

12TH ICCRTS

“Adapting C2 to the 21st Century”

Title: Macrocognition in Complex Team Problem Solving

Track(s): In priority order

Track 4: Cognitive and Social Issues

Track 5: Organizational Issues

Track 1: C2 Concepts, Theory, and Policy

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ABSTRACT

Defense transformation has dictated that coalition operations, joint force actions and multinational response teams will all be a relevant part of the force of the future. As such, a critical objective of C2 in the 21st Century will be to accomplish *Knowledge Interoperability*. Missions will be interconnected and interdependent, sociotechnical factors will increase, and cognitive work will be distributed among people and machines. From this we will see an increased need for teams to work together to plan, think, decide, solve problems, and take action as integrated units.

In this paper we describe a multi-disciplinary effort designed to build a theoretical framework of what we label macrocognition so as to support research in collaborative problem solving within the context of C2. We define macrocognition as the internalized and externalized high-level mental processes employed by teams to create new knowledge during complex, one-of-a-kind, collaborative problem solving.

We build upon theoretical underpinnings arising out of the cognitive and organizational sciences and integrate these with naturalistic decision making. We have two overarching goals with this effort. First, our short-term goal is to identify and define the key processes and functions that drive macrocognition. Second, from this, our long-term goal is to develop a richer understanding of the varied concepts necessary to capture the complexities inherent in collaborative problem solving so as to eventually drive improved training and collaborative decision making.

OUTLINE

Title: Macrocognition in Complex Team Problem Solving

- Drivers for Change in Team Activity
- Implications for team Cognition
- A Gap in the Technology: Macrocognition
- Fit in Team Cognitive Theory
- A Model of Team Collaborative Activity
- Stages and Processes in Collaborative Activity
- Definitions and a Taxonomy of Macrocognitive Processes
- Implications for Support of Team Collaborative Processes