SYSTEMS ANALYSIS AND DESIGN LIFE CYCLE

Contents

2.1 Systems Analysis and Design life Cycle: Requirements determination, requirements specifications

2.2 Feasibility analysis, final specifications, hardware and software study, system design, system implementation, system evaluation, system modification.

2.3 Role of systems analyst, attributes of system analyst, tools used in system analysis

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MOTIVATION

- Designing Information system for an organization is a very complex job.

- Students should know how to logically divide a complex job into smaller manageable steps.

- Each step must have a logical beginning and end and must be self contained.

MOTIVATION

- Division of large jobs into logical steps will
  - Enable one to assess progress at the end of each step
  - Steps may be assigned to persons with specialized competance
  - Allocation of human and financial resources appropriate for each step can be planned

LEARNING GOALS

1. Nine Steps in designing Information Systems.

2. Tasks performed in each step.

3. Nature of tasks performed by Systems Analysts.

4. The attributes of Systems Analysts.

5. The tools used by Systems Analysts.

LIFE CYCLE OF SYSTEMS ANALYSIS AND DESIGN

Steps involved in Analysis and Design

1. Requirements Determinations
2. Requirements Specifications
3. Feasibility Analysis
4. Final Specifications
5. Hardware Study
6. System Design
7. System Implementation
8. System Evaluation
9. System Modification

LIFE CYCLE OF SYSTEMS ANALYSIS AND DESIGN

Step 1 : Requirements Determination

- Arrived at by a consensus among managers

- Priorities among applications determined

- Pick high priority applications.

LIFE CYCLE OF SYSTEMS ANALYSIS AND DESIGN

Step 2 : Requirements Specification

- Known as System Requirements Specification (SRS)

- Understand the existing System

- Applications where a system is required are listed

- Arrive at the specifications of the users' Requirements

  after discussions with the user

- A system may encompass several applications

LIFE CYCLE OF SYSTEMS ANALYSIS AND DESIGN

Step 3 : Feasibility Analysis

- Formulate Goals of the system and quantify goals

- Find alternative methods of meeting the goals

- For each alternative assess resources needed
    - Human Resources
    - Time and Money
    - Equipment needed

- Assess cost of each alternative

- Find the best alternative method subject to resource constraints

Step 4 : Final Specifications

- Specifications would state what the system would achieve.
- Specification drawn up are improved for implementation.
- SRS written- given to user and agreement reached

Step 5 : Hardware Study

- Determine Hardware and Software required to execute the application.

- Determine Response time,Volume of data to be processed, Frequency of reports etc & then pick the hardware.

Step 6 : System Design

- Logical Design of the System

- Objects Identified

- Database Designed

- Program Specification drawn up

- Implementation Plan Drawn up

- Test Plan

Step 7 : System Implementation

- Write Programs

- Create Database

- Document System

- Train Users

- Trial run of the system

- Test and Accept
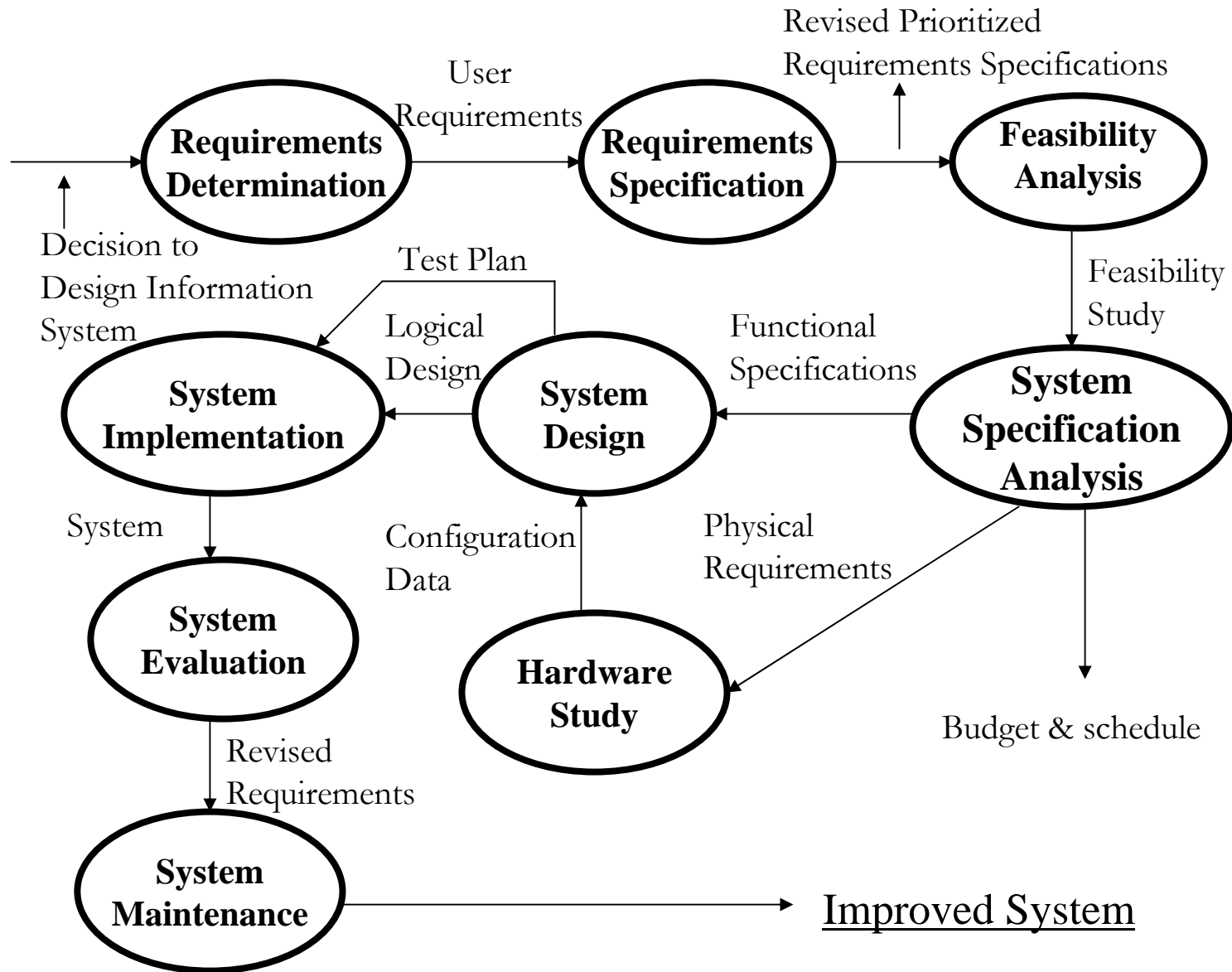
Step 8 : System evaluation

