PART I

A New Look at Project Risk Management

Imagine you are planning a climbing expedition up the Matterhorn, one of the most spectacular mountains in the Alps. As a project management expert, you produce a detailed plan and specify routes, expected distance travel times, budgets for equipment, shelter and food, and so on. In addition, you have to worry about what might go wrong: A storm may move in, for example. For such an eventuality, you need to build buffers into the plan: extra time and/or extra equipment (perhaps an emergency tent or ice picks). You also need to plan decision points; for example, if the storm moves in before noon, we turn around, and if it catches us at 4:00 P.M., we take refuge in an emergency shelter. This exercise of anticipating risks is the essence of project risk management (PRM).

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Project risk management can be defined as the "art and science of identifying and responding to project risk throughout the life of a project and in the best interest of its objectives." PRM extends project planning by identifying, appraising, and managing project-related risks. Risk, in turn, is defined as "the implications of the existence of significant uncertainty about the level of project performance achievable" and is seen as having two components: first, the probability of occurrence, and second, the consequences or impacts of occurrence.[1]

PRM has become an established, formalized, and widely used project management method.[2] This method offers a powerful set of tools that help companies to keep downside risks under control and to take advantage of upside opportunities. In some industries, such as engineering, construction, or pharmaceuticals, anticipating and managing downside risks is essential to remain in business. In other industries, the ability to seize opportunities can greatly enhance profitability. For example, the manager of one power generation engineering company told us, "Thinking proactively through risks enables us to fill the 'white spaces' in our contracts to our advantage. We proactively interpret undefined events in our favor. 'User training costs money? Well, that was not specified, so it's clear that *you* must pay it.' This protects us from the customer interpreting the event in *his* favor, and sometimes, we even manage to seize an opportunity and sell it to the client for additional profit."

PRM, then, is concerned with *achieving the stated project goals* in spite of risks (see Smith and Merritt 2002), although it ideally includes influencing the "base plan" and even the project design, and revising the targets when necessary.[3] While the details differ, authors agree that PRM consists of four conceptual steps (see Figure I.1): *Identify* risks beforehand; classify and *prioritize* them according to probability and impact; *manage* them with a collection of preventive, mitigating, and contingent actions that are triggered by risk occurrence; and *embed* these actions into a system of documentation and *knowledge transfer* to other projects.

In Part I of this book, we present two examples of project risk management. The first example, the PCNet project, describes one of the many IT integration projects undertaken as part of the takeover of RBD, Inc. by the diversified resources company Metal Resources Co. from July 2001 to September 2002. We consider this to be an excellent example of how solid application of PRM techniques in the appropriate project environment can produce good results.

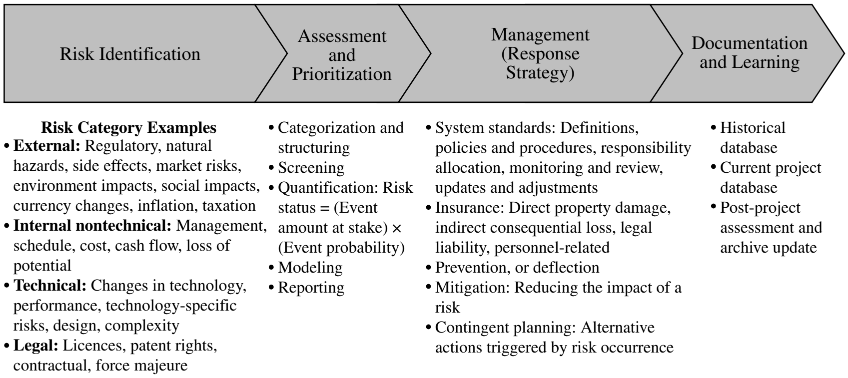

Figure I.1 Conceptual steps of the PRM process

The second example, the Circored project, describes the design and construction of a plant in Trinidad to produce direct-reduced iron (DRI), as part of a joint venture between Cleveland Cliffs, one of the largest iron ore suppliers to blast furnace integrated steelmakers in the United States, Lurgi Metallurgie GmbH, a metallurgical process engineering company, and LTV Steel, who wanted to use DRI in a mini-mill they were building in Alabama. We consider this to be an excellent example of what happens when standard PRM techniques are applied to novel, first-of-a-kind projects. As is often seen in such cases, the project ran into unexpected problems that delayed completion for several months, it ran over budget, and it was eventually blindsided by an unexpected turn in the market.

In Chapter 3, we draw the lessons from the two examples and characterize the *types of uncertainty* that require PRM. Based on this classification, we outline under what circumstances which of the various methods of PRM are appropriate. In addition, we extend the PRM toolbox by discussing additional methods that are relevant but have not been presented in the same context. Control-and-fast-response is a method of dealing with high task complexity, and project contracts are used to coordinate multiple stakeholders in the presence of relationship complexity. Finally, we introduce two approaches to unforeseeable uncertainty, both of which can extend PRM: trial-and-error learning, or the repeated redefinition of the project over time, and selectionism, or the use of parallel candidate trials, the best of which is chosen ex post. These will be further discussed in Part II of the book.

Endnotes

1. The definition of PRM can be found in Chapman and Ward 1997, p. 10; see also Wideman 1992. The definition of risk is in Chapman and Ward 1997, p. 7. The components of risk are described in DoD 2001, p. 5.
2. See, for example, Wideman 1992, PMI Standards Committee 1996, Chapman and Ward 1997, Council of Standards Australia 1999, DoD 2001, or Smith and Merritt 2002.
3. See Chapman and Ward 1997, p. 10.