



PRACTICE NOTE

Using multimedia to effectively engage stakeholders in risk management

Stakeholders in risk management

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Abstract

Purpose – The aim of this paper is to discuss how multimedia technology can be used to effectively engage stakeholders in the management of risk in projects and in business.

Design/methodology/approach – Drawing on research in stakeholder management and multimedia this paper presents a case study of how multimedia technology was used to help a government health department develop a risk management strategy to respond to climate change risk to its infrastructure.

Findings – Multimedia is a highly effective, engaging, and innovative way to capture and harness stakeholders' collective knowledge in managing risks and opportunities.

Research limitations/implications – This research has revealed the practical advantages of using multimedia to engage stakeholders in the risk management process. Future research needs to explore the pedagogical advantages of multimedia in helping organisations develop a risk management culture.

Practical implications – In the increasingly emotional and regulated business environment, effective risk management has become a basic necessity for every organisation, as has the ability to communicate effectively with external stakeholders about risk. The potential costs of poor communication with stakeholders during this process are enormous but the potential benefits of effective consultation are even greater.

Originality/value – This paper will be of value to managers involved in managing risk and opportunity. It demonstrates a new consultative approach to managing risk and opportunity which uses cutting-edge multimedia technology which complies with current international guidelines, laws and regulations.

Keywords Risk management, Project management, Communication, Multimedia, Stakeholder analysis, Conflict

Paper type Research paper

Introduction

The current economic crisis will likely mark a turning point in the way that many organizations in the private and public sectors manage risk. It has highlighted the dangers of ineffective corporate governance, risk contagion and risk interconnectivity and has also highlighted the importance of a more consultative multi-stakeholder response to risk management (WEF, 2009). Prior to this crisis, wider social changes had also been driving demands for a more consultative approach to risk management. Information technology and the internet have connected consumers in new ways which are not fully understood and has ensured that they are better educated and informed than at any time in history. Today's consumers are making ever more informed and



conscious decisions about the economic, health, social and environmental risks associated with the products and services they purchase and use (Banerjee, 2007; Werther and Chandler, 2006). Furthermore, increasing security threats from terrorism, unknown impacts from climate change and new potential health pandemics like avian flu and swine flu are having deeply unsettling side effects on both individuals and businesses, creating levels of public paranoia, hysteria and fear that Huxley (2009) argues are just as contagious and paralyzing as any virus. The interrelationship between the public's health, wealth and security and the business, governmental and regulatory institutions that govern their lives has never been clearer and it is against this backdrop of heightened public perceptions of risk that governments around the world have introduced increasing stringent risk-related legislation to regulate, monitor and call-to-account, the activities of the business community (Berry, 2004). Increasingly, government policy, guidelines and legislation stresses the importance of consultation, collaboration and community engagement. This is requiring a paradigm shift from narrow and traditional conceptualizations of risk management which historically have excluded stakeholders to a more inclusive notion of corporate social responsibility and stakeholder engagement, even if not accompanied by particularly helpful guidance of how to bring this about (Barnes, 2002).

Not surprisingly, given the dearth of guidance on how to incorporate heightened public perceptions of risk into corporate risk management strategies and processes, this is a challenge to which few organizations have addressed (Hood and Jones, 1996; Perrini *et al.*, 2006; Pryke and Smyth, 2006; Murray and Dainty, 2009, Moodley and Preece, 1996, 2009). As Teo's (2009) analysis of a controversial major housing project in Australia vividly illustrates, this is a problem that needs to be addressed since the costs to business of ignoring community perceptions of development risk can be enormous in terms of disruption, legal costs, rework and reputation. The costs to the community can also be enormous and Teo argues that future risk management in the construction industry will need to be guided by an approach which effectively communicates about risk and recognizes the legitimate interests and roles and contributions which stakeholders have in the management of projects and businesses. In the future, the implicit question facing any organization will be not just whether it is managing its risks effectively but also whether it is communicating this effectively to its stakeholders. This paper is a response to this challenge. Its aim is to discuss the role of stakeholders in the risk management process and the potential role of multimedia technology as a means to better facilitate this.

Stakeholders and risk

The concept of stakeholder management has gained considerable attention in the field of management recently and has its origins in the resource-based theory of the firm. This argues that organisations gain competitive advantage, in part from the relationships firms have with customers, suppliers, business partners and employees (its social capital) (Freeman, 1984; Gao and Antolin, 2004). Stakeholder management theory conceives an organization as a complex, dynamic and interdependent network of multidimensional relationships with a wide variety of stakeholders. Performance and competitiveness depend on how well firms manage and nurture these relationships strategically in order to achieve corporate objectives and how they are perceived to manage them by the stakeholders, in their interests (Zsolnai, 2006). From a risk management perspective the benefits of consulting with these stakeholders are said to

be numerous and include: higher levels of trust with stakeholder groups; stakeholders being able to contribute to decisions affecting their future; higher quality information for making business decisions; a wider understanding in the community of constraints upon firms; stakeholders feeling more involved in decision-making processes and feeling their interests are being considered; stakeholders better understanding their risk and opportunity management responsibilities and; greater collective responsibility in managing risks.

In essence, the stakeholder paradigm is based on the premise that people are not rational when thinking about risk but are influenced by cultural and social networks in which they are imbedded. In other words, people form their own subjective perceptions of risk which often differ from the objective assessments made by managers, experts and scientists and their behaviour reflects these perceptions (Fischhoff, 1995; Renn, 1996; Berry, 2004). Ultimately, it is argued that there is no other way for managers to interpret risks other than in terms of human values, emotions and networks. This position is supported by Barnes (2002) who points out that while risk managers have become more scientifically and technologically sophisticated in their approach to managing and measuring risk, the majority of the public continue to rely on cultural and social explanations of risk events, leading to significant perceptual differences between the community and the private business sector. Therefore, it is likely that in many companies there may remain significant institutional “blind spots” which ignore the contextual experience of risk and the perceptual issues that are relevant to public concern.

Loosemore (2007) critically reviewed risk management practices in a range of sectors and pointed to a number of common problems, which may be the cause of these institutional blind spots. For example, too many companies see risk management as a compliance issue, adopting minimum standards suggested by BS 6079: 3: 2000, AS/NZS 4360: 2004, COSO 2004 or ISO 31000, etc. rather than developing approaches which reflect their own business culture and stakeholder base. Loosemore *et al.* (2005) found that most approaches to risk management are therefore not driven or inspired by the need for broad consultation or by the profit and value enhancing opportunities which risk management can offer (the upside of risk) but by the fear of the ever greater penalties for doing something wrong (the downside of risk). They argue that it is therefore not surprising that many projects engender negative community responses, result in conflicts with stakeholders and that too few projects exceed expectations for clients and for the companies involved.

