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**HAZARDS**CRC

# CAPABILITY NEEDS FOR EMERGENCY & DISASTER MANAGEMENT

**Dr Paul Barnes**

Deputy Director - Centre for Emergency & Disaster Management  
Queensland University of Technology

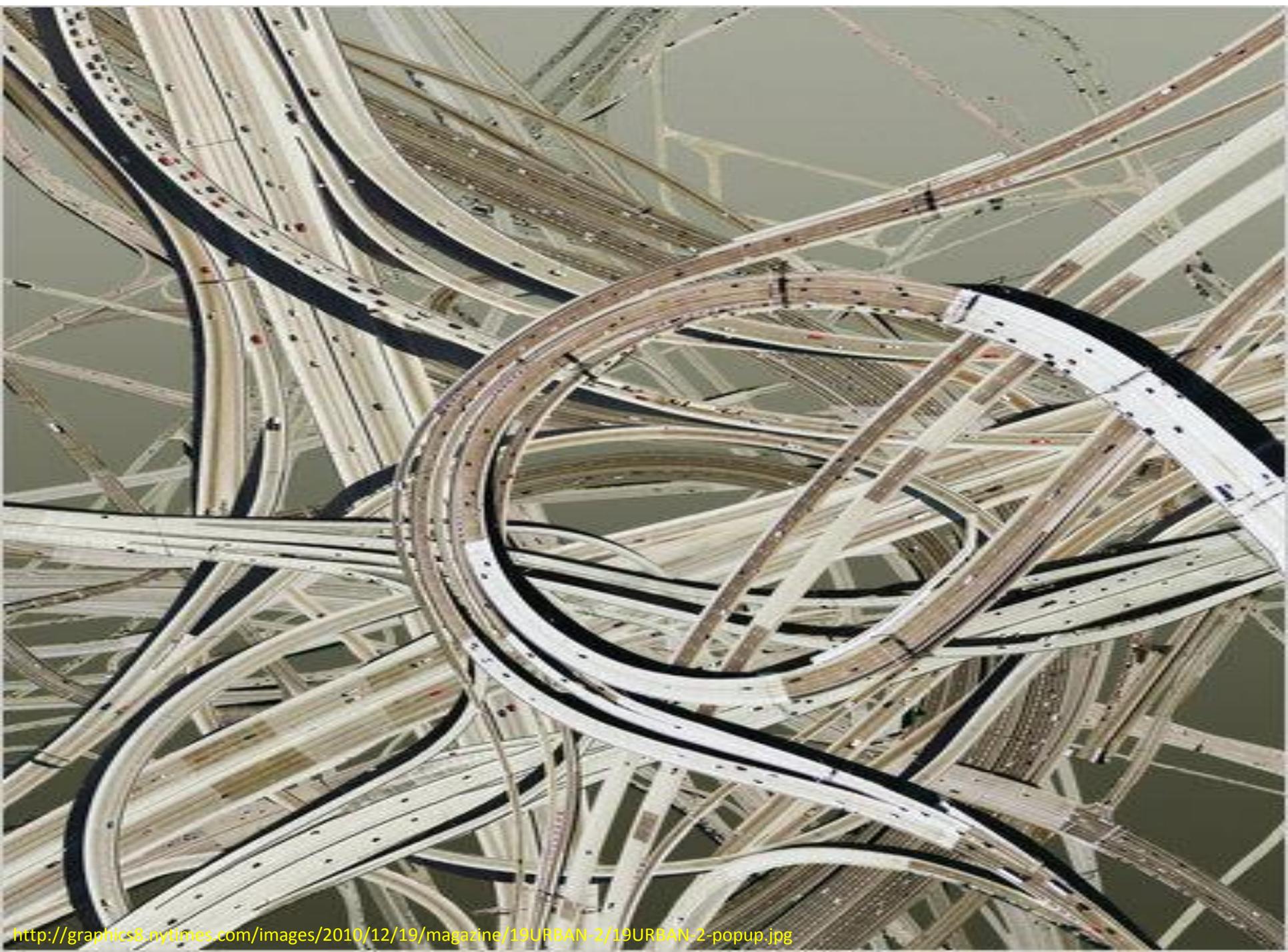


An Australian Government Initiative



**Queensland University of Technology**  
Centre for Emergency and Disaster Management









1989



Plus 16 years ..... **2005**



# Areas of **Emergency & Disaster Analysis** needing development

- Global catastrophes (including the human-caused variety)
- Early-warning/horizon-scanning systems
- 'Extreme' risk analysis and management procedures
- Surprise, resilience and tipping points
- Methods of forecasting collective social events and behaviours
- Computer simulation and scenario construction as laboratories for studying extreme events
- Development of counterfactual thought experiments in social processes
- Tools for the analysis of the fragility of critical infrastructures

