

King Saud University

College of Engineering

IE – 462: “Industrial Information Systems”

Spring – 2021 (2nd Sem. 1442 H)

Introduction (Chapter 1)

part 1 – Fundamentals Concepts regarding Information

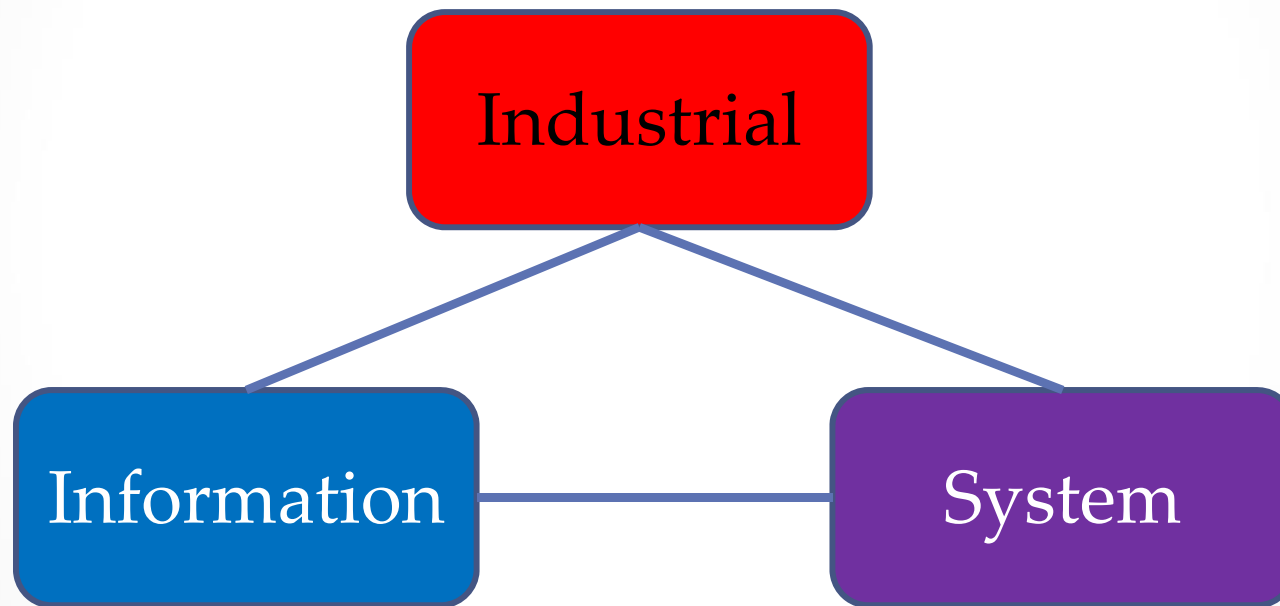
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Lesson Overview

Part 1:

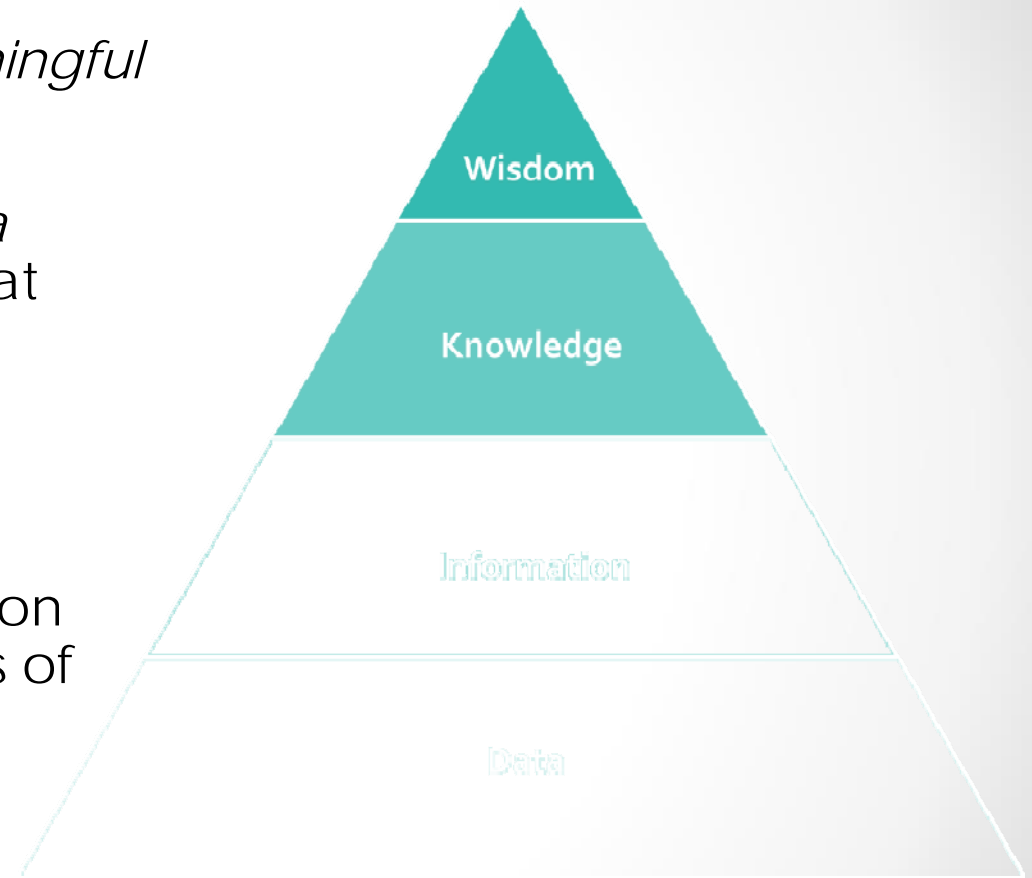
- What is information?
- What is a system?
- What are Information Technologies (IT)?
 - IT role in industry / manufacturing
 - Types of software
- Why IS in industry?

Industrial Information System



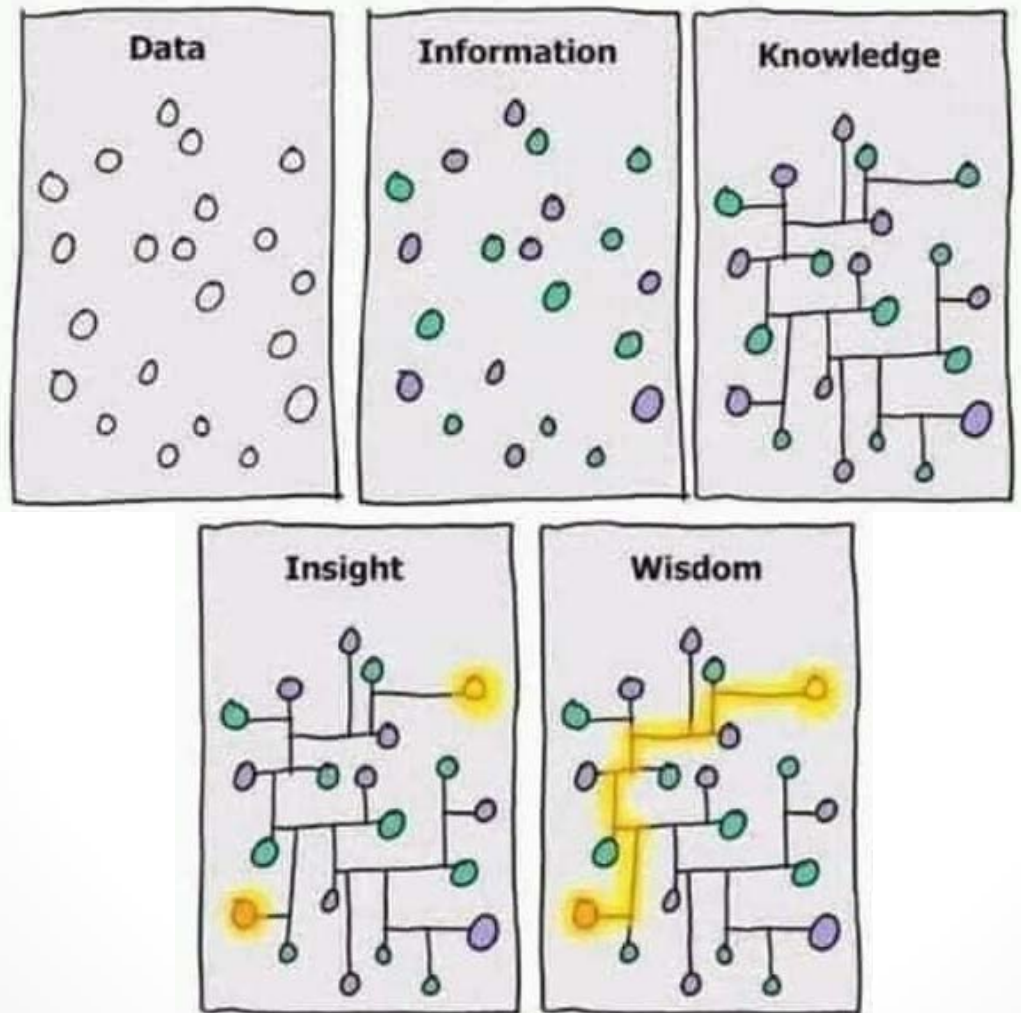
What is Information?

