

Systemic Issues In Risk Management In Projects – Why The AS/NZS 4360 Approach Is Not Enough

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Synopsis

The author is conducting PhD research into the nature of risk in projects, with a focus on those risks originating within the project or its host organisation. His preliminary results show that there are often major risks in projects that are either not recognised or are not adequately managed. In this paper, he explores why this occurs even when AS/NZS 4360 management processes are in place. He argues that AS/NZS 4360 processes should be only one tool in a larger and more systemic approach to managing for success.

Indications of a Problem with AS/NZS 4360

The purpose of project management is to maximise the success of projects. As described in the Guide to the PMBOK and in the AIPM National Competency Standards for Project Management (NCSPM), a key element of this is to be aware of and to understand the risks to success, and to manage those risks. Since risks are often complex in their cause and their impacts, risk management inevitably involves judgment and compromise. Some risks will simply be accepted, others transferred and in some cases it may even be appropriate to deliberately accept increased levels of risk in order to improve the likely outcome for the project. These ideas are consistent with the principles and processes of the risk management standard AS/NZS 4360, and are routinely applied by project managers.

Ongoing PhD research by the author indicates that despite such processes being in place, significant project risks are often not adequately identified, analysed or managed. The research seeks to identify and analyse internally generated risks faced by projects – risks not primarily caused by external influences, nor by issues intrinsic to the nature of the task. They arise from how the project and its host organisation are set up and operate, from the behaviour of people in the project and from the decisions they make. In effect, they are those risks the project (or its host) creates for itself. This is illustrated in Figure 1.

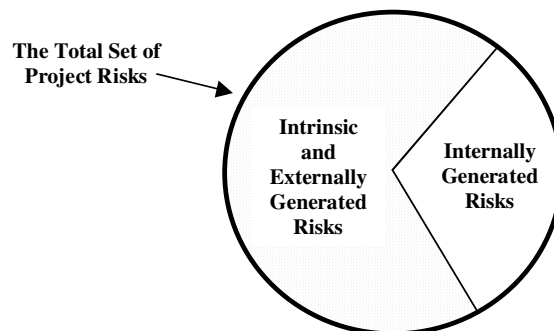


Figure 1. Internally Generated Risks arise within the project or its host organisation, from internal systems, policies, decisions, behaviour and culture. By definition, risks arising externally and risks that are intrinsic to the nature of the project task are excluded.

In five projects examined so far, a total of 125 non-trivial internally generated risks were identified. In four of the projects multiple (more than five) of these risks were classified as very significant or severe, and yet many were not listed in project risks registers or in risk reports. Of all the internally generated risks identified, only about 36% were being treated in a managed way. The data is summarized in Table 1.

Of interest is the percentage of non-trivial internally generated risks not being managed. This could be because the project teams concerned are simply not good at risk management. However that would not explain why in all five cases more internally generated risks are being managed than are registered or reported. Since in most of the projects a low percentage of internally generated risks are documented, a better explanation could be that internally generated risks are difficult to document even if they have been identified and are being managed. Project 2 is notable in its lower number of internally generated risks, as well as in the high percentage of those risks that were registered, reported and managed. However even in that case more internally generated risks were managed than were registered or reported.

Project	Non-trivial Internally Generated Risks (IGR)	IGR assessed as significant or severe in impact	IGR already registered or reported	IGR already being managed (treated)
1	46	6	14 (30%)	16 (35%)
2	8	0	6 (75%)	7 (88%)
3	30	20	2 (7%)	7 (23%)
4	20	7	7 (35%)	12 (60%)
5	21	18	2 (10%)	3 (14%)
TOTALS	125	51 (41%)	31 (25%)	45 (36%)

Table 1: Preliminary Internally Generated Risk (IGR) data from five projects

Regardless of the reasons, if it is true that some risks are difficult to document then it raises concerns about the efficacy of the AS/NZS 4360 approach. This is because every element of AS/NZS 4360 relies heavily upon identifying, documenting and then managing individual risks. Risks that are hard to register or otherwise document (such as internally generated risks) would in effect be “invisible”. If as proposed by the author internally generated risks are both common and significant, the existence of invisible risks might provide insight into the all-too-common occurrence of major disasters in organisations that were apparently robust (McLucas, 2001).

