

Article category: RISK

Project risk management

Part 2: The process

By *Antonie M de Klerk**

The focus of this article is the process of project risk management. We will identify the main steps and briefly discuss the content of each. Also, we will discuss the relationship between risk and opportunity. In the previous article we considered the need for project risk management, discussed the everyday nature of risk, and pointed out its two dimensions. However, we did not progress to the point where we actually defined project risk management; we will start off with a brief discussion of this now.

What is project risk management?

The purpose of project risk management is to improve project performance. The project should be better off with it than without it or else we are clearly wasting our time. A more accurate statement would be that the purpose is to improve the chance of project success. However, this is still not accurate. Remember the example we discussed last time of a person paying car insurance for a whole year but nothing happening to his car, and whether this was money well spent or not? The same concept applies to a project. We are dealing with uncertainties here, and hence we need to talk about long-run averages. Therefore an even better statement would be to say that we want to maximise the expected value of the project. Note again that we may be spending money and effort to manage risks that may in fact never occur.

A more explicit definition is the following: *project risk management is the art and science of managing uncertainties that can impact on project success, in a cost-effective manner.* There are a number of key words in this definition:

- *art and science*: experience as well as theoretical knowledge is required
- *manage*: planning, organising and control are necessary
- *uncertainties*: an element of probability or chance; could be events or variability
- *impact*: this can be negative or positive (risk or opportunity)
- *success*: this should be clearly defined
- *cost-effective*: there must be a balance between the cost and benefits of risk management

Events and variability

Project risks can be divided into two broad classes: uncertain events and variability. Uncertain event risks have to do with discrete events that may occur and have an impact on the project. Examples would be a labour strike, board approval, or a prototype test. Either the strike occurs or not, the board grants approval or not, or the test is successful or unsuccessful. One could describe these also as branching points in a project plan. For example, if a certain test is successful, we continue with installation and commissioning but if not, we need to do another design iteration, make changes to the prototype, re-test, and only then we can do installation and commissioning.

Variability, on the other hand, has to do with the inherent uncertainty associated with some factors that impact on project outcome. A good example is task duration. Despite our best planning, the actual time to complete a certain task remains uncertain. A design phase has been planned to take three months, for example, but in reality it takes four

months or perhaps three months. Stochastic PERT is an example of a technique that models variability. Cost and time (duration) are two prime examples in a project that display inherent variability. There are others also, of course, like material properties.

Risk versus opportunity

The impact of uncertain events or variability on project success can be either positive or negative. There is no reason why variability in the duration of the pouring of foundations for a building, for example, cannot be positive. We can finish early and save some time. However, if we are not prepared to take advantage of this opportunity by having the material on site for the next step, we cannot capitalise on this opportunity. The result will be that on the overall project we will only be able to capture the cumulative negative effect of risks, but not the positive effect of any opportunities.

The point in this is that we should also do opportunity management and not only risk management. Opportunity is also sometimes called upside risk. Note that in the definition above we only talked about "impact", which can either be positive or negative. The process, tools and techniques of risk management are equally applicable to risk and opportunity, and all we need to do is to change our mindset to include opportunity from now on in our definition of "risk".

Risk management and project management

Before we go into the details of the process, it is necessary to consider the how risk management fits into the broader concept of project management. Risk management is often seen as an add-on or afterthought, something that can be delegated to a lower level or perhaps even contracted out to a consultant. Also, it is often viewed as a rather ad hoc and once-off activity, needing to be performed only once the project is up and running. None of these views are correct.

Risk management is an integral and essential part of project management and is an on-going activity throughout the life of the project. Of particular importance is the fact that we should emphasise risk management during the project planning phase – this is where we have the highest impact and leverage.

The ability to do something about risk reduces the moment we commit to a particular project strategy and plan; to a large degree we have then "locked in" a set of risks with which we have to live throughout the project life cycle. Clearly we can manage risks during project execution as well, but this should largely be confined to monitoring actual events against plan – our largest influence lies upstream in the project planning phase.

Further, because risk management is all about protecting and achieving project success, the responsibility for this lies squarely with the project manager. Viewed from this angle, project management is very much about risk management. If there were no uncertainties, the project would execute exactly according to plan and no project manager would be needed. However, because risks occur and can impact on all levels of a project, it follows that everybody working on the project should be concerned with risks and their management.

We all know the story about the battle that was lost because of want for a nail for a horseshoe. Risk management is everybody's responsibility, although centralised co-ordination and expert support is usually necessary. Just like quality, we cannot delegate risk management to some individual "sitting in a corner" somewhere and thereby discharge our responsibility. It is very much part and parcel of what everybody does.

