CHAPTER 1:
AN INTRODUCTION TO INFORMATION SYSTEMS

Course : Information system engineering

Course code: CIS 111

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LEARNING OUTCOMES

- Students will learn the fundamental knowledge about system
- Students will learn about information system
- Students can differentiate between different types of information systems
- Students can understand the purpose and uses of various types of information system.
- Students can understand what is Information System 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.

COMPONENTS OF INFORMATION SYSTEM

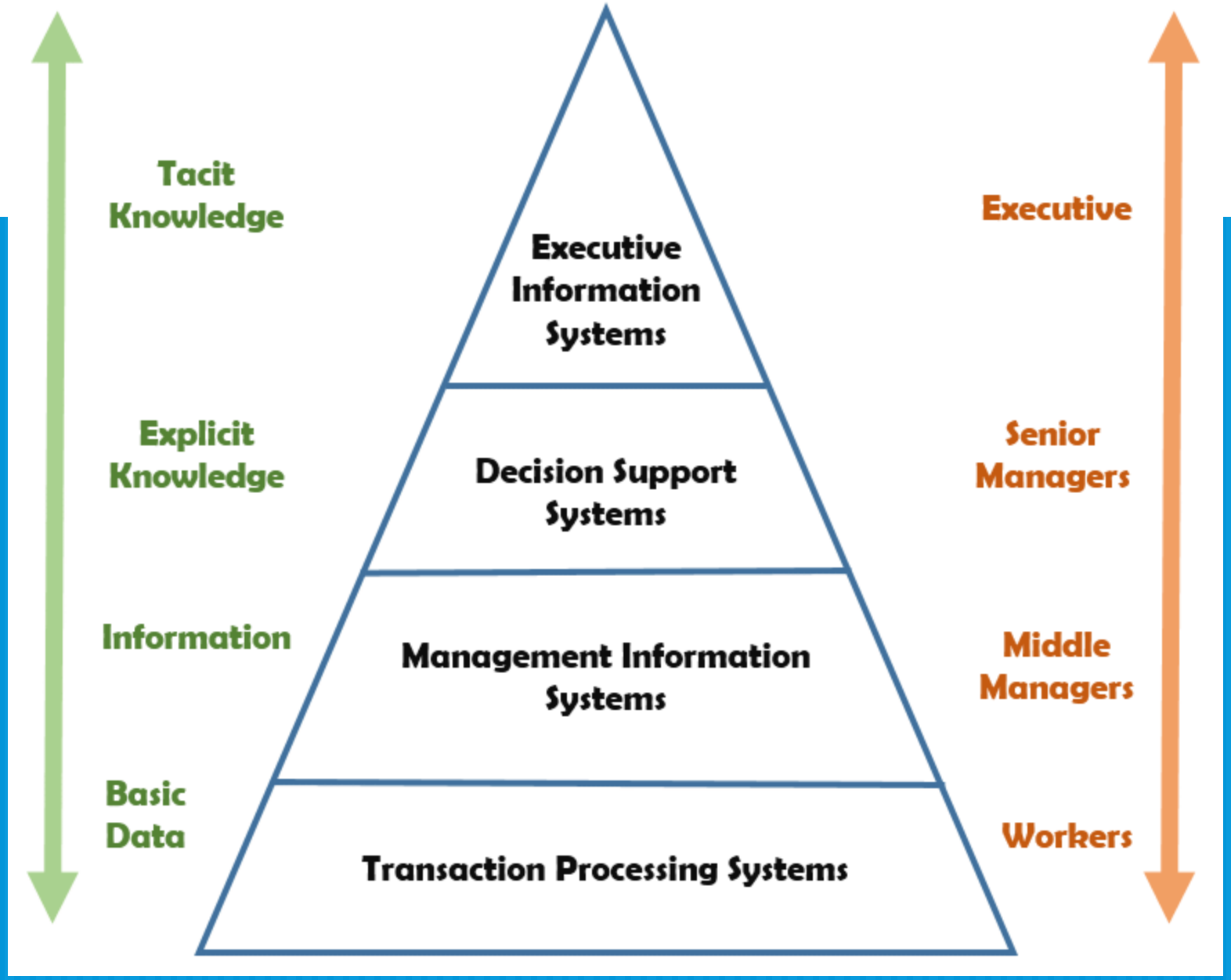
- There are five components must come together in order to produce an information system. These are-

1. Hardware
2. Software
3. Data
4. Procedures
5. People

TYPES OF INFORMATION SYSTEMS

- Four major types of information systems are

- Transaction processing
- Management information system
- Decision support system
- Executive support system


Tacit Knowledge
Explicit Knowledge
Information
Basic Data
Executive Information Systems
Decision Support Systems
Management Information Systems
Transaction Processing Systems
Executive
Senior Managers
Middle Managers
Workers

TRANSACTION PROCESSING SYSTEM (TPS)

- **Transaction processing systems(TPS)** collect, store, modify and retrieve the transactions
  - Transaction is an event that generates or modifies data to be stored in an information system
  - Examples: Point of Sale, credit card payments,
  - Designed in conjunction with the organization's procedures
  - Main processes are collecting and storing

- Characteristics
  - Rapid response
  - Reliability
  - Inflexibility
  - Controlled processing

MANAGEMENT INFORMATION SYSTEM (MIS)

- A Management Information System is
  - An integrated user-machine system
  - For providing information
  - To support the operations, management, analysis, and decision-making functions
  - In an organization
- Characteristics
  - Management oriented
  - Need and future oriented
  - Long term planning
  - Exception oriented

DECISION SUPPORT SYSTEM (DSS)

- "Decision support system (DSS) is interactive computer based system, which helped decision-makers utilize data and models to solve unstructured problems".
- Characteristics
  - ❑Facilitates decision making
  - ❑Interaction with the users
  - ❑Repeated use
  - ❑Task-oriented
  - ❑Identifiable

EXECUTIVE INFORMATION SYSTEM

- An Executive information system (EIS), also known as an Executive support system (ESS), is a type of management/decision support system that facilitates and supports senior executive information and decision-making needs. It combines both internal and external data access.
- Characteristics
  - ❑Detailed data
  - ❑Integrate internal & external data
  - ❑Trend analysis
  - ❑Support top level decision making

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

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.

REFERENCE BOOK