

Information Systems (කොරකුරු පද්ධති)

Lesson 01 (Introduction)



Objectives – Learning Outcomes

- The objectives of this section are to introduction about systems and to provide a high-level understanding of system concepts, types etc.

When you have followed this section you will:

- Understand what system is;
- Understand classification of systems;
- Understand different type of systems;



Outline

- What is a system?
- Classification of systems
- What is an Information System?
- Characteristics of a System
- Different type of Systems



What is a System?

- A system is a **group of** interacting, interrelated, **resources** forming a **common goal**
–e12time33.pdf
- A purposeful collection of inter-related **components** working together to achieve some **common objective**.
–Ian Sommerville, Software Engineering, 9th Edition



What is a System? Cont.

- ✓ A set of elements or components that interact to accomplish goals
- ✓ A combination of components working together

Definition of a System

- A collection of components that work together to realize some objective, forms a system



System is Organized combination of

1. Hardware
2. Software
3. Communications Networks
4. Data
5. People



Application



Computer Hardware Technologies

- Examples
 - Dell PowerEdge 2600 File Server
 - Apple iMac
 - Sony LCD Flat Panel Monitor
 - iPod
 - ID Automation USB Barcode Scanner
 - RFID Chip



Computer Software Technologies

- Examples
 - Windows XP
 - Graphics Card Driver Software
 - PowerPoint
 - mySAP Customer Relationship Management
 - Peachtree Accounting
 - iTunes Software



Telecommunications Network Technologies

- Examples
 - Ethernet
 - Netgear Wireless Router
 - Cable Modem
 - Cell Phone
 - WiFi, WiMax card
 - Bluetooth device



Data Resource Management Technologies

- Examples
 - IBM DB2 8.2
 - Microsoft SQL Server 2000
 - Oracle Database 10g
 - MySQL
 - Data Mining Software



People Technology 😊

- People are the 5th component of an Information System
- Everyone forgets the importance of people in an information system
- **Example:** End User, Data Entry Person, Manager, Programmer, DB Administrator, Cashier, Secretary, Professor



Classification of Systems

Open System

- An open system usually interacts with some entities in their environment
- An open system is a state of a system, in which a system continuously interacts with its environment

Closed System

- A closed system is a system in the state of being isolated from the environment
- It is often used to refer to a theoretical scenario where perfect closure is an assumption



Classification of Systems

Artificial System

- We can consider man-made (designed) systems as artificial systems

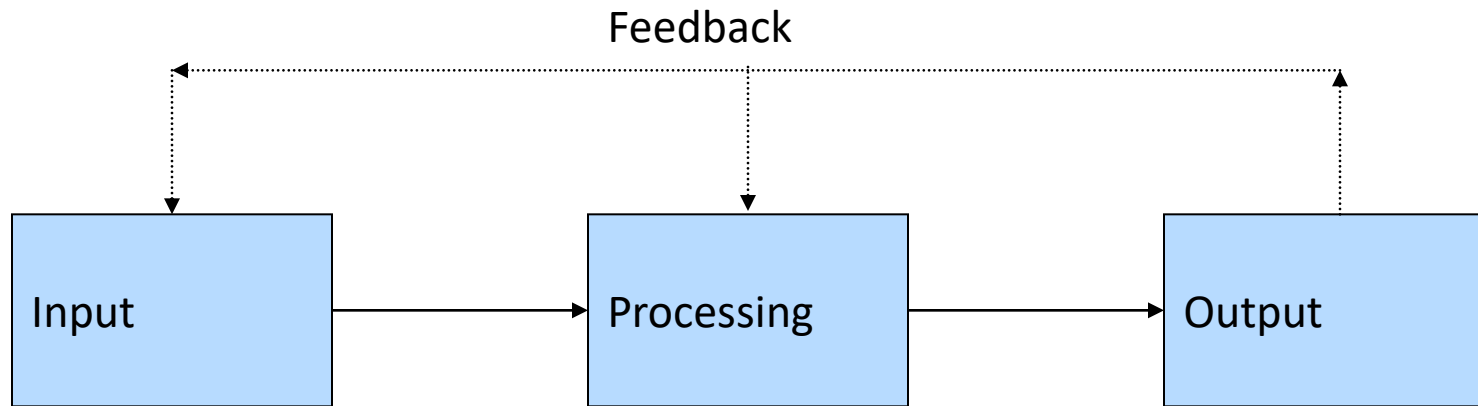
Natural System

- We can even consider living beings as natural systems
- Man-made systems normally have a certain purpose, objectives. They are “designed to work as a coherent entity”. Natural systems may not have an apparent objective

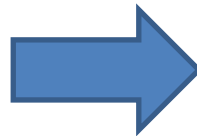


What is an Information System?

