

Component 4: Introduction to Information and Computer Science

Unit 9/Part a: Components and Development of Large Scale Systems

Unit 9 Objectives

- a. Describe the building blocks of a large scale system.
- b. Explain the initial design process/options for a large scale system.
- c. Describe the evaluation process/criteria for including and selecting existing software applications.
- d. Describe the process for new software development.
- e. Describe the different types of testing (unit, system, usability) and when testing should occur.
- f. Describe systems maintenance.
- g. Explain the process of financially supporting large scale systems over time.

Topics in this Unit

Topic I: Building Blocks

Topic II: System Development Lifecycle

Topic III: Financial Support



Topic I: Building Blocks

- Definitions
 - Systems
 - Computer Systems
 - Information Systems
- Goals of the Information System
- Information System Technologies
- Stakeholder Roles



Systems

- A set of interacting and interdependent entities forming an integrated whole
- Examples:
 - Sociocultural systems
 - Biological systems
 - Computer systems
 - Business systems

Computer Systems

- Computer systems include all elements needed for the computer
 - Hardware
 - Software
 - Devices
- Large scale systems are computer systems capable of processing large amounts of data



Information Systems

- An information system is a collection of people, processes and technology
 - Working together to generate information needed by users in an organization;
 - Typically includes computers, but it doesn't have to;
 - Supports day-to-day information needs as well as long-term planning;
 - Used by employees and clients/customers

Goals of the Information System

- Improve business knowledge
- Improve business processes and services
- Improve business communications and people collaboration



Information System Technologies

- Database technologies
 - support business accumulation and use of business knowledge.
- Software technologies
 - automate and support business processes and services.
- Interface technologies
 - support business communications and collaboration.

Stakeholder Roles

- System owners
 - Interested in information adding new business knowledge
- System users
 - Capture, store, process, edit and use data everyday
- System designers
 - Concerned with database technology
- System builders
 - Represent data in very precise and unforgiving languages

System Owners

- Usually from management
- Interested in the bottom line
 - system cost
 - value or benefits returned to the business



Goals of the System Owners

- Improve business knowledge
 - Information scope and vision
- Improve business processes
 - Functional scope and vision
- Improve business communications
 - Communications scope and vision

System Users

- Majority of information workers in any information system
- Tend to be less concerned with costs and benefits of the system
- But they are concerned with system functionality related to their jobs:
 - Ease of learning
 - Ease of use
 - Get the job done

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Goals of the System Users

- Improve business knowledge
 - Business data requirements
- Improve business processes
 - Business process requirements
- Improve business communications
 - Business interface requirements

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System Designers

- Database administrators
- Network architects
- Web architects
- Graphic artists
- Security experts
- Technology specialists



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Goals of the System Designers

- Improve business knowledge
 - Database design
- Improve business processes
 - Business process design
 - Software design
- Improve business communications
 - Interface design

System Builders

- Applications programmers
- Systems programmers
- Database programmers
- Network administrators
- Security administrators
- Webmasters
- System integrators



Goals of the System Builders

- Improve business knowledge
 - Database solutions
- Improve business processes
 - Commercial software packages
 - Custom-built application programs
- Improve business communications
 - Interface solution

Systems Analysts

- A specialist who studies the problems and needs of an organization to determine how people, data, processes and information technology can best accomplish improvements for the business.
- Bridges the gap between perspectives of the different stakeholders.
- Overlaps the roles of other stakeholders.

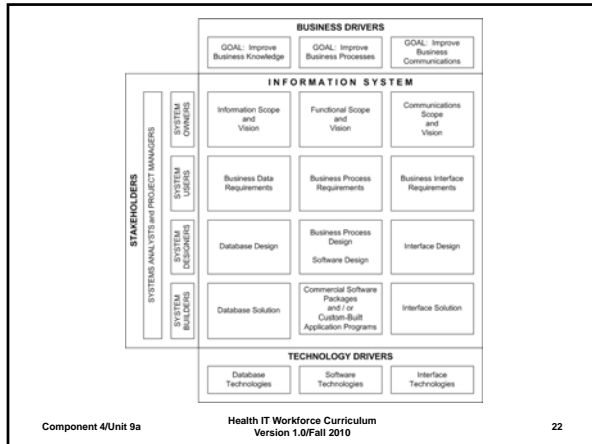
External Service Providers

- Most External Service Providers (ESP) are systems analysts, designers or builders contracted to bring special expertise/experience to the specific project.
- Consultants are one example of an external service provider or ESP.

Project Manager

- Project teams require management.
- One or more stakeholder takes on the role of Project Manager (PM).
 - Ensures on-time development
 - Keeps project within budget
 - Maintains acceptable quality





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