King Saud University

College of Engineering

IE – 462: "Industrial Information Systems"

Spring – 2020 (2nd Sem. 1440-41H)

Introduction (Chapter 1)

part 1 – Fundamentals Concepts regarding Information

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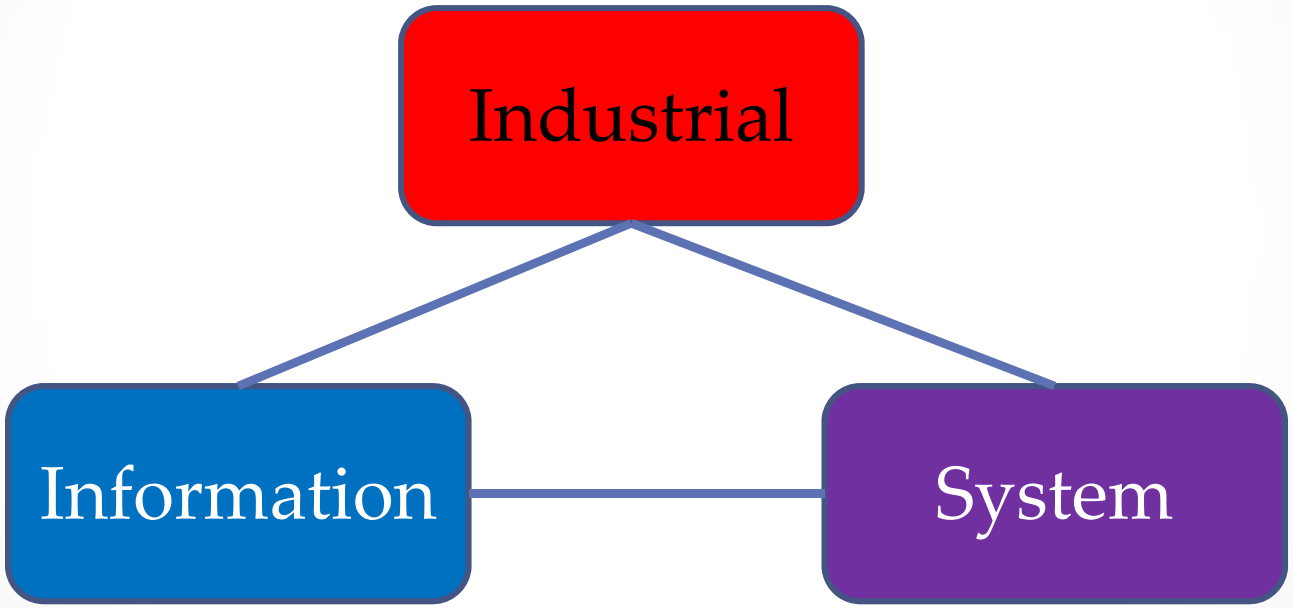
Lesson Overview

Part 1:

- What is information?
- What is a system?
- What are Information Technologies (IT)?
  - IT role in industry / manufacturing
  - Types of software
- Why IS in industry?

Industrial Information System

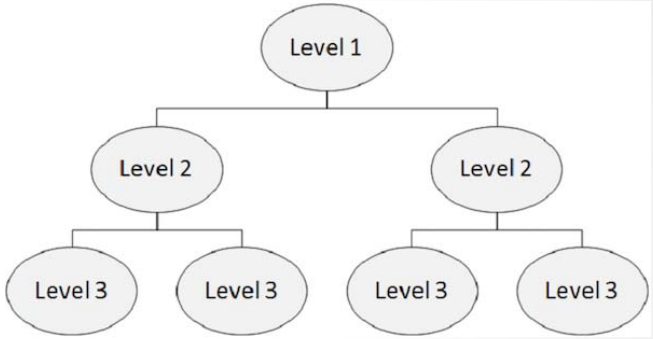


What is Information?

