Chapter 3 (SYBMS)

Process of Management Information System

❖ **System Analysis & Design :**
Systems development is systematic process which includes phases such as planning, analysis, design, deployment, and maintenance. Here, in this tutorial, we will primarily focus on –

- **Systems analysis**
- **Systems design**

- **Systems Analysis :**
It is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components. System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.
Analysis specifies **what the system should do**.

- **Systems Design :**
It is a process of planning a new business system or replacing an existing system by defining its components or modules to satisfy the specific requirements. Before planning, you need to understand the old system thoroughly and determine how computers can best be used in order to operate efficiently.
 System Design focuses on **how to accomplish the objective of the system**.

 System Analysis and Design (SAD) mainly focuses on –
- **Systems**
- **Processes**
- **Technology**

✡ **What is a System?**

The word System is derived from Greek word System, which means an organized relationship between any set of components to achieve some common cause or objective.

A system is "an orderly grouping of interdependent components linked together according to a plan to achieve a specific goal."

✡ **Constraints of a System**

☐ A system must have three basic constraints −

● A system must have some **structure and behavior** which is designed to achieve a predefined objective.
● **Interconnectivity** and **interdependence** must exist among the system components.
● The **objectives of the organization** have a **higher priority** than the objectives of its subsystems.
● **For example**, traffic management system, payroll system, automatic library system, human resources information system.

✡ **Categories of Information :**

There are three categories of information related to managerial levels and the decision managers make.

Volume of Information	Type of Information	Information Level		Management Level	System Support
Low Consensed	Unstructured		Strategic Information	Upper	DSS
Medium Moderately Processed	Moderately Structured		Management Control Information	Middle	MIS
Large Detail Reports	Highly Structured		Operational Information	Lower	DPS

1) **Strategic Information :**
- This information is required by topmost management for long range planning policies for next few years. For example, trends in revenues, financial investment, and human resources, and population growth.
- This type of information is achieved with the aid of Decision Support System (DSS).

2) **Managerial Information :**
- This type of Information is required by middle management for short and intermediate range planning which is in terms of months. For example, sales analysis, cash flow projection, and annual financial statements.
- It is achieved with the aid of Management Information Systems (MIS).

3) **Operational information :**
- This type of information is required by low management for daily and short term planning to enforce day-to-day operational activities. For example, keeping employee attendance records, overdue purchase orders, and current stocks available.
- It is achieved with the aid of Data Processing Systems (DPS).

   ❖ **Introduction & Need for System analysis :**

   The analysis phase involves gathering requirements for the system. At this stage, business needs are studied with the intention of making business processes more efficient. The system analysis phase focuses on what the system will do in an effort that views all stakeholders, as viable sources of information. In the analysis phase, a significant amount of time is spent talking with stakeholders and reviewing the stakeholder's input.

   ▢ Common stakeholders for IT projects are:
- Architecture office
- Testing & certification office
- Records management team
- Application support group

Once stakeholders have been recognized, the gathering and analysis of the requirements can begin. Requirement gathering must be related to business

needs or opportunities. Requirement analysis involves capturing requirements and analyzing requirements. Capturing requirements is communicating with stakeholders to agree on what the requirements are. Analyzing requirements is using standard tools to produce a baseline of the requirements. Once the stakeholders concur on the requirements, the baseline is created and becomes the formal requirement source.[4]

Within this analysis phase, the analyst is discovering and fact finding. Along with meeting with stakeholders, the analyst must meet with end users to understand what the user's needs are and to learn about problems that affect the current system in order to assist with designing a new and more efficient system. There are several activities that must occur within the analysis phase:[5]

- Gather Information
- Define the new system's requirements
- Build prototypes for the new system
- Prioritize requirements
- Evaluate alternatives
- Meet with management to discuss new options

❖ System Analysis of a New Requirement :

It is not always necessary that the analysts are required to conduct the analysis of the existing system. In a number of cases when legacy systems have outlived their utility or a new business environment requires a totally radical approach, the analyst is called for redesigning the processes, practices and procedures.

