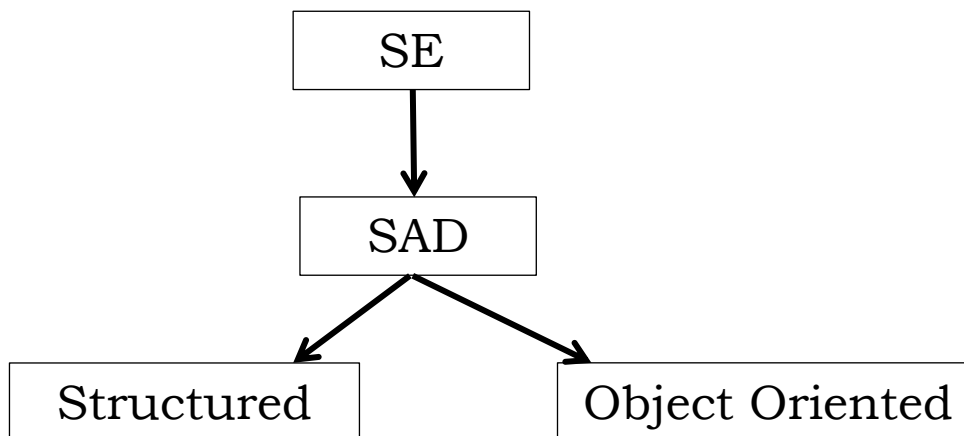


7.4 Examines the Structured System Analysis and Design Methodology (SSADM)

Time: 2 periods

Learning Outcomes

- Defines SSADM
- Lists and briefly describes the stages of SDLC covered by SSADM



There are many structured methods of SAD.

- ❖ **SADT(System Analysis Design Technique)** by Douglas Ross,1973
- ❖ **Structured Design** by Larry Constantine,1975 (How to design a system systematically/structured way?)
- ❖ **Structured Analysis** by Tom DeMarco, 1978 (Before we computerize the system we have to analysis the system)
- ❖ **Yourdon Structured Method** by Edward Yourdon, 1979
- ❖ **SSADM (Structured System Analysis and Design Method)** by Learmonth & Burchett Management Systems in 1981

Why do we need a standard method for SAD?

Different organizations used these different methods to analysis the system and design the system. Hence the Documentations are different. Using diagrams easier to communicate with people in the project such as client, system analyst, and developer etc...)

System analyst use different pictures and symbols to analyze the system and design the system. As a result new developer cannot understand the pictures and symbols that used in the system. Because the developer learned another

method and he has to learn and understand the pictures and symbols that used by system analyst.

Hence UK government wants to have one standard method for government development and government asks particular company to develop one standard method.

Hence, use SSADM - UK standard.

Defacto Standard – Worldwide standard

What is SSADM?

- Structured System Analysis and Design Method (SSADM) is **a standard for system analysis and application design.**
- It was developed in early 1980s in the U.K. by Learmonth & Burchett Management Systems and the Central Computer Telecommunications Agency (CCTA) **as a standard** for British database projects.
- It deals with information system design. Design stage is very important. **Development stage is not a very important stage.**
- SSADM is a systematic (There are rules and guidelines) approach for studying a business from different perspective and thereby provides a thorough understanding of the business, its process and data.
- All the Information Systems has two aspects such as data and process. We have to understand data and process very well.

Object oriented methodology (Object-oriented System Analysis and Design -OOSAD)

OOSAD used to design a system as a collection of objects that work interactively. Object oriented analysis and design uses visual modeling to improve communication among all stakeholders and produce high-quality products.

An object is a representation of a real-world entity such as a customer, a product, an employee, etc. Unified Modeling Language (UML) is a general-purpose language used to create visual designs for a system.

- In 1990's **Grady Booch** proposed **Booch Method** for OOSAD.
- **James Rambo** proposed **Object Modeling Techniques** in early 1990.
- **Ivan Jakobsan** proposed **OOSE (Object Oriented Software Engineering)** in 1990.

As a result different companies used different above methods, different techniques and different diagrams.

In mid-90's company call **Rational** recruited above 3 people to develop one method. Then **Rational** released that as UML (Unified Modeling Language) and Rational Rose is a tool for that.

