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RESEARCH ADVISORY FORUM

HOBART 23-24 MAY 2012

Christine Owen

Project Leader Organising for Effective Incident Management

BCRC, University of Tasmania

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UTAS

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CONFERENCE 2011 KEYNOTE

Commissioner Lee Johnson

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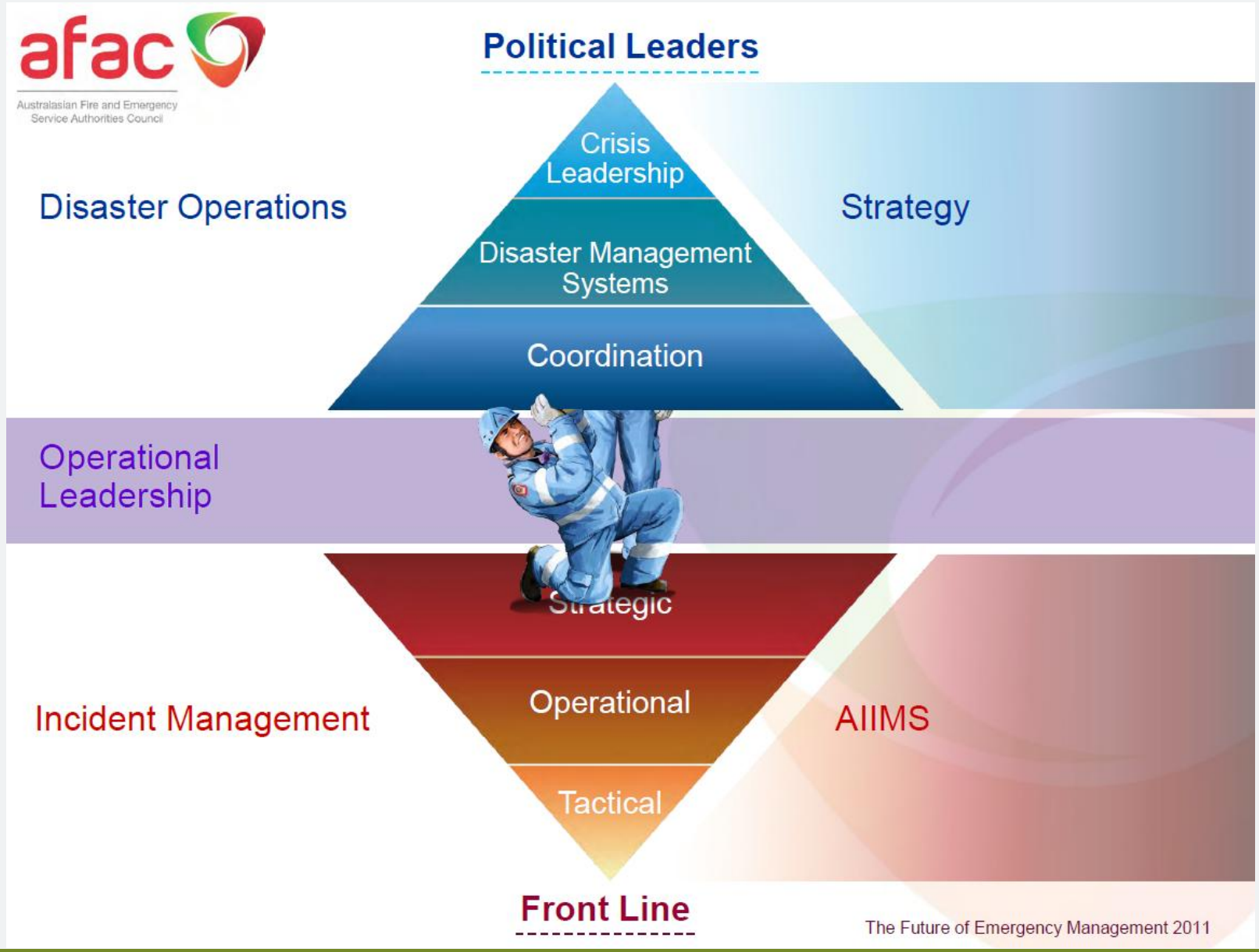