Another problem highlighted by Loosemore *et al.* (2005) is that many companies aggressively pursue profit without fully understanding their capacity or appetite for risk, a problem exacerbated by incentive structures which compensate on revenue earned without balancing the risks involved. Poor governance is also a problem in many companies with inappropriately structured boards which do not have the capacity to develop effective risk management policies, practices and cultures. And still, despite the rhetoric, too many clients inappropriately transfer risk, impose counter-productive time and cost constraints and emphasise price rather than value in tender selection criteria. In an attempt to cope with this risk-transfer culture, many companies rely on insurance and back-to-back contracts as a substitute for good risk management. Risk is too often transferred down the procurement chain until it reaches the point of least resistance, creating a dangerous illusion of control which can lead to disputes, delays, cost

escalations and rework. It also leads to a selfish and uncooperative industry culture lacking the collective responsibility that is required for effective risk management in the industry's unwieldy and fragmented supply chains. Thus, decisions made in one project stage too often create risks in subsequent project stages, by which time, risks have grown in proportions and opportunities to exceed expectations have been lost. The industry also has a narrow view of its stakeholder base and is generally insensitive to their needs. The results in a poor public image, irrational public perceptions of development risk, activism and opposition and inadequate information on which to make decisions.

While some companies may have some understanding of risks on individual projects, risks and opportunities are best understood collectively as part of a risk portfolio. Yet few companies understand risk correlations between different projects and business units meaning that many organisations have insufficient understanding of their total risk exposure and are vulnerable to crisis contagion spreading through their business. This is partly related to the fact that many organisations also manage risks in departmental, regional or functional silos which encourage independent evaluation of risks and fail to consider potential synergies which can be realised when risks are managed collectively. So while most managers practice risk management on a day-to-day basis, it is often practiced in an unsystematic and inconsistent manner. This means that standards vary considerably within companies and along supply chains and that many risks go unmonitored and unmanaged.

Loosemore *et al.* (2005) discuss many other problems with current risk management practices in the sector but the common theme which links all of those discussed here is the common root in poor consultation practices. According to Loosemore *et al.* in the majority of instances, current approaches to risk management appear to be deliberately designed to exclude stakeholders from the risk management process rather than include them.

The power of multimedia in managing risk

While technology is often associated with traditional scientific approaches to risk management, multimedia can offer a potential solution to stakeholder engagement in the process. Multimedia is a combination of two or more communication mediums such as text, image, sound, speech, video, and computer programs. Unlike traditional mediums of communication such as television which are primarily one-way, multimedia enables people to be involved and interact with information at their own speed, according to their needs and capabilities. In other words, multimedia provides people with control over their learning environment and enables them to follow a uniquely "personal" trail through the information being assimilated or used. This dynamic interaction allows the user to perceive the information at their own speed and get feedback were necessary, reviewing or skipping material that they are unfamiliar or familiar with. At the cutting-edge of multimedia, people can even "virtually" experience a situation as if they were there, the actions of the user being computed in real-time allowing their perception of the environment to respond accordingly.

From a risk management perspective, the main advantage of multimedia compared to traditional mediums of communication is its ability to engage, enthuse and stimulate the stakeholders involved in the learning process which occurs when stakeholder knowledge is effectively integrated (Nonaka, 1994). For example, Miller (1990), Adams (1992), Janson (1992) and Wright (2004) have studied operative and management training in a range of

major organisations and found that multimedia offered numerous pedagogical advantages over traditional training methods such as: less time needed to train; higher student proficiency; higher student retention; increased consistency in the delivery of the training; higher student satisfaction and motivation; flexibility of use – how, where, when; convenience and; self documenting verification of study. Perry (2003) cites cost reductions between 25 and 75 percent; Hennessy and Hartigan (1994) found that the advantages of multimedia are even more pronounced for Non English speaking background employees. Indeed, such is the power of multimedia to command attention that it is being experimented with in medicine to treat severe burns victims. The idea behind using multimedia in medicine is to flood the brain with other pleasant, attention-grabbing sensory inputs that can work to reduce pain perception and anxiety (Paulson, 2006). Applications of multimedia are constantly growing and multimedia is now used by a wide variety of organisations to manage risk. For example, multimedia is also used in industries like mining and power transmission to enable learners to experience high-risk work tasks in a simulated environment without being exposed to danger (Wu and Che, 2008). However, outside this training environment, there has been no use of multimedia in a more general corporate enterprise-wide risk management context at strategic, tactical and operational levels. Since risk management is often perceived as being an uninspiring, burdensome and somewhat intimidating task for many managers, there is clearly potential to experiment with new technologies such as multimedia to engage people in the process. Instead, there is little innovation in current risk management systems and softwares are uniformly unimaginative, pedagogically unstimulating. Indeed, they appear deliberately designed to exclude rather than involve people in the risk management process. Such computer-based systems represent a compliance-based approach to risk management, overplay the importance of technology and numbers in managing risk and ignore the fact that risk management is essentially about capturing and harnessing the talents and knowledge of organisational stakeholders and learning from this process and their experiences (Loosemore *et al.*, 2005). By better engaging people in the risk management process in a practical and realistic way, multimedia has the potential to avoid this common problem and facilitate stakeholder consultation in an engaging and cost effective way which is stimulating, interesting, enlivening and fun. By using multimedia in risk management, images, words and text can enliven the process and complex jargon can be minimised, making it easy to understand. Indeed, research indicates that people, no matter what background, retain and understand up to 91 percent more when using multimedia compared to computer and paper-based management systems (Bailey, 2001). The reason for this is that multimedia engages peoples' minds, helps them communicate more effectively about risk and thereby assists firms to build a positive risk management culture. Pedagogical research shows that people want to be fascinated and entertained when they learn rather than be passive participants in the learning process (Jenkins, 2002). So if a sense of engagement and creativity to the risk management process we can reach out to peoples' innate desire to learn and be more effective at managing our risks and opportunities.

Case study

To explore the apparent advantages of multimedia in improving current risk management approaches, this section presents a case study of an organisation that used a new multimedia approach to risk management called "Risk and Opportunity

Management System” (ROMS, 2009) which is currently being used by Australian and New Zealand Health authorities to develop a national adaptation strategy to enable hospitals to cope with the health impacts of climate change (Carthey *et al.*, 2009). It was also the basis of the risk management system used to manage the 2008 Beijing Olympic Games facilities (Zou *et al.*, 2009) and has been used by a wide range of major public and private sector organisations in the insurance, finance, resources, engineering and construction sectors to successfully manage a diverse range of strategic, tactical and operational risks involved in major public private partnership tenders, resolving installation restoration disputes and safety problems, resolving security threats, etc. The focus of this case study is an exercise undertaken by a state health authority which needed to develop a risk management plan to manage the risks and opportunities posed by climate change to its health infrastructure. This was the first attempt in Australia at developing such a strategy, and ROMS was used because of its ability to bring together a wide variety of health sector stakeholders which are notoriously difficult to manage because of the highly complex political and organisational and cultural characteristics of the health sector (Carthey *et al.*, 2009). ROMS was used to manage a two-day risk management workshop which involved stakeholders from clinical, health policy, health sector management, asset and facilities management, government architect and emergency services backgrounds. The aim of the ROMS process was to bring to integrate and synthesize into a coherent risk management strategy, the risk perceptions and occupational aims and objectives of all of these stakeholders in managing potential climate change risks. For example, clinicians would potentially have to deal with more tropical diseases such as malaria and dengue fever or more admissions from an aging population due to heat waves, while asset managers might have to deal with more flood and storm damage to buildings and infrastructure, while architects might have to design buildings which are more able to handle influxes of patients or more able to deal with power outages, etc. Many of these health related risks have been documented by research but none had been explored in terms of their implications for the health infrastructure which would need to provide an effective environment for managing them for both patients and health professions and workers.

