

Information Gathering

Information Gathering is a very key part of the feasibility analysis process. The main aim of fact finding techniques is to determine the information requirements of an organization used by analysts to prepare precise SRS (software requirements specification) understood by user.

What kinds of Information do we need?

- Information about the Firm/Organization
 - Policies
 - Goals
 - Objectives
 - Organization Structure
- Information about the User Staff
 - Authority Relationships
 - Job Functions
 - Information Requirements
 - Interpersonal Relationships
- Information about the Work Flow
 - Work Flow
 - Methods and Procedures
 - Work Schedules
 - DFD or Flowchart

Information Gathering Tools

There are various information-gathering tools. Each tool has a special function depending on the information needed.

- **Review of Literature, Procedures and Forms**

These are a very good starting point for gathering information. Procedural manuals can give a good picture of the system to be studied. The procedures manuals contain the requirements of the system. This helps in determining to what extent the goals are met by the present system.

- **On Site Observation**

The main objective of an on-site visit is to get as close to the real system as possible. It is important that the person who visits on site is a keen observer and is knowledgeable about the system and the normal activities that occur within the system. There are various observation methods used:

1) Natural or contrived: A natural observation occurs in a setting such as the employee's place of work, the observer in a place like a laboratory sets up a contrived observation.

2) Obtrusive or unobtrusive: An obtrusive observation takes place when the respondent knows he/she is being observed; an unobtrusive observation take place in a contrived way such as behind a one-way mirror.

3) Direct or indirect: A direct observation takes place when the analyst actually observes the subject or the system at work. In an indirect observation, the analyst uses mechanical devices such as cameras and videotapes to capture information.

4) Structured or unstructured: In a structured observation, the observer looks for and records a specific action. Unstructured methods place the observer in a situation to observe whatever might be pertinent at the time.

- **Interviews and Questionnaires**

Interview is a flexible tool and a better tool than a questionnaire for the evaluation of the validity of the information that is being gathered.

Interviews: It is a face to face interpersonal role situation, in which a person called the interviewer, asks questions to another person, designed to gather information about a problem.

Questionnaire: This tool has collection of questions to which individuals respond. Questionnaire is a self-administered tool that is more economical and requires less skill to administer than the interview.

Arranging the Interview:

The interview should be arranged so that the physical location, time of the interview and order of interviewing assure privacy and minimal interruption. Appointments should be made well in advance and a fixed time period adhered to as closely as possible. Interview schedules generally begin at the top of the organization structure and work down so as not to offend anyone.

Types of Interviews and Questionnaires

Interviews and Questionnaires vary widely in form and structure. Interviews range from highly unstructured to the highly structured alternative in which the questions and responses are fixed.

The Unstructured Alternative: The Unstructured interview is non-directive information gathering technique. It allows respondents to answer questions freely in their own words. The responses in this case are spontaneous and self-revealing.

The Structured Alternative: In this alternative the questions are presented with exactly the same wordings and in the same order to all subjects. Structured interviews and questionnaires may differ in the amount of structuring of the questions. Questions may be either closed or open-ended. An open-ended question requires no response direction or specific response. Closed questions are those, in which the responses are presented as a set of alternatives.

Structured Analysis

Structured Analysis is a development method that allows the analyst to understand the system and its activities in a logical way. It is a systematic approach, which uses graphical tools that analyze and refine the objectives of an existing system and develop a new system specification which can be easily understandable by user.

Structured Analysis Tools

During Structured Analysis, various tools and techniques are used for system development. They are –

- Data Flow Diagrams
- Data Dictionary
- Decision Trees
- Decision Tables
- Structured English
- Pseudo-Code

Data Flow Diagrams (DFD) or Bubble Chart

Data flow diagram is graphical representation of flow of data in an information system. It is capable of depicting incoming data flow, outgoing data flow and stored data. The DFD does not mention anything about how data flows through the system.

