

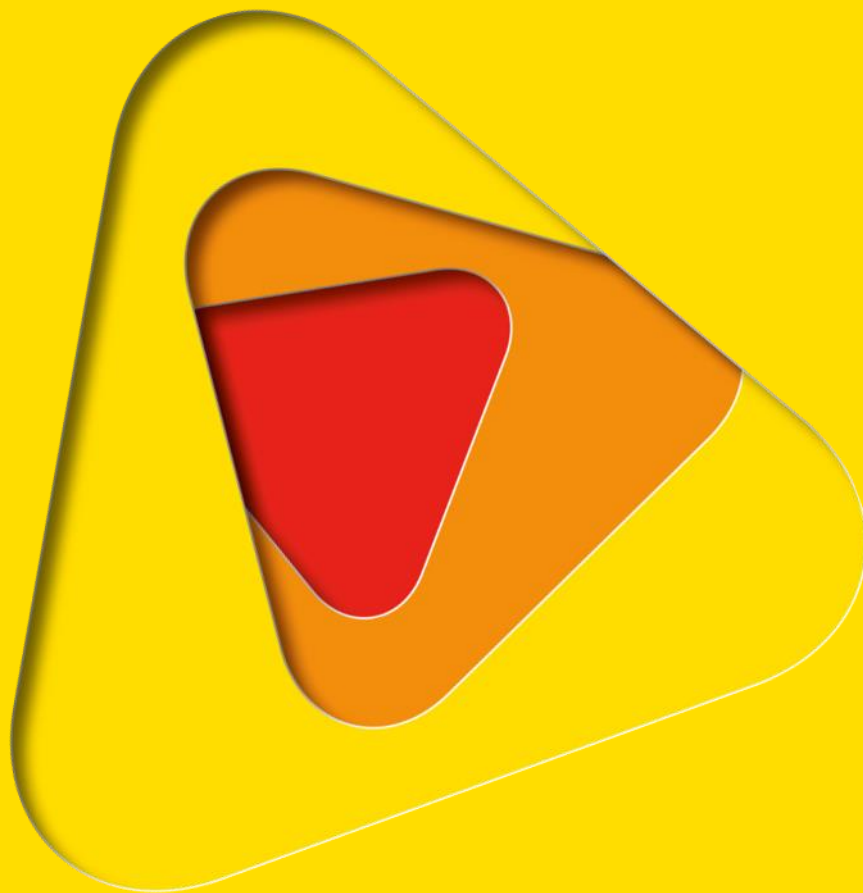


CAPABILITY NEEDS FOR EMERGENCY AND DISASTER MANAGEMENT ORGANISATIONS

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Capability Needs for Emergency & Disaster Management Organisations

The Problem:

Understanding future capability needs for response and recovery agencies and allied government agencies with standing in the oversight of emergency and disaster response are relatively un-addressed or where the relevant issues have been examined, remain incomplete.

Why it is important:

Without a means to understand current and future capability needs/deficits and apply such understanding effectively, efficiencies in the acquisition and delivery of emergency services to communities may be impacted.

Approaches taken to investigate the problem:

This project combines approaches from futures thinking and scenario planning with all-hazards/all-agencies and consequence management frameworks to develop processes for engaging public and private sector organisations in thinking about how to carryout capability needs assessments and integration for near term and future disasters.

Introduction:

The unmitigated consequences of natural and related technical hazards often generate cascading impacts affecting all segments of society. The potential for the rapid spread of damaging consequences can render a comprehensive understanding of a disaster's context beyond the grasp of competent authorities. In hindsight, the speed and severity of disruptions and extent of damage often suggests that there were deficiencies in the agility of first, second and allied response agencies to both, make-sense of the complexity and respond to wide area disasters.

Arguably, enhancing such agility entails possessing suitable capability at the right time (or being able to access it) and deploying it in an interoperable manner over an extended period. While logical, combining these factors into effective, reliable and strategic disaster management arrangements is challenging. The completion of post-incident (disaster) reviews of how response agencies performed during a disaster response, and also in any lead-up to a core period of disturbance, is becoming a norm. What is often absent in these processes - beyond ascertaining what went wrong - is deliberate attention to what could have been done better or pre-impact mitigation strategies that might have been implemented more effectively.

