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Adapting C2 to the 21st Century**

Title: *“More than Information Overload: Supporting Human Attention Allocation”*

Track 4: Cognitive and Social Issues

Suggested Topics: Decision-making Sense-making Collaboration

Lindsley G. Boiney, Ph.D.

MITRE Corporation

202 Burlington Rd

Bedford, MA 01730-1420

(781) 271-2640

lboiney@mitre.org

Abstract

Human attention, rather than information, is becoming the critical resource for SA and decision-making in many C2 environments.^{1, 2} The changing nature of missions, the impact of new information technologies, and the need to work in richer contexts (joint, coalition, inter-agency) have resulted in new approaches to C2 that place unique demands on human cognition and social processes. These demands go well beyond the need to process increased quantities of information. Attention pressures are intensifying as operators must multi-task, accommodate frequent interruptions, attend to numerous information sources and modalities, and remain alert for unanticipated threats in asymmetric warfare. Distributed teams must also maintain shared SA and repeatedly recalibrate changing priorities or lines of accountability.

Many technologies, such as information filters, prioritized alerts, checklists, adaptive automation, and peripheral displays, can potentially support attention allocation. But when applied without systematically characterizing the attention demands of a C2 environment, technologies may actually contribute to overload, attention tunneling, or ill-timed interruptions. This paper draws from *direct field observation* of attention allocation behaviors in C2 environments as well as existing theories of attention. Taking a systems approach, we develop a framework mapping distinct attention challenges to technologies most likely to improve overall SA and decision making performance.

¹ Jones, D. G., & Endsley, M. R. (1996). Sources of situation awareness errors in aviation. *Aviation, Space and Environmental Medicine*, 67 (6), 507-512.

² P.J. Mitchell, M.L. Cummings, T.B. Sheridan (2004). "Human Supervisory Control Issues in Network Centric Warfare." Prepared for Boeing, Phantom Works, September, 2004. Massachusetts Institute of Technology, Humans and Automation Laboratory.