

## A Systems Approach to Risk Management

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### Abstract

Tragedies occur despite the effort and resources that organisations put into preventing them. Current approaches to risk management have been built over time from a large body of knowledge, but fail to address some of the common characteristics of risks, such as unpredictability and interconnectedness. An alternative approach to risk management is proposed based on a system paradigm. Common characteristics of risks are reviewed for their impact on the whole system-of-organisation. An approach based on increasing the overall awareness and responsiveness of organisations is outlined.

**Keywords** Risk management, risk systems, organisation design, awareness, responsiveness

### FACING THE RISK MANAGEMENT CHALLENGE

Tragic, high profile accidents such as the Esso Longford gas explosion, the Canberra hospital demolition or the fire on HMAS Westralia cause an outcry and demands for an explanation. How could this terrible thing have happened and why weren't there systems in place to prevent it? Subsequent inquests and enquiries in each case have found that risk management systems *were* in place but were not effective.

In each of the examples the organisations involved were mature and frequently performed the activities that on one occasion went so wrong. None of these organisations had an ominous safety record. None of the accidents were "acts of god" and in hindsight all were reasonably avoidable (McLucas, 2001).

Significant resources are already directed into risk systems. Legislation requirements mean that, at a minimum, OH&S tools, techniques and reporting are in place. Systems for addressing risks more broadly are also generally used. Professional bodies and standards exist, as do a multitude of books and other publications covering risk systems design, software, training, audit, evaluation and more.

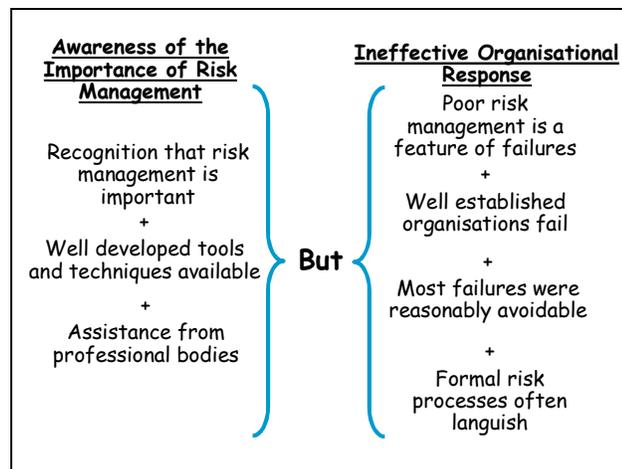


Figure 1: The current mismatch between awareness of the importance of risk management, and the actual organisational response

So why were these organisations so ineffective in their response to risk, despite being aware of the importance of risk management and having processes in place? Clearly, something is missing in the current approach. To avoid tragedies like these in the future, organisations need to do more than just try harder at the same thing. The challenge is to recognise and go beyond current assumptions and limitations to find new ways to deal with risk.

## CURRENT RISK MANAGEMENT APPROACHES

Figure 2 shows a typical approach to risk management, taken from the Australian Standard (AS/NZS 4360, 1999). Risk management systems in organisations are generally built around this process, and are embodied in the use of databases or spreadsheets to document risks and to enable monitoring of treatment action.

Although intended to be a continuing periodic process, risk identification and analysis is often limited to significant junctions, such as the start of a project, or a capital expenditure decision point. In such cases, the risks identified as significant become a factor in deciding whether or not to proceed.

Where risk management processes are more widely and continually applied, it is common to find that risk databases contain only the obvious risks – for example, they seldom include any risks that it would be politically incorrect to acknowledge in writing.

