

ACTIVITIES & METHODOLOGIES

Activities of Project Management

Project management plan begins with a set of activities that are involved in the development process.

- Overview of the project
- Project deliverables
- Managerial processes
- Technical processes
- Work packages
- Schedule of the project
- Budget estimation

Characteristics of Project

Some of the characteristics of project include:

- Planning of process is required;
- Clear objectives have to be specified;
- Project must have a predetermined time span;
- Involves different phases of work;
- Resources used on the project are constrained.;
- Non-routine tasks are involved.

Activities Covered by SPM

A software project is considered as a software application with specific elements associated with each type of project. The lists of activities involved in software project management are:

- Feasibility Study;
- Planning Phase;
- Project Execution.

Feasibility Study

A valid business case implies a prospective project. The necessary information required for the proposed application is gathered. Initial requirement stage is quite complex

and difficult. The client is aware of the problems but not sure of how to achieve the solution. Estimation becomes an important factor in the development of the product. Developmental and operational costs have to be estimated along with the benefits of the system. For a complex project, the feasibility study can have sub phases and strategic planning becomes essential in prioritizing the range of potential software developments. Group of projects are termed as a planned programme of development.

Feasibility studies aim to objectively and rationally uncover the strengths and weaknesses of the existing business or proposed venture, opportunities and threats as presented by the environment, the resources required to carry through, and ultimately the prospects for success. In its simplest term, the two criteria to judge feasibility are cost required and value to be attained. As such, a well-designed feasibility study should provide a historical background of the business or project, description of the product or service, accounting statements, details of the operations and management, marketing research and policies, financial data, legal requirements and tax obligations. Generally, feasibility studies precede technical development and project implementation.

Technology and System Feasibility

The assessment is based on an outline design of system requirements in terms of Input, Processes, Output, Fields, Programs, and Procedures. This can be quantified in terms of volumes of data, trends, frequency of updating, etc. in order to estimate whether the new system will perform adequately or not. Technological feasibility is carried out to determine whether the company has the capability, in terms of software, hardware, personnel and expertise, to handle the completion of the project when writing a feasibility report, the following should be taken to consideration:

- A brief description of the business
- The part of the business being examined
- The human and economic factor
- The possible solutions to the problems

At this level, the concern is whether the proposal is both technically and legally feasible.

Economic Feasibility

Economic analysis is the most frequently used method for evaluating the effectiveness of a new system. More commonly known as cost/benefit analysis, the procedure is to

determine the benefits and savings that are expected from a candidate system and compare them with costs. If benefits outweigh costs, then the decision is made to design and implement the system. An entrepreneur must accurately weigh the cost versus benefits before taking an action.

Cost-based study: It is important to identify cost and benefit factors, which can be categorized as follows: Development costs and Operating costs. This is an analysis of the costs to be incurred in the system and the benefits derivable out of the system.

Time-based study: This is an analysis of the time required to achieve a return on investments. The future value of a project is also a factor.

Legal Feasibility

Legal feasibility determines whether the proposed system conflicts with legal requirements, e.g. a data processing system must comply with the local Data Protection Acts.

Operational Feasibility

Operational feasibility is a measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.

Schedule Feasibility

A project will fail if it takes too long to be completed before it is useful. Typically this means estimating how long the system will take to develop, and if it can be completed in a given time period using some methods like payback period. Schedule feasibility is a measure of how reasonable the project timetable is.

Planning Phase

The planning phase comes into existence only if the proposed project is a prospective one. This is found only by the outcome of the feasibility study phase. In case of complex project, a detailed plan is not needed during the initial stage of planning phase. Instead, an outline plan is formulated for the whole project except for the first phase, which has a detailed one. As the project steps into different phases, a detailed plan for each stage can be developed as they are approached this will provide a clear idea about what should be done at every stages of the development.

The Project Planning Phase is the second phase in the *project life cycle*. It involves creating of a set of plans to help guide your team through the execution and closure phases of the project. The plans created during this phase will help you to manage time, cost, quality,

change, risk and issues. They will also help you manage staff and external suppliers, to ensure that you deliver the project on time and within budget.

In the Planning Phase, the team defines the solution in detail what to build, how to build it, who will build it, and when it will be built. During this phase the team works through the design process to create the solution architecture and design, writes the functional specification, and prepares work plans, cost estimates, and schedules for the various deliverables.

The Planning Phase culminates in the Project Plans Approved Milestone, indicating that the project team, customer, and key project stakeholders agree on the details of the plans. Plans prepared by team members for areas such as communications, test, and security, are rolled up into a master plan that the program manager coordinates. The team's goal during this phase is to document the solution to a degree that the team can produce and deploy the solution in a timely and cost-effective manner. These documents are considered living documents, meaning they will be updated continuously throughout the Planning Phase. Diligent work in the Planning Phase, which often involves several iterations of plans and schedules, should mitigate risks and increase chances for success. The team continues to identify all risks throughout the phase, and it addresses new risks as they emerge.