- **Information**:
  - Data put within a *meaningful context*
  - It is also *processed data* (data is raw material that proceeds to provide information)
- **Knowledge**:
  - relationship or connection between several pieces of Information
- Information and knowledge are necessary for decision making

Definition of a System

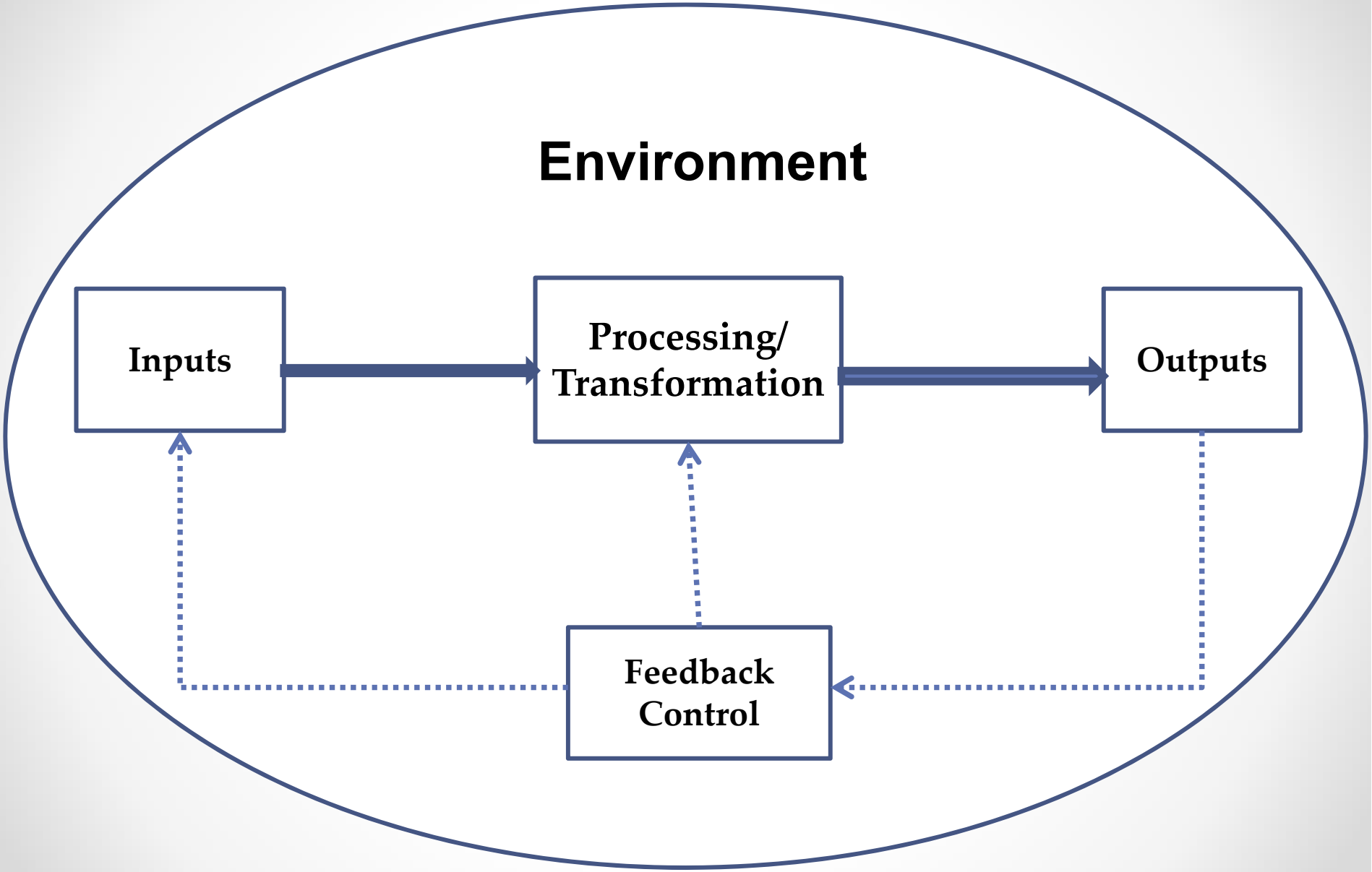
- **General system definition**:
  - any collection of component elements that work together to perform certain task for achieving a known goal



- Systems are usually:
  - **hierarchical** and are
  - either **physical or logical systems** (e.g. university, power stations, mathematical models, automobiles, information system)

- **Information system**:
  - refers to collection or combination of programs, procedures, data or equipment
  - used in processing data (e.g. billing system, inventory systems)

What is a System?



