



bushfire&natural
HAZARDSCRC

DECISION MAKING, TEAM MONITORING & ORGANIZATIONAL LEARNING

Dr Chris Bearman¹, Dr Benjamin Brooks², Dr Chris Owen²

1 Central Queensland University - Appleton Institute (Adelaide),

2 University of Tasmania

© BUSHFIRE AND NATURAL HAZARDS CRC 2015



An Australian Government Initiative





- Dr Chris Bearman – Central Queensland Uni
- Dr Benjamin Brooks – University of Tasmania
- Dr Christine Owen – University of Tasmania
- Heather Stuart – NSW State Emergency Service
- Mark Thomason – SA Country Fire Service
- Sandy Whight – Tasmanian Fire Service



- More Complexity
- Longer Duration
- More Dynamic
- More Agencies
- Increasing Technology
- Increasing Scrutiny



bushfire&natural
HAZARDSCRC



If we are going to ask people to operate in this environment we need to give them skills and tools to do so effectively.

We need to develop the capability of our people to function in these increasingly complex environments



RESEARCH STREAMS

- Stream 1 – Cognitive Decision Strategies
- Stream 2 – Team Monitoring Tools
- Stream 3 – Organizational Learning



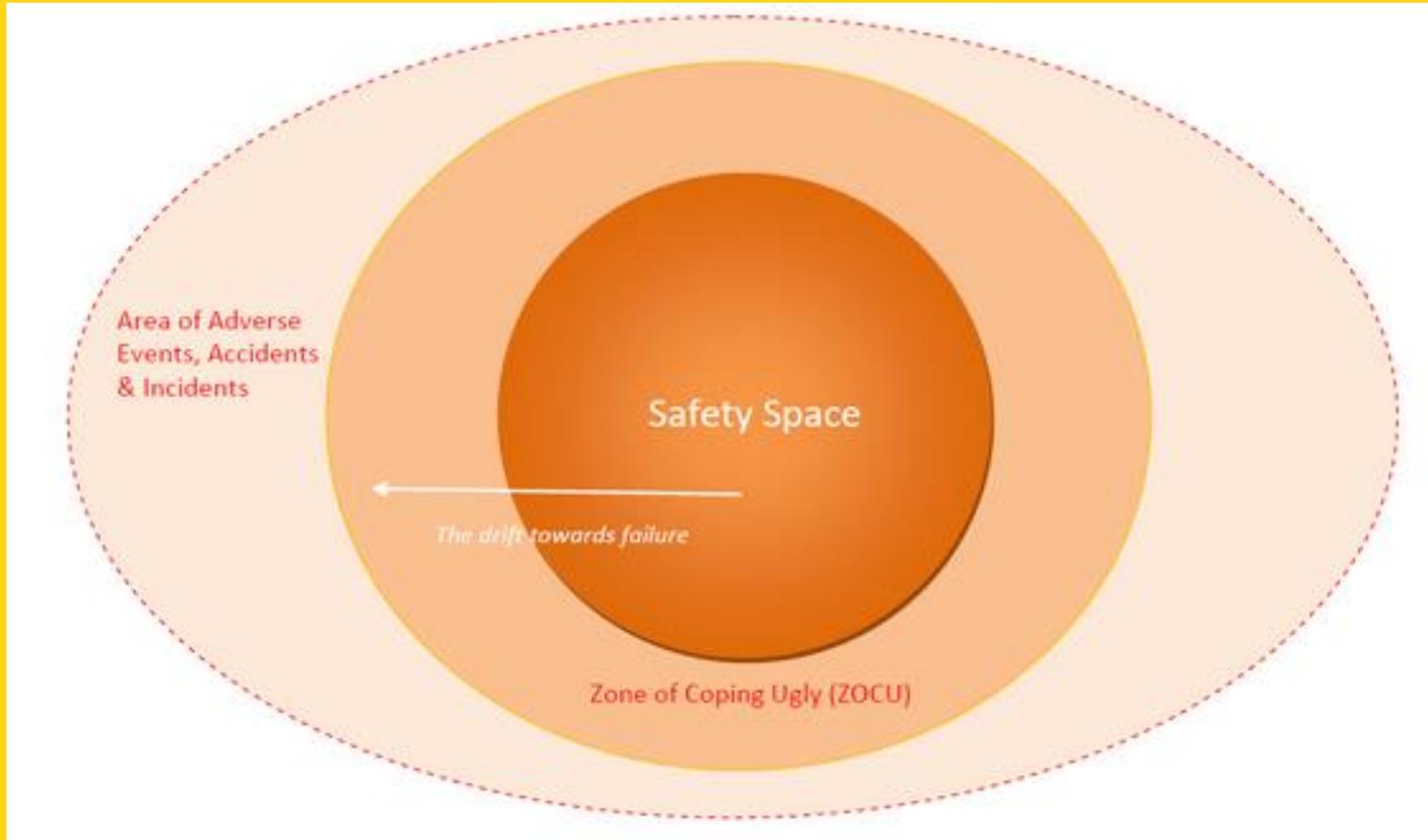
bushfire&natural
HAZARDSCRC

TEAM PERFORMANCE MONITORING



bushfire&natural
HAZARDSCRC





Brooks (2014) in Owen, C. (ed) Human Factors Challenges in Emergency Management



APPROACHES TO TEAM MONITORING

- Team Outputs
- Information Flow
- Linguistic Elements
- Communication, Coordination, Cooperation



TEAM MONITORING TOOLS

- Emergency Management Breakdown Aide Memoire (EMBAM)
- Team Behavioural Markers (TBM)



EMBAM - IDENTIFICATION

- **Networks:** Have you spoken about plans and problems with key personnel recently?
- **Missing Information:** How confident are you that you have the relevant information about the incident?
