The Victorian Emergency Management Continuum and the Benefits of Spatial Enablement.

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ABSTRACT

We live our lives in the real world and the real world has three key attributes that influence our lives, namely; time, activity and space. Traditional approaches towards emergency management have only focused on the key elements of prevention, response and recovery. This approach limits emergency management to the domains of time and activity. As a result this approach overlooks the need to explicitly focus and build spatial enablement across all elements of emergency management. This paper examines the emergency management arrangements within Victoria, Australia, since 1983 and suggests that these arrangements are a continuum that is constantly evolving. The paper argues that the development of a common operating picture through spatial enablement and interoperability is a critical aspect of emergency management.

Key Words: Victoria; Emergency Management, Spatial Awareness, Geospatial Interoperability; Bushfire; Flood; DaLA; Common Operating Picture.

1. Introduction

We live our lives in the real world and the real world has three key attributes that influence our lives, namely; time, activity and space. When developing emergency management arrangements people are conscious of time and activity, but it appears that the importance of spatial awareness is often overlooked. This paper examines the Victorian emergency management arrangements and develops the concept of a spatially enabled emergency management continuum. Such a concept provides the basis for the development of a common operating picture and enhanced community engagement. A key aspect of this process will involve the development of a geospatial interoperability continuum and it is envisaged that the United Nations will play a key role in developing this continuum and associated international standards.

2. Victorian Emergency Management Arrangements

Victoria’s emergency management arrangements are established under the Emergency Management Act 1986 and the Emergency Management Manual Victoria (Victorian Government 2011). Specific roles and responsibilities are allocated to provide an integrated framework to manage any emergency. These arrangements are based on an all hazards and all agencies approach (Victorian Government 2011). Since the Ash Wednesday fires of February 1983, the state emergency management arrangements have been developed and are regularly reviewed after significant events to ensure that the best possible arrangements are in place to deal with any type of emergency (EMMV 2009). This process forms a continuum of application and enhancement.

Under these arrangements an emergency is defined as the:

‘actual or imminent occurrence of an event which in any way endangers or threatens to endanger the safety or health of any person in Victoria or which

1 For the purpose of this paper ‘spatial enablement’ refers a method of organising information and activities in a ubiquitous manner by the spatial attributes of that information and activity.
destroys or damages, or threatens to destroy or damage, any property in Victoria or endangers or threatens to endanger the environment or an element of the environment in Victoria’ (EMMV 2009:4).

In terms of an emergency, the management task is described as aiming to: ‘bring together in an integrated organisational network the resources of the many agencies and individuals who can take appropriate and timely action to prevent or mitigate, respond to and recover from emergencies’ (EMMV 2009:5).

Three major functional areas are identified as being the key components of a comprehensive approach, namely; prevention, response and recovery. Within each of these functional areas specific activity is undertaken by various agencies (EMMV 2009). Depending upon the activity there may be some overlap in activities that occur in each of these areas. Figure 1 outlines some of these activities and depicts the overlap between these major functional areas.

![Diagram showing the overlap between prevention, response, and recovery activities.](image-url)

**Figure 1 Examples of Emergency Management Activities Clustered into Groups (EMMV 2009:6)**

When viewed from a temporal perspective these activities roughly equate to what occurs before, during or after an incident. This sequence is represented in Figure 2.
Figure 2 Temporal Sequence of Emergency Management Activities

Whilst this sequence suggest a linear relationship between these functional areas, each one of the functions needs to be considered as a cluster of activities which take place as is needed. Prevention activities are normally carried out at a maximum level of effort regardless of an incident or potential incident; however, response and recovery activities will peak at different times during and after an incident (EMMV 2009). Figure 3 demonstrates the intensity of effort for emergency management activities in a time sequence model.

Figure 3 Emergency Management Activities in a Time Sequence Model (EMMV 2009:7).

Under the Emergency Management Act 1986 the Chief Commissioner of Police has been appointed as Deputy Co-ordinator in Chief of Emergency Management. The Chief Commissioner of Police has also been delegated the responsibility for preparing and reviewing the State’s response plan. Under the Act, the Department of Human Services has been appointed as the coordinating agency for recovery and has the responsibility for preparing and reviewing the State’s recovery plan (EMMV 2009).
Within the Victorian arrangements the three key response management tasks are command, control and coordination (EMMV 2010). Command relates to the task of managing a particular agency’s resources and it can include the management of another agency’s resources if there are pre-existing agreements in place to support those arrangements. ‘Control involves the overall direction of response activities in an emergency’ and the control agency is the agency that is nominated to control all response activities for a specified type of emergency (EMMV 2010:5). Coordination involves ensuring that the relevant organisations have been brought together and that effective control has been established and maintained. It also involves the acquisition of resources and materials in accordance with the requirements of these agencies (EMMV 2010).

