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How to Reduce Risk in Project Schedules and Portfolios

By Sarim Khan

Even the best-planned projects go wrong: every project manager knows that. Unexpectedly, from leftfield, comes a curveball—leaving plans, budgets and timescales in tatters.

But it doesn't have to be that way. 'Unexpected' isn't the same as 'unimaginable', or 'inconceivable'. For all too often, the things that go wrong in projects could have been foreseen as at least possibilities: in many projects, adverse factors such as bad weather, supplier unreliability and technical delays are ever-present dangers.

What is often lacking, though, is a way of mitigating against these risks—and doing so cost-effectively. For mitigating against risk, or uncertainty, inevitably consumes resources and adds to project cost: protecting a project budget or timescale from every possibility that may impact it can quickly cause costs to balloon. The result? A budget that was once considered affordable becomes unimaginably expensive—with scarce resources expended for guarding against unlikely events that did not in fact occur.

So is there a solution? The answer is 'yes'—and perhaps surprisingly, it is a solution that has its roots in that most fundamental of project planning constructs, the project network. By incorporating risk and uncertainty parameters with respect to the individual activities within the network, and then applying advanced simulation techniques to extrapolate the potential outcomes, project managers can create a precise picture of where mitigation will be most effective.

The result: a better understanding of the real risks that projects face—and resources intelligently expended on mitigating against risks where the probability of occurrence, and the consequences, are clearly understood. So instead of a scattergun approach to project plan protection—blasting resources off in the hope that effective protection will result—projects managers can deploy a sniper's rifle, clearly targeting identified risks and uncertainties.

The basics aren't complicated. Logically, every activity on the project network is affected by uncertainty. It might cost *this* much—or it might cost *that* much. There's a range of possible cost outcomes, in other words. Likewise with timescales: at best, an activity might take *this* long—and at worst, *that* long. So plug these ranges into the project network, as parameters associated with each activity.

Risks are treated in a similar manner. An activity may be deemed to be at risk of being affected by an identifiable discrete event—such as bad weather—or it may not. That risk, in turn, has consequences—cost increases, or timescale overruns, for example. So if an activity or group of activities is deemed to be at

risk, plug that risk into the network as well—as an appropriate percentage probability as judged by the team in risk workshops.

The resulting network, with risk and uncertainty parameters attached, can then be modelled. At a basic level, the process of simply constructing the model yields valuable insights. It might be discovered that most of the risk occurs in the latter stages of the project, for example, or in a particular branch of the network. At the very least, it is possible to quantify the number of risks that a project faces, at which stages in the project they might impact, and the range of possible project cost and timescale outcomes. This in itself is no mean feat, given the cumulative nature of project activities, and their linked interdependencies.

But the real payback comes from simulation. Advanced probability-based 'Monte Carlo' mathematical modelling techniques and tools can run potentially many hundreds or even thousands of individual simulations, building up a picture of the project's 'risk profile'.

The result? Businesses are able to determine, with considerable certainty, both the most likely risks affecting their overall project, as well as the risks with the greatest consequences.

This information can be leveraged in a number of ways. Although there are no hard and fast rules on how to treat such insights, many project managers typically choose to create a list of the 'Top 10' risks faced by a project. Alternatively, through a process of weightings, the most likely risks and the risks with the greatest consequences can be combined in order to create what's known as the project's risk 'exposure'—another common technique.

At this point, the most significant benefits of the process can be realized. For a start, there is an opportunity to manage expectations better. From our observations, it seems that the sponsors of many high-profile project failures—the sort of IT, aerospace or construction disasters that appear on our newspapers' front pages—had no idea how risky their projects were, or where those risks lay.

Yet more importantly, there is a major opportunity to actually manage those risk scenarios better. One obvious—and highly cost-effective—way of doing this is through closer monitoring of the risk areas. But there is also an opportunity to deploy that sniper's rifle, to apply resources in a focused manner to mitigate against specific risks. In itself, this can prove a powerful 'reality check': if mitigation resources are being applied to areas not on the list of critical 'Top 10' risks, for instance, it's time to ask some pointed questions as to why.

Indeed, we often find that there may be a disconnect between mitigation resources and risk areas—both at the project level, and the portfolio level. Are resources being allocated on the basis of risk, for example—or on the basis of quieting those who are shouting loudest? Is the level of mitigation precisely-calculated to be appropriate to the exposure—or is it a figure plucked from the air, with no real sense as to whether it is adequate, or represents good value for money? Such questions can yield significant savings, as well as sharply

improving project performance in terms of meeting budget and timescale expectations.

At the level of the entire portfolio of projects within an enterprise, the same kind of opportunity arises. Typically, for example, we see that the largest projects have the greatest resource reserve set aside for mitigation. Logical, perhaps. But it is more logical, and far more cost-effective, to allocate the largest reserves to the riskiest projects. Indeed, several of our customers have experienced significant overall reductions in the extent of the resources that they must set aside for project mitigation, precisely for this reason.

In short, it is possible to treat project risks and uncertainty far more intelligently than is often the case. And in a project-oriented world, where resource constraints are an ever-present fact of life, that intelligence can make an enormous difference to project success.



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