Developing collaboration in complex events: A model for civil-military inter-organizational problem-solving and decision-making

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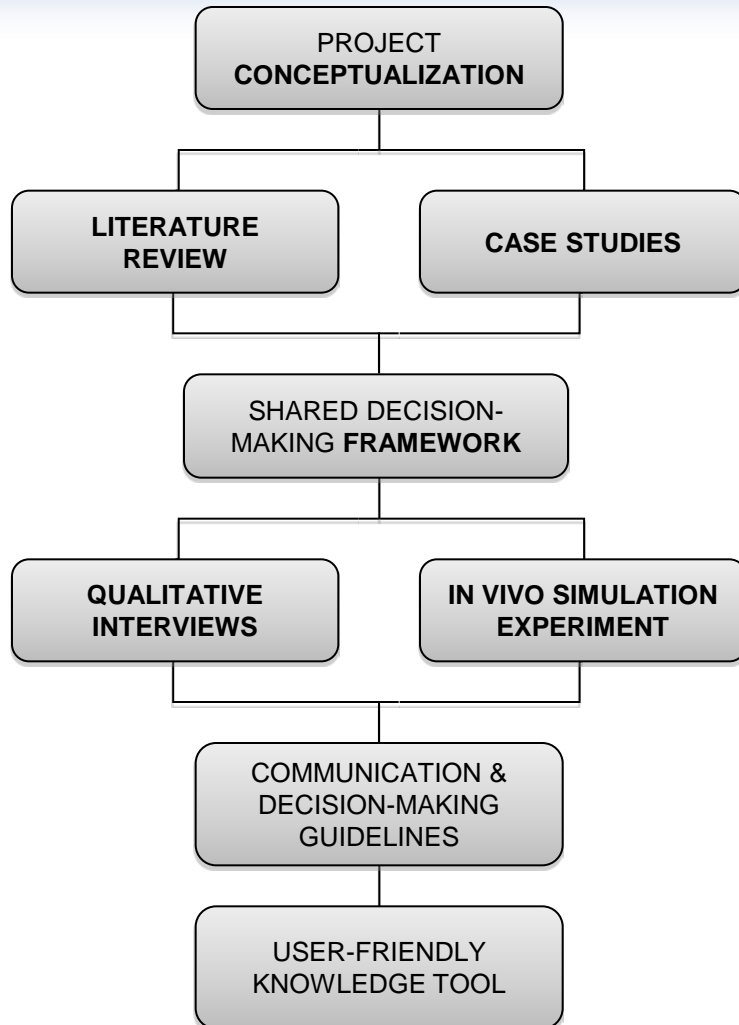
In vivo project goals

1. Develop a meta-organizational shared decision making framework

2. Test the framework through *in vivo* simulation

3. Document a psychosocial model on interagency collaboration and decision-making

4. Provide suggestions for overcoming social and cognitive barriers to interagency collaboration

In vivo project overview

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┌─────────────────────────┐
│         PROJECT         │
│   CONCEPTUALIZATION     │
└─────────────────────────┘

┌──────────────┐   ┌──────────────┐
│  LITERATURE  │   │ CASE STUDIES │
│    REVIEW    │   │              │
└──────────────┘   └──────────────┘

┌─────────────────────────┐
│   SHARED DECISION-      │
│   MAKING FRAMEWORK      │
└─────────────────────────┘

┌──────────────┐   ┌──────────────────┐
│  QUALITATIVE │   │ IN VIVO SIMULATION│
│  INTERVIEWS  │   │    EXPERIMENT     │
└──────────────┘   └──────────────────┘

┌─────────────────────────┐
│   COMMUNICATION &       │
│   DECISION-MAKING       │
│   GUIDELINES            │
└─────────────────────────┘

┌─────────────────────────┐
│   USER-FRIENDLY         │
│   KNOWLEDGE TOOL        │
└─────────────────────────┘
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- Literature review included a survey of decision making practice across numerous types of organizations

- Case studies included both Canadian and international extreme events with multi-level, multi-jurisdictional interaction

- Mixed methods data gathering : Qualitative analysis of interviews as well as the qualitative and quantitative analysis of the *in vivo* simulation experiment

Literature review

Literature review aimed at a broad understanding of:

- Various types of organizational structures involved with problem-solving during complex events (ICS, HRO, Community development, Private sector, Public service)