Key difference between SSADM and OOSADM

	Structured	Object-Oriented
Methodology	SDLC	Iterative/Incremental
Focus	Processs	Objects
Risk	High	Low
Reuse	Low	High
Maturity	Mature and widespread	Emerging (1997)
Suitable for	Well-defined projects with stable user requirements	Risky large projects with changing user requirements

SSADM requires to complete one stage before starting the next (finish first and then go to the next). Thereby leads some projects into “**analysis paralysis**”.

Today business requirements are change very frequently due to competitiveness among businesses.

With SSADM, we have to do feasibility study, requirement analysis and design again and again. SADM is suitable for waterfall models.

Hence, SSADM can apply for the system that system requirements are relatively stable and requirements are clear.

Eg: Library System (fairly stable and clear requirements)

If the requirements will change very frequently, for that kind of situations (Easter bomb blast, political situation such as changing the government, worldwide diseases such as corona virus) used OOSADM.

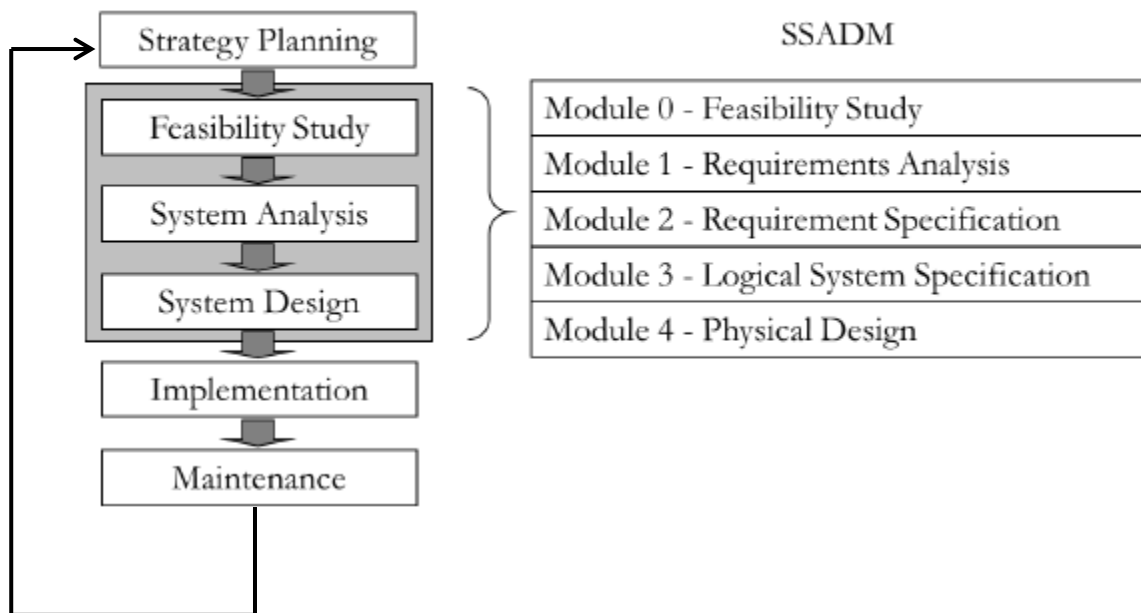
OOSADM is suitable for systems such as share market, banks ... etc.

What is Software Development Life Cycle (SDLC)?

SDLC is a process used by the software industry to design, develop and test high quality software. The SDLC aims to produce a high-quality software that meets or exceeds customer expectations, reaches completion within times and cost estimates.

- SDLC is the acronym of Software Development Life Cycle.
- It is also called as Software Development Process.
- SDLC is a framework defining tasks performed at each step in the software development process.
- ISO/IEC 12207 is an international standard for software life-cycle processes. It aims to be the standard that defines all the tasks required for developing and maintaining software.

Stages of the SDLC covered by SSADM



Feasibility Study

The business area is analyzed to determine whether the system development is feasible. In simply says that whether the project is feasible or not?

- ❖ Business Feasibility
- ❖ Financial Feasibility
- ❖ Technical Feasibility
- ❖ Political and Organizational Feasibility

Can identifying the problems at the beginning by doing feasibility study.

