

Improving Time-Sensitive Team Decision-Making

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**MITRE
Technology
Program**

Problem

- Greater complexity, increased reliance on teams
- Human decision making is often the “long pole in the tent.”



“We can provide the information, but if people do not make good use of the information, then we have failed.”

James G. Roche, Secretary of the Air Force

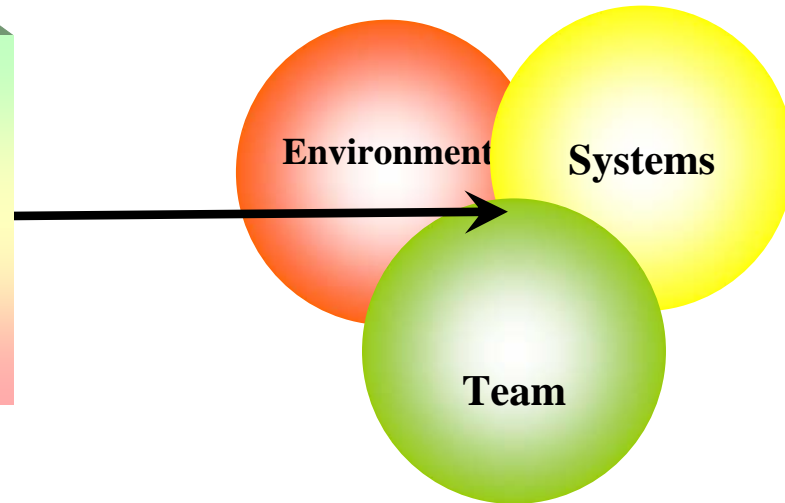
Background

- **Enabling effective collaboration remains challenging because of the need to manage**
 - **large volumes of information**
 - **multiple technologies and modalities**
 - **team awareness and dynamics**
 - **distributed and cross-agency environments**

“NCW is about developing collaborative working environments ... to make it easier to develop common perceptions of the situation.” (Network Centric Warfare, p. 12)

Objectives

Team performance determined by *interdependencies* among the team of operators, how supporting systems are applied, and influences from the surrounding environment



- Identify needed collaboration capabilities and areas of difficulty
- Improve
 - Shared situation awareness
 - Timeliness and accuracy of critical decisions

Activities

- Observe and interview teams performing time-sensitive C2
- Develop a model of collaboration
- Generate recommendations for
 - Technology
 - Processes
- Confirmation and validation
 - Experimentation



Highlight: JEFX



- Attention management
- Juggling multiple modalities
- Impacts of machine-machine
- Joint coordination issues
- Team awareness
- Unverified data

Highlight

- AMC's Tanker Airlift Control Center (TACC)
 - Addresses ESC direction to work “**across the Joint C4ISR Warfighting and Operational Support Spectrum**”
 - **Collaboration** identified as *the key challenge*



Impacts

- **Model of collaborative process**
- **New recommendations for technology, TTPs, training**
- **Publications**
- **Longer term impact**
 - **Challenge for ESE: effective, adaptive human decision making**
 - **Effective blend of human cognition with information technology**

Collaborations

Applying User Models to Improve Team Decision Making, Brad Goodman, MSR

Nonlinear Visualization, Dave DeMoulied, MSR

Dr. Mary Cummings, MIT

Future Plans

- **Extend across domains to the enterprise level**
- **Observe Homeland Defense exercise Ardent Sentry**
- **Use experimentation and prototyping to address collaboration shortfalls**
- **Continue as MITRE Sponsored Research**