

A Case Study on Successful project Implementation

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ABSTRACT

In this paper we present and discuss the findings of a case study on software project management in software development projects and the conclusions drawn from it. These studies were motivated to improve software project management capabilities. First, we describe how these studies were organized and performed. In the main part we present our findings and conclusions showing that there are strong deficits in project management quality.

Keywords: case study, project management, quality, software project management

I. INTRODUCTION

Over the past years, software development projects have increasingly been plagued by schedule and cost overruns while product quality is often poor. In reaction to this, many software companies have started initiatives to improve their software development processes. In this context, a key factor in software development projects deserves particular attention: the project management. In this paper, we present a case study on software project management. These studies were motivated by the company's goal to improve software project management. Many software projects are faced with a common situation: They fail in developing the required functionality within their schedule and planned budget; the results often lack the quality. Thus, during the last years several companies have started initiatives to improve their software development [4]. These initiatives mostly focus on improving the software processes and the technology used during software development. One area often underestimated but crucial for every software development project is project management. Project management is one of the key factors influencing the project success or failure. In this paper we present and discuss the findings of a case study on project management in software development and the conclusions drawn from it. These studies were motivated by the company's goal to improve software project management. Before an improvement program could be developed, we first had to identify the strengths and weaknesses mainly focusing on project management [7]. We also wanted to get an overview of the problems project managers have to face in industrial software projects contributing to schedule and budget overruns as well as to software systems with poor quality. Thus, at the very beginning a project management assessment was performed using on-site interviews with software project managers. The results of the case study have been summarized in an assessment report. To verify the qualitative data collected during the assessment a second investigation was performed by measuring quantitative data of a software development project [9]. Based on the results of this study we are currently implementing a process improvement program mainly focusing on project management aspects. The key elements of this program will be presented.

II. DESCRIPTION OF THE CASE STUDY

At the beginning we performed a project management assessment by means of structured, on-site interviews with seven software project managers. Its purpose was to assess and better understand the current practice and problems of software project management. Furthermore their impact on software development projects was investigated. The questionnaire used for these interviews covers more than 70 factors potentially influencing the process and outcomes of software projects. To develop the questionnaire, other investigations were taken into consideration. The questions mainly address human factors and organizational aspects. Most of the information collected during these interviews was qualitative and subjective. Hence, in a follow-up study we performed a quantitative evaluation by measuring an already completed software project in considerable detail to verify the results of the first study. Furthermore this increased insight into the reasons for certain problems occurring during software development projects. Measuring a software project requires multiple sources of information. Hence, the empirical investigation was implemented as follows: First we collected data on the basis of several interviews with the technical manager and the project manager. In addition, we asked the project staff to complete questionnaires concerning personal aspects or quality assurance activities. Some information concerning defect and change management data was provided by a tracking system used in the

software project. Additionally, we analysed the project key deliverables such as the project plan, project status reports, source code, and user documentation. We now briefly describe the central aspects of software development projects we were interested in.

2.1 Project Profile

To record the specifics of the investigated projects, we measured characteristic attributes such as project nature, project scope, and project type. Furthermore we examined items such as the organization structures used on the project and the application domain.

2.2 Project Totals

To get an overview of the performance of the investigated projects, we compared the planned and actual items for overall project effort, schedule, and cost.

2.3 Project Tasks

In this study we asked the project managers to list all tasks that have been performed during the project and to estimate the percentages of project effort which each task required. To validate this information, we collected detailed task-by-task information on the resources, effort, schedule, and cost. Furthermore we were interested in the documents that had been produced in each task as well as in the size of the deliverables in terms of page counts.

2.4 Project Environment

To analyse the influence of the project environment, we were interested in attributes such as the goals or constraints levied against the project by senior management, customer or user demands. The level of customer and user involvement during different phases was measured on a 5-point ordinal scale.

2.5 Project Management

To assess the strengths and weaknesses of project management, we measured the following variables:

- Project management experience
- Time and effort invested by the project manager for management activities
- Methods and tools used for project planning, progress tracking, and cost tracking
- Responsibilities for project management activities
- Risk management (methods used for the analysis and monitoring of risk factors)

2.6 Project Staff

Since project staff skills mainly influence the software development project, we collected information on the qualification and experience of team members. Furthermore, to assess the quality of personnel management, we recorded data such as staff availability, training of team members, effort spent for communication, and team continuity. For the measured project, we were also interested in the size and structuring of the project team.

2.7 Quality Assurance

For the aspect of quality assurance we collected qualitative data on the kind of quality assurance function and the quality assurance activities performed during the project. We explored the effectiveness of quality assurance activities. We collected information on the number of defects found and the effort required. For every defect we recorded the origin, the severity, the amount of effort required to fix it, and the quality assurance activity that helped to uncover the defect.

2.8 Project Outcomes

The project outcomes were only analysed in case of this study. For each document produced during the project we were interested in the nature of the document (e.g. specification, design document, user documentation) and the number of pages in total. For the source code we measured the size in lines of code per baseline. We distinguished different code classes such as delivered code, generated code, prototyping code, test code, and reused code. In addition, the complexity of the source code per baseline was measured. To capture the productivity, we were also interested in the number of documentation pages and in the number of lines of code produced per calendar month, and the number of personnel involved.

