

Introduction

- A System is a combination of resources working together to convert inputs into usable outputs.
- Within any system, the individual pieces coordinate to accomplish specific tasks, jobs, or functions.
- Ex.: Accounting systems contain subsystems for general ledger, accounts receivable, accounts payable, inventory control and payroll

Introduction

- Information Systems Analysis and Design
 - A method used by companies to create and maintain systems that perform basic business functions
 - Main goal is to improve employee efficiency by applying software solutions to key business tasks
 - A structured approach must be used in order to ensure success
- Application Software
 - Result of systems analysis and design
 - Designed to support specific organizational functions or processes

Introduction

- Software engineering processes have been developed to assist in analysis and design
 - Methodologies
 - Comprehensive, multi-step approaches to systems development
 - Techniques
 - Processes that are followed to ensure that work is well thought-out, complete and comprehensible to others on the project team
 - Tools
 - Computer programs to assist in application of techniques to the analysis and design process

Data and Processes

- Three key components of an information system
 - Data
 - Data Flows
 - Processing Logic
- Data vs. Information
 - Data
 - Raw facts
 - Information
 - Derived from data
 - Organized in a manner that humans can understand.

Data and Processes

- Data
 - Understanding the source and use of data is key to good system design
 - Various techniques are used to describe data and the relationship amongst data
- Data Flows
 - Groups of data that move and flow through the system
 - Include description of sources and destination for each data flow
- Processing Logic
 - Describe steps that transform data and events that trigger the steps

Approaches to Systems Development

- Process-Oriented Approach
 - Focus is on flow, use and transformation of data in an information system
 - Involves creating graphical representations such as data flow diagrams and charts
 - Data are tracked from sources, through intermediate steps and to final destinations
 - Natural structure of data is not specified
 - Disadvantage: data files are tied to specific applications

Approaches to Systems Development

- Data-Oriented Approach
 - Depicts ideal organization of data, independent of where and how data are used
 - Data model describes kinds of data and business relationships among the data
 - Business rules depict how organization captures and processes the data

Databases and Application Independence

- Database
 - Shared collection of logically related data
 - Organized to facilitate capture, storage and retrieval by multiple users
 - Centrally managed
 - Designed around subjects
 - Customers
 - Suppliers
- Application Independence
 - Separation of data and definition of data from applications

Organizational Responsibilities in Systems Development

- Systems Analysts work in teams
 - Project Based
 - Includes
 - IS Manager
 - Programmers
 - Users
 - Other specialists
 - Characteristics of Successful Teams
 - Diversity of backgrounds
 - Tolerance of diversity
 - Clear and complete communication
 - Trust
 - Mutual Respect
 - Reward structure that promotes shared responsibility

Organizational Responsibilities in Systems Development

- IS Manager
 - May have a direct role in systems development if the project is small
 - Typically involved in allocating resources to and overseeing system development projects.
- Systems Analyst
 - Key individuals in the systems development process

Organizational Responsibilities in Systems Development

- Skills of a Successful Systems Analyst
 - Analytical
 - Understanding of organizations
 - Problem solving skills
 - System thinking
 - Ability to see organizations and information systems as systems
 - Technical
 - Understanding of potential and limitations of technology
 - Management
 - Ability to manage projects, resources, risk and change
 - Interpersonal
 - Effective written and oral communication skills

Organizational Responsibilities in Systems Development

- Programmers
 - Convert specifications into instructions that the computer understands
 - Write documentation and testing programs
- Business Managers
 - Have power to fund projects and allocate resources
 - Set general requirements and constraints for projects

Organizational Responsibilities in Systems Development

- Other IS Managers/Technicians
 - Database Administrator
 - Involved in design, development and maintenance of databases
 - Network and telecommunications experts
 - Develop systems involving data and/or voice communications
 - Human Factors Specialists
 - Involved in training users and writing documentation
 - Internal Auditors
 - Ensure that required controls are built into the system

Types of Information Systems and Systems Development

- Transaction Processing Systems (TPS)
 - Automate handling of data about business activities (transactions)
- Management Information Systems (MIS)
 - Converts raw data from transaction processing system into meaningful form
- Decision Support Systems (DSS)
 - Designed to help decision makers
 - Provides interactive environment for decision making

Types of Information Systems and Systems Development

- Expert Systems (ES)
 - Replicates decision making process
 - Knowledge representation describes the way an expert would approach the problem

Systems Development Life Cycle

- Series of steps used to manage the phases of development for an information system
- Consists of six phases:
 - Project Identification and Selection
 - Project Initiation and Planning
 - Analysis
 - Design
 - Implementation
 - Maintenance

Systems Development Life Cycle

- Phases are not necessarily sequential
- Each phase has a specific outcome and deliverable
- Individual companies use customized life cycles

Phases of the Systems Development Life Cycle

- Project Identification and Selection
 - Two Main Activities
 - Identification of need
 - Prioritization and translation of need into a development schedule
 - Helps organization to determine whether or not resources should be dedicated to a project.
- Project Initiation and Planning
 - Two Activities
 - Formal preliminary investigation of the problem at hand
 - Presentation of reasons why system should or should not be developed by the organization

Systems Development Life Cycle

- Analysis
 - Study of current procedures and information systems
 - Determine requirements
 - Study current system
 - Structure requirements and eliminate redundancies
 - Generate alternative designs
 - Compare alternatives
 - Recommend best alternative

Systems Development Life Cycle

- Design
 - Logical Design
 - Concentrates on business aspects of the system
 - Physical Design
 - Technical specifications
- Implementation
 - Implementation
 - Hardware and software installation
 - Programming
 - User Training
 - Documentation

Systems Development Life Cycle

- Maintenance
 - System changed to reflect changing conditions
 - System obsolescence