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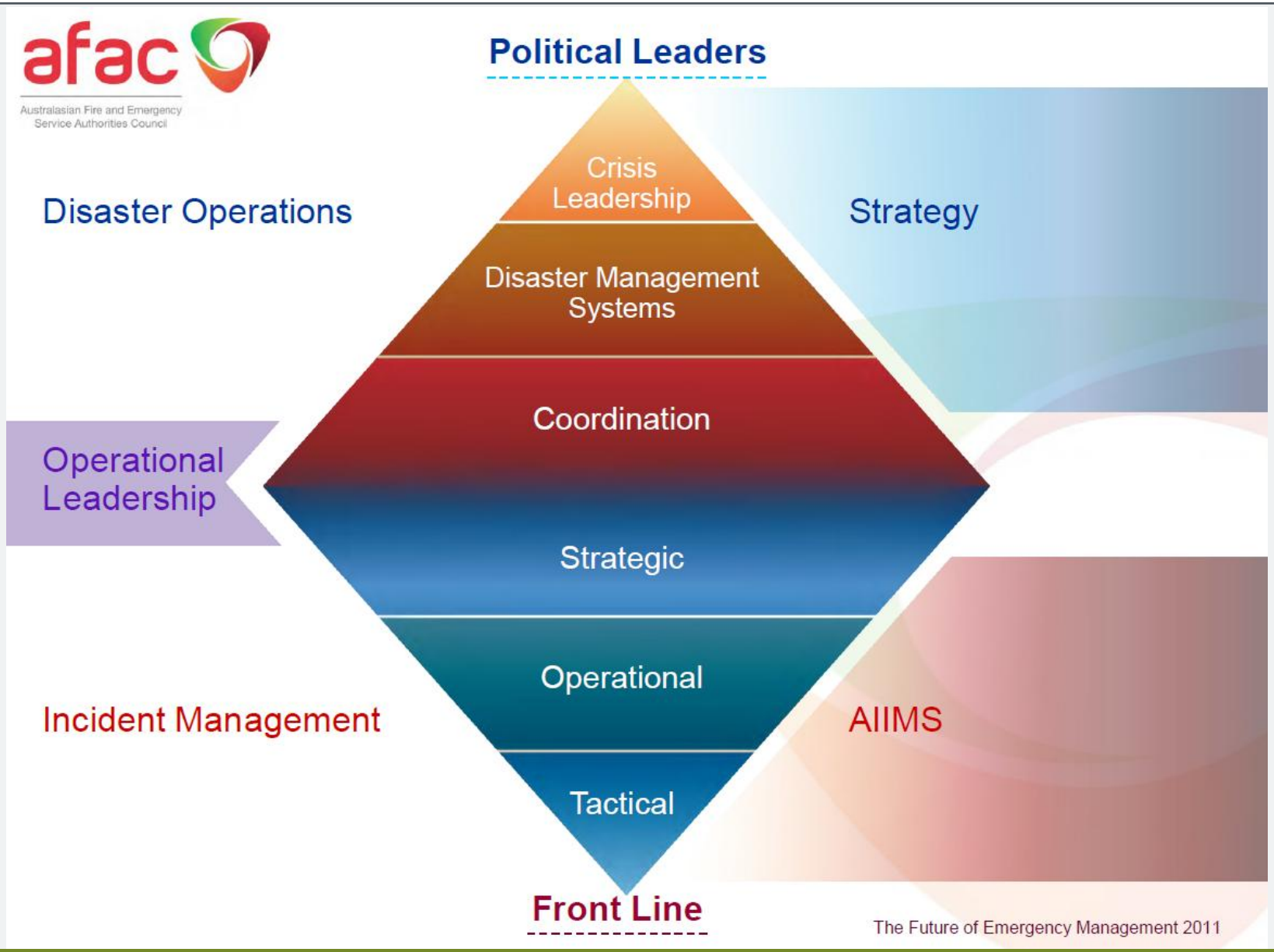
afac
Australasian Fire and Emergency Service Authorities Council



The Future of Emergency Management 2011

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RESEARCH TEAM

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2012

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A collaboration between

- The University of Tasmania
- The University of Central Queensland and
- The University of Sydney

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Layers of command and control structures in incident

Layers of emergency management	***Description***	***Australia/New Zealand application***
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)

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2011-2012 RESEARCH METHODS AND DELIVERABLES

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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

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RESEARCH QUESTIONS

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?

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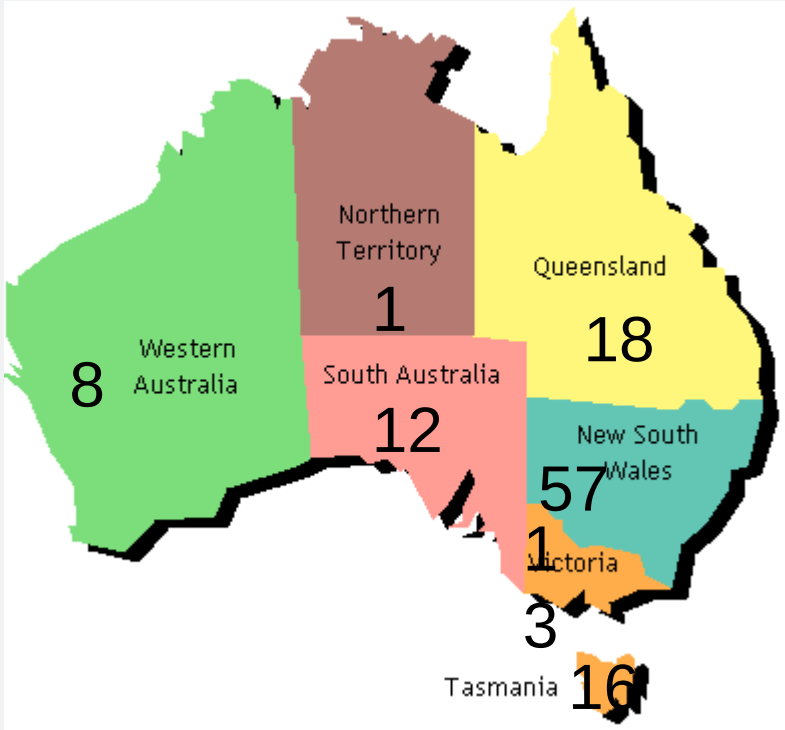
DEMOGRAPHICS