- **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



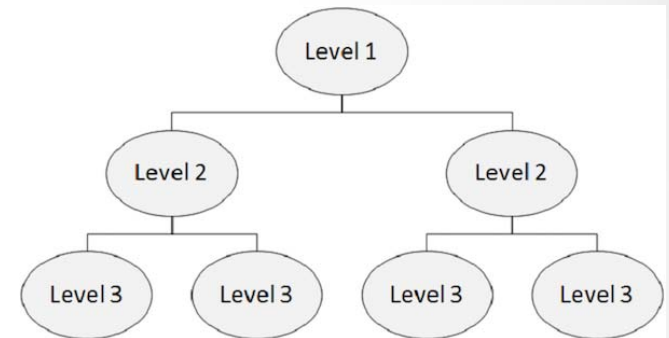
DIKW Pyramid

What is Information?

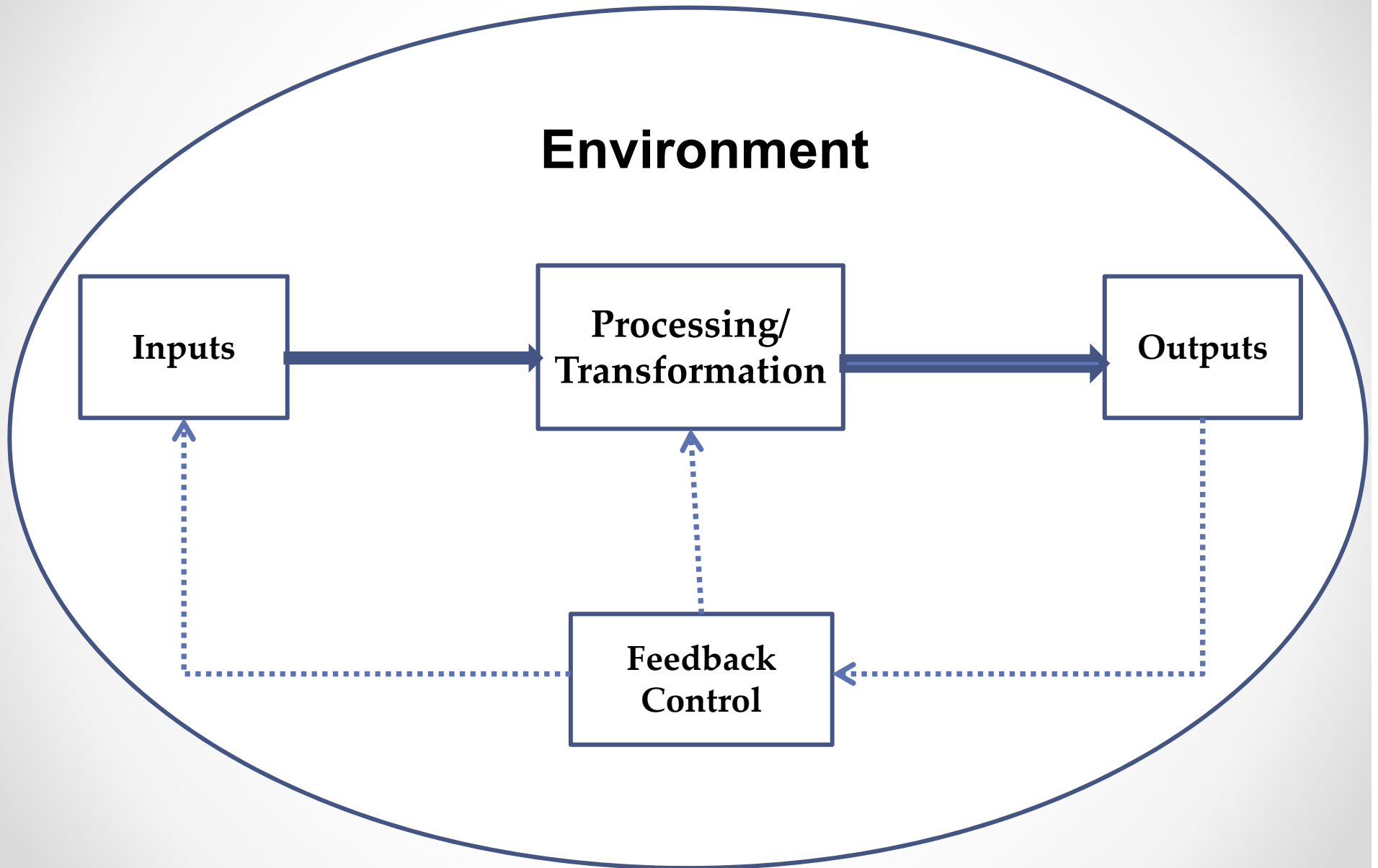


Definition of a System

- **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

