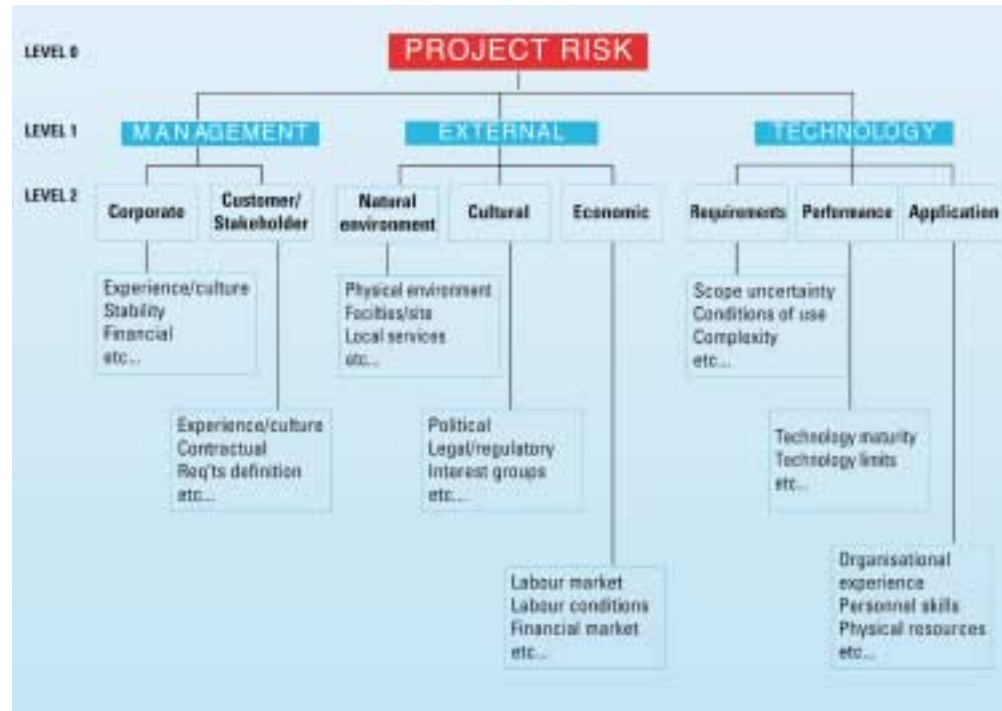




Breaking down work in a structured fashion is accepted good project management practice, so why not apply the principle to risk management? APM Fellow **Dr David Hillson** (above) was on to a winner when he put forward the idea at the Project Management Festival in Cannes in June 2002. His paper, upon which he has based this article, won two major awards.



OPPOSITE PAGE:
Fig 1 – Generic RBS for any project.

THIS PAGE:
Fig 2 – Specific RBS for an engineering contracting organisation.

David Hillson's work in developing the concept of Risk Breakdown Structure has been recognised with a top project management honour. He is the 2002 PMI Distinguished Contribution Award winner, presented by the Project Management Institute for significant achievement in the advancement of project management. The award is in recognition of his work over more than 10 years in the project risk management discipline, 'contributing both original thinking and pragmatic new approaches'. "Excellence is a never-ending journey and an award is a signpost – but it is not the destination!" he said.

STRUCTURING A BREAKDOWN

WE ALL know that risk management is essential for project success, and that in order to manage risks effectively we first need to identify them and assess their importance. The key factor linking the identification and assessment of risks with their management is understanding.

The problem is that risk identification techniques often produce nothing more than a long list of risks, which does not directly assist the project manager in knowing where to focus risk management attention. Qualitative assessment can help to prioritise identified risks by estimating probability and impacts, exposing the most significant risks, but this deals with risks one at a time and does not consider possible patterns of risk exposure, and so does not provide an overall understanding of the risk faced by the project as a whole.

In order to understand which areas of the project might require special attention, and whether there are any recurring risk themes, or concentrations of risk on a project, it would be helpful if there were a simple way of describing the structure of project risk exposure.

“Risk data can be organised and structured, to provide a standard presentation of project risks, which facilitates understanding, communication and management”

Structuring is an important tool for turning raw data into useful information. We know all about this in project management, since we use the Work Breakdown Structure (WBS) to structure the work to be done to accomplish project objectives. The Project Management Institute (PMI) defines a WBS as: “A deliverable-oriented grouping of project elements that organises and defines the total work scope of the project. Each descending level represents an increasingly detailed definition of the project work”. The WBS presents project work in hierarchical, manageable and definable packages to provide a basis for project planning, communication, reporting and accountability.

