Final Report: Rushing Risk Management

Risk Management for Software Intensive Projects
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Executive Summary

Continuous risk management is a process that a development team can utilize in a software development life-cycle to drastically decrease the chances of project failure. This process typically contains the following activities:

- Identify
- Analyze
- Plan
- Track
- Control

Additionally, the most important aspect of the process is communication. Communication is what facilitates understanding, as well as informs the decisions makers of risks that exist, and what the recommendations are to mitigate those risks before they turn into problems.

For various reasons, most likely scheduling and resource reasons, project teams cannot always perform the risk management processes as they are designed. In these situations, it is necessary to decide whether or not risk management should be performed, and if it is how it should be modified to yield the most benefit without hindering the development effort due to the overhead involved.

When it is determined that risk management should be performed, there are different strategies that could be used by project teams to perform the risk management activities so that they are inline with the hurried schedule of the project.

One of these options is an informal risk management process. In this type of process, formalities are reduced to decrease the amount of overhead involved, while the benefits of performing the activities is maximized through the techniques employed.

Additionally, there is the option to tailor the standard, important aspects of the risk management process so that their scope is drastically reduced, thereby reducing the amount of effort required to perform them effectively.

Ultimately, the decision to perform risk management in a rushed project must be decided quickly by the appropriate personnel. The benefits must be weighed against the drawbacks. By analyzing a case study that illustrates the decisions that need to be made in a hurried project, it can be shown how these modifications to the standard risk management practices can be applied to an actual project.

Introduction

Industry wide data and project results indicate that proactive measures are required to ensure project success and prevent problems from occurring. Proactive measures are needed to ensure that problems are kept from occurring. Continuous risk management is a process that can be utilized to minimize the chances of project failure.

Continuous risk management involves the following primary activities:

- Identify
  - Risks items and concerns are identified and recorded.
- Analyze
  - The identified risks are analyzed in order to prioritize the risks.
- Plan
  - Responsibility of the risk is assigned to the appropriate personnel and the approach to mitigate or handle the risk is determined.
- Track
  - The risk item status is tracked.
- Control
  - Determine the future for the risk item given the tracking data.

A meta-activity of the risk management program is communication. Communication is key to ensure that the right information is obtained and provided to the appropriate personnel who can make the decisions that will prevent the risks from turning into problems.

Typically, risk management activities are employed early in the project and have a timeframe that has preparation work on the order of weeks. However, this is not always possible or feasible in projects that require a quick turnaround on a very tight schedule.

In these types of projects, there is very little time for activities other than strictly developing the product that will be delivered. However, this type of environment typically rushes all activities leading to increased likelihood of error and cost overruns due to increased effort required to fix defects that end up reaching the field.

In a rushed project situation, it is possible to rush the risk management to effectively use the techniques to reduce the chances of project failure.

While the complete process is more than likely not possible, with careful planning and use of resources, the benefits of the risk management activities can be realized without negatively impacting the development efforts.

Depending on the situation of the project team involved, there are various options and techniques that can be tailored to proactively manage risks even though the timeframe is drastically reduced from the typical risk management design. This paper will explore the possibilities available to the project teams, and analyze a case study where the unit

manager and the project manager find themselves in a situation where rushed risk management would benefit the outcome of the project greatly.

Case Study

Within the case study "Is the Rookie Ready?" by Sarah Green, both a unit head and project manager face the challenge of performing rushed risk analysis. The context of this case study will be used throughout the remainder of this paper and the details are described in the sections that follow.

The Background
Tim O'Connel is the Unit leader at a software development firm, Driscoll Software. Tim recently had his best programmer, Alessandra Sandoval, leave the company to establish her own technical consultant firm. Alessandra's departure came about after a few months of turmoil in which Alessandra was working under Tim. The turmoil arose over differences between the development styles the two preferred. Tim prefers to be methodical while Alessandra was more of a free spirit who preferred the ad-hoc style, revered as almost hacker-esque. While the two did not see eye to eye, Tim was familiar with how good Alessandra was at finding and fixing bugs within Driscoll software. [Green09]

When Alessandra left Driscoll, Tim had to replace her. He simply did what most unit heads would, promoted the next best programmer, Kristen. Kristen did not have much experience as a project manager and her track record between Alessandra's departure and the day on which the case study begins, had not been great. [Green09]