The Emergency Management Manual Victoria and the Emergency Management Act 1986 provide detailed guidance on agency roles and responsibility across the major functional areas and key response management tasks. Within each agency further guidance is provided through agreed protocols and arrangements. Similarly, each agency has acquired equipment and infrastructure, for example communications and computer technology, to aid them across the functional areas and key response tasks.

Within these documented arrangements there is a significant amount of guidance in relation to the activity that occurs at different times within an emergency; however, there appears to be little explicit detail on the spatial component inherent in these activities. As a result of this deficiency these arrangements and supporting structures can not be considered as being spatially enabled.

3. Practical Application of the Victorian Emergency Management Arrangements

Prior to the Hilton Hotel bombing in Sydney in 1978, Australia did not have any formal mechanisms to respond to terrorism. As a result of this deficiency the Standing Advisory Committee for Commonwealth/State Cooperation for Protection Against Violence (SAC-PAV) was established (Australian Government 2011). These arrangements were amended after the 11 September 2002 terrorist attacks in the United States of America. The Counter-Terrorism Branch was then established within the Australian Government. The National Counter-Terrorism Committee (NCTC) and Protective Security Coordination Centre (PSCC) were also established at this time (Australian Government 2011).

Under the SAC-PAV arrangements the threat of terrorism was mainly managed by key government departments, national security agencies and police forces under a national security/crisis management agenda. Terrorism was addressed under the Victorian emergency management arrangements; however, there was limited guidance as the focus of these arrangements was on more traditional emergencies, for example fires and floods. When the NCTC developed the National Counter-Terrorism Plan (NCTP) counter-terrorism responses were clearly integrated with the existing emergency management arrangements (NCTC 2008). This approach led to an increased focus and use of intelligence and investigation across the major functional areas of prevention, response and recovery. Intelligence relates to the focused collection of information which is analysed and enhanced to provide an intelligence product that assists in the decision making processes. Intelligence and Investigation activities ‘are ongoing and carried out in order to prevent, respond to and investigate terrorist threats and attacks in Australia’ (NCTC 2008:3.2). If an incident does occur, intelligence and investigation activities will continue to occur whilst the emergency, for example a fire and explosion, are being managed by the
The National Counter-Terrorism Committee developed the National Guidelines for Protecting Critical Infrastructure from Terrorism (Victorian Government 2007). These guidelines were a set of nationally agreed strategies to protect critical infrastructure from the perceived threat of terrorism. The Victorian Government extended these arrangements to ensure that Victorian essential services and infrastructure were included in these protection arrangements (Victorian Government 2007).

The Victorian Government also introduced specific legislation, namely the Terrorism (Community Protection) Act 2003, which compelled the owners and operators of declared essential services to develop a risk management plan and undertake an annual exercise to test that plan (Victorian Government 2007). Under these arrangements critical infrastructure was defined as being ‘those physical facilities, supply chains, information technologies and communication networks which, if destroyed, degraded or rendered unavailable for an extended period, would significantly impact on the social or economic well-being of Victoria and its community’ (Victorian Government 2007:6). The concept of critical infrastructure protection (CIP) was based on an all-hazards and all-agencies approach. It involved a significant amount of cooperation and information sharing between government, emergency services and owners/operators of infrastructure (Victorian Government 2007).
Since the original concept of protecting critical infrastructure was introduced, the focus has now become a broader notion of critical infrastructure resilience (Australian Government 2010). This change in focus has come about due to the Council of Australian Government’s recognition that the regularity and severity of a number of significant disasters across Australia required a critical infrastructure protection approach that enhanced Australia’s capacity to withstand and recover from both emergencies and disasters (Australian Government 2010). Figure 5 demonstrates how the critical infrastructure protection agenda was included in the temporal sequence of emergency management activities. As can be seen in this diagram critical infrastructure protection is a significant input during the prevention stage. During this stage infrastructure is identified and a risk management approach is applied. This approach involves assessing and treating any identified risks. This information is then used during the response and recovery stages.

