



RESEARCH ADVISORY FORUM

HOBART 23-24 MAY 2012

Christine Owen

Project Leader Organising for Effective Incident Management

BCRC, University of Tasmania

CONFERENCE 2011 KEYNOTE

Commissioner Lee Johnson





Australasian Fire and Emergency
Service Authorities Council

Political Leaders

Disaster Operations

Strategy

Crisis
Leadership

Disaster Management
Systems

Coordination

Operational
Leadership

Strategic

Operational

Incident Management

AIIMS

Tactical

Front Line

The Future of Emergency Management 2011

RESEARCH TEAM



Dr Christine
Owen



Dr Ben
Brooks

2012

Dr Roshan
Bhandari



Prof Douglas
Paton

Dr Chris
Bearman

Steve
Curnin

A collaboration between

- The University of
Tasmania

- The University of
Central Queensland
and

- The University of
Sydney

Layers of command and control structures in incident

<i>Layers of emergency management</i>	<i>Description</i>	<i>Australia/New Zealand application</i>
Operational	First responders; front line personnel working directly on the fire or incident ground	First responders; incident ground personnel
Tactical	Local level incident management work directed at developing an incident action plan to contain or mitigate the event.	IMT
Strategic	Activity occurring above the local operational and tactical level that may involve regional and state-based activity. Concern for addressing the strategic issues across the whole-of government and community	Regional/State National (NZ)

Reporting on:

- Secondary sources analyses of human factors issues prevalent in coordination failure in secondary sources
- Organisational survey (n=206)
- Interviews (n= 37)
- End of year reporting to industry

Developing reviews of

- Training pathways and simulation scenario opportunities
- Information system HCI interfaces

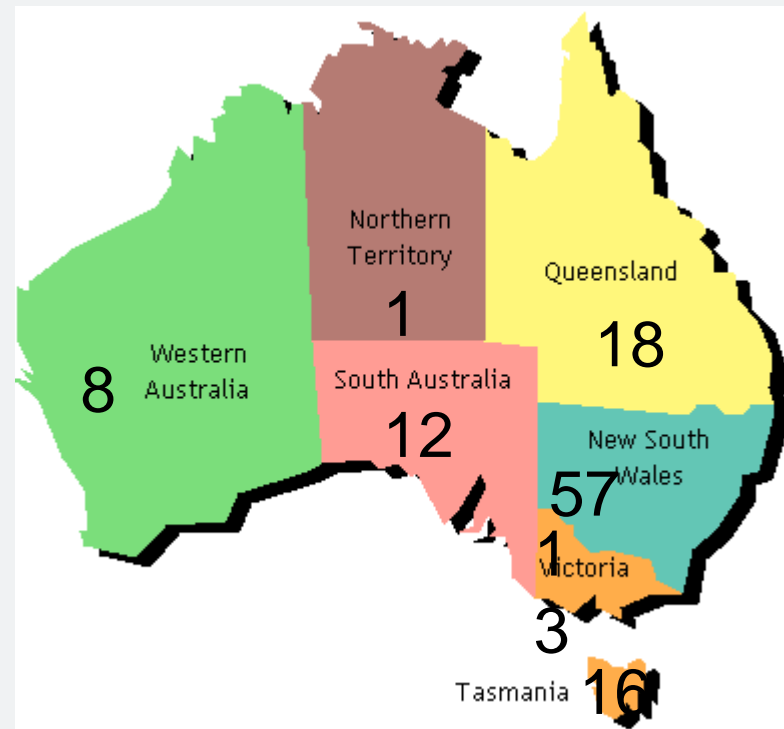


1. How is emergency management coordination above the IMT organised?
2. How has a lack of shared mental models by key personnel in emergency incident management led *to breakdowns in coordination* in previous incidents?
3. What are the implications for how information flows between the layers of emergency management and how does this influence the capacity to adjust to emerging conditions?
4. How might we best train and educate personnel in the most effective emergency management coordination above the IMT
5. What changes are needed to support effective emergency management as well as effective multi-agency coordination at regional and state levels?