Classification of Systems

- Closed and Open system:
  - **Closed system:** does not interact with environment
  - **Open system:** interacts with environment; either affects or is affected by the environment
- Static and Dynamic systems:
  - **Static system:** its components or goal does not change with time
  - **Dynamic system:** its elements, their contents and goal may change with time

What are Information Technologies (IT)?

- Information needs to be stored, processed, and presented through some media, or technology, aka **IT**

- IT includes:
  - Hardware (e.g. computer systems, equipment, and devices)
  - Software
  - Communication technologies

IT Role in Industry / Manufacturing

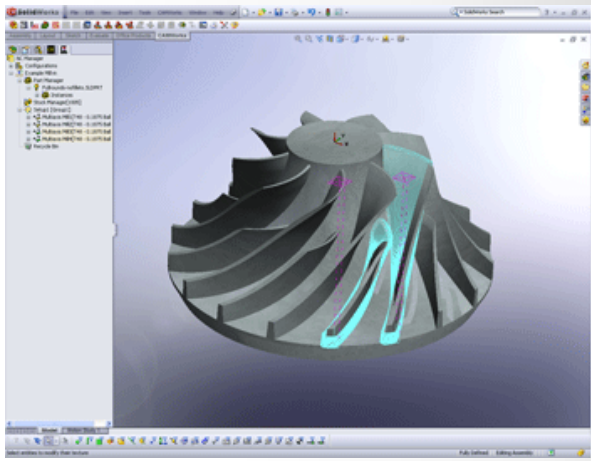
- It is necessary to *manage* both
  - **Material flow** (material processing) and
  - **Information flow** (manufacturing information processing)
- IT:
  - One of the major factors of productivity improvement
  - Enables firms to integrate decision functions in subsystems required to manufacture and distribute a product
  - e.g. in sales, purchasing, production planning, quality control, process control, and supply chain logistics

Computer Software

- **Information System** (IS):
  - Is a computer software
  - It is broad term given to the instructions that direct the operations of the hardware
- Basic types of software:
  - **Application software**
  - **End-user software**
  - **System development software**
  - **Systems software**

Types of software

1. **Application software**:
   - Process data for business activities, scientific applications, etc.
   - e.g. accounting, inventory, sales forecasting, application programs, CAD-CAM



2. **End-user software**:
   - Multi-purpose software
   - e.g. spreadsheet (MS Excel), word processor (MS Word), Graphics package (Photoshop)
   - This is software directly used by the user, without programming

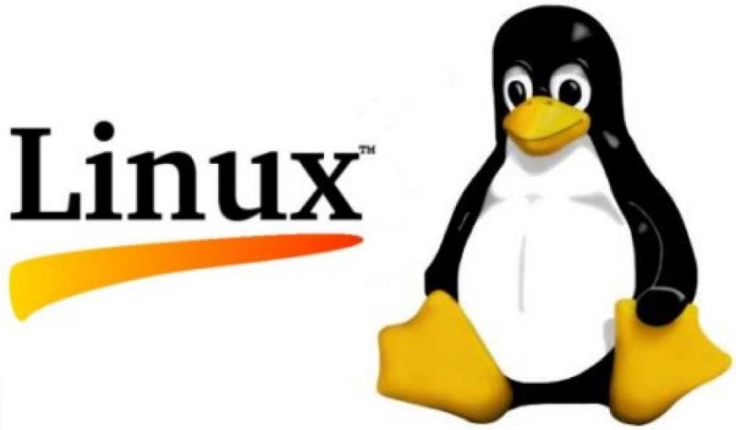
Types of software

3. System Development Software:

- used by programmers and systems analysts in developing and constructing specific programs, and information systems
- e.g. JAVA, PHP, ORACLE, Computer-aided Software Engineering

4. System Software/Operating system

- used to control internal operations of computer systems
- e.g. operating systems, and data communication programs (Windows, Linux, MAC)



Why IS in Industry?

- Industrial firm:
  - Set of activities, or processes, that interact with each other (creating and exchanging information)
- Example:
  - When *quality control* gives final approval to use material
  - This is *information* passed on to *production* before production personnel can *process* the material