**Infrastructure projects need good risk management**

**Synopsis**

Infrastructure projects play an important part in local, national and regional economies around the world. Infrastructure initiatives provide us with transportation, energy and other key public services such as Health and Education. The nature of their challenge and scope often leads to ground-breaking new technologies and engineering methods being used, which in turn get used on many other projects for years to come. They also inspire a generation of young people to enter the industry. Many significant infrastructure projects, particularly those of the built environment, achieve the status of being major landmarks and sources of national pride.

Our focus on understanding, taking and managing risk on these challenging projects, with the large amounts of uncertainty that inevitably comes with them, has led to some fantastic achievements around the world. Whilst there are certainly examples of projects that have not gone to plan, there are also some terrific examples of projects that have achieved their objectives. This article outlines some considerations to effectively using risk management on infrastructure projects – by stitching the core elements of good risk management into their initiation, design, planning, delivery and operation, and helping to bind stakeholders together.
1. Embrace the “unknowns” and “firsts of a kind” on ground-breaking infrastructure projects

Large, complex and innovative infrastructure projects involve tackling “firsts of a kind”, or “FOAKs”. Risk management helps us to understand and deal with FOAKs – which starts with setting up a good culture on the project that embraces challenges.

This includes always remembering that risk is not a negative factor to be avoided on infrastructure projects, it is an opportunity to make large gains for society and the public good. Of course, public funds are at stake and they must be deployed in the best manner possible. Risk management helps us to achieve this.

An example of “known unknowns” concerns how Infrastructure projects can best leverage advances in technology, including the opportunities through adopting the principles of Industry 4.0 (or business in the digital age). The convergence of technologies and advanced computing options that are now available opens up many possibilities, but also risks to be managed.

In order to ensure that we manage our “unknowns” properly, we need good governance and risk processes and procedures, and controls. We also need to work collaboratively, not in silos and not in an adversarial manner. Our processes and procedures need to have the “right amount” of structure to drive good, risk-informed decision-making and to engender a collaborative team ethos and can-do attitude in all stakeholders.

2. A good project team culture leads to good risk management

As the saying goes, culture eats strategy for breakfast. A good team culture includes the following elements (for more information on culture, visit the IRM’s guidelines on culture available on their website):

- the tone at, and from, the top is one that promotes and undertakes good risk management;
- risk is discussed in everyday conversations and it is on the agenda of all reviews and decision-making forums at all levels of the project – it is not discussed in silos;
- the understanding of risk, and how much can be taken, is consistent across the team and all project stakeholders, from the front line to the board room;
- debate about potential problems is welcomed. If problems materialise, the project team learns from them and does not adopt a “blame culture”.

For infrastructure projects, this is important for all parties involved – the core team, contractors and suppliers, investors and others.
3. Understand your stakeholder perceptions of risk

As I have written about in an article for the IRM Enterprise Risk magazine, the diverse stakeholder groups with an interest, and involvement, in large infrastructure projects will inevitably hold different views about the value that the project represents, how the project should proceed, and what constitutes success or failure. With lifecycles often measured in decades, broad and challenging scopes, and complex finance and budgetary arrangements, infrastructure project teams can benefit greatly from good stakeholder risk management practices.

One way to look at stakeholder groups for infrastructure projects is to split them into three broad categories. First, there are groups that are directly involved in making the project happen, and managing the outputs delivered. Second, there are those that are directly impacted by it. Third, there are those that have an opinion about it. The first category includes the public sector, spanning national and local government and departments (e.g. transport, education, the environment), and the private sector – from financiers and investors, to “builders” (whether construction, IT or other), consultants, and those who will maintain and operate the finished product. The second category, of impacted stakeholders, includes the local community (individuals and businesses). The third category of stakeholders, who have an opinion on the project, can include pressure groups, the media and NGOs.

Stakeholder groups will have different “anchor perspectives” that influence their perception of risk, because they are coming from different positions and perspectives. Understanding, responding to, and trying to satisfy the different expectations of stakeholder groups throughout the project takes time and effort. One way to look at addressing such perspectives is to look at risk and uncertainty in an inter-connected and collaborative manner, which considers the perspectives and perceptions from the varied stakeholder groups. A holistic picture may emerge that can help guide appropriate project strategies to take over the long-term. For this to work, the project team culture (discussed in point 2) must be one that welcomes debate accepts diverse views.

For example, managing financial risk on infrastructure projects is clearly a top priority. Managing social, political and reputational risk is also critical to their success. Understanding this breadth of views requires collaboration by experts and representatives from different groups, and ensuring they appreciate each other’s perceptions and perspective. Good risk management can help a project team to understand and act upon risks, and risk perception, in a forward-thinking and rounded manner.