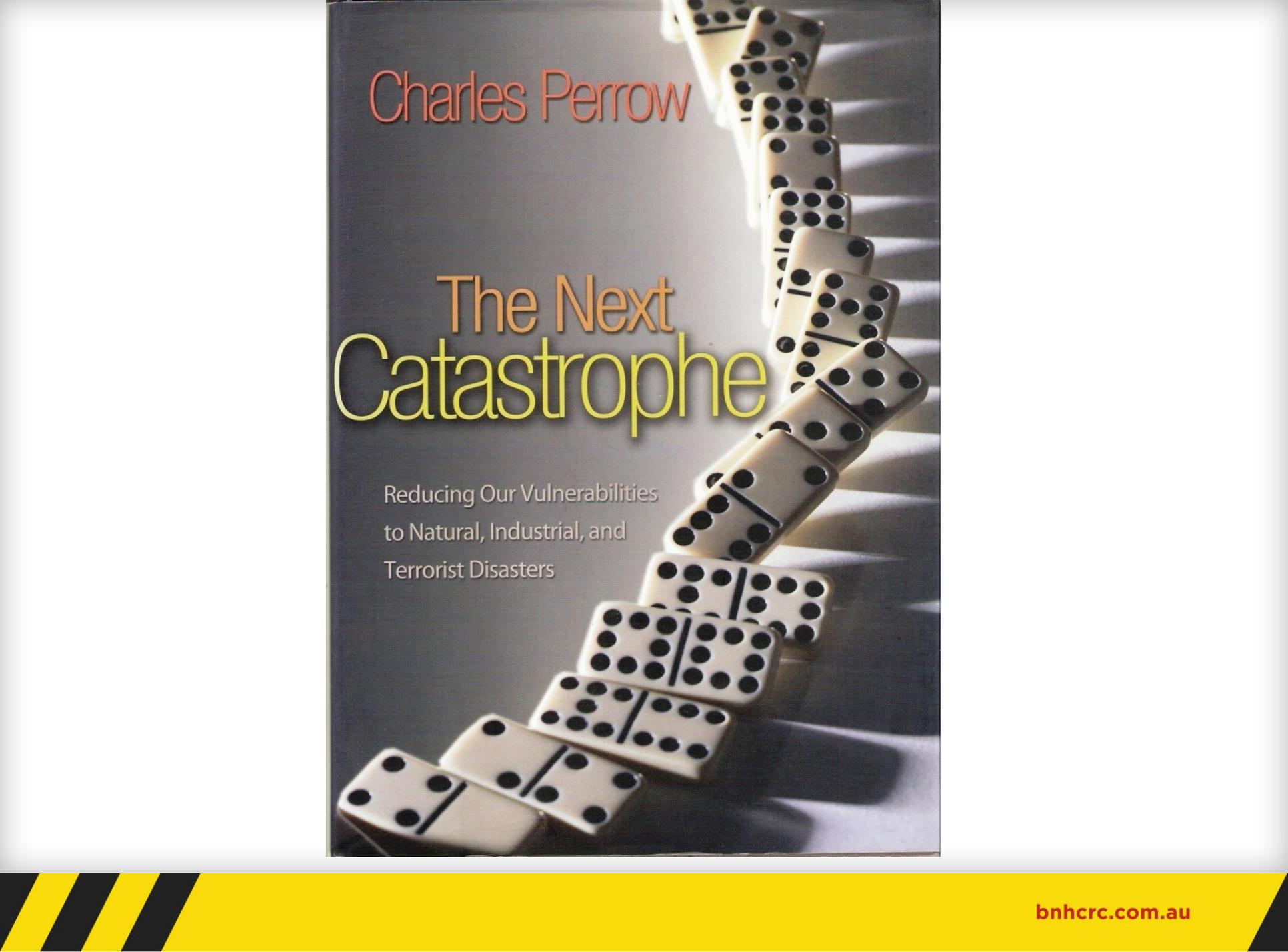
THE AGE OF THE  
UNTHINKABLE



WHY THE NEW WORLD DISORDER  
CONSTANTLY SURPRISES US AND  
WHAT WE CAN DO ABOUT IT



JOSHUA COOPER RAMO



Charles Perrow

# The Next Catastrophe

Reducing Our Vulnerabilities  
to Natural, Industrial, and  
Terrorist Disasters

SECOND EDITION

# MANAGING THE UNEXPECTED



Resilient Performance in an  
Age of Uncertainty

