

Software Process Management- Improved Model

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1. ABSTRACT

Software Process Management – Improved Model is a systematic approach and continuous improvement of software producing organization's ability to produce and deliver quality software within time and budget constraints. In the course of this project, the researcher developed, verified and validated a model, that is SPM-I. This thesis work presents a fit for use approach to software process improvement model for improve the overall process. This thesis work concentrates on improvement in process as well as organization. This model is based on experience on project of software companies. This thesis work is covered assessment, software process improvement, factor that influence on software process improvement. The ultimate aim was to develop a model which would be useful in practice for software development companies. This thesis work describes the principle of software process improvement and improvement models. The purposed model is a generic model which is beneficial for small firm as well as large firm.

KEY WORDS: Software Process Management comparison between CMM and SPM

SOFTWARE IMPROVEMENT PROCESS MODEL

Software process improvement model is an approach or method or both by which process improves and give better result rather than a normal process. By software process improvement a batter and high quality product can be found within budget and time.

The researcher suggests a Software process improvement model. This model is an iterative and cyclic model.

THIS MODEL CONSIST EIGHT STEPS. THESE ARE FOLLOWING

- process define
- problem define
- recommendation and assessment
- planning
- implement
- inspection
- configuration

PROCESS AND PROBLEM DEFINITION

A doctor can give the medicine when he knows about the patient diseases. Without knowing they cannot do anything. Similarly any process improvement model can work accurately if we know the exact problems in process. Therefore the main issue is to make problem clear first of all. When problem makes clear then a solution can be found for the problem. What processes have taken for the development of the project? Then it can find the shortcoming in the process

why the process is not give a better quality or why project should not complete within time has given by the costumer. Developer can't apply any other model. A lot of models are available for software process: Waterfall model, spiral model, iterative model extra. Study the process and try to find the shortcoming. A lot of problem may become the reason of unsuccessful project.

- Lack of management
- Lack of well communication
- Lack of well communication between costumer and organization
- Technical problem and lack of resources
- Lack of man power
- Not provided a good training
- Ego power
- Working in a adequate way

LACK OF MANAGEMENT

This is a good point of view for unsuccessful project, if there are no good management in the organization. This is harmful for the project. Project manager is not well qualified or he cannot hold the team and cannot inspire the team. Senior management does not hear the problem or ignore them.

Sl.No	Cause of problems	Category out of 5 scale
1	Lack of management	4
2	Lack of well communication	3
3	Lack of well communication between costumer and organization	3
4	Technical problem and lack of resources	4
5	Lack of man power	3
6	Not provided a good training	3
7	Ego problem	2
8	Working inadequate way	2

LACK OF WELL KNOWN COMMUNICATION

Well known means suppose a man which is perfect in one module of a project. But management gives him other responsibility in the project then this person cannot perform well as well as he can do in his module. If every member in the team knows its work very well with interest, then output may be come in a batter way and better quality.

WELL COMMUNICATION BETWEEN COSTUMER AND ORGANIZATION

Well communication means when organization deals with the costumer. They must specify the entire requirement according to the costumer. Calculate everything according to the size, budget, and time. If organization fails to right calculate with the deal in costumer. Then project can't get a good quality. Because organizations don't want that they go over budget. So they want to complete project according the costumer's budget. So they can't give a good quality in the project.

LACK OF MAN POWER

Lack of man power or good manpower is also a reason for unsuccessful project. For example a project needs 100 men but due to some reason you have only 50 men. Reason may be anything like you has no such money for project, or you cannot arrange so much manpower but you have taken a big project. At this condition project can not complete on time. One more reason organization have no good labour that is if one person works on a module some day but he leave after some day at this situation also a better output has not come with in time.

NOT A GOOD TRAINING

Organization should provide a good training to member of team. Without good training they can't perform so well. They can't get higher level of maturity without training. In the training organization should give the good knowledge and tell them what the organization want.

EGO PROBLEM

A well communication have establish in member of companies, if member have ego power in himself and not cooperate with other then project will not go in a right way.

ASSESSMENT AND RECOMMENDATION

Once the problem is defined, one can easily find about area need to be improve and then according to problem an assessment team formed with recommendation of higher authorities. Team depends upon the management and size of problem. Team, which is so formed should made of highly qualified and experience holder members. If the size of the problem is small, a team of 2-3 researchers are good enough. If the improvement area is large enough, then team will be formed according to the size of problem. Sometime software improvement is not so much effective because no one can say or give promise that applied technique or method can improve the culture of project. So if area of improvement is small like in small project, then risk is reduced. But if area of improvement is of higher level then it may be a great risk. A project/organisation take time for improvement and have no guarantee for success, but only probability for the success of same. So at this condition it is better to take sponsorship by the third party. But it requires higher authorities' permission. They can take decision about timing of sponsorship needed. Member of the team must be certified by SEI (software engineering institute) as only then they can take better decision in critical situation.

PLANNING

After formation of assessment team, they start work on the project. They make plan and prepare strategy about how can they improve process by finding changes required. For this first of all the problem clear and defined. Team now make a questionnaire for the members coming from different level in organization. Analysis the current situation of the company and then makes a profile for the future of the company. For that, they conduct interview of as much person as possible and make a plan. If there is more than one strategy for any process improvement, then they choose one which produces the better result. With the approach defined, a detailed implementation plan can be developed by taking consideration of all the factors like, technical and non technical. When the team complete the plan, they have a meeting with the senior management and there they give a presentation to the seniors. By doing this they reduce risk level. This plan includes schedule, tasks, milestones, decision points, resources, responsibilities,

measurement, tracking mechanisms, risks and mitigation strategies, and any other elements required by the organization.

