

Project Risk Management

Introduction:

A risk is simply something that can go wrong (and something usually does on projects), that keeps you from achieving project success. Of course there are things that can occur that are positive, which can also be referred to as risks. We will focus on those risks that have a potential negative impact on your project. Risk management is a discipline that allows you to increase your chances of success by planning how to identify and reduce the likelihood of risks occurring; risk management also helps you identify how to minimize the consequences of the risk if they do occur— in spite of your planning efforts.

How is it created?

Risks fall into three categories on a project: scope, resource and schedule. In the categories of scope and resource risks, innovation is a major risk factor. Any time the project team, the organization or the external stakeholder ventures into unknown terrain or looks to make a significant change to how things are currently being done, the risk factors multiply. The less experience you have with a certain type of application or technology and the more change you try to make to an organization, the likelier you are to run into trouble.

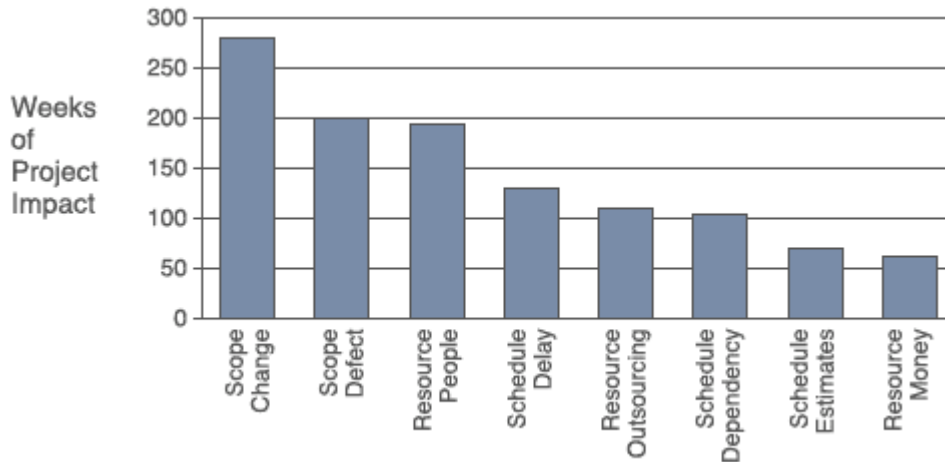
The second most likely set of risk factors is associated with complexity. Complexity introduces relationships among parts of the project, so that there are more dependencies. If something goes wrong in one area, it is more likely to affect some other area.

Complexity also often increases project size, since there are more things to be done. And sheer size is a risk factor, because the difficulty of communicating among team members and with stakeholder grows geometrically. Finally, complexity is often associated with lack of experience. Just as, according to Tolstoy, all happy families are alike, but each unhappy family is unhappy in its own particular way, so all simple systems resemble each other, but each complex system is complex in its own unique way. And lack of experience has the same consequences as innovations.

Finally, there are risks that do not vary much from project to project: a fire destroying the developers' workspace; a key team member is injured and hospitalized; the company is taken over and the new management must be brought up to date before the project is allowed to continue; the sponsor or the organization's management is indecisive and stakeholders keep changing their minds...

As project manager, you are responsible for identifying the context of your project and the various risk factors that apply. Use brainstorming sessions, speak with other project managers who have experience with the same kind of system, refer to the available literature on the Internet, in particular from the Project Management Institute. Once you have identified the risks, sort them by probability of occurrence – the malfunction of a brand-new software development tool is likelier than a tsunami in, say, Colorado – and by magnitude of consequence – a risk that would cost you a few hours of work is not nearly as critical as one that would immobilize the whole team for three weeks.

The following figure by Tom Kendrick's *Failure-Proof Projects*, shows the most common project risks, based on a study of several hundred projects. The risks are mainly in the area of communications (often, but not always, due to size) and commitment. Most of the projects studied were fairly routine – not very innovative, not very complex, not very large. In fact, run-of-the-mill projects are the rule; ambitious ones are the exception. The overall risk on ambitious projects is higher, and also the impact when something goes wrong.



The above chart (from Failure-Proof Projects by Tom Kendrick) further characterizes risks based on scope, schedule and resources (triple constraint) by their root cause. For the above data scope risk caused nearly 500 weeks of project delay, resource risk more than 350 weeks and schedule risk just over 300 weeks of delay for the projects reviewed.

Once you have identified and assessed the risks on your project, you can start planning how to address them. There are two things you can do to improve the situation: **risk reduction**, decreasing the probability of a risk materializing, and **risk mitigation**, decreasing its consequences, should it materialize.

Risk Reduction

To reduce risks, you can use several approaches:

- Create an awareness of the risk among your team members and the project stakeholders: “forewarned is forearmed.” For example, you might point out that computers do crash and that it is prudent to save your work from time to time when you are engaged in a long-lasting task.
- Create a specific process to reduce risk. For instance, you may have found in the past that there is a risk of system testing being incomplete (causing defects to slip through) unless you include user representatives in test planning. You would then, as a minimum, require sign-off by a user before the test plan is declared complete.
- Invest resources in risk prevention. For instance, you could have the organization install fire extinguishers. A more relevant example is to install a good computer backup system, which will reduce the risk of losing completed work and also reduce the risks associated with system modifications.

Risk Mitigation

Risk mitigation is how you plan to minimize the impact if any of the risk factors that you have identified should materialize. You will never be able to reduce the risks to a point where it is guaranteed that nothing wrong will happen: at some time, some risk will materialize. (This is popularly known as “Murphy’s Law.”)