The essential steps

The process of project risk management is to a large degree self-evident.

1. Identify the risks that bear on the project

1. Analyse these risks (in terms of the two dimensions: probability of occurrence and consequence)
2. Order the risks according to magnitude to find out which of them are deserving of our attention
3. Devise ways to deal with these risks
4. Monitor and review the situation on a continuous basis during project execution, until completion.

This looks deceptively simple. Yet, these are the essential steps and one should take care not to lose sight of them when working on a project.

Standards, guidelines and other references

The five steps have been embodied, elaborated and sometimes expanded in a number of standards and guidelines that are freely available. Generally speaking, the literature on project risk management is rather recent, testifying to the fact that this discipline has really only substantially evolved over the past decade.

Chapter 11 of the Project Management Body of Knowledge of the Project Management Institute in the United States provides a useful albeit somewhat brief overview of project risk management [1]. It divides the process into risk identification, risk quantification, risk response development, and risk response control. A few essential tools of risk quantification are mentioned. Wideman [2] is the suggested supporting text for this chapter.

Chapman & Ward [3] is currently the leading and most comprehensive text on the topic. This recent publication is recommended for anyone looking for a complete treatment covering both the practical and theoretical aspects.

The Project Risk Analysis and Management (PRAM) Guide from the Association for Project Management in the UK is another good reference [4]. Anybody looking for a readable, not too theoretical, yet complete guide to get started in project risk management, should get hold of this one. The influence of Chapman (co-author of [3]) in this guide is evident.

A lesser known reference (in South Africa, at least) is the Australian/New Zealand Standard AS/NZS 4360 [5]. Although this document addresses the general subject of risk management, it is equally appropriate for project risk. It provides a clear and concise overview of the process and also contains some useful templates for a risk register and other documentation. Further, it suggests guidelines for developing and implementing a risk management programme in an organization. Useful tables for risk assessment and evaluation are provided. This is a reference that will be useful on the bookshelf of any person involved in project risk management.

The AS/NZS 4360 process

There is no universally accepted project risk management process. The processes described in the above references range from basic to comprehensive, but are all variations on the same theme. The process suggested by the AS/NZS 4360 standard contains all the essential elements (see Figure 1).

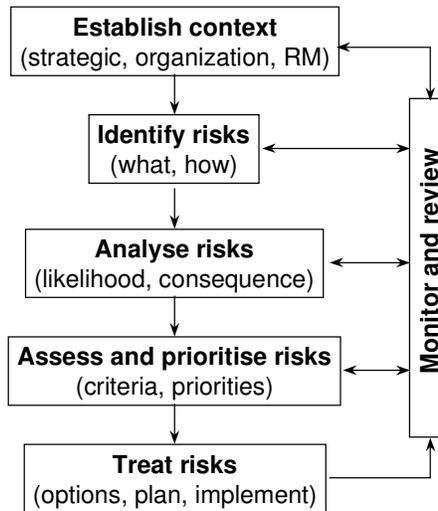


Figure 1: The AS/NZS 4360 Risk Management Process

We will briefly discuss each of the elements in this process. A more complete treatment of the process can be found in the references given above.

Establish context

It is important to establish the context in which the rest of the risk management process will take place. This includes a clear definition of the project and its objectives, the stakeholders, and organizational and strategic issues.

Identify risks

The aim here is to identify all risks that can impact on the project and compile a comprehensive list. There are techniques and guidelines for systematically working through the project to accomplish this. However, no foolproof methodology exists that guarantees that all risks will be identified. Remember, a risk not identified will not further be considered.

Analyse risks

The likelihood and consequence of each risk needs to be estimated in order to provide a measure of its magnitude or importance. An exact quantitative assessment is usually not necessary (nor possible) but at least a logical relative qualitative analysis is required.

Assess and prioritise risks

Using the information obtained in the previous step, the risks should now be ordered according to relative importance. The purpose is to identify those risks that justify and require further action. Techniques are available to aid this process.

Treat risks

This step consists of identifying the options available for treating the risks, considering those options and deciding how to deal with the risks that warrant action. The output is usually in the form of a treatment plan.

Monitor and review

During project execution risks are resolved and the treatment plan must be implemented and controlled. Constant monitoring and review is required. Also, unforeseen new risks may arise that require action.

In the next article

In Part 3 of this series we will consider the relationship between risk management and decision making and discuss ways to aggregate individual risks into overall project risk. We will also identify some software tools that are available to assist us in the risk management process.

References

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2. Wideman, RM (ed.), *Project and Program Risk Management*, Project Management Institute, Upper Darby, Pennsylvania, 1992.
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