**KARL E. WEICK AND  
KATHLEEN M. SUTCLIFFE**

# Anticipating Surprise

*Analysis for Strategic Warning*

**Cynthia M. Grabo**

## Problem Statement

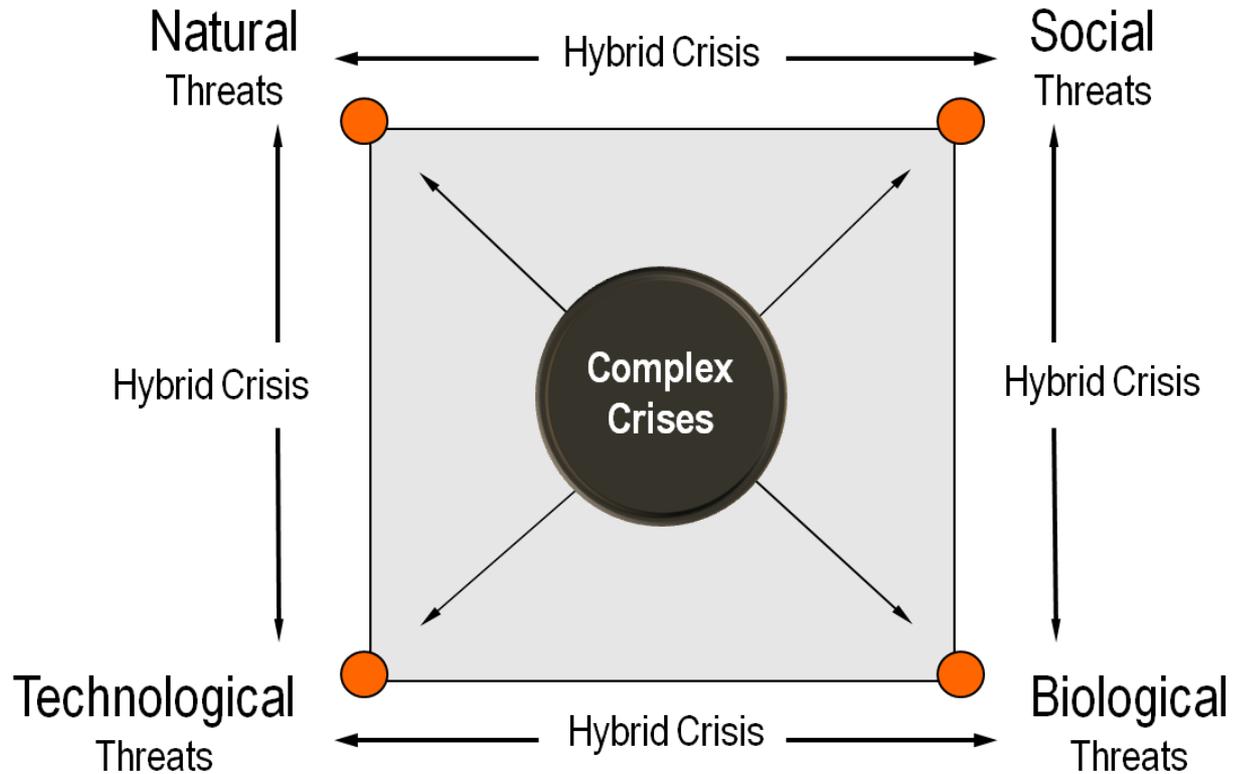
What capabilities are needed by first and second response agencies and allied organisations, individually and in inter-operable contexts, to effectively meet complex emergency and disaster situations at local, State and State levels - into the future?

