

# What's SPM?

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## A Working Definition

A Software Project is the complete procedure of software development from requirement gathering to testing and maintenance, carried out according to the execution methodologies, in a specified period of time to achieve intended software product.

## 1 History

In the 1970s and 1980s, the software industry grew very quickly, as computer companies quickly recognized the relatively low cost of software production compared to hardware production and circuitry. To manage new development efforts, companies applied the established project management methods, but project schedules slipped during test runs, especially when confusion occurred in the gray zone between the user specifications and the delivered software. To be able to avoid these problems, software project management methods focused on matching user requirements to delivered products, in a method known now as the waterfall model.

As the industry has matured, analysis of software project management failures has shown that the following are the most common causes:

1. Poor communication among customers, developers, users and project managers
2. Unrealistic or unarticulated project goals
3. Inaccurate estimates of needed resources
4. Badly defined or incomplete system requirements and specifications
5. Poor reporting of the project's status
6. Poorly managed risks
7. Use of immature technology
8. Inability to handle the project's complexity
9. Sloppy development practices
10. Stakeholder politics (e.g. absence of executive support, or politics between the customer and end-users)
11. Commercial pressures
12. Insufficient end-user involvement

## 2 Software Management Activities

Software project management comprises of a number of activities, which contains planning of project, deciding scope of software product, estimation of cost in various terms, scheduling of tasks and events, and resource management. Project management activities may include:

- Project Planning
- Scope Management
- Project Estimation

## A Project Planning

Software project planning is task, which is performed before the production of software actually starts. It is there for the software production but involves no concrete activity that has any direction connection with software production; rather it is a set of multiple processes, which facilitates software production.

## B Scope Management

It defines the scope of project; this includes all the activities, process need to be done in order to make a deliverable software product. Scope management is essential because it creates boundaries of the project by clearly defining what would be done in the project and what would not be done. This makes project to contain limited and quantifiable tasks, which can easily be documented and in turn avoids cost and time overrun.

During Project Scope management, it is necessary to:

- Define the scope
- Decide its verification and control
- Divide the project into various smaller parts for ease of management.
- Verify the scope
- Control the scope by incorporating changes to the scope

## C Project Estimations

For an effective management accurate estimation of various measures is a must. With correct estimation managers can manage and control the project more efficiently and effectively.

Project estimation may involve the following:

### Software size estimation

Software size may be estimated either in terms of KLOC (Kilo Line of Code) or by calculating number of function points in the software. Lines of code depend upon coding

practices and Function points vary according to the user or software requirement.

#### **Effort estimation**

The managers estimate efforts in terms of personnel requirement and man-hour required to produce the software. For effort estimation software size should be known. This can either be derived by managers' experience, organization's historical data or software size can be converted into efforts by using some standard formulae.

#### **Time estimation**

Once size and efforts are estimated, the time required to produce the software can be estimated. Efforts required is segregated into sub categories as per the requirement specifications and interdependency of various components of software. Software tasks are divided into smaller tasks, activities or events by Work Breakthrough Structure (WBS). The tasks are scheduled on day-to-day basis or in calendar months.

The sum of time required to complete all tasks in hours or days is the total time invested to complete the project.

#### **Cost estimation**

This might be considered as the most difficult of all because it depends on more elements than any of the previous ones. For estimating project cost, it is required to consider -

Size of software

Software quality

Hardware

Additional software or tools, licenses etc.

Skilled personnel with task-specific skills

Travel involved

Communication

Training and support

### **3 Project Monitoring and Control**

In this phase, the tasks described in project plans are executed according to their schedules.

Execution needs monitoring in order to check whether everything is going according to the plan. Monitoring is observing to check the probability of risk and taking measures to address the risk or report the status of various tasks.

These measures include -

- **Activity Monitoring** - All activities scheduled within some task can be monitored on day-to-day basis. When all activities in a task are completed, it is considered as complete.
- **Status Reports** - The reports contain status of activities and tasks completed within a given time frame, generally a week. Status can be marked as finished, pending or work-in-progress etc.
- **Milestones Checklist** - Every project is divided into multiple phases where major tasks are performed (milestones) based on the phases of SDLC. This milestone checklist is prepared once

every few weeks and reports the status of milestones.

### **4 Project Communication Management**

Effective communication plays vital role in the success of a project. It bridges gaps between client and the organization, among the team members as well as other stake holders in the project such as hardware suppliers.

Communication can be oral or written. Communication management process may have the following steps:

- **Planning** - This step includes the identifications of all the stakeholders in the project and the mode of communication among them. It also considers if any additional communication facilities are required.
- **Sharing** - After determining various aspects of planning, manager focuses on sharing correct information with the correct person on correct time. This keeps every one involved the project up to date with project progress and its status.
- **Feedback** - Project managers use various measures and feedback mechanism and create status and performance reports. This mechanism ensures that input from various stakeholders is coming to the project manager as their feedback.
- **Closure** - At the end of each major event, end of a phase of SDLC or end of the project itself, administrative closure is formally announced to update every stakeholder by sending email, by distributing a hardcopy of document or by other mean of effective communication.