- Decision-making strategies used by different organizational structures

- Key organizational characteristics such as types of authority, interaction and roles

Case studies

Eastern Ontario & Quebec Ice Storm (1998)

Red River Floods (1997)

Kelowna Fires (2003)

SARS (2003)

Gander, Operation Sleepover (2001)

Blackout (2003)

Katrina (2005)

London Bombing (2005)

Tsunami (2004)

Considerations

- ## Model conceptualized within an extended timeline from pre-event to reconstruction

| -3 | -2 | -1 | 0 | +1 | +2 | +3 |

Prepared-ness & Planning | Threat | Warning | Impact | Rescue | Recovery (Honeymoon) | Recovery (Disillusionment) | Re-construction

Consequence Management

Crisis Management

Risk Management

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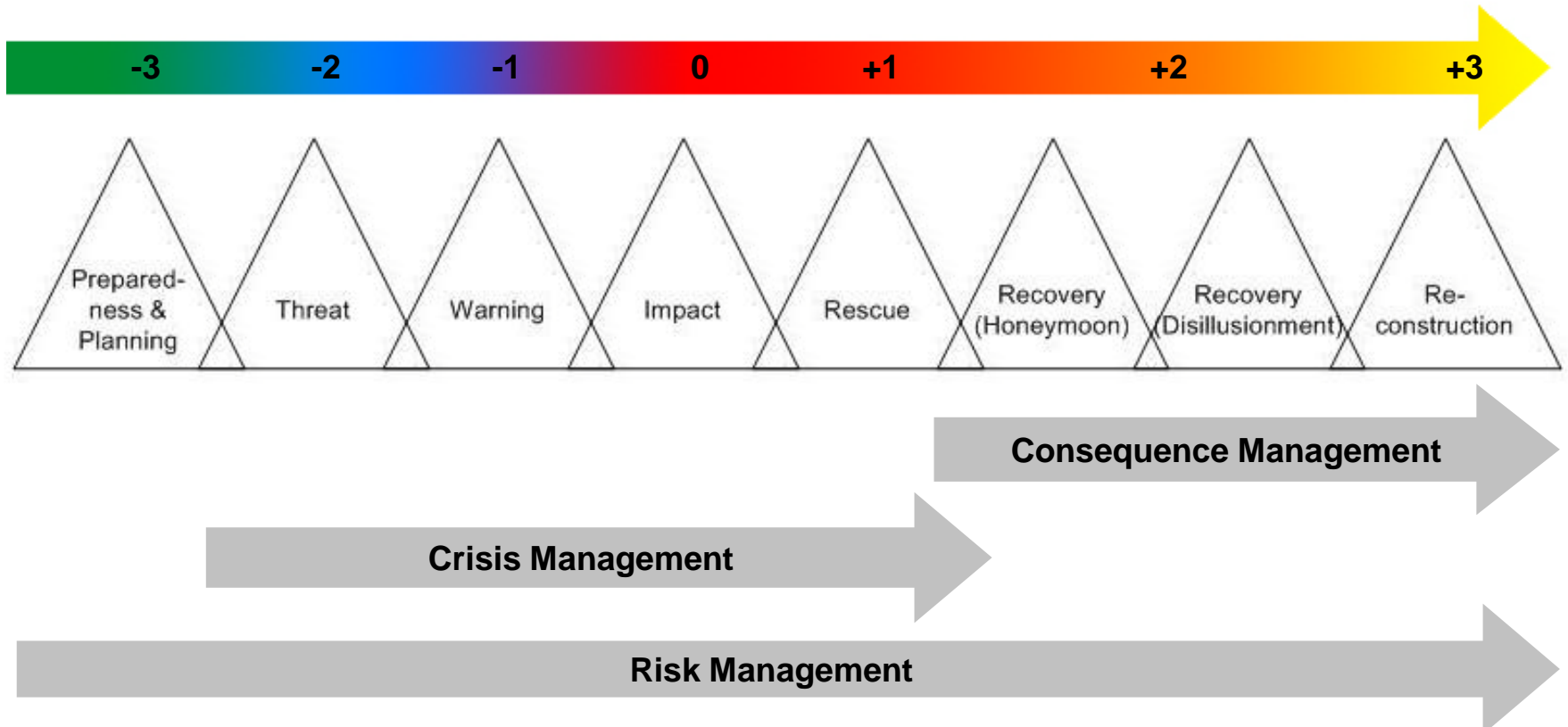
Considerations

- No one approach is "best"
  - Complex situations require diverse approaches
  - These approaches may combine, unroll in parallel, and interact in a recursive fashion.