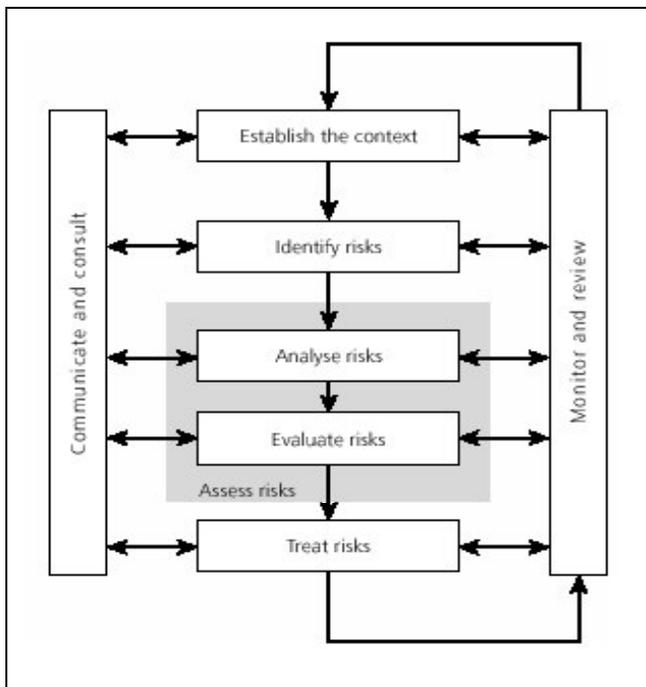


Figure 2: Typical Risk Management Process. Taken from AS/NZS 4360

The weaknesses of these traditional approaches are revealed when we consider some of their underlying assumptions:

**Most risks can be predicted in advance.** In reality, many risks are unpredictable and even unknowable in advance.

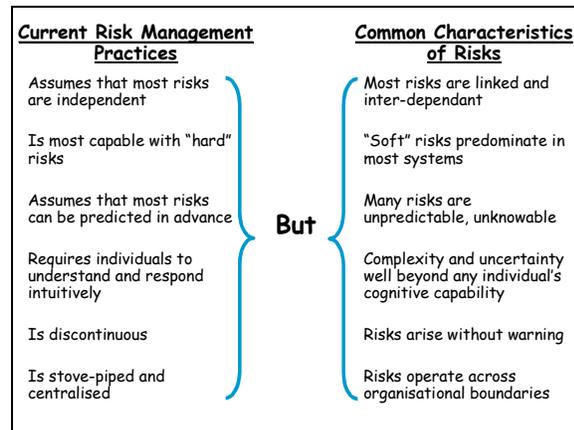
**Risk assessments are discrete events.** Unfortunately, risks often arise without warning and from unexpected sources. Cyclic or event driven risk assessments may fail to identify them, or may do so very late.

**Most risks are independent.** Risks are generally not independent of each other. The occurrence of one risk can have a strong influence on the likelihood of other risks occurring.

**Risks are quantifiable.** Current approaches are best capable of identifying, documenting and dealing with risks that are easy to define and measure. In the real world, powerful risk forces arise from much more subtle “soft” factors such as human behaviours, cultures and leadership.

**Individuals are capable of recognising and understanding the risks faced.** Organisations and their environments are very complex. In general, the level of complexity is far beyond the cognitive capability of any individual (McLucas, 2001). This means that understanding is usually limited to a few key issues, rather than actually understanding the majority (or all) of the forces at work.

**Risk can be managed in separate stove-piped and centralised systems.** Most organisations operate separate QA, OH&S, financial and other risk management systems, using distinct management structures, reporting systems and terminology. All are risk systems, and managing them separately ignores the complex relationships between risks. It invites sub-optimisation and leads to poor risk identification and management in the boundaries created.



**Figure 3: Mismatch between current risk practices and the characteristics of risks in the real world**

However, the biggest limitation to current risk management approaches is **the assumption that the complex response of a human/technical system can be reduced to a series of discrete risks**, each with its own separate cause and effect. Risk databases assume that risks are discrete by inviting each to be "treated" separately, and by providing risk descriptions that are not linked by cause and effect mapping or other techniques. The reductionist thinking inherent in risk management is demonstrated by the nature of the software available to support managers. A sample of risk software currently for sale on the Internet identified 53 examples. Of these, further investigation showed that over 50% were little more than risk spreadsheets or databases, taking no account of the interactions between risks and providing little if any additional "analytical" power to the user of the software. As a whole, the software reviewed indicated only a superficial view of risk management.

At best, current risk management approaches raise the profile of risk in an organisation and focus thoughts and energy on some of the potential risks. At worst, current systems are compliance driven and develop a dangerous assumption that risks are being managed because a formal process was followed.

<i>Highest level of thinking/complexity demonstrated by risk software tools</i>	
<i>Organisational Design</i>	0
<i>Complex Models and Dynamics</i>	2
<i>Simulation and simple models</i>	9
<i>Statistics</i>	16
<i>Risk Registers</i>	26
<b>Total Reviewed</b>	<b>53</b>

**Table 1: Highest level of complexity demonstrated by commercial risk software**

The conclusion is that current risk management approaches are incapable of dealing with the complex, uncertain and competitive nature of the real world.

