System Analysis and Design (SAD)

Er Dhiraj Bashyal

Course Content

Unit 1 : System Development Fundamentals

Unit 2 : Planning

Unit 3 : Analysis

Unit 4 : Design

Unit 5 : Implementation and Maintenance

Introduction

- What is System Analysis & Design?
  - Let’s break this into 3 parts
    - System
    - System Analysis
    - System Design

What is System ?

- a system is a set of rules, an arrangement of things, or a group of related things that work toward a common goal
- *A system is "an orderly grouping of interdependent components linked together according to a plan to achieve a specific goal."*
- For example, the library system contains librarians, books, and periodicals as components to provide knowledge for its members System

System Activities or Functions[1]

- There is 7 activities or functions of a system
  - Input
  - Processor
  - Output
  - Feedback
  - Control
  - Boundaries and Interfaces
  - Environment

System Activities or Functions[2]

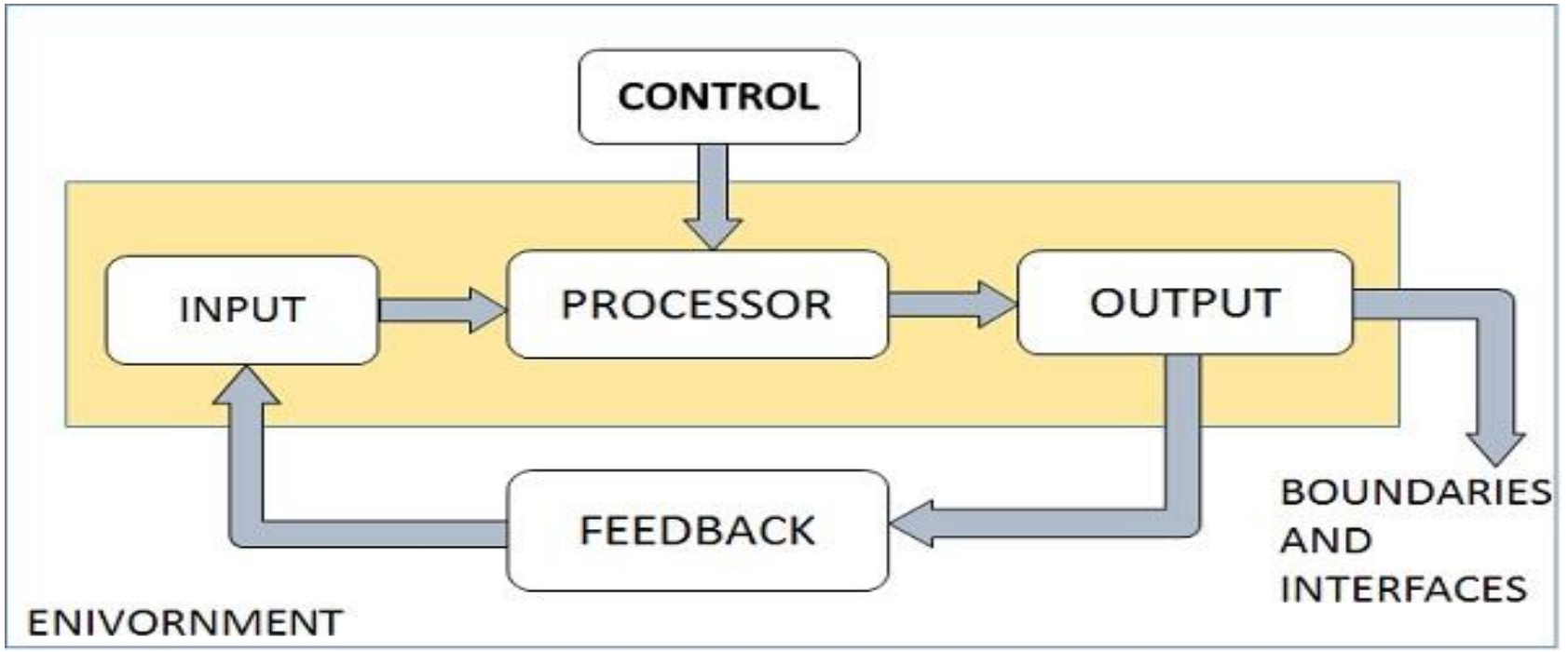

Fig: Activities or functions of a system

System Activities or Functions[3]