A Systems Perspective on Risk Management

From a systems viewpoint, risk management cannot be separated from other management activities. Whenever any decision is made, any management action is carried out or when the project context changes, there are likely to be impacts upon the risks faced by the project. The reverse is also true – any risk treatment action will generally have complex (if subtle) impacts upon project capability and performance.

A decision to recruit an additional specialist for a project team may reduce the project’s technical and schedule risks, but increase the risk of a cost overrun. The work required to recruit and introduce that specialist takes resources, time and effort from other project management work which then must be rescheduled or omitted. Once recruited, the new project member will through their capability, performance and behaviour impact upon the project’s external reputation and upon its internal management performance. All of these impacts will also have further knock-on influences on the overall project risk and on the likelihood of success. Figure 2 illustrates this, showing that apparently straightforward decisions can have far reaching and to a large extent unquantifiable consequences over time.

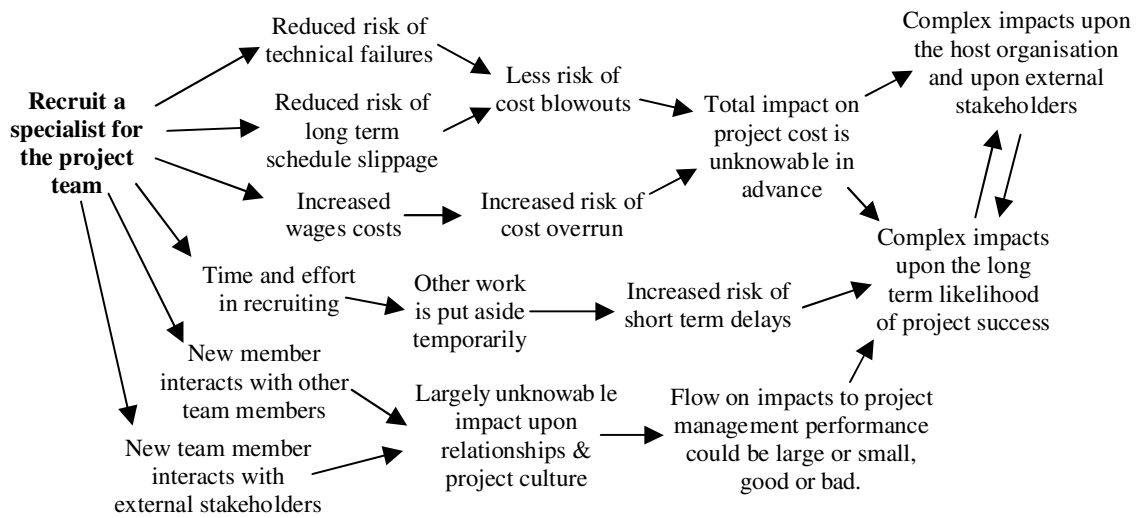


Figure 2. The real world is complex, with uncertainty increasing rapidly with the time horizon. Many risks are difficult to identify or to quantify. The time delays involved vary considerably and are also often unquantifiable. The project will experience ongoing feedback from its host organisation and from external stakeholders. We not only cannot determine exactly what will happen, we also do not know when it will happen or to what extent.

We should not assume that it is ever possible to fully comprehend the nature and potential ramifications of any specific action. The limits of our human cognitive capability will always mean that we must seek to simplify, approximate, aggregate or otherwise reduce the information to a point where we as individuals feel that we can make decisions with confidence (McLucas, 2003). The practical implication of this in risk management terms is that we should assume that all decisions will lead to unseen risk, and that unknowable risks will emerge at unpredictable times and in unpredictable ways in the project's future.

In a world with unknown and even unknowable risks, we need to be alert and responsive to unpredicted circumstances as they arise – both as risks and as opportunities (Barber, 2002). An organisation that is not alert and responsive will manage its emerging risks less effectively and will not see and take up opportunities. Achieving systemic alertness and responsiveness in a project organisation is a complex blend of culture, behaviour, capabilities and processes, as indicated by Figure 3.