## REAL WORLD CHARACTERISTICS OF RISKS

If traditional risk management approaches are ineffective, then how should we approach risk management in organisations? A useful start point is to consider some of the characteristics of risks in the real world, such as those identified in Table 2.

<i>Real World Characteristics of Risk</i>		<i>Implications</i>
<i>Risks arise at all levels, in all timeframes and in every nook and cranny.</i>	So	<b>Everyone has to manage risk</b>
<i>Unknowable unknowns can always occur and by definition will not have been foreseen. The ability to react quickly and effectively to situations not expected or experienced before is a key to success.</i>	So	<b>The organisation must be alert, responsive and balanced</b>
<i>People can only effectively deal with risks arising within their own area of authority and within their own management timeframes.</i>	So	<b>Risk accountability must match roles and tasks</b>
<i>Risks tend to occur at (or because of) process and structural boundaries. Risk sources, impacts and inter-dependencies occur across business functions.</i>	So	<b>Risk management processes cannot be limited to specific levels or to specific functions</b>
<i>Without understanding, decisions lead to perverse outcomes. Understanding requires information, context, tools and intellectual capability.</i>	So	<b>Risk knowledge management is a fundamental enabling capability</b>
<i>Risks identified at one level often need to be reported and managed at another level. Reporting risks can often be counter-intuitive behaviour for those reporting it. Risks may be reported at one level only to be ignored or hidden at other levels.</i>	So	<b>Leadership and acceptance of accountability are critical issues</b>
<i>Organisational cultures are very powerful in influencing behaviour. Risk aversion and risk denial are just two examples of cultures that may prevent effective risk management.</i>	So	<b>Leadership behaviour and other key symbols must be consistent with and drive an appropriate risk culture</b>
<i>Simple tools, techniques and thinking often do not suffice in our complex world</i>	So	<b>The tools and techniques used must match the complexity of the task</b>

**Table 2: Characteristics of risk and their implications for organisations**

This brief review again highlights the limitations of stand-alone risk management systems. The implications for organisations go beyond any individual system for risk management and encompass at a minimum, performance management, knowledge management, roles and accountabilities, and leadership.

## A SYSTEMS APPROACH TO RISK MANAGEMENT – SYSTEMIC AWARENESS AND RESPONSIVENESS

A systems approach to risk management needs to acknowledge the complex, interconnected, changing and unpredictable nature of the environment faced by organisations. Given that risks cannot be comfortably and reliably predicted in advance, every organisation must be “on its toes”, looking for the unexpected and responding appropriately when new risks arise.

Establishing awareness and responsiveness as characteristics of an organisation is a systemic approach and requires different thinking than current risk management approaches.

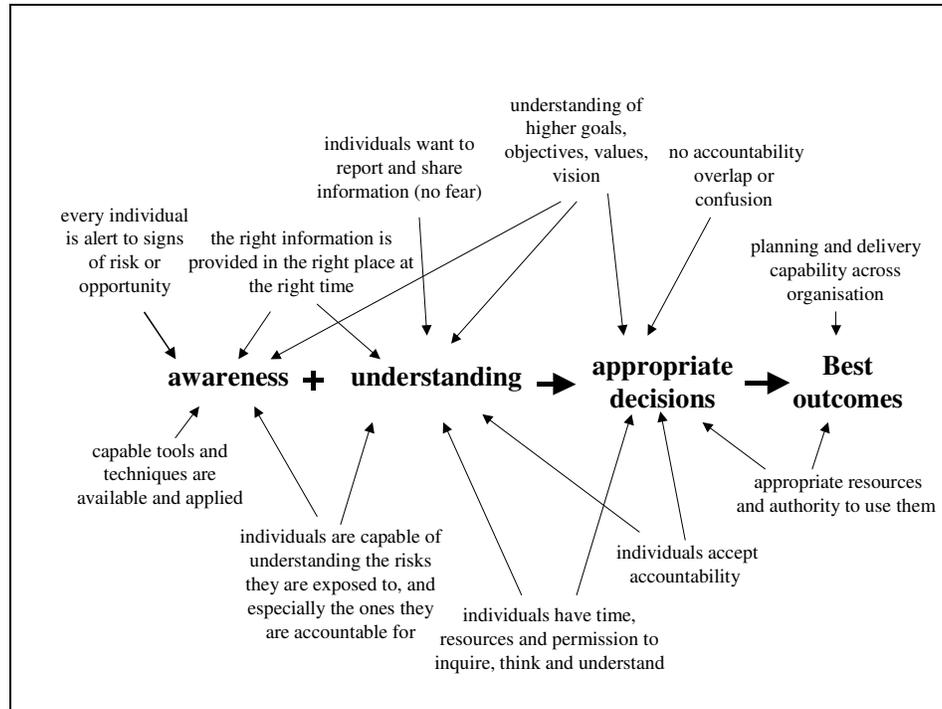
Systemic awareness and responsiveness cannot be achieved in an organisation by processes alone. Consider an organisation that enthusiastically and energetically applies the risk processes implied by the Australian Standard AS4360. In this hypothetical organisation, we would expect to see well-maintained databases of risks, effective risk reporting systems and additional consideration of risk whenever important decisions are being taken. However, if the same organisation also has unclear or overlapping areas of accountability between some of its executives, we will expect to see confusion, competition and inaction in the identification and management of at least some risks. This simple example shows that risk processes alone cannot be enough - risk awareness and responsiveness depends upon the whole organisational design.