- 206 responses (75 agree to interview)

- Most states covered (plus 12 from NZ)



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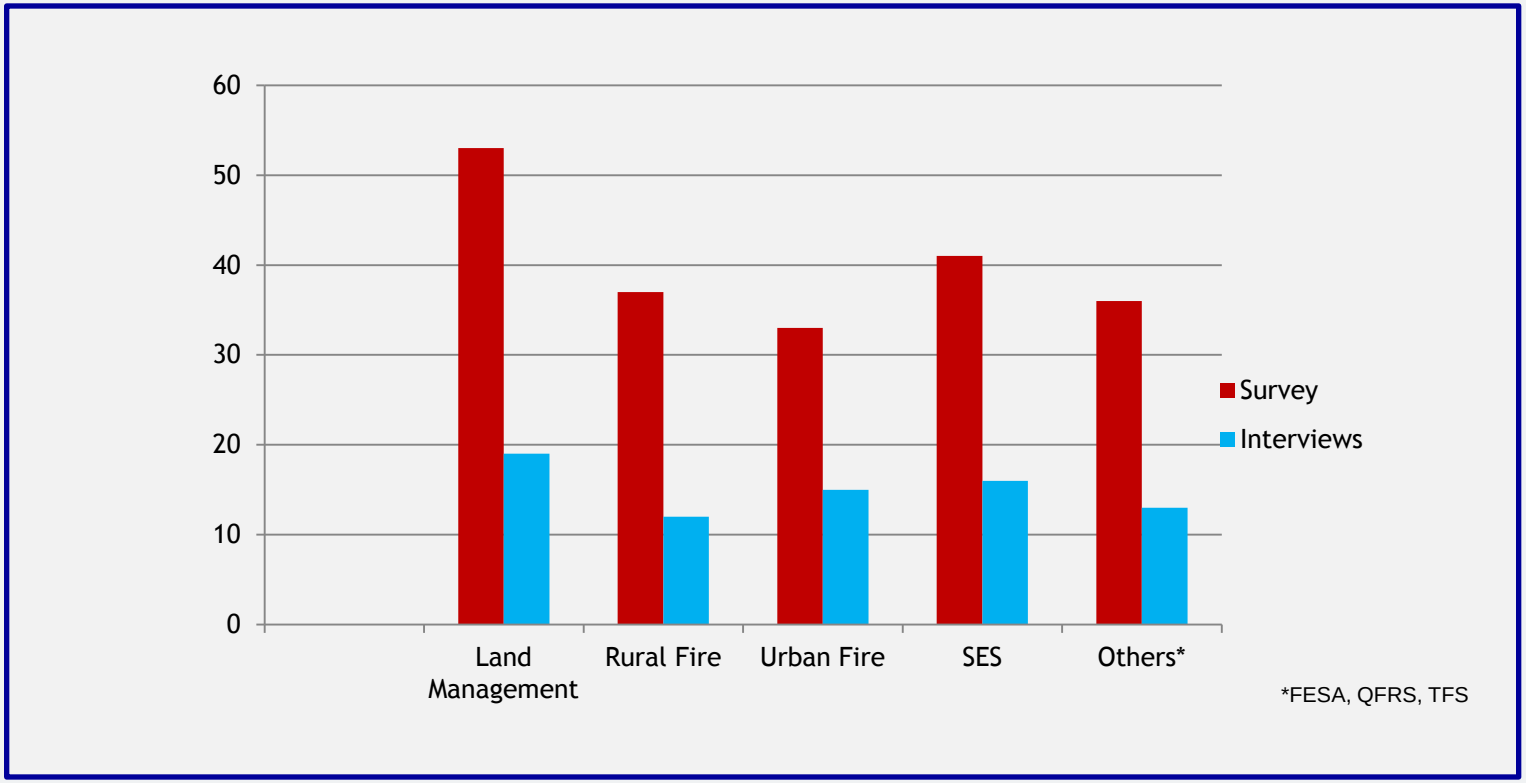
DEMOGRAPHICS

- All types of emergency services agencies



- Good coverage of emergency events

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TYPES OF EVENTS

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Grass fire (32)
Forest/Scrub
(73)

Hazardous materials
(14)

Structure
fires/structural
collapse (49)

Earthquake (17)

Storm (24)
Cyclone (10)

Flood
(56)

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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**

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Types of inter-dependence

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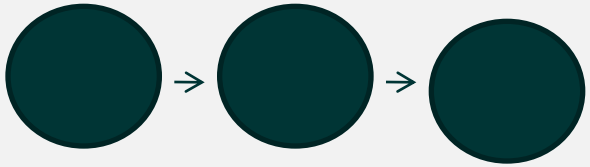
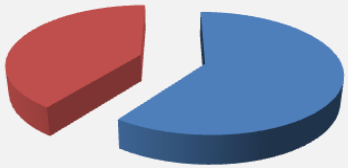
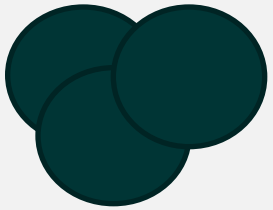
Wait on others to complete task (46%)