3.1 Black Saturday

Victoria has a long history of devastating bushfires; however, on Saturday, 7 February 2009, a significant bushfire in Victoria caused the deaths of 173 people. This bushfire was unprecedented and the day has become known as Black Saturday. During the bushfire, fire authorities battled 315 fires across the state and they were overwhelmed with the intensity and ferocity of a number of these fires. During the bushfires communities and towns were virtually wiped out. In addition to the 173 deaths it is estimated that the fires caused over $4 billion damage across Victoria (VBRC 2010).
After the bushfires, as part of the review process, a Royal Commission was established to investigate ‘the causes of, the preparations for, the response to and the impact of the fires that burned throughout Victoria in late January and February 2009’ (VBRC 2010:vii). The Royal Commission identified a number of systematic failures within Victoria’s emergency management arrangements. These failures included confusion about responsibilities and accountabilities, the lack of agency integration, siloed approach by some agencies, separate technology systems, duplication of functions, deficiencies in leadership and the absence of a common understanding of the situation (VBRC 2010; Victorian Government 2011).

Fire severity is an important factor when considering the management and impact of bushfires. Fire severity is influenced by topography, fuel loads and weather conditions (VBRC 2010). For example, fire moves more quickly as it moves uphill and moves more slowly downhill. These differences occur because of the pre-heating effect of the flames as they move uphill when they are closer to fuels. In addition to this effect, hot convective air from the fire moves upslope drying out fuels (Pyne et al 1996). As a general rule it has been estimated that for each 10% increase in slope the rate of fire spread will double and when the fire is running downhill this rule is reversed (Pyne et al 1996).

Leaves, twigs, bark and other organic material that is available to burn in a forest is described as fuel and the fuel load refers to the amount of this type of debris in a forest that is available to burn. Fuel load is reduced through either preventative burning by authorities or during a bushfire. The fuel load influences fire severity and fuel combustibility will be influenced by the type of plant material and the dryness of this material (Gould et al 2007). When planning prevention and response activities it is essential that authorities have detailed intelligence on the available fuel load in a given area.

Weather is a critical factor in influencing fire behaviour and it has four key elements, namely, air temperature, relative humidity, wind speed and atmospheric stability (New South Wales Government 2011). Strong wind will tilt the flames forward and this increases the effective radiation and pre-heating of the fuel load. It will also maintain the oxygen supply to the fire and increase the wind speed in the flame zone. Strong wind increases the number of spot fires due to burning embers being blown in front of the fire (New South Wales Government 2011).

The Royal Commission identified that on Black Saturday the worst possible weather conditions combined with high fuel loads exacerbated the fire severity and this was a major contributing factor of the devastation caused on the day (VBRC 2010; Victorian Government 2011). Unfortunately the absence of a common understanding of the situation was driven by a lack of spatial enablement due to the lack of integration and standardisation of systems and data across and between some agencies.

In terms of fire management, spatial enablement needs to be considered in terms of three-dimensional awareness and capability. The fire services had detailed knowledge regarding fuel load, topography and weather. This knowledge allowed them to understand the fire severity risk; however, the ability to share this information

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2 For example within a eucalypt forest maximum fuel density in the fine surface fuel load is reached in approximately 5 years. As the forest grows taller the near surface and fine suspended fuel increases in density quickly until approximately 10 years and then continues to gradually increase. Similarly, the fuel load of the forest canopy will increase with age (Gould et al 2007).

3 For the purpose of this paper three-dimensional refers to the longitude, latitude and elevation of a given point or location.
to the public and other agencies, especially other agencies resources deployed in the field, was significantly challenged by the speed and ferocity of the fires (VBRC 2010; Victorian Government 2011). The low levels of spatial interoperability between organisations lead to confusion between agency responsibility and meant that there was no common understanding of the unfolding situation (VBRC 2010; Victorian Government 2011).

3.2 National Flood Crisis 2010-2011

Victoria has a long history of floods and major regional flooding occurs somewhere within the state at least every 10 to 20 years. It has been estimated that the long-term average flood damage within Victoria costs approximately $350 million per annum (Comrie 2011:7). From September 2010 to February 2011 Australia experienced some of the worst and most widespread flooding in the nation’s history (Comrie 2011; QFIC 2011; QPS 2011). Widespread heavy rainfall occurred during the peak of a La Niña event and in Queensland’s case this was exacerbated by Tropical Cyclone Tasha. This rainfall occurred after a prolonged period of approximately 10-15 years of drought and this appears to have lead to some complacency regarding flood risk (Comrie 2011; QFIC 2011; QPS 2011).

