SSADM
(Structured Systems Analysis and Design Method)

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Assignment 2

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Table of contents

1. Classification
2. Historical development
3. Techniques
4. Structure
5. Benefits/Risks
6. Evaluation
Classification

In this scheme there are several methodologies, such as Process-oriented, Blended, Object Oriented, Rapid development, People oriented and Organisational oriented. According to David Avison and Guy Fitzgerald SSADM is the Blended method, because it consists of different parts from other methodologies, techniques and tools. For instance: the project management method „Prince“, which could be used in the first stage „Feasibility“ of the SSADM.
“The first generation methodologies” were focused to create computerized models of the administrative functions for the ordinary office. “Computerized systems” were seen the same structure and functions as the manual systems and as a result computerized version of design came from the model of existing system. This “semi formal” design strategies and methodologies followed from logical flows of the business and systems designers came to the conclusion that this is inappropriate approach.

(http://www.umsl.edu/~sauterv/analysis/termpapers/f11/kwasa.html)

The first generation methodologies required documentation that spelled out the document flows and the functional requirements in detailed terms. Edward Yourdon pointed out some criticisms of classical methods in his book “Structured Design”.

What were his criticisms? Classical Methodologies:

-Were monolithic

Such design tactics that were programmed to search more modular method which will able to help user to find out explanation one of particular part of the blocks of the whole system avoiding explanation of other parts. “If you didn’t read the last
Diagrammatic Techniques

Logical Data Structures

- describing what information should be held by the system
- what information is stored and how are they interrelated 1:n etc
- Entity relationships between completely separated entities
- Entity relationship between master entity and detail entity
- Several special cases with additional information
- Application during SSADM several times
- LDS for current system → LDS for Required System → Composite Logical Data Design → Physical Data design (NIMSAD)

Data Flow Diagrams

- representing information flows of a system (who sends/receives, what is done with the information, how is it send, where is it stored) → boundaries
- diagrams hierarchical
- 4 different types of DFD (current physical, logical, business, systems options,
Entity Life Histories (Ashworth+Goodland p.44ff.)
- how are the entities of a system and their data changed over time by events acting on them
  → Keep track of those changes
  → How do the changes affect the entities
  → If possible show all events that can occur in the system (Gödel)
- Sequence, Selection, Iteration + some other notations (parallel structures, quit and resume)

Additional techniques: (Ashworth+Goodland p.14f.) & (Requirements Engineering and Management for Software Development Projects, 2013, pp. 177-201)
1. Logical Dialogue Design: specify man-machine dialogues (where prototyping is not possible). mostly used towards end of requirements analysis
2. Context Diagrams - shows the context in which system operates. Also shows context of modules within the system
3. Structure Chart - shows hierarchy of functionality in the system

Relationship between these views (Ashworth+Goodland p.52ff.)
- rules (e.g. a data store is related to one or more entities, each data item must be created, amended and deleted by events on the Entity Life History)
- all views show different aspects of the system but around same entities
Non diagrammatic techniques

- Documentation
- relational data analysis
- first cut rules and physical design control
- quality assurance
- project estimating
- Others: interviewing, questionnaires, cost-benefit analysis, ...

Non diagrammatic techniques of SSADM (Ashworth/Goodland, 1990, p.15ff.)
Documentation (not really a technique but strong focus on documenting everything.)
- different types of documents (forms and sheets) that must be produced during the process
- facilitates standardisation and thereby the understanding of the processes taking place

relational data analysis
- complements LDS by progressing unnormalized data, that is not captured by LDS, to normal forms
- must be merged with LDS

First cut rules and physical design control
- two techniques that support the conversion from data design to physical design

Quality assurance
- reviews of the process must be held after each stage between project team (systems analysts) and a representative team of the users to discuss the progress to avoid mistakes, because each step in SSADM builds upon the next and mistakes will be taken to next stages if not solved early
Structure (SSADM 4+)

<table>
<thead>
<tr>
<th>Phases</th>
<th>Stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feasibility study</td>
<td>Stage 0 Feasibility</td>
</tr>
<tr>
<td>Requirements analysis</td>
<td>Stage 1 Investigation of current system</td>
</tr>
<tr>
<td>Requirements specification</td>
<td>Stage 2 Business system options</td>
</tr>
<tr>
<td>Logical system specification</td>
<td>Stage 3 Definition of requirements</td>
</tr>
<tr>
<td>Physical design</td>
<td>Stage 4 Technical system options</td>
</tr>
<tr>
<td></td>
<td>Stage 5 Logical design</td>
</tr>
<tr>
<td></td>
<td>Stage 6 Physical design</td>
</tr>
</tbody>
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SSADM has seven stages (numbered 0 to 6) within a five module framework covering life cycle from feasibility to design study. This structure provides its own set of plans, timescales, controls and monitoring processes. Each stage will be considered in the scope of appropriate module.

