**CHAPTER - 2**

**PROJECT MANAGEMENT**

* 1. **PROJECT PLANNING AND SCHEDULING**

**2.1.1 Project Development approach:**

Effective software project management is crucial to the success of any software project. Faulty software project management leads to failure in completion of software projects. The main goal of software project management is to enable a group of software engineers to work efficiently towards successful completion of project.

* **Feasibility Study:**

Once scope has been identified it is reasonable to ask: “Can we build software to meet this scope? Is the project feasible?”

The main aim of the feasibility study activity is to determine whether it would be financially and technically feasible to develop the product. The feasibility study activity involves the analysis of the problem and the collection of relevant information relating to the product such as the different items which would be input to the system, the processing required to be carried out on these data, the output data required to be produced by the system, as well as various constraints on the behavior of the system.

Preliminary investigation examine the project Feasibility, the likelihood the system will be useful to the organization. There are three basic tests of feasibility study for computation of a new system, and each one is equally important. These tests are

* Behavioral or operational feasibility
* Technical feasibility
* Economical or Financial feasibility
* **Behavioral or Operational Feasibility:**
* In this test we have to know that a new created system will gives the same functionality as older system is giving?
* Is system able to perform its all operations like Sending mails, Pay roll management, content management, Help, Message board facility, Personal Messaging, etc.?
* Are all these basic operations will be perform if we use new system?
* Proposed project are beneficial only if they can be turned into information system that will meet the organization’s operating requirements. Simply stated, this test of feasibility asks if the system will work when it is developed and installed. Will there be major barriers to implementation?

It has to be seen whether there is sufficient support from management and from the users. If the system is well liked and used to the extent that persons will not be able to see reason for a change, there may be resistance.

It the current business methods are not acceptable to the users, they may welcome a change that will bring about a more operational and useful system.

The planning and development of the project. It will reduce the chance of resistance to the system and change in general and increase the likelihood of successful project.

Lastly, it has to be seen that the proposed system does not harm the organization in any way, such as loss of control over information, or individual performance being poor considered carefully.

Issues that appear to be relatively minor in the beginning, have ways of growing into problems after implementation. Therefore, all operational aspects have been considered carefully.

It is quite feasible to implement the new proposed system. In addition to that we are going to train the concerted staff and will also be providing them with the USER’S MANUAL to operate the proposed system.

* **Technical Feasibility**
* In this test we will ensure that is the system is easy to develop?
* Is this system able to handle more clients at a same time?
* Is system efficient to handle high data processing?
* If system needs to expand capacity then all resources will be given so that system can perform faster than old system?

Technical issues were also raised during the feasibility study. It has been observed that technical knowhow is available in plenty and it is easily accessible to the organization.

The equipment required for the proposed system is also easily available and it has the technical capacity to hold the volume of data required for the new system.

The system can also be expanded if the need arises. There are technical guarantors of accuracy, reliability and ease of data, and data security.

* **Economical Feasibility**
* By this test we can ensure about that is this new system is affordable?

A system that can be developed technical and that will be used if installed must be a good investment for the organization. Financial benefits must equal or exceed the cost. The financial and economical question raised during the preliminary investigations is for estimating the following:

* The cost to conduct a full systems investigation.
* The cost of hardware and software for the class of application being considered.
* The benefits in the form of reduce costs or fewer costly errors.
* The cost if the proposed system is not implemented.

To be judged feasible, a project proposal must pass these entire tests. Otherwise, it is not a feasible project. Our preliminary investigation revealed that the project is feasible in all this aspects.

The organization gets the following benefits by using the proposed Information system:

* Greater speed in processing data.
* Improved accuracy and consistency.
* Faster information retrieval.
* Reduced costs.
* Better security.
* Competitive advantage.
* Enhanced communication.

**2.1.2 Project Plan**

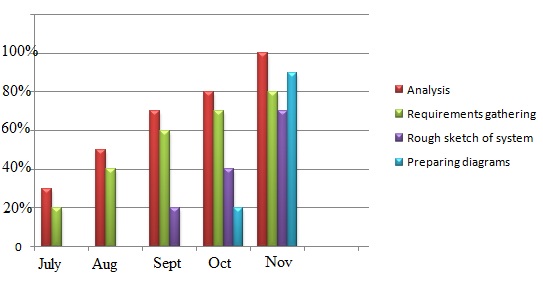
Once a project is found to be feasible, software project managers undertakes project planning. Project planning is undertaken and completed even before any development activity starts.

The objective of software project planning is to provide a framework that enables the manager to make reasonable estimates of resources, cost, and schedule. These estimates are made within a limited time frame at the beginning of a software project and should be updated regularly as the project progresses.