The Setting
The week prior to Christmas Tim received a phone call from Hybara Casinos. Hybara Casinos was a former client of Driscoll Software, one of the biggest, who had recently left Driscoll Software stating that Driscoll Software was too expensive. However, the new cheaper system that Hybara Casinos purchased after leaving Driscoll Software had been crashing continuously and when it crashes the casino comes to a standstill. In order to resolve the situation and start fresh in the New Year, Hybara Casinos has approached Tim, and Driscoll Software, to deliver a working system by the New Year. [Green09]

The Issues
The trigger that sets the case study in motion is the fact that Tim has told Hybara Casinos that Driscoll Software can deliver this new system, including the normal "bells and whistles", by the New Year which is just two weeks away. This type of development effort usually takes Driscoll Software six weeks to complete.

Tim's Point of View
Due to the fact that Driscoll Software was lacking in venue, Tim made a quick decision to accept the project. In doing so, Tim now faces the challenge of figuring out how to deliver a normal six week effort it two weeks. His options are as follows:

- Hire Alessandra as a technical consultant.
- Allow Kristen, and her team to complete the project.

Tim wants to trust Kristen and her team to pull of the project, but is not confident that they can make it happen give Kristen's track record. On the other hand, Tim knows that Alessandra is familiar with the Hybara Casinos system, but he know her consulting fees are not cheap and their relationship is not the strongest.

Kristen's Point of View
When Tim approaches Kristen with the details of the project, she immediately becomes aware of the issues she faces. Her issues are as follows:

- Compress a six week project into two weeks.
- Meet the expectations of the customer.
- Convince her team, most of whom have Christmas travel plans, to take on this project.
- Convince Tim her team is capable of completing this project in the reduced time frame.

Kristen wants to be able to tell Tim that her team is capable of completing a six week project in two weeks, yet knows her resources are limited due to holiday travel plans. In addition Tim wants to know by the end of the day is she is capable or not.

To do Risk Management or Not

As is commonplace with any activity and process contained in the software development life-cycle, there is overhead, cost, and drawbacks involved in a risk management program. These additional considerations can actually increase the likelihood of project failure if the processes are performed when the project team cannot handle any more responsibility.

Additionally, in a rushed project where there is extremely little time to develop and delivery as scheduled, there is no time available to be learning new techniques and activities for software development.

Therefore, if risk management has never been performed, then learning during a rushed project is not the appropriate time to begin. The overhead involved would be drastically increased for a program just starting out. Additionally, there is a high likelihood that without a risk management champion (someone who is an expert in risk management), mistakes would be made and the process would definitely require improvement in future iterations.

Additionally, there would be little time to convince senior management that this is a beneficial program to invest in. Thus the likelihood of obtaining the decision makers' buy-in is reduced, and any valid risks that are identified that should be mitigated would likely be met with resistance from the people who would be the ones to enable the actions

that are needed to keep the risk from turning into a problem. Also, by performing any activities that do not have senior management buy-in could cause tension and conflict that hinders many other aspects of the project. Finally, when there is time to properly set up a risk management program, senior management could have reduced confidence in the stakeholders initiating the program. As with customer expectations, there are senior management expectations. If they refused to buy-in once, their initial impression could hinder any chances of them buying in when it comes to new attempts to obtain their involvement.

Resources are extremely scarce in these types of projects as well. Therefore, unless there is a brand new developer on the project, then all resources will need to be put towards pure development. There is a theory in scheduling of projects that suggests adding a resource towards the end actually decreases productivity [Miranda08]. Therefore, if management is able to facilitate this, a brand new developer could actually be designated as a risk management champion. They could learn the techniques, perform the planning, set up the organizational infrastructure for continuous risk management, and begin the activities for risk identification. However, being able to do this effectively without reducing the productivity of the other developers is highly unlikely. They would need to ask questions, gather knowledge (more than just obtain information for the purposes of risk management), and obtain the proper perspective for the project.

On the other hand, if there is preexisting knowledge on the project team, or they have performed risk management in the past, there are options for the team to help address the limited timeframe and limited resources available for risk management activities. In this situation, it would likely be more beneficial than not to perform the rushed risk management activities.

Informal Risk Management

A possible option is to perform an informal risk management. This is an extremely lightweight, flexible, and adaptable application of the more formal process. The low overhead of this process is an added benefit, as there is little time in rushed projects for any additional overhead.