Schematic model of an information system



System Elements



- Inputs
- Processing mechanisms
- Outputs



What is an Information System? Cont.

- Input

The activity of gathering and capturing data

Whatever goes into the computer

- Processing

Converting or transforming data into useful outputs

- Output

Useful information, usually in the form of documents and/or reports

Anything that comes out of a computer



What is an Information System? Cont.

- Feedback

Output that is used to make changes to input or processing activities

- Forecasting

A proactive approach to feedback

Ex:- Use for estimating future sales or inventory needs

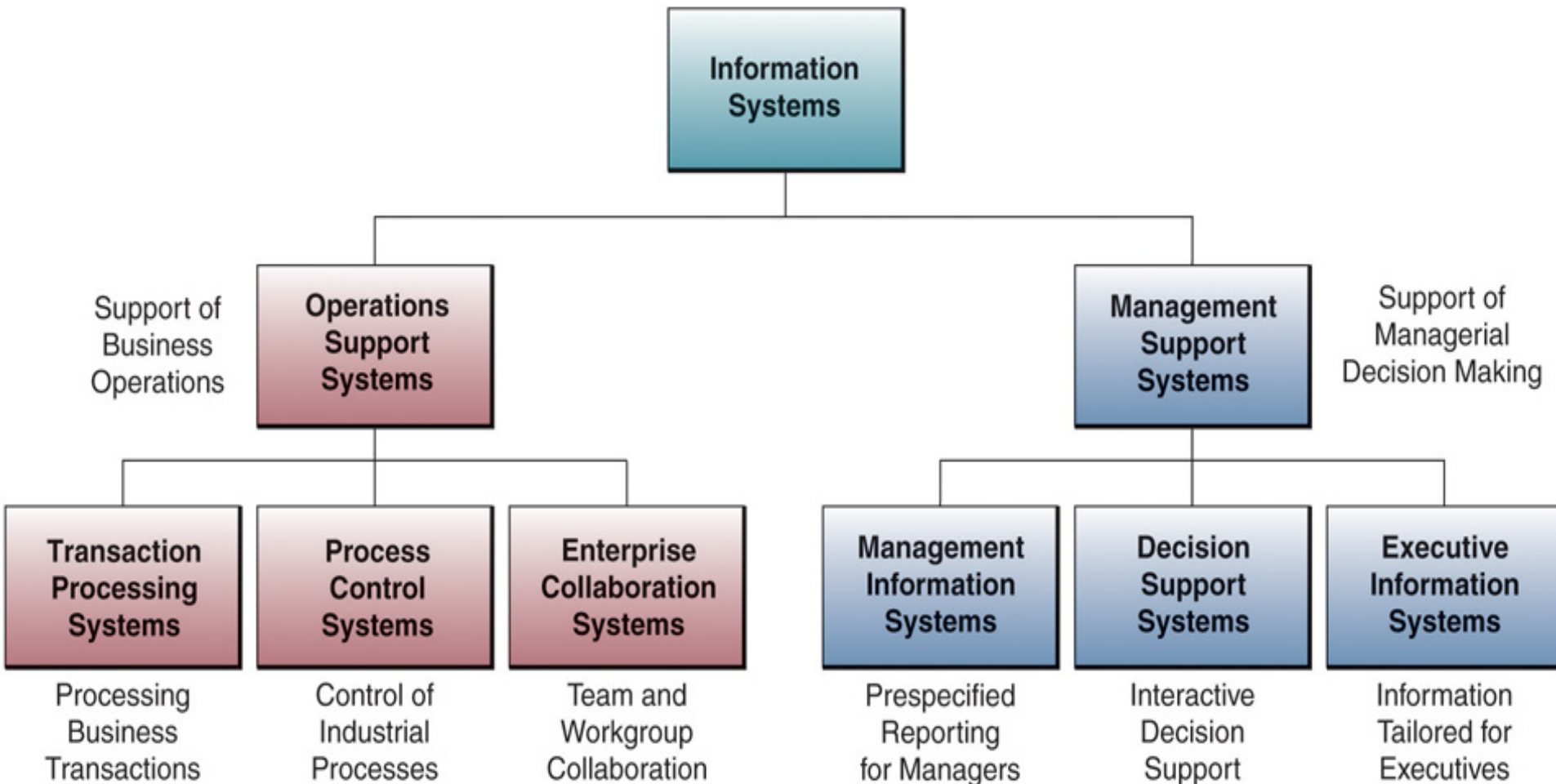


Characteristics of a System

- A system has a boundary
- It is made up of different components
- It has a specific task or related tasks towards a particular function
- It has input and output and sub systems