4. Manage risk in design

The design process is a “nurturing process” that brings the project into reality.

Design is a critical element, and risk management needs to protect the aspiration of the project, not limit it. In order for this to succeed, a culture of collaboration needs to exist.
The design of an infrastructure project has long-term implications on the way that the infrastructure will perform. When producing and agreeing design, always remember the long-term objectives. Adopting a positive risk management mindset can help to ensure this will be the case.

5. Good processes and controls foster good risk management

Setting up good risk management means weaving risk management into project processes, including in project governance forums. Yes, it includes a Risk Management Plan, or a “Risk section” of a Project Management Plan, but it needs to be developed collaboratively as a team, not by a few individuals, and to show how the team embeds risk management into its project activities. For example, schedule and risk need to be intertwined (using the schedule Work Breakdown Structure to generate a Risk Breakdown Structure), not separate, so that meaningful schedule quantitative risk analysis can be undertaken, to in turn make good schedule decisions.

We need to ensure that people working on the project have the time, and the right forums (through timely facilitated workshops and reviews) to think through what the most important project risks are as the project progresses. Ensure people don’t just look at impacts as being risks. For example, “finishing XYZ late” is an impact - what’s the risk? You don’t need to have a huge number of risks in a register – keep the number of risks manageable and manage impacts to risks.

6. Keep the big picture in focus

Risk management can be a powerful ally to help us always remember the strategic objective of the infrastructure project that we are involved in.

It can help guide us for big decisions we need to make and keep us focused when important pressures (such as cost, time and quality) are upon us. When times get tough, as they inevitably do on large and complex projects, it is important that people making decisions keep sight of the long-term end goal that is being striven for, and that risk is being taken to achieve this (whilst ensuring that all public funds are being put to the best possible use).

7. Embed risk management into all decision-making

Understanding the psychology of decision-making, the way that decisions are made, and cognitive bias and how to “de-bias” decisions is a critical determinant of making risk management effective.

As the cognitive psychologist and renowned author, Gary Klein, recently outlined to me in April 2018:

“The people who are going to make important progress are those who have prepared themselves to take informed risks and to venture into unknown areas.”

April 2018
This is particularly important for major, strategic decisions, including how risk is to be shared by project parties and how to avoid adversarial situations that can be caused by an ineffective sharing of risk and information.

As an example of having effective decision-making, an infrastructure project team could use a decision-making model to help focus resources on the decisions that matter the most. For example, the consultancy McKinsey, in their article “Untangling your organisation’s decision-making” describes one way to look at decision-making, which includes the following categorisation of decisions:

**The ABCDs of categorizing decisions.**

<table>
<thead>
<tr>
<th>Scope and impact</th>
<th>Level of familiarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad</td>
<td>Unfamiliar, infrequent</td>
</tr>
<tr>
<td>Narrow</td>
<td>Familiar, frequent</td>
</tr>
</tbody>
</table>

- **Big-bet decisions** with major consequences for the company, often involving situations with unclear right or wrong choices.
- **Cross-cutting decisions** that are frequent and require broad collaboration across organizational boundaries.
- **Ad hoc decisions** that arise episodically; impact on broader organization depends upon how concentrated they are.
- **Delegated decisions** that can be assigned to individual primarily accountable or to working team.

Image credit: McKinsey

In this example, “big-bet” and “cross-cutting” decisions require more rigour and can benefit from risk techniques such as scenario planning and the judicious use of quantitative risk analysis and good data. Less important decisions may be handled differently, perhaps by using rapid experimentation yet still using good data to make informed judgements.

8. **Anticipate and adapt to change and unexpected events**

Resilience is an important capability of an infrastructure project team. Depending on what the project is, it may encompass three broad areas: (1) physically building in resilience measures for when the project is in operation, (2) team resilience and (3) responding to change during the project.
Building in resilience into the project may include measures and design to counter security threats, physical and/or Cyber, for example. As well as the design aspects, insurance is also an important consideration.

Project team resilience (sometimes called crisis management planning) concerns equipping the team with skills to deal with events and major incidents on the project, should they occur. Good team resilience is about responding quickly and effectively to problems if they occur, and to manage “the long tail” that can result from a major incident (again, insurance can play an important part in this). Over a project lifetime that could span many years, this is an important skill for the team to have.

Demonstrating resilience to respond to change during the project means being adaptable to changing economic situations, political change, social change and broad events that could occur during the lifespan of the project. Infrastructure projects are typically long-term endeavours, and the modern world changes quickly, and has many interconnected risks.

**Conclusion**

Risk management can play a valuable part in helping major infrastructure projects to succeed. With the right culture, mindset, techniques and drive, incredible feats of engineering and ingenuity can be achieved for the public good.

**About the author**

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