## Objectives

1. ***Co-discover varieties of capability needed by first and second responders, and allied organisations***, individually and from an ***inter-operational context*** to match current and future (all-hazards) disaster contexts.
2. Detail suitable means for ***agencies to determine their own needs and planning requirements*** for achieving agile PPRR & remediation capabilities into the future.

# Complexity

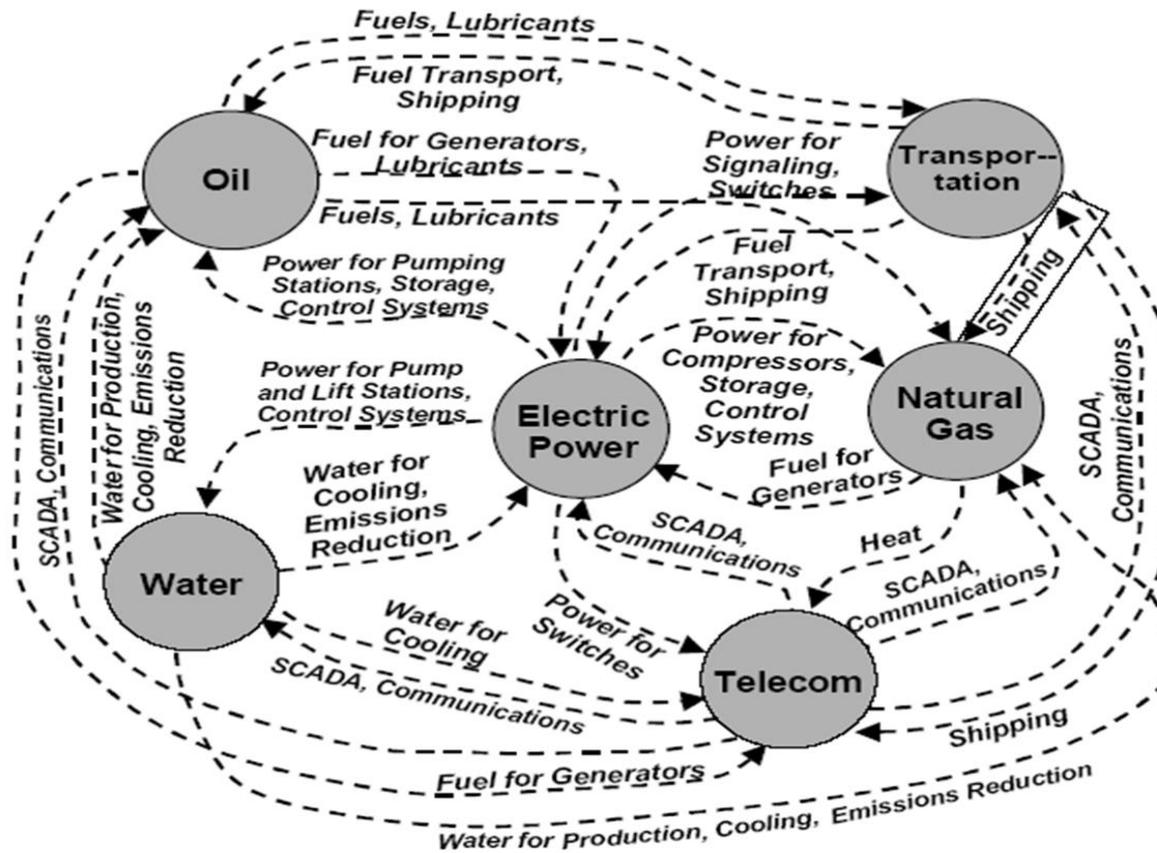
## Complex Crises



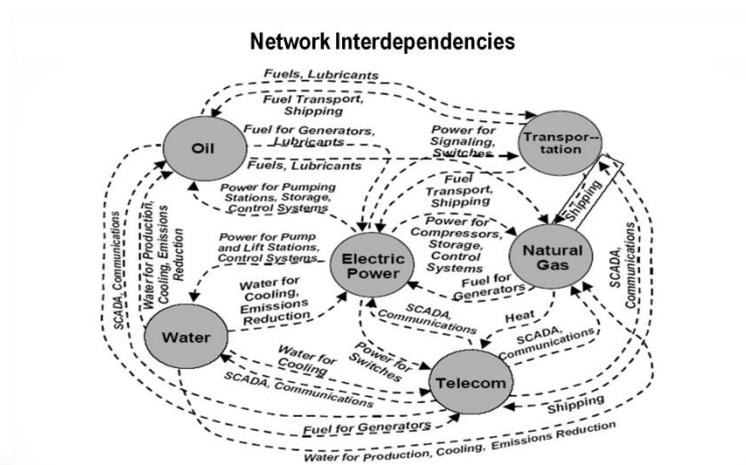
Dennis Parker, D & Tapsell, S. (1995) "Hazard transformation and hazard management issues in the London megacity," in *GeoJournal*, 37 (3) pp. 313-328

