IT in Construction

Lecture #2
Construction Management Information System Introduction

Amin Alvanchi, PhD

Construction Engineering and Management

Outline

- Data, information and system

- Information system

- Management information system

Data, information, and system

- **Data vs. Information**
  - Data
    - A given or fact; a number, statistics, a statement, or a picture
    - Represents something in the real world
    - The raw materials in the production of information
  - Information
    - Information is data that has been processed in a way to be meaningful to the person who receives it.
      - Data that have meaning within a context (e.g., blood test result for a specialist or an ordinary person)
      - Data in relationships and comparison (e.g., data on charts)
      - Data after manipulation (e.g., aggregation, selection, sorting)

Data, information, and system

Question: Why do organizations need information?

- Decision making, problem solving, and monitor and control

Question: Which one is data which one is information for you?

- Tehran's temperature drops by 10^oc tomorrow!

- Moscow's temperature drops by 10^oc tomorrow!

- Construction of highway #34 in S. Carolina ends on March 1st 2014

- Construction of phase 1 of Tehran-Shomal highway ends on March 1st 2014

Data, information, and system
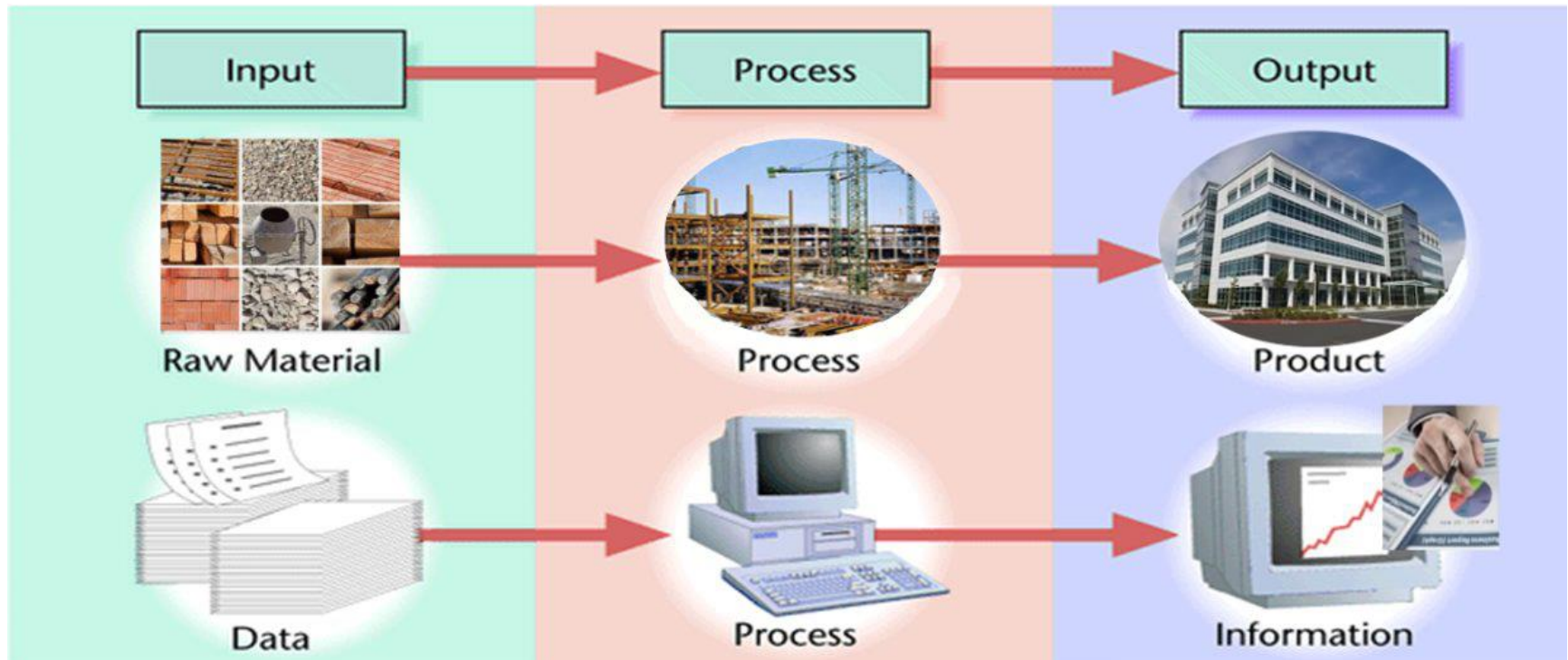
Data, information, and system

- The Four Stages of Data Processing

  - Input: Data is collected and entered into computer.

