

International Journal of Advance Research in Computer Science and Management Studies

Research Paper

Available online at: www.ijarcsms.com

Fortuity Management in Software Development: A Review

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Abstract: Now a day's Software Development is becoming so much complex and challengeable. In today's modern world of engineering development, almost all projects suffer from some unwanted threats called fortuity or risks which can seriously affect the quality, cost and schedule of the projects. Even many projects are cancelled due to catastrophic risks so it is very much important for a good project management to identify, monitor, plan and control the potential risks. Reducing the number of software failures is one of the most challenging problems of software production. Controlling risk in software projects is considered to be a major contributor to project success. This review provides some necessary information regarding the potential risks that can occur in SD, their consequences on the project and some useful guidelines for handling them.

Keywords: SD, fortuity, Risk management, threats, consequences.

I. INTRODUCTION

Most of the software development projects are performed in unpredictable environments with many risks resulting in unsuccessful completion of the projects. Fortuity management is the process that allows IT managers to balance the operational and economic costs of protective measures and achieve gains in mission capability by protecting the IT systems and data that support their organizations' missions. Risk management ensures that an organization identifies and understands the risks to which it is exposed. Risk management also guarantees that the organization creates and implements an effective plan to prevent losses or reduce the impact if a loss occurs. Risk management is the procedure in which the risks posed by inherent hazards involved in processes or situations are estimated either quantitatively or qualitatively. In the life cycle of a chemical for instance, risks can arise during manufacture, distribution, in use, or the disposal process. Risk management is the decision-making process through which choices can be made between a ranges of options which achieve the "required outcome". The "required outcome" may be specified by legislation by way of environmental standards, may be determined by a formalised risk-cost-benefit analysis or may be determined by another process for instance "industry norms" or "good practice". Risk management is a critical aspect of the decision-making process.

By identifying and controlling the risks, one may make better and more daring decisions when taking on complex challenging projects or when exploring new unknown grounds. It is strongly believed that the risk identification, particularly, is an ongoing process, and apparently the risk factors keep on increasing with emerging technologies, people, environment, management and the circumstances.

II. PHASES OF FORTUITY MANAGEMENT

1. Risk Identification
2. Risk Analysis
3. Risk Reduction Planning Or Monitoring
4. Risk Control
5. Risk communication

RISK IDENTIFICATION

The first step in the risk management process is risk identification: the identification of loss exposures. Unidentified loss exposures most likely will result in an implicit retention decision, which may not be optimal. . [4] There are various methods of identifying exposures. For example, comprehensive checklists of common business exposures can be obtained from risk management consultants and other sources. [5] Risks come in two kinds; risks that apply to every workplace or organisation, and risks that come from doing the particular work you do. There are various methods of identifying exposures. For example, comprehensive checklists of common business exposures can be obtained from risk management consultants and other sources. Loss exposures also can be identified through analysis of the firm's financial statements, discussions with managers throughout the firm, surveys of employees, and discussions with insurance agents and risk management consultants.[6] Regardless of the specific methods used, risk identification requires an overall understanding of the business and the specific economic, legal, and regulatory factors that affect the business.

Why risk identification is important

Identifying risks is the first and perhaps the most important step in the risk management process. It involves generating a comprehensive list of threats and opportunities based on events that might enhance, prevent, degrade, accelerate or delay the achievement of your objectives. If you don't identify a risk, you can't manage it. It's also important to scan the environment from time to time to identify new and emerging risks, as the department's exposure to risk may be constantly changing. In project management, risk identification begins at the earliest stages of a project and continues throughout the project life cycle. Project risks can include unknown issues and variability in cost, effort, timing, and benefits in relation to a specific project. As a project manager, it is your job to anticipate project risks and to implement the necessary controls before risks become insurmountable. Project managers typically classify risks as either "threats" or "opportunities."

The practice of risk identification focuses on reducing the probability and impact of a threat while increasing the probability and impact of an opportunity. During the risk identification phase, a project manager must establish the various risk categories that are pertinent to the project before selecting the appropriate tools and techniques to identify risks. Basically risk identification means Determining what risks or hazards exist or are anticipated, their characteristics, remoteness in time, duration period and possible outcomes.

RISK ANALYSIS

Software developers continually evolve and refine techniques to mediate risk of failure in software development projects. They pay significant attention to risks which contribute to impeding a project; risks which contribute to missed schedules, budget overrun, and failure to meet the system's specified requirements. [6] Qualitative risk "qualifies" the risks that have been identified in the project. Generally, in software development, there are large, medium, and small software projects that each of them can be affected or influenced by a risk. Therefore, it requires a distinctive assessment process of the potential risks that may cause failure or loss of the project whenever they occur. From the literature, there are actually number of risk assessment researches conducted toward software projects. However, there are at least view researches being focused on risk assessment of small and medium software projects. These particularly results in a gap to the risk assessment research area that may lead to a lot of small and medium project not having risk assessment. For that reason, the main target of the article is to give researchers

an insight on the current level of risk assessment for small and medium software development. Risks are expected in each phase of Software Development. These risks can have affect different parameters like cost, budget, slip of schedule and sometimes some later phases of Software Development Life Cycle. There are different type of risks and have different levels of sensitivity and extent. These risks can occur in different nature of projects in different extent according to Probability of occurrence and its Impacts.

