

Project Management at a Startup – When, What and How

“In complex environments, planning is a paradox...Planning whether it is applied to overall product specifications, or detailed project management tasks, is too deterministic.”¹

Most of us would agree that developing a new software product at a startup company is a complex task with high uncertainty. Software startup companies try to seize the opportunity of providing a software solution for a business or technical problem. Often the solution incorporates new technologies that are immature or not very well understood. At the same time, startup companies are in the process of establishing an engineering culture, growing a development team, and developing an IT infrastructure and an organizational support network.

In this article, I will argue that project management can bring benefits to a startup company depending on **When, What and How**. There is a time **when** a startup company needs to make a commitment to deliver its software product to an outside party, such as for a pilot installation, a beta customer, an investor's evaluation or a trade show demonstration. This is the time when it is important for a startup company to have the ability to follow through on its commitments.

¹ “Messy, Exciting, and Anxiety Ridden: Adaptive Software Development,” Jim Highsmith, *The American Programmer*, April 1997

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Project management is a proven practice for delivering on a commitment. The purpose of project management is to make software product development more predictable with respect to both time and product content. The questions are: “**What are the project management activities to introduce?**” and “**How will they be introduced?**” These questions should be considered in the context of a startup company characterized by an environment of rapid change, a high level of unknowns and usually a shortage of resources.

On Your Mark!



Answering the question about “**What**” deserves a look at the different aspects of project management:

- ❖ **The software engineering process**, which specifies when engineering activities, such as requirements definition, design, testing, etc., are carried out, for how long, and what engineering deliverables result from each activity.
- ❖ **Planning**, which, according to the IEEE standard for software project plans, covers the scope, risks, schedule, technical process and managerial process.
- ❖ **Project organization and staffing**, which defines the team structure, roles and responsibilities, and includes bringing people with the required skills on board.
- ❖ **Leadership and teamwork**, which is a broad area covering rewards, collaboration versus command and control, work hour and work place policies, setting technical directions, etc.
- ❖ **Monitoring and taking corrective action**, which covers all activities during the execution of the project, such as assuring the integrity and quality of the product, making decisions, and tracking the completion of deliverables.

This brief overview of project management activities makes it clear that doing it all from the start could overwhelm any startup company.

Project management can add value to a startup company if it is introduced selectively based on the objective at hand. For example, a startup company may have the following expectations for what project management can bring to the company:

1. **Increasing the probability of delivering the product at the committed time.**
2. **Giving focus to engineering activities by providing discipline.**

Taking existing practices into account, a project manager can use these objectives as a guideline for selecting the project management activities with the highest payoff.

For example, expending energy on developing a software engineering process is premature if a company has not gone through an entire product development cycle. Defining the project organization is also not very critical if the size of the team is small and team members are willing to be jacks-of-all-trades. Staffing for a startup company often means recruiting. Without a doubt, it is important for startup companies to assemble a team with the right mix of skills; although, recruiting is an ongoing activity and not project specific. At a startup company, everyone has a leadership role. It is the project manager's responsibility to create an environment where people can exercise their leadership skills.

When it comes to monitoring and taking corrective action, introducing a standard testing practice is more effective after the first development cycle. This is also true for configuration management and the build process. However, the project manager needs to make sure that the existing build process and version control practices are good enough to prevent source code corruption and allow the engineers to proceed with their implementation work.

As a software project management consultant, **what** I focus on is:

1. Planning, specifically **preparing a schedule** and **defining the requirements** for a product release
2. Monitoring/taking corrective action, specifically **weekly status meetings** and **establishing a change control process**

The two planning activities I focus on are preparing a schedule and defining the product requirements for the release.

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The following diagram depicts a model of **how** these two activities are related and who and what is involved.

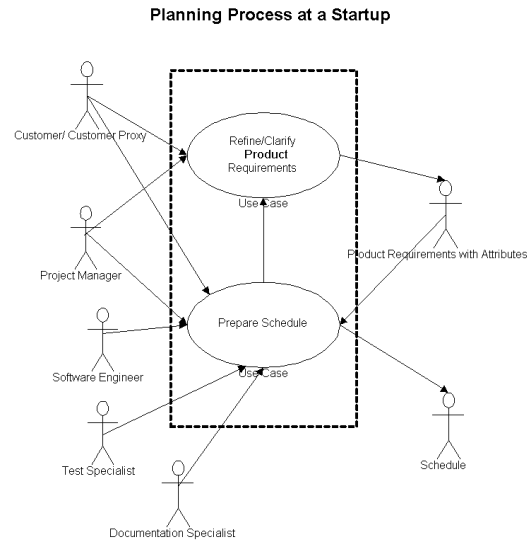


Figure 1: Planning Process – Use Case

The customer or customer proxy initiates the process by defining the requirements, which serve as input to the schedule preparation. The schedule preparation process depends on input from the customer, software engineer, test specialist, documentation specialist, etc. The result of this process is influenced by **how** the project manager engages all of the parties in defining requirements and preparing the schedule.

The project manager adds value to this process by engaging the customer or customer proxy through clarifying requirements by:

- ❖ **Splitting compound requirements statements into several requirements**
- ❖ **Adding definitions for terms (glossary) and using them consistently**
- ❖ **Using a common sentence structure and the term “shall”**
- ❖ **Quantifying statements when possible**
- ❖ **Adding detail**
- ❖ **Defining attributes for each requirement, for example, assigning a requirement to a software component, classifying its priority, estimating its efforts, or associating it with another requirement it depends on**

Furthermore, the project manager adds value by proposing the tasks and their organization as a starting point for getting input from engineers, who are responsible for completing the work.