Victoria and Queensland were the two states most affected by these floods. In Queensland, Tropical cyclone Tasha caused the Fitzroy River to flood and also caused flash flooding in Toowoomba and the Lockyer Valley (QFIC 2011; QPS 2011). This flooding resulted in the deaths of 35 people and affected over 200,000 people in 70 towns. Authorities have estimated that the flood caused approximately $30 billion damage (QFIC 2011; QPS 2011). Within Victoria, approximately one-third of the state suffered from some form of flooding or storm damage during this period and this has caused significant damage and disruption (Comrie 2011). As a result of the extent and damage of the floods in Victoria, the State Premier established a comprehensive review of flood warnings and the emergency response efforts (Comrie 2011).

The Floods Warning and Response Review’s interim report identified a number of similar issues that emerged during the Black Saturday bushfires. These issues included poor information flow between agencies and between the public, confusion over agencies roles, responsibilities and accountabilities, a disconnection between coordination centres, differences in terminology to describe flood dimensions and river heights, lack of municipal flood plans, and IT systems not supporting multi-agency roles (Comrie 2011). The interim report concluded that ‘although it can be stated with confidence that the emergency service organisations in Victoria respond very well to lower and moderate level emergencies, they have been severely tested by the Black Saturday bushfires in 2009 and the 2010-11 floods’ (Comrie 2011:29).

Topography also plays an important role when planning for and responding to floods. Flooding behaviour is influenced by a range of variables including the floodplain shape, slope, vegetation and storage capacity. Similarly, development and flood controls, both natural (gorges, ocean levels in tidal areas) and man made (roads and structures) impact on the spread, speed and dispersion of flood waters (Gillespie & Grech 2002; NFRAG 2008). For example, in the Lockyer Valley case the steep slope and lack of natural and man made controls caused a flash flood during involving an 8 meter wall of water which has been described as an inland tsunami (Owens 2011; QFIC 2011; QPS 2011). During the Victorian floods emergency services battled a large slow moving body of water due to the relatively flat topography (Comrie 2011).
Just as in the case of bushfire management, there is a need for emergency services to establish three-dimensional spatial awareness and capability through the planned spatial enablement of data and technical capability. The interim report of the Floods Warning and Response Review identified a number of problems that can be attributed to a lack of spatial awareness across agencies (Comrie 2011).

3.3 Social Media

The role of social media was a key focal point during the national flood crisis (QFIC 2011; QPS 2011; Williamson 2011). Prior to the floods, the Queensland Police Service (QPS) Media and Public Affairs Branch had commenced a trial use of social media as a form of community engagement. The staged introduction of social media was designed to ensure that police were comfortable with uploading information and moderating conversations (QPS 2011). In the 24-hour period following the flash floods the number of likes posted on the QPS Facebook page ‘increased from 17,000 to 100,000’ and the page ‘generated 39 million post impressions, equating to 450 post views per second over the 24-hour period’ (QPS 2011:iv). Some of the key benefits of using social media included the ability to proactively push large volumes of information to a significant number of people, becoming a trusted and authoritative source of information, delivery of focused information to particular community groups, quickly dispelling rumour and misreporting and providing authorities with direct access to information (including photographs and video material) of events that were unfolding (QPS 2011).

Since this time research has been conducted in relation to enhancing emergency situational awareness using social media through the planned collection, detection, assessment and simplification of situation reporting in near-real-time (Williamson 2011). This research has shown the benefit of spatially enabling these messages on social media and clustering the messages according to a particular location or issue (Williamson 2011). It is anticipated that the inclusion of social media will be a key component of future emergency management arrangements.

3.4 Interoperability and Spatial Enablement

The multi-agency environment of emergency management increases the need for compatibility and system integration between agencies. Under the concept of a network-centric response each agency needs to be conceptualised as a node within a broader network (Griffin 2010). The capabilities of the overall network are then determined by the group of connected nodes which can synchronise in order to tackle a particular problem rather than the capabilities of an individual node (Dekker 2009). This synchronisation needs to occur for routine events, for example road safety and public order issues, as well as non-routine or emergency situations, for example major bushfires (Griffin 2010). During the Black Saturday bushfire and 2010-2011 flood crises it appears that agencies were unable to achieve a high level of synchronisation and this resulted in a number of issues identified by the Royal Commission and Flood Warning and Response Review.