- Decision-making is only <u>one</u> stage in the problem-solving process
  - Other stages include identifying the problem, defining the problem, generating solutions, decision-making, implementing solutions, and monitoring implementation

- Multi-disciplinary approach is appropriate
  - Integrates findings from diverse disciplines and fields of practice
  - Will lead to a more robust and relevant model

Videos

- [Gap-Santé Video](#)

- [PRiMer Overview Video](#)

- [PRiMer DST Video](#)

- [Social Media Video](#)

- [C4 SDM Framework Video](#)

- [In-Vivo Tool Video](#)
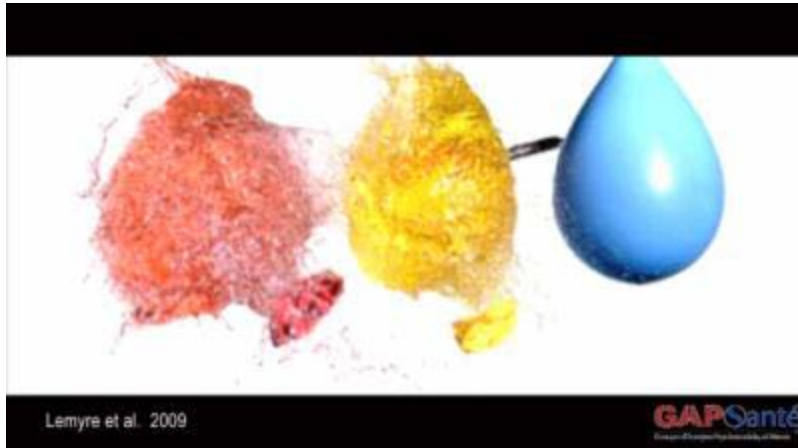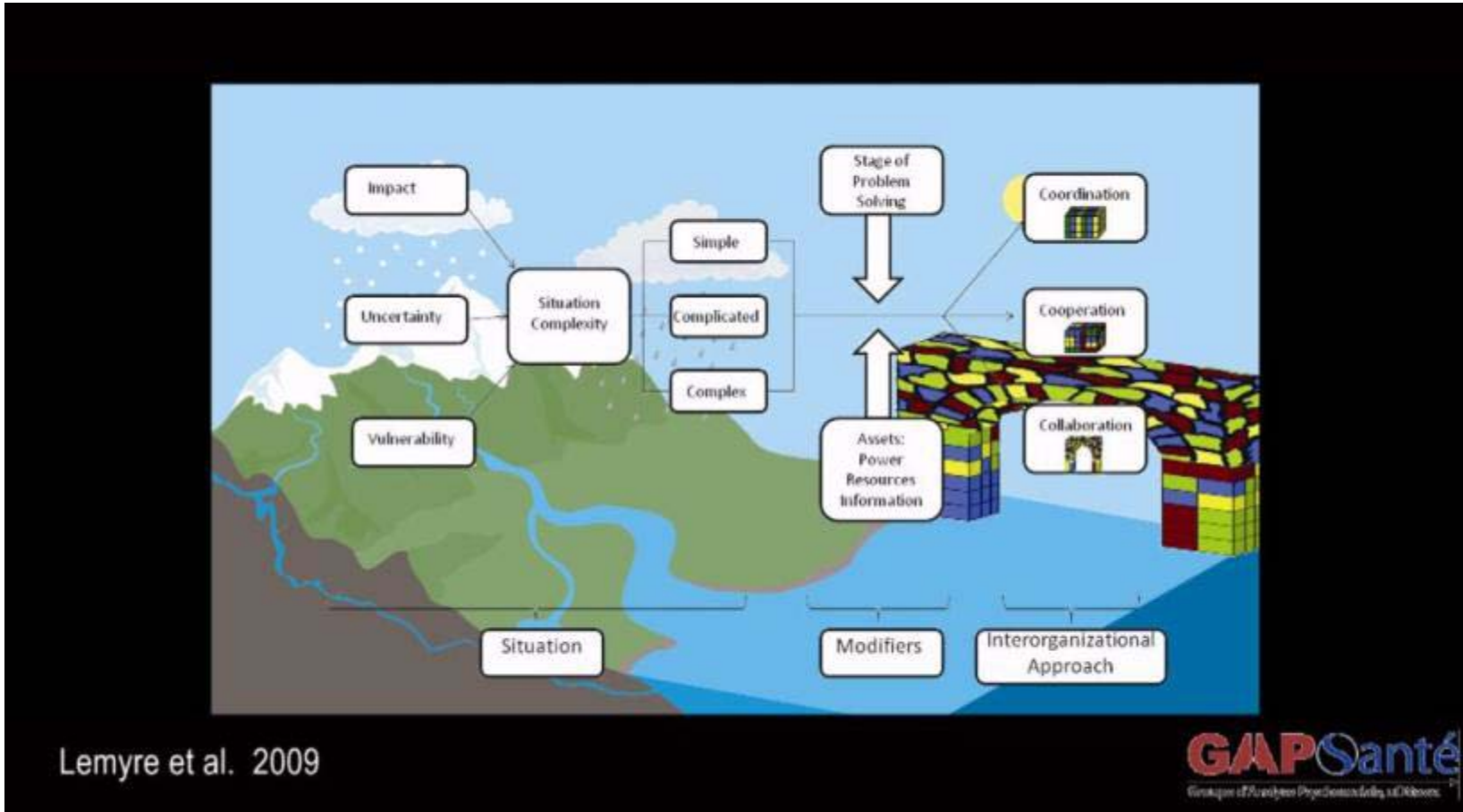
Lemyre et al. 2009