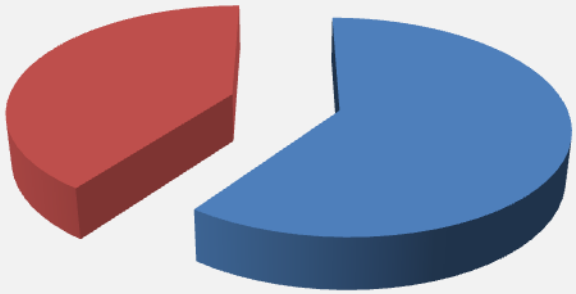


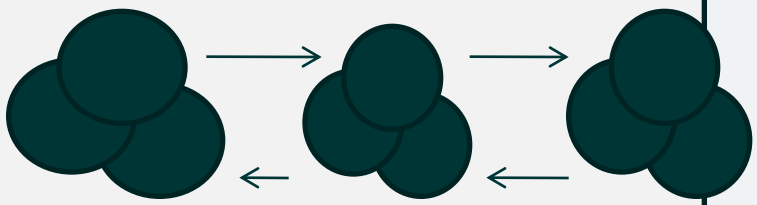
Work with others to complete task (60%)





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





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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 fore 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

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MULTI-AGENCY COORDINATION: A QUICK QUIZ

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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

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A QUICK QUIZ

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

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A VIGNETTE

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.

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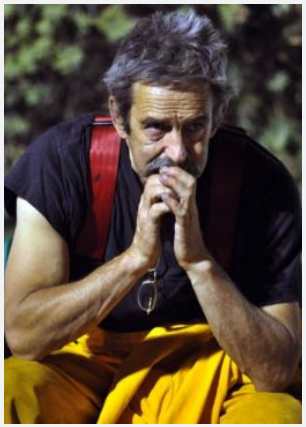
Operational Demands

- 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



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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%)*

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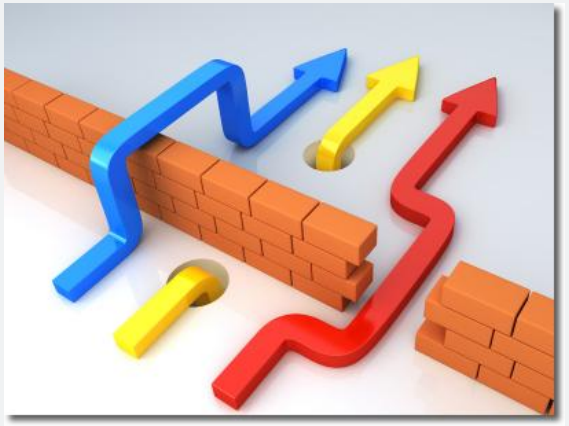
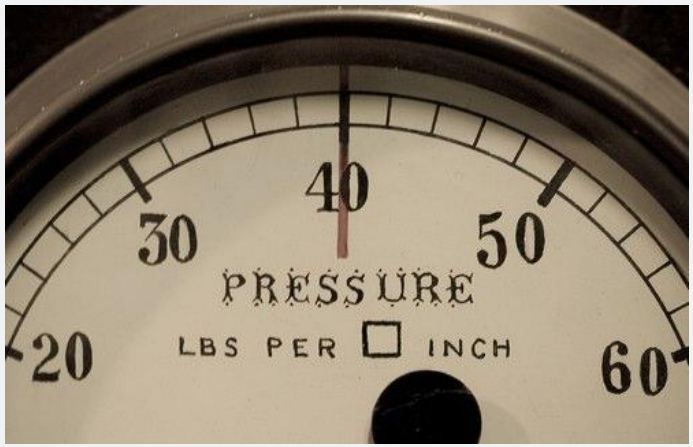
Participants who reported experiencing factors that prevented them from doing their job effectively also reported:

Less satisfaction with:

- Briefings
- Accuracy
- Leadership
- Team functioning





Greater problems with:

- Discrepancies between own goals and others
- Capacity to coordinate

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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?

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How is emergency management coordination above the IMT organised?

1. Problem detection (situation assessment) assessment; risk

2. Task execution- mobilising resources

4. Interpretation; consequence management

3. Anticipation planning prediction

5. Evaluation/risk /assurance

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1. PROBLEM DETECTION, CHALLENGES

Demands	***Challenges for information flow between layers***
Establishing communication flows	• Understanding who is where and doing what
Situation assessment	• 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	• Impact assessment of risk • Information gaps, inconsistencies • Time lags

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2. TASK EXECUTION

Demands	***Challenges for information flow between layers***
Managing resources	• Insufficient resources • Fatigue management • Lack of capability and assessing existing capability
Managing competing priorities	• Prioritisation of resource requests
Managing systems	• 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

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3 PLANNING AND PREDICTION

Information-related demands	***Challenges for information flow between layers***
Gaining and maintaining situation awareness	• Developing predictions with incomplete /inconsistent information
Determining potential impacts	• Developing triggers for use when anomaly detection requires transition to escalation • Locations for evacuations; • Contingency planning
Developing strategic plans	• Inadequate resources to achieve predictions • Goal and priority conflicts

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4 SENSE-MAKING INTERPRETATION

Demands	***Challenges for information flow between layers***
Developing a State strategy	• Competing priorities across different agency and political interests • Interagency liaison • Conflicting levels of risk tolerance between agencies
Providing meaning for different stakeholder groups	• Identifying warnings to the community • Translating key messages to media, to whole of government and to politicians.