DEMOGRAPHICS

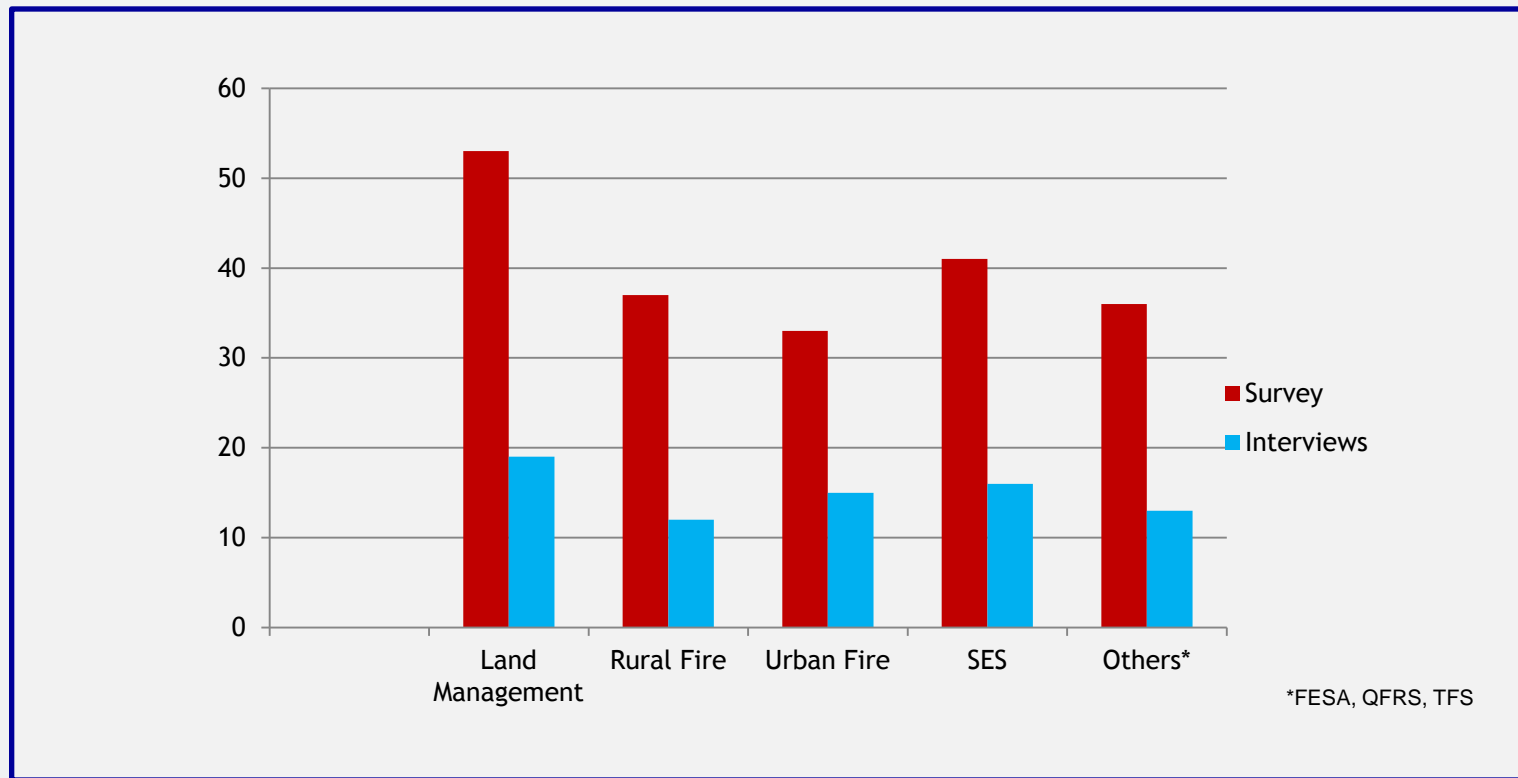
 206 responses (75 agree to interview)

 Most states covered
(plus 12 from NZ)





All types of emergency services agencies



Good coverage of emergency events

TYPES OF EVENTS

Grass fire (32)
Forest/Scrub
(73)



Hazardous materials
(14)



