

**12TH ICCRTS
“Adapting C2 to the 21st Century”**

Contingency Effects on Time-critical Collaborative Decision-making

**Potential Tracks: 4 Cognitive and Social Issues
 7 Network-centric Experimentation and Applications
 1 C2 Concepts, Theory and Policy**

**Andrew Dowse (PhD STUDENT)* and Dr Edward Lewis
School of Information Technology and Electrical Engineering
University of New South Wales at the
Australian Defence Force Academy**

***Point of Contact
Russell Offices (R1-6-C093)
Canberra ACT 2600
Australia
Tel (61) 2 62655512**

e-mail: a.dowse@adfa.edu.au or andrew.dowse@defence.gov.au

Abstract

Key to the concept of Network Centric Warfare is the social interaction between elements of a diverse force to create synergy, unity of purpose and harmony of action. This paper examines collaborative decision-making arrangements when addressing problems that span the competency, authority and responsibility of different elements of the force. As an optimal approach to decision-making depends upon the nature of the problem, a model is developed that incorporates contingency factors of task uncertainty and task interdependence. The model draws upon organisational and decision science literature to reflect coordination and specialisation requirements in conceptual terms of integration and differentiation of decision processes and behaviour.

The paper reports on the conduct of a laboratory experiment to test the research model, in which decision-makers use a tool suite to collaborate with commanders from other parts of the organisation to solve time-critical problems. Within this sense and respond environment, controlled variations of the nature of the problem, level of prescription used in the decision aid, collaborative approach and cooperativeness of collaborators were applied to test five research propositions. The paper presents and elaborates upon the findings of the experiment.

Outline

Background

Decision Models from the Literature

Differentiation and Integration in C2

The Collaborative Decision Model

Research Propositions

Research Design and Implementation of the Experiment

A Game Theory Variation

Findings

 Prescriptive Decision-Making

 Value of Collaboration in Complex Tasks

 Targeted versus Inclusive Collaboration

 Collaboration and Innovation

 Strength of Relationships

Conclusion