- **Conflicting expectations:** Is the information consistent with what you would expect to be happening in that situation?
- **Consistent Information:** Is the information you have consistent across all sources?
- **Intuition:** Does your gut tell you something isn't right about the situation?
- **Familiarity:** Is someone familiar to you not behaving in a manner you have come to expect of them?
- **Feedback:** Have you received confirmation that the tasks you delegated have been completed?



EMBAM - RESOLUTION

- **Delegate:** Find someone who is close to the breakdown or has the most appropriate skills and have them resolve the issue. Remember to receive confirmation.
- **Resource:** Breakdowns can be caused by missing resources. Find out what is missing, or what will assist the other teams, and get it to them.
- **Mentor:** A subtle form of resolution, mentoring allows you to suggest alternatives, opinions and strategies without stepping on people's toes.
- **Assert:** If you've tried more subtle strategies and they haven't worked you can use your authority to resolve the problem.
- **Replace:** If breakdowns are occurring because of disruptive personalities in the management team, or even things like fatigue, you can stand them down or give them alternate duties.



TBM - COORDINATION

Coordination
<i>Knowledge requirements</i>
Do team members have a common understanding of the mission, task, team, and resources
Do team members share a clear and common purpose?
<i>Mutual performance monitoring and back-up behaviours</i>
Are team members recognizing and correcting any mistakes made by others?
Are team members providing and requesting assistance from other team members?
<i>Adaptability</i>
Are team members compensating for others?
Are team members adjusting to meet situation demands?