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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

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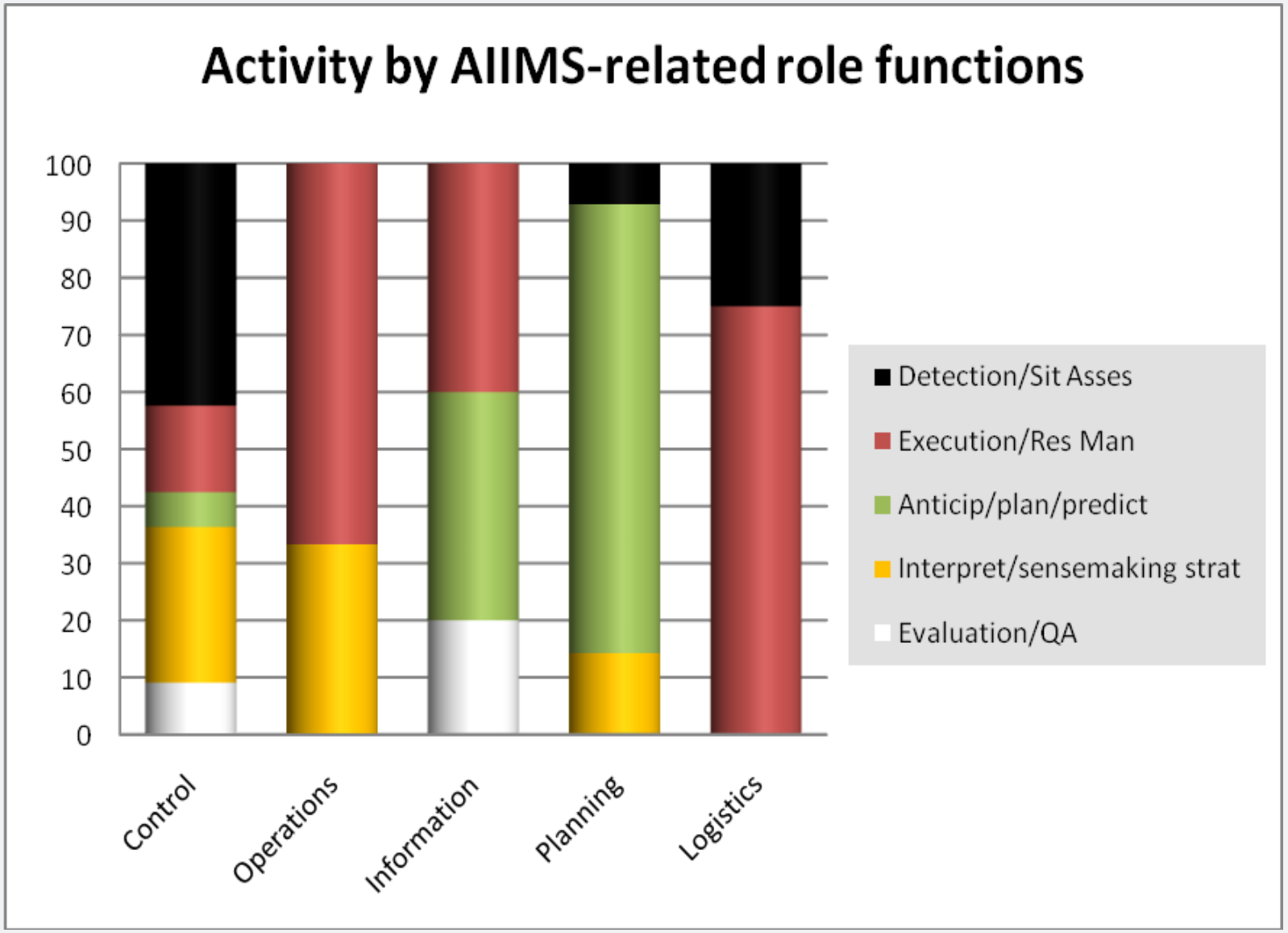
Problem solving activities regional and state



