SOFTWARE RISK MANAGEMENT

Yogesh Bhatia, Sanjeev Verma
Department of Information Technology
Dronacharya College of Engineering, Gurgaon, Hr, India

Abstract- **Software development is a highly complex and unpredictable activity associated with high risks. With more and more organizations investing substantial resources in software development, risk management becomes crucial. A continuous process is introduced based on the dynamic system theory. A framework for applying risk management approach in practice is also proposed from action research perspective. Finally, the relevant practical implications for software development project are discussed. This paper reviews the basic concepts, terminology, and techniques of Software Risk Management. It teaches readers how to identify and analyze software risks on their projects. Readers then learn techniques for planning and acting to mitigate risks so that the overall impact of those risks on their projects is minimized.**

I. INTRODUCTION

Risk management in software engineering is related to the various future harms that could be possible on the software due to some minor or non-noticeable mistakes in software development project or process. Risk is thus an unexpected event that produces an adverse effect. It is the combination of constraints and uncertainties.

Generally it is difficult to minimize constraint, so uncertainty is reduced. Thus it is quite difficult to eliminate risk and achieve risk free software. Thus all possible measures and steps are taken to avoid and resolve the risk. Software projects have a high probability of failure so effective software development means dealing with risks adequately. Risk management is the most important issue involved in the software project development. During the life cycle of software projects, various risks are associated with them. These risks in the software project is identified and managed by software risk management which is a part of SPM. Some of the important aspects of risk management in software engineering are software risk management, risk classification and strategies for risk management.

II. SOFTWARE RISK MANAGEMENT

Since there could be various risks associated with the software development projects, the key to identify and manage those risks is to know about the concepts of software risk management. Many concepts about software risk management could be identified but the most important are risk index, risk analysis, and risk assessment.

- Risk Index: Generally risks are categorized into two factors namely impact of risk events and probability of occurrence. Risk index is the multiplication of impact and probability of occurrence. Risk index can be characterized as high, medium, or low depending upon the product of impact and occurrence. Risk index is very important and necessary for prioritization of risk.

- Risk Analysis: There are quite different types of risk analysis that can be used. Basically, risk analysis is used to identify the high risk elements of a project in software engineering. Also, it provides ways of detailing the impact of risk mitigation strategies. Risk analysis has also been found to be most important in the software design phase to evaluate criticality of the system, where risks are analyzed and necessary counter measures are introduced. The main purpose of risk analysis is to understand risks in better ways and to verify and correct attributes. A successful risk analysis includes important elements like problem definition, problem formulation, data collection.

- Risk Assessment: Risk assessment is another important case that integrates risk management and risk analysis. There are many risk assessment methodologies that focus on different types of risks. Risk assessment requires correct explanations of the target system and all security features .It is important that a risk referent levels like performance,

cost, support and schedule must be defined properly for risk assessment to be useful.

III. RISK IDENTIFICATION

The objective of the risk team is to first of all identify the application oriented, non-environmental risks associated with the application system. They can use one of these methods of risk identification.

- Risk Analysis Scenario:- In this method, the technique of brainstorming is used. It involves the risk team's experience, judgement and their knowledge of application domain.

- Risk Checklist:- These are simply lists of the risks that have been found to occur regularly in software development projects. We need to identify the risks associated with the project. Project Managers might use the checklist of their own. The final list comprises of all risks that could occur and affect the product, the process or the business.

IV. RISK PLANNING

It involves identification of strategies to deal with the risk. It may use any of these methods.

a) Risk Acceptance- This is just like a do nothing method. As Discussed that the prioritization of risks, we consider more, only the risks with high priority. For the risk with the lowest priority we may not do anything also as it may save our cost.

b) Risk Avoidance- Some activities may be avoided together. So we may avoid doing risky things. We need not undertake certain projects to avoid risks.

c) Risk Mitigation- A plan which deals with the risk only if it occurs. In this method any head of member may substitute alternate solution for the same.

d) Risk Resolution- It is defined as the process of executing of the plans for solving each risk. When a risk occurs it is the project manager who has to respond to trigger and execute the action plan. The input to this phase is the risk action plan and the outputs are:
- Risk Status
- Acceptable Risks
- Reduced Rework
- Corrective Action

- Problem Prevention

e) Risk Transfer- In this process the risk is transferred to another person or organization.

V. CONCLUSION

In this way, software risk management, risks classification, and strategies for risk management are clearly described in this paper. If risk management process is in place for each and every software development process then future problems could be minimized or cosmpletely eradicated. Hence, understanding various factors under risk management process and focusing on risk management strategies explained above could help in building risk free products in future.

REFERENCES

[1] Hoodat, H., & Rashidi, H. (2009). " Classification and Analysis of Risks in Software Engineering". World Academy of Science, Engineering & Technology, 56446-452. Retrieved from EBSCOhost.

[2] Boban, M., Pozgaj, Z., Sertic, H. " Strategies for successful software development risk management", <www.efst.hr/management/Vol8No2-2003/4-boban-pozgaj-sertic.doc>

[3] "Risk Management" <http://en.wikipedia.org/wiki/Risk_management>

[4] "Software Engineering Risk: Understanding & Management (SERUM)" <http://www.thedacs.com/databases/url/key/270/277/3535>.

[5] Fundamentals of Software Project Management by Rajiv Chopra (Katson Publications)

[6] Risk Management in Software Engineering by Sunil Sapkota.