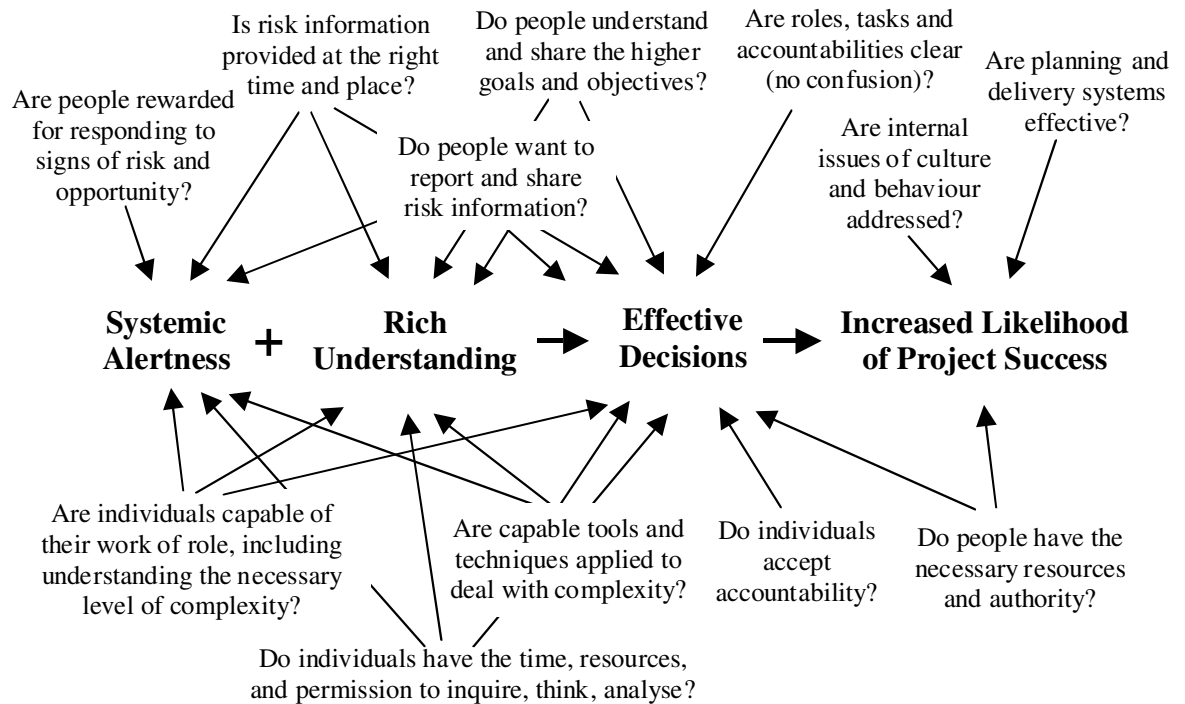


Figure 3. Just a few of the inter-related factors determining whether a project organisation is alert and responsive are shown here (Barber, 2002). Responsiveness is shown split into understanding and effective decision making. Many of the factors are linked to and driven by the project's management culture.

From Figure 3, we can see that it may be useful to consider the systemic capability of an organisation to manage the risks to its success by asking three key questions:

- Is it systemically alert to risks and opportunities, including those that are subtle, complex or emerging?
- Is it effective in analysing and understanding the true nature of those risks and opportunities?
- Does it respond (make decisions and implement treatments) appropriately for its short and long term success?

The key question for AS/NZS 4360 systems is whether they can inherently ensure that a project organisation is capable of managing its risks in these three areas. If not, then effective risk management requires something beyond the application of AS/NZS 4360.

Risk Alertness (the ability to identify risk)

The application of AS/NZS 4360 does cause people to focus on identifying risks to their success. To support this, it requires that the context be examined and that risk evaluation criteria are set. It defines a systematic approach to risk identification, seeking to be comprehensive so that all risks will be found.