Stage 0 has four steps. Overall goal of these steps is to examine feasibility options to select suitable one. Feasibility and technical possibility of project planning are considered, and constraints should be met in terms of this stage. Consequently, benefits of the new information system (IS) should outweigh costs. Thereby, preparing transition to analyse requirements for the new IS, which includes following two stages.

In terms of stage 1 much of the work performed in feasibility study is concerned in more details. The scope of the project is reassessed and current physical data flow model is replaced by logical model. Afterwards, the project plan is agreed with management and the responsibility of next stage 2 is carrying out where business systems options are analysed in great detail and then by discussion with management the most relevant is chosen (selection of hybrid option taken from various presented options is possible).

After choosing suitable business systems options SSADM defines requirements of IS in scope of stage 3 which responds to determine all requirements of system in detail. Investigation and analysis are substituted by specification and design. Also
Benefits

- User feedback
- Facilitates modulation / communication
- Remove redundancies / inconsistencies / ambiguity
- Project planning improved
- Different views on system (levels)
- Can be adapted

Benefits
User feedback
- allows feedback of users
- promotes diagrammatic thinking
- Especially in the logical design where user roles of the system may be defined

Modulation/Communication
Entity models and their communication; these entities are a representation of the real world, can provide a smooth transition for later implementation stages.

Improved Project planning
SSADM projects a rigid structure of documentation which must be adhered to in order to allow the highest probability of success. Documentation is interleaved with all aspects of the information systems project. Focuses on analysis and design which is normally done in a haphazard fashion. Aims to reduce mistakes, omissions and ambiguities created at design time. Identifying and rectifying difficulties during the early stages are much cheaper and easier to fix than in later stages.

Different Views:
Can look like how the system in general work, then each level goes into a greater specification
There are multiple analyst which presents multiple solutions to which one needs to be chosen or a hybrid may be selected
Risks

- SSADM has troubles to cope with requisite variety and complexity (analysis paralysis)
- Linear approach → hard to implement adaptive content
- Hard to define boundaries of a system
- Time / cost consuming
- No user involvement in design process
- Doesn’t cover the whole SDLC

Risks

Systems can exist in a dynamic environment where adaptation is necessary for continued survival. The rigid, linear approach of SSADM enforces a completion of each stage before the subsequent stage can commence.

This can lead to analysis paralysis for systems which have to constantly adapt in order to maintain survival. What this really means is that there will be constantly changing requirements which can contribute to an lengthy analysis cycle.

Its sequential nature does not allow much flexibility; changes are not easily implemented.

Development times may be lengthy since the methodology does not allow for the simultaneous execution of stages. In order for the methodology to be successful a linear progression through each stage needs to be enforced. More time spent means a higher cost.
**SSADM and the SDLC**

With respect to the SDLC, SSADM does not cover implementation specific details due to the multitude of alternatives of hardware, software and implementation strategies.

SSADM fits the niche in the SDLC with respect to the requirements gathering and analysis and the implementation. Strengthens the requirements and design stages of the SDLC.
Here we will look at SSADM through NIMSAD lens and highlight some of the aspects of the methodology that we found crucial.

Framework suggests that an effective methodology depends on 3 elements:
1. Context in which methodology is being used
2. Person who uses the methodology
3. Methodology itself

Context in which methodology is being used is also known as a problem situation
a. SSADM imitates business flow, distinguishing business objectives. This implies that SSADM is a purposeful methodology, even though this fact is not explicitly stated by the methodology - no actual model for understanding a system. By mimicking business flows, methodology inherits purpose from business model of an organisation
b. Methodology defines boundary and major functions via its techniques, but it is the job of the methodology user to rely on own judgement of the system when constructing these diagrams because methodology does not cover the explicit process of defining boundaries.
c. Methodology does not cover ethical/moral values, since the obvious task of a methodology user is to present rather technical aspect of a system
d. Methodology mentions that the precise syntax for pragmatic world,
Summary

- Classification: where SSADM fits in compared to other methodologies
- Historical background and evolution
- Main and supplementary techniques
- Structure of the methodology
- Advantages/Disadvantages
- Evaluation of the methodology
References

References

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