

Exploring patterns of risk exposure

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Risk identification often produces a long list of risks, which can be hard to understand or manage. The list can be prioritised, but this does not indicate those areas of the project which require special attention, or expose recurring themes, concentrations of risk, or 'hotspots' of risk exposure.

There is also often no assessment of overall project risk exposure, or of the linkages between risks, either at the same level, or aggregated to a higher level. Instead the most common techniques (such as the Probability-Impact Matrix) focus simply on prioritising individual risks, producing ranked lists such as the 'Top Ten' risks. Wouldn't it be helpful if there was a simple way of describing the structure of project risk exposure?

Project management makes wide use of structures, and there are several standard project frameworks, as well as a couple which are specific to risk management. What frameworks are available and can they help us understand risk exposure across a project?

The most commonly-used project management framework is the **Work Breakdown Structure (WBS)**, which divides project work hierarchically into manageable and definable packages to provide a basis for project planning, communication, reporting and accountability. Other common project management hierarchies include the **Organisational Breakdown Structure (OBS)** and the **Cost Breakdown Structure (CBS)**. The OBS reflects the management structure of the project, describing different levels of control, while the CBS provides a basis for cost estimation, budgeting and control.

On the risk side there are two risk-related frameworks. The **Risk Breakdown Structure**

(**RBS**) presents a hierarchical structure of potential risk sources, and can be used in a variety of ways to structure and guide the risk management process. **The Risk Impact Breakdown Structure (RiBS)** covers different types of risk impact to describe characteristics of the project risk exposure. Examples for RBS and RiBS are shown in Figures 1 and 2, though these are only illustrative.

How can we use these frameworks to analyse aspects of a project's risk exposure? A variety of different categorisation schemes can be created simply by mapping identified risks into the relevant framework, followed by a summation of either the number of risks, or (better) a weighted sum taking risk severity into account. For example:

- **WBS.** Mapping risks to the WBS indicates which parts of the project scope are most at risk. The individual work packages containing most risk can be identified, and this can be aggregated or rolled up the WBS framework to find the most risky major tasks, project areas etc.
- **OBS.** Categorising risks using the OBS shows relates risks to the areas of responsibility of the various individuals, teams or groups in the project organisation, and can be used to propose appropriate risk owners.
- **CBS.** Linking risks into the CBS allows the cost of risk impacts and planned risk responses to be mapped into the project budget, exposing which cost elements are most uncertain, allowing calculation of an appropriate risk budget, and suggesting where contingency might be required.
- **RBS.** Grouping risks by the RBS indicates common sources of risk, allowing preventative measures to be taken, and increasing the efficiency of risk responses by targeting root causes to tackle multiple related risks.

Figure 1: Example RBS

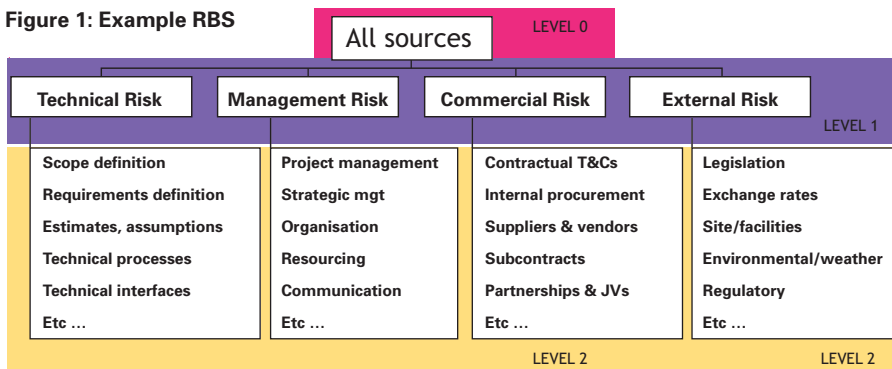
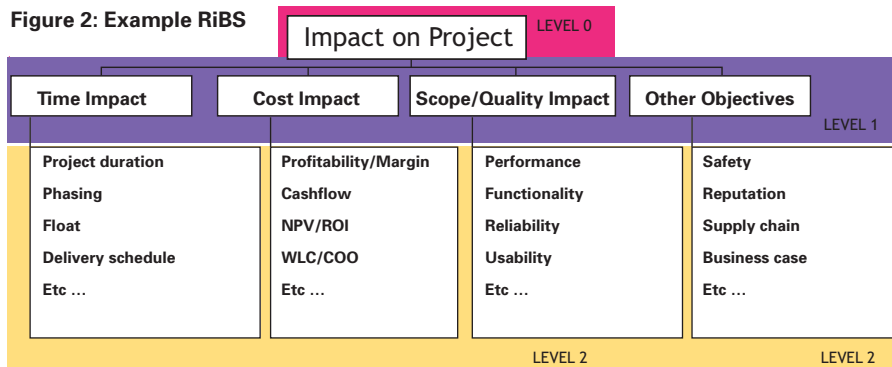


Figure 2: Example RiBS



● **RiBS.** Mapping risks against the RiBS allows analysis of the types of risk exposure faced by the project, indicating where the management team should focus attention when developing risk responses.

Clearly each of these categorisations can be used to support risk response planning, ensuring the responses are aimed at the right target, and making best use of the resources available. Simply mapping risks into the various project and risk frameworks provides valuable additional information to assist the project manager in addressing the risk challenge faced by the project.

However, even though these simple classifications are useful, they are still only one-dimensional analyses of the multi-dimensional risk problem area. Cross-framework mapping takes the analysis to another level, providing new insights into patterns of risk exposure. Here are three possible examples:

RBS x WBS. Combining WBS (project scope) with RBS (sources of risk) reveals which types of risks are affecting which areas of the project. Because both WBS and RBS are hierarchies, different levels of analysis are possible, from the top where the whole project is affected by all types of risk, down to lower levels showing particular types of risk faced by specific work packages.

RBS x RiBS. Cross-mapping of RBS against RiBS indicates the combination of sources of risk and potential impacts on project objectives. Hotspots within this matrix shows particular cause-effect chains which are significant for the project, and will be useful to support development of effective risk responses. These might be either preventative (targeting common causes of risk) or corrective (addressing common impact areas with fallback plans and/or contingency). As before, this analysis can be conducted at different levels.

RiBS x CBS. Mapping RiBS (types of risk impact) against CBS (cost structure of the project) exposes which types of risk impact are likely to have the greatest effect on the project budget, and can be used to develop targeted contingency funds.

The value of this type of mapping lies in its ability to support development of effective risk responses, by revealing different aspects of the risk exposure of the project. The use of hierarchical frameworks has an additional benefit in allowing responses to be developed at different levels, ranging from whole-project generic responses to detailed specific actions targeting particular hotspots of exposure.

About the author

Dr David Hillson, PMP, FAPM, FIRM, is an international risk management consultant, and Director of Risk Doctor & Partners (www.risk-doctor.com). He is a popular conference speaker and award-winning author on risk. He is recognised internationally as a leading thinker and practitioner in the risk field, and has made several innovative contributions to improving risk management.

David is an active member of the global Project Management Institute (PMI) and received the PMI Distinguished Contribution Award for his work in developing risk management over many years. He is also a Fellow of the UK Association for Project Management (APM) and a Fellow of the UK Institute of Risk Management (IRM).

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