System Development

What is a System?

The word System is derived from Greek word Systema, which means an organized relationship between any set of components to achieve some common cause or objective.

A system is "an orderly grouping of interdependent components linked together according to a plan to achieve a specific goal."

Properties of a System

A system has the following properties:

1. Organization

Organization implies structure and order. It is the arrangement of components that helps to achieve predetermined objectives.

2. Interaction

It is defined by the manner in which the components operate with each other.

For example, in an organization, purchasing department must interact with production department and payroll with personnel department.

3. Interdependence

Interdependence means how the components of a system depend on one another. For proper functioning, the components are coordinated and linked together according to a specified plan. The output of one subsystem is the required by other subsystem as input.

4. Integration

Integration is concerned with how system components are connected together. It means that the parts of the system work together within the system even if each part performs a unique function.

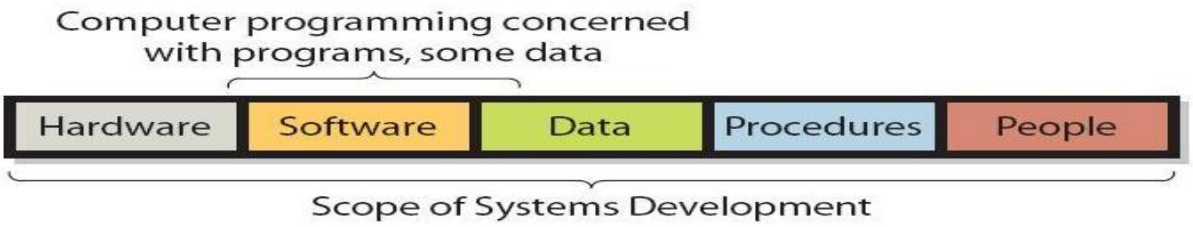
5. Central Objective

The objective of system must be central. It may be real or stated. It is not uncommon for an organization to state an objective and operate to achieve another.

The users must know the main objective of a computer application early in the analysis for a successful design and conversion.

Meaning of System Development

The process of creating and maintaining information systems is called systems development or systems analysis and design. This diagram shows that it involves all five components of an information system. In addition to technical knowledge, it requires business knowledge and management skill.



• While you may be able to purchase an off-the-shelf software program, you won't be able to do that with information systems. Here are some of the reasons why:

– You must construct or adapt procedures to fit the business and the people who will be using the system. You can't buy procedures.

– People must be trained to use the information system effectively. You can't buy that.

– Users must take ownership of their system. That's the single most important criterion for the success of an information system.

• Information system maintenance involves two things:

– Fixing a system to make it do what it should have done in the first place, or

– Adapting it to changing requirements.

Characteristics of a Systems Development Methodology

- The project is divided into a number of identifiable processes, each having a starting point and ending point. Each process comprises several activities, one or
- more deliverables, and several management control points. The division of the project into these small, manageable steps facilitates both project planning and project control.
- Specific reports and other documentation, called **deliverables,** must be produced periodically during systems development to make development personnel accountable for faithful execution of systems development tasks. An organization monitors the development process by reviewing the deliverables that are prepared at the end of each key step. Many organizations rely on this documentation for training new employees; it also provides users with a reference while they are operating the system.
- Users, managers, and auditors are required to participate in the project. These people generally provide approvals, often called *signoffs,* at preestablished management control points. **Signoffs** signify approval of the development process and the system being developed. Such approvals ensure that users understand the resources needed for the project and believe that the project will have a successful outcome, thus ensuring its acceptance.
- The system must be tested thoroughly prior to implementation to ensure that it meets users' needs.
- A training plan is developed for those who will operate and use the new system.
- Formal program change controls (see Chapter 8) are established to preclude unauthorized changes to computer programs.
- A post-implementation review of all developed systems must be performed to assess the effectiveness and efficiency of the new system and of the development process.

Types of System

- **Physical or Abstract :**

Physical system is tangible entities that may be static or dynamic in nature. Abstract system is conceptual or non-physical. The abstract is conceptualization of physical situations.

- **Open and Closed :**

An open system continually interacts with its environment. It receives input from the outside and delivers output to outside. A closed system is isolated from environment influences.

- **Sub System and Super System :**

Each system is part of a large system. The business firm is viewed as the system or total system when focus is on production, distribution of goal and sources of profit and income.

The total system consists of all the objects, attributes and relationship necessary to accomplish an objective given a number of constraints. Sub systems are the smaller systems within a system. Super system denotes extremely large and complex system

- **Permanent and Temporary System :**

A permanent system is a system enduring for a time span that is long relative to the operation of human. Temporary system is one having a short time span.

- **Natural and Man Made System :**

System which is made by man is called man made system. Systems which are in the environment made by nature are called natural system.

- **Deterministic and Probabilistic :**

A Deterministic system is one in which the occurrence of all events is perfectly predictable. If we get the description of the system state at a particular time, the next state can be easily

predicted. Probabilistic system is one in which the occurrence of events cannot be perfectly predicted.

- **Man-made Information System :**

It is generally believed that the information reduces uncertainty about a state or event. An information system is the basis for interaction between the user and the analyst. It determines the nature of relationship among decision makers.

An information system may be defined as a set of devices, procedures and operating system designed around user-base criteria to produce information and communicating it to the user for planning control and performance.