bushfire&natural
HAZARDSCRC

COGNITIVE DECISION-TOOLS



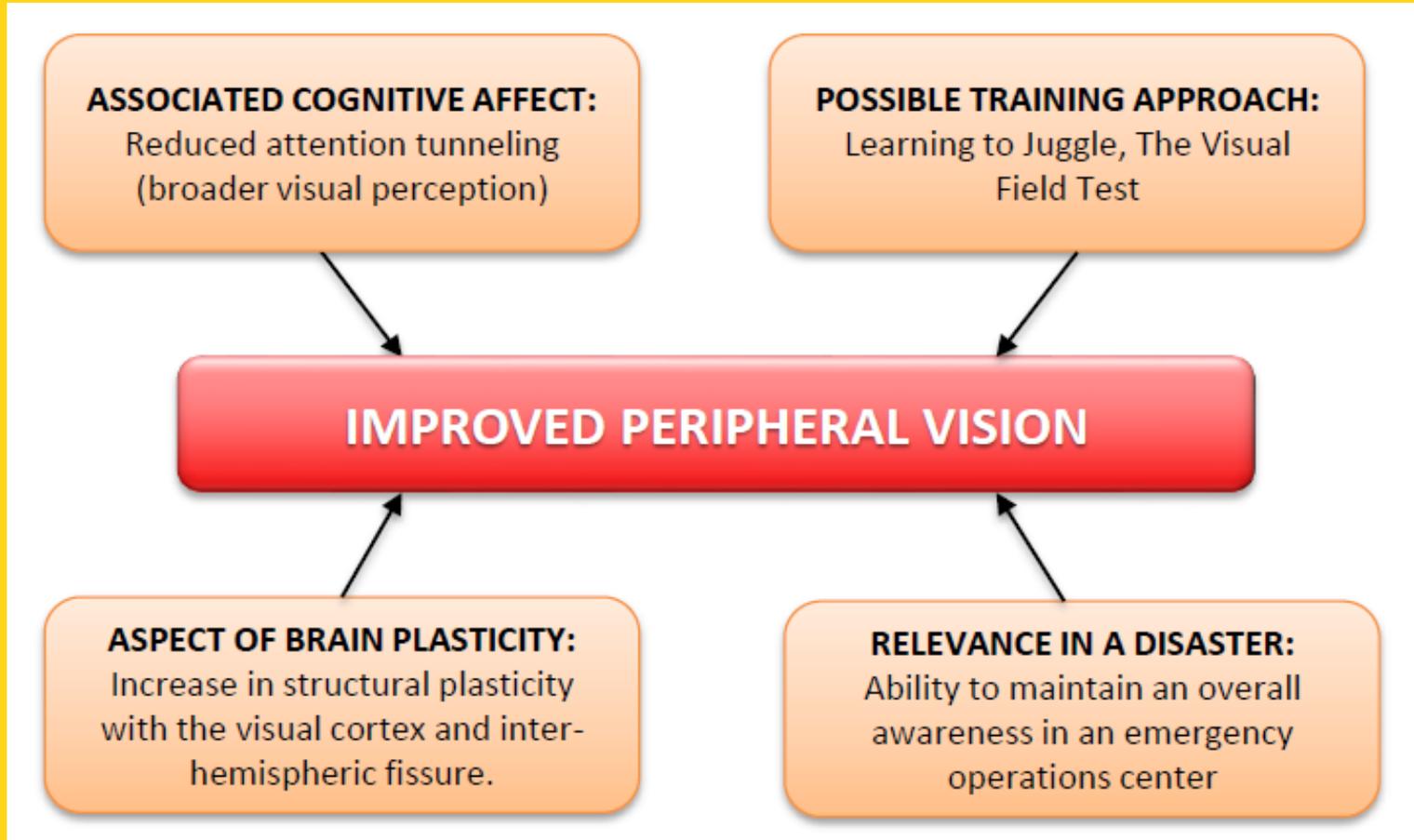
- Adjusting decision style to context (intuitive, classical, creative)
- Not just deciding, but making sense.
- Management of the constraints (time and resources).
- Clever decision recording systems.
- Monitoring for evidence of bias or decision errors.
- Psychologically safe decision environments in resilient organisations.
- Build expertise in all its complexity.
- Fitting the task to the human, making humans fitter (brain plasticity)