The project manager influences **how** effective project status meetings are by:

1. **Creating an agenda for the meeting**
2. **Following up on action items**
3. **Facilitating the information exchange**
4. **Writing meeting minutes**

Establishing a change control process means weekly reviews of defects, enhancement requests and requirements change proposals. The project manager is responsible for calling a meeting with the product manager, quality assurance specialist and the engineer responsible for the software component. The project manager facilitates **how** the different parties arrive at the priority for a change request and which requests will be included in the release.

The success of project management at a startup company depends on a project manager who adapts the activities to the project, product and team at hand. The project manager needs to show leadership by introducing activities, but should be sensitive and flexible enough to retain and improve those that are effective.

At a startup company, the reality is that project management and planning in particular are under constant siege of schedule pressure.

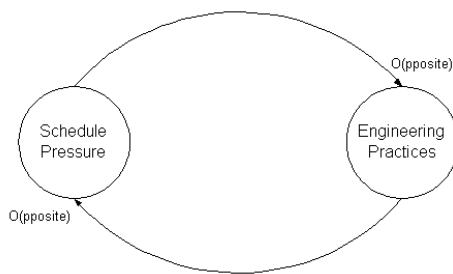


Figure 2: Schedule Pressure/Engineering Practices Causal Loop

Increasing schedule pressure frequently decreases the adherence to good engineering practices, which in turn increases the schedule pressure.

Practicing project management at a startup company or any company is a continuous process. Therefore, at the end of each development cycle, the project manager evaluates symptoms, such as:

- a. Schedule tracking was abandoned
- b. The time to create a product build increased
- c. Mismatches of interfaces discovered after implementation caused rework

These symptoms are either the result of schedule pressure or lack of adherence to engineering practices.

Based on these observations, the project manager suggests interventions that either reduce the schedule pressure or improve the engineering practices.

For example, a project manager needs to encourage a feasible schedule through the process described in Figure 1. This may also mean that the project manager suggests the use of unit testing in order to decrease the time it takes to build the product.

Project management at a startup company earns its keep by the degree it contributes to the company's goal of bringing a well-defined product to market. It is not prudent to try establishing all project management activities at once, but rather to introduce activities selectively, such as scheduling practices or scope/change management.

Keeping Track of Your Time with “Standard Time”

Imagine your boss walks into your office with the question, “How long do you think it will take you to add an ‘or’ clause to the Search feature?” If you are like most people, you will rely on your memory for how long it took you to complete a similar task. Think about your past answers. How reliable was your memory?

Now you can do better. “Standard Time” is a new software tool that helps you keep track of how you spend your time and manage your projects. With some data entry on your side, you won't have to rely on your memory, but you can rely on facts for your estimates instead. With “Standard Time,” you can also analyze your work habits and improve your efficiency.

Standard Time offers three ways you can characterize the work (tasks) you do. Each task is part of a project. Projects are grouped into different project types and the work for each task belongs to a category of tasks.

Projects are unique endeavors with a start and an end date, e.g., “P2E January 2001 Newsletter,” “AIX Gateway Release 2.05,” and “ACM Professional Development Seminar Fall 2000.” Whether you want to distinguish between different project types depends on the work you do. For example, a consultant may have the following project types: (1) Training, (2) Contract Project Management, and (3) Custom Software Development.

If you do something repeatedly, such as accounting at the end of the month in order to bill your clients, I suggest you set up a project called “Ongoing” with a project type of “Overhead.”

If your work involves software development, possible task categories are:

- ◇ Implementation
- ◇ Software installation and setup
- ◇ Unit test
- ◇ Co-worker assistance
- ◇ Interviews
- ◇ Review meetings
- ◇ Project meetings

Each project also has a client, who is simply the company name or person who pays the bills.

If you are unsure of what project types and categories will work for you, I suggest you start with your best guess, log your tasks for two weeks, and then review your setup using the reports provided by Standard Time. The reports will give you a better idea for how to characterize your work.

Here are some reports I found useful. The “Bar Chart, Project Breakdown” will give you an overview of the type of work you do for each project on a daily basis. On completion of a project, the “Pie Chart, Time for Each Category” helps you analyze the time spent on each task category for the project. At the end of the year, looking at the “Pie Chart, All Project Types” tells you the percentage of time spent on each project type.



Figure 3: Bar Chart – Project Breakdown

If you are responsible for developing software for a new release and fixing defects for the current release at the same time, the “Cross Tab Project by Week or Month” report will give you insight into which assignments consume most of your time.

To get into the habit of keeping track of your time, Standard Time has a reminder facility that alerts you to start a task, if no task is in progress, or to record the completion of a task, based on elapsed time.

Consultants can use Standard Time for logging their work and billing their clients. Software engineers can collect their own historical data to improve their estimates. Project managers can use it to collect actual hours worked from team members and import the data into Microsoft Project.

For more information or to order an evaluation copy of Standard Time, visit the Web site at <http://www.stdtime.com>.

P2E Calendar of Activities

- ◇ **Tues., Jan. 9, 4:00-6:00 p.m.**—“XP in the Trenches– Panel Discussion,” Joint SPIN and SQUAD meeting. Location: Anthem/Blue Cross Building, 700 Broadway, Denver. Contact UllaMerz@aol.com or 303-499-7301.
- ◇ **Wed., Jan. 10, 5:40-8:00 p.m.**—“The World of Wireless,” Speaker: Vipanj Patel, managing director at iSherpa, Location: Brobeck, 370 Interlocken Drive, Ste. 500, Broomfield. For more information, visit www.dimensional.com/~sms/bsc/.
- ◇ **Wed., Apr. 25**—“Project Management Institute (PMI) 2001 Spring Seminar,” Denver Marriott Hotel-City Center. For more information, visit www.pmi.org/chapters/milehi/pmiindex.htm.

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SOFTWARE STARTUP COMPANIES!**

