

Joint Decision Making in the Real-World: Recommendations for Improving the Joint Decision Model



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This report outlines three studies that investigated the challenges to incident commanding across the blue light services. The implications of each study is outlined below. It is suggested that the Joint Decision Model (JDM) in its current format is not fit for purpose. An alternative decision model that focusses on the enhancement of goal clarity, clearly defined roles and agency-specific expertise is more appropriate. Further research to develop this model is planned. If you are interested in being involved with this research then please contact the authors of this report.

1) What does 'save life' mean to different agencies?

Finding: Although agencies share a strategic 'save life' goal, the tactical meaning of this goal is different between agencies. A poor understanding of the nuanced difference about what these goal practically means to each agency can lead to conflicting opinions on how to best achieve the 'save life' goal.

Implication: Instead of a joint decision model, it is suggested that a distributed decision model that creates a shared awareness of iterative agency-specific priorities would be more useful.

2) Decision inertia and redundant deliberation between 'save life' and 'prevent further harm' goals

Finding: The JDM goals to 'save life' and 'reduce harm' are psychologically incompatible. The former guides thinking on achieving positive outcomes whereas the latter guides thinking on avoiding negative outcomes. The complexity of the emergency incident makes these goals compete, for example, saving lives versus risk of causing harm to emergency responders. This leads to redundant deliberation and decision inertia.

Implication: Training to enhance the understanding of 'least worst' decision making can help commanders better cope with these trade offs. The JDM could also be improved by more clearly separating these goals.

3) A taxonomy of challenges to incident command

Finding: There are nine key challenges to incident commanding, which can be themed into two categories: (i) endogenous uncertainties, relating to the features of the emergency incident; and (ii) exogenous uncertainties, relating to the features of the organisation/team.

Implication: Training should focus on reducing 'exogenous' (i.e. team related) challenges. A more effective team will be more resilient and reactive against inevitable endogenous complexities that are characteristic of emergencies.

2. Executive Summary

4. Foreword

5. Study one: What does 'save life' mean to different agencies during a simulated marauding terrorist firearms incident?

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11. Final Reflections

Emergency incidents are inherently complex, dangerous and high-stakes. The emergency response teams who turn out must process a vast amount of rapid and changing information whilst ensuring that fast and life saving action takes place. Not only must they take action to save and treat those individuals directly affected by the emergency, but they must also ensure that the wider community and emergency responders are kept safe and free from harm. As a result of these complex and often competing demands, it has been observed that command level decision making is most often derailed, not by poor or bad decision making, but by the inability to commit to any choice at all. This derailment of action is a result of *decision inertia*, whereby commanders redundantly deliberate over their choice despite there being little or no chance of it making their decision any easier. This is especially problematic during emergency incident command as choices are rarely optimal, with commanders having to decide between 'least worst' options. This report will describe the findings from psychological research investigating the causes and consequences of decision inertia in emergency response contexts.



Findings from two major studies will be described: the first based on in-depth interviews with experienced commanders and the second based on data collected from an immersive Marauding Terrorist Firearms simulation exercise. Fundamentally, this report will stress the importance of enshrining agency-specific expertise in the emergency services. A greater understanding of roles and responsibilities across a decentralised network of emergency response teams is important. The desire of the government's Joint Emergency Services Interoperability Programme (JESIP) for 'joint' decision making, defined by collective and mutual agreement, is not useful for multi-team performance. Instead, it is suggested that a greater understanding of the nuanced differences in skills and capabilities between agencies is needed. A decentralised approach to responding will enshrine individual agency expertise, encouraging coordinated (rather than collective) inter-team action.

Study 1: What does 'save life' mean to different agencies during a simulated marauding terrorist firearms incident?

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Summary

Fifty commanders from the Police, Fire and Rescue and Ambulance Service took part in a multi-agency simulated marauding terrorist firearms attack (MTFA) exercise. They were split into thirteen teams who were each exposed to the same simulation. Although agencies were found to work towards a collective 'save life' goal the meaning of this goal was very different to different response agencies:

- Police commanders were concerned with neutralising the threat whilst protecting the wider public
- Fire and Rescue commanders prioritised initial emergency responder safety in order to take high-risk procedures
- Ambulance commanders prioritised casualty access and treatment

Commanders *assumed* shared goals when in fact their self-reported goals aligned with role-specific demands. Furthermore, teams who collectively prioritised 'save life' goals were faster at decision logging early in the incident; yet became slower when the incident progressed. This is arguably due to a gap between the explicit statement of shared strategic goals (i.e. to 'save life') and the reality of what this means with regards to tactical priorities. A distributed decision model that enhances a shared understanding of individual agency tactical priorities, rather than focusing on abstract 'save life' mantras, will facilitate greater coordination than the current 'joint' decision model.

