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Software Project Management with WFMS Tool

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Abstract:

Proper and effective Software Project Management (SPM) is usually the most important factor in the outcome of a project for almost all the software companies and their project engineers and managers. By using effective project management techniques a project manager can improve the chances of success in software development.

Problem is how to analytically combine these techniques into a practical and best effective workable process? For effective solution one need a balanced process that covers the management and development of the entire project from inception to completion.

A Project Scheduling Problem consists in deciding who does what during the software project lifetime. This is a capitalissue in the practice of software engineering, since the total budget and human resources involved must be managed optimally in order to end in a successful project.In this work we tackle the problem by using working flow management system (WFMS) to solve many different software project scenarios.Our conclusions show that GAs are quite flexible and accurate for this application, and an important tool for automatic projectmanagement.

This paper presents proposed software for project management during project life cycle in organization by studying various project management methodologies.Also the role and critical activities of project manager, project team and hence project management is explored in software projects implementation in organization of different sizes and culture.

Keywords: SPM (Software Project Management), WFMS (Work Flow Management System), Project Scheduling, WBS (Work Breakdown Structure)

Introduction:

As Warren Buffett said: "It is better to be approximately right than precisely wrong", but is that enough to say for specific problems.From literature [1] it is well known that proper and effective "Software Project Management" (SPM) is usually the most important factor in the outcome of a project for many companies.
"Failing to plan is planning to fail." This is perhaps one of the most popular saying among project management (PM) practitioners and it is hard not to concur with this management philosophy (McNeil and Hartley, 1986).For that matter, project planning remains a key factor of project success. Although planning does not guarantee project success, lack of planning will probably guarantee failure.

It comes as no surprise that the empirical relationship between project planning and project success is under close scrutiny by some authors.

The high complexity of currently existing software projects justifies the research into computer aided tools to properly plan the project development. Current software projects usually demand complex management including scheduling, planning and monitoring tasks. There is a need to control people and processes, and to efficiently allocate resources in order to achieve specific objectives while satisfying a variety of constraints. In general, the project scheduling problem consists in defining which resources are used to perform each task and when each one should be carried out. Tasks may be anything from maintaining documents to writing programs, and the resources include people, machine, time etc. The objectives are usually to minimize the project duration, to minimize the project cost and to maximize the product quality. In a real project, the manager wants an automatic plan which will resolve these three conflicting goals. With the proposed tool, a project manager can evaluate different scenarios in order to take future decisions on the actual project itself as well as on future projects also.

"Software Project Management" (SPM) is usually the most important factor in the outcome of a project for many Software Development Organizations and their project engineers and managers.

The intent of the Project Management Tools Initiative is to study and evaluate project management solutions and produce relevant documents, which will serve as the source of information to the Agency to assist in the selection and use of project management tools. Each phase output documents are also generated which will help to move project from one phase to next phase.

The software project scheduling can be easy adapted by using proposed tool. The implementation of the methodology does not require additional project management resources.

Existing Methodology:

Project's with many resources, phases and due dates can be hard and stressful, however, running multiple projects with different activities, timelines and a lot of deadlines can even be harder. The project's leader might be unable to concentrate and follow-up each project's detail properly.

The planning and the design of the stages of each task would be proficient and well-organized when using a software technology tools which in the end can contribute in delivering a successful project (Attarzadeh & Ow, 2008).

According to Alfaadel, Alawairdhi, and Al-Zyoud's study that aimed to investigate the most common reasons behind the success or failure of some IT projects. The results listed five reasons that lead to the project failure and one of those reasons was "poor planning and scheduling".

To the best of our knowledge, there was an absence of studies that showed and examined the use of project management tools. So as a result, a survey in a form of a questionnaire was distributed among many project managers who work in different organization (private sector / governmental sector). The main goal of this survey is to provide a good overview about the tools used by project managers in the local context and what the main preference features in their opinion that should be available in the tool.

Usually in practice of SPM in Software Development Organizations we have small and larger projects. A small project with a team of one or two persons working for a few weeks can be executed almost "informally", where the project plan specifies the delivery date with a few intermediate milestones by e-mail, and requirements might be communicated in a note or verbally, and intermediate work products, such as design documents, might be scribbles on personal note pads. To successfully execute larger projects in software development organization, "formality" and rigor along dimensions tasks and personnel must increase.

Most of the organisations do project management manually without using any specific tool for that. But they are suffering for lots of repeated manual work to generating different types of reports. There is a tool called Microsoft Project for project management which is used by some organizations but it has many weaknesses which are listed below.

- Difficult to get actual durations on a regular basis (to get a true in-progress picture).
- MS Project does not line up with many organizations standard time reporting systems (Payroll, timesheet, SAP etc.)
- Rigid default corrections are difficult to customize.
- Not all the people are comfortable with the output of MS Project.
- Not idle for large projects
- MS Project requires large amounts of time and work to get the software to match the true schedule.
- MS Project is a large application that requires training to learn and master.
- An extra cost associated with the software.

Project Management Past:

In the 1970s and early 1980s, achieving effective software project management became recognized as a significant issue. Projects were often delivered late and over budget and didn't meet requirements and expectations. Thought leaders like Winston Royce, Frederick Brooks, leaders like Winston Royce, Frederick Brooks, Arthur Pyster, Richard Thayer, Richard Fairley, and Barry Boehm helped chart new directions in software project management. In those days, only a few complex systems existed, and the project development team was much more centralized than today.