Presentation

In the same way, risk data can be organised and structured, to provide a standard presentation of project risks, which facilitates understanding, communication and management, and we might call this a Risk Breakdown Structure or RBS. We can define this in the same terms as the WBS, as: “A source-oriented grouping of project risks that organises and defines the

total risk exposure of the project. Each descending level represents an increasingly detailed definition of sources of risk to the project.” The RBS is therefore a hierarchical structure of potential risk sources.

The value of the WBS lies in its ability to scope and define the work to be done on the project. Similarly, the RBS can be an invaluable aid to understanding the risks faced by the project. Just as the WBS forms the basis for many aspects of the project management process, so the RBS can be used to structure and guide the risk management process.

RBS structures – generic or specific?

Is it possible to produce a single RBS that applies to all projects? The Risk Management Specific Interest Group of the Project Management Institute (PMI Risk SIG) and the Risk Management Working Group of the International Council On Systems Engineering (INCOSE RMWG) recently produced a list of ‘universal risk areas’, which might apply to any type of project in any sector of industrial, government or commercial activity. Although this

work did not explicitly use the RBS concept, in fact the ‘universal risk areas’ can be structured into a hierarchical format as a generic RBS, as shown in Figure 1.

Generic versions of the RBS might be useful as a starting point, but they are unlikely to include the full scope of possible risks to every project.

Alternative

An alternative is to produce a specific RBS structure relating either to a given industry or to the types of project undertaken by a particular organisation. We have done this for consultancy clients in various industries with different project types, including defence software development, energy supply, pharmaceutical vaccine development, construction management, general engineering and telecommunications. An example of a specific RBS for a contracting engineering company is presented in Figure 2.

How to use the RBS

Once the RBS has been defined, it can be used in a variety of ways. Some

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of these facilitate the risk management process on a particular project, while others are relevant across projects. The main uses and benefits of the RBS are as follows:

Risk identification aid – the higher levels of the RBS can be used as a prompt list to ensure complete coverage of risk identification, or lower levels can be used as a checklist. In addition, the RBS can be used to structure lists of risks identified by other methods.

This enables gaps or blind spots in risk identification to be seen and addressed, and reveals any double counting or duplication.

Risk assessment – identified risks can be mapped into the RBS and categorised by source.

This exposes the most significant sources of risk to the project, and indicates areas of dependency or correlation between risks. Risk response development can then be focused on high-risk areas, with generic responses for root causes or dependent groups of risks.

Comparison of alternatives – risks associated with competing bids and tenders can be compared directly if the same RBS is used to structure their

associated risks.

This can also provide input to trade-off studies examining alternative development options or investment decisions. Risk exposure on different projects within a programme or portfolio can also be directly compared, since the RBS presents a common structure and terminology to describe the risks. This can help in the development of a risk-balanced portfolio.

Risk reporting – different project stakeholders need different levels of reporting, and the RBS can be used to roll-up risk information to a higher level for senior management, as well as drilling down into the detail required to report on project team actions. It also provides a consistent reporting language for risk, reducing the potential for misunderstanding, even when used for cross-project reporting.

Lessons learned for future projects – risk management on completed projects could be performed using an RBS as a common framework. This can reveal common or generic risks, allowing the development of

“Risk management on completed projects could be performed using an RBS as a common framework”

preventative responses, and feed-forward of effective actions into future projects.

Successful and effective risk management requires a clear understanding of the risks faced by the project and business. This involves more than simply listing identified risks and prioritising them by their probability of occurrence and impact on objectives. The large amount of risk data produced during the risk process must be structured so that we can understand it and use it as a basis for action.

Hierarchical

A hierarchical Risk Breakdown Structure framework similar to the WBS provides a number of benefits, by decomposing potential sources of risk into layers of increasing detail. The RBS is a powerful aid to risk identification, assessment and reporting, and the ability to roll-up or drill-down to the appropriate level provides new insights into overall risk exposure on the project. It also provides a common language and terminology to facilitate

comparison of alternatives, cross-project reporting and lessons learned.

Used in these ways, the RBS has the potential to become the most valuable single tool in assisting the project manager to understand and manage risks to the project.

- Dr David Hillson PMP FAPM MIRM MCMI is recognised for his pioneering and practical contributions to risk management, both through his work as a consultant and trainer, and through his regular conference presentations and papers.

A director of Project Management Professional Solutions Limited, he is active in APM and PMI. He is past chairman of the APM Risk SIG and was a founder member of the PMI Specific Interest Group on Risk Management. He is also an elected member of the UK Institute of Risk Management (IRM), and is active in the Risk Management Working Group of the International Council On Systems Engineering (INCOSE RMWG).