Types of DFD

Data Flow Diagrams are either Logical or Physical.

Logical DFD - This type of DFD concentrates on the system process, and flow of data in the system.

Physical DFD - This type of DFD shows how the data flow is actually implemented in the system. It is more specific and close to the implementation.

DFD Components

DFD can represent Source, destination, storage and flow of data using the following set of components -



- **Entities** - Entities are source and destination of information data. Entities are represented by rectangles with their respective names.
- **Process** - Activities and action taken on the data are represented by Circle or Round-edged rectangles.
- **Data Storage** - There are two variants of data storage - it can either be represented as a rectangle with absence of both smaller sides or as an open-sided rectangle with only one side missing.
- **Data Flow** - Movement of data is shown by pointed arrows. Data movement is shown from the base of arrow as its source towards head of the arrow as destination.

Data Dictionary

Data dictionary is the centralized collection of information about data. It stores meaning and origin of data, its relationship with other data, data format for usage etc. Data dictionary has rigorous definitions of all names in order to facilitate user and software designers.

Contents

Data dictionary should contain information about the following

Data Flow: data flows are data structures in motion

Data Structure: a group of data elements handled as a unit.

Data Elements: smallest unit of data that provides for no further decomposition.

Data Stores: data stores are data structures at rest. A data store is a location where data structures are temporarily located.

Data Processing: There are two types of Data Processing:

- Logical: As user sees it
- Physical: As software sees it

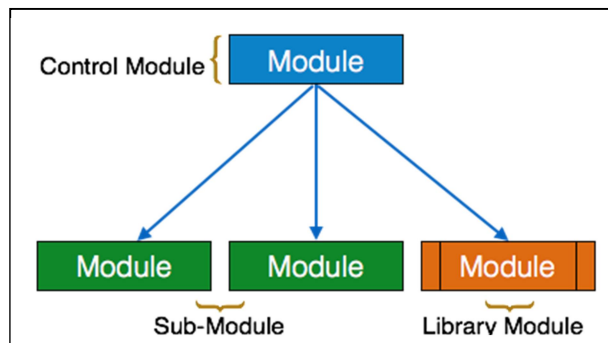
Structure Charts

Structure chart is a chart derived from Data Flow Diagram. It represents the system in more detail than DFD. It breaks down the entire system into lowest functional modules, describes functions and sub-functions of each module of the system to a greater detail than DFD.

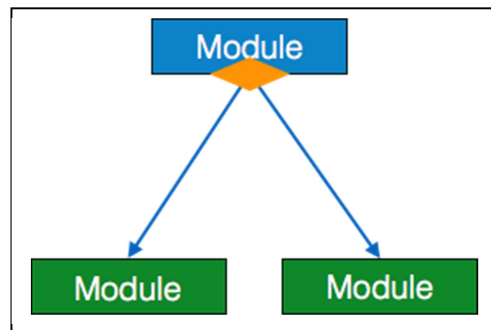
Structure chart represents hierarchical structure of modules. At each layer a specific task is performed.

Here are the symbols used in construction of structure charts -

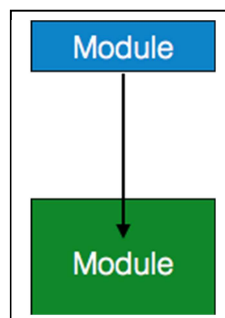
Module - It represents process or subroutine or task. A control module branches to more than one sub-module.



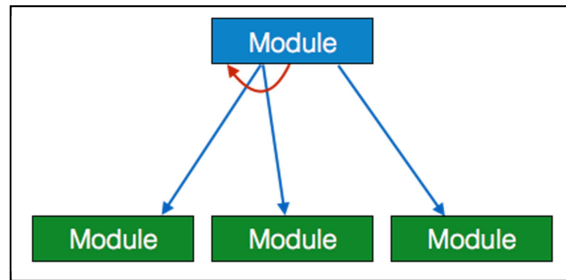
Condition - It is represented by small diamond at the base of module. It depicts that control module can select any of sub-routine based on some condition.



