



Extracting and Analysing Kilmore Fire Coordination Network

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Introduction

- During large scale emergency events, not only do different organisations (and teams) need to coordinate internally, but they also have to be synchronised with other organisations and agencies to be able to manage and control the emergency event properly.
- Members involved in emerging networks during emergency events need to have proper communication patterns in addition to using their experience, skills, resources and equipment.
- Related studies (McLennan & Elliot, 2010) highlighted the importance of “community and social context” from one hand, and also “information and its sources” on the other hand, which influence decision making (Lawrence, Morrison, Dunlop, et al., 2010).
- By analysing the network, we aim to better understand information flow (and decision making) in the coordination network during the event.

Background

- Network analysis is an emerging research field among scholars in different disciplines.
- Using coordination theory in human networks can help to solve coordination problems and facilitate group works.
- Based on systems (networks) complexity, different approaches can be applied in order to properly coordinate the system.
- Since network structure plays an important role in performance of users and organisations, it is helpful to find the structure and position of individuals in intra- and inter-organisational networks which have a significant effect on coordination.

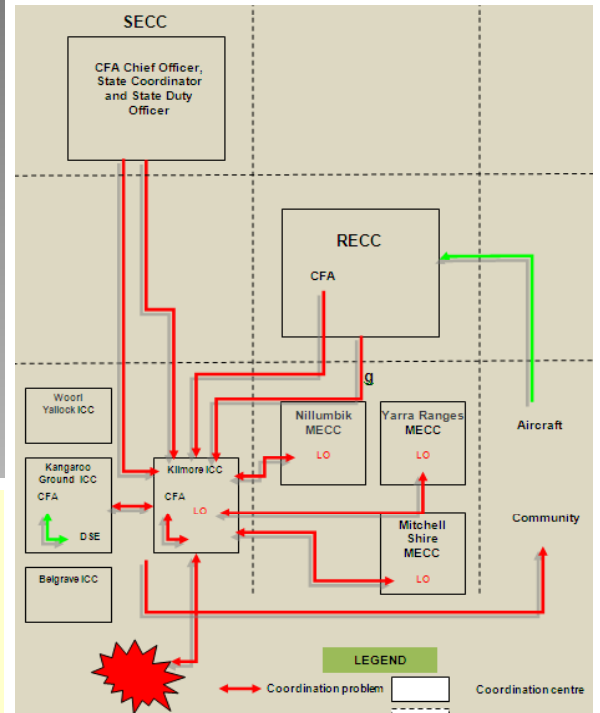
Research Objective

- To understand intra- and inter-team (and organisation) *cohesion, connectedness, structure and communication diversity* and also their individual members' diversity and network position during an extreme event (e.g., Kilmore Fire in February 2009).
- To understand what modes of communication and co-ordination the individuals (involved in the coordination network) had with others in the emergency network.
- To understand what the breakdowns are (from a network analysis perspective):
 - Studying tolerance, attack and failure of nodes (e.g., individual, organisations) and its impact on facilitating information flow which would have impact on coordination performance
 - Evaluating which types of node failures have high level of impact on coordination performance which will lead to develop a better predicting model for understanding the rate of node failure and attack.
- To improve coordination behaviour within and between organisations (and teams) in large scale bushfires through exploring complex adaptive coordination behaviour.

Methodology

Content Analysis: Transcripts and individual statements from the Victorian Bushfires Royal Commission repository will be analysed to extract individual names, position and the agency they belong to, communication between them, their location during the communication and the devices and technologies they used.

Social Network Analysis: Visual representation and measurement of network and individual characteristics (e.g., cohesion; connectedness; structure) will be undertaken.



Kilmore East fire – map of coordination problems and enablers (Hickey, Owen, 2011 Multi agency information flows report)

Organisations involved in the 2009 Victorian Bushfires

Area of Interest	Agency, Department or Organisation
Victorian Ambulance	Ambulance Victoria
Fire Management	CFA, Forest Fire Management Group, MFEMSB, ...
Police	Victoria Police Australian Federal Police
Emergency Services Critical Infrastructure	Victorian SES, SP Ausnet, NEMMCO, ...
Local Government	Murrindindi Shire Council, Whittlesea City Council, ...
Victorian Natural Resource Organisations	DSE, Parks Victoria
Victorian Transport Organisations	Connex
Victorian Government Departments	Hospitals, OESC, Department of Human Services, ...
Health, Community & Communications Services	St John Ambulance, ESTA (triple 0), Victorian Bushfire RRA, ...
Federal Agencies	Bureau of Meteorology
Various Interstate & International Fire and Recovery resources	E.g. St John Ambulance; SES; Fire Management; Land management;