This project seeks to explore this gap by examining differences between actual and ideal responses to a range of familiar (expected), and unfamiliar disasters and emergency contexts. The intent of the research is to go beyond what have been predominantly response-focused considerations by: (1) exploring 'actual and ideal' effectiveness across the full spectrum of Prevention, Planning Response, Recovery and remediation (PPRRr); (2) considering all private and public sector organisations that are involved in this continuum (typically 1st Responders, Government Departments and Agencies, government volunteer groups and non-government volunteers groups); and (3) by exploring individual and collective capability gaps in recent, near-term and future disasters.

The Project

Project D8 will engage with state and federal response agencies, as well as those supporting response and recovery, and local government, to examine in-depth lessons learnt from historical emergencies and disasters on a case study basis and via analysis of capability and capacity deficits. From this it will examine options for defining agile and sustained skills sets across the full cycle of disaster management. This study will also enhance planning mechanisms for the delivery of effective disaster response and efficient recovery strategies for future emergencies. The combination of capability gap analysis and scenario-based futures-based thinking will allow the formation of scaled descriptions of capability along a continuum of increasing effectiveness, adaptability and sophistication to contribute to strengthening community resilience.

These capability specifications will form the basis of a Maturity Model that encapsulates specification of an expanding Planning, Preparation, Response and Recovery repertoire that will allow detailed yet flexible planning by State and Federal agencies. Such outputs are critical because within the context of modern disaster situations, institutions would be unlikely to face single incidents but, rather a series of systemic failures, often appearing concurrently. A further point to note is that both natural and technological hazards can impact socio-technical systems directly as well as being propagated by them: as *network* events. Such events have been categorised as ‘outside of the box,’ ‘too fast,’ and ‘too strange’.

Emergent complexities in linked systems make crises difficult to anticipate and consequences difficult to plan for. Furthermore, under emergency conditions the pressure on senior decision-makers to ‘make-sense’ of multiple lines of information (for both crisis and consequence modes) is significant.

A critical component of the work is the integration of the capabilities of as many relevant agencies active in ‘operational’ response and recovery to all hazards emergencies. Key aspects of this integration include:

- The exploration of options for how Local, State and Federal agencies can collaborate more efficiently and effectively to inform choices for maximising adaptable decision-making under disaster conditions.
- The creation of a sustainable and agile emergency management workforce equipped to meet the needs of future disasters with a detailed understanding of the conditions under which planning, preparedness, response and recovery and remediation of infrastructure systems may need to take place.
- The capability needed by first and second responders, and allied agencies, to match current and future disaster contexts, including the disruptions caused by climate variability and geo-political unrest.

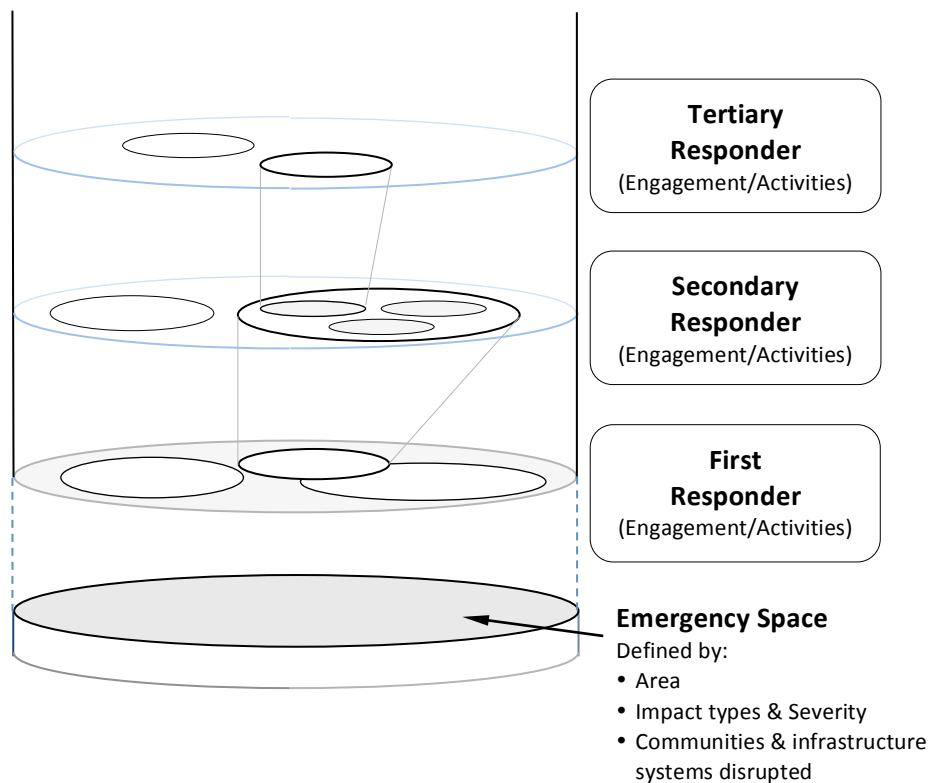
An important part of the work entails engaging with state and federal response agencies, as well as those supporting response and recovery, and local government, to examine in-depth lessons learnt from historical emergencies and disasters on a case study basis and via analysis of capability and capacity deficits. From this it will examine options for defining agile and sustained skills sets across the full cycle of disaster management. This study will also enhance planning mechanisms for the delivery of effective disaster response and efficient recovery strategies for future emergencies. The combination of capability gap analysis and scenario-based futures-based thinking will allow the formation of scaled descriptions of capability along a continuum of increasing effectiveness, adaptability and sophistication to contribute to strengthening community resilience.