From a systems thinking point of view this approach has a number of drawbacks, most notably that it is reductionist both in how it goes about finding risks and how it deals with them. It is precisely because it is systematic (but not systemic) that it seeks to turn risk management into a repeatable series of process steps, and to identify and work on individual risks one by one.

The first problem with this is that systemic risks emerge continually and in subtle ways, often only being evident for a short period at a time – i.e. when specific issues or events occur. The AS/NZS 4360 approach is cyclic (where risk is focused on at regular intervals) and takes snapshots in time, with no certainty that a specific emerging risk will be “in the frame” at the time.

AS/NZS 4360 also suggests significant use of templates of risk sources and risk impact areas to prompt the thinking of those involved in risk management. These tend to reinforce existing experience, limitations and paradigms. Even within those constraints it is difficult to design effective templates – there is a need to compromise between having a huge but exhaustive list, and having one that is more manageable but less complete. Despite this, templates tend to become a crutch for busy managers – who may feel that a rapid risk review based upon a template will at least identify most of their risks. This is a dangerous approach since it leaves the possibility of missing important risks, especially those that are new in nature. Arguably, this leaves the door open for disaster and may sometimes explain why apparently capable organisations fail.

The standard itself may also lead to beliefs and behaviours that have perverse consequences. The most obvious is that individuals (and the project as a whole) may consider their risks well managed simply because they apply AS/NZS 4360 compliant risk management processes. Not only does this place the project at increased risk if the standard is not perfectly applied, it may mean lead to complacency and to less attention being placed upon the need to be alert to new and subtle issues and risks.

The most significant risk identification weakness of AS/NZS 4360 is its reliance upon documenting risks, so that they can be managed. It is not hard to find instances of significant risks that are difficult to document in risk registers or reports. Take for example a case where one team member is not effective in their role (whatever the reason). This may create considerable risk for the project and could even lead to catastrophic failure in some circumstances. Individual performance is a sensitive issue that most managers find difficult to confront even one-on-one. Despite its potential impact upon the project’s success, it is highly unlikely that this risk will be documented or reported using the formal risk management system.

It is also unlikely that a project manager will document the risk created by an inappropriate higher management policy, a personality clash, or even slow decision making by key stakeholders. All of these are internally generated risks, may be severe in their impact and yet are difficult to talk about let alone document in a risk register or risk report. In such cases, AS/NZS 4360 becomes superfluous and the risks can only be managed (if at all) in other ways. Arguably the most common responses will either be to live with the risk, or to seek to find back-door remedies that avoid it.

This highlights the incompleteness of AS/NZS 4360. It is systematic, but it is neither holistic nor systematic in its approach to the identification of risks. It is constrained in the types of risks that are likely to be identified and may not deal well with risks that are subtle or only visible for short periods. It does not identify or deal with those risks that are not likely ever to be formally documented, regardless how critical their impact(s).

Risk Analysis (gaining insight into the true nature of risk sources, impacts and relationships)

The risk analysis focus of AS/NZS 4360 is on determining which risks are acceptable and which not, and to provide data to assist in later evaluation and treatment. According to the standard, qualitative analysis is a broad, shallow form of analysis used only when insufficient data is available or the risks are unquantifiable. Quantitative analysis is considered more detailed and

accurate, and hence is more valuable. The method of analysis described is to “consider” the sources, consequences and likelihood of each identified risk.

That approach is arguably appropriate when assessing technical or physical risks in repeatable circumstances where the laws of physics are the main issue. It also may work when there is sufficient long-term historical data such that probabilities and impacts are well known – such as may be the case at times in the insurance industry. However in real organisations many of the risks faced are not purely technical, and most of these involve human behaviour and relationships (McLucas, 2003).

Risks that arise as a result of human complexity are often referred to as “soft” risks. They are difficult to quantify and involve multiple inter-related factors that cannot be discovered by superficial review. Before they can be categorised, it is necessary to carry out a thorough qualitative analysis. For soft risks, techniques such as cause and effect mapping are likely to be far more meaningful than quantitative analysis. The mapping process causes questions to be asked and answers proposed again and again, building a rich insight into the interactions and dynamics involved.

