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The Right Projects Done with an Effective Methodology of Software Project Management

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Abstract: ***This paper explores the idea of evaluate about the right Software Project Management. It is useful to the potential for the right project done with an effective methodology. The most discriminating characteristic of a successful software development process is the well-defined separation between "research and development activities" and "production activities". When software projects do not succeed, the primary reason is usually a failure to crisply define and execute these two stages, with proper balance and appropriate emphasis. In this paper explain about the project management and project management activities followed by the explanation of project control variables. After that gives a note on the project management methodology. Finally presents the next generation software cost models and list on some of the project management templates.***

Keywords: ***Software, Project Management, Methodology, templates,***

I. INTRODUCTION

Project Management is the discipline of defining and achieving targets while optimizing the use of resources (time, Money, people, materials, energy, space, etc) over the course of a project (a set of activities of finite duration).

Project Management is quite often the province and responsibilities of an individual project manager. This individual seldom participates directly in the activities that produce the end result, but rather strives to maintain the progress and productive mutual interaction of various parties in such a way that overall risk of failure is reduced. In contrast to on-going, functional work, a project is "a temporary endeavor undertaken to create a unique product or service." The duration of a project is the time from its start to its completion, which can take days, weeks, months or even years. Typical projects include the engineering and construction of various public or consumer products, including buildings, vehicles, electronic devices, and computer software.

In recent years, the Project Management discipline has been applied to Marketing and Advertising endeavors as they become more technologically oriented and multiple communication channels become part of the marketing mix.

II. PROJECT MANAGEMENT ACTIVITIES

Project Management is composed of several different types of activities such as:

- Planning the work
- Estimating resources
- Organizing the work
- Acquiring human and material resources
- Assigning tasks
- Directing activities
- Controlling project execution
- Report progress
- Analyzing the results based on the facts achieved

III. SOFTWARE ECONOMICS

Most software cost models can be abstracted into a function of five basic parameters. Those are size, process, personnel, environment and required quality.

The *size* of the end product (in human-generated components) which is typically quantified in terms of the number of source instructions or the number of function points required to develop the required functionality.

The *process* used to produce the end product, in particular the ability of the process to avoid non-value-adding activities (rework, bureaucratic delays, and communications overhead).

The capabilities of software engineering *personnel* and particularly their experience with the computer science issues and the applications domain issues of the project.

The *environment* is made up of the tools and techniques available to support efficient software development and to automate the process.

The required *quality* of the product is including its features, performance, reliability and adaptability.

The relationship among these parameters and the estimated cost can be written as

Effort = (personnel) X (environment) X (quality) X ($size^{process}$).

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Activity	Cost
Management	5%
Requirements	5%
Design	10%
Code and Unit testing	30%
Integration and test	40%
Deployment	5%
Environment	5%
Total	**100%**

Table1: Expenditures by activity for a conventional software project

IV. PROJECT CONTROL VARIABLES

Project Management tries to gain control over five variables:

Time: The amount of time required to complete the project. Typically it is broken down for analytical purposes into the time required to complete the components of the project. This is then further broken down into the time required to complete each task contributing to the completion of each component.

Cost: Calculated from the time variable Cost to develop an internal project is time multiplied by the cost of the team members involved. When hiring an independent consultant for a project, cost will typically be determined by the consultant or firm's hourly rate multiplied by an estimated time to complete.

Quality: The amount of time put into individual tasks determines the overall quality of the project. Some tasks may require a given amount of time to complete adequately, but given more time could be completed exceptionally. Over the course of a large project, quality can have a significant impact on time and cost (or vice versa).

Scope: Requirements specified for the end result. The overall definition of what the project is supposed to accomplish and a specific description of what the end result should be or accomplish.

Risk: Potential points of failure, most risks or potential failures can be overcome or resolved, given enough time and resources.

Three of these variables can be given by external or internal customers. The value(s) of the remaining variable are then set by project management, ideally based on solid estimation techniques. The final values have to be agreed upon in a negotiation process between project management and the customer. Usually, the values in terms of time, cost, quality and scope are contracted.

To keep control over the project from the beginning of the project all the way to its natural conclusion, a project manager uses a number of techniques: project planning, earned value, risk management, scheduling and process improvement.

V. PROJECT MANAGEMENT METHODOLOGY

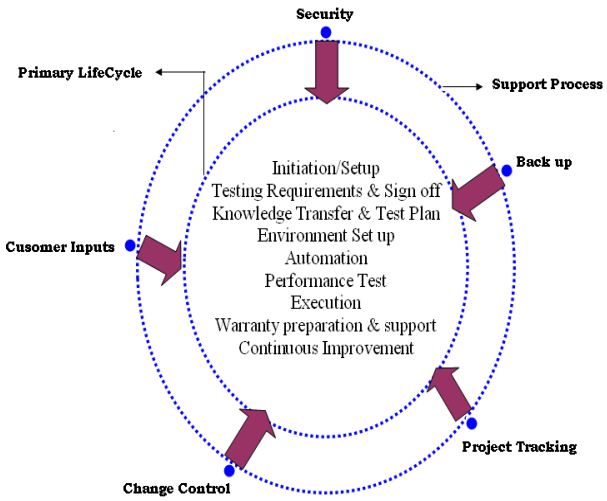

Fig.1 Project Management Methodology

The different phases are

Initiation/Setup

- Testing Strategy
- Automation Feasibility
- Manual & Automated components
- Tool selection for automation