BEST PRACTICE IN DECISION-MAKING



CURRENT WORK

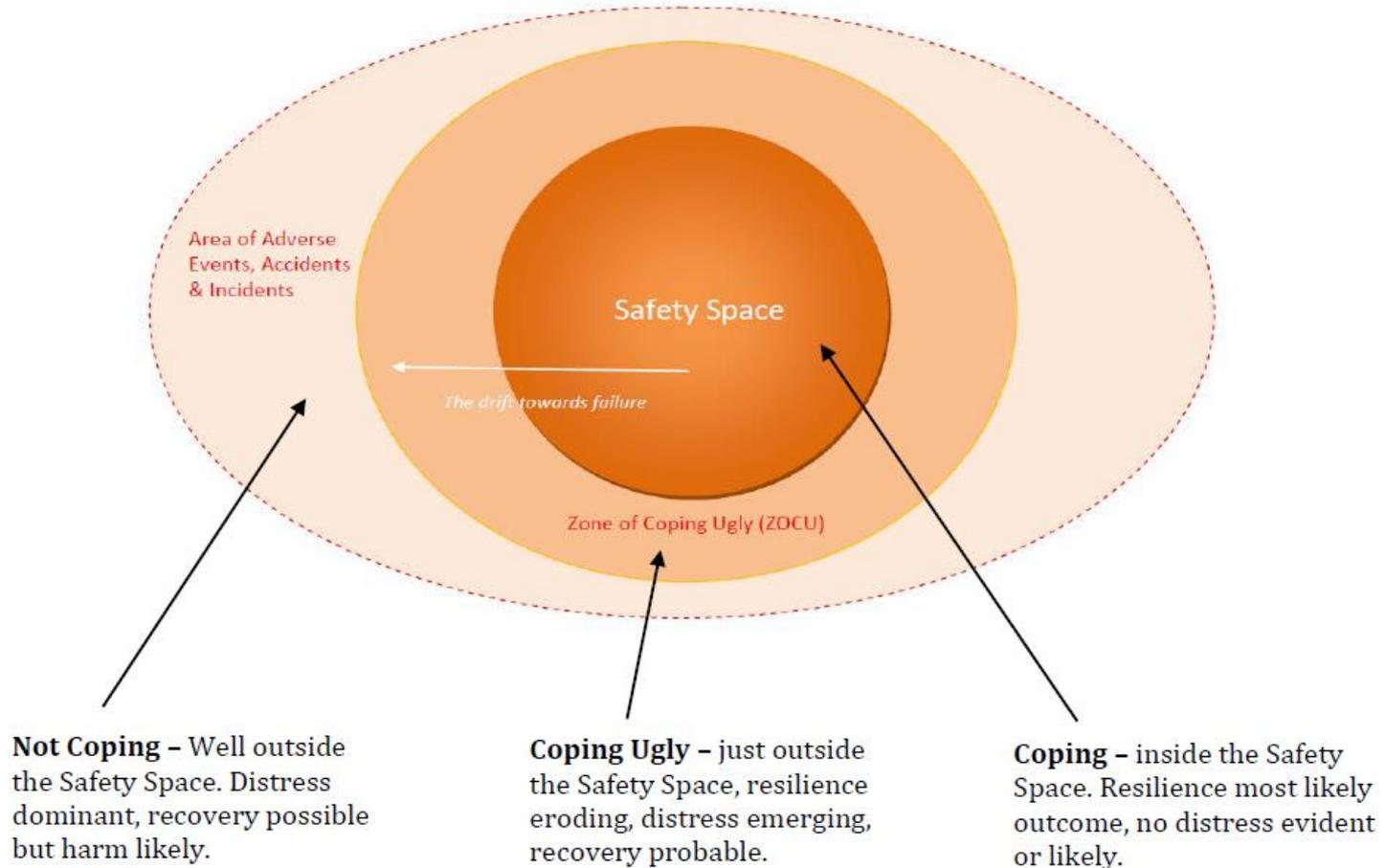
- Identifying the precise nature of the gaps between formal and informal decision-making.
- Studying decision-making of USAR commander during Fukushima deployment.
- Preparation for exercise-based evaluation of components of REAG Org Resilience HealthCheck
- Designing other interventions for next round of research (training, checklists, aides' memoir)
- Exploring the possibilities in brain training approaches.