IMPLEMENTATION

When the plan establish according to problem, then create the solution according to plan. First make a paper solution on basis of experience and knowledge as well as skill of the assessment team. Then again gives presentation to the higher authorities. If they give some suggestion for modification in the solution, then modify the plan accordingly and if they are comfortable for solution then start the implementation. They choose a better solution. Before implementing the plan it should be discuss with the senior management and organization. When they are agree on solution, start working on the solution. 1.5 Inspection and Configuration Management

An inspection is generally an organized examination or a formal evaluation exercise. It involves the measurements, tests, and gauges applied to certain characteristics in regard to an object or activity. The results are usually compared to specified requirements and standards for determining whether the item or activity is in line with these targets. Inspections are usually non-destructive [3]. It is not guarantee that the work plan and implementation is correct. For inspection a team is formed, in which members are moderator, reader, and inspectors. A formal meeting is conducted. Role of the moderator is to conduct the meeting and ensure the subject of the meeting. Role of the moderator is like a leader of the inspection team. So moderator should be highly qualified and skilful. Moderator tells the team how the inspection starts and leads them. Inspection team takes the interview of assessment team. They make a questionnaire for every member of team. Review of the work done by all and they analyse the result. What result will come after process improvement? Review all the factors came in the technique. Main motive of the inspection is to find the defect in the module. If there are no defects then team will give the clean chit for the process improvement. If there is any problem in the technique then they tell where the problem is or what problem can be faced. What change should be done in process? They specify where the changes are need. This work is handling by the configuration management. Before a configuration item makes a baseline of the work. A baseline is a software configuration management concept that helps us to control changes without seriously impeding justifiable changes. Once a baseline is established, we pass through a one way door. After that changes inspection team again inspect the process. This process will continue till the defect does not end. And the improvement has done.

DOCUMENTATION

Documentation is an umbrella activity in this model, which is going on side by side throughout process. In each phase documentation is needed. Documentation is needed for the future work so that anybody can reuse it as well as future work can be done. The documents associated with a software project and the system being developed has a number of associated requirements:

They should act as a communication medium between members of the development team.

They should be a system information repository to be used by maintenance engineers.

The work presented in this Thesis provides a software process improvement model. This model is an iterative model. The main objective of this model having done software process improvement by stepwise. First define the area of process improvement after understand the process. Team start the work on the process improvement. They have done planning for process

improvement at which area improvements are needed or changes are required. When they make a plan then discuss with the senior management. Then they give a presentation to the senior authorities and convince them for the improvement. After planning the next phase come.. Inspection is using for finding the defect. It analyse where are you wrong. It is a formal meeting in which member of inspection team have taken interview of the assessment team. If the plan is correct then give the clean chit. If there are modification are needed then modify it. This work is done by the configuration management. Identify where the changes are need then apply it.

This model is a cyclic model. After configure it will go for problem and same procedure will done again till the process improve and give a better output rather then the normal process. One case more if something change in the problem then after complete the cycle it go again problem and done all process according to the new problem. In this model documentation is an umbrella activity. That is useful for reuse and further future work.

COMPARISON THIS MODEL TO OTHER MODEL

This model is different to other model. Its work methodology is different with other models.

COMPARISON BETWEEN CMM AND SPM-I

- The main problem with the CMM model is that CMM give the maturity level. That an organization across the level then its enter the next level. But CMM does not specify the implementation. In SPM-I model implementation is defined and a proper document is prepared for every process.
- CMM works on software. SPM-I model works on both and organization.
- CMM is a goal. Being used just as stamp of approval. SPM-I model is a method.
- CMM is works only a repeating task. But SPM-I model is not only repeating task but also whole. If problem is change then this model works due to a cyclic model

COMPARISION BETWEEN SIX SIGMA AND SPM-I

- Six Sigma is a statistically-based process improvement methodology that aims to reduce defects to a rate of 3.4 defects per million defect opportunities by identifying and eliminating causes of variation in business processes. SPM-I model is a planned methodology of continuous improvement methodology.
- Six Sigma is iterative methodology reduced the defect one by one. SPM-I model is a cyclic and iterative model that improves the process one by one step. After completion of last step if further improvements are needed the cycle start again?
- Six Sigma methodology works on two approaches DMAIC, DMADV. SPM-I works as a full flash model.
- Six Sigma focuses on prioritizing and solving specific problems which are selected based on the strategic priorities of the company and the problems which are causing the most defects. SPM-I model does not focus on prioritizing and solving problems. SPM-I model solve all types of problems.

2. CONCLUSION

The SPM-I software process improvement model improves the process in a traditional way. This model is an iterative model. The SPM-I model does the process improvement in a step wise way. It covers user requirements, software quality assurance, and organization point of view. Many of the factors can be found in the organization from the SPM-I model like management commitment and teamwork were strengthened.

SPM-I model covers the some limitation of existing model (CMM, SIX SIGMA, and IDEAL). For example, the main limitation of CMM is key practice describes “what to do” but does not prescribe “how to do”. SPM-I model describe the implementation and prescribe how to do.

SPM-I model is a flexible model. If there is a change come in process. It covers all the aspect of the changing of process due to cyclic model.

3. REFERENCES

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