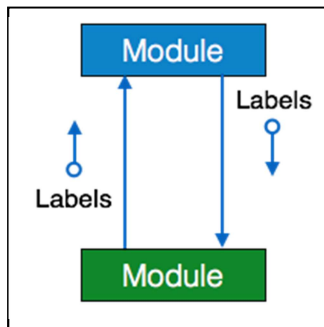
Jump - An arrow is shown pointing inside the module to depict that the control will jump in the middle of the sub-module.



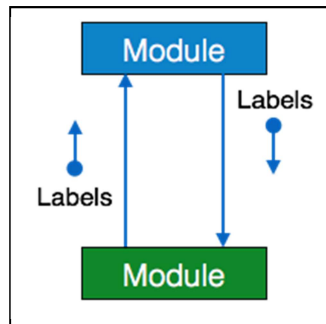
Loop - A curved arrow represents loop in the module. All sub-modules covered by loop repeat execution of module.



Data flow - A directed arrow with empty circle at the end represents data flow.



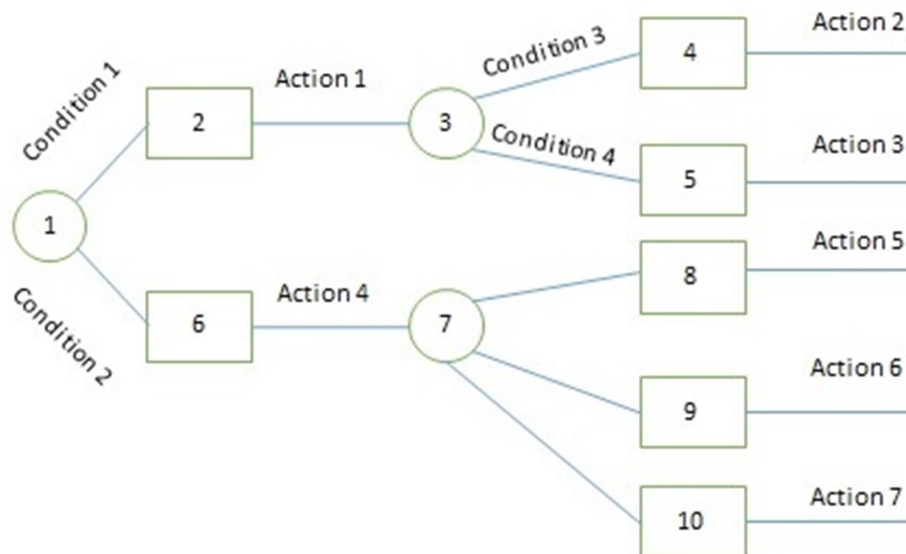
Control flow - A directed arrow with filled circle at the end represents control flow.



Decision Trees

Decision trees are a method for defining complex relationships by describing decisions and avoiding the problems in communication. A decision tree is a diagram that shows alternative actions and conditions within horizontal tree framework. Thus, it depicts which conditions to consider first, second, and so on.

Decision trees depict the relationship of each condition and their permissible actions. A square node indicates an action and a circle indicates a condition.



Decision Tables

A Decision table represents conditions and the respective actions to be taken to address them, in a structured tabular format.

It is a powerful tool to debug and prevent errors. It helps group similar information into a single table and then by combining tables it delivers easy and convenient decision-making.

Structured English

Structure English is derived from structured programming language which gives more understandable and precise description of process. It is based on procedural logic that uses construction and imperative sentences designed to perform operation for action.

Pseudo-Code

Pseudo code is written more close to programming language. It may be considered as augmented programming language, full of comments and descriptions. A Pseudo-Code does not conform to any programming language and expresses logic in plain English. Pseudo-Code contains more programming details than Structured English. It provides a method to perform the task, as if a computer is executing the code.