This knowledge is critical because within the context of modern disaster situations, institutions would be unlikely to face single incidents but rather a series of systemic failures, often appearing concurrently. A further point to note is that both natural and technological hazards can impact socio-technical systems directly as well as being propagated by them: as *network* events. Such events have been categorised as ‘outside of the box,’ ‘too fast,’ and ‘too strange’. Emergent complexities in linked systems make crises difficult to anticipate and consequences difficult to plan for. Furthermore, under emergency conditions the pressure on senior decision-makers to ‘make-sense’ of multiple lines of information (for both crisis and consequence modes) is significant.

Figure 1 below displays a representation of a vertically integrated capability map applied to an ‘emergency space’ that identifies certain key interdependent relationships needed to effect comprehensive and sustained response and recovery effort. As detailed earlier the capability maps that this project seeks to create will entail defining key relational elements that embody the interdependencies of effective response recovery and remediation of essential services.

A critical hypothetical relationship depicted in Figure 1 suggests the effectiveness of a first response group that supported by the efforts of a cluster of secondary groups: one of which relies in turn, upon a tertiary level support entity. The staged engagement of each layer of response into the emergency space will typically involve first Responders, and across secondary and tertiary stages, state Government Departments and Agencies, local government, as well as volunteer groups and welfare groups.

Figure 1: Vertically Integrated Emergency Response Capability



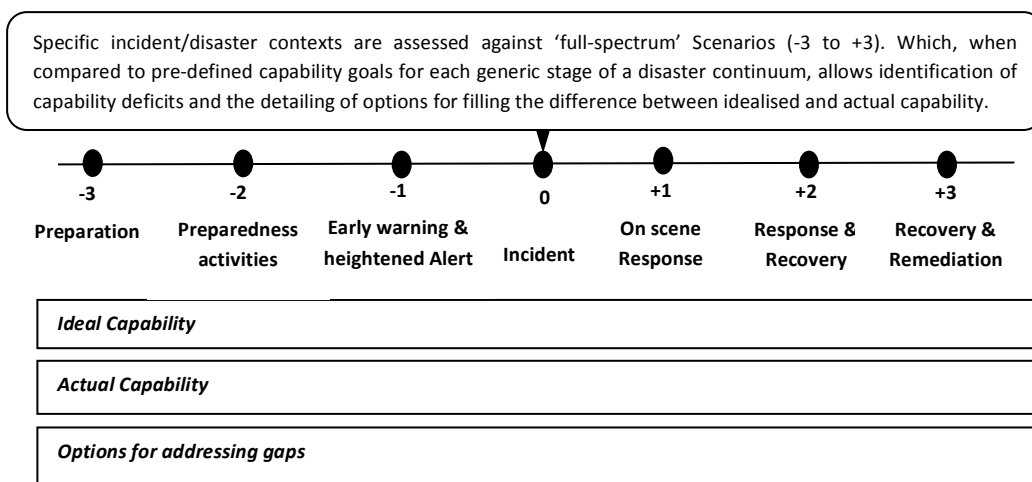
A central strategy in the delivery of value in this project is ensuring utilization of findings and entails a range of knowledge sharing opportunities of varying formats both internal and external to the CRC End-user group. Close links with end-users is a central design feature of this work and cooperation in planning of objectives and timelines for delivery of findings will be explicit as will where viable participation the analysis of findings. From this engagement we will seek to maximize fit of both what is investigated, and from this, the relevance to practitioners of what is discovered. The inclusion of end-users in the final design of deliverables from the proposed work is strategically important, as this will enhance the uptake and usefulness of findings.

