

3. Analysis

After the feasibility study, the analyst takes the formal acceptance of the proposed system from the requested department. The next step is to study the current system in detail, so that the system requirements can be determined.

During systems analysis, the analyst obtains actual specifications of the system by clearly understanding the needs of the users. After analysis, a document is prepared by the analyst, which is called as Software Requirement Specification (SRS) document.

Many methods and languages have been developed for requirements analysis.

- Structured Analysis and Design Technique (SADT) – simply called as ‘Structured Analysis’ – is the most commonly used method for analysis.
- Problem Statement Language (PSL) – is fundamentally the same as the structured analysis, but it is purely textual whereas structured analysis uses both text and graphics.
- Requirements Statement Language (RSL) – are some of the languages developed for specifying the requirements. PSL.

RSL has been specially designed for specifying the requirements of real time control systems.

Data collection is an important part of feasibility analysis and systems analysis phase. Many techniques are used for collection of data, which are commonly known as *fact finding techniques*.

3.1. Preliminary Investigation

The first step in the system development life cycle is the preliminary investigation to determine the feasibility of the system. The purpose of the preliminary investigation is to evaluate project requests. It is the collecting of information that helps committee members to evaluate the merits of the project request and make an informed judgement about the feasibility of the proposed project.

Analysts working on the preliminary investigation should accomplish the following objectives:

1. Clarify and Understand the Project Request.

What is being done? What is required? And why? Is there an underlying reason different from the one the user identifies?

2. Determine the size of the project.

3. Assess costs and benefits of alternative approaches.

4. Determine the technical and operational feasibility of alternative approaches.
5. Report the finding to management, with recommendations outlining the acceptance or rejection of the proposal.

3.2. Scope of Study

The preliminary review of the system is performed which assists in recognizing the scope of the system. Feasibility study occurs depending on the result of the original study. The feasibility study is essentially the test of the projected system in the light of:

- Its workability.
- Fulfilling user's needs.
- Effective utilization of resources.
- The cost usefulness.

3.3. Conducting the Investigation

The data collected by the analysts during preliminary investigations are gathered through three primary methods:

1. ***Reviewing Organization Documents:*** The analysts conducting the investigation first learn about the organization involved in, or affected by the project.
Example: To review an inventory systems proposal means knowing first how the department works and who are the persons directly associated with inventory system. Analysts can get some details by examining organization charts and studying written operating procedures. The procedures clearly define various important steps involved in receiving, managing and dispersing stock.
2. ***On-site Observations:*** In this method, the analysts observe the activities of the system directly. One purpose of on-site observation *is to get as close as possible to the real system being studied.* During on-site observation, the analyst can see the office environment, work local of the system and the users, methods of work and the facilities provided by the organization to the users.
3. ***Conducting Interviews:*** The above two methods tell the analysts how the system should operate, but they may not include enough details to allow a decision to be made about the merits of a system proposal, nor do they present user views about current operations. ***Analysts use interview to learn these details.***

3.2 Testing Project Feasibility

Feasibility is the determination of whether a project is worth doing. The process followed in making this determination is called a feasibility study. Once it has been determined that a project is feasible, the analyst can go ahead and prepare at the project specification which finalizes project requirements. The contents and recommendations of such a study will be used as a bases for deciding whether to proceed, postpone or cancel the project.

Three significant tests of feasibility are considered and described below:

1. *Technical Feasibility:* This is concerned with specifying *equipment* and *software* that will successfully satisfy the user requirement. The technical needs of the system may vary considerably, but might include:

- ❖ The facility to produce outputs in a given time.
- ❖ Response time under certain conditions.
- ❖ Ability to process a certain volume of transaction at a particular speed.
- ❖ Facility to communicate data to distant location.

Out of all types of feasibility, technical feasibility generally is the most difficult to determine.

2. *Operation Feasibility:* It is mainly related to human organizational and political aspects. The points to be considered are:

- ❖ What changes will be carried with the system?
- ❖ What organizational structures are disturbed?
- ❖ What new skills will be required? Do the existing staff members have these skills? If not, can they be trained in due course of time?

This feasibility study is carried out by a small group of people who are familiar with information system techniques, who understand the parts of the business that are relevant to the project and are skilled in system analysis and design process.

3. *Economic Feasibility:* Economic analysis is the most frequently used technique for evaluating the effectiveness of a proposed system. More commonly known as cost/benefit analysis; the procedure is to determine the benefits and savings that are expected from a proposed system and compare them with costs. If benefits outweigh costs, a decision is taken to design and implement the system. Otherwise, further justification or alternative in the proposed system will have to be made if it has a chance of being approved. This is an ongoing effort that improves in accuracy at

each phase of the system life cycle.

A number of approaches for evaluating the costs of solutions have been suggested. Approaches include the following:

- ❖ **Last cost:** This is based on the observation that costs are easier to control and identify the revenues. Thus, it assumes that there is no change in income caused by the implementation of a new system. In such an evaluation, only the costs are listed and the option with the lowest cost is selected.
- ❖ **Time to Payback:** This method of economic evaluation is an attempt to answer the question. How long would it be until we get out money back on this investment in system? This requires data on both costs and benefits. This method of evaluation has *two significant disadvantages*:
 - It only considers the time taken to return the original investment and ignores the system's long term profitability.
 - The method does not recognize the time value of money. Benefits that accrue in the distant future are not worth as much as similar benefits that occur more quickly but this method fails to recognize this.
- ❖ **Cost-effectiveness:** Some type of cost benefit analysis is performed for each alternative. Rough projections of equipment requirements and costs, operational costs, manpower costs, maintenance cost, etc., need to be made. Projections of potential, tangible as well intangible benefits are also needed to be made.

Example: Tangible benefits are ability to obtain information, which was previously not available, faster or timely receipt of information, improved or better decision making, improvement in planning and control etc.

In the conduct of the feasibility study, some more interrelated types of feasibility can be considered are discussed below:

1. **Social Feasibility:** Social feasibility is a determination of whether a proposed project will be acceptable to the people or not.
2. **Management Feasibility:** It is a determination of whether a proposed project will be acceptable to management. If management does not accept a project or gives a negligible support to it, the analyst will tend to view the project as a non-feasible one.
3. **Legal Feasibility:** Legal feasibility is a determination of whether a proposed project infringes on known

Acts, statutes, as well as any pending legislation.

4. *Time Feasibility:* Time feasibility is a determination of whether a proposed project can be implemented fully within a required time frame. If a project takes too much time it is likely to be rejected.

3.3 Handling Infeasible Projects

It is not essential that all projects that are submitted for assessment and examination are good enough. Generally, requests that do not pass all the feasibility tests are not followed further, unless they are customized and re-submitted as fresh proposals. Sometimes, it so happens that a part of a recently developed system is not functional and the collection committee may choose to unite the workable portion of the project with another feasible proposal.