Methods

Thirteen multi-agency teams completed the same MTFA simulation. Their time-stamped decision logs and self-reported 'top three' goals were recorded. Simulations were conducted using Hydra, an immersive simulation suite used to train decision making (Figure 1.1).

The time it took teams to complete the simulation averaged seventy-eight minutes. The scenario involved reports of three men who had opened fire on civilians in a busy city train station with automatic weapons. The simulation involved nine injects of information provided to delegates via audio messages.

1. Initial callout message
2. Request to zone hot/warm/cold areas
3. Civilian cries for help
4. Update from control on casualty numbers
5. Shooters move location to underground
6. Fire breaks out inside warm zone
7. Non-specialist staff offer assistance
8. Pressure from superiors to save casualties
9. Update request from strategic group



Figure 1.1. Example Hydra simulation and control rooms

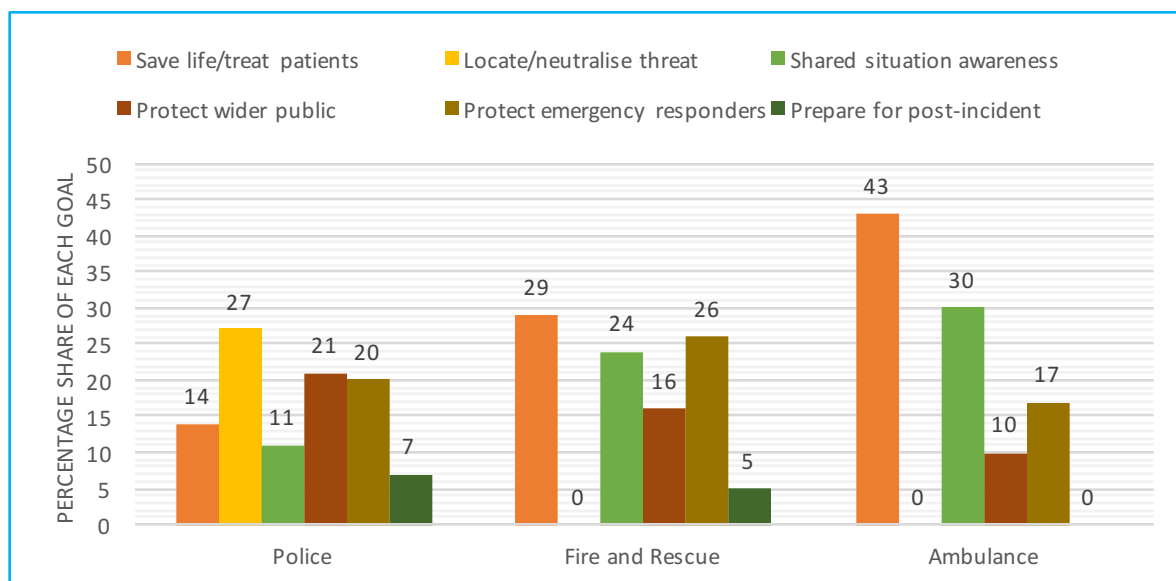


Figure 1.2. Inter-agency differences in the prioritisation of goals

Findings

1. The self-reported goals of commanders differed between agencies and focused on role-relevant priorities (Figure 1.2). Despite these differences, when asked whether multi-agency goals were consistent, responders believed that their goals were consistent.

2. Goals were themed into two categories: 'approach' goals that were focused on making a *positive* impact on the situation (save life/treat patients; establish shared situation awareness; locate/neutralize threat) and 'avoidance' goals that were focused on *preventing* a negative impact on the situation (protect emergency responders; protect wider public from harm;

prepare for post-incident demands). Teams who, collectively, shared mainly *approach* goals were *faster* at making decisions earlier in the incident but were *slower* at making a decisions when the incident became more complex.

Implications

1. The 'save life' goal can create unnecessary complications during multi-agency responding as each agency interprets this goal with regards to their own agency-specific tactical priorities.

2. A distributed decision making model that enshrines inter-agency goal clarity is more useful for multi-team coordination than one that tries to impose 'joint' and collective choices.