Structure
fires/structural
collapse (49)



Earthquake (17)




Storm (24)
Cyclone (10)





Flood
(56)



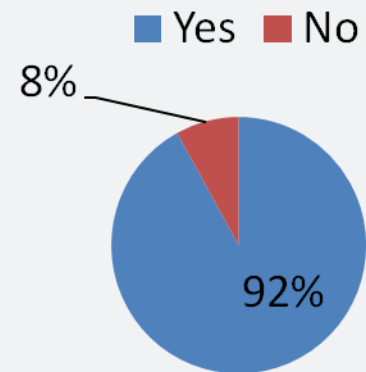
Multi-team coordination

 All but 3 people stated they were in a team

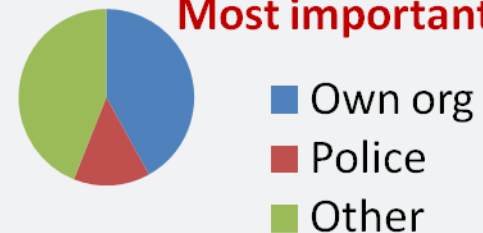
 92% of participants stated they had contact with teams other than their own

 The “most important” other team was **within their own organisation**

Between Team contact



Most important person

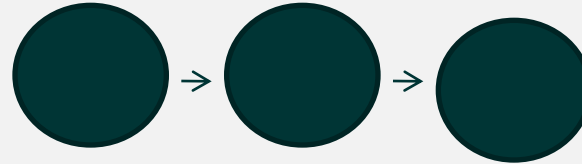


Types of inter-dependence

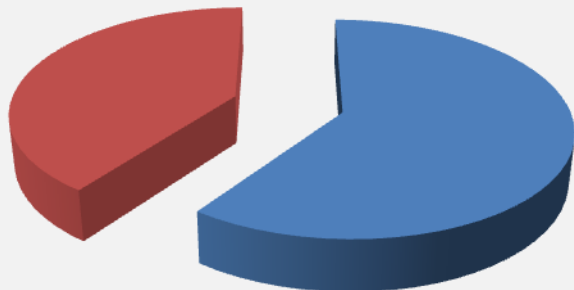
Wait on others to complete task (46%)



■ Yes
■ No

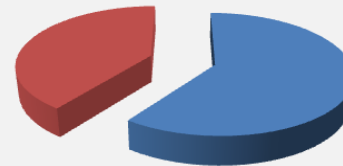


Give/get feedback to/from others as task progresses (78%)

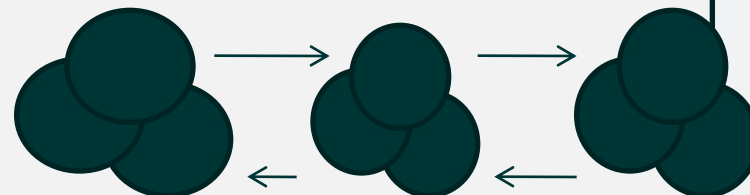
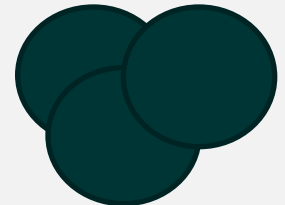


■ Yes
■ No

Work with others to complete task (60%)



■ Yes
■ No



Organisations involved in incidents

	N	%
Air attack/support	118	59
Ambulance service (incl St Johns)	147	74
Bureau of Meteorology	159	80
Communication utility	86	43
Coroner	55	28
Forest based fire service	87	44
Gas or electrical utility	130	65
Human services organisation	126	63
Land management agency	134	67
Local government	182	91
Military	66	33
Police	188	94
Port authority	32	16
Primary industries/agriculture department	96	48
Private forest company	44	22
Red Cross	80	40
Road authority	139	70
Rural fire organisation	158	79
State emergency service	155	78
Technical specialist	116	58
Transport organisation	102	51
Urban fire organisation	132	66
Water utility	100	50
No other agencies involved	0	0



Median
number of
organisations
per incident

13



An “H” on a map denotes:

- (a) A Fire Hydrant
- (b) A Hostage situation
- (c) A Helipad
- (d) (a) and (c)
- (e) (a) and (b)
- (f) All of the above
- (g) None of the above

On an incident management advice form
the term “LOL” means

- (a) Local Office Location
- (b) Lots of laughs
- (c) Little Old Lady
- (d) Liaison Officer Logistics
- (e) (a) and (d)
- (f) All of the above
- (g) None of the above

In an area of wide-spread flooding, a local emergency service gets a call from a nearby town that a tree has fallen across the road, blocking access.