To operate in a network-centric environment there must be a high level of interoperability between agencies and organisations. To do this there is a requirement to develop common operating procedures and the integration of processes and appropriate information assets (Griffin 2010). By doing this the various agencies will be in a position to develop situational awareness that is based on one common version of the true situation and minimise both the duplication of effort and potential for confusion. Agencies frequently refer to this as developing a
common operating picture. This approach also helps to ensure that there is a higher level of coordination across the response agencies. Spatial enablement of data and systems increases the level of situational awareness and simplifies the task of creating a common operating picture (Griffin 2010).

When creating a common operating picture, one of the challenges for policy makers and systems designers will be addressing fears regarding the potential loss of power and re-direction of hierarchical communication flows within an agency brought about by new and configurable spatial infrastructure that supports the common operating picture (Griffin 2010).

In emergency management the interoperability environment has a greater need to exchange non-voice related information across agencies, for example text, video imagery and GIS material. This type of exchange helps to ensure that all agencies are contributing to and using a common understanding of a given incident (interoperability) while sharing resource and infrastructure costs. During an incident, with the exception of the management team, most voice communications will still occur within a particular agency and relate to the command of the agency’s own resources (intra-operability). The retention of command within an agency is often referred to as the maintenance of intra-service command. During a network-centric response even though all agencies are working towards a common aim and agreed objectives, it is essential that each agency retains the command and control of its own personnel. During an emergency response it is also essential that agencies have visibility of the location of each other’s resources to ensure that personnel are not placed in positions of danger (Griffin 2010).

The Department of Homeland Security has developed the Interoperability Continuum as a tool to improve emergency response communications and interoperability (DHS 2011). Under this Continuum interoperability must address five key dimensions, namely:

- Governance;
- Standard Operating Procedures;
- Technology;
- Training and exercises; and
- Usage.

Interoperability maturity can be evaluated across these five dimensions as an agency moves from an internal or individual focus towards a broader collective framework. Figure 6 demonstrates the factors that are considered during this maturity evaluation. Under this model, the placement of an agency along the continuum is an indication of an agency’s level of leadership, planning and collaboration (DHS 2011).
Figure 6 Interoperability Continuum (DHS 2011:3)

It is envisaged that this interoperability continuum will continue to evolve as agencies use it to evaluate their current level of interoperability and as the concept of network-centric operations matures (DHS 2011). Whilst this interoperability continuum is focused on emergency communications, each dimension and the relevant descriptors can be applied against GIS systems and data to determine the degree of spatial enablement. Although the first two descriptors for the technology dimension, swap radios and shared channels, would have to be amended to reflect spatial capability rather than communications capability. This model would be further strengthened if an additional dimension of community engagement was added to the existing five dimensions.

The recent Seoul Declaration on Global Geospatial Information Management (GGIM) included a goal to ‘to take actions to foster and strengthen national, regional and global cooperation with the aim of developing an interconnected global community of practice on geospatial information under the umbrella of the United Nations’ (Geospatial World 2011). The GGIM Declaration should be considered as a vehicle to develop a geospatial interoperability continuum similar to the DHA communications and interoperability model depicted in figure 6. This approach would ensure that standards could be created to develop best practices in geospatial management and help to promote the development of spatially enabled emergency management arrangements.

The Victorian Fire Services Commissioner has commenced a project to develop a common operating picture which would be available for all emergency management agencies and the community (SCC 2011). This project is designed to close the gap between the information needed to make an informed decision and the information that is currently available to both the emergency services and the public (SCC 2011).
It is anticipated that the spatial enablement of this information will be a key factor in the success of any future common operating picture.

3.5 Recovery and Reconstruction

Whilst the current Victorian emergency management arrangements include a review process, this review normally occurs during the recovery phase. As a result, the focus of any review is normally related to the functional areas of prevention/planning and response (Comrie 2011; VBRC 2010). This approach means that the functional area of recovery has received relatively little examination during a formal review. Any review of the recovery process may consider the immediate humanitarian assistance and rehabilitation to restore some form of normality to an area. During lower and moderate level emergencies this may be appropriate; however, when dealing with large scale emergencies like Black Saturday and the national flood crises the functional area of recovery has a longer term reconstruction element. It does not appear that the planning and management arrangements of large scale reconstruction have been critically reviewed.