The ROMS process

The basic philosophy behind ROMS is that people are an organisation’s most important asset in managing risk and that risk management should be a simple, interactive, enjoyable and engaging process which adds value for business rather than being a purely compliance-based process. ROMS is designed to bring disparate stakeholders together to collectively share knowledge about risk and opportunity from a variety of perspectives and to develop an integrated and agreed plan to mitigate and maximize them, respectively. There is significant evidence that many organisations avoid engaging in risk management because of the perceived complexity of the process which can make it seem intimidating and costly in terms of time and money (Loosemore *et al.*, 2005). Furthermore, perceived difficulties in resolving conflicts between different stakeholders can cause organisations to undertake risk management in isolation and ignore those stakeholders who may hold valuable information about the risks and opportunities involved and how to best manage them (Cornelissen, 2004). While ROMS has not been developed with a compliance-based philosophy it complies with international standards of risk management which essentially represent a basic minimal

level of risk management practice. These standards and guidelines differ across countries and include AS/NZS 4360:2004; COSO Enterprise Risk Management Framework 2004, MAB/MIAC Guidelines for Managing Risk in the Australian Public Service, British Standard BS 6079:3:2000 and Canadian Standard CAN/CSA-Q850-97 (October 1997) and the new ISO 31000.

ROMS can be used to develop risk management plans at a policy, strategic, tactical and operational level. At a policy level, for example, the ROMS can be used to develop policies relating to occupational health and safety, quality, environmental management, financial management, industrial relations, training and development, and media communications. At a strategic level, ROMS can be used to develop strategic business plans, set future business objectives, to assess future markets, to decide whether to tender for projects, to assess product or project feasibility, business continuity, crisis management and disaster recovery. ROMS can also be used to develop standard operating procedures, and gain an overall understanding of business risks and opportunities across entire project portfolios. At a tactical level, ROMS can be used to decide on the best way to win jobs, access markets and negotiate with clients. At an operational level, it can be used as a planning tool to decide how to best complete a project in accordance with stated objectives and key performance indicators. At a project level it can be used for assessing feasibility, analyzing design options, life-cycle costing, programming, tendering, documentation and specification, safety and environmental planning, commissioning and making handover and transition arrangements.

In simple terms, the ROMS consists of two main parts: educational and operational. The educational component uses voice delivery, moving graphics, text, pictures and is interactive so that people can access further information and guidance and examples of risk management policies, management responsibility structures, job descriptions for risk management, stakeholder consultations strategies, etc. The educational component is an important aspect of ROMS since it enables users to learn about risk management in an enjoyable and interactive way, in their own time and in a way which fits around their work commitments.

The operational component of ROMS is also highly interactive and takes key stakeholders collectively, step-by-step through a risk and opportunity management methodology at their own pace, enabling them to interact with each other and the system to ask questions and get guidance at any time. The operational component of ROMS involves eight simple steps and is the focus of this case study. The names of stakeholders have been changed for confidentiality reasons. Research about user interaction with the educational component of ROMS will be reported at some future date.

Step 1: project information. Step 1 involves establishing a simple record in the company system which ensures that a record of the process is stored for future monitoring, learning and compliance purposes. This process should start at the very beginning of a project or business life-cycle and should be stored and passed from one stage to the next establishing a life-cycle record of decisions over the duration of a project or business. This provides assurance for others that the risks before them have been effectively managed and encourages people to take responsibility for the risks they create rather than pass them on for someone else to resolve. Step 1 also involves identifying different types of stakeholders using a simple stakeholder analysis tool which is provided by ROMS along with a standard consultation strategy. Figure 1 shows the interface in step 1 for the climate change adaptation strategy with names and

The ROMS requires some basic information about the decision, task or problem being addressed in the workshop/interview. This data will act as a future reference point to store and recall information. Click the row headings for help.

Project Information	
Project Name	Adapting to climate change
Project Stage*	1
Workshop/Interview Number*	1.1
Workshop/Interview Facilitator*	Peter Stephens
Workshop/Interview Participants (Key Stakeholders)	David Press (Manager, Environmental Health Services)
	Richard Goodwill (Asset/Facilities Manager)
	Patrick Tan (Project Architect)
	Dr Susan Twist (Regional Health Service)
	Dr Andrew Tiplousos (Emergency services)
	Andrea Phillips (State Government)
	Professor Alan Medderly (Senior Clinician)
(Enter Workshop/Interview Participant 8 Here)	
Decision, Task or Problem	How do we adapt our healthcare facilities to cope with the health impacts of climate change and extreme weather events

Figure 1.
Interface for step 1 of
ROMS

data changed for confidentiality reasons without background information which can be accessed by selecting various column and row headings. However, Figure 1 and subsequent Figures in this paper, cannot illustrate how the multimedia operates due to the paper-based nature of this article.

Step 2: level of complexity. Step 2 involves selecting a level of risk management complexity (there are four) which suits the abilities of the user, the appropriate approach depending on the quality of data available, familiarity of the problem, time available, etc. For example, sophisticated users dealing with complex financial issues where there is an abundance of reliable quantitative data can operate at “level 4” which provides access to a wide range of sophisticated techniques such as simulation and probabilistic analysis. In contrast, a user with no experience of risk management dealing with a routine problem for which there is no data can chose “level 1”. If necessary, ROMS recommends the best level of complexity to follow by asking a series of simple questions. Not only does the four level approach enable users to operate at a level which is appropriate to their needs and capabilities (thus minimizing user risk), but it ensures that the system is adaptable to different customer needs and to projects of any complexity from simple to complex. Furthermore, it also ensures that organisations can grow in risk management maturity over time by setting targets for certain numbers of employees to function at different levels. Figure 2 shows the interface in step 2 with some background information which can be accessed by selecting various column and row headings. Again, Figure 2 cannot illustrate how the multimedia operates due to the paper-based nature of this article.

