

# STRUCTURED SYSTEMS ANALYSIS AND DESIGN

## METHOD

- Structured systems analysis and design development (SSADM) is a systems approach to the analysis and design of information systems.
- SSADM is a waterfall method.

### SSADM Techniques

- The three most important techniques that are used in SSADM are :
1. **Logical Data Modeling** : The process of identifying, modeling and documenting the data requirements of the system being designed. The data are separated into entities (things about which a business needs to record information) and relationships (the association b/w the entities).
  2. **Data Flow Modeling** : The process of identifying, modeling and documenting how data moves around an information system. Data Flow Modeling examines processes (activities that transform data from one form to another), data stores (the holding areas for data), external entities (what sends data into a system or receives data from a system), and data flows (routes by which data can flow).
  3. **Entity Behavior Modeling** : The process of identifying, modeling and documenting the events that affect each entity and the sequence in which these events occur.

### Stages

- The SSADM method involves the application of a sequence of analysis, documentation and design tasks concerned with the following:
1. **Stage 0 – Feasibility Study**
    - In order to determine whether or not a given project is feasible, there must be some form of investigation into the goals and implications of the project.
      - For a small scale project, it may not be necessary.
      - For a large scale project, it may be done but in an informal sense.
    - When a feasibility study is carried out, there are four main areas of consideration:
      1. **Technical** – Is the project technically possible?
      2. **Financial** – Can the business afford to carry out the project?
      3. **Organizational** – Will the new system be compatible with existing systems?
      4. **Ethical** – Is the impact of the new system socially acceptable?

- The product of this stage is a formal feasibility study document. SSADM specifies the sections that the study should contain including any preliminary models that have been constructed and also details of rejected options and the reasons for their rejection.

## **2. Stage 1 – Investigation of the Current Environment**

- Through a combination of interviewing employees, circulating questionnaires, observations and existing documentation, the analyst comes to full understanding of the system as it is at the start of the project. This serves many purposes:
  1. The analyst learns the terminology of the business, what users do and how they do it.
  2. The data model can be constructed.
  3. The users become involved and learn the techniques and models of the analyst.
  4. The boundaries of the system can be defined.
- The products of this stage are :
  1. Users Catalog : describes all the users of the system and how they interact with it.
  2. Requirements Catalogs : details all the requirements of the new system.
  3. Current Services Description
  4. Current Environment logical data structure (ERD)
  5. Context Diagram (DFD)
  6. Leveled set of DFDs for current logical system
  7. Full Data Dictionary including relationship b/w data stores and entities.

## **3. Stage 2 – Business System Options**

- The analyst develops a set of business system options by using outputs of the previous stage.
- The new system could be produced varying from doing nothing to throwing out the old system entirely and building entirely new one.

## **4. Stage 3 – Requirements Specification**

- The most complex stage.
- The analyst must develop a full logical specification of what the new system must do.
- The specification must be free from error, ambiguity and inconsistency.
- To produce the logical specification, the analyst builds the required logical models for both the DFDs and the ERDs.
- The product of this stage is a complete requirements specification document.

## **5. Stage 4 – Technical System Options**

- Like the Business System Options in this stage a large number of options for the implementation of the new system are generated.

## **6. Stage 5 – Logical Design**

- The logical design specifies the main methods of interaction in terms of menu structures and command structures.
- The product of this stage is the logical design which is made up of:
  - Data Catalog
  - Required Logical Data Structure
  - Logical Process Model: includes dialogues and model for the update and inquiry processes.

## **7. Stage 6 – Physical Design**

- All the logical specifications of the system are converted to descriptions of the system in terms of real hardware and software.
- The logical data structure is converted into a physical architecture in terms of database structures.
- The exact structure of the functions and how they are implemented is specified.
- The product is a complete Physical Design which could tell software engineers how to build the system in specific details of hardware and software and to the appropriate standards.

### **Advantages**

1. Separation of logical and physical aspects of the system
2. Well-defined techniques and documentation
3. User involvement

### **Disadvantages**

1. The size of SSADM (in some circumstances)
2. Cost and time in training people
3. The learning curve can be considerable if the full method is used.

**Reference : [http://en.wikipedia.org/wiki/Structured\\_systems\\_analysis\\_and\\_design\\_method](http://en.wikipedia.org/wiki/Structured_systems_analysis_and_design_method)**