Introduction to Systems Analysis and Design

Outline

Information System

Systems Analysis and Design

System Development Life Cycle

Information Technology

- **Information Technology**—the combination of hardware, software and services that people use to manage, communicate and share information.

- Information helps companies:
  - Increase productivity
  - Deliver quality products and services
  - Maintain customer loyalty
  - Make sound decisions

- Use of information technology is vital for organisational success
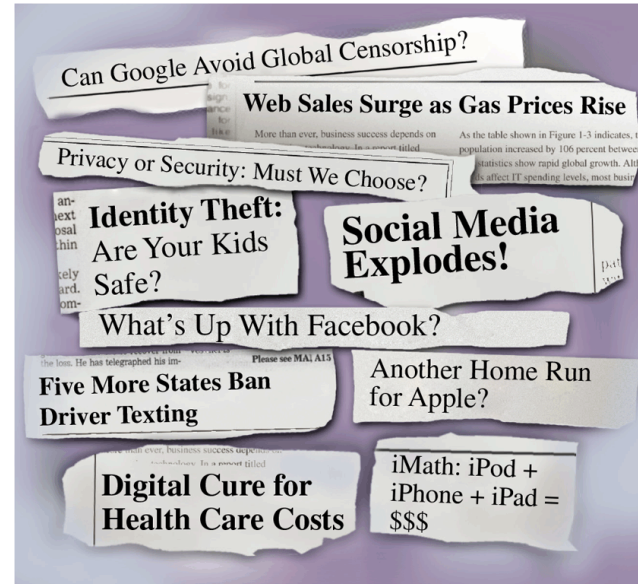
Information System

- **Computer application** – a computer software program that executes on a computing device to carry out a specific set of functions

- **Information system** – a set of interrelated components that collects, processes, stores, and provides as output the information needed to complete business tasks

- *Five elements* in an information system: *Hardware, Software, Data, Processes, People*
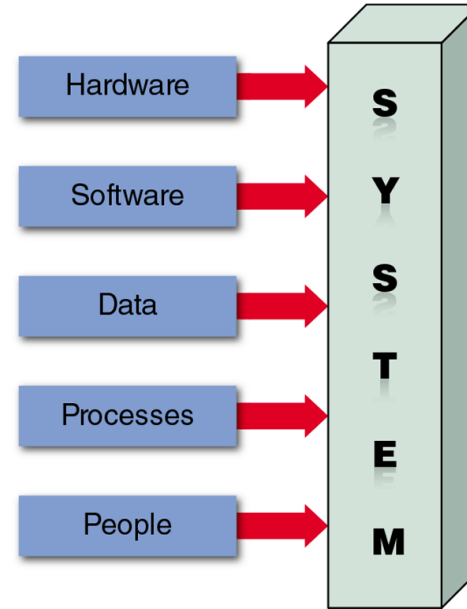
Information System Components

- **Hardware**
  - Physical layer of the information system
    - E.g., computer hardware, network hardware, etc.
- **Software**
  - Controls hardware
  - System software
  - Application software
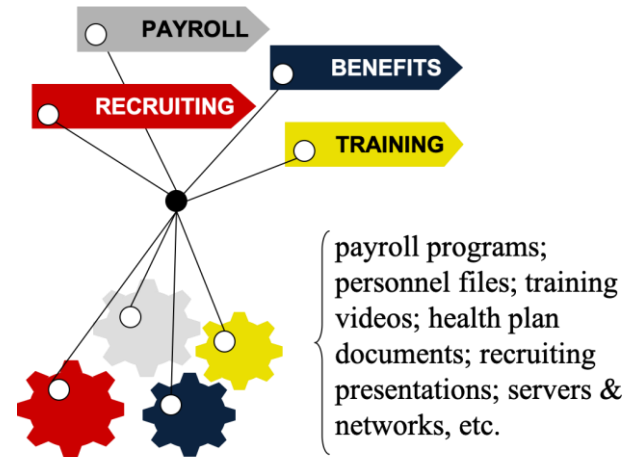- **Data**
  - Stored information
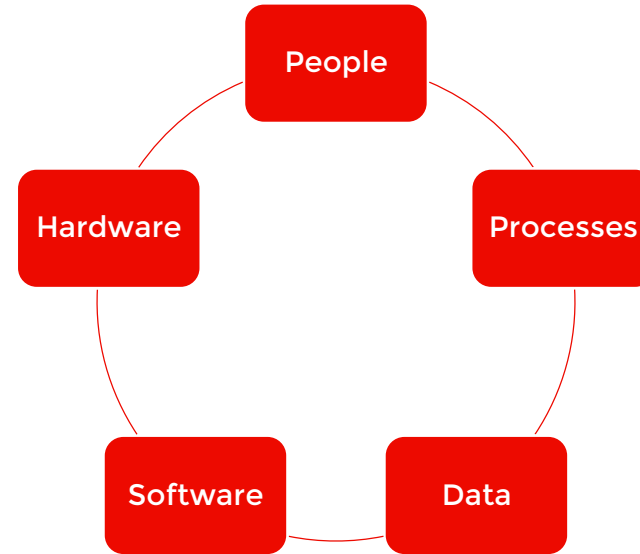
Information System Components

- **Processes**
  - Describe the tasks and business functions performed to achieve specific results

- **People**
  - **Stakeholders:** Individuals interested in an information system
  - Management group, users and IT staff.