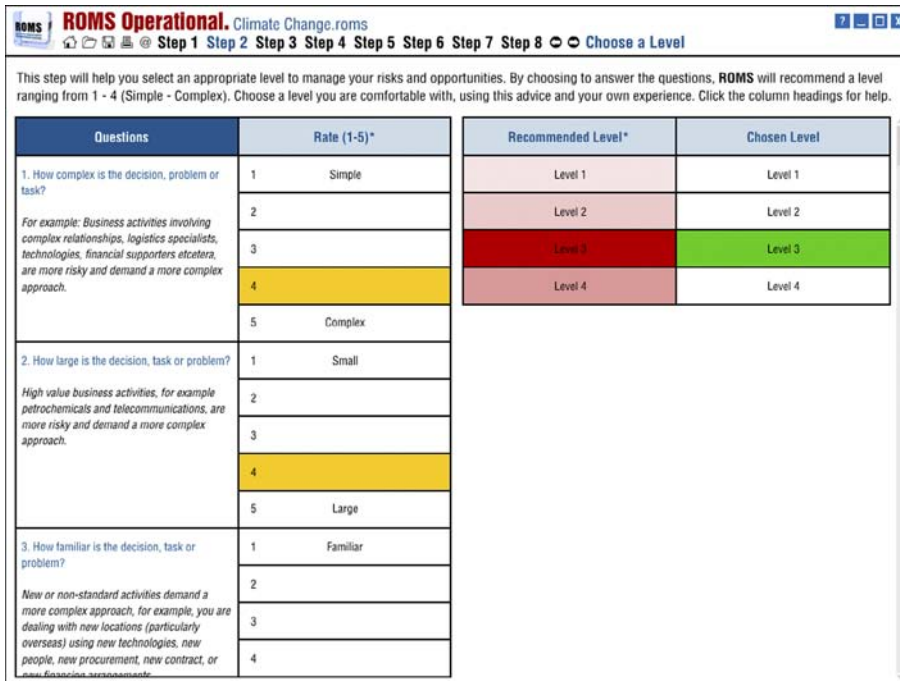


Figure 2. Interface for step 2 of ROMS

Step 3: stakeholder consultation. Step 3 is a stakeholder consultation process whereby “key” stakeholders are required to be involved in the process from this point onwards and are invited to a workshop where five common objectives are identified, ranked, weighted and agreed. Given the multitude of often conflicting objectives that stakeholders bring to a situation, this can be challenging and the system facilitates this process in an easy and structured way providing advice and guidance on how to do this effectively. The process of identifying common objectives is critically important to overcome the silo mentality referred to earlier and to enable stakeholders to emerge with a new appreciation of other stakeholder interests, business constraints and a new awareness of common interests that did not previously exist. The identification of common objectives is also critically important in fostering a sense of collective responsibility and collaboration between the key stakeholders involved in the risk and opportunity management process from that point onwards. Figure 3 shows the interface in step 3 with some background information which can be accessed by selecting various column and row headings.

Step 4: identify risks and opportunities. Step 4 assists the key stakeholders to collaborate in identifying both risks and opportunities which could adversely or beneficially affect their ranked objectives. For many organisations, simply undertaking this step effectively would be a major step forward. As well as identify risks and opportunities users are assisted to think about “how” they could arise to help later with the identification of effective control strategies to mitigate risks and maximize opportunities. The identification of risks and opportunities are separated because experience with ROMS shows that people tend to find it much more difficult to think

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Step 1 Step 2 Step 3 Step 4 Step 5 Step 6 Step 7 Step 8 Stakeholder Consultation

This step will help you identify and rank key stakeholder objectives and associated KPIs. This step should be completed in the ROMS workshop in consultation with all key stakeholders present. Click the column headings for help.

Key Stakeholders	Key Stakeholder Objectives	5 Common Objectives (Ranked)	KPI's*
David Press (Manager, Environmental Health Services)	Ensuring buildings don't get clogged with patients during a disaster	Evidence-based practice - identify facility-related responses to health care challenges posed by climate change, ensure research is disseminated Weighting: 20% + -	National health design guidelines incorporating outcomes of research (Enter KPI 2 Here)
	Ensuring our buildings don't compound the problem and represent a risk to		(Enter KPI 3 Here)
	Ensuring our buildings can physically cope with 24 hour extreme usage		Asset management and urban planning strategies do not compound problems in event of a crisis (Enter KPI 2 Here)
	Quantifying impacts - undertaking research into climate change and health		(Enter KPI 3 Here)
	Be prepared and not shocked		
Richard Goowill (Asset/Facilities Manager)	Ensure appropriate location of facilities - not flood plains, fire risk areas etc	Quantifying impacts - undertaking research into climate change and health care infrastructure Weighting: 20% + -	Research program developed
	Ensure appropriate design of facilities to cope - space flexibility, insulations,		Research being undertaken
	Asset management and urban planning strategies do not compound problems in		Research outputs been disseminated and published (Enter KPI 1 Here)
	Raising awareness of climate change in population and workforce and (Enter Objective 5 Here)		Ensure behavioural change by raising awareness of climate change in population and workforce and expectations and behaviours needed to minimise health impacts and maximise facility capacity to (Enter KPI 2 Here)
			Integrated planning - Coordinate multiple providers to ensure an integrated response to crisis (Enter KPI 3 Here)
Patrick Tan (Project Architect)	Ensure appropriate design of facilities to cope - space flexibility, insulations,	Integrated planning - Coordinate multiple providers to ensure an integrated response to crisis Weighting: 20% + -	Development of an integrated response plan to different climate change scenarios signed (Enter KPI 2 Here)
	Ensure appropriate urban design - approaches, access, parking,		
	Internal environment - air conditioning, natural ventilation, corridor width, flexible		
	Ensure adequate time and resources to plan and implement changes		

Figure 3. Interface for step 3 of ROMS

about opportunities than risks because traditionally their focus will have been on the downside of risk for various reasons such as fear of failure and recrimination, lack of contractual incentives to look for opportunities to exceed objectives, etc. (Loosemore *et al.*, 2005). To help with this process, ROMS provides a range of techniques which correspond to their chosen level of complexity in step 2. For example, at the simplest level, simple checklists and work breakdown statements are used to identify risks whereas more sophisticated users can use techniques such as soft systems analysis and simulation to identify risks and opportunities. Figure 4 shows the interface in step 4 with some background information which can be accessed by selecting various column and row headings.

Step 5: assess and prioritise. Step 5 involves key stakeholders collaboratively assessing the magnitude (considering existing controls) of each risk and opportunity associated with each ranked objective so that resources can eventually (in step 6) be allocated most efficiently to manage them. Obviously, greater resources will be allocated to higher level risks and opportunities associated with the most important objectives. This assessment process is initially qualitative whether level 4 or 1 is chosen. This is important to “filter-out” the many risks and opportunities which can be dealt with effectively using simple qualitative methods which often “clog” complex mathematical models to produce meaningless results. ROMS has an in-built risk matrix which can be adapted to reflect any organisation’s risk appetite and assessment process simply involves selecting predetermined risk and consequence labels referring where necessary to definitions, advice and guidance provided by the multimedia system. Recognizing the dangers of ranking risks and opportunities on probability and consequences alone

The screenshot shows the ROMS Operational interface for step 4. The header includes the ROMS logo, the title 'ROMS Operational. Climate Change.roms', and navigation tabs for steps 1 through 8, with step 4 selected. Below the header, a text box explains the purpose of the step: 'This step will help you identify the risks and opportunities associated with each common objective identified in step 3. This step should be completed in the ROMS workshop in consultation with all key stakeholders present. Click the column headings for help.' The main content is a table with four columns: '5 Common Objectives (Ranked)', 'Risks and Opportunities', 'Define', and 'Ways Risks and Opportunities Arise*'. The table lists various objectives and their associated risks and opportunities, such as 'Evidence-based practice - identity facility-related responses to health care challenges' and 'Asset management and urban planning strategies do not compound problems in event of a crisis'. Each entry includes a description of the risk or opportunity, a classification (Risk or Opportunity), and a brief explanation of how it arises.

