

## **Developing Information System**

SAD refers to the process of examining a business situation with the intent of improving it through better procedures & methods. System Development generally is thought of as having two major components:

### **a) System Analysis**

### **b) System Design**

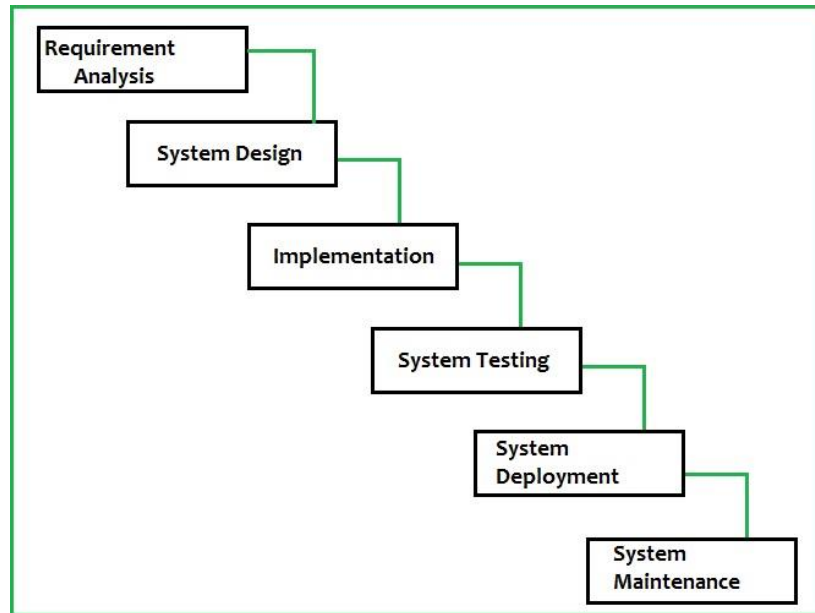
**System Design** is the process of planning. We must thoroughly understand the existing system and data mine how computer desk can be used to make its operation more effective. System design specifies how to achieve objectives.

**System Analysis** is the process of gathering and interpreting facts diagnosing problems and using information to recommend improvement to system. It specifies what the system should do. The system analysis is management between techniques which helps us in designing a new system or improving an existing system.

**System Development Life Cycle:** System Development life cycle (SDLC) is used to plan and manage the system development process. Although it is primarily identified with structured analysis, the SDLC describes activities and functions that systems developers typically perform, regardless of how those activities and functions fit into a particular methodology. The SDLC model includes the following steps:

- i) Systems Planning**
- ii) Systems Analysis**
- iii) Systems Design**
- iv) Systems Implementation**
- v) Systems Operation and Support**

The SDLC is pictured as a waterfall model where the result of each phase, often called an end product or deliverable, flows down into the next phase. In reality, the systems development process is dynamic, and constant change is common.



**Systems Planning:** A system's planning usually begins with a formal request to the IT department, called a system's request that describes problems or desired changes in an information system or a business process. A system's request can come from a top manager, a planning team, a department head, or the IT department itself. The request can be very significant or relatively minor. A major request might involve a new information system or the replacement of an existing system that cannot handle current requirements. In contrast, a minor request might ask for a new feature or a change to the user interface in current system. The purpose of the planning phase is to identify clearly the nature and scope of the business opportunity or problem by performing a preliminary investigation, often called a feasibility study. The preliminary investigation is a critical step because the outcome will affect the entire development process. The end product, or deliverable, is a report that describes business considerations, reviews anticipated benefits and costs, and recommends a course of action based on economic, technical, and operational factors.

**Systems Analysis:** The purpose of the systems analysis phase is to understand business requirement and build a logical model of the new system. The first step is requirement modeling, where you define and describe business process. Requirement modeling continue the investigation that began during systems planning and involves various fact-finding techniques, such as interview, surveys, observation, and sampling. During the next tasks, data modeling, process modeling, and object modeling, you develop a logical model of business process the system must support. The model consists of various types of diagrams, depending on the methodology being used.

The end product for the systems analysis phase is the System Requirements Document. The systems requirements document describes management and user requirements, alternative plans and costs, and analysis your recommendation. Looking ahead to design and implementation, several possibilities exist: develop a new system in-house, purchase a commercial package, or modify an existing system.

**Systems Design:** The purpose of systems design is to create a blueprint for the new system that will satisfy all documented requirements, whether the system is being developed in-house or purchased as a package. During systems design, you identify all necessary outputs, inputs, interfaces, and processes. In addition, you design internal and external controls, including maintainable, and secure. The design is documented in the System Design Specification and presented to management and users for their review and approval. Management and user involvement is critical to avoid any misunderstandings about what the new system will do, how it will do it, and what it will cost.