Requirements Analysis

The requirements of the system to be developed are identified and the current business environment is modeled in terms of the processes carried out and the data stored

In simply, we have to identify that what are the requirements should be satisfied of the system to be developed?

Requirements Specification

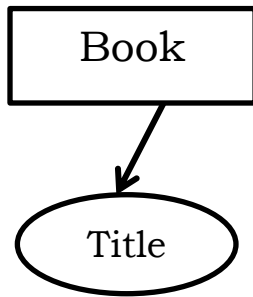
Detailed functional and non-functional requirements are defined and new processes are introduced to define the required processing and data storage

In simply, once you identify requirements, and then specify them in detail. It is call requirement specification. This is a legal document.

Logical System Specification

After creating requirement specification, then design them in logically. In the sense we design the system to be developed without considering the technical constraints. Logical design is very important. This is called logical system specification. Logical design is independent of technology.

Eg: Flow chart, ER Diagram



Logical Design

Physical Design

Once you have the logical design, then we can transformed it into a physical design. The physical design is depending on the technology.

Book Table	
Field Name	Data Type
Title	Varchar (SQL server)
	Text (Access)

Physical Design

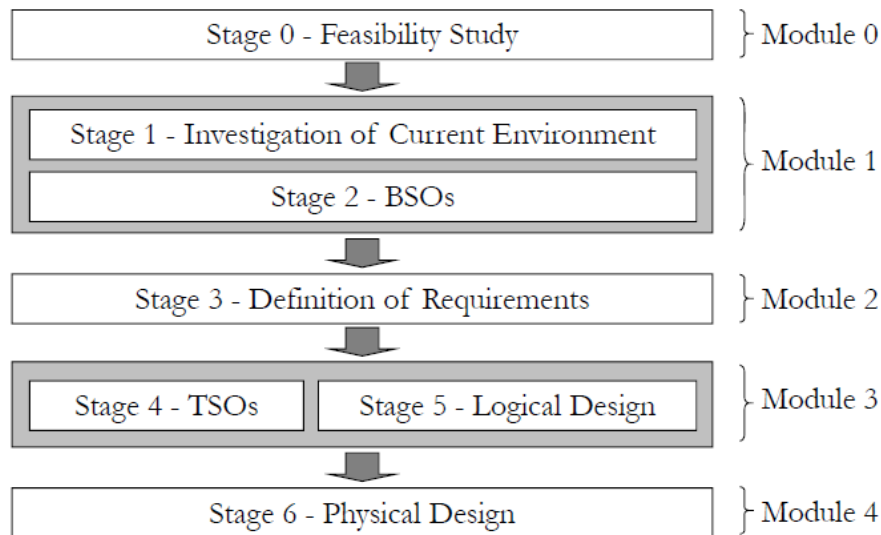
Once you have physical design you can implement or develop. After that you can test the system using different testing techniques.

Then if you happy about the quality of the system, install the system at the client side. Then user training and data transferring from old system to new system will happen. Then the client will uncover some errors and modifications and then maintenance needed.

Framework

SSADM has a framework/skeleton. We have to do all the analysis and design things within this frame.

In this framework, 5 modules in SSADM are broken into 7 stages.



Stage 0 (Feasibility study) - Check whether the project is feasible or not?

Stage 1 (Investigation of current environment) – Uncover/identify requirements /problems of the current system (manual/computerize)