The informal process could begin with an Awareness and Concern Meeting. This meeting would need only a facilitator and a recorder. These roles would not be the same types of roles as in the software risk evaluation, but would only act as a meeting coordinator and concern/issue capturer.

The other participants of the meeting would only be the readily available stakeholders. This added flexibility reduces the amount of planning needed, as well as the coordination involved. The only planning that may be necessary is picking a time that would maximize participation. Other than that, plans and stakeholder responsibility should not change in order to participate in the meeting.

The meeting would progress by the facilitator introducing the meeting and then begin by going around the room and allowing each participant the opportunity to voice a concern with the project. Once they do not have any more concerns, then they can sit and listen or leave if they have to get back to work. Ideally, they would be able to stay to listen to the perspectives off all participants, but given the project situation it would be understandable if they need to tend to other tasks. Additionally, staying and listening to the concerns of others may remind them of some issue that they forgot about, which they would be able to voice at the next cycle around the table. If it is the last cycle, then they can raise their hand or signal that they have something else to bring up.

While this is going on, the recorder is capturing all concerns and as much context as they can. Once all concerns have been voiced, the remaining members in the group produce a quick categorization and prioritization of the individual concerns identified.

Once they are quickly parameterized, a name is assigned to each individual item that is in the top 20% of the prioritized list. This name will be assigned with the understanding that it is not a responsibility to mitigate the issues, but someone who should just keep in mind that these concern/issues exist. Ideally, this would either be the person who identified the concern or someone who can actually do something about it if needed. It would need to be stressed that this is not an assignment of a task, or cause any repercussions to the assignee. The only reason for this is so that there is reduced chaos in the informal process, and there is some idea of who to ask if there are questions surrounding the item identified in the meeting. Additionally, it will be understood that even though the item is tagged with someone's name, it is open for anyone to take action if able.

This list will then be made readily available to all stakeholders. This could be as simple as a temporary list on a whiteboard, or a file that exists on the network where everyone has access to it. The location of this list would then be sent to all stakeholders via email or some other communications method that could verify that all have been made aware of the list's location.

The purpose of this informal process is not to provide thorough mitigation plans, formal tracking, or excessive control. The purpose is to spread awareness and knowledge, and provide stakeholders with an opportunity to voice their concerns to other stakeholders. Additionally, the readily available list of the concerns provides stakeholders with a reminder of some potential issues in the project. This increases the likelihood that an opportunity may present itself where one of the concerns or issues could be removed or addressed. Additionally, these changes to address the concerns could be updated on the list under the appropriate item that was captured during the meeting.

Once the project is finished, and the schedule is relaxed, the team can conduct a post-mortem to determine what concerns were actually addressed, and what still exist and if there is anything that can be done about them. This information could then be used to begin the more formal risk management activities as the schedule allows.

Another potential benefit of this type of process is that the output of the meeting could also be distributed to senior management as well as any other decision makers. Even if there are no formal mitigation actions taken, it would at least make them aware of the concerns other stakeholders have with the project.

There are obvious drawbacks to this type of approach. For one thing, there is no clear definition of what the item that is captured should contain or how it should be structured (unlike the condition-consequence form [Glutch94]). This makes tracking and control extremely difficult. Additionally, it is extremely unlikely to be repeatable because of its informality. Essentially, it is a "whatever works now" type of process. Also, using this type of technique could run the risk of being the default risk management process. While this should only be used if it is not possible to run the actual process, it could be what the developers become accustomed to, and decide that it is not worth the extra effort to invest in a more thorough process in the future.

Rushing an Existing Risk Management Process

Whatever the circumstances are that would force an organization to perform rushed risk management, whether it is a shortened delivery time frame or a loss of critical resources, the organization must have an existing risk management process in place to rush. Without this process having previously been in place, there is no value in attempting to perform rushed risk management.

Requires an Existing Risk Management Process
In order to perform rushed risk management, an organization must have a pre-existing risk management process in place that the members of management, the development team and marketing are familiar and comfortable with. It is this previous experience with risk management that allows rushed risk management to even be remotely possible, because the key players within the management process have already been exposed to what is required to perform risk management. As described in the previous section, the overhead required to become familiar with risk management would render any benefit to performing risk management, in a rushed situation, ineffective.