FITTER, EXPERT, DECISION-MAKERS



RULE OF THUMB FOR OUT OF SCALE EVENTS



TRAINING-BASED INTERVENTION

Organisational resilience

Attributes and Indicators



RESILIENCE IN DECISION-MAKING AND SA



3 RESEARCH APPROACHES

- **Decision-making & Brain Plasticity Training.** We will provide a 1-2 day training course with tools to trial and track participants over a 6 month period.
- Integration of cognitive tools into EM organisation's **annual exercises.**
- **Special Events:** simulations/staff rides, reviews of previous events to continue to improve our store of knowledge and understanding of DM.



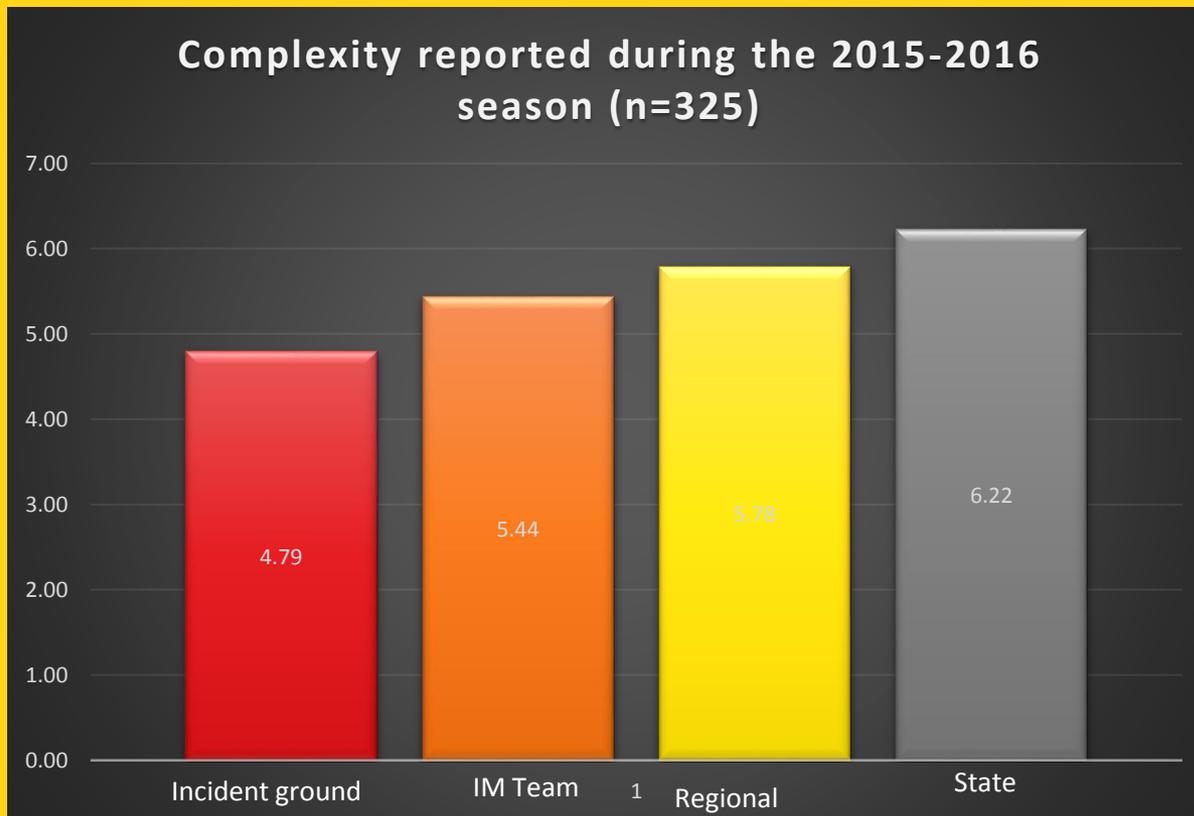
bushfire&natural
HAZARDSCRC

FACILITATING ORGANISATIONAL LEARNING



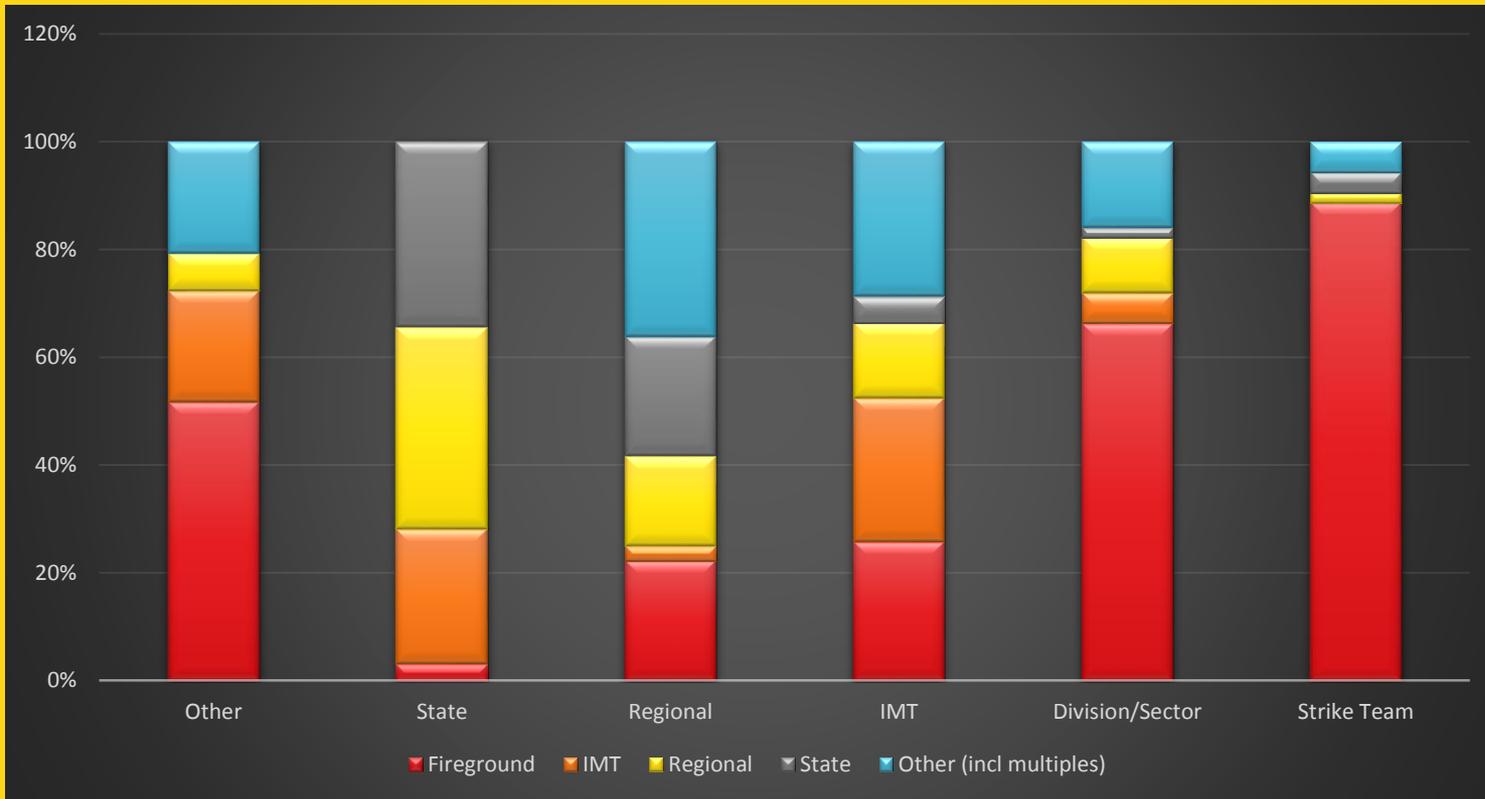
Analysing tools with a critical focus on work practice