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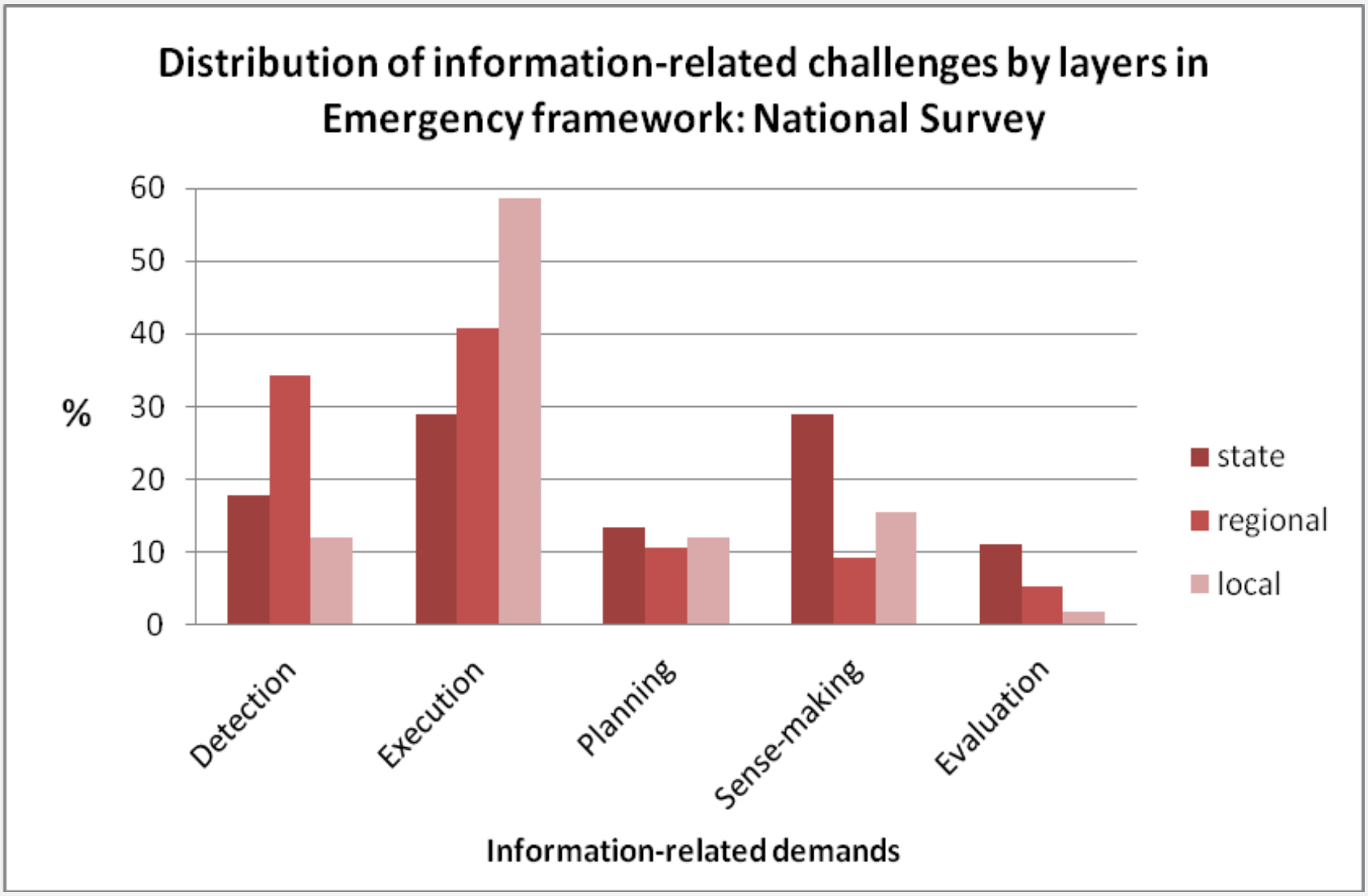
PROBLEM SOLVING ACTIVITIES



