

## Managing Risk in Complex Projects

*Dr David Hillson FIRM, HonFAPM, PMI Fellow*

Some people say that complex projects are not the same as other “ordinary” projects, and so they need to be managed differently. When we consider the risk angle, there are three questions to answer:

1. **Are complex projects inherently different from other projects?** Complexity is a continuous variable, so it might be hard to tell if a particular project is complex or not. Complexity is not just a function of scale – a project can be large but simple, or small and complex. Instead complexity arises from the structure of the project and the way its elements relate together. It involves **unpredictability**, where it is not always clear how a change in one part might influence other parts. It is usually hard to see how variations in input might affect the overall output for a complex project, due to the number of interconnections and dependencies within project elements. The behaviour of complex projects is often **ambiguous**, which means that complex projects are always risky.
2. **Are complex projects exposed to different types of risk?** Complex projects are subject to the same sorts of risk that are found in any project. However the unpredictable nature of complex projects also results in particular types of unforeseeable risk. These have various names: they are sometimes known as **unknown-unknowns**, or **Black Swans**, or **ontological risks**, or **emergent risks**. These risks are hard to identify in advance and difficult to assess accurately, and the standard risk response strategies are often not effective in treating them.
3. **Do these types of risk require managing differently?** The fact that some risks are unpredictable means that we cannot use the normal proactive risk process to prepare for them, because we cannot see them coming. Instead we need to develop an approach that will be effective in addressing emergent risks in complex projects. Two key strategies will help when unforeseen risks emerge:
  - a. **Flexibility** – the ability to bend without breaking, to adapt easily
  - b. **Resilience** – the capacity to maintain core purpose and carry on with integrity

Both of these strategies can be applied at multiple levels to address the challenges of complexity, including for the whole organisation, at project/programme/portfolio levels, in contractual and technical areas, and in the personal attitudes of key staff. At each of these levels, specific actions can be taken to develop appropriate flexibility and resilience to deal with emergent risks that may arise. For example, a

specific complex project should have a **risk budget** for known risks, as well as the right level of **contingency** built into its budget and schedule for emergent risks. Project **processes** should be flexible enough to cope with changes while maintaining overall direction towards project goals. And the project team should be **empowered** to get the job done within agreed limits, without needing approval for every small deviation from the original plan.

So our answers to these three questions are Yes, Yes and Yes. Some projects can clearly be described as complex, if their structure leads to inherently unpredictable behaviour. This unpredictability produces a particular type of emergent risk which cannot be addressed using the traditional project risk management process. Instead we need to develop flexibility and resilience at all levels in order to cope with the special risk challenges associated with complexity. Only then will we be able to undertake truly complex projects with confidence that we can succeed.

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*To provide feedback on this Briefing Note, or for more details on how to develop effective risk management, [contact the Risk Doctor \(info@risk-doctor.com\)](mailto:info@risk-doctor.com), or [visit the Risk Doctor website \(www.risk-doctor.com\)](http://www.risk-doctor.com).*

## About the Author



### **Dr. David Hillson**

*The Risk Doctor*



**Dr David Hillson** CMgr FRSA FIRM FCMI HonFAPM PMI-Fellow is The Risk Doctor ([www.risk-doctor.com](http://www.risk-doctor.com)). As an international risk consultant, David is recognised as a leading thinker and expert practitioner in risk management. He consults, writes and speaks widely on the topic and he has made several innovative contributions to the field. David's motto is "Understand profoundly so you can explain simply", ensuring that his work represents both sound thinking and practical application.

David Hillson has over 25 years' experience in risk consulting and he has worked in more than 40 countries, providing support to clients in every major industry sector, including construction, mining, telecommunications, pharmaceutical, financial services, transport, fast-moving consumer goods, energy, IT, defence and government. David's input includes strategic direction to organisations facing major risk challenges, as well as tactical advice on achieving value and competitive advantage from effectively managing risk.

David's contributions to the risk discipline over many years have been recognised by a range of awards, including "Risk Personality of the Year" in 2010-11. He received both the PMI Fellow award and the PMI Distinguished Contribution Award from the Project Management Institute (PMI®) for his work in developing risk management. He is also an Honorary Fellow of the UK Association for Project Management (APM), where he has actively led risk developments for nearly 20 years. David Hillson is an active Fellow of the Institute of Risk Management (IRM), and he was elected a Fellow of the Royal Society of Arts (RSA) to contribute to its Risk Commission. He is also a Chartered Fellow of the Chartered Management Institute (CMI) and a Member of the Institute of Directors (IOD).

Dr Hillson can be contacted at [david@risk-doctor.com](mailto:david@risk-doctor.com).