



White Paper 2012-11

Take Risks, but Take Risks the Right Way: Reframing the Opportunities and Risk Process for Complex Projects

Risk & opportunity management, as done traditionally in project management, is not effective for complex projects. It often becomes a bureaucratic exercise only done to give comfort to the organization and its auditors. Yet, if done well, leveraging opportunities and managing risks can greatly enhance the project's and organization's success. What is usually done wrong and how can we fix that?

Projects are uncertain endeavors, and that's normal

By definition, a project is an uncertain endeavor: it involves ultimately producing a one-of-a-kind outcome, something new that has not been done before. Therefore, it involves a lot of uncertainties, also usually called 'opportunities and risks'. The organization, and the project leader in particular, need to make the most of them, leveraging opportunities and managing risks.

Complex projects add another dimension of uncertainty due to a multitude of interdependent contributors. Opportunities and risks are enhanced. They are also much less easy to control from the project leader's perspective, as he then operates in a world where he mostly can influence and leverage, but not directly instruct.

The project leader's main task is to make the most of an uncertain project execution, and that should be a very large part of his duties.

Traditional risk management was a first step – and yet, is still often poorly implemented

When the main operators started to transfer their risk to the main contractors through turnkey lump sum contracts, contractors often did not have a robust risk management system. This led to significant failures both in terms of physical project delivery and also, from the business perspective.

Henceforth a first generation of risk and opportunities management was put in place. It is often labeled as 'risk management', which expresses clearly the defensive nature of this process. The traditional risk management process involves two types of activities:

- Qualitative risk management, i.e. identification of all possible risks and opportunities for the project, followed by a prioritization process, definition and attribution of actions by the project team;
- Quantitative risk management, based on Monte Carlo probabilistic simulations, both for the cost and also possibly for the schedule.

Project Value Delivery's observations show that although quite simple, this traditional risk management is not consistently implemented. Moreover, even when it is implemented, some weaknesses are often encountered:

- The identification of possible risks and opportunities is not thorough enough. They are not sufficiently customized to the actual project;
- Not enough time is spent on identifying and acting on opportunities;
- Risk engineers often don't know enough of the technical side of the business to be really helpful;
- Prioritization of action is not sufficient resulting into a plethoric risk mitigation action list which is not really acted upon;
- Quantitative risk management is not used for any kind of project leader decision.

As a result many project leaders shun the risk process because they don't feel it really helps them deliver their project.

Traditional risk management just does not work for complex projects

Monte-Carlo calculations of the risk on cost or schedule always show that there is 80% chance to be within 5 to 10% of the original cost or schedule. Yet in real life, only 20% of the complex projects finish within that range! The fundamental process is just flawed.

The reason is just simple: Monte Carlo supposes that all the activities, or cost line items, are independent. In a complex project this is by definition not the case, because there are a lot of interdependencies in the system. In addition, in real life, low probability, high impact events can have a significant impact on a project; they cannot be realistically modeled in a Monte Carlo simulation which considers mainly risks in the 20%-80% probability of occurrence range. Monte Carlo just cannot represent a complex project!

Some organizations even try to derive actions from a detailed breakdown of the individual contributions to the Monte Carlo result. Not only does that make no sense mathematically, because Monte Carlo is a probabilistic addition, but this leads to flawed decision-making.

Calculation of contingency through Monte Carlo should be relegated to a tool for finance people to add some prudent conservatism to the estimate of the situation at the completion of the project. It is of no operational use to the project leader.

Where opportunity and risk really lie in complex projects

In complex projects, opportunities and risks are not entirely symmetrical.

The main risk lies in the schedule. It is these events that can create large failures tens of percent above the original plan, both in cost and schedule. Because in reality resources cannot easily be mobilized and demobilized, because of the time it takes to bring them up to speed, and because they might get on standby if the critical convergence points are missed, schedule – and the critical convergence points therein – is the main opportunity and risk driver.

Convergence planning is the right tool to monitor and act on this schedule risk from the project leader perspective (see the papers [2012-03](#) “*The fallacies of conventional scheduling, and how to overcome them*” and [2012-04](#) “*Convergence management, the key to large, complex projects success*”).

Opportunities can lie in the cost of resources or duration of activities (which then amounts to a few % of the original cost) and in finding clever alternate strategies to deliver the project (i.e., rescheduling the activities). Opportunities lie always in diminishing the number of critical convergence points in the project, and on improving the focus of people and teams, minimizing the switch over between activities (or even, multi-tasking). In particular when the methodology is dictated by a contract, opportunities to improve the project execution are limited, except if there are significant changes in the scope.

Now that we identify what are the project’s opportunities and risks, what process can we use to make the most of opportunities and minimize risks?

The PVD risk process for complex projects

Improve the brainstorming and prioritization

To start with, the opportunities and risks still need to be well identified. This comes down to a well-organized brainstorm of the project core team, focused on schedule, convergence points and resources. It involves looking for creative solutions. The risk person needs to understand deeply the business and foster a healthy

discussion on the execution strategy, while enabling creativity exercises to find non-evident solutions.

A key methodological point is to brainstorm the opportunities before the risks; this psychologically based advice is fundamental to achieve a real effective brainstorm on opportunities. At this stage it is already important to focus on real game-changing opportunities and risk and not concentrate on smaller possible gains or losses. A real prioritization process involves dropping all actions relative to what is a not a priority (monitoring, but not acting). There should only be a limited amount of actions defined to ensure they are effectively implemented.

Change the profile of the risk person in charge

Risk should not be a function outside the business line. Make risk management a mandatory assignment as part of the preparation to become a project leader, as a part time responsibility.

Be paranoid regarding low probability, high consequence risks

Someone should be designated to look at what is happening in a project with the eye for preventing low probability, high consequence risks. This person should understand the project business, the project technicalities, and be allowed to challenge and champion the cause of the prevention of catastrophic events. Considered early, easy fixes often save the day. Having a champion in the team will challenge groupthink and avoid many troubles.

Focus on schedule convergence risks

Focus on the convergence risks related to schedule. The PVD risk formula (White paper 2012-12) will give a simple way to estimate the amount of risk the project is exposed to, based on the convergence points’ buffer monitoring of convergence planning.

Conclusion: reframe your opportunity and risk process. You deserve it

Opportunity and risk management is the day-to-day realm of the project leader. We should not let it done and measured by ‘risk specialists’. It needs to be a core activity on a day-to-day basis. In complex projects, risk can become overwhelming if not managed early. The PVD risk framework offers a simple yet robust framework that can be owned by the business line, and responds to the exact needs of complex projects.



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