FACILITATING ORGANISATIONAL LEARNING



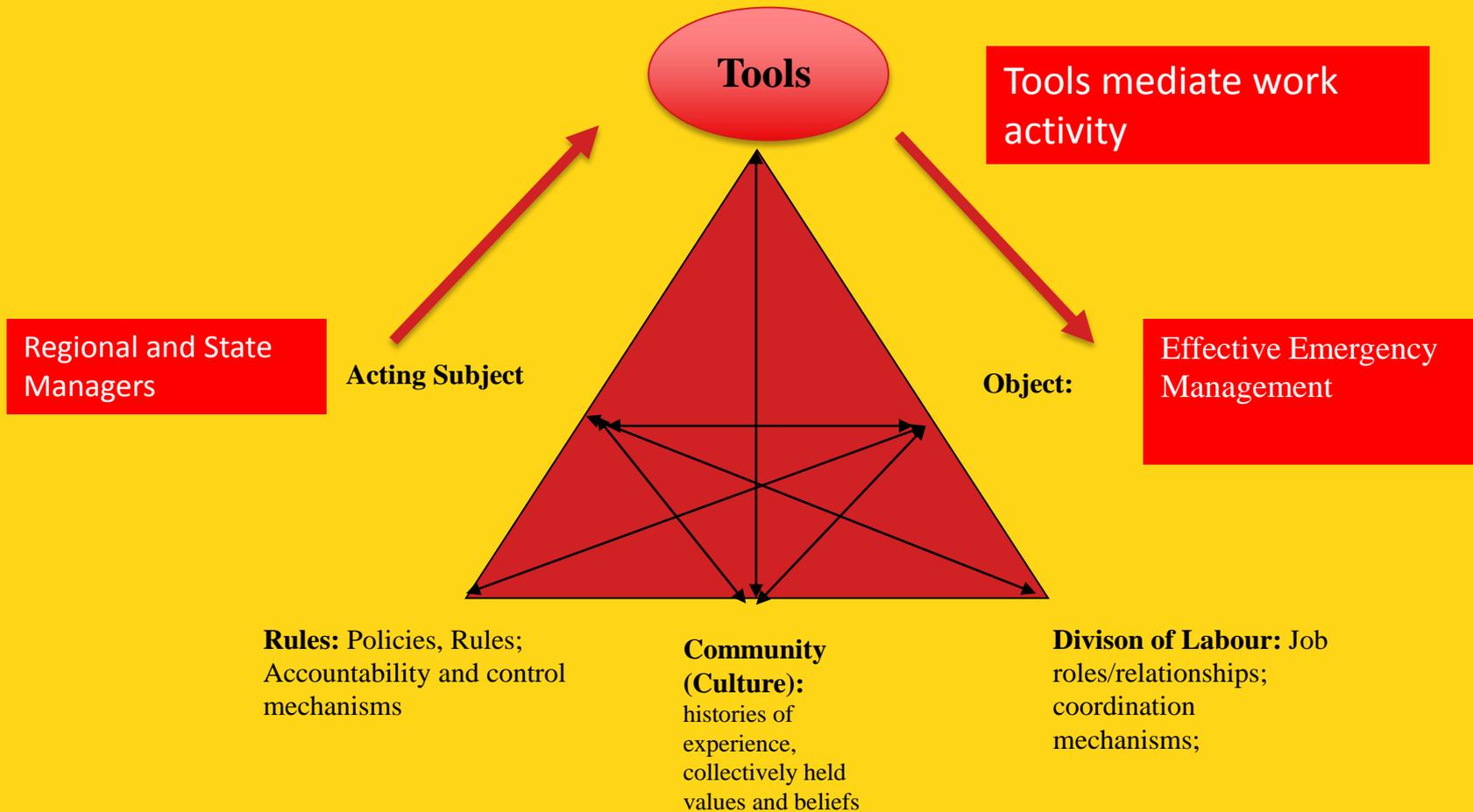


AIIMS TIER BY CONTACT WITH OTHER TEAMS



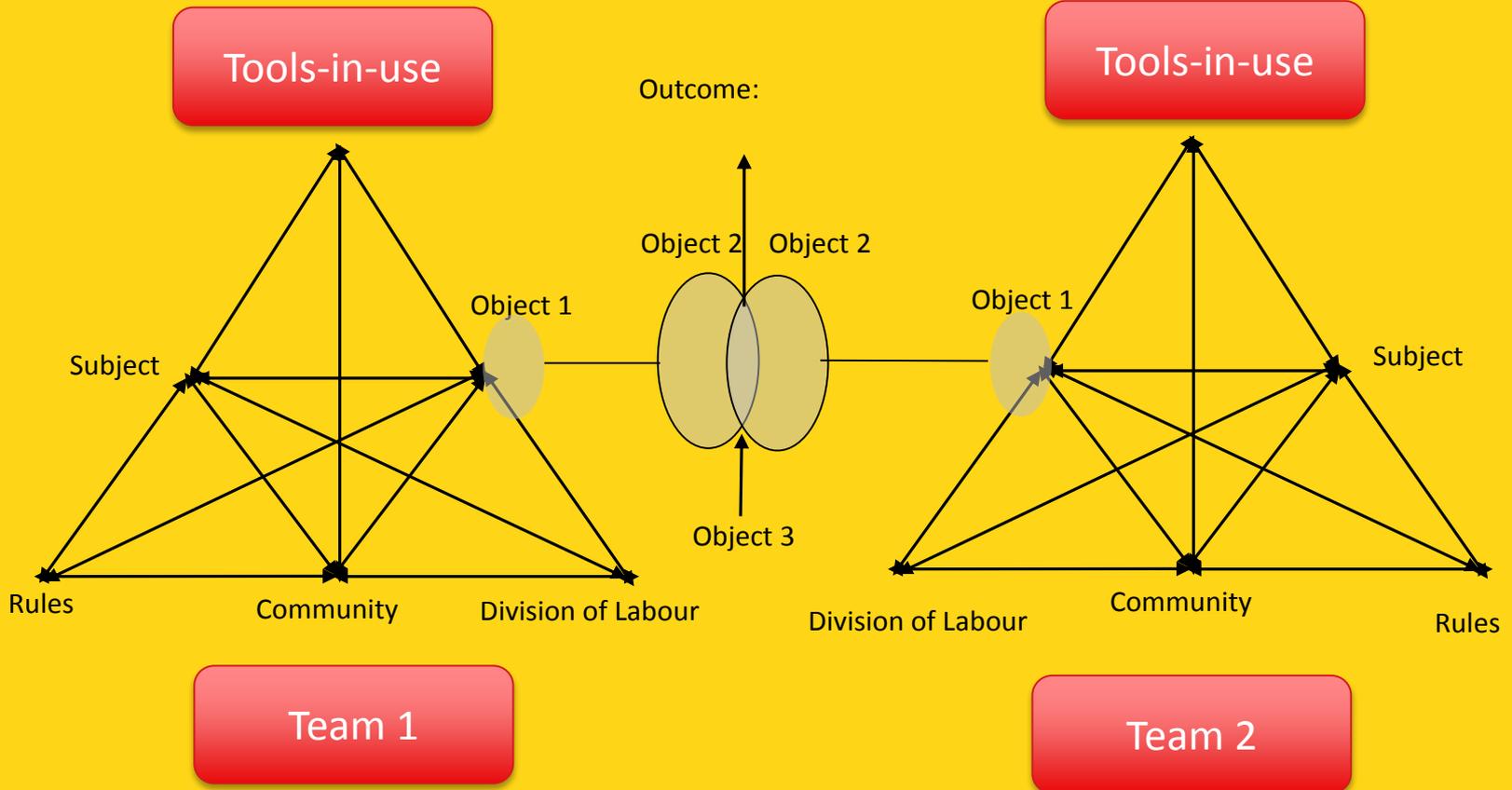


Analysing tools with a critical focus on work practice





Analysing tools with a critical focus on work practice



Adapted from Engeström 2001: 136