5 Common Objectives (Ranked)	Risks and Opportunities	Define	Ways Risks and Opportunities Arise*
Evidence-based practice - identity facility-related responses to health care challenges posed by climate change, ensure research is disseminated Stakeholders: • Dr Susan Twist (Regional Health Service)	Entrenched ways - standard practice does not always equate with evidence based practice	Risk	If we employ the wrong people
	Lack of evidence of how to translate climate change demands into facility design	Risk	If research is not carried out
	Commercial reality - driven by cost	Risk	If cost is made the primary factor is project
	Climate change not seen as important by designers	Risk	Not being required/encouraged to take climate change
	Innovative responses	Opportunity	Competition, incentives etc
	High quality evidence	Opportunity	Undertake and disseminate research
	Set high expectations	Opportunity	If stretch targets, goals, expectations are included in
	Linking researchers and practitioners	Opportunity	Linkage research projects through federal research
	Take a lead - make a statement, lead by example	Opportunity	Initiate some demo projects
	(Enter Risk/Opportunity 10 Here)	R O	(Enter Ways Risk/Opportunity 10 Can Arise Here)
Asset management and urban planning strategies do not compound problems in event of a crisis	Business as usual being acceptable	Risk	If no expectations set, if wrong project members are
	No sense of urgency - Missed opportunities	Risk	If this issue is not promoted as important asap
	Fragmented - silos	Risk	If processes are put in place to facilitate
	No integration of Gap X and Op X in planning strategies	Risk	If incentives are not put in place to do so - eg, PPP

Figure 4. Interface for step 4 of ROMS

(Williams, 1996), ROMS provides a three-dimensional ranking process on “risk level”, “urgency” and “controllability”. This is important because most managers are unaware of the fact that statistically, the concept of probability (and thus risk) does not reflect the imminence of threat but merely the likelihood that it will occur. So to classify a high risk as more important than a medium risk could be dangerous if the medium risk is more imminent (urgent). This is a mistake that has led to numerous disasters in a range of industries (Loosemore, 2001). Similarly, controllability is important in ranking risks because it is logical to put resources where the biggest return on investment will accrue, which is in the risks and opportunities which can be controlled. This does not of course mean that uncontrollable risks and opportunities should be ignored. It just means that when allocating resources they should be of lower priority. In step 5, the ranked risks and opportunities can be graphically illustrated using a variety of interfaces for analysis and reporting purposes. Figure 5 shows the interface in step 5 with some graphical information which can be accessed by selecting various column and row headings.

Step 6: action plan. Step 6 involves taking forward the ranked list of risks and opportunities into an “action plan” where control strategies to mitigate risk and maximize opportunities are identified and selected using cost/benefit analysis. The impact of different combinations of strategies can be compared graphically using a variety of tools to see what the impact on initial risk and opportunity profile is of putting in place different combinations of strategies. Obviously the aim is to reduce risk and increase opportunity. Importantly, ROMS provides a running total of the “cost of controls” to enable users to have a discussion, internally and externally with clients, about the costs of risk, enabling negotiations about optimal risk distributions to

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Step 1 Step 2 Step 3 Step 4 Step 5 Step 6 Step 7 Step 8 Assess and Prioritise

This step will help you assess the magnitude of the risk and opportunities identified in step 4 and prioritize them accordingly. This section should be completed in the ROMS workshop in consultation with all key stakeholders present. Click the column headings for help.

Risks and Opportunities	Existing Controls	Probability	Consequence	Level	Urgency*	Controllability*	Rank
Evidence-based practice - identify facility-related responses to health care challenges posed by climate change, ensure research is disseminated	Excellent (E) Good (G) Adequate (A) Inadequate (I)	Rare (R) Unlikely (U) Possible (P) Likely (L) Almost Certain (A)	Insignificant (I) Minor (Mi) Moderate (Ma) Major (Ma) Extraordinary (E)	Low (L) Medium (M) High (H) Very High (V) Exceptional (E)	Low (L) Medium (M) High (H)	Low (L) Medium (M) High (H)	Click Here To Rank
Entrenched ways – standard practice does not always equate with evidence based practice	Inadequate	Likely	Major	Very High	High	Medium	8
Lack of evidence of how to translate climate change demands into facility design	Adequate	Likely	Major	Very High	Low	High	16
Commercial reality - driven by cost	Inadequate	Possible	Minor	Low	Medium	Low	42
Climate change not seen as important by designers	Adequate	Possible	Minor	Low	Low	Medium	44
Take a lead – make a statement, lead by example	Adequate	Likely	Major	Very High	Medium	High	12
High quality evidence	Good	Likely	Major	Very High	Medium	Medium	13
Linking researchers and practitioners	Inadequate	Likely	Moderate	High	Medium	Medium	23
Set high expectations	Adequate	Likely	Minor	Medium	High	Medium	26
Innovative responses	Adequate	Possible	Moderate	Medium	Medium	High	30
Asset management and urban planning strategies do not compound problems in event of a crisis	Excellent (E) Good (G) Adequate (A) Inadequate (I)	Rare (R) Unlikely (U) Possible (P) Likely (L) Almost Certain (A)	Insignificant (I) Minor (Mi) Moderate (Ma) Major (Ma) Extraordinary (E)	Low (L) Medium (M) High (H) Very High (V) Exceptional (E)	Low (L) Medium (M) High (H)	Low (L) Medium (M) High (H)	Click Here To Rank
Political constraints – public opinion	Inadequate	Likely	Major	Very High	Medium	High	12