# Ambiguous (connections)

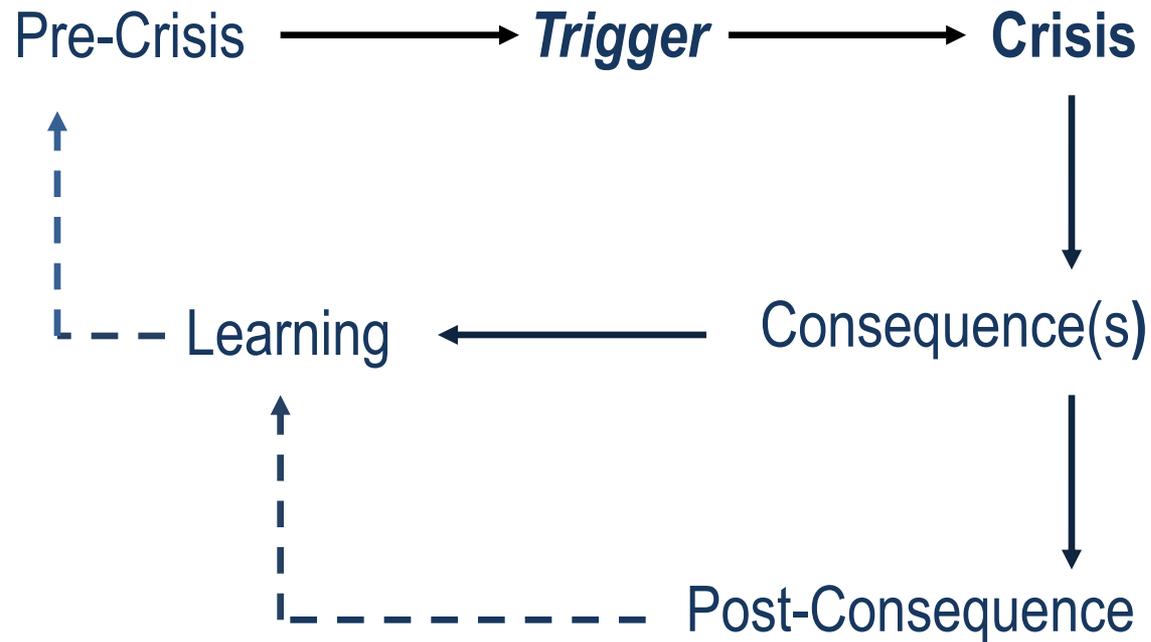
## Network Interdependencies

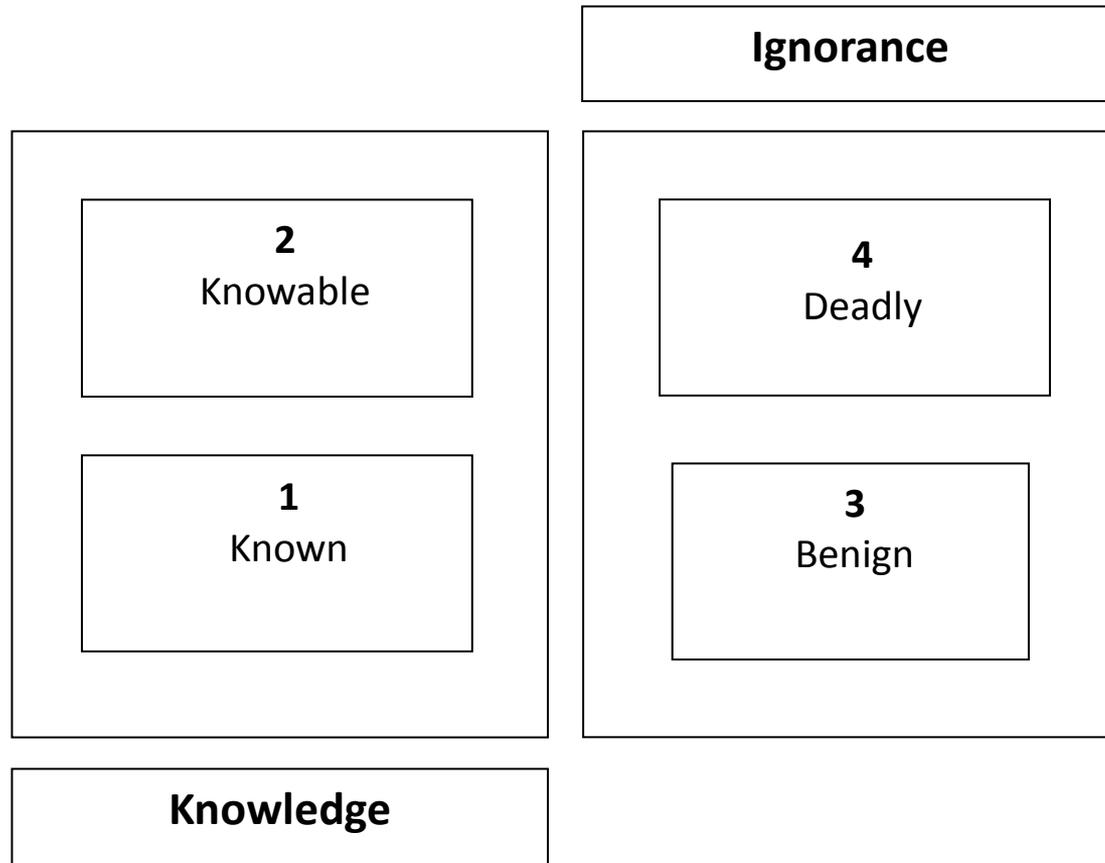


- ‘Normal’ service delivery is underpinned by the optimal functioning of a number of response agencies – are such interdependencies taken into account in planning for crises?
- How do EDMgt industry groups deal with overlapping (or confusing) responsibilities when responding to disturbances?
- Are they (interdependencies) considered in estimating recovery times? If not should they be?
- Given the complexities of modern infrastructure systems do planning teams have adequate training and understanding of challenges of such complexity?