Processes in an HR System

Business Information System

- Enterprise Computing
  - Supports organisation-wide operations and data management requirements
- **Enterprise resource planning (ERP)**
  - provides cost-effective support for users and managers throughout the company

Questions

- Who designed and developed the system?

- How do they know the requirements?

- How do they know the system is good enough?

- How to improve the design?

Systems Analysis and Design

- **Systems analysis** – activities that enable a person to *understand* and *specify* what the new system should accomplish
  - what a system must do to satisfy the need or solve the problem.

- **Systems design** – activities that enable a person to describe in detail how the information system will actually be implemented to provide the needed solution
  - how the system will actually work.

System Development Life Cycle (SDLC)

The SDLC consisting of all activities required to build, launch, and maintain an information system. **Six core processes** are:

1. *Identify the problem or need and obtain approval*

2. *Plan and monitor the project*

3. *Discover and understand the details of the problem or need*

4. *Design the system components that solve the problem*

5. *Build, test, and integrate system components*

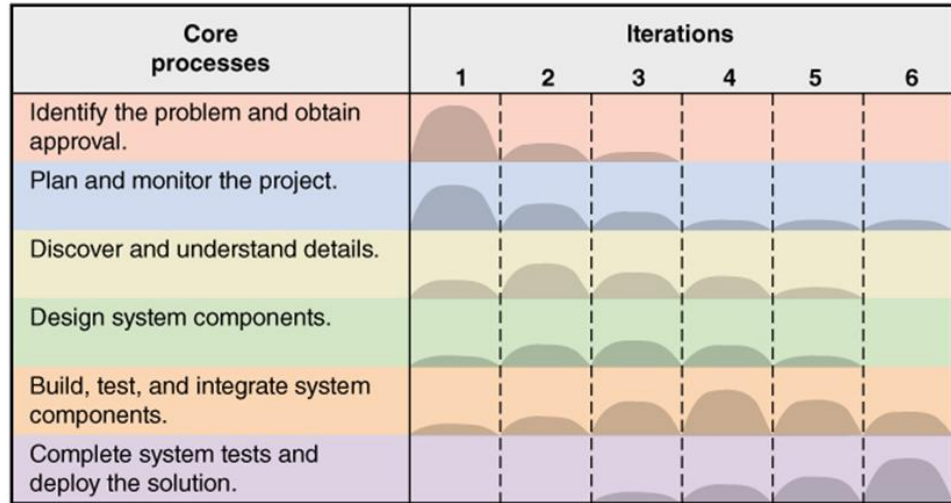6. *Complete system tests and then deploy the solution*

System Development Life Cycle (SDLC)

- **Project** – a planned undertaking that has a beginning and end and that produces some definite result
  - Used to develop an information system
  - Requires knowledge of systems analysis and systems design tools and techniques
- **System development methodology** – the actual approach used to develop a particular information system (aka: methodology)
  - E.g., Unified process (UP), Extreme programming (XP), Scrum, among others
  - **Agile development** – an information system development process that emphasises flexibility to anticipate new requirements during development
    - Fast on feet; responsive to change

System Development Life Cycle (SDLC)

- **Iterative development** – an approach to system development in which the system is "grown" piece by piece through multiple iterations
  - Complete small part of system (mini-project), then repeat processes to refine and add more, then repeat to refine and add more, until done

Core processes	Iterations					
	1	2	3	4	5	6
Identify the problem and obtain approval.						
Plan and monitor the project.						
Discover and understand details.						
Design system components.						
Build, test, and integrate system components.						
Complete system tests and deploy the solution.						

The mounds represent the distribution of development efforts (e.g., time, cost)

Systems Analysis and Design in SDLC

- Provides the tools and techniques you need as an information system developer to complete the development process, including:
  - ❑ Understand the need (business need).
  - ❑ Capture the vision.
  - ❑ Define a solution.
  - ❑ Communicate the vision and the solution.
  - ❑ Build the solution or direct others in building the solution.
  - ❑ Confirm that the solution meets the need.
  - ❑ Launch the solution application.