The emergency service responds and sets up two cars on either side of the tree with warning lights for safety and proceeds to remove the tree.

Operational Demands

- ✓ Sheer size/scale of event - complexity
- ✓ Escalating or large immediately- no time to scale up
- ✓ Overwhelmed communications
- ✓ Degraded infrastructure/ technology/communications
- ✓ Lack of resources
- ✓ Unpredictability of event
- ✓ Competing priorities/demands



Factors that prevent job effectiveness

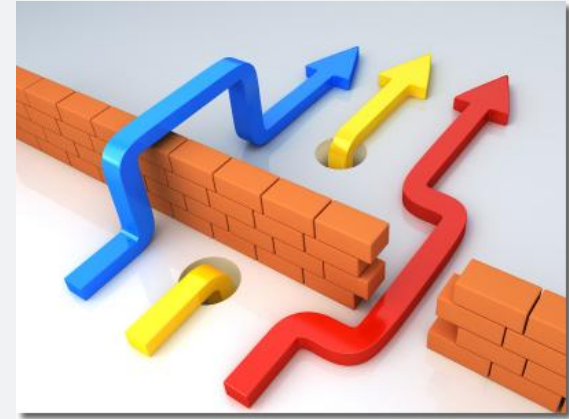
1 IN 3 REPORTED “YES”

- 1. I didn't get the information I needed (57%)***
- 2. There were competing views about what needed to be done (41%)***
- 3. The event changed in ways that were unpredictable (39%)***
- 4. Roles and responsibilities were unclear (37%)***
- 5. Other people didn't know how to do their job (37%)***

Participants who reported experiencing factors that prevented them from doing their job effectively also reported:

Less satisfaction with:

-  Briefings
-  Accuracy
-  Leadership
-  Team functioning



Greater problems with:

-  Discrepancies between own goals and others
-  Capacity to coordinate

How is emergency management coordination above the IMT organised?

Mirror of what
is below?



What new
challenges
are faced?



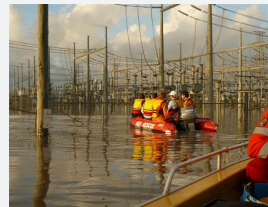
Division of labour
Systems/
processes/ in use?

How is emergency management coordination above the IMT organised?

1. Problem detection
(situation assessment)
assessment; risk



2. Task execution-
mobilising resources



3. Anticipation
planning prediction



4. Interpretation;
consequence
management

5. Evaluation/risk
/assurance

1. PROBLEM DETECTION, CHALLENGES

<i>Demands</i>	<i>Challenges for information flow between layers</i>
Establishing communication flows	<ul style="list-style-type: none">• Understanding who is where and doing what
Situation assessment	<ul style="list-style-type: none">• Multiple incidents, rapid changes, slow information flow• Consideration of stakeholder needs, needs of public• Alerting personnel to transitions in incident activity (e.g., shifts toward escalation)
Intelligence gathering	<ul style="list-style-type: none">• Impact assessment of risk• Information gaps, inconsistencies• Time lags

2. TASK EXECUTION

<i>Demands</i>	<i>Challenges for information flow between layers</i>
Managing resources	<ul style="list-style-type: none">• Insufficient resources• Fatigue management• Lack of capability and assessing existing capability
Managing competing priorities	<ul style="list-style-type: none">• Prioritisation of resource requests
Managing systems	<ul style="list-style-type: none">• Duplication of processes, manual handing of the same information by different stakeholder agencies• Other agencies not knowing the arrangements or their role responsibilities• Failure of existing incident management arrangements to identify consequences and report up