# Crisis *Fractals* (in a continuity context)





# Futures Thinking

## Possible futures

All **imaginable** future situations, events

## Plausible futures

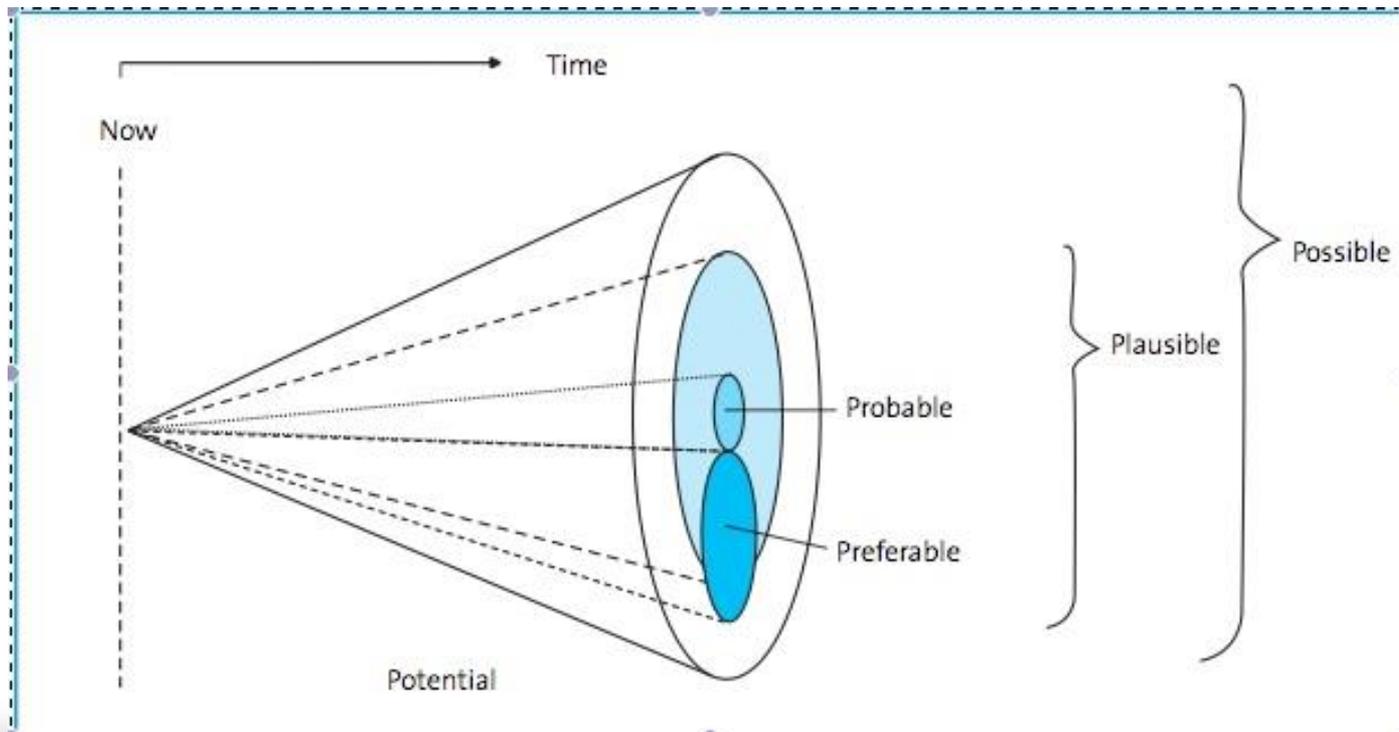
What **could** happen **based on a current knowledge** of how 'things' work?

## Probable futures

What is **likely** to happen **given the continuance of existing trends**?

## Preferable futures

What do we want to happen?



<b>Economy (Institution)</b>	<b>Common Risk Assessment Terminology</b>	<b>Standardised Threat /Incident Taxonomies</b>	<b>Horizon-scanning (Foresight) Techniques</b>	<b>Impact Frames (Trans-National National &amp; Regional)</b>	<b>All Hazards (Threat Sources) Approach</b>
<b>Singapore</b>			****	<b>Mega-city Scale</b>	
<b>United Kingdom</b>		**	** In Cabinet Office & Office of Chief Scientist		**
<b>Germany</b>			Focus on Impact Analysis	GIS (Reliant on State data)	
<b>Canada</b>		****	** Risk Analysis & Capability Development		**
<b>Netherland</b>					
<b>Switzerland</b>			** In Chancellor's Office		
<b>OECD *</b>			**	<b>Global</b>	
<b>International Risk Governance Council *</b>	**			<b>Global</b>	
<b>World Economic Forum *</b>	<i>Via a Delphi –like Method</i>		** Networked Experts	<b>Global</b>	