AS/NZS 4360 neither demands effective analysis of soft risks, nor does it offer tools or techniques for that purpose. By regarding qualitative analysis as a last resort option that is shallow and broad, it implies that effective analysis of soft risks is either not possible or not practical and that the best risk managers can do is a superficial assessment. Since soft risks are capable of being catastrophic in their consequences, this is not an appropriate or safe approach to risk analysis.

In fact AS/NZS 4360 does not provide any true analysis tools for either soft risks or hard risks, nor does it assist risk managers to identify suitable tools. In some cases it might be reasonable to assume that appropriate specialist tools are available and are used by managers (such as in reliability engineering and insurance related activities). However the AS/NZS 4360 approach to soft risks is to use qualitative categorisation, with no advice on how to conduct effective analysis as a basis for that categorisation. This superficial approach deals only with obvious risk symptoms, and cannot provide meaningful insight into the systemic underlying sources of risk within the project.

This is illustrated in the case study in Figure 4 below, where the project’s host organisation had pervasive cultures, beliefs and processes mitigating against adequate resourcing of its projects. Discovery of these issues and relationships requires an appropriate process of data discovery and analysis – intuitive categorisation without such analysis is likely to lead to inadequate conclusions and inappropriate treatments. Simply trying to hire more staff will not necessarily work, and in any case would not correct the root causes of the problem for this or other projects in the same organisation.

