

A Novel Organizational Framework for Software Process

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Abstract

The Capability Maturity Model for Software is an organizational framework which explains the key features for an effective software process. Software engineering is a managerial and engineering process for the development of high quality software with certified reliability. The compilation of CMM, organizational potentials, judicious application of technical practices represents a powerful process improvement. This paper stresses the need of organizational framework for developing and maintaining the software process and proposed a novel organizational framework for small and medium scale enterprise to improve the software process.

Keywords

CMM, Software process, Organizational Framework.

I. INTRODUCTION

The computer software is set of instruction which perform some specific tasks. Quality improvements of software products are difficult and complex. Many scientist and researchers are trying to reduce the hardship of developments and to reduce the overall cost as well. Modern days, organizations focus on the software process of software production. Software process is the set of methods, tools and practices used to produce end software artifact.

The importance of software process improvement is to produce products according to the client requirement at the same time improving the organizations capability to produce effective products. It is clear that a fully effective software process must consider the relationships of all the required tasks, including the tools and methods used training, the skill, and motivation of the people involved.

Software is an incremental process in which the recent tools it serves as the platform for communication and development, with each new round of the process. Efficient people and technical expert's knowledge will involve in every phase. Software process is also a concern intensive learning

process and need to be support with knowledge management.

There are some fundamental operations which can be involved with framing an ideas is essential. Like following

1. Generate ideas based on requirement ,
2. Clarifying ideas,
3. Structuring ideas in organizational environment,
4. Interpreting of selected ideas,
5. Amending ideas by experts view.

A) The Capability Maturity Model (CMM):

The Capability Maturity Model is a method which explains the key elements of an effective software process development. The CMM explains an evolutionary enhancement path from an normal one. CMM is disciplined process and mature process which covers practices for engineering, planning, managing software development and maintenance. When organization follows the key practices improve the ability of organizations to meet goals like functionality, schedule, product quality and very important cost factor.

The CMM gives standard which it is possible to compare, in a repeatable way of usage, the level of an organization's software process standard and compare it to the standards of the practice of the industry model. The CMM can also be used by an organization to plan development activities of software process. Every organization establishes and improves the software processes which make them development, maintain their software work products, progress through each level. Each CMM level provides a layer in the foundation for continuous process development.

II. PROPOSED METHOD:

This research enhance the existing maturity model approaches commonly we can say CMMI models. Maturity models are structured level by level approaches which make things to be classified easily and organization behavior and implementation will become easy one. In our research make use the same concept of structured level approach with our

innovative ideas to overcome the existing drawbacks of the system.

Organizational frameworks are more important for software development process to complete the projects within the duration and specific cost. There are numerous software development models which handle the development process but organizational frame work are very important one to make successful completion of the process because successful models doesn't yield better results without cooperation of proper organizational framework. To overcome the problems which are faced in the small and medium scale software enterprises, we have proposed an enhanced maturity model approach to improve the software process.

A) IASCOD Approach:

This approach contains five level stage of organization behavioral to complete the software process.

- I. Initialization:
- II. Analyzation:
- III. Standards maintenance:
- IV. Capacity Analyze:
- V. Optimization:
- VI. Documentation:

I. Initialization:

In this level we have just idea to execute the development process but there is no documented work or any structural behavior works. Task has been allotted to the project team or management level and had some informal meeting to discuss about the project in higher level.

II. Analyzation:

In this level management people has to analyze with the expert people to get idea for handling the software process. In the existing models checks any the old software process match with new software functionalities and process. If it is ok then organization can bring some of the ideas to the new process but not entire process because every software process has some unique features and concepts which we should consider while planning the development model but in some cases all functionalities may match.

III. Standards Maintenance:

Small and medium scale organization will

maintain some standards for uniformity purpose in software development. A specified standard has to incorporate into the development models. It is a process, that there are sets of defined rules, procedures and documented standard processes developed and it's vary to some degree of improvement over a period of time. It's could be considered a developmental stage - with use in a wider range of conditions and user competence development the process can develop to next level of maturity.

IV. Capacity Analyze:

In this level organization analyzing using process metrics, effective achievement of the process requirements can be evidenced across a range of operational conditions. Organization will check the suitability of the product in multiple environments and hardware has been tested, if any problem found the process has been refined and adapted. Users have experienced the process in multiple and varied conditions and are able to demonstrate competence. The process maturity enables adaptations to particular projects without measurable losses of quality or deviations from specifications.

V. Optimization:

In this level organization will look into the characteristic of processes and focus is on continually improving process performance through both incremental and innovative technological changes based on the user requirement. Every process/product has their own specification and constraints but the framework should focus generalist point of view like speed, performance, requirements checkup, etc.

VI. Documentation:

Documentation is basic step for all the process in organization because without documentation third party can't understand what they have done. Documentation will explain the crystal clear picture of framework.

III. PERFORMANCE ANALYSIS

This methodology was tested in a software concern with medium scale projects with the same project have been tested with maturity model. Our proposed model yields better result in customer report analysis as well as software development lifecycle.

S.No	Phase	Number of Defects	
		Existing	Proposed
1	Reviews	0	0
2	Testing	53	35
3	Acceptance Testing	64	28
4	Post Release	21	11

Table1. Customer Report Analysis

S.No	Phase	Number of Defects	
		Existing	Proposed
1	Requirement Analysis	576	285
2	Designing	85	49
3	Coding	1368	782
4	Software Testing	1005	683

Table 2. SDLC defects

IV. CONCLUSION

Software process is an important organizational framework in small and medium scale organization. In this paper we have provided a novel approach to improve the process and potential of software process in organization level. Our IASCOD Approach gives a better result and improves the efficiency of organization. It's our faith , our research will helps to society and young researchers.

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