Allocate extra resources
The first step in attempting to rush the risk management process is to allocate additional resources dedicated specifically to risk management. For some risk management techniques, like the Software Risk Evaluation (SRE), the major resources are constrained to the evaluation team. Simply adding resources to the evaluation team would most likely result in additional overhead to the SRE process.

What would make a more significant impact would be to allocate these additional resources to parallel risk management activities. For instance, one team may be performing the SRE with the development team while a second team is performing schedule based risk management such as the Critical Path Method or the Critical Chain Method. In this scenario the first team is analyzing the technical feasibility of the system

and identifying associated risks while the second team is analyzing the feasibility of scheduling the development tasks required to deliver the product within the constrained time frame. For each parallel risk management technique, the time required to perform a more complete risk analysis is significantly reduced.

Stop work and focus on RM

Depending on the size of the organization or the project team additional resources may not be readily available. In addition, it may be that a manager is waiting to the project teams risk assessment to accept or reject a project. For these situations, where available resources are already constrained and a decision is riding on the risk assessment, it is recommended to stop all other work and assign all the resources to risk management activities.

In order for this to be effective, the resources must be familiar this the risk management process. Adding resources to risk management who are unfamiliar with the process will only add additional overhead; defeating the initial purpose of adding the additional resource. In addition, the resources should be assigned to parallel risk management activities as described in the previous section.

Threshold of Success – Critical Path Success

The Threshold of Success (TOS) technique is a technique used to establish what it means for a project to be successful. The threshold of success of a project is composed of multiple TOS statements which have the following characteristics [Taran07]:

- Short and specific
- Measureable
- Attainable
- Realistic
- Time bound

In order for a project to be deemed successful all the statements within the TOS must be successfully completed. However, under normal risk management circumstances the TOS defined for a project will be all inclusive; meaning the entire scope is likely to be addressed, even if it is indirectly, within the TOS definition.

In the case of rushed risk management the scope of the TOS needs to be modified to be more applicable to the reduced timeframe. When reducing the scope of the TOS there are two possible recommendations:

- A schedule based TOS composition.
- A minimum requirements TOS composition.

Either one of these recommendations aims at reducing the scope of the TOS, while still providing a formal method of documenting what defines project success.

When creating a schedule based TOS, it is beneficial if the project schedule conforms to the Critical Path or Critical Chain Methods. These two schedule methods conveniently highlight the development tasks that are critical to project completion. The assumption made here is that tasks off the critical path are not required to deliver a working version

of a system. Defining the TOS accordingly focuses development efforts on these critical tasks reducing the development overhead so that the project deadline can be met. A second product release will be necessary after initial deployment to deliver the artifacts associated with the tasks lying off the critical path.

Similar to establishing a schedule based TOS, establishing a minimum requirements TOS aims at striping the scope of the system down to the bare minimum required at delivery. For instance, if the developing organization is responsible for performing system integration and installation activities when the system is deployed then the client may be able to relax the deadline of system support documentation because the need will not be immediate. Removing tasks such as system documentation reduce the scope of the deliverable required at the deadline, but also free up critical resources necessary for completing the critical tasks to meet the minimal TOS.

Mini-SRE

The mini-SRE is a miniaturized version of the complete SRE. This is to reduce the overhead of the process, and tailor it to fit projects that do not need the complete process. When rushing risk management, however, it may be necessary to decrease the process even further to ensure that the risk management activities can be completed in time so that mitigation activities can occur in the reduced timeframe.

Modifications to the mini-SRE process would be to use an internal evaluation team. This would cut down on the timeframe it would take for the evaluators to get up to speed on the project. Also, it would cut down on the overhead involved finding the people who will facilitate the evaluation. This evaluation team could consist of key decision makers, project champions, or any stakeholders who have extensive knowledge and insight surrounding the project.

The identification process can only be focused on risks that have an immediate timeframe. These are the only risks that can be addressed given the schedule.

Additionally, during the identification process, bias and intuition can be used to identify the greatest concerns on the project. While bias is typically an undesirable element when it comes to risk management because it limits the scope of the identification process, in a rush mini-SRE, these aspects could be a strong indicator of the highest priority risks, or the risks that have the most concern. Leveraging these elements appropriately could be an efficient way to discover the items that should be mitigated quicker than if the mini-SRE process was performed. The drawback to this is that there will be many risks that go unidentified. However, in the rushed-risk setting, the scope must drastically be limited to only the highest priority.

