

# **PENDAHULUAN: Konsep Sistem**

**TIP – FTP – UB**

**MAS'UD EFFENDI**

# SCOPE OF SYSTEM ANALYSIS

- SYSTEM SCIENCE
- SYSTEM DEVELOPMENT
- SYSTEM MODELLING

# System analysis

- System analysis is a set of procedures which basically used to design and manage real-world systems.
- These activities was combined to reach the big objective.

# WHAT IS A SYSTEM?

- A system is an assemblage or combination of elements or parts forming a complex or unitary whole; (river system)
- A system is any assemblage or set of correlated members (system of currency)
- A system is an ordered and comprehensive assemblage of facts, principles or doctrines in a particular field of knowledge or thought (system of philosophy)

# WHAT IS A SYSTEM?

- A system is a coordinated body of methods , or a complex scheme or plan of procedure (system of organization and management)
- A system is any regular of special method or plan of procedure (a system marking, numbering or measuring)

# WHAT IS A SYSTEM?

System is an assembly of elements or components or part related in an whole to reach an objective

Systems have characteristic or property ascribed to an element or process is termed an attribute of that element (color, texture, size, strength, shape, and permeability) or process (intensity, speed, rate)

# Part of system definition are:

- Elements or components or parts
- Relationships or interaction among elements/components/ parts
- There are something that connected to be unity
- There are an objective
- It was lied in a complex environment

- Elements or Components are operating parts of a system consisting of input, process, and output.

Each system component may assume a variety of values (attributes) to describe a system state as set by control action and one or more restrictions.



- Attributes are the properties or discernible manifestations of the component/elements of a system

These attributes characterize the parameters of a system

- Relationships are the links between components and attributes

# The properties of a system:

1. The properties and behavior of each component of the set has an effect on the properties and behavior of the set as a whole
2. The properties and behavior of each component of the set depend upon the properties & behavior of, at least one, the component in the system
3. Each possible subset of components has two properties listed above, the component can't be divided into independent subsets.

# The evolution of system science

- Cybernetics (Norbert Wiener, 1948): In its narrow view, cybernetics is equivalent to servo theory in engineering; in its broad view, it may encompass much of natural science. Cybernetics has to do with self-regulation, such as mechanical, electromechanical, electrical, or biological

# The evolution of system science

- General system theory (Ludwig von Bertalanffy, 1940): GST is concerned with developing a systematic framework for describing general relationships in the natural and the man-made world

# The evolution of system science

- Systemology: the science of systems or their formation.

A system science is pushed forward by the formations of inter-disciplines

# A hierarchy of level:

1. The level of static structure or frameworks
2. The level of simple dynamic system of clockworks
3. The level of thermostat or cybernetic system
4. The level of the cell
5. The level of the plant
6. The level of the animal
7. The level of the human
8. The level of social organization
9. The level of the unknowable

# A classification of systems:

- Natural and man-made systems

Natural system are those which came into being by natural process

Man-made systems are those in which human being have intervened through components, attributes, or relationships.

- Physical and conceptual systems

Physical systems are those which manifest themselves in physical term

Conceptual systems are those which symbols represent the attribute of component

# A classification of systems:

- Static and dynamic systems

Static system is one having structure without activity

Dynamic system combines structural components with activity

- Closed and open systems

Closed system is one that not interact significantly with its environment

Open system allows information, energy, and matter to cross its boundaries