Lemyre et al. 2009
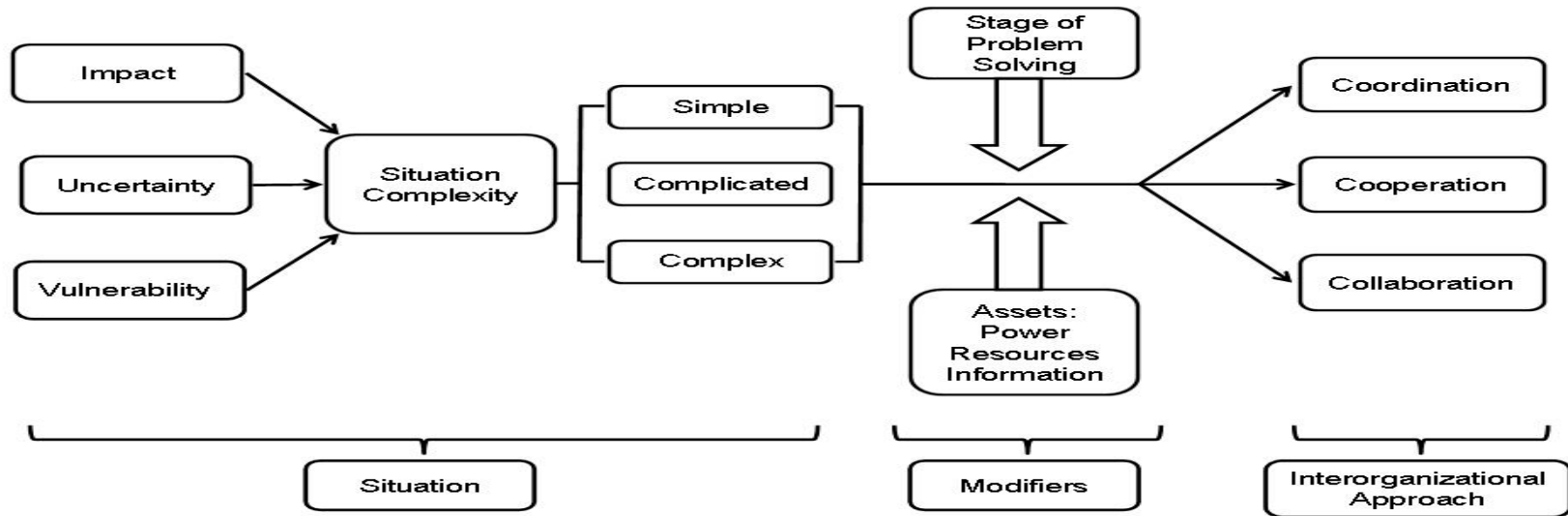
# Model of inter-organizational problem-solving

Two main components:

- Situational complexity (simple, complicated, complex)
- Inter-organizational approach to problem-solving (Coord., Coop., Coll.)