Study 2: Decision inertia and redundant deliberation between ‘save life’ and ‘prevent further harm’ goals

Summary

JESIP’s Joint Decision Model (JDM) describes two central goals: to ‘save life’ and ‘reduce harm’. Interviews with thirty-one commanders from the blue lights services suggested that these goals are counter-intuitive and psychologically incompatible with one another, contributing to increased (redundant) deliberation, decision inertia and delays in action. Commanders were torn between the desire to ‘save life’, an *approach* oriented goal geared towards making a *positive* impact on the situation; and ‘prevent further harm’, an *avoidance* oriented goal geared towards avoiding causing a *negative* impact. Negative consequences were anticipated both in the short-term (i.e. incident related – causing harm to emergency responders) and the long-term (e.g. being held to account in a court of law). It is suggested that the JDM in its current format is incompatible with the demands of the emergency incident environment and risks increasing decision inertia.

Table 2.1. The ‘save life’ and ‘prevent further harm’ goals and quotations from interviews

Strategic Goal	Tactical Goal	Quote
Save Life	Specific to the incident	<p><i>“We can’t just wait and say police haven’t been in when you can see people across the road who were injured and wanted or needed help”</i></p> <p><i>“You must look at what we do and why we do it and that’s to save life”</i></p>
Prevent Further Harm	Avoid harm to emergency responders	<p><i>“But it had to be reasonable because you’ve got to bear in mind maximise safety of the officers as well as a strategy”</i></p> <p><i>“You do think more about the responders but at the same time you try and balance that with the job that you’ve got to try and do”</i></p>
	Avoid further harm to casualties / victims	<p><i>“I would prefer to be cautious and not risk any further injury by bringing him out in a way which I know to be a lot safer”</i></p>
	Avoid further disruption to normality	<p><i>“That’s a main arterial route through the city so if you close that off too early you create quite a few problems for people who are just going about their business it was just a normal working day”</i></p>

Method

- Thirty-one commanders, with an average length of service of twenty-four years, were interviewed about the main challenges that they had faced during their experience of incident command.
- Interviews lasted an average of one hour, thirty-nine minutes.
- They were asked to recall a ‘*challenging incident*’ that had ‘*high consequences*’ where decisions were ‘*very difficult or impossible to reverse*’.

Findings

1. Commanders struggled to make decisions when they had to trade off two psychologically incompatible goals: to ‘save life’ and make a *positive* impact on the decision and to ‘prevent further harm’ and avoid causing a *negative* impact on the situation (Table 2.1).
2. The ‘prevent further harm’ goal was associated with a desire to avoid potential negative consequences resulting from poor decisions. Anticipated negative consequences could arise both in the short-term (during the incident) or in the long-term (post incident) (Figure 2.2).

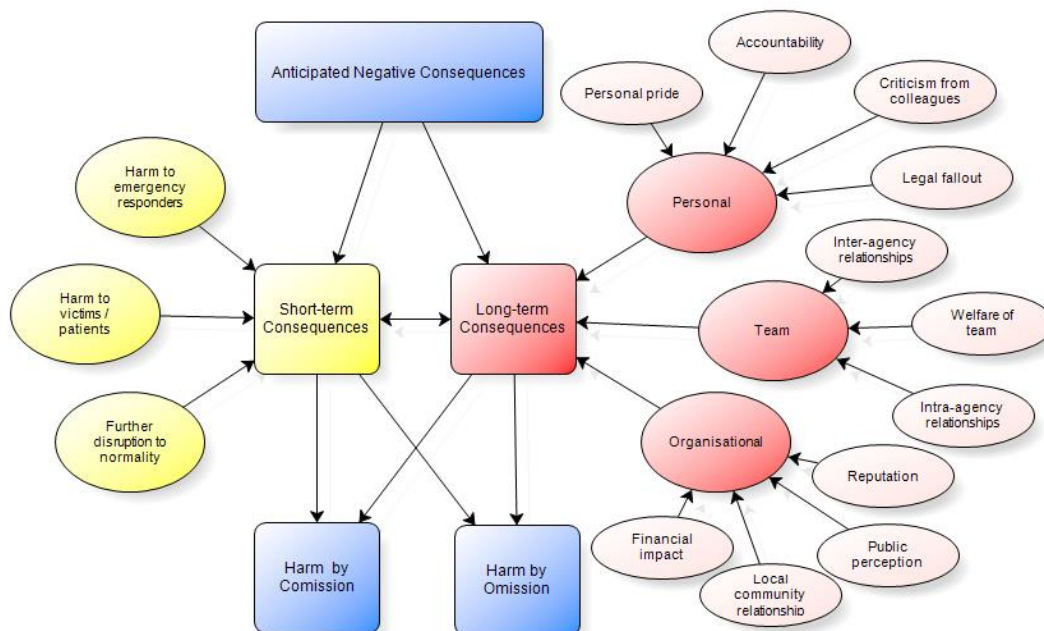


Figure 2.2. Short- and long-term negative consequences for violating the 'prevent further harm' goal

Findings (cont.)

