

The PERIL Database

Good project management is based on experience. Fortunately, the experience and pain need not all be personal; you can also learn from the experience of others, avoiding the aggravation of seeing everything first-hand. The Project Experience Risk Information Library (PERIL) database provides a step in that direction.

For more than a decade, in conducting workshops and classes on project risk management, I have been collecting data anonymously from hundreds of project leaders on their past project problems. Their descriptions included both what went wrong and the amount of impact it had on their projects. I have compiled this data in the PERIL database, which serves as the foundation for this book. The database describes a wide spectrum of things that have gone wrong with past projects, and it provides a sobering perspective on what future projects will face. Since the version of the PERIL database I used in the first edition of this book, the number of included cases has nearly tripled, to well over 600.

Some project risks are easy to identify because they are associated with familiar work. Other project risks are more difficult to uncover because they arise from new, unusual, or otherwise unique requirements. The PERIL database is valuable in helping to identify at least some of these otherwise invisible risks. In addition, the PERIL database summarizes the magnitude of the consequences associated with key types of project risk. Realistic impact information can effectively counteract the generally optimistic assessments typically used for project risks. While some of the specific cases in the PERIL database relate only to certain types of projects or may be unlikely to recur, some close approximation of these situations will be applicable to most technical projects.

Sources for the PERIL database

The information in the PERIL database comes primarily from participants in classes and workshops on project risk management, representing a wide range of project types. Slightly more than half the projects are product development projects, with tangible deliverables. The rest are information technology, customer solution, or process improvement projects. The projects in the PERIL database are worldwide, with a majority from the Americas (primarily United States, Canada, and Mexico). The rest of the cases are from Asia (mostly Singapore and India) and from Europe and the Middle East (from about a dozen countries, but largely from Germany and the United Kingdom). As with most modern projects, whatever the type or location they share a strong dependence on new or relatively new technology. The majority of these projects also involved software development. There are both longer and shorter projects represented here, but the typical project in the database had a planned duration between six months and one year. While there are some very large programs in PERIL, typical staffing on these projects was rarely larger than about 20 people.

The raw project numbers in the PERIL database are:

	Americas	Asia	Europe/Middle East	Total
IT/Solution	256	57	18	331
Product Development	224	66	28	318
Total	480	123	46	649

While the PERIL database represents many projects and their risks, with only 600 examples, it is far from comprehensive. The database contains only a small fraction of the tens of thousands of projects undertaken by the project leaders from whom it was collected, and it does not even represent *all* the problems encountered on the projects that are included. Because of this, analysis of the data in the PERIL database is more suggestive of potential project risks than definitive. Despite this, the overall analysis of the current data corroborate the conclusions reached from the earlier, smaller database, so the broad trends appear to be holding up.

Also, as with any data based on non-random samples, there are inevitable sources of bias. The database contains a bias for major project risks, because the project leaders were asked to provide information on significant problems. Trivial problems are excluded from the data by design. There is also potential bias because each case was self-reported. Although all the information included is anonymous, some embarrassing details or impact assessment may well have been omitted or minimized. In addition, nearly all of the information was reported by people who were interested enough in project and risk management to invest their time participating a class or workshop, so they are at least somewhat skilled in project management. This could cause problems related to poor project management to be underrepresented.

Even considering these various limitations and biases, the PERIL database does illuminate a wide range of risks typical of today's projects. It is filled with constructive patterns, and the biggest source of bias—a focus on only major problems—accurately mirrors accepted strategies for risk management. Nonetheless, before blindly extending the following analysis to any particular situation, be aware that your mileage may vary.

Measuring Impact in the PERIL database

The problem situations that make up the PERIL database resulted in a wide range of adverse consequences, including missed deadlines, significant overspending, scope reductions, and a long list of other undesirable outcomes that were not easily quantified. While such an extensive assortment of misery may be fascinating, it is difficult to

pummel into a useful structure. To this end, I chose to normalize all the quantitative data in the database using only time impact, measured in weeks of project slippage. This tactic makes sense in light of today's obsession with meeting deadlines, and it was an easy choice because by far the most prevalent serious impact reported in this data was deadline slip. Focusing on time is also appropriate because among the project triple constraints of scope, time, and cost, time is the only one that's completely out of our control—when it's gone, it's gone.

For cases where the impact reported was primarily something other than time, I either worked with the project leader to estimate an equivalent project slippage or excluded the case from the database. For example, when a project met its deadline by using significant overtime, we estimated the slippage equivalent to working all those nights, weekends, and holidays. If a project found it necessary to make significant cuts to the project scope, we estimated the additional duration that would have been required to retain the original scope. Where such transformations are included in the PERIL database, we used very conservative methods in estimating the adjustments.