Two main modifiers:

- problem-solving stage (problem definition, solution generation, implementation, evaluation)
- available assets (power, resources, and information)
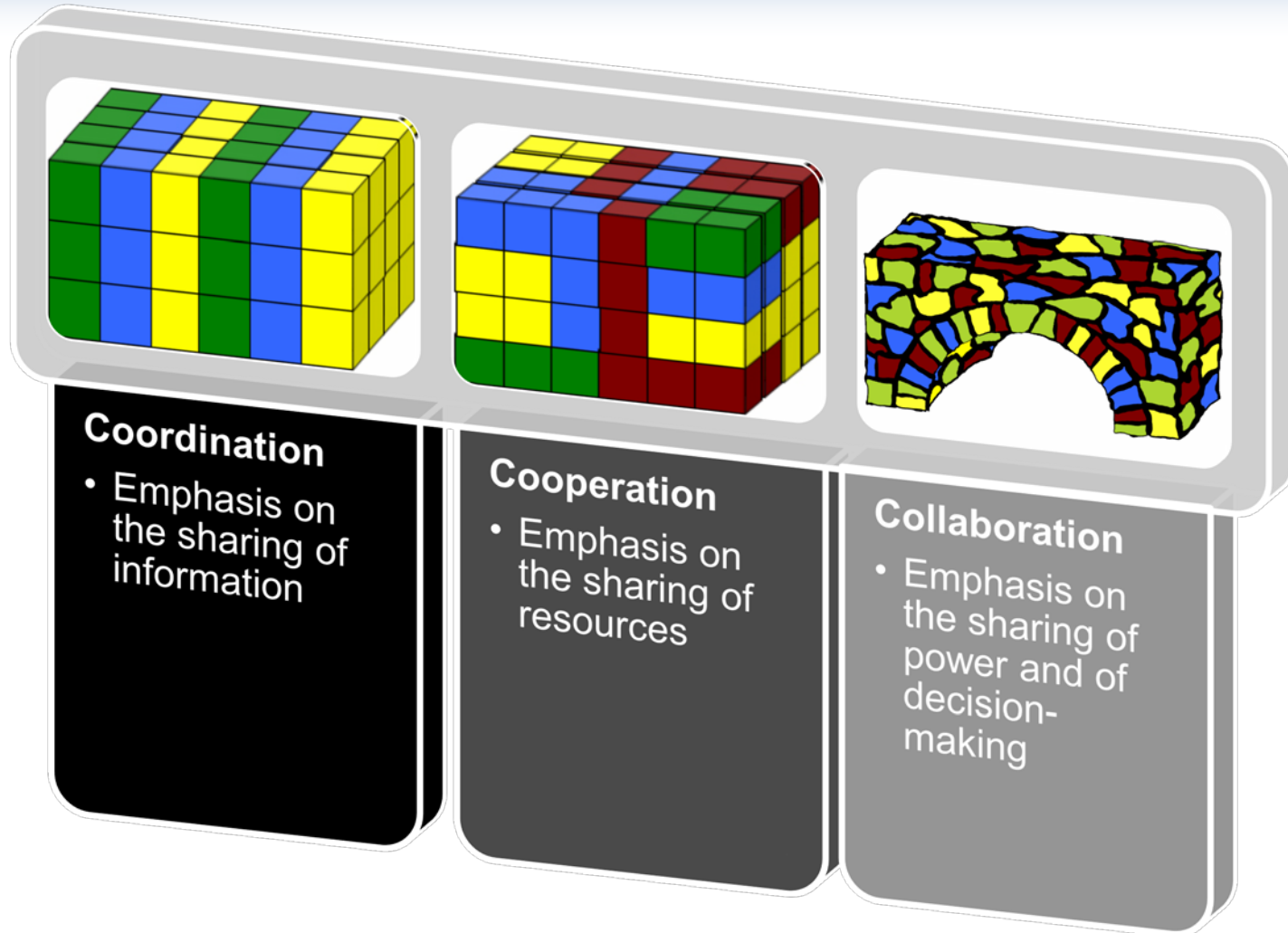
Situation Complexity
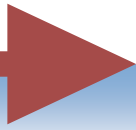
Three main factors of situational complexity

- The impact of the event, (*actual, perceived and potential impacts*)

