System analysis summary

Information system block: is any organized combination of people, data resources, hardware, software that collect, transform and disseminates information in an organization.

Stakeholders is anybody who has an interest in an information system.

They can be technical or non- technical.

Owners -> scope -> pay for the building and maintenance

Users -> requirements -> actually use the system

Builders -> components -> construct, test and deliver the system

Designers -> design -> design the system to meet requirements

It vendors -> architecture -> sell hardware, software and services

Analysts -> analyze -> facilitate the development of information systems by

Bridging the gap between non-technical (owners & users) and technical (designers and builders)

Principle of successful development

* Get the users involved
* Use a problem solving approach

1. STUDY AND UNDERSTAND THE PROBLEM
2. Define requirements of a suitable solution
3. Identify candidate solutions and select the best solution
4. Design and implement the solution
5. observe and evaluate the solution’s impact.

* Establish phases and activities

1. Preliminary investigation
2. Problem analysis
3. Requirement analysis
4. Decision analysis
5. Design
6. Construction
7. implementation

* Establish standards

1. Documents
2. Quality
3. Automated tools
4. technology

* Justify system as capital investment
* cost effectiveness and risk management
* Don’t be afraid to cancel or revise scope
* Divide and conquer\\
* If you want to learn anything, you must not try to learn everything
* DESIGN A SYSTEM FOR GROWTH AND CHANGE

System analysis

A problem solving approach that decomposes a system into its component pieces for the purpose of studying how well it works.

System Design

A complementary technique that reassembles systems components back into a complete system to improve the system by editing the original.

SAD.: process of examining a business situation with the approach of improving it through better procedures and methods.

System development life cycle: process of developing and maintaining systems.

PHASES:

1. PRELIMINARY STUDY
2. Feasibility STUDY
3. Detailed system study
4. System analysis
5. System design
6. Coding
7. Testing
8. Implementation
9. Maintenance

A system analyst studies problem and needs of an organization, to determine how people, data, processes, communications and technology can best improve the business

Steps to problem solving approach

* Identify the problem
* Analyze and understand the problem
* Identify solution requirements and expectations
* Id alt solutions
* Design and implement the best solution
* Evaluate the results
* System development methodology (Preliminary investigation)
* Project identification: list problems, directives and opportunities -> establish an initial baseline that triggered the project and to identify constraints

1. Urgency
2. Visibility
3. Benefits
4. Priority
5. Solution

* Negotiation scope

1. Data
2. Business process
3. Interface

* Access project worth
* Plan the project

1. Preliminary (baseline) plan
2. Detailed plan of schedule

* Present the master plan

Steering body is a body of executive businessmen and system managers that study and prioritize completing business proposals to determine which project will return the most profit and develop on said project

PROBLEM ANALYSIS (STUDY) PHASE

DON’T TRY TO FIX IT UNLESS YOU UNDERSTAND IT.

* STUDY THE PROBLEM DOMAIN
* DATA: 1-page data model for business vocabulary and rules
* PROCESSES: 1-2-page functional decomposition diagram
* INTERFACES: 1-page use case diagram
* ANALYZE THE PROBLEM AND OPPORTUNITIES: cause and effect analysis technique
* ANALYZE BUSINESS PROCESS: focus on the process, and the deliverable
* ESTABLISH SYSTEM IMPROVEMENT OBJECTIVES: establish a criterion to measure improvements and identify constraints
* UPDATE PROJECT PLAN
* PRESENT FINDINGS AND RECOMMENDATIONS

Fact-finding ethics

* Protect security and privacy of facts and data
* Do not disclose sensitive information to the public
* Do not be careless with notes, and documents.

Fact finding methods

This Is a discovery stage where information is procured verified and assembled in a report.