The two main approaches to risk mitigation are early detection – finding out that an incident has happened before the consequences have had time to spread – and contingency planning. Contingency planning consists in figuring out beforehand how to handle a crisis and setting apart resources to deal with it. For example, you might have a succession plan for key personnel, so that if someone falls sick, you can quickly get a replacement (for example, from a temporary work agency). In all cases, you need to set aside a contingency in both the project budget and the schedule. The contingency does not need to cover the sum of all possible risks, since only a small number of risks are likely to materialize. The most important thing about the contingency is that it is a reserve for the entire project based on the likelihood and impact of the risks identified, not a reserve that you build into each individual activity. If you did, you would soon find that team members would treat the contingency as an addition to the estimated time to complete the task, and they would therefore gradually consume the whole contingency without any risk actually having occurred.

Of course, if the consequences of a risk happening are so minor that they won’t affect cost, schedule, scope or quality, you can remove the risk from your risk management plan.

Risk Management Plan

A risk management plan consolidates in a single document all of the work of identifying, reducing and mitigating risks. The list below was developed for our sample project and represents a typical example of risks on a fairly small project to implement a new system.

Risk/Cause	Likelihood	Impact	How to Minimize Cause	Current Status	Action Items	Responsible Pers
SCOPE						
Key Requirements are identified after the design freeze due to lack of involvement of users	H	H	Perform a Stakeholder analysis to identify key stakeholders. Develop a communications plan to keep them involved in the project. Identify process owners and make them responsible for delivering value	A key process owner has been identified who is not interested in participating in the project.	Include this in the next status meeting with the project sponsor and other stakeholders. Brainstorm ways to get this individual involved.	Project manager
Requirements keep changing because no clear project objectives were identified up front	H	H	Keep team focused on key project objectives (80/20 rule) Use iterative prototyping approach and involve all key users in the process. Get sign-off on requirements and enforce no going back.	Have had to enforce no going back to change things that were already decided. Team needs to be periodically reminded of areas of focus (value) 80/20 rule	Need to get process owners to sign-off on second iteration prototype	Project Manager
Stakeholders' expectations are different than project teams due to lack of clear on-going communications	H	H	Stay in constant communications with stakeholders to first understand their expectations and then work to help them understand the project teams	Currently one key stakeholder is not willing to participate in the project.	If this isn't resolved within the next week, escalate to the project champion.	Project Manager
RESOURCE						
Key resources dedicated to the project don't materialize due to other higher priority projects	M	H	Make sure to have a project champion who can help free up these resources	A key process owner is not participating as planned	Generate interest in the project through some quick wins to get people more involved.	Project Champion
Project Champion leaves the organization before the project is completed	M	H	Keep project duration as short as possible, check with Champion up front regarding his/her commitment to the organization, have a second champion available in case of worse case scenario	Champion is committed to the project,	Identify a second champion and get this individual involved in the project	Project manager
Process owners not involved due to lack of time	M	H	Work with the project champion to either free up these resources or identify others	Currently one process owner is unable to participate as planned	Identify this issue in the next status meeting for resolution.	Project manager
Resources assigned to the project are inexperienced	M	M	IF experienced resources are	Currently the project is missing technical	Raise this issue in the next status	Project Manager

			unavailable internally, use outside experts to make sure project has the appropriate skills	and functional resources familiar with the new software being implemented	meeting. Schedule additional training for the project team members. In addition these outside resources and training will cost more than what the project has currently budgeted	
SCHEDULE						
Project time requirement underestimated due to poor planning	M	H	Stop and take the time necessary to make sure time estimates are reasonable.	The project is getting behind one day each week due to the time requirement being underestimated	Check with other organizations and experts and determine a more accurate time estimate	Project Manager Technical Lead Process Lead
Project completion date conflicts with several other large project completion dates	L	M	Change at least one of the projects completion dates	So far management is unwilling to change the project's completion date so the system will be ready for the busy fall season	Escalate to project champion to see if the other two projects completion dates can be changed	Project Champion
Decisions are not being made in a timely manner due to lack of decision making process	H	H	Develop and get agreement to a decision making process with a no going back rule after a decision has been made	Project has lost one week already due to slow decision making	Present the decision making process in the next status meeting for approval	Project Manager
Technical						
This Technology has never been used in the organization before	H	H	Bring in outside expertise familiar with the technology	Currently searching for internal or external expertise with the software	Identify external resources and organizations that have experience with this technology	Project Manager Technical Lead
Project depends on the network being upgraded before it can work	L	H	Get IT management responsible for the network involved in the project.	Currently no regular contact with IT network management regarding the project status	Meet with IT management to understand their expectations and explain the project's needs to them. Get the appropriate networking manager involved in regular status meetings	Project Manager
IT professionals will not join the project until after the requirements have been finalized	M	H	Get appropriate IT personnel on the project team at the beginning of the project	No IT professionals with necessary skills are available for at least two months	Raise this issue in the next status meeting. Make sure IT management responsible for these resources are in attendance. If not resolved, escalate to project champion	Project Manager

What it is not:

A risk management plan is not a substitute for project planning or lack thereof. Before you can develop a quality risk management plan, you must be very clear about your project purpose and objectives, what is in and out of scope, what resources are available to you and when you have to deliver the project to your stakeholders. Without this information you cannot begin to understand what may or may not go wrong and what impact it might have on your project.

How do you know when you are done?

Now that you have developed this risk management plan, you must keep it updated throughout the project's lifespan. This includes monitoring the risks you have already identified, reassessing their probability and their potential consequences, and adding new risks as you discover them. The project manager is usually responsible for handling this task throughout the life of the project.