**Systems Implementation:** During systems implementation, the new system is constructed. Programs are written, tested, and documented, and the system is installed. If the system was purchased as a package, systems analysts perform any necessary modifications and configurations. The objective of the implementation phase is to deliver a completely functioning and documented information system. At the conclusion of this phase, the system is ready for use. Final preparations include converting data to the new system's files, training of users, and performing the actual transition to the new system. The systems implementation phase also includes an assessment, called a systems evaluation, to determine whether the system operates properly and its costs and benefits are within expectations.

**Systems Operation and Support (Maintenance):** During systems operation and support, the IT staff maintains and enhances the system. Maintenance changes correct errors and adapt to changes in the environment, such as new tax rates. Enhancements provide new features and benefits. The objective during this phase is to maximize return on the IT investment. A well designed system will be reliable, maintainable, and scalable. A scalable design can expand to meet new business requirements and volumes. Information systems development is always a work in progress. Business processes change rapidly, and most information systems need to be replaced or significantly updated after several years of operation.

## **Evolution**

After the MIS has been operating smoothly for a short period of time, an evaluation of each step in the design and final system performance should be made. Evaluating should not be delayed beyond the time when the system analysts have completed most of the debugging. The longer the delay, it will be more difficult for the designer to remember the important details.

The evolution should be made by the customer as well as by the designers. It is less important than the previous evaluation, the financial specialists should evaluate the project in terms of planned cost versus actual cost of design, implementation and operation. They should also attempt to identify cost savings and increased profit directly attributable to the MIS.

Following structure is generally used to partial evaluation:

**Structure:** The measurements of the costs and benefits are the measurement of the changes or differences between the old and new. The measurement of the change must be related to the basic goals of the MIS, the principle activities that further these goals, or the many minor activities that further these goals. In other words, we may measure the changes in the total output of the system or measure the many changes accomplished throughout the system. The former is obviously the most desirable.

What we have is the hierarchy of levels at which we are consider measuring costs and benefits.

For a particular MIS, The designer may select the level at which measurement is to take place based upon specific objectives of the MIS. It is probably rare that a measurement of the total system is attempted at the system level. At the system level, judgment of broad concepts might be employed:

- (i) **System Integrity:** How well the subsystems integrated into the total system without redundancy? How flexible is the system? How easily may the system be explained?
- (ii) **Operation Integrity:** How skilled are the people operating the system? What backup is there to prevent the system breakdown in the event of loss of key personnel or equipment failure?
- (iii) **Internal Integrity:** How well does the system do what it is supposed to do? How valid are the system outputs? How sources is the system against human error, manipulation, sabotage, or theft.
- (iv) **Procedural Integrity:** How good is the documentation of the system and procedures? Are procedures such that employee are motivated to follow them? How well are procedures followed in practice? What controls ensure that the procedures are followed?

**Formulation of the Measurement:** Once the variables of interest have been identified, a table should be set up to formalize the measurement. Table can contain the costs and benefits.

## **Implementation**

There are four basic methods for system implementation:

- (i) Install a system in a new operation or organization, one just formed.
- (ii) Cut off the old system and install new. This produces a time gap during which no system is in operation.
- (iii) Cut over by segments, this method is also referred to as “phasing in” in the new system. Small parts or subsystems are substituted for the old.
- (iv) Operate in parallel and cut over. The new system is installed and operated in parallel with the current system until it has been check out; then the current system is cut out.

Following are steps in system implementation:

**(A) Plan the Implementation:** The three main phases in implementation take place in series; these are the initial installation; the test of the system as whole; and the evaluation –maintenance and control of the system.

The first step is plan for implementation that having the following steps:

- (i) **Identify the Implementation Task:** Before starting implantation system analyst should identify the implementation tasks. The plans should list all subtasks for each of these major tasks so that individuals in the organization may be assigned specific responsibilities.
- (ii) **Establish Relationship among Task:** In the small system, the order of performance may be simply be descried in text form. In large project, many concurrent and sequential activities are interrelated, so that a network diagram must be employed in any good plan.
- (iii) **Establish a Schedule:** A first estimation of the schedule is prepared by having a system designer estimate the times between the events in the program network. The critical time should be calculated. Management may apply pressure or provide additional personnel to shorten the network times.
- (iv) **Prepare the Cost Schedule ties to Tasks and Time:** The cost for completing each milestone and possibly each task required to complete a milestone, should be established as part of the plan, then the rate of expenditure should be budgeted.
- (v) **Establish a Reporting and Control System:** Reporting and control of the work in progress may be obtained by weekly meetings of the key people involved or by brief written progress reports. The objective of the control system is to minimize the confusion and the associated delays and costs.

