

A Framework for Team Situation Awareness in Synthetic Battlespace

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ABSTRACT

Situation awareness (SA) in group contexts such as in human-in-the-loop (HITL) experiments can differ markedly from other military contexts where performance centers on the individual (e.g., fighter pilot SA). One obvious difference is that in group contexts, information relevant to the situation is obtained and used by more than one individual. As a result, HITL players bring to gameplay backgrounds that vary in terms of level of experience, skills/ abilities, and prior knowledge and so contribute differentially to the information-gathering and sense making processes involved in SA. While most definitions of SA have focused on the internal representations and processes of the individual other attempts have distinguished between the individual and group both in terms of the unit of analysis (individual vs. system) and in identifying the processes and representations involving Team SA (e.g., distribution of information within the system and the dynamic coordination of this information across time). This latter focus involves distributed cognition.

In this paper we develop a framework for situation awareness within the context of synthetic battlespace that incorporates ideas about individual and Team SA to assess the contribution of individual players, the distributed cognitive system, and the performance of the team as a whole using objective and subjective measures of evaluation. Using data from a HITL experiment we will illustrate concepts relevant to this framework. It is our intent that this framework generalizes to other dynamic group contexts. Among the advantages of this approach are that it increases opportunities for learning by separating out individual performance and that it provides a guide for developing more effective training software and techniques, both of which will ultimately contribute to an increase in mission effectiveness.

ABOUT THE AUTHORS

Jacqueline M. Curiel is a research psychologist at Alion Science and Technology and a co-founder of Behavioral Cognition LLC, a consulting company specializing in behavioral research. She received both her M. A. and PhD degrees in Psychology from the University of Notre Dame, where her research focused on spatial cognition and mental representations in narrative comprehension.

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