- The uncertainty

  (*novelty, unknowns, unrolling*)

- The vulnerability/resiliency of those who may be impacted

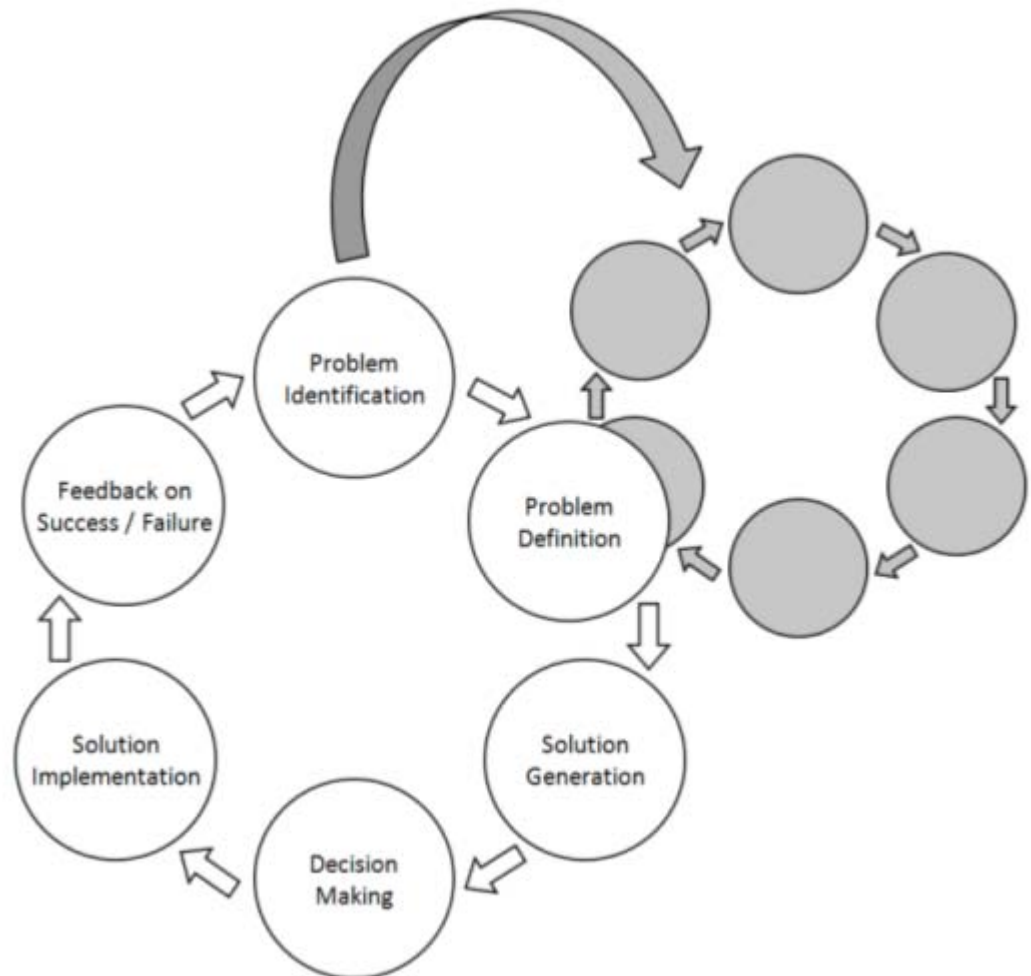 (*Social, economic, educational*)