Project planning consists of the following essential activities:

* Estimating some basic attributes of the project
  + Cost: how much it will cost to develop the project?
  + Duration: how long it will take to complete the development?
  + Efforts: how much effort would be required?
* The effectiveness of the Planning activities is based on the accuracy of following estimations:
* Scheduling manpower and other resources
* Staff organization and staffing plans
* Risk identification, analysis and abatement planning
* Miscellaneous plans such as quality assurance plan, configuration management plan, etc.

**2.1.3 Schedule Representation**



**Fig. 2.1.3 Schedule Representation**

## RISK MANAGEMENT

**2.2.1 Risk Identification**

* Risk management involves a series of steps software engineers take to identify, address, and remove project risks throughout the entire software development life cycle. Risk management deals with risk types such as generic, project, product-specific, product, and business risks. Generic risks include "across-the-board" risks that can occur at any time, such as project funding or team member availability. Project risks include those that affect the project or resources, such as budget constraints or a tight time frame for completion. Product-specific risks deal with factors associated with the type of software engineering project, such as providing adequate pre-release testing resources. Product risks affect the quality or performance of the software and can include the quality of program code or changes in requirements. Business risks concern the viability of the project itself, and include changes in economic conditions or management decisions.
* **Inputs to Risk Identification**
* Identify the benefits of understanding the inputs to risk identification.
* Identify examples of the project planning outputs that should be reviewed prior to risk identification.
* Match the risk categories to examples of their business risks.
* Identify examples of sources of historical information.
* **Tools and Techniques, and Outputs for Risk Identification** 
  + Recognize the value of understanding the tools and techniques and the outputs of risk identification.
  + Identify the steps to performing documentation reviews.
  + Apply the steps to prepare for a documentation review for a given project.
  + Sequence the steps of the interviewing technique used for risk identification.
  + Apply the interviewing technique to gather information about project risks, given a scenario.
  + Identify the steps to creating a cause-and-effect diagram.
  + Choose the appropriate cause-and-effect diagram for a given project risk in a scenario.
  + Identify examples of the outputs from risk identification

## 2.2.2 Risk analysis

* Risk analysis involves determining and assessing probability and impact. Software engineers usually classify risk probability with statistical numbers. Calculated risk ranks in the order engineers believe it will occur. The associated impact of a calculated risk can be classified using numbers that rate the impact as negligible, marginal, critical, or catastrophic. Engineers then create a risk assessment chart listing known risks by type, probability and impact.
* **Risk management:-**

Evaluates which risks identified in the risk assessment process require management and selects and implements the plans or actions that are required to ensure that those risks are controlled.

* **Risk communication:-**

Involves an interactive dialogue between stakeholders and risk assessors and risk managers which actively informs the other processes.

There are two points to keep in mind when analyzing risk:

1. Where is the risk?
2. How significant is the risk

**2.2.3 Risk Planning**

With risks identified, analyzed and prioritized, engineers then decide on a course of action. This may require taking a step back and gathering additional information on the potential risks and costs involved with them. It can also involve creating a contingency plan in the event the risk does happen, deciding on a way to reduce the chances of the risk occurring, or making the decision to accept the possibility of the risk occurring and waiting to develop a plan until it does.

#### Risk Avoidance

Includes not performing an activity that could carry risk.

* **Risk Reduction**

Involves methods that reduce the severity of the loss.

#### Risk Retention

Involves accepting the loss when it occurs. True [self-insurance](http://en.wikipedia.org/wiki/Self_insurance) falls in this category. Risk retention is a viable strategy for small risks where the cost of insuring against the risk would be greater over time than the total losses sustained.

* **Risk Transfer**

Means causing another party to accept the risk, typically by [contract](http://en.wikipedia.org/wiki/Contract) or by [hedging](http://en.wikipedia.org/wiki/Hedging).

The planning by which the risks cannot occur is:

* Interact with all branches.
* Authorize carefully and creating new safe security system for that.
* Make new security for natural threats.
  1. **ESTIMATION**

**2.3.1 Effort Estimation**

Based on the breakdown of tasks, inputs, and outputs, the expected effort range required for each task is determined using a calibrated estimation model based on historical size-effort data were available and relevant, or other methods like expert judgment. Task dependencies are established and potential bottlenecks are identified using suitable methods (for example, critical path analysis). Bottlenecks are resolved where possible, and the expected schedule of tasks with projected start times, durations, and end times is produced. Resource requirements (people, tools) are translated into cost estimates. This is a highly iterative activity which must be negotiated and revised until consensus is reached among affected stakeholders (primarily engineering and management).