It is envisaged that the work be separated into three stages. The first stage of the work (Year 1) is in two parts:

- Part 1 is an initial scoping study of challenges of individual and inter-operational capability needs of first response, support and recovery agencies in a sample of states, across local, State and federal jurisdictions and the development of scenarios for later desktop workshops.
- Part 2 will apply the prototype Capability Deficit Assessment (CDA) Framework (below) to detail initial assessments of capability deficits by engaging individuals from selected State-based agencies to validate its final design and use. The CDA Frame is intended for comparison of idealised with actual ability to plan and prepare for, as well as respond and recover from, varying simulated disaster scenarios of increasing complexity. Scenario development will move from familiar (normal) disaster settings, to less frequent events and finally, potentially unfamiliar, complex (future) events.

Reports are planned to document initial findings related to interoperability needs amongst all responder groups and incident scenarios (normal, infrequent and complex) and, the challenges of addressing certain types of capability deficits.

Figure 2: Scenario-based Capability Gap Analysis



The Second stage will entail running workshops in each state applying the validated CDA Framework to specific scenarios relevant to individual state jurisdictions and more broadly operational needs at a national level.

- Reports are planned to document specific state issues related to interoperability needs among responder groups and the challenges of dealing with current capability deficits as well as those projected into the future.

The third stage will involve specifying a scaled continuum of possible levels of capability, from lower to more complete, that seeks to enhance planning and carrying out agile and effective disaster management at local, regional, state and Federal levels.

- This will lead to a definition of a high-level prototype Maturity Model (MM) incorporating capability assessments for Industry consideration and comment.
- From this basis individual candidate MM's will be prepared for consideration by state-based organisations. While these MM's will include specific details relevant to different organisations, an emphasis will be on whole-of-state considerations. This is important given variation in agency responsibilities across the States.

It is envisaged that representatives from selected end-user groups will be embedded or closely associated with the research team for agreed periods to provide advice on the design of the "future" disaster scenarios to be used in the capability gap analyses, exchange expertise, and to facilitate direct transfer of findings and provide feedback to the research team.

Specific outcomes from this work will include:

1. Transfer of skills in applying futures & scenario-based thinking that assists preparedness, Prevention, Response and Recovery for disasters and related incidents that impact on human services and essential infrastructure systems;
2. Processes to better identify future capability and capacity needs for preparedness, Prevention, Response, Recovery and remediation efforts.
3. Objective frameworks which will allow individual state disaster management agencies and related authorities to examine capability planning options to enable them to better prepare to adapt to complex circumstances which are commonly created by disasters and emergent threats secondary to immediate disaster-related effects.

Activities

- The Project Coordinator hosted and participated with the Qld Fire & Emergency Service in a four hour Command and Control decision making workshop involving a scenario of three concurrent bushfires impacting three adjacent local government areas. Groups involved were the disaster management sections of three Queensland Local Government Councils, the Queensland Police Service and the Queensland Ambulance Service.
- The Project Coordinator was invited by the Productivity Commission, as part of their ongoing inquiry into Natural Disaster Funding Arrangements, to participate in a roundtable workshop on July 1 on effective risk management for natural disasters, including an exploration of the principles and policy frameworks required for effective risk management.
- The Project Coordinator will observe and referee the 9 hour real-time operational simulation of this three bushfire scenario (Operation Headache) on July 24.
- The Project Coordinator has upcoming (early August) consultation meeting planned with the Director General of Emergency management Australia, ACT Emergency Services and the Emergency Management policy Branch of Attorney Generals.
- Planning for project discussion sessions is under way in Melbourne and Adelaide.

Publications

- Accepted paper at the AFAC Conference (2014) "Discovering Future Disaster Management Capability Needs Using Scenario Planning."
- Discussion Paper: Candidate interoperability needs amongst responder and recovery groups (**Near Completion**)
- Discussion Paper: Disaster Scenarios and Futures Thinking (**Near Completion**)

Current Project members

- Dr Paul Barnes (Project Coordinator)
- Professor Ashantha Goonetilleke
- Wayne Freeman (Casual Research Assistant)
- Appointment of a Post-Doctoral researcher is expected soon