2.9 Project Initiation

In project management, initiating includes recognizing and starting a new project. An organization should put considerable thought into project selection to ensure that it initiates the right kinds of projects for the right reasons. It is better to have a moderate or even small amount of success on an important project than huge success on one that is unimportant. The selection of projects for initiation, therefore, is crucial, as is the selection of project managers. Ideally, the project manager would be involved in initiating a project, but often the project manager is selected after many initiation decisions have already been made. Organizations must also understand and plan for the ongoing support that is often required after implementing a new system or other product or service resulting from a project. It is important to remember that strategic planning should serve as the foundation for deciding which projects to pursue. The organization's strategic plan expresses the vision, mission, goals, objectives, and strategies of the organization. It also provides the basis for information technology project planning. Information technology is usually a support function in an organization, so it is critical that the people initiating information technology projects understand how those projects relate to current and future needs of the organization.

III. SUCCESSFUL PROJECT METHODOLOGY IMPLEMENTATION CRITERIA

3.1 Learn To Accomplish Our Work On Time

Successful project methodology implementation can be achieved if we know how to select a proper methodology that fits the needs of our project and how to put the chosen methodology in practice [8]. No matter whether we follow a traditional 5-phase process (Initiate-Design-Build-Deploy-Closure), the main idea is that we should be able to apply solutions that give rapid measurable success.

A properly chosen and successfully implemented methodology will let us gain the following benefits:

- Your project team clearly understands their primary project implementation jobs and the strategic goals of your project.
- Costs and schedules are under control during every of the implementation phases.
- Reduced complexity of the project work.
- Saved time and money.
- A faster return on our investment.
- Best management practices.

There are two basic tips to successful project methodology implementation, as follows below.

3.2. Select A Suitable Methodology

The first step is to define our project methodology requirements. we will need to think about what exactly we want to get from our example methodology for project management and planning, what the type of content it should contain, and in which way we intend to implement it.

For instance, our requirements for a project methodology might be as follows:

- It should cover a complete life-cycle of our project.
- Every step in the project life-cycle should be described in depth.
- There should be a clear and unambiguous project methodology definition that describes how each step could be practically taken. Work templates would be helpful.
- It needs to follow worldwide project standards for phases.
- It should suit the type and size of our particular project.
- It should be flexible enough to let you customize each of the project life-cycle stages.

When we have defined our project methodology requirements, our next step is to review how much other methodologies used currently by our organization are successful. Note that it is not necessary to re-invent the wheel if we have something that successfully works in-house. That is why we should look at project implementation methodologies used within the company, compare them to our specific requirements and then see if there is a good fit and whether improved stages can be accomplished.

If we have not found a good fit and project methodology implementation is still not defined, we can research a new methodology for our project, or just purchase a suitable PM toolkit. The Web will help us to find a methodology example that fits our requirements. Remember that the best-fitting methodology may have an 80% fit, while the rest 20% will be customized to our specific needs and expectations [10].

If we failed purchasing a fitting project methodology sample, then there is one way remaining: we can try to develop our own example of work implementation and planning. Of course, such a way will be more time-consuming and much expensive than searching for a ready-to-use PM methodology; however, by following this way we will ultimately meet our project methodology requirements.

3.3. Put The Selected Methodology In Practice

No matter whether we have developed our own methodology for our project or just purchased some project methodology sample, the next step is to introduce it into our organization. This step involves the following:

- Design a work plan.
- Customize the selected PM methodology for each of the projects undertaken by our organization.
- Train our team to use the methodology and to follow its life cycle phases.
- Use project management software to control the development process.
- Work on constant improvement of the chosen the project planning and management methodology.

By stepping through the listed actions, we are about to achieve the success from the very beginning of our project implementation phases. Project implementation jobs, tasks and processes will be completed faster and more easily because the team will know how to follow the methodology and because we have early established a foundation for better methodology, implementation and evaluation.

CONCLUSION

With the right amount of planning, implementing and monitoring we have the opportunity to complete a project on time, on budget and with high quality results, instead of ending up with a project that doesnot fully meet all the KPIs (key performance indicators). There are so many reasons why a project might fail – setting up unrealistic expectations, poor methodology and requirements, inadequate resources, poor project management, untrained team members and so on. However, these things can be avoided by adopting effective practices and project management techniques which will help to establish a clear understanding of expectations and processes among all the people on board. Some people (myself included) can get pretty excited when working on a new project and can get carried away with the ideas flow.

Although we as a company believe in adapting plans as we go, starting a project without a clear vision can lead to unexpected difficulties. We and our team should invest our time in gathering information, assigning tasks to specific people and having a good overview of our resources. The end result should be a well-rounded project plan with a clear scope, steps, implementation process and a well-defined target. Once the project has been planned accordingly to its scope and goals, the implementation phase can begin. In theory, since we have already agreed on our project scope and we have a basic backup plan if something does not work, the only thing remaining is to implement our plan and processes efficiently.

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