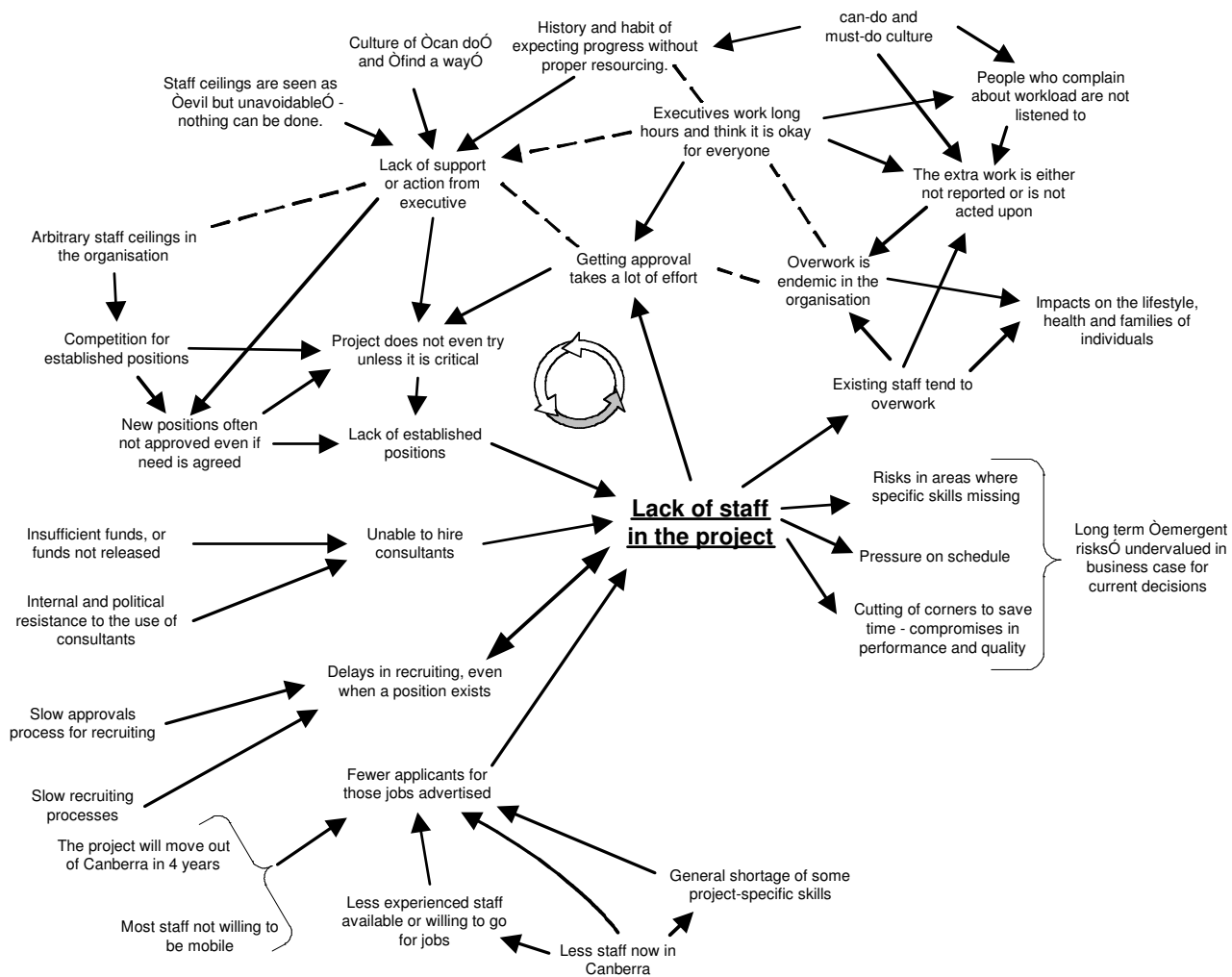


Figure 4. Apparently simple risks are often symptomatic of broad systemic issues in the organisation.

AS/NZS 4360 systems deal with each risk independently. Although convenient, this it does not reflect real world complexity since risks are often inter-related. For example, the risk of low quality outputs and the risk of cost overruns in a project are related. Lack of funds may lead to cost cutting and a lowering of quality, and poor quality outputs (for any reason) may lead to rework and other impacts that increase total costs. It would not be appropriate to deal with either risk in isolation – to manage one also requires management of the other. AS/NZS 4360 does not provide any mechanism for such inter-dependency to be made explicit during analysis, nor does it ensure that the inter-dependency is represented when the risks are reported.

AS/NZS 4360 is most capable when the risks it is dealing with are easily defined and quantifiable – such as for engineering reliability risks, or the risk of a lightning strike. When dealing with soft risks involving human relationships or other complex inter-relationships within project organisations, it offers neither suitable analytical tools, nor a capable method of categorizing or representing the risks. For organisations relying on AS/NZS 4360 systems, it is likely that such risks (even if identified) will be examined and reported superficially. Treatment actions may be ineffective or have perverse unforeseen consequences.

Risk Responsiveness (making appropriate decisions and implementing them)

Within AS/NZS 4360, the process of getting to a decision and then implementing it is referred to as risk treatment. The first stage is the prioritisation of risks relative to each other and against

the project's risk criteria. For each risk in turn this is followed by reviewing treatment options, deciding which treatments are the most cost effective to pursue, and the preparation and implementation of treatment plans.

The most striking features of this process are that it works on only those risks specifically identified, and that each risk is treated one at a time. From a systems viewpoint, both are limitations on effective risk management. As noted earlier, it is not safe to assume that we can identify all of the significant risks to project success. A risk management system that does not deal with the question of hidden, undiscussable or emerging risks, leaves the project open to the possibility of avoidable failure. As well, many risks are related in complex ways to each other, making it inappropriate to make decisions about risks one at a time and without an understanding of those relationships.

AS/NZS 4360 systems are also hampered by the way risk data is represented. Decisions are based upon information and understanding and are always dependant upon the quality of the information provided, the ability of the decision makers to understand and to interpret that information, and having the freedom and resources to act. Typically, a first step is to decide where to focus the priority of action – i.e. which risks to work on first. This requires that the identified risks are compared with each other for importance. The information provided to senior managers is often provided in risk register form or as probability impact charts, as shown in Figure 5.

In Figure 5, Risk 3 is shown as the least critical risk but may require that a decision is made immediately or it will be too late to act, whilst Risk 5 seems much more important but there may be weeks or months to decide what to do. Leaving the time dimension out of any representation of risk means that prioritisation decisions are suspect, and the same can be said for dimensions such as treatment cost, political or other sensitivities and other factors that managers need in order to set priorities and to make decisions. Using improved charting techniques may permit more factors to be represented but this quickly overloads any two dimensional page or screen. The underlying problem is that the whole risk approach is reductionist – it seeks to represent complex problems in just a few words or numbers. It either leaves out important information or ends up with so many words or numbers that they become unusable anyway.