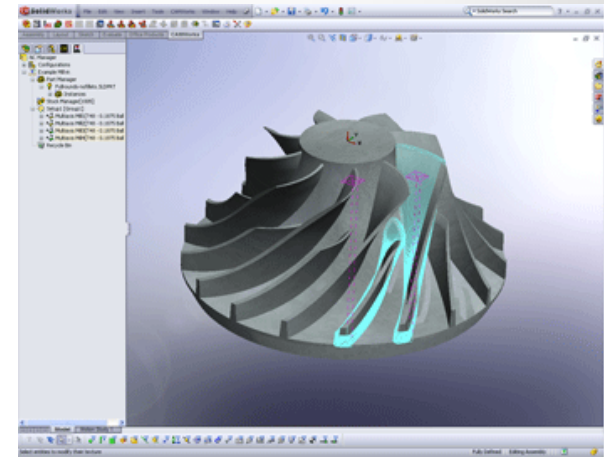
Computer Software

- **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

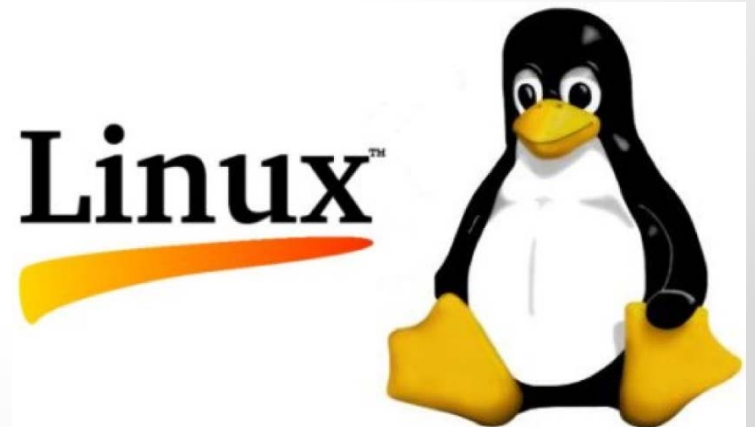
3. System Development Software:

- 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