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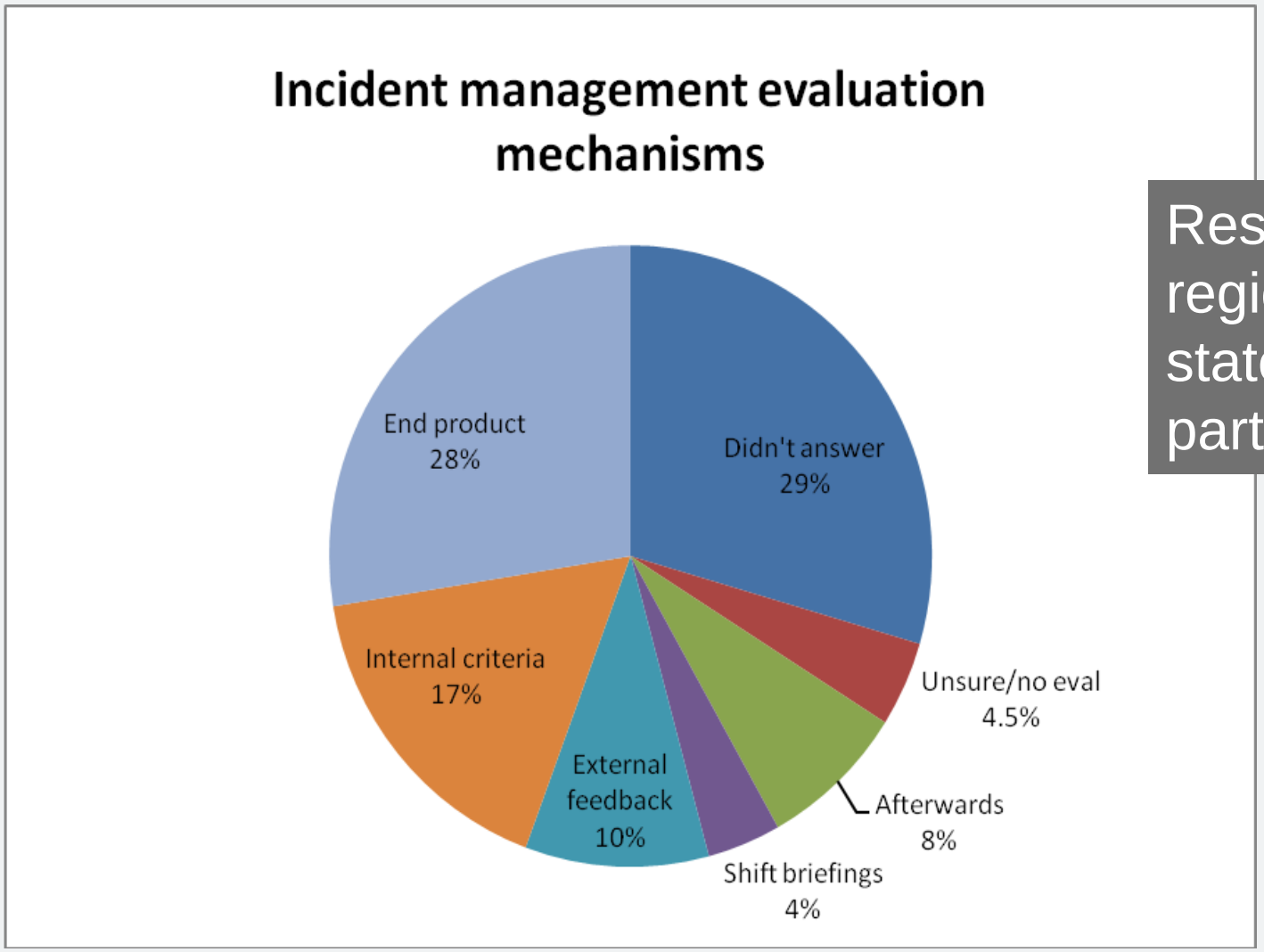
WHAT MECHANISMS ARE IN PLACE TO ASSESS THE EFFECTIVENESS OF THE OBJECTIVES?



Responses of regional and state level participants

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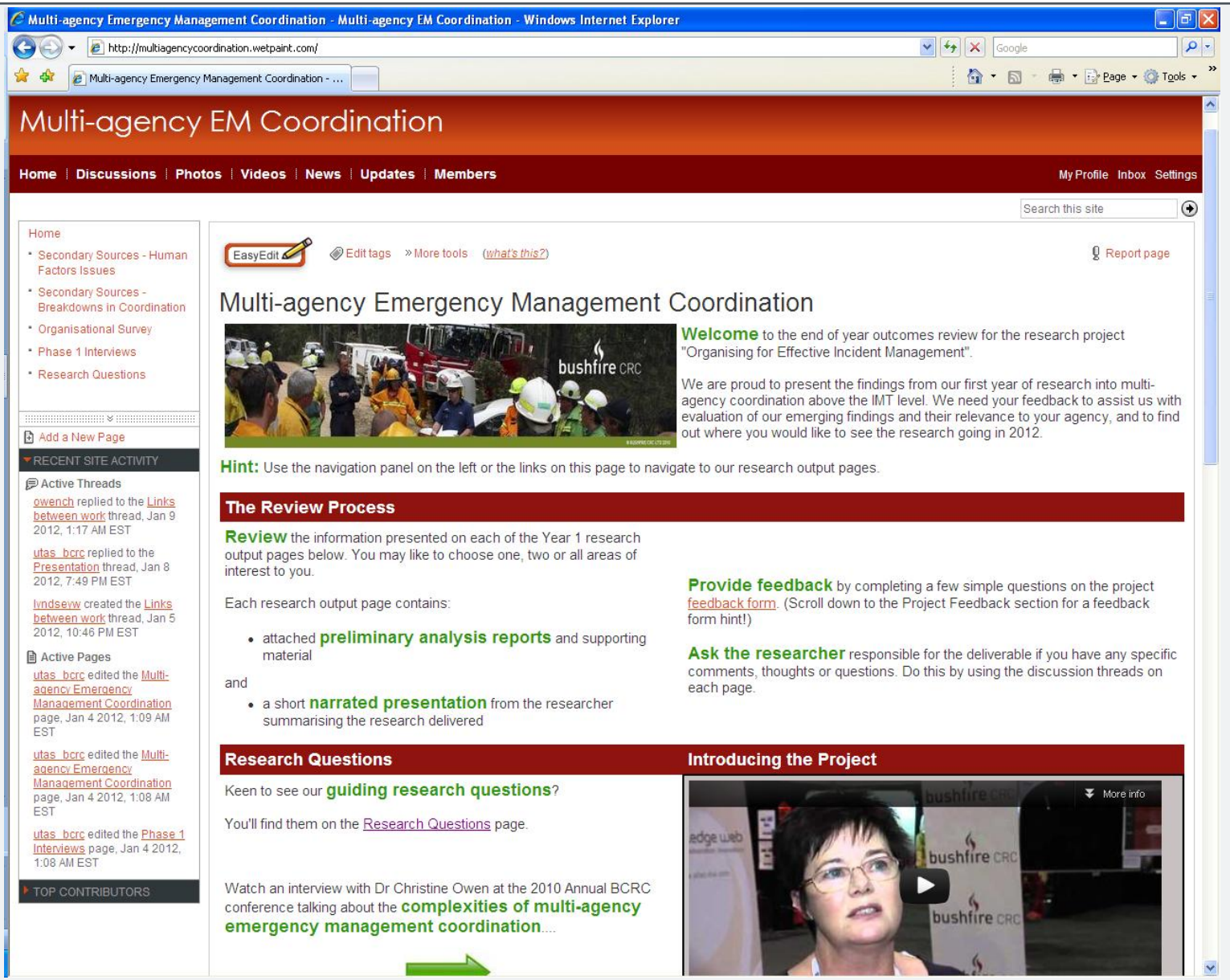
End of year 1 review of outcomes- wiki