3 PLANNING AND PREDICTION

<i>Information-related demands</i>	<i>Challenges for information flow between layers</i>
Gaining and maintaining situation awareness	<ul style="list-style-type: none">• Developing predictions with incomplete /inconsistent information
Determining potential impacts	<ul style="list-style-type: none">• Developing triggers for use when anomaly detection requires transition to escalation• Locations for evacuations;• Contingency planning
Developing strategic plans	<ul style="list-style-type: none">• Inadequate resources to achieve predictions• Goal and priority conflicts

4 SENSE-MAKING INTERPRETATION

<i>Demands</i>	<i>Challenges for information flow between layers</i>
Developing a State strategy	<ul style="list-style-type: none">• Competing priorities across different agency and political interests• Interagency liaison• Conflicting levels of risk tolerance between agencies
Providing meaning for different stakeholder groups	<ul style="list-style-type: none">• Identifying warnings to the community• Translating key messages to media, to whole of government and to politicians.

5 EVALUATION, QUALITY ASSURANCE

Demands

Challenges

Monitoring safety health of incident management

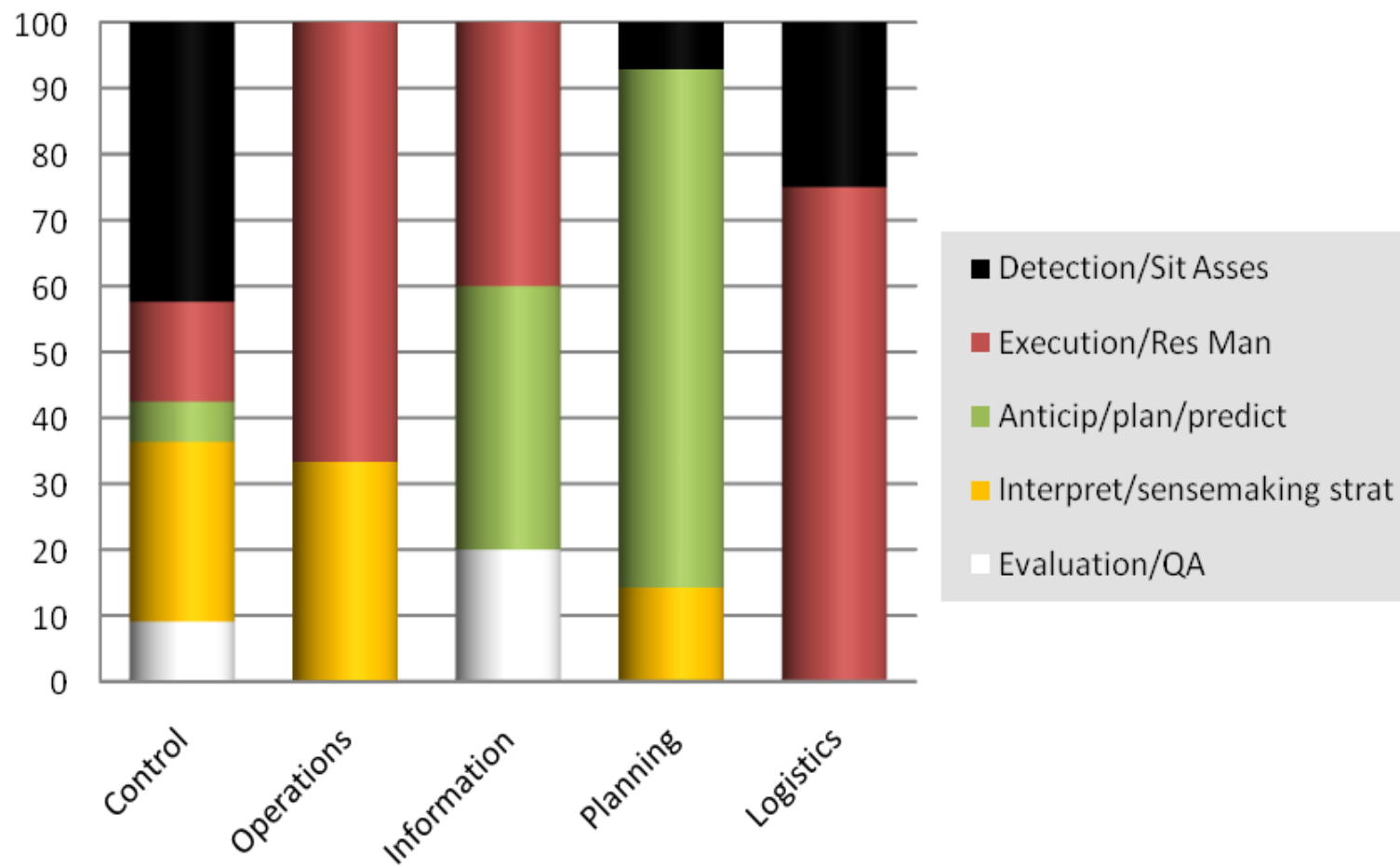
- Inaccessible information, not timely
- Challenges in knowing whether or not actions have been completed and information loops have been closed