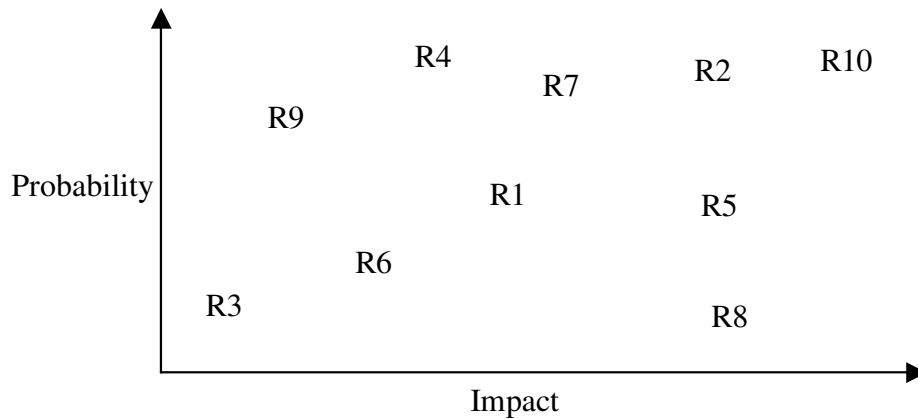


Figure 5. In AS/NZS 4360 systems a project's risks are typically shown in a P/I chart so that the highest overall risks can be seen and worked on first. Other than working directly from the risk register, this is typically how risks are prioritised and reported under AS/NZS 4360. The amount of information about the risks and their relative importance is very small. It does not identify whether some of the risks require decisions more urgently than others, nor does it include other important information like treatment costs. It is unsatisfactory for making decisions or even for setting priorities.

Another problem making decisions based upon AS/NZS 4360 is that it does not recognise or deal with inter-relationships. For example, if Risk 4 actually comes about, does this alter the likelihood, probability or nature of Risk 10? If so, then there is a relationship between the two that should be taken into account when deciding what to do. It may be appropriate to treat an apparently less critical risk, to achieve multiple positive flow-on affects to other risks faced by the project. Rather than being the exception, the author's research so far indicates that such risk relationships are common. If taken into account, they significantly impact upon which risks are tackled first and how they are treated.

In making decisions about risk, project managers should not rely only upon the data provided in standard risk registers or in probability-impact charts. The information is insufficient and often misleading. Presumably, project managers who manage risk well must intuitively or explicitly recognise this and use other tools to gain a rich understanding of the risks they face and their inter-relationships before making decisions.

Going Beyond AS/NZS 4360

If AS/NZS 4360 has significant weaknesses, it is pertinent to consider the characteristics of projects that are very effective in managing their risks. Presumably, they must do more than just apply AS/NZS 4360 risk management processes. Effective risk management in this complex and uncertain world is clearly possible, if only because by definition any complex organisation that is successful over a long period must have managed its risks well (unless continuously lucky, and this is assumed not to happen often). Such projects do exist, so effective risk management must be possible.

From first principles, we might also say that complex projects that are successful over the long term are well organized and managed, and that they must be relatively mature in project management capability terms (here maturity relates to the capability, not to the age of the project). According to Barber (2002) and as shown in Figure 3, projects that manage risk well are likely to have cultures and systems that actively support the identification, analysis and treatment of all kinds of risk – including those that are sensitive and difficult to document. As a result, in those project organisations the right sort of data is routinely being collected, risk conversations and analysis are inquiring and unbounded, and the resources required are made available for long term systemic risk treatments. The attributes of alert and responsive project organisations are shown in Table 2 (adapted from Barber, 2002).