3. Decision inertia was associated with a fear of violating both 'save life' and 'prevent further harm' goals. Instead of taking action, commanders redundantly deliberated between which goal was 'least worst' to violate (Figure 2.3).

Implications

1. The JDM can unintentionally increase decision inertia and redundant deliberation by grouping two psychologically incompatible goals.
2. Training that helps commanders to anticipate and manage the trade off between 'least worst' options could help commanders make decisions.
3. The JDM should clearly separate the 'save life' and 'reduce harm' goals.

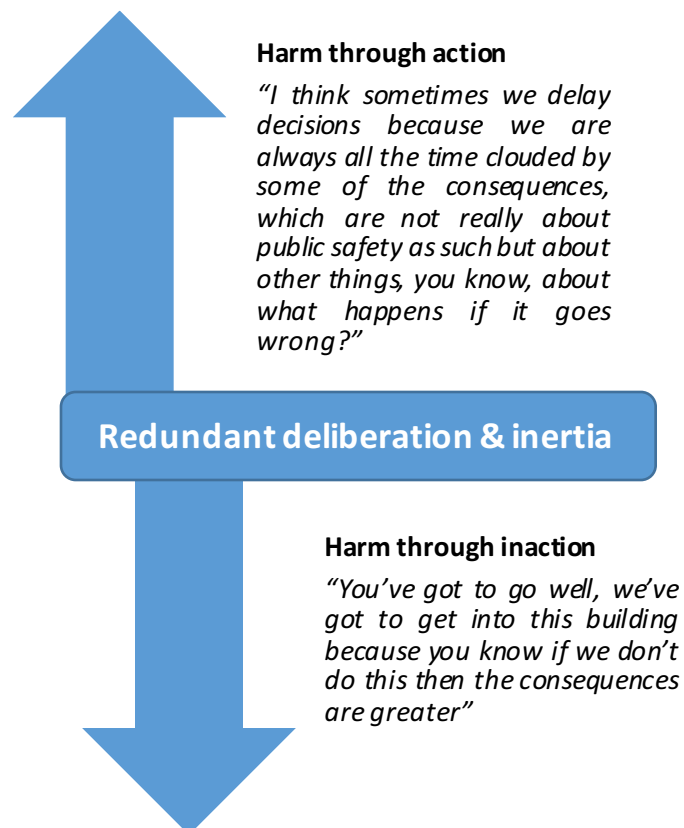


Figure 2.3. Decision inertia as a result of goal violations

Study 3: A taxonomy of challenges to incident command

Summary

Thirty-one commanders from the Police, Fire and Rescue and Ambulance Service were interviewed about decision making challenges. Challenges were associated with uncertainty and themed into two categories: (i) endogenous uncertainties, relating to the features of the emergency incident; and (ii) exogenous uncertainties, relating to the organisation/team. Endogenous uncertainties included: (i) lacking, ambiguous or too much information; (ii) unreliable or unavailable resources; (iii) time pressure; (iv) social management (public and media); and (v) adapting to budget cuts. Exogenous uncertainties included: (i) communication problems regarding insufficient updating and miscommunication; (ii) poor role understanding, both in terms of own and others' roles; (iii) trust issues associated with distrust, mistrust and the paradox of trust; and finally (iv) competitiveness within the command environment as a product of competing and conflicting goals. This taxonomy of challenges can be used to guide future training and the development of interventions.