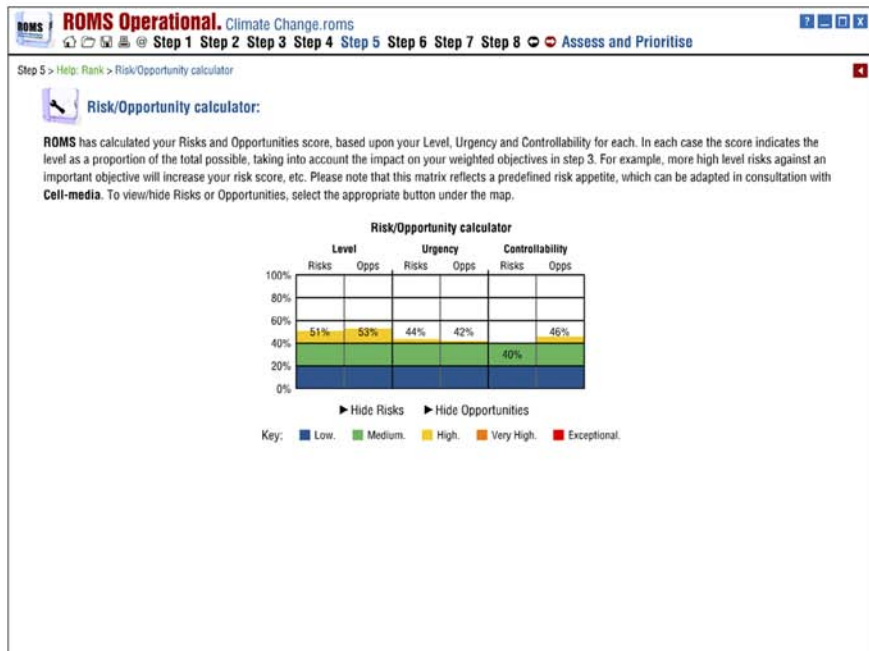


Figure 5. Interface for step 5 of ROMS

(continued)

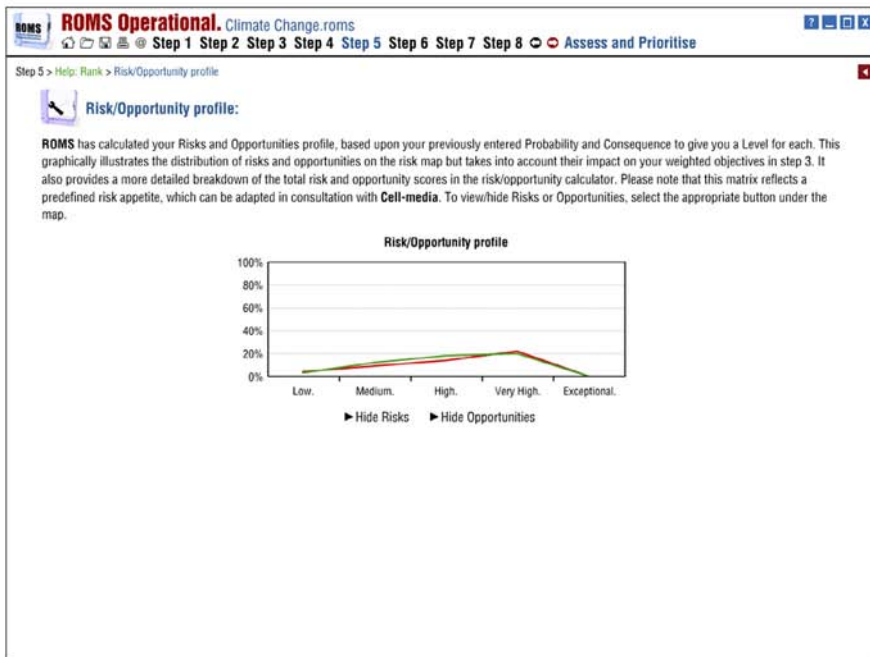
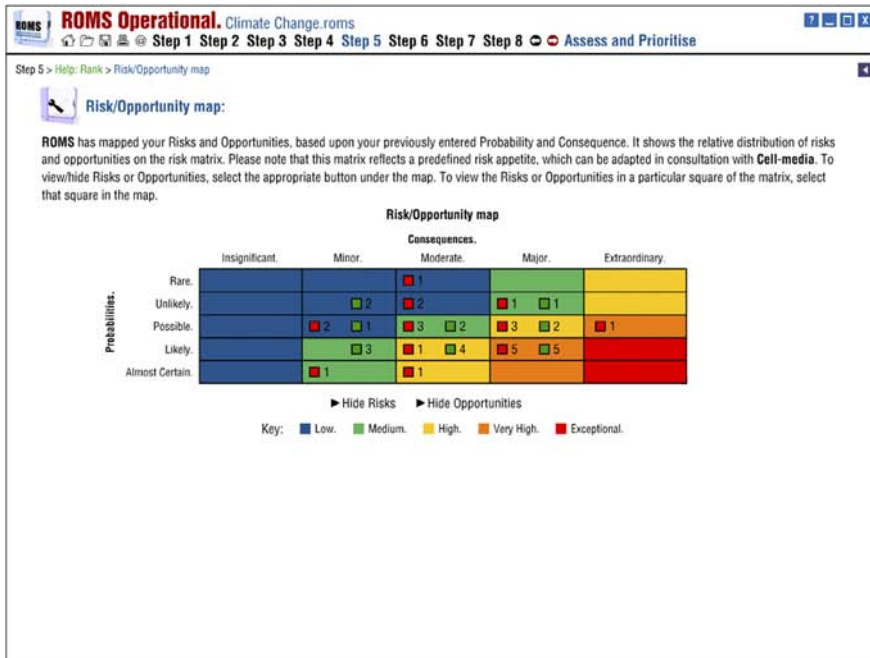


Figure 5.

take place. The multimedia interface enables this to happen in a simple and easy-to-understand way which vividly illustrates the relative costs and benefits of various risk and opportunity distribution patterns. Residual risks and opportunities which fall outside the risk appetite of the organisation can be further analyzed, where appropriate, using more sophisticated probabilistic risk analysis techniques such as simulation using add-on software such as @RISK. Figure 6 shows the interface in step 6 with some background information which can be accessed by selecting various column and row headings.

Step 7: implementation. Step 7 involves allocating the selected additional controls from step 6 a “risk owner” and a “deadline”. ROMS also provides advice on how to implement the chosen controls effectively through effective risk communication, etc. Figure 7 shows the interface in step 7 with some background information which can be accessed by selecting various column and row headings.

Step 8: monitor, review and learn. Step 8 provides an automated monitoring, review and learning mechanism. This enables the manager in charge of the process to monitor the action plan to ensure it is implemented as planned, to review it if progress does not go as planned and to learn from the process by improving organisational processes and incorporating lessons into training systems for employees and even key stakeholders. Educating the supply chain is a critical dimension of effective risk and opportunity management which is often neglected (Edwards and Bowen, 2005). There is also a facility for senior executives to access an executive summary of progress against the risk management plans in their area of responsibility at any time. Figure 8 shows the interface in step 8 with some background information which can be accessed by selecting various column and row headings.

Conclusion

The aim of this paper was to explore the relationships between stakeholders and risk management and to discuss the potential role of multimedia technology as a means to better engage stakeholders in the risk management process. The paper has argued that unsustainable tensions exist between reified and experiential notions of risk and it is clear that that business communications about development risk have little meaning if they are separated from the social, political and cultural context in which risk is experienced by those stakeholders who are affected. The point made in this paper is that in the future, risk management will need to better consider stakeholder perceptions of risk and that the risk manager who relies wholly on scientific expertise and who ignores the human dimension of risk management is likely to create more risks than he or she solves, even in the most technical situations. We also argue that while our technical skills have come far, our ability to manage these perceptions in a constructive way is constrained by the rationalist, scientifically-based processes and technologies which dominate the field of risk management. The future challenge of risk management is to rise above the limitations of individual minds, reconciling the interests of different stakeholders to reach a consensus about the risks which face a project and ways of dealing with them.