As we approached the 1980s and our knowledge and sophistication with software

development grew, the number of complex systems began to increase dramatically, and the problems associated with ineffective project management became more acute. Senior managers coined the term "software crisis" to focus attention on providing solutions to this problem; numerous government and industry initiatives were developed in response (see the sidebar, "Responding to the 'Software Crisis'"). Collectively, these initiatives embodied a four-pronged technical and management attack: standardize the process, standardize the product, standardize the support environment, and professionalize the workforce.

In the mid 1980s, the Software Engineering Institute's Capability Maturity Model (CMM) began to take shape. This framework has enabled many organizations to adopt the processes, methods, and tools of effective project management. Product-line management techniques, increased graduate-level education in software and systems engineering management, and the development of such standards as the Project Management Institute's Guide to the Project Management Body of Knowledge (PMBOK) also emerged in response to the software crisis.

Project Management Present:

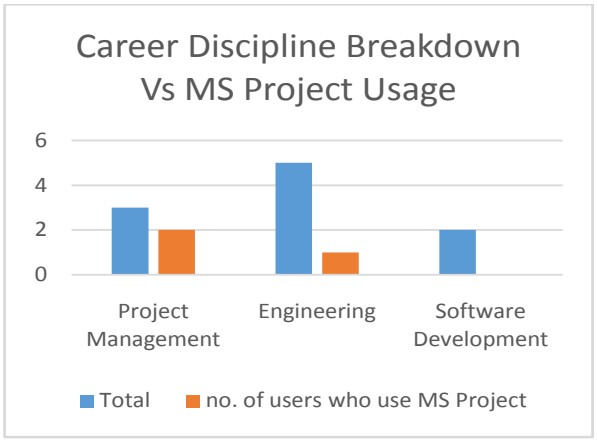
Managing a large, software-intensive system is a complex and intrinsically difficult task. The system is complex and can involve hundreds of staff years of skilled effort, large budgets, and potentially thousands of activities. Many perspectives attest to the facts that the delivery of complex systems on time, within cost, and meeting customer requirements is a significant problem, and that the number of complex systems is increasing (see the sidebar "Keeping Up or Falling Behind?"). This situation doesn't bode well for our ability to improve project management's effectiveness.

The project management discipline is certainly better off today than it was 20 years ago. However, while companies were responding internally, customer behavior, industry structure, and the competitive environment began changing externally at an accelerated rate.

Analysis:

The weakness of Microsoft Project clearly outweighs the strengths. The key strengths highlight that project management software is particularly useful in the planning phase. A common theme was that project management software enables the project manager to accurately track performance against schedule.

To further expand on this idea, I have broken down the disciplines of the people interviewed. For each discipline, I further expanded the results to show how many people in each discipline use MS Project. The results are shown below in figure 1.



As evidenced from the table, there are no software developers that use MS Project to manage projects. The highest percentage of MS Project users fall in the project manager category.

The data supports the fact that the rigidness of project management software does not lend itself to the human factor of managing projects. For this reason, there is a need to have compatible software which is used by all the career discipline at all the levels. And the proposed software must be easy to use so that it can be used by all the users of the company from higher authority to lowest level users. The proposed software should follow all the rule of CMM (Capability Maturity Model). At any point of time it should give us analytical report in requested format. Due to the weaknesses of Microsoft Project, we should implement proposed project management software that can help us in project management as well as in deliverable of product in given time limit.

Technically, a process for a task comprises a sequence of steps that should be followed to execute the task. For a company, the processes it recommends for use by its engineers and project managers are much more because they encapsulate what the engineers and project managers have learned about successfully executing projects. The benefits of experience are conferred to everyone and these processes help managers and engineers emulate past successes that avoid the pitfalls that lead to failures.

For a project, the engineering processes generally specify how to perform engineering activities such as requirement specification, design, testing and so on. The project management processes, on the other hand, specify how to set milestones, organize personnel, manage risks, and monitor progress, and so on.

Project planning usually starts with the development of work breakdown structure (WBS). The WBS is a hierarchical set of independent tasks. As a part of WBS, development costs and duration of tasks need to be estimated. After defining the set of tasks, project managers define the precedence relationship that exists among tasks. This information can be presented in the form of precedence networks and Gantt charts. The time needed to complete the project is defined by the longest path through the network. This path is called the critical path. Project managers can use the critical path method (CPM), which is available in most project management software, to identify the critical path. In most cases, duration, start and finish time, cost, and other task parameters are uncertain. These all things have to be covered in WFMS tool to define the dependencies and time limit of each and every task and phase. Using WFMS, we can easily manage the project as well as periodical involvements of stack holders are easily defined. To generate WBS for new project, WBS of old projects can be taken as help which is already there in the WBS. WFMS is mainly use to plan the project as well as to define the work flow of project management and deliverables as per CMM standards. If we are using WFMS, most of the manual work and documents regarding CMM standards is auto generated.

Conclusion:

The conclusion of this research paper is that even though software organization is using any pre-developed Software Management Tool, they will be facing more problems. So we need to develop one customize tool for project management so that every task of project management can be easily handled and we can deliver right deliverables in given deadlines. And previous data can be used to prepare project plan for the future projects also.

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