Today's business world of a company is beyond the four walls of the organization. The vendors and the customers are being treated as trusted business partners of the organization. This change in the management policy calls for a change in the information management function in the organization. It cuts across all the facets of processing the data and the information, right from the input to the output and its distribution. The conventional confidential access to the information and the practice of authorizing a person to make decisions has undergone a substantial change. The decision Centre's in the organization have been diffused and a substantial delegation of decision making has taken place at the lower level.

The characteristic change in the organization is that it is being looked as a process organization as against a functional organization. The work culture is changing from the single hierarchical command control principle. These work groups are empowered to make decisions with an access to support the information. In such changed environment, the information system architecture, the design and processes, and the hardware-software configuration should be structured to meet this changed requirement of information. The trend is towards building a system which is potentially flexible, adaptable to the new technology, easy to use, and which enables the user to meet his own needs through his knowledge and expertise.

The system analyst, in such a virgin situation of policy change, has to think globally, taking into consideration the technology, the user, and the business it serves. He is required to make analysis to evolve the system and the technology strategy, and configuring them to work for executing the business strategy through the information support.

Hence, the System Analysis and Design, in such situations, in an exercise at a macro level with a top-down approach in understanding the requirement.

⬚ The information system development cycle for a new application consists of the five major stages:

1 **Definition of the system and its objective.**
2 **Development of the system (Analysis-Design-Programming)**
3 **Installation of the system.**
4 **Operations of the system.**
5 **Review and evaluation.**

❖ **Structured Systems Analysis and Design (SSAD) :**

With this particular methodology, a software development venture is divided into stages, steps, tasks and modules/ components.

✡ **Objectives of SSAD : ITC InfoTech India Ltd.**

▢ Structured Systems Analysis and Design (SSAD) was developed with specific objectives:

- To warrant that a project could lucratively persist should a loss in staff occur without any adverse consequences on the project
- To improve communication between all participants in the project so that an effective construction is in place
- To develop a better of class systems
- To improve the manner in which projects are controlled and directed
- To allow for the efficient use of both experienced and inexperienced staff
- To allow for projects to be supported by computer- aided software engineering applications.

✡ **How SSAD works:**

SSAD is a waterfall approach whereby there are a series of events which occur in sequential order, each step leading from the last.

▢ There are a total of five steps and they are as follows:

- **Feasibility study:** This is a study that will determine if the project is actually possible to undertake and whether it is cost effective or not.
- **Requirements analysis:** Identifying the needs of the business
- **Requirements specification:** The requirements (functional and non-functional) are clearly and unambiguously identified and stated.
- **Logical system specification:** The technical systems options are created and also the logical design of the system, including upgrade and enquiry designs.
- **Physical design:** The logical system specification and technical specification is then used to design a physical database and set of program specifications.

✡ **Advantages of SSAD:**

- **Timelines:** as mentioned before, SSAD can be used to improve the way a project is controlled and directed. This is due to the fact that it allows one to plan the project well which is essential to deliver the product on time.

- **Improvement of productivity**: By encouraging on-time delivery, meeting business needs, ensuring better quality, using human resources effectively as well as evading bureaucracy, SSAD improves general productivity of the project.
- **Better quality:** Decreases the error rate of information systems by identifying a certain level of class in the launch and constantly checking the system.
- **Effective use of skills:** It does not require any special skills and can easily be taught to the staff. It usually makes use of diagramming and modeling tools.
- **It can respond to changes in the business environment:** Business requirements and objectives are taken into consideration while the project is being developed. This creates the possibility to adjust the planning of the project to the actual requirements of the business.
- **Usability:** Special emphasis is put on the analysis of the user requirements. Concurrently, the system model is constructed and a wide-ranging demand analysis is conducted.
- **Cuts costs:** Due to the fact that SSAD separates logical and physical systems design, the system does not have to be executed again with new hardware or software.

✡ Disadvantages of SSAD:

- SSAD puts prominence on the analysis of a system and its documentation. This paves the way for over-analysing, which in turn can be very time consuming and puts strain on expense.

Unit 3: Question Paper (SYBMS)

1) Discuss the System Analysis & Design.
2) Discuss the Introduction & Need for System analysis.
3) Discuss the System Analysis of a New Requirement.
4) Discuss the Structured Systems Analysis and Design (SSAD).