Lecture 1
Introduction to Systems

Course Code: CIS 114

Module Title:Information Systems Engineering

What is System?

- A system is a set of interdependent components, organized in a planned manner to achieve certain objectives.
- System interacts with their environment through receiving inputs and producing outputs.
- Systems can be decomposed into smaller units called subsystems.

Characteristics of a system:

- **Organization**-It implies structure and order. It is the arrangement of components that helps to achieve objectives.
- **Interaction**-It refers to the manner in which each component functions with other components of the system.
- **Interdependence**- It means that parts of the organization or computer system depend on one another. They are coordinated and linked together according to a plan.
- **Integration**- It refers to the holism of systems. It is concerned with how a system is tied together.
- **Central Objective**- A system should have a central objective. Objectives may be real or stated.

Elements of a system

- Outputs and inputs
- Processors
- Control
- Feedback
- Environment
- Boundaries and Interfaces

Categories of System

- System falls into three categories
  - Physical or Abstract systems
  - Open or closed system depending upon their interaction with environment.
  - Man-made such as information systems.

What is Information System?

- Information system deals with data of the organizations.
- The purposes of Information system are to process input, maintain data, produce reports, handle queries, handle on line transactions, generate reports, and other output.
- The transformation of data into information is primary function of information system.

Types of Information Systems

Three major information systems are

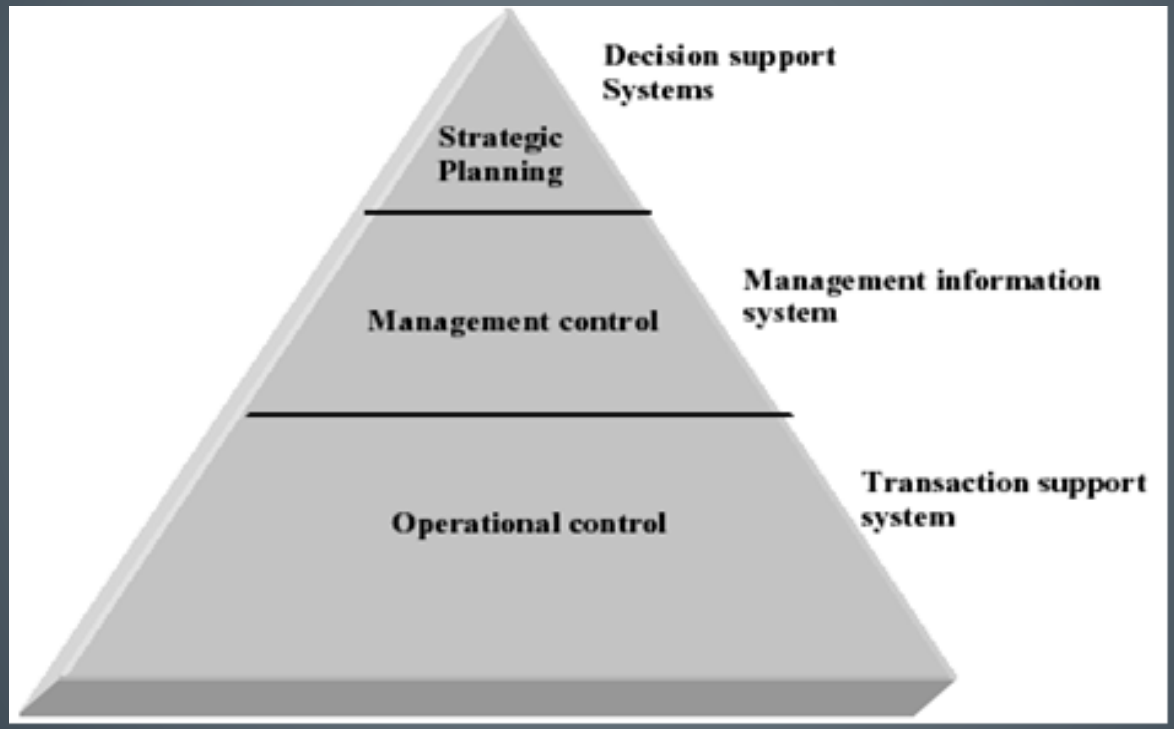
- Transaction processing
- Management information system
- Decision support system

Characteristicsof Information Systems

Summary of Information Systems

Categories of Information Systems	Characteristics
Transaction Processing Systems	Substitutes computer-based processing for manual procedures. Deals with well-structured processes. Includes record keeping applications.
Management Information system	Provides input to be used in the managerial decision process. Deals with supporting well structured decision situations. Typical information requirements can be anticipated.
Decision Support Systems	Provides information to managers who must make judgements about particular situations. Supports decision-makers in situations that are not well structured.

Relation of information systems to levels of organization



The objectives of systems development

The objectives of systems development are to produce a system which is:

- A working reliable system to measurable criteria specified by the business
- Able to do what the user requires to meet clearly defined business objective
- Developed and implemented at a cost which can be justified in terms of the business benefits which are expected to accrue from the new system.

The problems of system development

- The wrong system
- Over time
- Over budget
- Not easily maintained
- Not flexible enough

What is Systems Engineering?

- Systems Engineering is an interdisciplinary approach and means to enable the realization of successful systems.
- It focuses on defining customer needs and required functionality early in the development cycle, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem.