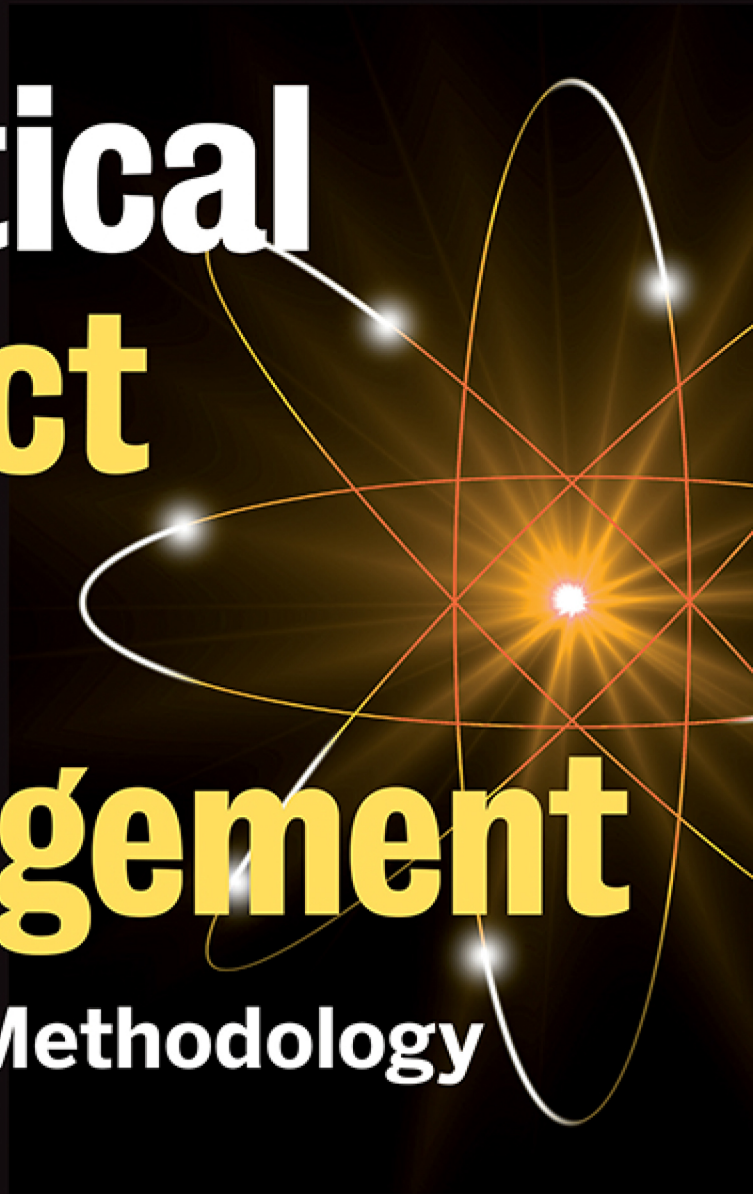


DAVID HILLSON

PETER SIMON

Practical Project Risk Management

The ATOM Methodology



THIRD EDITION

Practical Project Risk Management

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Practical Project Risk Management

THE ATOM METHODOLOGY

Third Edition

**David Hillson
Peter Simon**



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Berrett-Koehler Publishers, Inc.

Practical Project Risk Management, Third Edition

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Foreword to the Third Edition

Newspapers and websites are full of stories about projects that are over time, over budget, and not delivering the scope that was promised. In addition, there are many projects, small and large, that never make the headlines but also suffer from time and cost overruns. We know that the environment in which we execute our projects is full of uncertainties and risks. But apparently we fail to account for the effects of risks that affect our projects, and we keep making promises that cannot be kept.

When studying this a bit deeper, it turns out that there are several reasons for not delivering on our project promises. First, we do not make a clear distinction between uncertainties and risks, where uncertainties are the natural fluctuations that occur in purchase costs, execution times, and product quality. Risk, on the other hand, is different. This concerns events that may or may not happen, and if they do will influence our project objectives. Because risk events may not happen, it is relatively easy to ignore them. Unfortunately, the effects of many risks are several orders of magnitude larger than the effects of natural variance. Some of these risks will occur, and when they do, they have a big effect on our project outcomes.

Second, we often fail to systematically identify, categorize, and communicate the risks on our projects. The fact that we are not able to control everything on our project is seen as a weakness. We have a feeling that risks are better kept secret, especially for the client, but often also for ourselves. This means that when a risk event occurs, we are caught unprepared.

Third, because we don't account for risks properly, and many of the risks are downside risks, our estimates for scope, time, and quality are often too optimistic. Optimistic estimates also win contracts. Many tenders in public projects are granted on the basis of lowest price and fastest execution. Properly accounting for the effect of risks may put you behind the competition.

An old saying goes "What we don't know can't hurt us," but the contrary is true in projects: some of these hidden risks will hurt us in the end, either through

avoidable threats that occur or exploitable opportunities that are missed. Therefore, one would expect that learning as much as possible about risks in projects is, and always has been, a standard practice in project management. The fact of the matter is that risk management was added to the project management profession quite late, and many project management frameworks fail to provide an applicable methodology for carrying out risk management.

The book *Practical Project Risk Management: The ATOM Methodology* from David Hillson and Peter Simon addresses this gap, and it provides a clear-cut methodology for risk management in projects. Building on solid, communicable, and applicable definitions since its first edition, the book lays out a methodology that can be practically applied in real projects. As one of the few such sources, the book also addresses quantitative risk management, allowing for an assessment of the effects that risk events will have on project promises such as project duration and project cost.

Proper risk management builds on many other skills and tools, such as stakeholder management. The traditional stakeholder model of Power versus Interest has been extended in *Practical Project Risk Management* with the Attitude dimension, which can be either supportive or resistant. This extra dimension makes it possible to incorporate stakeholders and stakeholder management in a much more precise way in risk management activities than using traditional stakeholder models.

The problem with many methodologies is that they offer a “one size fits all” approach. In contrast, the ATOM methodology distinguishes between small, medium, and large projects, and provides specific activities that fit different sized projects. Other additions to this third edition are the ATOM risk workshops and guidelines for facilitation in the risk management process. These are important enhancements. Structured approaches like the ATOM methodology are best carried out in structured meetings with the relevant stakeholders. These workshops need skilled facilitators from inside or outside the organization, because we all have different specializations in the project, different risk perceptions, and different risk attitudes.

The third edition of *Practical Project Risk Management: The ATOM Methodology* is ready for use in real projects of any size. It can be easily incorporated into any overarching project management framework, both generic ones provided by, for example, PMI or APM, and company-specific ones. The book is also well suited for academic courses in project management, as well as for company training.

To conclude, applying the practical and theoretically sound methods provided in this book can and will help to reduce the probability of hitting the headlines with yet another project that failed to meet its promises.

Prof.dr.ir. Alexander Verbraeck
Chair, Policy Analysis
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Authors' Preface

Everyone agrees that managing risk is a core part of project management, because all projects are risky. Risk management focuses on addressing proactively the implications of uncertainty on the achievement of project objectives. Despite this shared view, for many project managers and their teams, as well as for risk practitioners, the problem comes when they try to make risk management work in practice. The training course has been attended, the theory is well understood, and the tools and techniques all make sense. There is no problem with “what, why, when, where, and who.” But somehow it all seems different when it comes to your project. If only someone could show you how.

Through this book, we hope to make our expertise available to hard-pressed project management professionals, with practical advice on how to manage risk properly, efficiently, and effectively. This is not a book of academic theory or generic principles, although it is firmly based on current international best practices and reflects leading-edge thinking and developments. This book is about actually doing it, so that businesses and their projects can manage risk effectively, minimizing threats and maximizing opportunities in order to optimize achievement of objectives.

This book will be helpful to someone with no prior knowledge of risk management and who needs to implement a proven approach, as well as to someone who has some limited experience but needs guidance on how to apply risk management successfully. Risk management can really work in practice—this book shows how.