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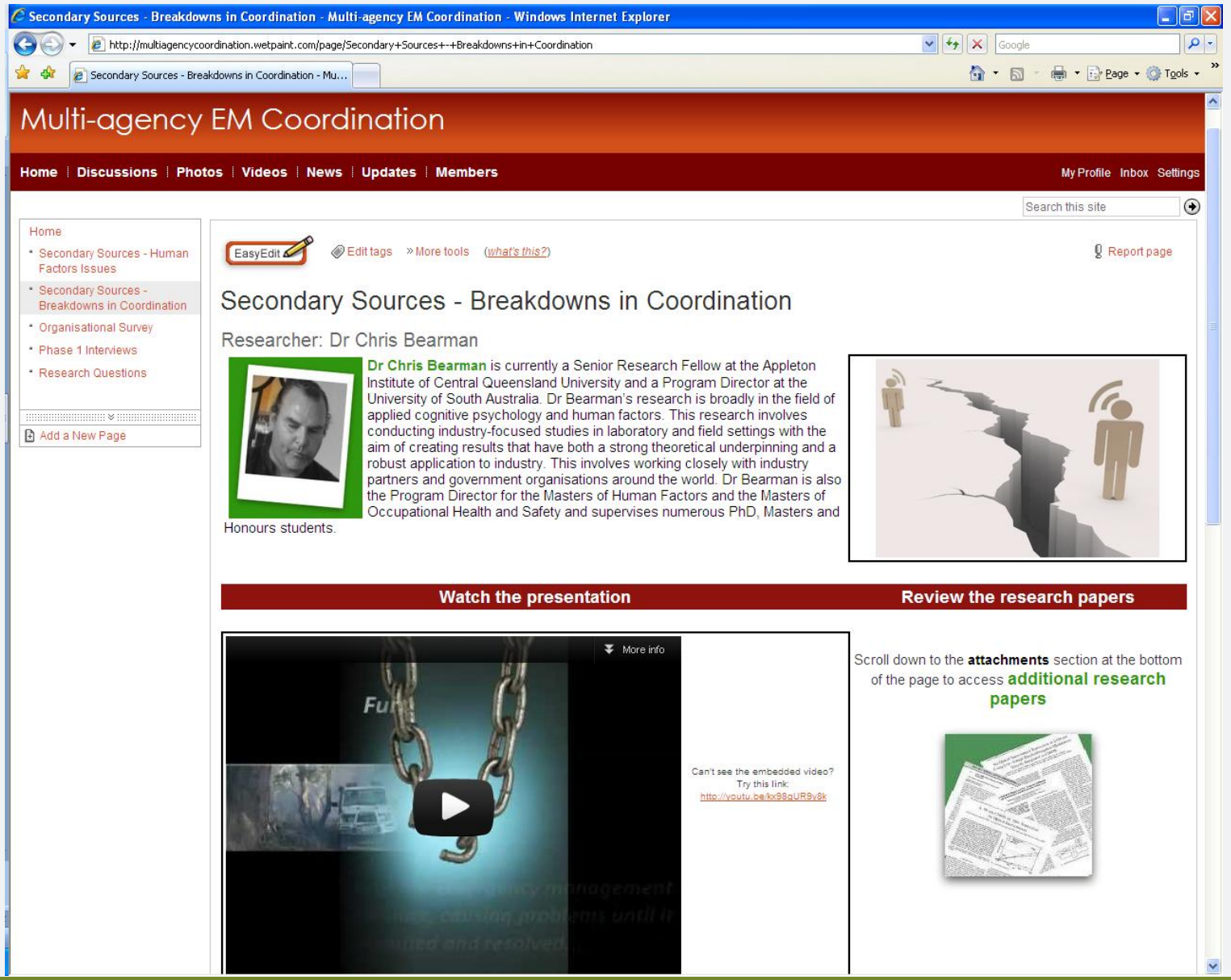
END OF YEAR 1 REVIEW OF OUTCOMES- WIKI



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FEEDBACK FROM STAKEHOLDERS - WIKI

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

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