Types of Information Systems



❑ Transaction Processing Systems (TPS)

- An organized collection of people, procedures, software, databases, and devices used to record completed for business related exchanges
- Support operations ; Updates Operational Databases
- Examples:
 - ATM Machine System – Banking Transactions
 - Cash Register System – Point of Sale Transactions
 - Payroll system



❑ Process Control Systems (PCS)

- Supports Operations (Operational)
- Monitor and Control Industrial/Manufacturing Process
- Examples:
 - Petroleum Refining
 - Power Generation
 - Automobile Manufacturing



❑ Enterprise Collaboration Systems (ECS)

- Supports Operations
- Teamwork, communication, and collaboration
- Examples:
 - E-mail
 - Chat
 - Video Conferencing
 - Calendaring
 - Journaling
 - Workflow
 - File Sharing



❑ Management Information Systems(MIS)

- Supports Management
- **Analysis & Reporting**
- Charts, Graphs, Summary Tools
- Examples:
 - Spreadsheet (Excel) – One of the first and most basic
 - Oracle's Corporate Performance Management



□ Decision Support Systems (DSS)

- Support Management
- What-if Analysis, Decision Modeling, Scenario Building, Highly interactive, ad hoc.
- Examples
 - Enterprise Decision Manager 2.0 Fair Isaac Corporation
 - AIMMS 3.6
- Most DSS's are custom developed for specific companies; very few out-of-the-box products



❑ Executive Information Systems (EIS)

- Supports high-level strategic management
- Provides critical info from other systems (MIS and DSS)
- Portal Concept: one place with links to all information
- EIS's integrate external information such as economic developments and news about related markets and competitors. Helps strategic decision making, not necessarily tactical
 - Tactical – doing things the right way
 - Strategic – doing the right things



Type of Systems – More...

- Geographic Information Systems
- Knowledge Management Systems
- Content Management Systems
- Enterprise Resource Planning Systems
- Expert Systems
- Embedded Systems



❑ Geographic Information Systems (GIS)

- These help to control and present data accessed, stored or analyzed with respect to a particular geographical location
- According to technology this system contains mapping software, remote sensing, land surveying, Aerial photography, mathematics, photogrammetry and geography
- With a GIS application you can open digital maps on your computer, create new spatial information to add to a map, create printed maps customized to your needs and perform spatial analysis



❑ Knowledge Management Systems (KMS)

- These perform the function of identifying the activities of different ranges use within an institution, creation, production, distribution and the application of their philosophies and practices for various needs
- While these philosophies and practices can be incorporated within a single individual or the activities of an institution, they help acquire knowledge



❑ Content Management Systems (CMS)

- A **content management system (CMS)** is a software application or set of related programs that are used to create and manage digital content
- CMSs are typically used for enterprise content management (ECM) and web content management (WCM)
- WCM facilitates collaborative authoring for websites (A person who is not familiar with web based technologies can use CMS to create, modify and delete contents in a web page) Ex- Joomla, Wordpress, Moodle



❑ Enterprise Resource Planning Systems

- This is a broad institutional system that helps control and coordinate all resources of an enterprise through a shared database
- ERP systems manage a broad set of activities in an organization
- ERP software applications can be used to manage product planning, parts purchasing, inventories, interacting with suppliers, providing customer service, and tracking orders
 - Ex: SAP, OPERA



❑ Expert Systems

- A computer application that performs a task that would otherwise be performed by a human expert
- Gives the computer the ability to make suggestions and to act like an expert in a particular field
- Artificial intelligent is employed for this purpose

Examples:

diagnose human illnesses,
make financial forecasts, schedule routes for delivery
vehicles



❑ Embedded Systems

- This is a system committed for a single or minute specific tasks
- This is a system that is embedded as part of a complete piece of equipment
- Examples: Navigation systems, network routers, switches, hubs, passenger environmental controls, anti-lock braking systems, air bag controls, GPS mapping, Dishwashers, microwave ovens, surveillance systems, robots



Summery

In this section you have given an introduction about systems and provided a high-level understanding of system concepts.

Also this section covered system definitions, classifications, different types and characteristics of systems.



References

- SOFTWARE ENGINEERING, Ninth Edition, Ian Sommerville

Next Lesson >>>

Lesson 02 : Systems Development Models and Methods