**(B) Acquire Floor Space and Plan Space Layout:** The installation of a new system to replace a current one may require a major revision of facilities as well as completely new office, computer room and production layouts. The MIS manager must prepare rough layouts and estimates of particular floor areas he or she feels needed. The manager should prepare cost estimates for this.

**(C) Organize the Implementation:** Once the implementation tasks have been defined in the planning phase, manager usually assigns a project manager to guide the implementation. A manager of MIS may assume this responsibility by virtue of a permanent assignment.

**(D) Develop Procedures for Implementation:** The project leader has available the network plan for proceeding with the implementation. The leader must now call upon key people in the project to prepare more detail procedure for system implementation. The system analyst must develop the procedure for delivering instructions and forms to supervisors, for coordinating and integrating this very small portion of the MIS with other parts of the manufacturing system, and for the working out the problem involved.

**(E) Train the Operating Personnel:** A program should be developed to support management and personnel the nature and goals of the MIS and to training of operating personnel in their new duties. Practical attention should be paid to the training of first-line supervisors, then to professional support personnel like accounting and production personnel and then operational personnel like clerk etc.

**(F) Computer Related Acquisition:** Computer related acquisition have the following basic parts:

- (i) **Hardware:** hardware can be purchased according to requirements of system.
- (ii) **Software:** In small firm the software might be purchased. In large firm with specialized forecasting, planning, operating and control models most software must be developed internally and under contract.
- (iii) **Personnel:** Implementation of an MIS offers the company an opportunity to upgrade and promotes the personnel after training. A personnel chart should be prepared showing the number of individuals are required in terms of skills, the source and the date they will be required to work.
- (iv) **Materials:** Forms and manuals are the principal materials to be ordered for the MIS.

**(G) Develop Forms for Data Collection and Information Dissemination:** A vast amount of detailed data, both external and internal to the company, must be collected for input to the MIS. Forms are required not just for input and output but also for transmitting data at intermediate stages. So the form should be developed to collect data.

**(H) Develop the Files:** In the implementation stage, the actual data must be obtained and recorded for the initial testing and operation of the system. This requires a checklist of data, format of data, storage form and format, and remarks to indicate when the data have been stored. The implementation also requires the development of a procedure for updating each piece of the data and for updating entire sections of the files required. The translation of specifications for files into computer programs is the function of computer specialists.

**(I) Test the System:** As each part of the system is installed, test should be performed in accordance with the test specifications and procedures described earlier. Tests during the installation stage consist of component tests, subsystem tests, and total system acceptance tests. Components test may include; equipment, old and new; new forms; new software; new data collection methods; new work procedures and new reporting formats. As more subsystem installed subsystem may be tested.

**(J) Cutover:** Cutover is the point at which the new component replaces the old component or the new system replaces the old system. This usually involves a good deal of last-minute physical transfer of the files, rearrangement of office furniture and movement of work stations and people. Old forms, old files, and old equipment are suddenly retired.

**(K) Document the System:** documentation of the system means preparation of written descriptions of the scope, purpose, information flow components and operating procedures of the system. Documentation is not a frill; it is a necessary –for troubleshooting, for the replacement of the subsystems, for interfacing with other system, for training new operating personnel and also for evaluating and updating the system.

### **Pitfalls in MIS Developments**

There are fundamental weaknesses in any organization, such as improper management and unclear organizational functions. When the organization decides an MIS, these problems directly affect and limit an MIS. Various limitations of an MIS are:

**Organizational Framework:** The MIS must be built on top of a management system that includes the organizational arrangements, the structure and procedures for adequate planning and control.

**Generation of Information:** The information is the raw material of decision-making for MIS, and if information is not being generated, disseminated, and used for management, then no system-manual or computer is going to solve organizational problems.

**Managerial Participation:** The most striking characteristic of a successful company is that the MIS development has been viewed as a responsibility of management. Their success is attributed directly to the fact that managers are required to become involved in the design of their own systems. This includes both top management and operating line management.

**Communication Gap:** In MIS, user cannot adequately express information needs and the designer designs the flow chart and graphs according to the user requirements. After designing, the programmer incorporates his own ideas and interpretations, for developing the system. In these development stages, one undefined requirement can develop an incorrect information system.

**Bias in Information:** The presentation of information may generate a bias and may influence the user such as, if the information is presented in an alphabetic order and if it lengthy, the first few information entries will get more attention.

**Delayed Delivery of Information:** It reduces the immediate action or decision. Thus, delayed information will only have knowledge value.

**Suppression and Filtering of Information:** This is done with the confidential and sensitive data to achieve unrealistic goals.