Limiting the scope using these techniques will feed directly into limiting the scope of the following risk management activities. With the limited time and resources, the scope has to be cut back. These techniques could be an effective way to do that without missing the risks that should be addressed despite the constraints on the team.

Post Mortem – Learn From the Rush
Once the rush has been completed, it is important to perform a post-mortem to learn from the rushed process. Ultimately, it is likely that the team will have to rush the risk management activities again in future projects. Performing a post-mortem will take a look back and identify what the team did right, what the team did wrong, and how the team could improve these activities in a future rush.

Additionally, the team would be able to determine the best way to continue to tailor these activities so that it fits the members and types of projects that they are involved with, and yields the most benefit.

Case Study Recommendations

The following sections provide recommendations on how Tim and Kristen could have leveraged rushed risk management to mitigate the issues and challenges they were facing regarding the Hybara Casinos project.

Tim's Point of View
In a situation such as Tim's, a client is providing the opportunity to develop a system which would provide much needed revenue for the organization, but has a reduced delivery timeline and needs to know if you will accept in a matter of hours; the recommendation for is to leverage the informal risk mitigation strategies described previously.

Having gathered Kristen and her team together, Tim should have pitched the Hybara Casino project, the two week delivery date, his thoughts, and the motivation that Driscoll Software could benefit greatly from this projects revenue. In return, Kristen and her team would then be provided the opportunity to freely present their concerns to Tim; such as the previously scheduled holiday vacations that would significantly reduce the available resources, the risks of developing a normally six week project within a two week timeframe, and the possible options for reducing the deliverables to meet the two week deadline.

Armed with the information gained by this informal risk assessment, which included all available stakeholders, Tim would have been more educated in the risks associated with accepting this project. It is the assumption of the authors that Tim would have that the risks associated with his team would have been too high to accept the project. He would either have to decline the project or hire Alessandra has a technical consultant.

Kristen's Point of View
In order to provide a realistic recommendation that is applicable to a wider range of scenarios we must assume that Tim has accepted the offer from Hybara Casinos and the system must be delivered in two weeks.

Given the assumption above, it is the recommendation of the authors that Kristen utilize the techniques described above to perform rushed risk management. Knowing that she must deliver a system within an extremely shortened time frame she must assemble all the resources she has available and focus specifically on risk management for a designated period of time.

Assuming Kristen's team is familiar with the risk management process, a parallel risk management effort could be utilized. One team would be responsible for performing a modified mini-SRE to identify any areas containing risks regarding the understanding of what Hybara Casinos requires at the New Year delivery date. Again in parallel, a second team will be establishing a TOS based on the minimum requirements that are necessary for Hybara Casinos to be operational by the delivery date.

By reducing the scope of the initial deliverable, based on the assumption the remaining deliverables will be deployed in a follow-up release, and leveraging the prior knowledge of the client and their system needs Driscoll Software should be able to mitigate many of the risks associated with developing a six week development effort within a two week time frame.

Summary

Risk management can provide large benefits and help to facilitate success for a project. In many situations, however, project managers find themselves questioning whether or not there is time or resources to perform the activities needed. When this occurs, with minimal prerequisites required, there are options available to obtain much of the benefit from risk management.

These tailored versions can greatly aid in a rushed situation, and reduce the amount of overhead required to run the process, thereby reducing the overall risk in these high risk projects.

Bibliography

[Green09] Green, Sarah. ***Is The Rookie Ready?*** (R0912B). *Harvard Business Online* (December 2009).

[Taran06] Taran, G. & Williams, R. ***Mini Software Risk Evaluations: Going Light in Evaluating Risks in Software Intensive Projects.*** Unpublished manuscript, 2006

[Taran07] Taran, Gil. ***How Successful Are You, If You Can't Define It?*** Unpublished manuscript, 2007.

[Miranda08] Miranda, Eduardo & Abran, Alain. **"Protecting Software Development Projects Against Underestimation."** *Project Management Journal 39*, 3 (September 2008): 75-85.

[Glutch94] Glutch, David P. ***A Construct for Describing Software Development Risk*** (CMU/SEI-94-TR-14, ESC-TR-94-014). Pittsburgh, PA: Software Engineering Institute, Carnegie Mellon University, 1994.

[Hulett96] Hulett, David T. ***Schedule Risk Analysis Simplified.***

[Scitor] Scitor Corporation, **Critical Chain Concepts.**