

Systems Development Life Cycle (SDLC)

[Chapter 1 & 2]

System Analysis and Design

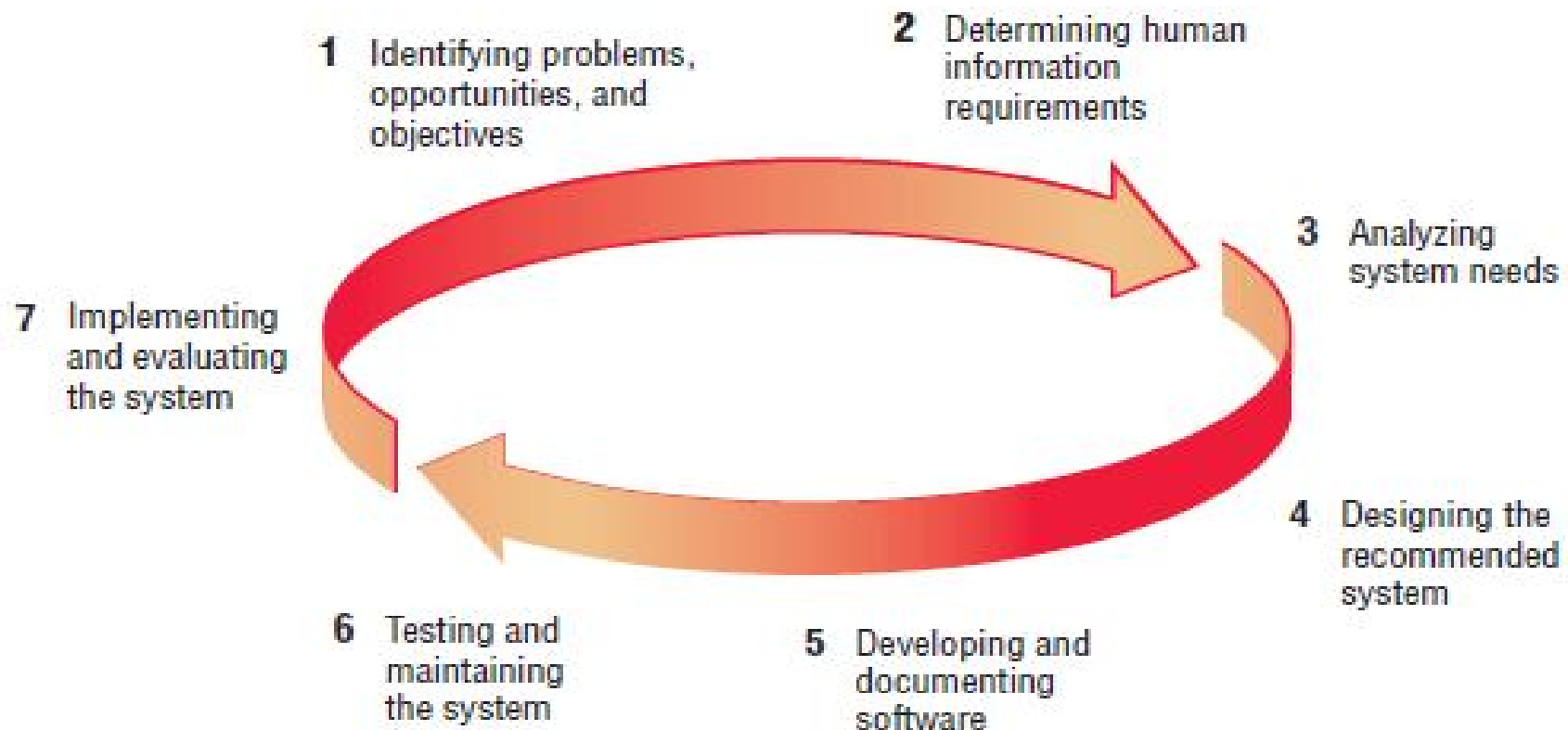
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- The systems development life cycle is a systematic approach to solving business problems
- It is divided into seven phases
- Each phase has unique activities

Systems Development Life Cycle (SDLC)



The seven phases of the systems development life cycle (SDLC).



- Identifying
 - Problems
 - Opportunities
 - Objectives
- Personnel involved
 - Analyst
 - User management
 - Systems management



- Determining information requirements
 - Interview management, operations personnel
 - Gather systems/operating documents
 - Use questionnaires
 - Observe the system and personnel involved
- Learn the who, what, where, when, and how, and the why for each of these
- Personnel involved
 - Analyst
 - User management
 - User operations workers
 - Systems management



- Analyzing system needs
 - Create data flow diagrams
 - Document procedural logic for data flow diagram processes
 - Complete the data dictionary
 - Make semistructured decisions
 - Prepare and present the system proposal
 - Recommend the optimal solution to management
- Personnel involved
 - Analyst
 - User management
 - Systems management



- Designing the recommended system
 - Design the user interface
 - Design output
 - Design input
 - Design system controls
 - Design files and/or database
 - Produce program specifications
 - Produce decision trees or tables
- Personnel involved
 - Analyst
 - System designer
 - User management
 - User operations workers
 - Systems management



