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Project Risk Management Reloaded
How Proper Risk Management in Project Organizations Goes Against Common Management Thinking

Low probability, high consequence risks happen more often than we usually think and they are the ones that ultimately, shape a company or even an industry. Because they do not happen often, their prevention is easily overlooked and left to the next project. Yet, high risk industries like the nuclear or the aeronautics industry can teach us basic techniques and mindsets we can use to easily diminish the probability and the impact these risk. The project organizations that will implement these simple techniques will gain significantly in consistency of delivery and protect themselves against catastrophic events.

The considerable impact of low probability, high consequence risks

As we discussed in the paper 2012-24, it is a basic property of complex systems to make high consequence events happen much more often than we would normally expect. What type of events are we talking about? They can be for example:

- Major accident, destroying key equipment and/or causing significant injuries or death;
- Major natural disaster impacting project operations or logistics;
- Bankruptcy or any other event that impedes a key supplier to deliver.

Each of these events has the capacity to diminish drastically the financial results of the organization or even possibly, to wipe out the organization (no necessarily up to bankruptcy, but weakening it enough to have it partially or totally bought over). Historically many organizations have suffered dramatic losses or failed altogether due to one single large catastrophic event: to give some recent examples, the single Macondo accident created huge losses to BP and disrupted the entire oil industry in the Gulf of Mexico; or more recently, Tepco, the operator of Fukushima, went technically bankrupt in the aftermath of the tsunami and consequential nuclear crisis. In the project management industry, there are numerous examples of project organizations that went through dire straits after one single particular project went particularly bad.

The biggest challenge organizations face is how to effectively diversify their ways of doing things to avoid common causes of process failures.

Some simple maths will illustrate the point. Commercial organizations generally make around 10% profit. Significant events can often have consequences in the order of several percent of the revenue of the organization. Thus they can wipe out entirely the profit. Another way to look at it, is to consider how much future revenue will be needed to compensate for the loss due to a single event. It is often several months revenue, or even years.

Single major catastrophic events are also often the starting point for a new generation of regulations that will impact an entire industry. For example, the Enron collapse did impact all public companies through new tighter anti-fraud regulations; major pollution events or industrial accidents always foster a new series of new safety prevention regulations. Thus, beyond their direct immediate impact, major events have considerable long term impacts. Regulations change more often and drastically because of major events rather than due to a progressive improvement over time!

Can't insurance protect from the impact of low probability, high consequence event?

Insurances do routinely protect us from low probability, high consequence events like a heavy illness, road accident consequences, or home fire. Insurances generally exist to cover assets and equipment, where statistics about events are available and the market sufficiently large.

But insurance never covers for the consequential losses due to the event: disruption of operations, loss of reputation, etc. In reality the consequential losses are often much higher for organizations than the loss of the asset itself. For example, insurance will cover the cost of replacement of the cruise ship Concordia, but does certainly not cover the consequential effects of the accident on the cruise ship owner and the cruise organizers, not on the entire cruise industry in general.

What we can learn from high risk industries

Risk is the combination of consequence and probability. To diminish risk, one can then diminish probability and/or diminish consequence. The key principles are then:

- to diminish probability:
  - implement multiple lines of defense – several independent failures are needed for a large consequence to happen;
  - chase for possible common causes of failure, and make the system more resilient to them;
- to diminish consequence:
  - limit the possible impact of a failure through specific contingency plans and

equipment, including mitigation measures and recovery measures.

High risk industries implement comprehensive frameworks that develop these principles into strict guidelines. In those organizations, the risk prevention branch needs to be independent, reporting directly to the highest level in the organization. In addition, they implement systematically independent reviews, and identification and analysis of precursor incidents.

These organizations have developed and matured over decades and there is a long way before project organizations achieve the same maturity in terms of project risk management. Still, we can highlight important lessons that are extremely useful for the management of project risk.

Implementing multiple lines of defense

A sacrosanct principle in risk management is that a single failure should not lead to a catastrophe. Hence at least two independent failures are required to create significant adverse events. This leads to the concept of redundancy, doubling or tripling circuits and processes. The redundancy concept is complemented by the diversity concept: it is even safer to have different types and makers for the redundant equipment, to avoid common causes of failure.

In project organizations, the worst that can happen is an organizational common cause of failure.

Implementing redundancy is costly, adds to complexity, and increases the type and frequency of possible failures while diminishing their impact. It thus needs to be considered carefully in terms of cost/benefit analysis. At the organizational level, it means:

- not taking a project which by itself could cause the collapse of the organization (in size or complexity);
- diversifying the exposure to different markets / geographical areas
- implementing candid, really independent reviews of projects to make sure that there is a redundancy in the way they are being looked at.

Chasing for common causes of failure

Even in the best engineered safely redundant systems, some common causes of failure might happen could strike all the redundant systems at the same time, disabling them. In project organizations, the worst that can happen is an organizational common cause of failure: while the organization might survive to one failed project, it won't to two. But if the root cause of failure lies in the organizational setup itself, e.g. in the tendering process, or in the engineering process, then it is a major issue.

Efficiency would dictate that all activities in an organization are carried according to exactly the same process. Risk management dictates that it is not the case and that diversity is allowed to avoid the organization to be whipped out by a process common cause of failure. Risk management goes against efficiency, so a balance needs to be struck. But allowing diversity is key to enable survival, and to also to allow evolution of the organization by trying new ways of doing things. It is required, and diversity of processes need to be engineered in the organization.

Limiting the possible impact of a failure

Supposing that failure occurs, it is vital to limit its consequences. It is often difficult in organizations to examine a failure scenario and what could be done to minimize its consequences, because most organizations promote an upbeat, optimistic approach to business. Nevertheless this exercise is much needed, in particular to detect possible domino effects of a failure and avoid them by setting up the appropriate barriers. Having a state-of-the-art crisis management system and rehearsing the most improbable scenarios needs to be done. Contractual protection against any consequential damages to 3rd parties as much as possible is a must. Organizational protection by using specific legal entities that protect the group of companies and help share risks with others is also a strategy which needs to be considered.

Overall, a plan to face possible major failures and crisis is a worthwhile exercise. Reality will never happen exactly as was thought, but having gone through the thinking process is a must.

Conclusion: risk management guidance is contrary to conventional management principles

Risk management implies behaviours and organizational setups that run contrary to the search of maximum efficiency. The point is that in today's world in general, and even more in project organizations, efficiency of repeated production is not the key to success. Resilience to chaos or adaptation capability are the keys to success. If that goes with some loss of efficiency, so be it.

The biggest challenge organizations face is how to effectively diversify their ways of doing things to avoid common causes of process failures. This means, letting individual projects experiment with new ways of doing things, within certain limits; accept small failures to avoid a larger one that would wipe out the organization; and accept small failures to find better ways of doing things. Are you ready for that?

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