- Find out from Users whether the System meets specified requirements.

- List areas of dissatisfaction and find reasons

- Suggest if there has to be any improvements to the system

LIFE CYCLE OF SYSTEMS ANALYSIS AND DESIGN

Step 9 : System Modification

- Fix errors

- Add/Delete features as required by users

- Tune the System

- Continuously monitor system and assess performance

System Life Cycle Diagram

System Life Cycle Diagram showing the flow between: Requirements Determination → Requirements Specification (User Requirements) → Feasibility Analysis (Revised Prioritized Requirements Specifications) → System Specification Analysis (Feasibility Study) → System Design (Functional Specifications) → System Implementation (Logical Design, Test Plan) → System Evaluation (System) → System Maintenance (Revised Requirements) → Improved System. Also: Decision to Design Information System (back to Requirements Determination); Hardware Study with Configuration Data and Physical Requirements; and Budget & schedule.

ROLE OF SYSTEMS ANALYST

- **Defining Requirements**

  - Involves Interviewing Users

- **Prioritizing Requirements**

  - Obtain Users Consensus

- **Fact Gathering**

  - Data, Facts, Opinions of Managers

  - Lower level Users should be consulted

- **<u>Analysis and evaluation</u>**

  - Arrive at appropriate system

- **<u>Solving problems</u>**

  - Hazy requirements converted into specific

    requirements

  - Suggest many alternative solutions
  - Quantify cost and benefits

- **<u>Drawing up specifications</u>**

  - **<u>FUNCTIONAL SPECIFICATIONS</u>**

    - Understood by users and programmers

    - Accepted by users

    - Precise and detailed

    - Account for possible changes

SYSTEM DESIGN

- Logical design of system

  - Objects identification

  - Normalizing database

  - Test plan

- Design must be modular to accommodate change

- **<u>Evaluating Systems</u>**

    - Evaluation after use for sometime

    - Plan periodicity for evaluation

    - Modify as needed

ATTRIBUTES OF A SYSTEMS ANALYST

- **<u>KNOWLEDGE OF ORGANISATION</u>**

  - Knowing user's jargon & practices

  - Know Management functions.

- **<u>KNOWLEDGE OF COMPUTERS AND</u>**

  <u>SOFTWARE</u>

  - Knowledge of system design tools

  - Keep abreast of modern developments

ATTRIBUTES OF A SYSTEMS ANALYST

- **<u>GOOD INTERPERSONNAL RELATIONS</u>**

    - Need to work as team member

    - Lead smaller teams

    - Interface with programmers & Users

    - Motivator.

- **<u>ABILITY TO COMMUNICATE</u>**

    - Oral Presentation

    - Report Writing

    - Answer queries

ATTRIBUTES OF A SYSTEMS ANALYST

- **<u>ANALYTICAL MIND</u>**

  - Problem solving attitude

  - Ability to assess trade offs

  - Sound commonsense

  - Curiosity to learn about new organizations

- **<u>BREADTH OF KNOWLEDGE</u>**

  - Broad Liberal Knowledge

  - Variety of jobs to be tackled in diverse organizations

- Data Flow Diagram

- Decision Tables

- Modeling Language such as UML

- Normalization of Databases

- Testing tools

- ISO/CMM procedure manuals