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Approach to problem solving

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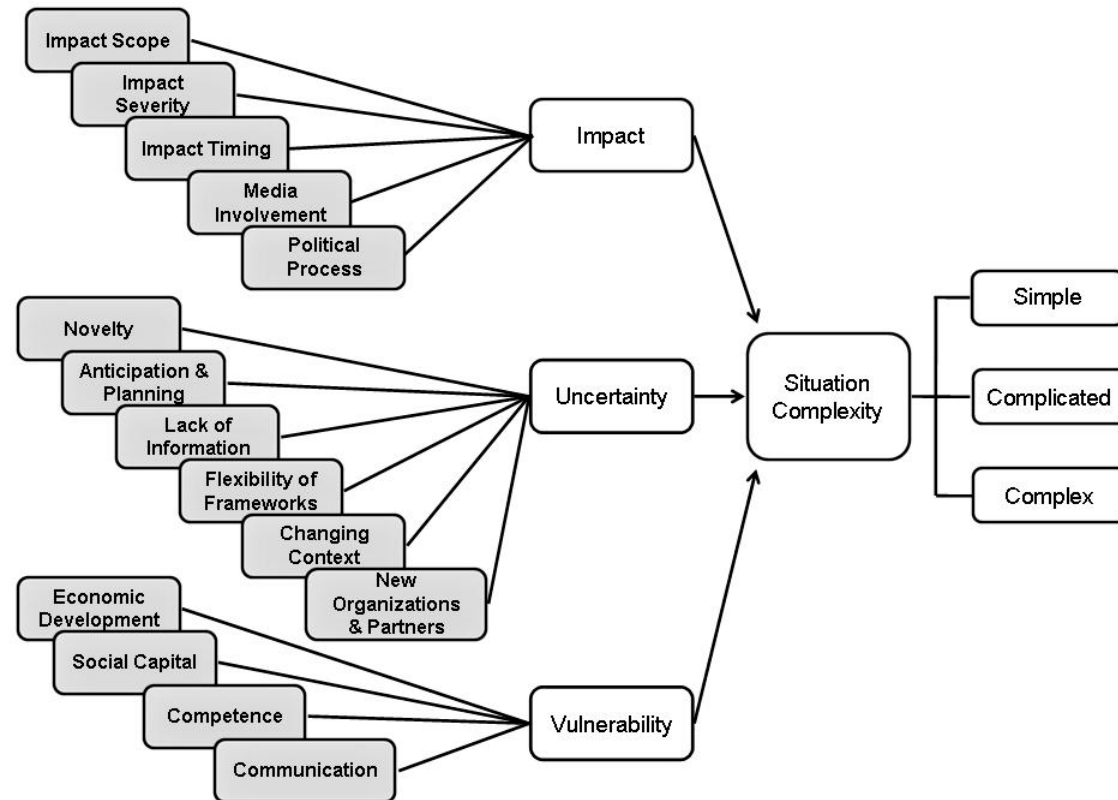
Stages of problem-solving

- Problem solving is an iterative process

- Different stages require different problem solving approaches

Methods: Inter-GAP *in vivo* system

HYDRA-like system

- Working in Pods (groups)

- Based on a scenario

  ("dirty bomb"; situated in a fictional mid-sized Canadian border town called "Gapville"
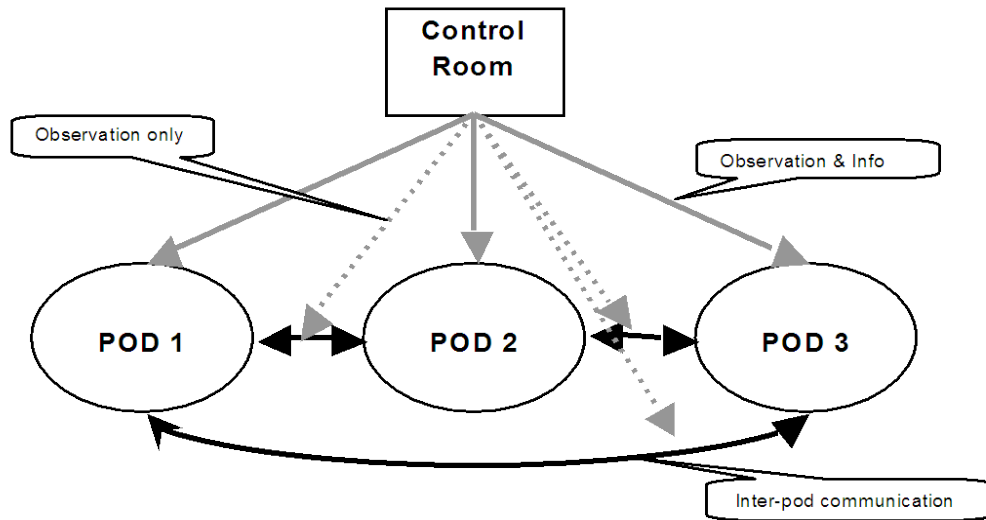
Inter-GAP *in vivo* system

With a software of communication (Nefsis) (camera, audio, chat)