* Sampling: process of collecting a **representative** sample
* Research: thoroughly research the problem domain.
* Observation: the system analyst watches to learn how it is done
* Questionnaires: collect information from respondents
* Interviews: collect information through face-to-face interaction
* Prototyping: build a small working model of the users proposed design.
* Joint requirement planning

Requirement validation: checks the requirement definition document for conformance to standards

Requirement management: the process of managing changes to requirements. It encompasses the policies, procedures and processes that govern how a change to requirement is handled

Sampling techniques:

* Randomization
* Stratification (sorting by another common element).
* Work sampling- sampling from observations.

Observation pros and cons

* Data is highly reliable
* Inexpensive to gather
* Ability to do work measurements
* Difference in regular performance (eye-service)
* Time difference or incompatibility (scheduling inconvenience)
* Interruptions

Questionnaire pros and cons

* Questionnaires can be answered quickly
* Easy to collect data and maintain anonymity.
* Easy to table and analyze
* Low respondent count
* Incomplete or incorrect forms
* Difficult to prepare
* Inability to clarify misunderstandings

Types

1. Free format
2. Fixed: Multi-Choice, ratings and rankings questions

Things to note when developing a questionnaire

* Determine what facts to collect
* Determine the format
* Write the questions
* Test the questions
* Duplicate and distribute

Interview pros and cons

* Direct interaction and motivation(communication)
* Probe for more info and clarification of already existing info
* Time consuming
* Needs good human relations skill
* Can be impractical due to interviewees location

Types

Unstructured: only has a general goal with unspecified questions

Structured: specific set of questions

Open-ended questions: free response

Closed-ended questions: gives an option for 2 extremes i.e. yes or no

Steps to conduct interview

* Select interviewees
* Prepare for the interview -> interview guide
* Use clear language
* Avoid long, threatening and complex questions
* Don’t include your own opinions
* Conduct the interview (opening, body, conclusion)
* Follow-up on the interview
* Listen: to hear is to recognize speech while to listen is to understand what the speaker wants to communicate
* Facial disclosure, eye contact and posture

Discovery prototyping: building a small scale model to check if the project will meet the requirements

Pros and cons:

* Allows experimentation
* Training mechanism
* Cost of development

Feasibility study: the measure of the benefits of an information system

Feasibility analysis: the measure of feasibility

Feasibility test:

* Operational feasibility: concerned with the problem and its solution
* Technical: concerned about the technology and technical know-how
* Schedule: concerned with the allocated time
* Economic: concerned about cost and benefits
* Cost-benefit analysis:
* Break-even analysis
* Cash flow analysis
* Return on investment analysis
* Net present value

System design phases

The tasks that focuses on the specifications of a computer based solution (physical design)

Tasks

* Application architecture (defines the application to be used
* Design the system database
* Design the syste\*m interface (input screen)
* Package design specification (to guide the programmer on the implementation)
* Update\ project plan

Computer network architecture

* Distributed architecture
* Centralized ‘’
* Network ‘’

System construction: development, installation and testing of system components

System implementation: is the delivery of that system into production

Purpose: to develop and test a system that fulfils business and design requirements

Tasks

* Build and test network
* Build and test databases
* Install and test new software package
* Stub testing
* Unit testing
* System testing
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Implementation phase: delivers the new system into operation

Tasks

* Conduct system test
* Prepare a conversion plan
* Abrupt cut-over
* Parallel conversion
* Location conversion
* Staged conversion
* Verification testing (ALPHA)
* Validation testing (BETA)
* AUDIT TESTING
* .

Model: is a

* Agile model
* Waterfall model

Requirement discovery: includes the techniques to be used by system analysts to identify or extract system problems and solutions requirements from the user community.

Problem analysis is the activity of identifying the problem, understanding the problem (including causes and effects), and understanding any constraints that may limit the solution.

System (business) requirement is a description of the needs and desires for an information system.

Functional requirement is what a system app is supposed to do from the end-user’s perspective.

Nonfunctional requirement is how the system operates in terms of speed, performance, security etc.