To better reflect the reality of typical projects, the time data in the PERIL database also excludes extremes. In keeping with the theme of focus on major risk, projects that reported a time slippage of less than a week were not included. On the assumption that there are probably better options for projects that overshoot their deadlines by six months or more, the cases included that reported longer slips are capped at 26 weeks. This prevents a single case or two from inordinately skewing the analysis, while retaining the root cause of the problem. Due to their enormous and disruptive potential impact, these and other significant cases will receive more detailed attention later in this book.

The average impact for all records was roughly seven weeks, representing almost a 20 percent slip for a typical nine-month project. The averages by project type were consistently very close to the average for all of the data, with product development projects averaging a bit more than seven weeks, and IT and solution projects slightly less than seven weeks. By region, projects in the Americas and in Europe and the Middle East averaged slightly more than seven weeks. Asian projects were slightly better, but still nearly six weeks. This data by region and project type includes average impact, in weeks:

	Americas	Asia	Eur/ME	Total
IT/Solution	7.0	6.0	7.5	6.8
Product Development	7.7	5.2	6.6	7.1
Total	7.3	5.5	6.9	6.9

Risk causes in the PERIL database

While the consequences of the risks in the PERIL database are consistently reported based on time, the risk causes were varied and abundant. One approach to organizing this sort of data uses a risk breakdown structure (RBS) to categorize risks based on risk type. The categories and subcategories I have used to structure the database form an example of an RBS. Each reported problem in the database is characterized in the hierarchy based on its principal root cause. The top level of the hierarchy is organized similarly to the first half of this book, around the project triple constraints of scope, schedule (or time), and resource (or cost). The database subdivides these types of risks based on further breakdown of the root causes of the risks. For most of the risks, determining the principal root cause was fairly straightforward. For others, the problem reported was a result of several factors, but in each case, the risk was assigned to the project parameter that was most significant.

Across the board, risks related to scope issues were dominant. They were both most frequent and, on average, most damaging. While schedule risks were next most numerous, on average resource risks were slightly more harmful. The typical slippage for risks within each major type represented from about a month and a half to two months:

	Count	Cumulative Impact (Weeks)	Average Impact (Weeks)
Scope	270	2114	7.8
Schedule	192	1141	5.9
Resource	187	1250	6.7
Total	649	4505	6.9

The total impact of all the risks is a bit over 4,500 weeks—almost 90 years—of slippage. A Pareto chart summarizing total impact by category is in Figure 2-3.

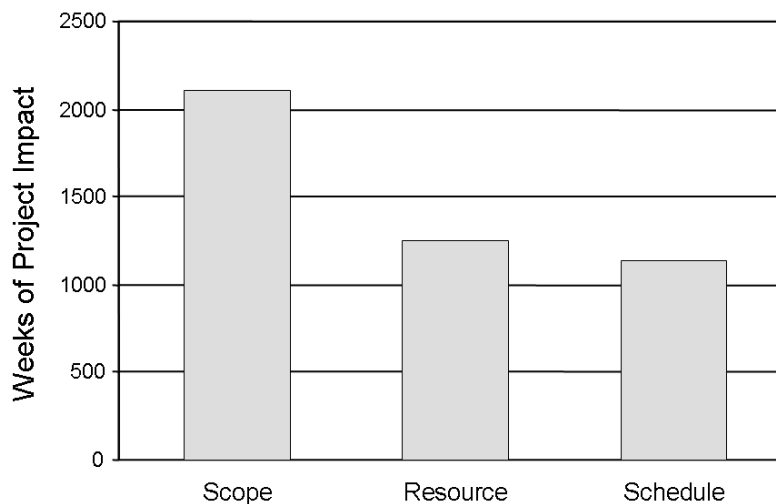


Figure 2-3: Total Project Impact by Root-Cause Category

Within each of these three categories the data is further subdivided based on root-cause categories, using these definitions:

Root-Cause Subcategories	Definition	Cases	Cumulative Impact (Weeks)	Average Impact (Weeks)
Scope: Changes	Revisions made to scope during the project	177	1460	8.2
Resource: People	Issues arising from internal staffing	123	706	5.7
Scope: Defects	Failure to meet deliverable requirements	93	654	7.0
Schedule: Delays	Project slippage due to factors under the control of the project	102	509	5.0
Schedule: Estimates	Inadequate durations allocated to project activities	49	370	7.6
Resource: Outsourcing	Issues arising from external staffing	47	316	6.7
Schedule: Dependencies	Project slippage due to factors outside the project	41	262	6.4
Resource: Money	Insufficient project funding	17	228	13.4

A Pareto of the cumulative impact data is in Figure 2-4. By far the largest source of slippage in this Pareto chart is scope change; it is more than twice as large as the next subcategory. One positive aspect of this data is that the top five subcategories are all things that are at least partially within the purview of the project leader. This suggests that more focus on the things that you can control as a project leader can significantly reduce the number and magnitude of unpleasant surprises you'll encounter during your projects. This idea, along with further decomposition of these risk root-cause categories, is explored through the next three chapters, with scope risks discussed in Chapter 3, schedule risks in Chapter 4, and resource risks in Chapter 5.