Quality assurance

- Incomplete information, withholding of information

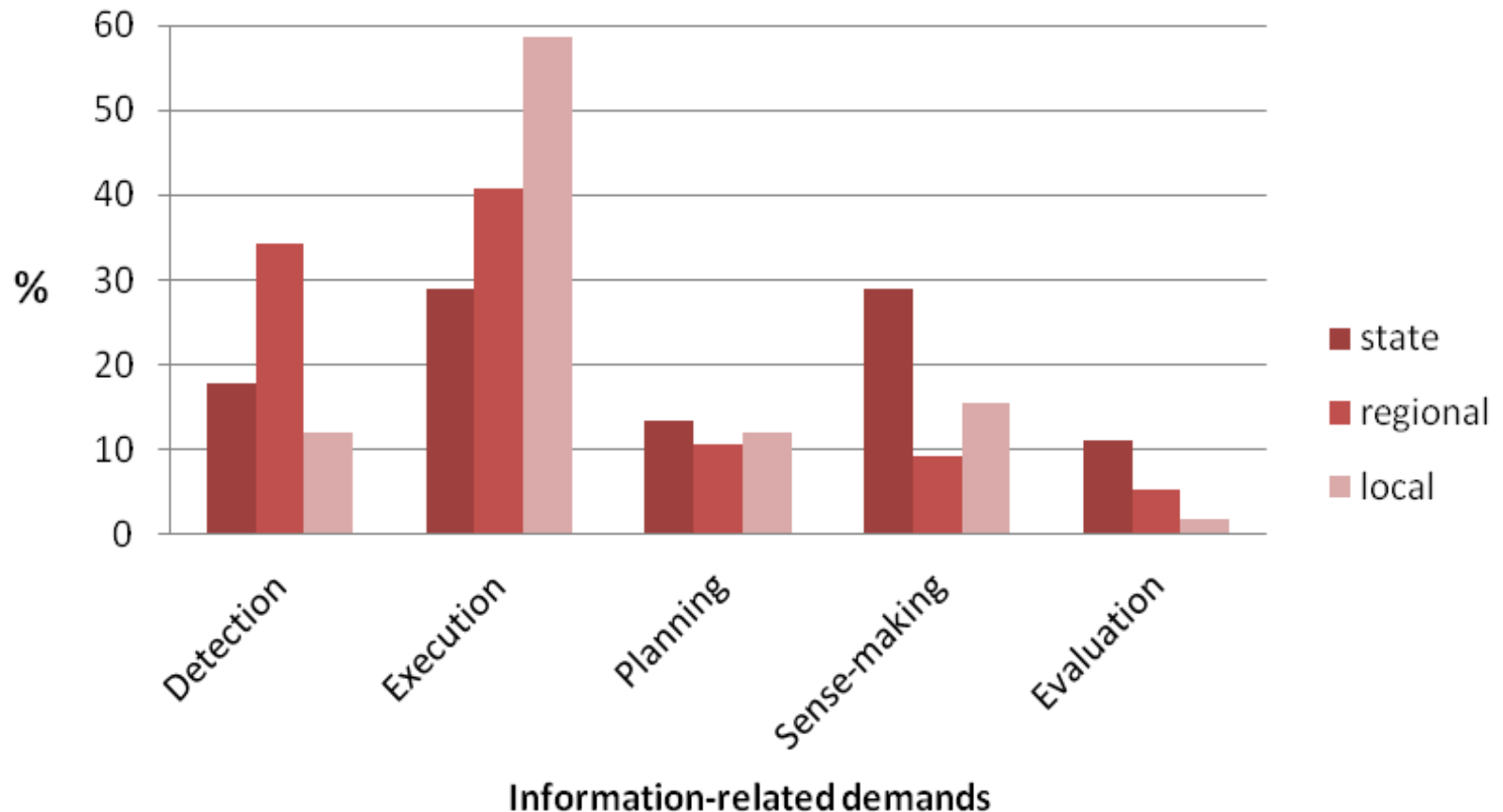
Problem solving activities regional and state