We have taken best practice guidelines and standards and translated them into a comprehensive, proven, practical methodology for managing project risk, presented as a simple stepwise process, leaving no ambiguity about what should be done next. We call this methodology Active Threat and Opportunity Management (ATOM), reflecting our belief that risk management is about taking action and that risk management must be targeted equally at both downside risk (threats) and upside risk (opportunities). For each process step, practical advice, hints, and tips are offered on how to get the most out of the risk management process.

The first edition in 2007 described our ATOM methodology in enough detail to allow anyone to use it on their project, regardless of project size or industry

sector. The award-winning second edition (2012) was prompted by feedback from ATOM users, both commercial practitioners and noted academics, and our own desire to continuously improve the methodology. In that edition we added a chapter on managing risk in programs, a key dimension in today's world of ever more complex initiatives. We also made minor changes to all chapters to reflect the improvements we had made to our working practices, and we further aligned ATOM with relevant international standards.

In this third edition we offer further practical guidance on how to apply ATOM, focusing on areas that people continue to find difficult. There are two new chapters on the ATOM risk workshop (Chapter 16) and the role of the risk facilitator (Chapter 17), since much of the hard work of the ATOM risk process takes place in the context of a risk workshop or risk meeting, and facilitation is supposed to make workshops easier and more effective. We have also updated Chapter 15 on Quantitative Risk Analysis (QRA) to take account of how some tools work, and to explain how QRA might be used to benefit small projects. The final chapter addresses risk management in a wider context beyond projects. In the second edition this described managing risks in programs, and the chapter has now been extended to include portfolios, with a new discussion on risk efficiency. In addition, we have made small modifications and improvements in a number of places to reflect our own continued learning and experience.

With our combined experience of over 60 years of managing risk on projects, we know that risk management works. It frustrates us to hear people saying that it's too hard, or not worth the effort, or just a waste of time. ATOM is our answer—a simple, scalable risk process that applies to projects in all industries and business sectors. We hope that you will not just read this book, but that you'll put what you read into practice, since this is the only way of gaining the promised benefits. None of us has time to waste on processes and activities that don't work. Risk management does work, if it is done properly. But please don't take our word for it; try it for yourself and find out.

David Hillson and Peter Simon

PART I

The Problem

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The Challenge of Managing Risk

Few would disagree that life is risky. Indeed, for many people it is precisely the element of risk that makes life interesting. However, unmanaged risk is dangerous because it can lead to unforeseen outcomes. This fact has led to the recognition that risk management is essential, whether in business, projects, or everyday life. But somehow risks just keep happening. Risk management apparently does not work, at least not in the way it should. This book addresses this problem by providing a simple method for effective risk management. The target is management of risks on projects, although many of the techniques outlined here are equally applicable to managing other forms of risk, including business risk, strategic risk, and even personal risk.

The book is divided into three parts, starting with defining the problem in an effort to understand the underlying reasons for the apparent failure of project risk management to deliver the promised or expected benefits. The main body of the book describes a generic risk management process applicable to most projects, focusing on simple guidelines to make risk management work in practice. Finally, the book considers implementation issues, applying the risk management process to different types of projects, and addressing the steps necessary to use risk management effectively.

But before considering the details of the risk management process, there are some essential ideas that must be understood and clarified. For example, what exactly is meant by the word *risk*?

Risk—The Definition Debate

Some may be surprised that there is any question to be answered here. After all, the word *risk* can be found in any English dictionary, and surely everyone knows what it means. But until quite recently, risk practitioners and professionals were engaged in an active and controversial debate about the precise scope of the word.

Everyone agrees that risk arises from uncertainty, and that risk is about the impact that uncertain events or circumstances could have on the achievement of goals. This agreement has led to definitions combining two elements of uncertainty and objectives, such as “A risk is any uncertainty that, if it occurs, would have an effect on achievement of one or more objectives.” Traditionally, risk has been perceived as bad; the emphasis has been on the potential effects of risk as harmful, adverse, negative, and unwelcome. In fact, the word *risk* has been considered synonymous with *threat*. But this is not the only perspective.

