components of an Information System? With drawing.
7. What are the five strategic business objectives of an information system?