Activity by AIIMS-related role functions



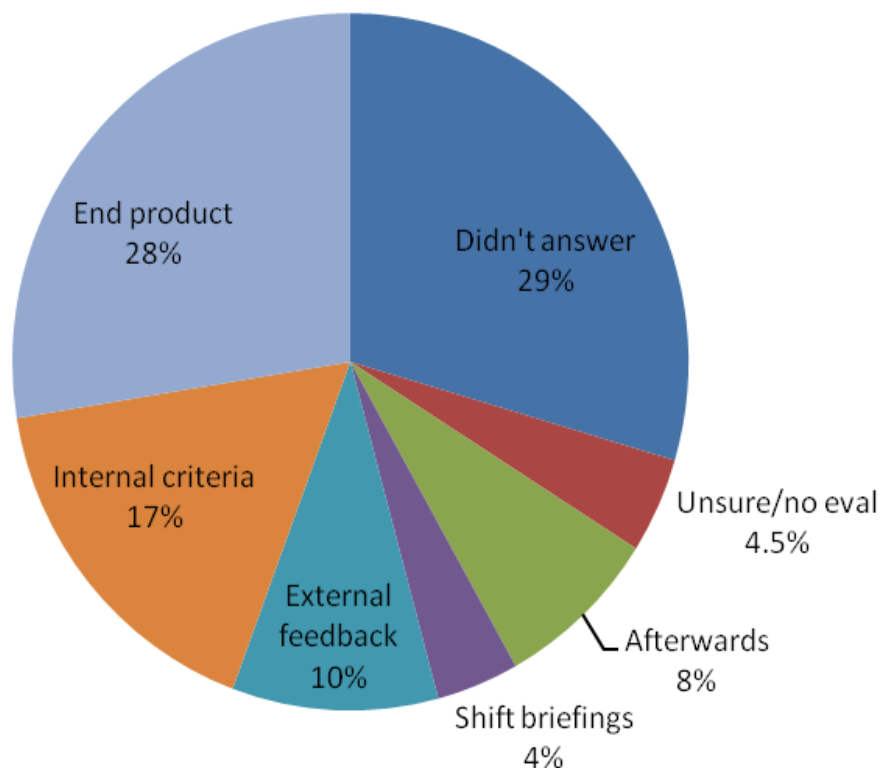
PROBLEM SOLVING ACTIVITIES

**Distribution of information-related challenges by layers in
Emergency framework: National Survey**



WHAT MECHANISMS ARE IN PLACE TO ASSESS THE EFFECTIVENESS OF THE OBJECTIVES?

Incident management evaluation mechanisms



Responses of regional and state level participants

End of year 1 review of outcomes- wiki

Multi-agency Emergency Management Coordination - Multi-agency EM Coordination - Windows Internet Explorer

http://multiagencycoordination.wetpaint.com/

Multi-agency Emergency Management Coordination - ...