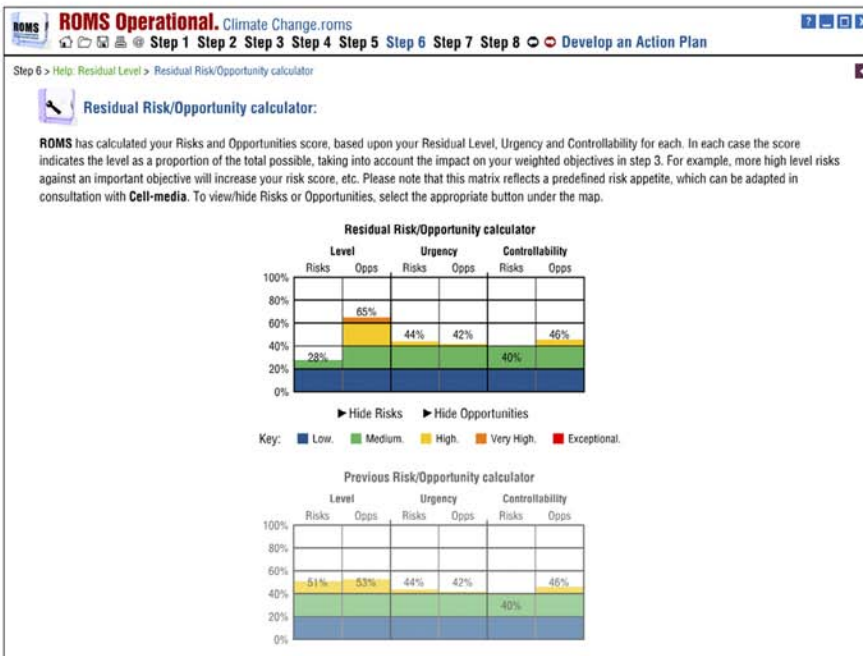
While this paper has only presented one example of ROMS in use, experience of using ROMS across numerous sectors and contexts has shown that a multimedia approach can be valuable in achieving this aim for both large and small organisations involved in simple routine type activities or complex one-off activities. Using the ROMS

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Step 1 Step 2 Step 3 Step 4 Step 5 Step 6 Step 7 Step 8 Develop an Action Plan

This step will help you develop an action plan to mitigate the risks and maximize the opportunities and identify any remaining residual risks which may need further analysis. This step should be completed in the ROMS workshop in consultation with all key stakeholders present. Click the column headings for help.

Risks and Opportunities (Ranked)	Additional Controls	Residual Probability	Residual Consequence	Residual Level	Cost/Benefit	Preferred
Evidence-based practice - identify facility-related responses to health care challenges posed by climate change, ensure research is disseminated		Rare (R) Unlikely (U) Possible (P) Likely (L) Almost Certain (A)	Insignificant (I) Minor (M) Moderate (Mo) Major (Ma) Extraordinary (E)	Low (L) Medium (M) High (H) Very High (V) Exceptional (E)	Cost of Controls = \$870000	Accept (A) Reject (R)
(8) Entrenched ways – standard practice does not always equate with evidence based practice	Translate research into practical format and providing clear practical Shock tactics: Eg. use mapping tools to illustrate the importance of the Disseminate through sources that practitioners use	Unlikely	Minor	Low	20000	Accept
		Unlikely	Insignificant	Low	30000	Reject
		Likely	Minor	Medium	0	Accept
(16) Lack of evidence of how to translate climate change demands into facility design	Undertake and disseminate research which highlights impact of climate Make it a requirement in design specifications Influence bodies who assess hospital bids to make climate change	Unlikely	Minor	Low	500000	Accept
		Unlikely	Insignificant	Low	0	Accept
		Unlikely	Insignificant	Low	0	Accept
(42) Commercial reality - driven by cost	Produce guidelines – to set standards Research that shows adaptive controls have CapX v Op X trade (Enter Additional Control 3 Here)	Unlikely	Minor	Low	0	Accept
		Likely	Minor	Medium	0	Accept
		R U P L A	I M Mo Ma E	None	0	A R
(44) Climate change not seen as important by designers	Incorporate climate change measures into evidence-based Insist that guidelines are used on all hospital facilities (Enter Additional Control 3 Here)	Unlikely	Minor	Low	180000	Accept
		Unlikely	Insignificant	Low	0	Reject
		R U P L A	I M Mo Ma E	None	0	A R



(continued)

