

October 1, 2010

SimIS Inc. Vice President David W. Roberts Co-Chairs Panel on “Opportunities for Human Factors Measures in Military Operational Test and Evaluation”

Continuing SimIS' support of the Test and Evaluation community's need for improved Operational Test and Evaluation tools and processes, David Roberts co-chaired an important panel of government, academia, and industry experts at the Human Factors and Ergonomic Society Annual Meeting. The panel's comments were well received by the early Friday morning conference crowd and an hour of lively discussion followed the briefings.

The panel was co-chaired by Jennifer Ockerman, Ph.D., from the Johns Hopkins University Applied Physics Laboratory. Panel members included:

Albert A. Sciarretta, CNS Technologies, Inc.
Dennis Folds, Ph.D., Georgia Tech Research Institute
Susana McKee, U.S. Air Force, 505th Command and Control Wing
Reta Morgan Reynolds, U.S. Army, Aberdeen Test Center
Rebecca Grier, Ph.D., Institute for Defense Analysis

A synopsis of the panel topic follows:

Military Operational Test and Evaluation (OT&E) is conducted under operationally realistic conditions across a full spectrum of military operations to determine the readiness of a system to be fielded. OT&E seeks to assess the operational effectiveness and suitability of the system under test. Operational effectiveness measures the overall ability of a system to enable mission accomplishment when used by warfighters in a representative operational environment. Operational effectiveness seeks to evaluate organization, doctrine, and tactics. Operational suitability measures the overall ability of a system to be placed in field use. Operational suitability assesses reliability, availability, and human factors.

To date, little effort has been placed on evaluating the warfighters' performance as part of the overall ability of the system to enable mission accomplishment. In fact, any warfighter performance issues are normally reported by exception, which means that it is not evaluated unless a problem is identified during testing (i.e., there is no formal plan to evaluate the warfighter performance component of overall system performance). Most analysis focused on the human factor has been done through the use of opinion surveys. Although, opinion surveys can provide insight into how well a warfighter likes a new system, they do not provide information on the new system's impacts on the warfighters' cognitive capabilities and ultimate performance, nor on the impact on the performance of a team of warfighters.

Over many years, the human factors domain has developed measures of cognition (mental workload, situation awareness, decision making, etc.) and teamwork (collaboration, coordination, shared SA, social network analysis, etc.) that should be applied during military OT&E. These types of human factor measures can be used to

evaluate both operational effectiveness and suitability, providing a method of analyzing the human component in mission effectiveness and the impact of the system under test on the human component. Without objectively evaluating the human component of the overall system, it is impossible to truly evaluate operational effectiveness and suitability.

This panel presented the need for more objective, comprehensive, and automatically-collected human performance measurements in military OT&E, and earlier in the development and testing, especially in relation to command and control (C2) systems, as well as touched upon the potentially useful human factor measures currently available and how to select the correct ones to use.