

Trident Warrior Fleet Experimentation Support

PROGRAM DESCRIPTION

Trident Warrior (TW) is part of the Naval Warfare Development Center's Fleet Experimentation Program. TW events have been conducted annually since 2003 on underway ships and at land-based command centers. TW provides a field assessment of emerging technologies within a real-world operational environment. Numerous technologies are examined within initiative areas such as Cyber, Information Dominance, and Command and Control. Human Systems Integration (HSI) assessments are an important component of each technology's evaluation.



HSI CHALLENGE

Measures of human performance are vital for ensuring technologies are assessed not only on their technical merits, but also on their ease of use and operational impact. There is growing recognition of the value of HSI when assessing sociotechnical systems that are being considered for acquisition by the U.S. Navy. This recognition has led to a greater emphasis on understanding the role of human operators in these advanced technology systems. For example, in TW 2012, more than 95% of the 65 assessment objectives measured human-system interactions. This increasing role of HSI has expanded the focus of military assessment beyond just technical capability (does it work?) to functional utility (is it useful to real users for real tasks?). However, HSI assessments require a detailed analytic protocol that must be developed and applied to ensure that reliable and valid assessment can be obtained.

APPROACH

PSE helped to develop a metrics structure for assessing HSI factors in TW technologies. This structure ensures that the needs of the 'humans in the loop' are met and that overall system effectiveness is optimized. The metrics structure includes both quantitative measures, such as system data (e.g., direct measurement of bandwidth) and 'qualitative measures' which assess human performance (e.g., surveys, observer logs, interviews). Together, quantitative and qualitative measures provide a thorough HSI evaluation of the military utility of each TW technology.

PSE also plays an instrumental role in the HSI assessment of individual technologies. PSE works with technical area leads to provide expert guidance to technology groups to develop data collection plans and qualitative measures within the context of the live TW exercise. Following the exercise, PSE analyzes and interprets the data in terms of meeting the defined objectives and providing military utility to the Fleet. Additionally, feedback from field experimentation is provided to operational units so that doctrine, standard operating procedures (SOPs) and Tactics, Techniques and Procedures (TTPs) can be updated to accommodate the impact of new technology and associated work processes.

IMPACT

Since 2003, PSE has supported the HSI assessment of hundreds of technologies. While summary "pass/fail" grades are important to guide Navy investment in each technology, the detailed feedback PSE helps prepare is essential for guiding further development in productive ways.

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