Project Execution

There are two phases of project execution namely design and implementation. The boundary between these two phases must be clearly understandable. Design is about thinking and decision making about the form of the products which has to be created. Implementation lays down the activities that have to be carried out to create these products. Planning and design phase are difficult to separate at the most detailed level because planning decisions are influenced by design decisions. For example, if a software product development has five components then it must have five sets of activities defined for each component.

Project execution is the process from after the contract is signed to the point where the technology is ready for operational use. New and modified products must be ready from a technological and operational point of view before installation and operational use. This is achieved by carrying out the project planning process followed by the project execution process. A successful project execution process will make a new or modified product ready from a technological and operational point of view.

The project planning process will identify technical gaps related to the product itself, environment, standards, governing documents, verification, handling and documentation. The

technology qualification program (TQP) is a project plan that describes activities and decision gates for a specific product required to close these gaps.

The project planning process may also identify gaps related to vendor's organization. These gaps must be corrected prior to project execution and is not a part of the TQP. A preliminary TQP will be worked out by the vendor as a part of their tender. The TQP will be finalized in cooperation with the operator prior to contract award. There will be no need for the TQP when a product can be delivered off the shelf in accordance with operator's technical requirements.

The TQP describes required activities related to 'development and qualification testing (QT) in the above figure. Technology readiness is achieved when the TQP activities are executed and accepted.

The manufacturing and factory acceptance testing (FAT) is controlled by the quality plan. The operational preparations are controlled by the operational manager. Operational readiness is achieved when the manufacturing and operational preparations are finalized and accepted.

Vendors have quality assurance (QA) systems to provide quality in all steps of their services. These QA systems shall be used to establish the TQP and quality plans during the project planning process. Operators have requirements and recommended practices that shall be used during the operational preparation process. Still there is need for a practical summary of the entire project execution process as it will be for new technology. Such summary is wanted by completion-and drilling engineers responsible for the project planning process and will be used to control the content of the TQP and quality plan worked out by the vendors.

This need has resulted in the development of a guideline describing the entire project execution process. The guideline is fit ted to operator needs and has thus emphasis on qualification activities. The guideline is made for well technology, but the main principles can be used for most technology elements.

Plan, Methods & Methodologies

An **activity plan** is based on some method of work. To test software the following list is assumed.

- Requirement analysis for the software;
- Develop test cases for each requirement;
- Creating test scripts, expected results;
- Comparison of actual result with the expected result;
- Identifying the discrepancies.

A **method** denotes a kind of activity.

A **plan** takes the method and converts it to activities. Every activity identified must contain the start and end dates, the responsible person to carry out the activity, what tools and materials are used.

Complex procedures can be handled in sequence or in parallel manner. The output of the first method will be the input of the second method, the second one's output might be the input of the third one and so on. Methods grouped together are termed as methodologies. For example, object oriented design is a methodology made up of several methods.

In strategic planning, resource allocation is a plan for using available resources, for example human resources, especially in the near term, to achieve goals for the future. It is the process of allocating resources among the various projects or business units. The plan has two parts: Firstly, there is the basic allocation decision and secondly there are contingency mechanisms. The basic allocation decision is the choice of which items to fund in the plan, and what level of funding it should receive, and which to leave unfunded: these resources are allocated to some items, not to others.

There are two contingency mechanisms. There is a priority ranking of items excluded from the plan, showing which items to fund if more resources should become available; and there is a priority ranking of some items included in the plan, showing which items should be sacrificed if total funding must be reduced.

Software Process/Phases of SPM

1. Project conception and initiation

An idea for a project will be carefully examined to determine whether or not it benefits the organization. During this phase, a decision making team will identify if the project can realistically be completed.

2. Project definition and planning

A project plan, project charter and/or project scope may be put in writing, outlining the work to be performed. During this phase, a team should prioritize the project, calculate a budget and schedule, and determine what resources are needed.

3. Project launch or execution

Resources' tasks are distributed and teams are informed of responsibilities. This is a good time to bring up important project related information.

4. Project performance and control

Project managers will compare project status and progress to the actual plan, as resources

perform the scheduled work. During this phase, project managers may need to adjust schedules or do what is necessary to keep the project on track.

5. Project close

After project tasks are completed and the client has approved the outcome, an evaluation is necessary to highlight project success and/or learn from project history. Projects and project management processes vary from industry to industry; however, these are more traditional elements of a project. The overarching goal is typically to offer a product, change a process or to solve a problem in order to benefit the organization.