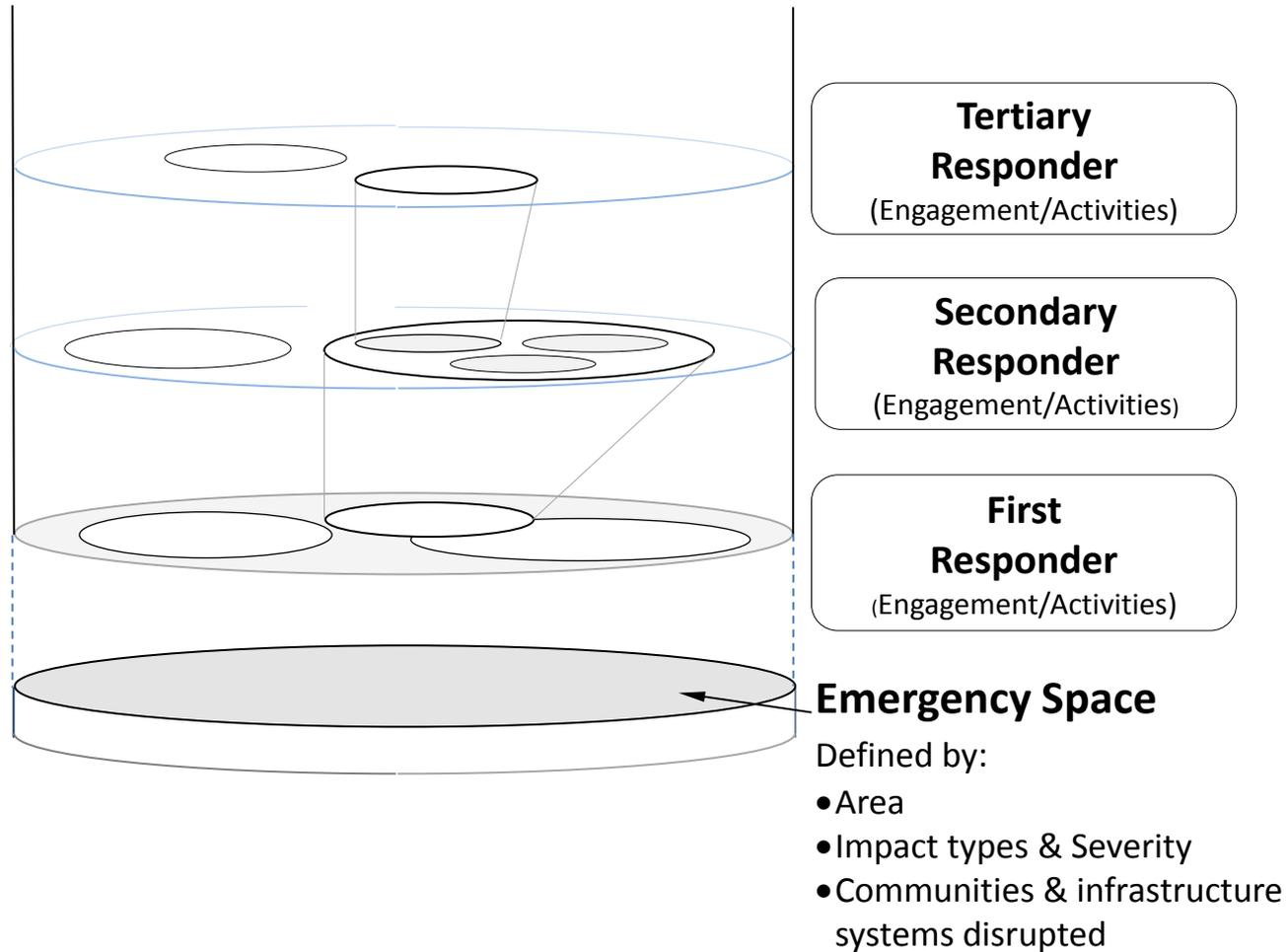
# Discovering Capability

## Structure of Capability Gap Analysis

Each incident/disaster context is assessed against 'full-spectrum' Scenarios (-3 to +3) Which when compared to pre-defined capability goals for each generic stage of a disaster allows identification of capability deficits and the detailing options for filling the difference between idealised and actual capability.



# Vertically Integrated Emergency Response Capability



## Expected Outcomes

1. The ***transfer of skills*** in applying futures & scenario-based planning that informs decisions supporting preparedness & prevention efforts and response & recovery from the consequences of disasters and related incidents that impact human services and essential infrastructure systems.
2. ***Processes to better identify future capability and capacity*** needed by first and second responders, and allied organisations, to address current and future disaster contexts: including disruptions caused by climate variability and geo-political unrest.
3. ***Means to describe escalating scales of capability, capacity and interoperability (as Maturity Models)*** to assist planning for and achievement of agile emergency & disaster management at Local, State and Federal levels.

# An Emergent Capability

**Minimising  
Surprise**

*requires*

**Reducing Uncertainty**

**Enhancing Detection**

(of weak signals)

**Triggering timely & suitable  
responses**

**Following through with effective,  
response, continuity, recovery &  
remediation actions**