The Global Facility for Disaster Reduction and Recovery (GFDRR) has been established to help developing countries reduce their vulnerability to natural hazards and is often involved after a significant disaster (GFDRR 2011). When this occurs they apply a Damage and Loss Assessment (DaLA) methodology which was developed by the Economic Commission for Latin America and the Caribbean (ECLAC). This methodology groups activities into three different stages of emergency, rehabilitation and recovery (which is also referred to as transition) and reconstruction (ECLAC 2003). The DaLA methodology uses objective, qualitative data to determine the value of destroyed assets and losses in a particular area. The result of the assessment is then used to determine the range and priority of interventions that are required. It also helps to determine the post-disaster financing needs (ECLAC 2003).

Reconstruction of damaged and destroyed infrastructure is then planned in such a way that the residual risk to the community is reduced by building back better rather than simply replacing what was present before the disaster. This methodology has been used since 1972 by the United Nations and other international agencies and has been constantly improved to ensure that it is able to be applied after a significant disaster (The World Bank 2011). This extensive review and improvement process has been far more intensive than any review of reconstruction that has occurred under Victoria’s emergency management arrangements functional area of recovery.

If Victoria used a similar approach and separated the functional area of recovery into two distinct activities, recovery and reconstruction, it would help to improve the current emergency management arrangements. Under this methodology the Department of Human Services would still be the coordinating agency for recovery and be responsible for preparing the State’s Recovery Plan. The Department of Infrastructure should then be appointed as the coordinator in chief for the long-term reconstruction of the disaster zone and be responsible for preparing a specific State Reconstruction plan. This plan should ensure that any reconstruction reduces any residual risk to the community.

4 Emergent Emergency Management Arrangements

The Black Saturday bushfires and the 2010-2011 flood crises have shown that significant large scale emergencies occur infrequently and Victoria’s emergency
management arrangements have struggled to cope with these large scale disasters. The recommendations from the Bushfire Royal Commission and the outcomes of the Floods Warning and Response Review will improve these arrangements; however, there are a number of emergent themes, namely the development of a common operating picture, the use of social media to improve community engagement and an improved method of managing large scale reconstruction (Comrie 2011; VBRC 2010; Victorian Government 2011).

The development of a common operating picture through spatial enablement and interoperability is a critical aspect of any strategy to improve the current emergency management arrangements. It is essential that this spatial enablement is based on 3-dimensional capabilities that will help emergency services personnel to understand flood and fire risk.

Similarly, the use of social media to increase the level of community engagement will continue to be developed as agencies understand this new technology. This engagement will be a two-way process that allows authorities to receive information as well as provide information to the public.

Whilst the function area of recovery hasn’t been exposed to detailed examination in respect to long term reconstruction, the GFDRR approach of introducing a new separate function of reconstruction is insightful and should be given careful consideration.

Figure 7 demonstrates how these emergent themes will influence the temporal sequence of emergency management activities. This approach ensures that time, activity and space are fully integrated into Victoria’s emergency management arrangements.

![Figure 7 Emergent Temporal Sequence of Emergency Management Activities.](image-url)
5 Conclusion

The Victorian emergency management arrangements have been continually reviewed and enhanced since their introduction in 1986 as part of an ongoing continuum. The Victorian Government and emergency services are committed to providing the best possible service to minimise the loss of life, injury and damage. It is widely recognised that during lower and moderate level emergencies these arrangements are highly successful; however, they become challenged whilst managing a large scale disaster. It appears that the importance of spatial awareness has been overlooked in these arrangements and this may limit the ability of the arrangements during the management of large scale events.

Lower and moderate level emergencies are very frequent as opposed to large scale disasters which are relatively infrequent. As a result the inclusion of reconstruction within the functional area of recovery has not been problematic. When dealing with a large scale disaster the complicated and long-term nature of building works justifies the establishment of the new functional area of reconstruction.

The Victorian Fire Services Commissioner’s project to build a common operating picture will significantly improve the level of spatial enablement in the Victorian emergency management arrangements. The development of a geospatial interoperability continuum will help in this process and will also help advance the GGIM Declaration.

Ultimately the Victorian emergency management arrangements are about protecting people and our environment. The advent of social media allows emergency services personnel to interact and engage with the community like never before. These technologies allow the community to provide the emergency services with a wealth of information that is rich in detail and extensive in volume. This type of information has never been available to such an extent until now. Similarly, emergency services can use this technology to provide the best possible information to the community to allow them to make informed decisions during an emergency. The spatial enablement of this information allows both people and the authorities to quickly identify important information that is relevant to them. How this will be done is still unfolding, but the early indications are that it will be the next quantum leap in emergency management.
References


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