- Examines interaction both within groups and between groups

- 2 I.V.:
  - Group composition
    - Homogeneous
    - or Mixed
  - Approach
    - Coordination
    - or Collaboration
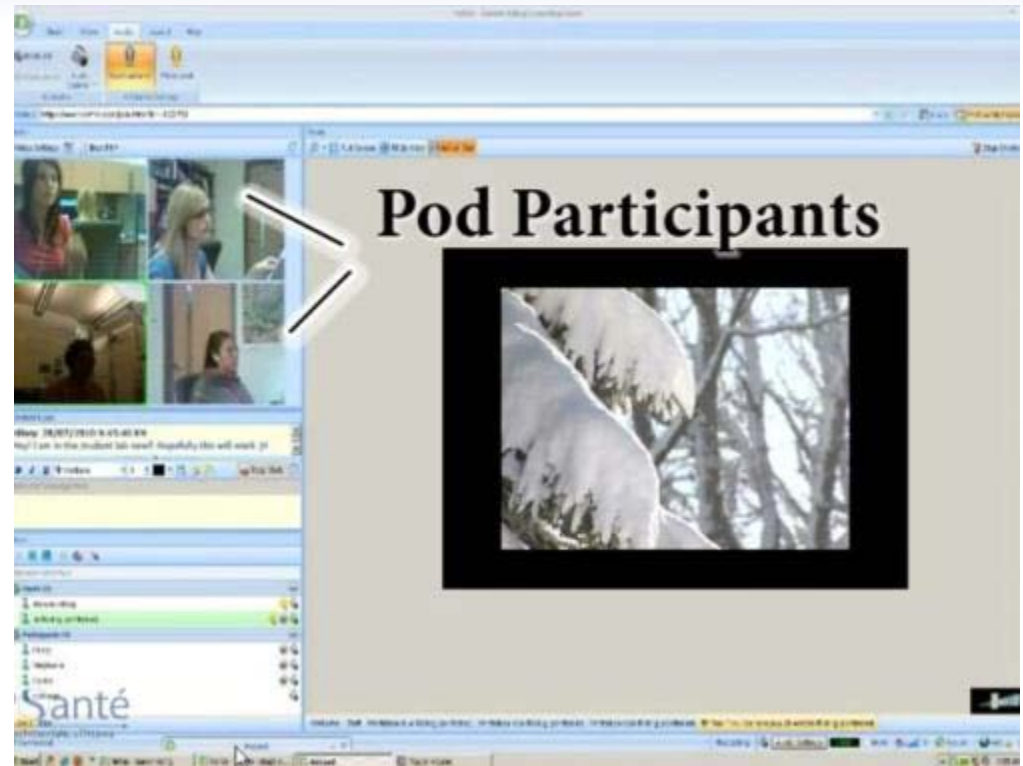
Overall session composition for *in vivo* experiment

- Sessions typically holds nine participants grouped three to a pod

- Participants drawn from three types of organizations
  - Military
  - ICS non-military
  - Non-ICS

- PODS are either Homogeneous or Heterogeneous

Preliminary Results

- Fourteen *in vivo* sessions to date
  - Senior decision makers
  - Early career professionals
  - Naïve participants (to pilot)

- In-depth qualitative interviews
  - Senior decision makers
  - Military, police, health, social services
  - Focus on a real experience of problem-solving in a multi-organizational context

Results: Situation Complexity

- Event players/organizations need to understand what drives complexity
  - Initial tendency to view event as less complex
  - Increased diversity of organizations → more rapid and accurate assessment of event complexity
  - Increased emphasis on **_social_** complexities in addition to technical complexities → better situational awareness

Results: Problem Solving

Collaboration

- Requires practice

- More heavily influenced by trust and relationships → less procedural driven

- Higher levels of frustration, but also higher levels of satisfaction with decisions

- Linked to the capacity to view "big picture"
  - Integrated multi-org perspective greater than sum of multiple organizations' perspectives

Results: Problem Solving

Cooperation

- Important to consider sharing of information and resources <u>and</u> the allocation of resources
  - Conditional "sharing" can be a challenge

Coordination

- Perceived as easier than collaboration
  - Takes less time, less frustration, less negotiating
- Emphasis on defining "who is in charge"

Results:Organizational Structure

- Organizational cultures impact multi-org problem solving
  - Interpersonal trust vs. organizational trust
  - Capacity of orgs to expand, extend, emerge is related to their culture
  - Culture influences the capacity of orgs to share info, resources, power/authority → capacity to coordinate, cooperate, collaborate

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