- Input
  - It involves capturing and assembling elements that enter the system to be processed. Inputs to the systems are anything to be captured by the system from its environment.
  - For example- Raw materials
- Processor
  - It involves transformation processes that convert input to output. For example, a manufacturing process.
- Output
  - It involves transferring elements that have been produced by a transformation process to their ultimate destinations.
  - Outputs are the things produced by the system and sent into its environment. For example, finished products.

System Activities or Functions[4]

- Feedback
  - It is data about the performance of a system
  - It is the idea of monitoring the current system output and comparing it to the system goal
  - Any variation from the goal are then fed back in to the system and used to adjust it to ensure that it meets its goal
  - For example, data about sales performance is feedback to a sales manager.
- Control
  - It involves monitoring and evaluating feedback to determine whether a system is moving toward the achievement of its goals
  - The control function then makes necessary adjustments to a system's input and processing components to ensure that it produces proper output
  - For example, a sales manager exercises control.

System Activities or Functions[5]

- Boundaries & Interfaces
  - The line that marks the inside and outside of a system and that sets off the system from its environment
  - Boundaries are the limits that identify its components, processes, and interrelationship when it interfaces with another system
- Environment
  - Everything external to a system that interacts with the system.

Next Topic

- Characteristics of System
- Type of System
- System Analysis
- System Design

Characteristics of System[1]

- Organization
  - It implies structure and order
  - It is the arrangement of components that helps to achieve objectives
- Interaction
  - It refers to 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. One subsystem depends on the output of another subsystem for proper functioning.

Characteristics of System[2]

- Integration
  - The parts of a system work together within the system even though each part performs a unique function.
- Central Objective
  - Objective may be real or stated. All the components work together to achieve that particular objective.

Types of System [1]

- Open System
  - A system that interacts with other systems in its environment is called open system
  - Can receive inputs from, and delivers output to the outside of system
- Adaptive System
  - A system that has the ability to change itself or environment in order to survive is called an adaptive system

Types of System [2]

- Physical System
  - Tangible Entities
  - Static or dynamic in nature
  - Example, computer system
- Abstract System
  - Conceptual system
  - Not Physical entities
  - May be formulas, representation or model of a real system

System Analysis

- What is system analysis ?
  - ➢ It is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components.
  - ➢ System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives.
  - ➢ It is a problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

Why System Analysis?

- Why System Analysis?
  - Reduced Costs
  - Efficiency & Flexibility
  - Risks Coverage
  - Better management
  - Better Quality
  - Reduced Costs
  - Helps make clear path for development of system
  - & Many More

System Design[2]

- What is System Design?
  - System design is the process of designing the elements of a system such as the architecture, modules and components, the different interfaces of those components and the data that goes through that system.
  - It is a process of planning a new business system or replacing an existing system by defining its components or modules to satisfy the specific requirements. Before planning, you need to understand the old system thoroughly and determine how computers can best be used in order to operate efficiently.

System Design[2]

What is System Design?

- The major goal of systems analysis and design is to improve organizational systems.
- Often this process involves developing or acquiring application software and training employees to use it.
- Application software, also called a system, is designed to support a specific organizational function or process, such as inventory management, payroll, or market analysis. The goal of application software is to turn data into information.
- For example, software developed for the inventory department at a bookstore may keep track of the number of books in stock of the latest best seller. Software for the payroll department may keep track of the changing pay rates of employees.
- A variety of off-the-shelf application software can be purchased, including WordPerfect, Excel, and PowerPoint. However, off-the-shelf software may not fit the needs of a particular organization, and so the organization must develop its own product