  - Process: Data is manipulated into information using mathematical, statistical, and other tools.

  - Output: Information is displayed or presented.

  - Storage: Data and information are maintained for later use.

Data, information, and system

- What Is a System?
  - System: A set of components that work together to achieve a common goal

  - Subsystem: One part of a system where the products of more than one system are combined to reach an ultimate goal

  - Closed system: Stand-alone system that has no contact with other systems

  - Open system: System that interfaces with other systems

Information system

- An **information system** (IS) is any organized system for the collection, organization, storage, process and communication of *information*. These days IT has brought a significant improvement to IS.

- Normal components of an information system:
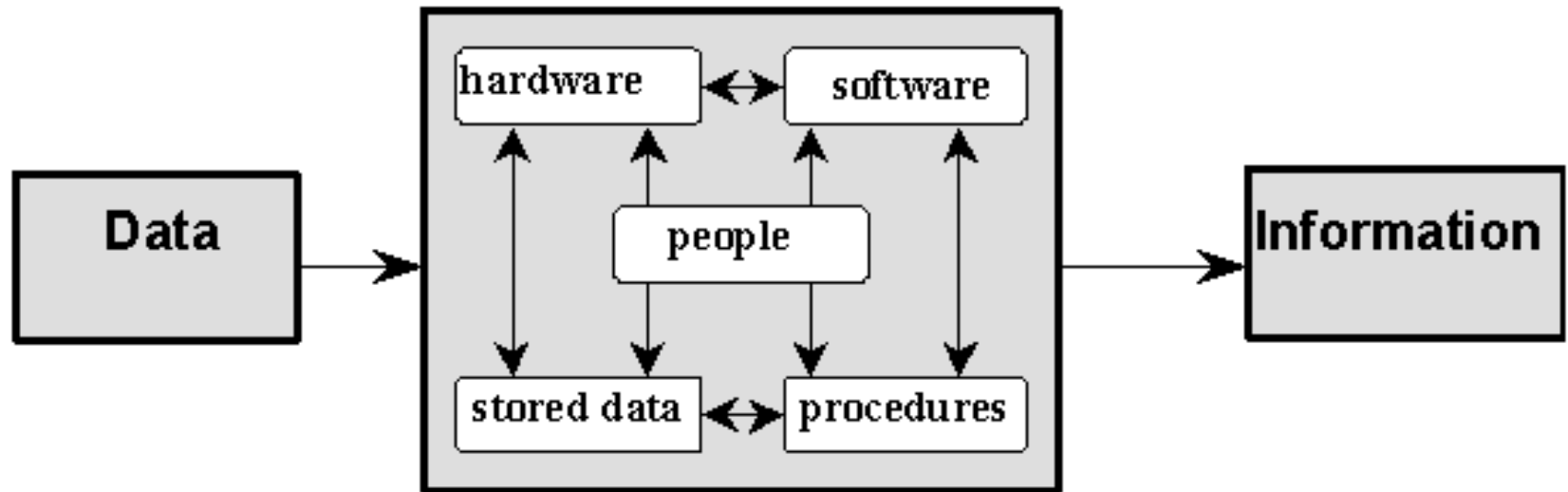
Did we have any information system 50 years a go?

Information system

Examples:

- Sharif's Edu system

- A car's ECU (engine control unit)

- Fifa world cup computer game

- A camera surveillance system

- A news website

- A construction project planning and control system

Information system

- A proper combination of human mind and computer capabilities creates synergy in information systems.