Google

Page Tools

Multi-agency EM Coordination

Home | Discussions | Photos | Videos | News | Updates | Members

My Profile | Inbox | Settings

Search this site

Home

- Secondary Sources - Human Factors Issues
- Secondary Sources - Breakdowns in Coordination
- Organisational Survey
- Phase 1 Interviews
- Research Questions

Add a New Page

RECENT SITE ACTIVITY

Active Threads

- [owench](#) replied to the [Links between work](#) thread, Jan 9 2012, 1:17 AM EST
- [utas_bcrc](#) replied to the [Presentation](#) thread, Jan 8 2012, 7:49 PM EST
- [lindsew](#) created the [Links between work](#) thread, Jan 5 2012, 10:46 PM EST


Active Pages

- [utas_bcrc](#) edited the [Multi-agency Emergency Management Coordination](#) page, Jan 4 2012, 1:09 AM EST
- [utas_bcrc](#) edited the [Multi-agency Emergency Management Coordination](#) page, Jan 4 2012, 1:08 AM EST
- [utas_bcrc](#) edited the [Phase 1 Interviews](#) page, Jan 4 2012, 1:08 AM EST

TOP CONTRIBUTORS

EasyEdit Edit tags > More tools (what's this?) Report page

Multi-agency Emergency Management Coordination

**Welcome** to the end of year outcomes review for the research project "Organising for Effective Incident Management".
We are proud to present the findings from our first year of research into multi-agency coordination above the IMT level. We need your feedback to assist us with evaluation of our emerging findings and their relevance to your agency, and to find out where you would like to see the research going in 2012.

Hint: Use the navigation panel on the left or the links on this page to navigate to our research output pages.

The Review Process

Review the information presented on each of the Year 1 research output pages below. You may like to choose one, two or all areas of interest to you.
Each research output page contains:

- attached **preliminary analysis reports** and supporting material

and

- a short **narrated presentation** from the researcher summarising the research delivered

Provide feedback by completing a few simple questions on the project [feedback form](#). (Scroll down to the Project Feedback section for a feedback form hint!)


Ask the researcher responsible for the deliverable if you have any specific comments, thoughts or questions. Do this by using the discussion threads on each page.

Research Questions

Introducing the Project

Keen to see our **guiding research questions**?
You'll find them on the [Research Questions](#) page.

Watch an interview with Dr Christine Owen at the 2010 Annual BCRC conference talking about the **complexities of multi-agency emergency management coordination**....



END OF YEAR 1 REVIEW OF OUTCOMES- WIKI

Secondary Sources - Breakdowns in Coordination - Multi-agency EM Coordination - Windows Internet Explorer

http://multiagencycoordination.wetpaint.com/page/Secondary+Sources+--+Breakdowns+in+Coordination

Multi-agency EM Coordination

Home | Discussions | Photos | Videos | News | Updates | Members

My Profile | Inbox | Settings

Search this site

Home


- Secondary Sources - Human Factors Issues
- Secondary Sources - Breakdowns in Coordination
- Organisational Survey
- Phase 1 Interviews
- Research Questions


Add a New Page

EasyEdit Edit tags > More tools (what's this?) Report page


Secondary Sources - Breakdowns in Coordination

Researcher: Dr Chris Bearman

 Dr Chris Bearman is currently a Senior Research Fellow at the Appleton Institute of Central Queensland University and a Program Director at the University of South Australia. Dr Bearman's research is broadly in the field of applied cognitive psychology and human factors. This research involves conducting industry-focused studies in laboratory and field settings with the aim of creating results that have both a strong theoretical underpinning and a robust application to industry. This involves working closely with industry partners and government organisations around the world. Dr Bearman is also the Program Director for the Masters of Human Factors and the Masters of Occupational Health and Safety and supervises numerous PhD, Masters and Honours students.



Watch the presentation




More info

Can't see the embedded video?
Try this link:
<http://youtu.be/xx38qUR8y6k>

Review the research papers

Scroll down to the **attachments** section at the bottom of the page to access **additional research papers**



1. Importance of recognising ground has shifted- more exposed; greater expectations
2. Old ways of doing things need to be challenged
 - “my way or the highway”;
 - over-reliance on reacting – will never have sufficient information
3. Need to change the way we do things around here to get past “*just suck it up and get on with it* type attitude”
4. Changes result in huge drain on capability (e.g., data capture)
5. Never sufficient resources- always making do