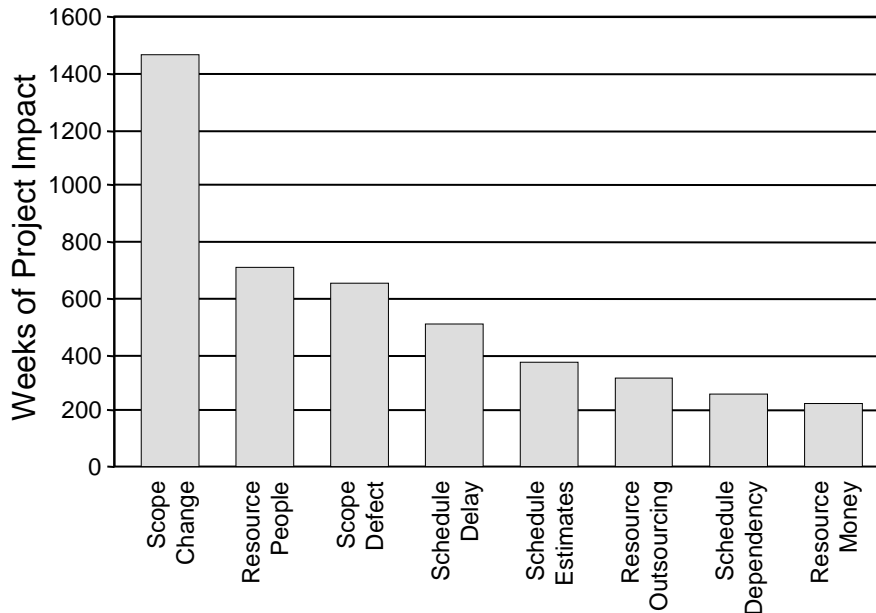


Figure 2-4: Total Project Impact by Subcategory

Big risks

Most books on project risk management spend a lot of time on theory and statistics. The first edition of this book departed from that tradition by focusing instead on what actually happens to real projects, using the PERIL database as its foundation. The point was to illuminate significant sources of actual project risk, with specific suggestions about what to do about the most serious problems—the “black swans.”

Calling such risks “black swans” has been popularized of late by the writings of Nassim Nicholas Taleb. The notion of a black swan originated in Europe before there was much knowledge of the rest of the world. In the study of logic, the statement “All swans are white” was used as the example of something that was incontrovertibly true. Because all the swans observed in Europe were white, a black swan was deemed impossible. It came as something of a shock when a species of black swans was later discovered in Australia. This realization gave rise to the metaphorical use of the term “black swan” to describe something erroneously believed to be impossible.

Taleb’s primary subject matter (discussed in depth in his very good 2001 book, *Foiled by Randomness*) is financial risk, but his concept of a black swan as a “large-impact, hard-to-predict, rare event” is nonetheless applicable to project risk management. It is a mistake to consider a situation as impossible merely because it happens rarely or has not happened yet. In projects, it is common for project leaders to discount major project risks because they are estimated to have extremely low probabilities. But these risks do

occur—the PERIL database is full of them—and the severity of problems they cause means that ignoring them can be very unwise. When these risks do occur, the same project managers who initially dismissed them come to perceive them as much more predictable—sometimes even inevitable.

In the next three chapters, we will heighten visibility of these project-destroying “black swans” by singling out the most severe 20 percent of the risks in the PERIL database—the 127 cases representing the most schedule slippage. The definition of a “large-impact, hard-to-predict, rare event” is a useful starting point, but as the database shows, these most damaging risks are not as rare as might be thought, and they need not be so difficult for project managers to predict if they get appropriate attention in the risk management process.

Half of the “black swans,” 64, are scope risks. Schedule and resource risks are fewer, each comprising about a quarter of the total. These risks caused projects to slip at least three months, and they account for over half of the total damage in the PERIL database, almost 2,500 weeks of accumulated slip. The next three chapters will dig into the details of these risks, with the goal of improving your chances of identifying them in future projects. In the second half of the book, we will explore response tactics for dealing with these and other significant project risks.