Testing Requirements & Sign off

- Unit testing requirement
- Business Functional Requirements
- All interfaces
- Application security levels
- List of platforms for compatibility
- Critical transactions for performance testing
- Performance goals
- Globalization needs
- Effort estimates and price signoff
- Scheduling sign off
- Project Plan
- Project communication
- Workflow between Development &TS Testing teams
- Developer -Tester interaction process for UT (if required)

Knowledge Transfer & Test Plan

- Application Demo
- Domain Training
- Shadow transfer
- Study of user and operations manuals
- Globalization rules
- Test plan and Test cases

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Environment Set up
- Hardware and Software resource setup
- Ghost image plan
- Test bed creation
- Special requirements for globalization testing

Automation
- Architecture
- Automation Test Flow
- Identify reusable elements
- Create and test scripts
- In-line auto test setup

Performance Test
- Critical transactions
- Scripting
- Environment setup
- Iterative test run
- Analysis

Execution
- Execute test scripts or cases
- Log, track and report defects
- Improve and increase automation
- Monitor, analyze and feedback until Q levels achieved.

Warranty preparation & support
- Allocate technical team to support warranty levels
- Optionally agree to a per/bug payment if errors are above Warranty levels
- Integrate warranty support team into maintenance team
- Live monitoring
- Warranty bug fixing

Continuous Improvement
- Increase automation levels
- Improve test scripts and cases

VI. PROJECT MANAGEMENT PHASES

The different phases are

Requirement Specification: Requirement Specification is the first and most important phase of the SDLC. During this phase our Project Manager is in constant contact with the Customer to find out requirements of the project in detail. Main tasks in this phase include Requirement Determination, Risk Analysis, Setting up Schedules, and deciding Deliverables. Communication with the Customer is carried out using any of the following means of communication, such as Instant Messenger, Email, Phone, Voice Chat or personal meeting. A System Requirement Specification Document is prepared at the end of this phase.

Requirement Analysis and Design: Project Manager and System Analyst after reviewing the Customers requirements analyze the requirement and start designing of the project. System Architecture, Database Design, Program. Specifications and Test Scenarios are determined. A Detail Design Document is prepared at the end of analysis that can be used by the programmers to perform the coding.

Coding and Testing: Programmers begin programming in this phase using the Detail Design Document. As project progress programmer's progresses is monitored by Project Manager and Project Leader respectively. Project Manager is in constant contact with the customer and provides updates on the progress of the project using MS Project. The programmers follow coding Standards decided by the company. Project Leader helps the programmers with their coding problems and guides them to the solutions. Testing is done by the QA Team simultaneously for the finished modules and approval is given to the modules once they have passed their initial tests before integration.

Deployment and Support: This phase starts with Deployment of the project. Initial hardware and software setup necessary to run the project is a very critical phase of the project. After project is completed Project Manager contacts the customer and prepares for the set-up. Software is handed over to the customer for acceptance testing only after complete internal testing. Support to the project is provided for a limited number of days during which any minor customer changes are finished.

VII. NEXT GENERATION SOFTWARE COST MODELS

A next generation software cost model should explicitly separate architectural engineering from application production, just as an architecture-first process does. The cost of designing, producing, testing and maintaining the architecture baseline is a function of scale, quality, technology, and process and team skill. Next-generation software cost models should estimate large-scale architectures with economy of scale. This implies that the process exponent during the production stage will be less than 1.0. My reasoning is that the larger the system, the more opportunity there is exploit automation and reuse common processes, components and architecture.

VIII. PROJECT MANAGEMENT TEMPLATES

MPMM includes the complete set of project Management Templates need to manage successful projects.

This comprehensive set of templates, forms, processes and checklists will save our time and Effort when creating project deliverables.

Templates save our Time and Effort

These project management templates save our time and effort, as we never have to create project deliverables from scratch. Whether we need to create a business case, control change or manage risk, the Template Toolkit

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included within MPMM will help us do it quickly and efficiently.

MPMM includes the following sets of templates, to help us manage projects:

- Project Initiation Templates
- Project Planning Templates
- Project Execution Templates
- Project Closure Templates
- Risk Management Templates
- Change Management Templates
- Quality Management Templates
- Cost Management Templates
- Issue Management Templates
- Time Management
- Templates
- Procurement Management Templates
- Acceptance Management Templates
- Communications Management Templates

Agile Project Management

Agile Projects Make traditional obvious.
We can't fully plan before we start, because we don't know where we're going.

--We can plan a little and continue to iterate the planning.

When we execute, things will happen
--Risk management is essential.

During the "control" phase, we need to measure what's happening, so we have a chance of guiding the project.

--What do we measure, so we know where we are and can move to where we want to be?

If we knew when we were done, we'd close
-- So if we're ready to release at a moment's notice, we can close any time

IX.CONCLUSION

As a project is a temporary effort to create a unique product or service. Projects usually include constraints and risks regarding cost, schedule or performance outcome. In order to manage these constraints and risks to achieve good output of the product or service, project management is essential. Successful software project management is hard work. Technical breakthroughs, process breakthroughs and new tools will make it easier, but management discipline will continue to be the crux of software project success. New technological advances will be accompanied by the new opportunities for software applications, new dimensions of complexity, new avenues of automations, and new customers with different priorities.

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