Risk-Analysis Methods

One of the first steps in a risk analysis is to describe the risk in detail. Based on this form, a risk description contains the following information, some of which is not gathered until the control measures or the monitoring phase is planned:

- Unique risk title
- Identification date
- Formal description of the risk using risk factor, risk event and risk effect
- Context description containing additional information in text form
- Person who identified the risk,
- Priority
- Probability of a risk event occurring
- Degree of impact (risk effect)
- Time at which the risk event is likely to occur or at which measures have to be taken
- Classification
- Responsible person
- Conclusion date and
- Reason for conclusion.

The risks can be prioritized based on qualitative criteria with the help of a risk portfolio. With this method, the probability of the risk event occurring and the degree of impact are rated as "low", "medium" or "high". Thus, three priority categories can be defined:

- high-priority risks (A quadrant) are those which are rated as "high" for one parameter and at least "medium" for the other;
- low-priority risks (C quadrant) are those rated as "low" for one parameter and at the most "medium" for the other; and
- the other risks are assigned medium priority (B quadrant).

RISK REDUCTION PLANNING

If a system is safety or business critical we expect to identify common risks and their remedies before deploying the system. [6]Risk response planning is all about options and actionsThe same should be true for software design processes. One way of doing this is through risk reduction patterns, which identify common sources of project risk and suggest how to reduce them. Sources of risk include:

- Imperfect knowledge of the problem.
- Teamwork difficulties.
- Lack of productivity.
- Ambiguity over ownership.
- Distractions.
- Training overheads.

Project plans include margins to guard against such problems, but the history of software development is littered with projects that exceeded their allotted budget and schedule by a factor of two or more, and others that were never debugged

enough to be usable. Software project managers can never have complete certainty over the course of their project. Changes in the customer's needs, loss of key personnel, and technical difficulties in implementing the software can all cause delay, cost overruns, or failure to meet the specified performance. Risk efforts must continue on an on-going basis to ensure project success.[2] Risks are identified, analysed, evaluated and managed across a variety of business boundaries and activities.

The project leadership should check the status of all risks and "Risk Handling Plan (RHP)"s at regular "Risk Management Board (RMB)" meetings. Project milestones should include briefings on the status of the risk management efforts. The developer assigned to execute the RHP for each risk should report regularly on progress.

A risk handling plan is easier to monitor if it includes a detailed forecast of how the risk will be reduced. In addition to describing and scheduling the tasks, the RHP should list how each of the risk assessments changes at the completion of a task or other milestone. This should include the expected probability and consequence values, including values for any calibrated scales used.

RISK CONTROL

Risk Control consults on a wide range of risk and valuation issues and supplies new-generation portfolio credit risk models. A research-led company, we work with major banks, insurers, financial regulators, hedge funds and asset managers worldwide on software implementations, consulting assignments and training. We offer software, parameterisation and methodology solutions for all your risk management and valuation needs. The risk communication tasks are as follows:

- Consult with stakeholders to gain their input into identifying and evaluating feasible control options for reducing risk
- Inform stakeholders of chosen risk control and financing strategies
- Inform stakeholders of benefits, costs, and any new risks associated with proposed control options
- Identify as a result of implementing control measure, any new stakeholders, or new issues
- Evaluate acceptance of control options
- Evaluate acceptance of residual risks and
- Determine if risk trade-offs might be possible

Risk Management Planning produces plans for addressing each risk item (e.g., via risk avoidance, risk transfer, risk reduction, or buying information), including the coordination of the individual risk-item plans with each other and with the overall project plan.

RISK COMMUNICATION

Risk researchers Doug Powell and Bill Leis have described risk communication as: "the causeway that links all the organizational elements in a well-functioning risk management process." It has been noted that while most firms and agencies in Canada which ought to be implementing good risk communication practices are not yet doing so, the situation is slowly changing as there is a growing awareness that communicating well has benefits for good risk management.

In this phase we identify stakeholders in defining scope of issues. In preliminary analysis for ongoing verification and refinement, thus risks is estimated by communicating the result with stakeholders and informs stakeholders of benefits, costs and any new risks associated with proposed control options and finally evaluate the acceptance of control options and residual risks thus ensure implementation of communication phase.

III. CONCLUSION

The global financial crisis has generated a number of calls for better risk management as a way of preventing the risk exposures and strategic management failings that stimulated the dramatic downturn in corporate and economic performance of recent years.

Different Phases of Fortuity Management must be taken care of very seriously. Identifying the risks and analysing the methods to mitigate and even if it occurs risks must be monitored and methods to minimise the effect.

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