Obviously, some uncertainties could be helpful if they occurred. These uncertainties have the same characteristics as threat risks (i.e., they arise from the effect of uncertainty on achievement of objectives), but the potential effects, if they were to occur, would be beneficial, positive, and welcome. When used in this way, *risk* becomes synonymous with *opportunity*.

In the past, risk practitioners have been divided into three camps around this debate, as illustrated in Figure 1-1.

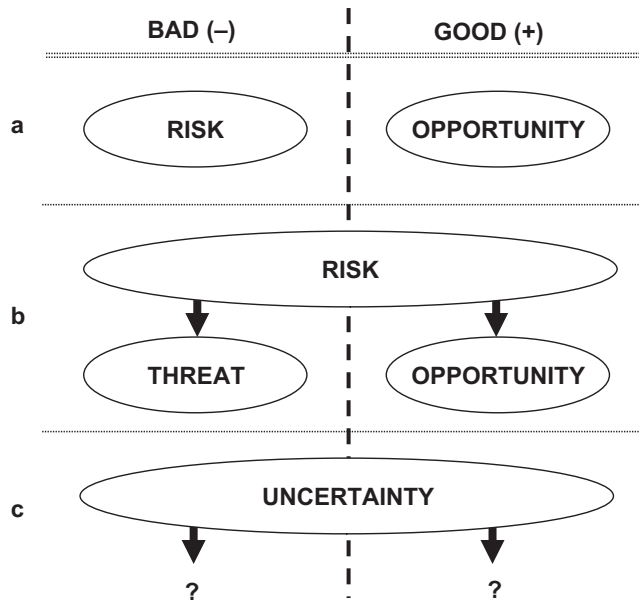


Figure 1-1: Risk—The Definition Debate

One group insisted that the traditional approach must be upheld, reserving the word *risk* for bad things that might happen. This group recognized that opportunities also exist, but saw them as separate from risks, to be treated differently using a distinct process (row a).

A second group believed that there are benefits from treating threats and opportunities together, broadening the definition of risk and the scope of the risk management process to handle both (row b).

A third group seemed unconcerned about definitions, words, and jargon, preferring to focus on “doing the job.” This group emphasized the need to

deal with all types of uncertainty without worrying about which labels to use (row c).

In recent years the definition debate has become less contested. The majority of official risk management standards and guidelines now use a broadened definition of risk, including both upside opportunities and downside threats, as we discuss toward the end of Chapter 3 (see Figure 3-5). In fact, the first reference to this broader definition can be found in the 1996 edition of *A Guide to the Project Management Body of Knowledge* (PMBOK® Guide) from the Project Management Institute (PMI). Since then the Association for Project Management (APM) in their *Body of Knowledge* and *Project Risk Analysis and Management (PRAM) Guide* has also adopted this wider definition in their risk management processes, with tools and techniques to identify, assess, and manage both opportunities and threats. Following this trend, increasing numbers of organizations (though not all) are widening the scope of their risk management approach to address uncertainties with positive upside impacts as well as those with negative downside effects.

Given the increasing popularity of the wider application of risk management to both threats and opportunities, as well as the attraction of using a single process to deal with two related concerns, this book adopts the inclusive position. Using a common process to manage both threats and opportunities has many benefits, including:

- **Maximum efficiency**, with no need to develop, introduce, and maintain a separate opportunity management process
- **Cost-effectiveness** (double “bangs per buck”) from using a single process to achieve proactive management of both threats and opportunities, resulting in avoidance or minimization of problems, *and* exploitation and maximization of benefits
- **Familiar techniques**, requiring only minor changes to current techniques for managing threats so organizations can deal with opportunities
- **Minimal additional training**, because the common process uses familiar processes, tools, and techniques
- **Proactive opportunity management**, so that opportunities that might have been missed can be addressed
- **More realistic contingency management**, by including potential upside impacts as well as the downside, taking account of both “overs and unders”
- **Increased team motivation**, by encouraging people to think creatively about ways to work better, simpler, faster, more effectively, etc.
- **Improved chances of project success**, because opportunities are identified and captured, producing benefits for the project that might otherwise have been overlooked.