An individual's awareness of specific risks relies on the availability of timely, relevant information, a desire to look for and use the information, and the intellect, skills and experience to understand. "Hard" systems such as information management or market research are required to get the right information in the right place at the right time. "Soft" influences such as culture, expectation and how-things-are-done-around-here have a powerful effect on whether individuals are alert and responsive. As well, identifying and reporting risk may require acknowledging personal mistakes, mistakes by peers, or jeopardising the continuation of a project (Barber, 2002). Thus risk management performance is impacted upon by the courage and the values of the person involved. Performance management and rewards systems will in large part determine whether these attributes exist in the organisation, and whether the right behaviour occurs. For this reason, we should expect such systems to have a powerful long-term influence on risk management performance.

In fact awareness and responsiveness are emergent characteristics of a well-designed system. They do not arise from any single design factor, structure, process or policy, but from a complex interaction of these factors over time. They are expressed by the willingness and ability of individuals to look for, report and address all the risks facing the organisation. Although driven by personal behaviour, successful awareness and responsiveness also depend upon supporting tools, techniques and processes. Figure 4 depicts some of the factors involved in the overall awareness and responsiveness of an organisation.

The complex and changing nature of the environment faced by organisations means that having information on current risks and a culture that allows open reporting is also not enough. To interpret the information in a timely way requires that individuals are capable of understanding the nature of the system that they are part of. Superficial or inappropriate analysis of the underlying causes of risk will lead at best to wasted effort and often to perverse results for the organisation.

Individuals must have the ability to understand and process the complexities that they face. This ability results from a combination of experience, training in the nature of the system and cognitive capability. The risk management tools and techniques available to assist an individual must be matched to the complexity of their role. Although simple risk spreadsheets may often be sufficient for operators and for section leaders, senior managers who are accountable for the performance (and design) of organisational systems will need to use more complex knowledge elicitation techniques, risk mapping and trend analysis.



**Figure 4: Role of awareness and understanding in managing risk**

Carefully designed roles and accountabilities are crucial in enabling a timely, thorough and coordinated response. Appropriate decisions and actions need to be taken by the appropriate person. Confusion or overlap in accountabilities between roles can, at best, delay the required actions. At worst, confusion and overlap can mean that significant risks have been identified and considered, but are eventually ignored.

While all aspects of an organisation combine to generate its risk performance, some organisational systems can be used to leverage change. Table 3 lists some key attributes of a systemically aware and responsive organisation.

<i>Attributes of a Systemically Aware and Responsive Organisation</i>
<i>Performance management systems encourage appropriate behaviour</i>
<i>Appropriate accountability structures</i>
<i>Integration of all risk systems</i>
<i>Knowledge management enable awareness and understanding</i>
<i>Tools and techniques match complexity of role</i>
<i>Leadership and culture that allow risk to be acknowledged</i>

**Table 3: Building Systemic Awareness and Responsiveness in an Organisation**

## **CONCLUSION**

The success of risk management is dependant on the attributes of the complete organisation, not the attributes of individuals or specific processes. Traditional approaches to risk management are ineffective in the real world because they seek to break down risks into smaller and “more manageable” components.

Dealing with real, complex risks requires that organisations move from specific risk processes to a broader organisational awareness and responsiveness. Organisations are complex, interconnected, soft systems themselves, so systemically establishing this awareness requires multiple factors including leadership, accountability, and performance management systems.

Risk specific processes are only a small part of managing risk. The real risk management challenge is to design projects and organisations to be aware and responsive.

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