- Developing and documenting software
 - Design computer programs using structure charts, Nassi-Schneiderman charts, and pseudocode
 - Walkthrough program design
 - Write computer programs
 - Document software with help files, procedure manuals, and Web sites with Frequently Asked Questions
- Personnel involved
 - Analyst
 - System designer
 - Programmers
 - Systems management



- Testing and maintaining the system
 - Test and debug computer programs
 - Test the computer system
 - Enhance system
- Personnel involved
 - Analyst
 - System designer
 - Programmers
 - Systems management



- Implementing and evaluating the system
 - Plan conversion
 - Train users
 - Purchase and install new equipment
 - Convert files
 - Install system
 - Review and evaluate system
- Personnel involved
 - Analyst
 - System designer
 - Programmers
 - User management
 - User operations workers
 - Systems management



- Systems analysts act as
 - Outside consultants to businesses
 - Supporting experts within a business
 - change agents
- Analysts are problem solvers, and require communication skills
- Analysts must be ethical with users and customers

Multifunctional Role of System Analyst



- **1. Problem identification:** System analyst is the middle man between end user and the development team. So he has to communicate between the two ends as well as to understand customer's needs, identify the exact nature of the problem. Then he discusses it with the development team in order to have different solution alternatives.
- **2. Evaluation & synthesis:** After having various alternatives from the development team a good analyst should be able to evaluate the solution on the basis of cost, time and technology which is called as feasibility test.
- **3. Modeling:** Once a proper choice of the alternatives is done by end user a model or prototype is prepared by system analyst with the help of development .Good logical and analytical mind helps him to model the system.



- **4. Verification of the model:** The system analyst evaluates the length of the model with respect to cost & time required for the implementation of the system and these parameters are checked with the customer & then testing details are sent to the development team. Once the model is accepted by the user, the development team sends the tested system to the analyst for verification
- **5. Modification:** Then the system is sent to the user for acceptance. Many times it happens that at the beginning the user is not very clear about all of his needs. So after acceptance of the system when the user starts working on it he requests the analyst for the modifications. Here again the analyst has to evaluate the request on the scale of same parameters. Then the modification specifications are prepared and sent to the development team.

Multifaced Role of System Analyst



- **1. An architect:** An analyst is creator of physical design of the system as per user requirements. He formulates the abstract ideas of user into detailed format of the system which in turn helps the development team to build the end product. So he is the brilliant architect of the system.
- **2. An agent of change:** System analyst works towards the future which is uncertain. The only thing which is permanent is the change. So analyst has to prepare model in this changing environment. Since an analyst is responsible for bringing the change in system, he is an agent of the change.



- **3. Investigator & monitor:** An analyst should have fair capacity to investigate the problem. He should be able to go to the root cause of the problem. **Monitor:** In order to complete the task the analyst must have leading capacity, technical skills and project management capacity so that, right from understanding the information contents of data till functional processing and behavioral operations, he can control the flow of the system and thereby monitor the system as a 'whole'.
- **4. An organizer:** Analyst should have clear idea of all the activities of the system rather he should be able to put all the activities in sequence & clear about their purpose and the consequences. He is responsible for execution of the activities and hence the result. He himself is an evaluator of the system.



- **5. Motivator & psychologist:** System acceptance is achieved through user participation right from the beginning that is from designing phase to implementation stage. This can be made possible by effective training & proper motivation to use the system. **Physiologist:** Good motivator has to be good physiologist because he has to reach people, understand the client's environment, dig out the exact nature of the problem, and interpret it correctly to the developer team, asses the behavior draw the conclusion.

Relationship between system analyst's skills and SDLC phases



- **Interpersonal skills**
 - Project identification and selections phase
 - Project initiation and planning phase
- **Analytical skills**
 - Analysis phase
- **Management skills**
 - Design phase
- **Technical skills**
 - Implementation phase
 - Maintenance phase

Analytical skills for System analysts



- We will focus on **four sets** of analytical skills. They are:
 - System thinking
 - Organizational knowledge
 - Problem identification
 - Problem analyzing and solving

Benefiting from systems thinking



- The first step in systems thinking is to be able to identify something **as a system**.
- Identify where the boundary lies and all of the relevant inputs
- **Visualizing** a set of things and their relationship as system allows you to translate a specify physical situation into more general.
- By **decomposition**
 - The system into subsystems, we can analyze each subsystem separately and discover if one or more subsystem is at capacity.
 - Its enabled us to determine its problem with demand

Organizational knowledge



- Analyst should understand
 - how organizations work
 - Polices
 - Terminologies, abbreviations, and acronyms
 - Short/long term strategy and plans
 - Role of technology
 - The functions and procedures of the particular organization you are working for
 - How the department operates,
 - its purpose,
 - its relationship with other department
 - its relationship with customers and suppliers
 - Who the experts are in different subject areas



- *Problem* is the difference between an existing (current) situation and desired (output) situation.
 - The process of identifying problems is the process of defining differences, so *problem solving* is the process of finding a way to reduce differences.
 - Analyst *should able* to compare the current in an organization to the desired situation.