

Practical Project Risk Management¹

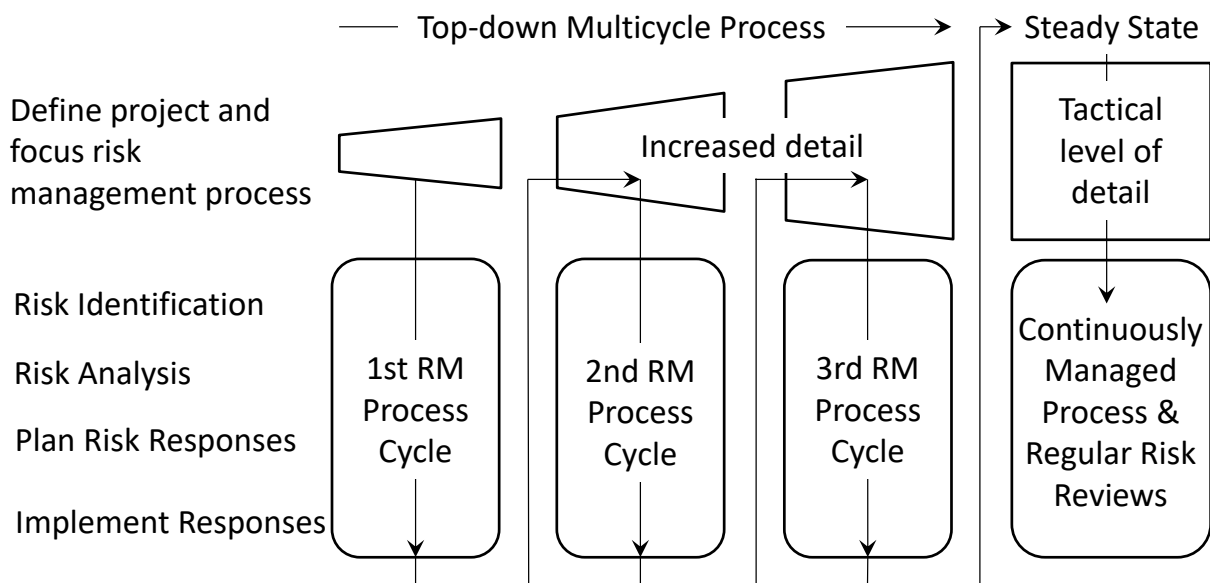
Exploiting the Idea of Composite Risks: A brief guide²

Purpose

1. Develop an early focus on high level risks and key risk related decisions.
2. Exploit an initial high level decomposition to structure subsequent risk identification.
3. Help structure risk models that include all risk sources whilst avoiding duplication.

Background

The term *composite risk* was coined by Prof Chris Chapman when contributing to the APM guide *Prioritising Project Risks* (2008). It describes a risk identified at a high level of risk decomposition which could be decomposed into lower level risks, should that prove to be a productive path for the risk management process to follow. Composite risks may be a feature of the earlier stages of a top-down multi-cycle approach to the risk management process.



¹ This series of articles is by Martin Hopkinson, author of the books “*The Project Risk Maturity Model*” and “*Net Present Value and Risk Modelling for Projects*” and contributing author for Association for Project Management (APM) guides such as *Directing Change* and *Sponsoring Change*. These articles are based on a set of short risk management guides previously available on his company website, now retired. See Martin’s author profile at the end of this article.

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Example

The table below illustrates a high level cost breakdown for a project, with the range in estimated costs indicative of the levels of risk associated with each element.

| Cost | Estimates (\$k) | | | Range (\$k) |
|-------------------------------------|-----------------|--------|--------|-------------|
| | Min | Median | Max | Max - Min |
| Land Purchase for New Factory | 2,000 | 2,000 | 2,000 | 0 |
| In-house Design & Requirements | 650 | 800 | 1,000 | 350 |
| Design Contract | 1,600 | 2,300 | 3,000 | 1,400 |
| Building Construction Contract | 20,000 | 28,000 | 40,000 | 20,000 |
| Equipment and Installation Contract | 34,000 | 40,000 | 46,000 | 12,000 |
| Factory Commissioning | 1,200 | 2,500 | 4,000 | 2,800 |
| Project Management | 4,000 | 5,200 | 7,000 | 3,000 |

With the exception of the land purchase, each element in the above breakdown can be treated as a composite risk because it is evident that a more detailed decomposition of contributing risks can be identified. In the meantime, an analysis of risk at this stage may identify that:

1. The majority of cost risk is likely to materialise during the delivery of the building and equipment contracts.
2. However, significant sources of this risk may lie in the decisions taken during the in-house design and requirement activities and as a consequence of the design contract. For example, subsequent design changes may drive later contract change costs.
3. For these reasons a key point to consider during this stage of the risk management process is how the contracting strategy can be used to mitigate risk. For example the design and equipment contracts might be linked to incentivise the contractor to manage risk to the equipment procurement and installation work and, potentially, also the construction cost.
4. The primary source of risk to the commissioning and project management risks may be identified as being exposure to schedule variance (cost increasing as a function of time). If so, this should prompt a reassessment of the project benefits, which would also be impacted by delay and, thus the underlying business case.
5. The structure established by the breakdown in the table has the potential to form a sound basis for developing a quantitative cost risk model, as risk decomposition continues.

Such insights are often missed when a single-cycle process is used to develop a risk register.

Common Faults

1. Reliance on a single pass process to identify risks in a detailed risk register.
2. Development of incoherent risk models structured by summing risks from a register.

About the Author



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Martin Hopkinson, recently retired as the Director of Risk Management Capability Limited in the UK, and has 30 years' experience as a project manager and project risk management consultant. His experience has been gained across a wide variety of industries and engineering disciplines and includes multibillion-pound projects and programmes. He was the lead author on Tools and Techniques for the Association for Project Management's (APM) guide to risk management (*The PRAM Guide*) and led the group that produced the APM guide *Prioritising Project Risks*.

Martin's first book, *The Project Risk Maturity Model*, concerns the risk management process. His contributions to Association for Project Management (APM) guides such as *Directing Change* and *Sponsoring Change* reflect his belief in the importance of project governance and business case development.

In his second book *Net Present Value and Risk Modelling for Projects* he brought these subjects together by showing how NPV and risk modelling techniques can be used to optimise projects and support project approval decisions. ([To learn more about the book, click here.](#))