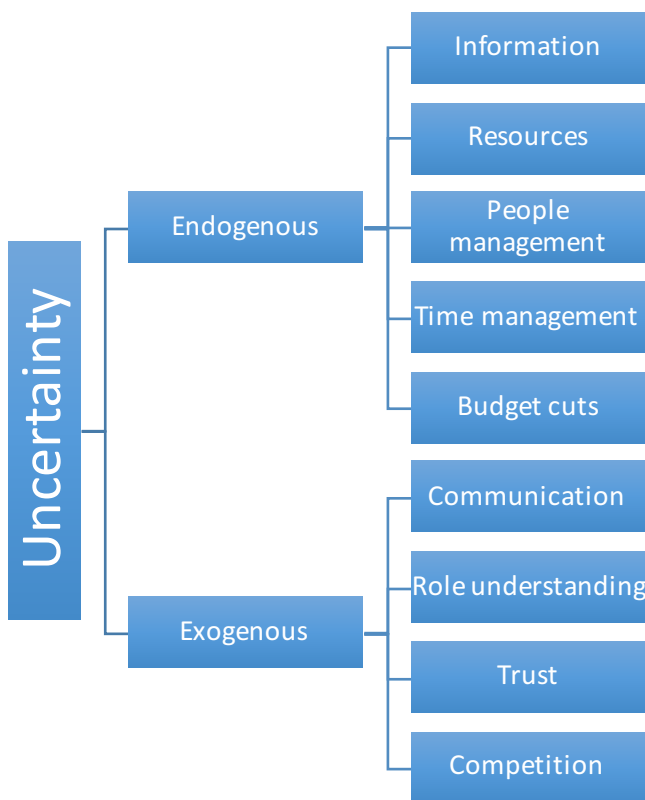


Figure 3.1: A taxonomy of endogenous and exogenous challenges to incident command

Method

- These results are derived from the same interviews described in study two.

Findings

1. The different types of challenging incident described by commanders were :

- Public Protests and rioting (16%)
- Large urban search and rescue (e.g. building collapse, train derailments) (16%)
- Firearms incidents (13%)
- Gas/chemical leaks (13%)
- Large fires (9%)
- Multiple vehicle road traffic collisions (9%)
- Crowd management and crushing (9%)
- Terrorism (7%)
- Flooding (7%)

2. There were nine key challenges to incident command, which were themed into two categories of uncertainty: (i) endogenous uncertainties, relating to the features of the emergency incident; and (ii) exogenous uncertainties, relating to the features of the organisation/team (Figure 3.1). Table 3.1 provides detail on each of these challenges.

Table 3.1 Nine main challenges to incident command divided into two types

Theme	Challenges	Reason for uncertainty
Endogenous	Information	<ul style="list-style-type: none"> • Lack of information • Too much information
	Resources	<ul style="list-style-type: none"> • Lack of resources • Unreliable resources
	Time management	<ul style="list-style-type: none"> • Time pressure • Administrative demands
	People management (public; media)	<ul style="list-style-type: none"> • Public inside risk area • Public outside of risk area • Social media and potential criticism
	Budget cuts and austerity	<ul style="list-style-type: none"> • Reduced capacity • Increased demands • Role instability • Emotional demands
Exogenous	Communication	<ul style="list-style-type: none"> • Insufficient updating • Miscommunication • Inaccurate assumptions
	Role understanding	<ul style="list-style-type: none"> • Erroneous assumptions on external agency capabilities • Poor understanding of own responsibilities • Operating in isolation
	Trust	<ul style="list-style-type: none"> • Distrust abilities • Mistrust intention • Trust paradox
	Competition	<ul style="list-style-type: none"> • Competition for command (intra-agency) • Competition for primacy (inter-agency) • Self-oriented personalities and egos • Desire to take action

Implications

1. The taxonomy can be used to focus research on important challenges to incident command that may be aided by the development of novel interventions (e.g. technology to aid time management).
2. The taxonomy can be used to guide training to mitigate endogenous and exogenous challenges. It is especially encouraged that training focus on 'exogenous' challenges as these relate to overcoming issues with team work. By improving teamwork the response team will be more resilient to inherent and often uncontrollable endogenous challenges (e.g. lack of information).



This report has identified a number of challenges to incident commanding in the UK. Yet its conclusions do not intend to be pessimistic. Instead this report provides evidence for a more informed and grounded understanding of the psychology of decision making at command level. Effective emergency responding requires a decentralised multi-agency team whose members have clearly defined roles and responsibilities. In contrast to the current JESIP concept of ‘joint’ and *collective* decision making, this report argues for *collaborative* decision making, which enshrines the nuanced differences between agencies and draws strength from the wealth of expertise that can be derived from collaborative inter-agency action.

What’s next?

The next phase of research is to more explicitly evaluate how the JDM has been used by practitioners since its introduction in 2013. Further simulation-based studies are also planned to test the JDM and evaluate its usefulness in different emergency response contexts. An alternative decision model that focusses on *collaborative* decision making will also be developed and compared to the JDM. Future research will continue with close collaboration and advice from practitioners to ensure that results are grounded and useful. If you are interested in finding out more about this research, wish to provide feedback on this report or would like to get involved in future research, please contact the authors of this report:

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