- Think
- Have common scenes

- Can make decisions
- Can instruct computer to what to do
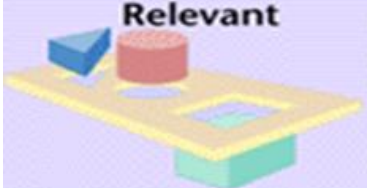- Can learn and gain experience

- Fast in calculation
- High capacity of data storage
- High in accuracy
- A full time worker
- Gets instructions

Information system

□ Characteristics of useful information:

Relevant	Information must pertain to the problem at hand. For example, the total number of years of education may not be relevant to a person's qualifications for a new job. Relevant information might be that the person has so many years of education in mechanical engineering, and so many years of experience. The information must also be presented in a way that helps a person understand it in a specific context.
Complete	Partial information is often worse than no information. For example, marketing data about household incomes may lead to bad decisions if not accompanied by vital information on the consumption habits of the targeted population.
Accurate	Erroneous information may lead to disastrous decisions. For example, an inaccurate record of a patient's reaction to penicillin may lead a doctor to harm the patient while believing that she is helping him.
Current	Decisions are often based upon the latest information available, but what was a fact yesterday may no longer be one today. For example, a short-term investment decision to purchase a stock today based on yesterday's stock prices may be a costly mistake if the stock's price has risen in the interim.
Economical	In a business setting, the cost of obtaining information must be considered as one cost element involved in any decision. For example, demand for a new product must be researched to reduce risk of marketing failure, but if market research is too expensive, the cost of obtaining the information may diminish profit from sales.

Management information system (MIS)

□ MIS is defined as an information system evolved for the purpose of providing information to the people in the organization.

□ In other words…..

" MIS is using technology to create business value."

Management informatıon system (MIS)

□ Management information system (MIS): Information system which provide information that organizations need to manage themselves efficiently and effectively.

Organization levels and Management Information Levels

Management information system (MIS)

- Construction management information system : MISs which target improvement in construction industry processes in construction companies

Project Scheduling, Change Orders, Photos, Docs, Selections, POs, Leads, Warranty, Daily Logs, To-Dos

BuilderTREND

PROCORE
Procore

CO-CONSTRUCT
Co-construct

Over 100,000 users across the globe make BuilderTREND the most popular cloud construction software in the World.

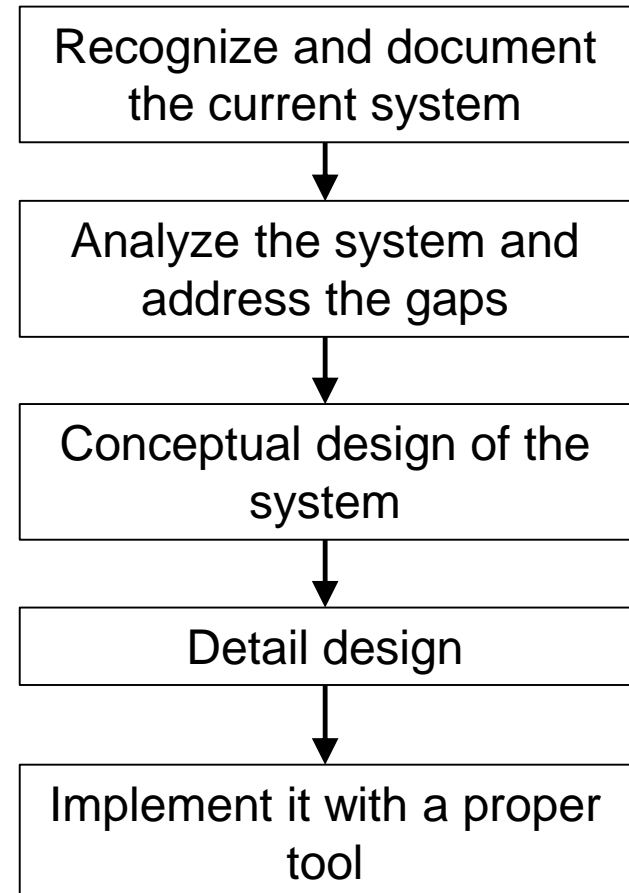# Management information system (MIS)

- Examples for MIS systems with MS Access:

    - [PM](#)

    - [BBO](#)

    - [NCR](#)

    - [Document management](#)

Management information system (MIS)

Development of MIS requires a considerable effort within the organization. Before developing any MIS systems we need to make sure that we are developing an appropriate system.

- MIS development phases:

```
┌─────────────────────────┐
│ Recognize and document  │
│   the current system    │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│  Analyze the system and │
│    address the gaps     │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ Conceptual design of the│
│         system          │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│      Detail design      │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ Implement it with a proper│
│          tool           │
└─────────────────────────┘
```

Thank you!