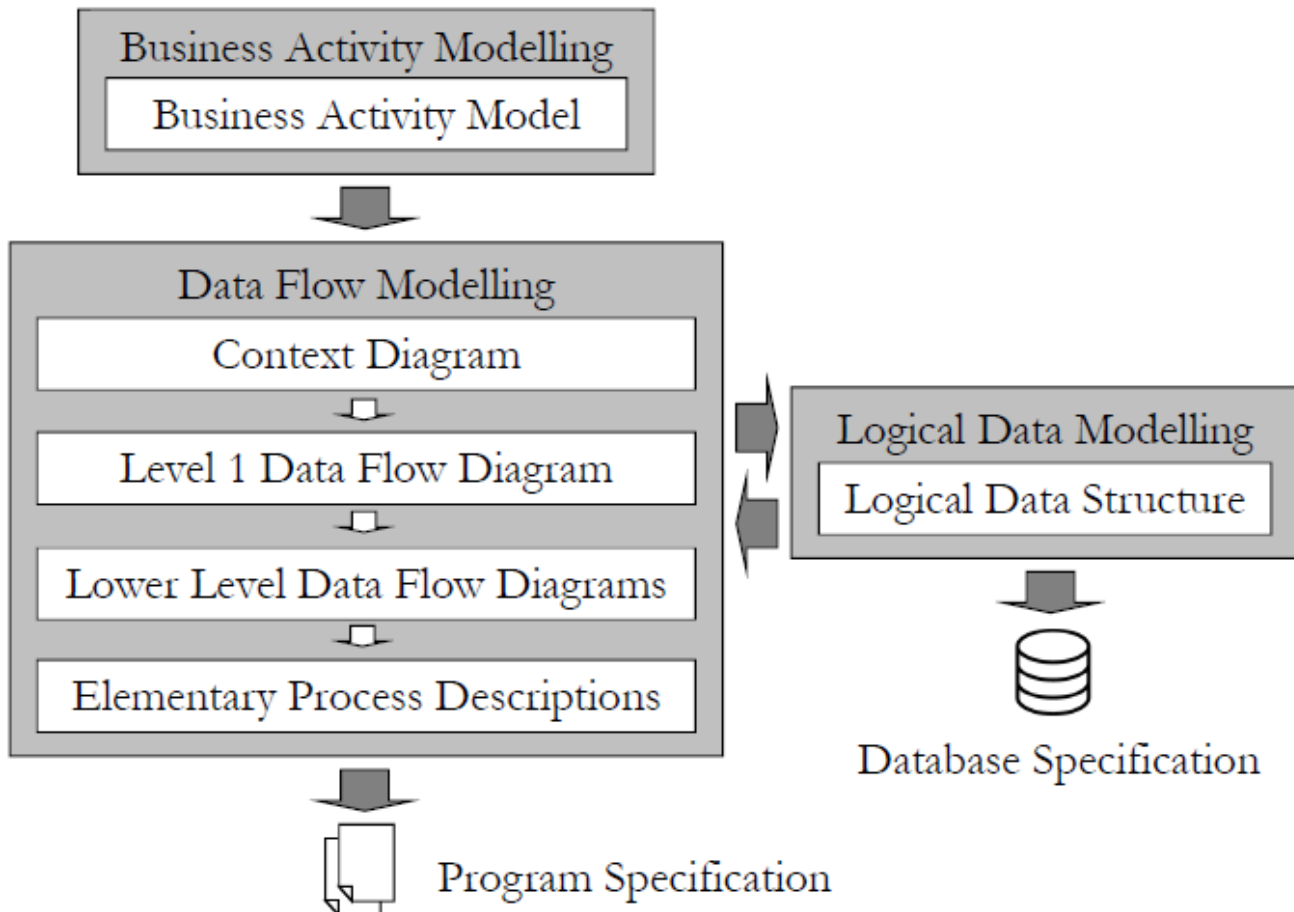
Stage 2 (BSOs) – There are alternative solutions to satisfy those requirements (mandatory/essential and not essential/nice to have). All solutions satisfy mandatory requirements. Client has to select one solution out of those alternative solutions and Analyst can explain the advantages & disadvantages.

Stage 3 (Definition of Requirements) – Defining the requirements for the selected solution. (SRS-System Requirement Specification)

Stage 4 (TSOS) – Evaluate the technical system options. Find out what are the alternative technical options to transform to the physical design.

Stage 5 (Logical Design) – Design the future system logically without considering the technical constraints.

Stage 6 (Physical Design) – Transform the logical design into the physical design according to the selected technical option.

Techniques Used for SSADM

Following are the most important and popular SDLC models followed in the industry –

- Waterfall Model
- Iterative Model
- Spiral Model
- V-Model
- Big Bang Model

Other related methodologies are,

- Agile Model
- RAD (Rapid Application Development Model)
- Prototyping Model

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