Having discussed what a risk is (“any uncertainty that, if it occurs, would have a positive or negative effect on achievement of one or more objectives”), it is also important to clarify what risk is not. Effective risk management must focus on risks and not be distracted by other related issues. A number of other elements are often confused with risks but must be treated separately, such as:

- **Issues.** This term can be used in several different ways. Sometimes it refers to matters of concern that are insufficiently defined or characterized to be treated as risks. In this case an issue is more vague than a risk, and may describe an area (such as requirement volatility, or resource availability, or weather conditions) from which specific risks might arise. The term *issue* is also used (particularly in the UK) as something that has occurred but cannot be addressed by the project manager without escalation. In this sense an issue may be something totally unforeseen or the result of a risk that has happened, and is usually negative.
- **Problems.** A problem is also a risk whose time has come. Unlike a risk that is a potential future event, there is no uncertainty about a problem—it exists now and must be addressed immediately. Problems can be distinguished from issues because issues require escalation, whereas problems can be addressed by the project manager within the project.
- **Causes.** Many people confuse causes of risk with the risks themselves. The cause, however, describes existing conditions that might give rise to risks. For example, there is no uncertainty about the statement “We have never done a project like this before,” so it cannot be a risk. But this statement could result in a number of risks that must be identified and managed.
- **Effects.** Similar confusion exists about effects, which in fact only occur as the result of risks that have happened. To say “The project might be late” does not describe a risk, but what would happen if one or more risks occurred. The effect might arise in the future (i.e., it is not a current problem), but its existence depends on whether the related risk occurs.

Clarifying Some Confusions

There is now widespread agreement on what a risk is—an uncertainty that, if it occurs, would have a *positive or negative* effect on achievement of one or more of the project’s objectives. Unfortunately, the practice of project risk management is still often confused by two complicating factors that lead people away from focusing on the real risks:

- **Choices, not true uncertainties.** Risks are uncertain and might or might not happen. On inspection, many so-called “risks” identified by project teams are actually choices. These are not things that might happen by chance, but decisions or actions that the project can just choose to do or not. This confusion particularly seems to affect identification of opportunities. Often these choices are related to a value engineering process where improvements in cost or schedule are made by making changes to the project specification/performance or scope. For example, we might choose to subcontract a difficult part of our project: this is not an “opportunity” because it is not uncertain—we either decide to do it or we don’t. These items should be excluded from the Risk Register.
- **“Business-as-usual” risks.** Too often, Risk Registers contain risks that can be considered as “business as usual,” which are commonplace for almost all similar projects, and for which standard responses already exist. For example, “We may find errors during integration testing.” The purpose of integration testing is actually to find errors, and we have processes in place to find them and address them. Another example would be “We may need to recruit additional skilled staff.” The project organization would have existing HR processes in place to deal with this. By including such risks in the Risk Register, the “real risks” may be hidden or undervalued. “Real risks” are uncertainties that are not covered by existing processes, where it is no one’s job to find them and address them. If the chosen response to a risk is for someone to do their normal job and follow an existing procedure, then it is a “business-as-usual” risk, and it should be removed from the Risk Register.

Using Risk Management on Projects

The widespread occurrence of risk in life, business, and projects has encouraged proactive attempts to manage risk and its effects. History as far back as Noah’s Ark, the pyramids of Egypt, and the Herodian Temple shows evidence of planning techniques that include contingency for unforeseen events. Modern concepts of probability arose in the 17th century from pioneering work by Pascal and his contemporaries, leading to an improved understanding of the nature of risk and a more structured approach to its management.

Without covering the historical application of risk management in detail here, clearly those responsible for major projects have always recognized the potentially disruptive influence of uncertainty, and they have sought to minimize its effects on achievement of project objectives. Recently, risk management has become an accepted part of project management, included as one of the key