Figure 6. Interface for step 6 of ROMS

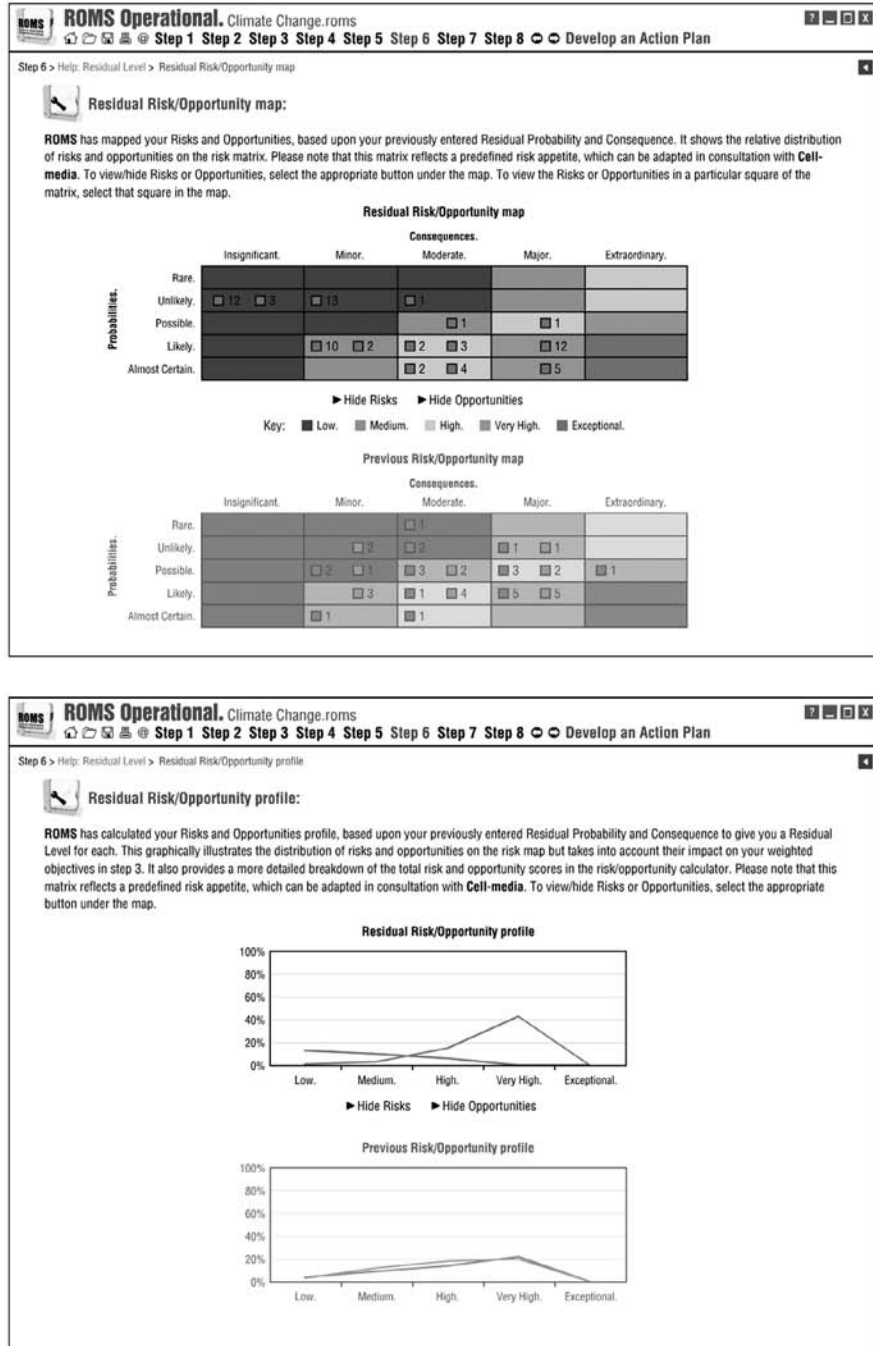


Figure 6.

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Step 1 Step 2 Step 3 Step 4 Step 5 Step 6 Step 7 Step 8 Implementation

This step will help you to assign an Owner and Deadline for each accepted Additional Control per Risk or Opportunity. This step should be completed in the ROMS workshop in consultation with all key stakeholders present. Click the column headings for help.

Risks and Opportunities (Ranked)	Accepted Additional Controls	Owner*	Deadline*
Evidence-based practice - Identity facility-related responses to health care challenges posed by climate change, ensure research is disseminated			
(8) Entrenched ways – standard practice does not always equate with evidence based practice	Translate research into practical format and providing clear practical applied advice/strategies to help people respond	CHAA and Health services	1 / November / 2009
	Disseminate through sources that practitioners use.	CHAA	3 / August / 2009
(16) Lack of evidence of how to translate climate change demands into facility design	Undertake and disseminate research which highlights impact of climate change on design outcomes	CHAA and Health services	2 / July / 2009
	Make it a requirement in design specifications	State government	1 / October / 2009
	influence bodies who assess hospital bids to make climate change strategies a top priority.	Health services	2 / August / 2009
(42) Commercial reality - driven by cost	Produce guidelines – to set standards.	CHAA and health services	10 / February / 2010
	Produce evidence that climate change strategies do not		
	Research that shows adaptive controls have CapX v Op X trade off's	CHAA	6 / May / 2009
(44) Climate change not seen as important by designers	Incorporate climate change measures into evidence-based design guidelines	CHAA	14 / September / 2009
(12) Take a lead – make a statement, lead by example	Demonstration projects - adaptation.	State government	30 / August / 2009
	Research – working across disciplines.	CHAA and health services	3 / July / 2009
(13) High quality evidence	Commission research from world-class researchers and disseminate using used channels - see CHAA research	State government	8 / June / 2009
(23) Linking researchers and practitioners	initiate joint ARC Linkage projects through CHAA	Health services	4 / August / 2009

Figure 7. Interface for step 7 of ROMS

methodology, it has shown how multimedia can facilitate an unthreatening yet rigorous and consultative approach to risk management which highlights interdependencies and common interests between organizational stakeholders, which recognizes and considers the interests of different stakeholders and which effectively captures and harnesses the knowledge, experience and creative capability of stakeholders in an interactive, engaging and stimulating way. The potential advantages of using multimedia to manage risks and opportunities for an organisation, large or small, are numerous and include: improved communications with stakeholders; demonstrated corporate responsibility and citizenship; fewer problems and less rework which waste time and money; more business opportunities to improve performance; more customer focus; higher quality documentation to make decisions; more open and trusting relationships with business stakeholders and partners; better supply chain management and better use of human resources and organizational knowledge. However, it should be noted that no system, no matter how well designed and interactive can provide assurance that risks and opportunities will be managed effectively. Ultimately, this depends on the maturity of the risk management culture in an organization which is itself dependent on the resources and time that an organization is willing to invest in the process and by the attitudes, skills, experience and knowledge of its human resources. Using ROMS we have learnt that multimedia technology is merely a powerful mechanism to develop and harness this maturity. The ROMS process involves time and commitment and if risk management is seen as a burden and a non value-adding activity in an organization, then the output of any process will reflect this.

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[Step 1](#) [Step 2](#) [Step 3](#) [Step 4](#) [Step 5](#) [Step 6](#) [Step 7](#) [Step 8](#)

⌂ ≡ ⌂ ✕ Monitor, Review and Learn

Step 8 > Monitoring > Risk and Opportunity Diaries

Risk and Opportunity Diaries:

This form records the progress of individuals involved in implementing a control decision. It is completed by the Designated Manager in consultation with each individual involved in implementation and submitted to regular Risk Review meetings for discussion.

Individual Diaries	Available Diaries
Risk or Opportunity Owner: CHAA and Health services	CHAA and Health services CHAA State government Health services CHAA and health services State Government Health services/State government State architect Facilities managers CHAA/health services XX CHAA and state government
Actions to be carried out: (1) Translate research into practical format and providing clear practical applied advice/strategies to help people respond to climate change risks. Shock tactics. Eg. use mapping tools to illustrate the importance of the problem.	
Progress in achieving Actions: (Enter Progress Here)	
Problems in achieving Actions: (Enter Problems Here)	
Actions Complete/Dead <input type="checkbox"/> Actions Remaining/Live <input checked="" type="checkbox"/> Email Diary to Individual ✉	

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[Step 1](#) [Step 2](#) [Step 3](#) [Step 4](#) [Step 5](#) [Step 6](#) [Step 7](#) [Step 8](#)

⌂ ≡ ⌂ ✕ Monitor, Review and Learn

Step 8 > Learning > Post-mortem

Post-mortem:

This form records the lessons learnt in managing the Risk and Opportunities associated with a specific decision. It is completed by individual decision-makers in consultation with stakeholders.

Post-mortem
Decision, Task or Problem: How do we adapt our healthcare facilities to cope with the health impacts of climate change and extreme weather events
What went well?: (Enter What Went Well Here)
What went badly?: (Enter What Went Badly Here)
What would you do differently next time?: (Enter What You Would Do Differently Here)

Figure 8.
Interface for step 8 of
ROMS

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