Attributes of systemically aware and responsive project organisations

Performance management systems encourage appropriate risk behaviour

There are clear accountability structures (including for risk management)

All risk systems are integrated (including quality and OH&S systems)

Knowledge and information management enables awareness and understanding

Tools and techniques match the complexity of the risk task at each management level

Leadership and culture encourage all kinds of risk to be acknowledged

Table 2: Systemic awareness and responsiveness in a project organisation

If and when such a project environment exists, risk management can and will go far beyond AS/NZS 4360. The use of risk registers and probability impact charts become secondary and subservient to the key risk management challenge – to ensure that the project is systemically alert, aware and responsive to its internal and external environment.

AS/NZS 4360 Conclusions

AS/NZS 4360 is based upon a reductionist view of risk management – it seeks to break the total risk faced into manageable individual risks and to treat each separately. The central problem is that the world is not like that. Although the AS/NZS 4360 approach may seem to be effective for purely engineering risks or in an insurance environment where relevant historical data is available, there are many ‘soft’ complex and inter-related risks faced by project organisations. The AS/NZS 4360 approach may not identify, understand or treat those risks effectively and hence is not a safe or effective approach by itself.

To be effective, project risk managers go well beyond the standard in order to maximise the likelihood of success. This may not be possible for those working within a larger organisation where AS/NZS 4360 is the prime approach to risk management. In such cases it is unlikely that they will be provided with the necessary information for effective analysis or with appropriate analytical tools and techniques.

The challenge for leaders is to recognise that the management of risk is indivisible from management as a whole, and is simply part of the larger task of managing for success. Whether a project recognises, understands and appropriately treats its risks so that the likelihood of success is maximised, depends far more upon the leadership and management culture of the organisation than it does upon the application of AS/NZS 4360 processes. AS/NZS 4360 is a useful tool as part of a much larger risk management approach, but it is no more than that.

Working to build upon AS/NZS 4360

From a systems point of view the appropriate approach is to design the project organisation to be alert and responsive to its environment, implementing AS/NZS 4360 processes only as an element within that design. However the reality for most organisations is that they already have formal risk management processes, and it is worthwhile to consider how an existing system might be improved.

A first step is to ensure that the environment exists for the formal risk management processes to flourish and to be as effective as they can be. This is a complex task, since in effect it requires the organisation to be designed to be alert and responsive. Despite this it is possible to address some specific questions and make changes where necessary. Are project staff rewarded for

raising difficult issues, and if so how is that reinforced? Is project performance information made transparently available to stakeholders, so that emerging issues and risks are identified? Are there explicit processes for staff to raise sensitive issues that they feel cannot easily be written down, and are they protected and supported when they do so? Asking and answering such questions is the first step to creating a more alert and responsive project organisation.

We can also work directly on some specific weaknesses in the standard AS/NZS 4360 approach. For example, a well designed risk database allows much more information to be stored and reviewed than any standard risk register. This can be used to advantage without causing unnecessary workload, provided that the database is designed specifically to be within the risk management process – rather than as an additional reporting tool. There are also new and better ways to represent risk information than P/I charts, and new ways to analyse, understand and represent complex soft risks.

Taking another step forward, it is possible to build upon AS/NZS 4360 systems to generate new insight into the systemic sources of risk in project organisations. This is because risk inter-relationships and risk treatments are in their own right powerful indicators of where systemic problems lie. New tools developed by the author for their research can be used to analyse sets of risks and sets of risk treatments, in order to identify systemic sources of risk and to direct management focus to those areas. This means that instead of being reactive to individual risks one at a time, managers are able to constructively work on the systemic sources of their internal risks, and to improve the project management maturity of their organisation as they do so.

Summation

The message for project managers and for the leaders of project organisations is clear. Reliance upon AS/NZS 4360 processes alone is inadequate and dangerous. Instead, it is necessary to work on the design of the project organisation to make it inherently alert and responsive to changes and threats in its internal and external environment. In particular, ‘soft’ and sensitive risks created internally to the project organisation require constant care and attention.

Provided that their limitations are understood, it is possible to build upon existing AS/NZS 4360 systems to make them more effective and robust by using more capable tools and techniques for risk identification, analysis and representation. Beyond this, we can use risk analysis and the information it generates as a powerful tool for understanding the maturity of our organisation, and where we might work to improve it.

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