

# **Knowledge State Sensitive Mission Rehearsal**

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# Overview

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- **Relevant Needs With Quick Response Teams**
- **Problems**
- **Domain Constraints**
- **Mission Rehearsal System**
  - Guidance from literature
  - Incorporating a sensitivity to memory dynamics
- **Current Developments and Concluding Remarks**



## **Relevant Needs With Quick Response Teams**

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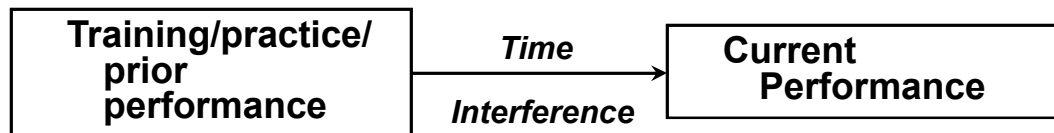
- **Human as a central and balanced element**
- **An ability for the human to perform a wider variety of tasks**
  - **Quickly, effectively, and consistently**
  - **With fewer individuals (“more with less”)**
- **Retrieve knowledge and skills despite potential for decay and interference**



# Quick Response Team Problems

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- An over-reliance on human flexibility and real-time innovation
- Difficult to choreograph context specific activity
  - Contingencies
  - Roles & responsibilities
- Knowledge retrieval





# Domain Constraints

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- **Adapt to varying contexts**
  - Training and practice limited
- **Experience**
  - Good (e.g., reaction time...)
  - Bad (e.g., decision biases...)
- **Must incorporate intelligence or general information**
- **Push situation assessment ahead of window for time to act**
- **Almost always some time in transit to site**
- **Availability of entire staff and skill sets vary**



# **Mission Rehearsal System**

## ***Guidance from literature***

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- **Perceptual vs. Cognitive Fidelity**
  - The romance with “realism”
  - The emphasis and measured value of visual fidelity conflict with relevant needs
    - Entertainment vs. effectiveness
- **Guided mental rehearsal**
  - Useful even for perceptual/motor skill
- **Sensitivity to cognitive factors**
  - Significant and measurable gains
- **“Cognitive factors”?**



# **Mission Rehearsal System**

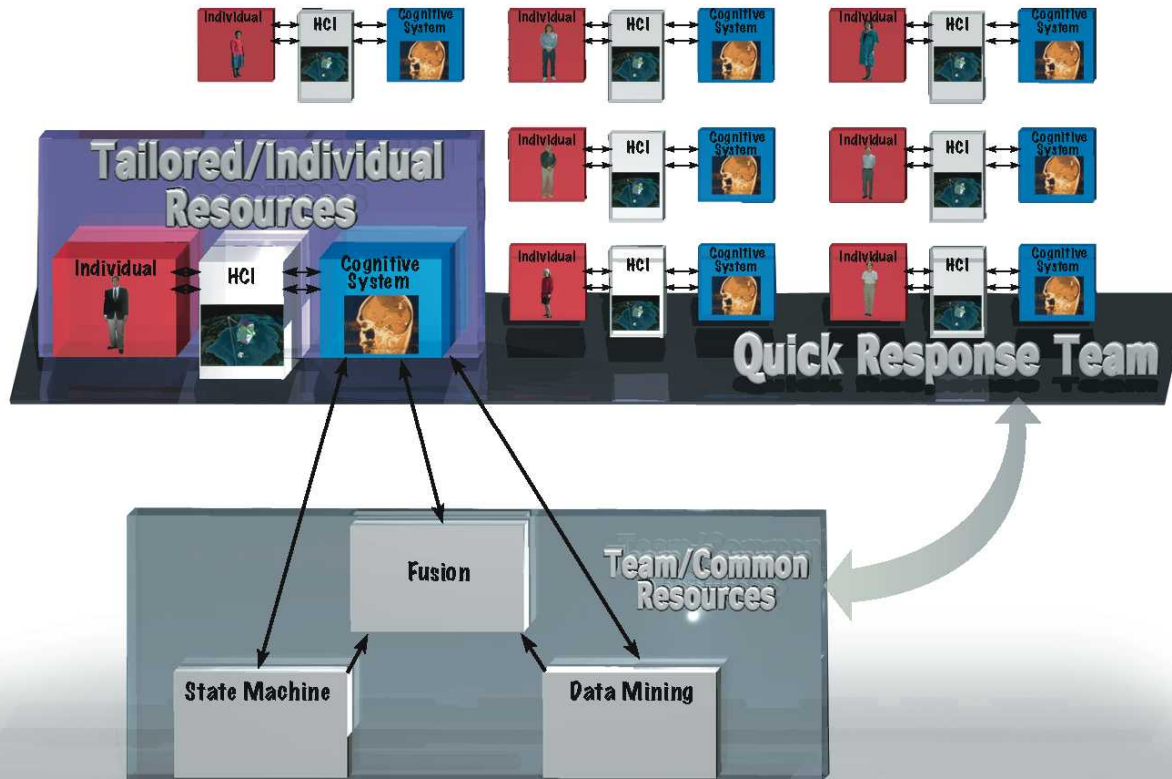
## ***Sensitivity to Memory Dynamics***

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- **Understand the task and more specifically the knowledge**
  - **Procedural vs. Declarative Knowledge**
    - **Varying learning and degradation characteristics**
  - **Can be computationally modeled**
    - **Leverage model to drive rehearsal content**
      - **ACT-RPD**
    - **Raise activation of knowledge and facilitate retrieval mechanisms during subsequent performance**
- **Rehearse a context specific task guided by a system sensitive to the state of an individual's skill**

# Mission Rehearsal System

## *Broader View*







## **Concluding Remarks**

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- **Significant opportunities to apply models in support of tailored, relevant, and timely mission rehearsal**
- **Addressing challenges of varying contexts and potential roles and responsibilities**
- **Decreased burden on individual flexibility and real-time innovation**
- **Respecting the need for rapid, consistent, and effective human performance**