

ENHANCING THE COMMANDER'S DECISION AID TO MEET FUTURE COMBAT SYSTEM PLATFORM PROTECTION SYSTEM REQUIREMENTS

Ronald M. Yannone

BAE SYSTEMS Information and Electronic Warfare System (IEWS)
P.O. Box 868 Nashua, NH 03061-0868 USA
ronald.m.yannone@baesystems.com

ABSTRACT

Since 1995, BAE Systems IEWS has been developing and demonstrating the Commander's Decision Aid (CDA), a generalized sensor/information fusion processor and resource/response manager for integrated defense of ground combat vehicles. The CDA was developed under several contracts to Prime Contractor United Defense for the U.S. Army Tank-automotive & Armaments Command (TACOM). The CDA performs sensor fusion, threat typing, prioritization, countermeasure response management, and countermeasure effectiveness. To date, the CDA has been exercised in live-fire exercises against numerous threats at Yuma Proving Grounds, AZ. The next step is to extend the CDA to address the Army's Future Combat System (FCS) requirements – namely to grow the CDA into FCS's Platform Protection System (PPS). Where the CDA effort to date has focused on single-vehicle self-defense, FCS will be heavily network-centric – comprised of support vehicles (e.g., C2, multispectral sensors, weapons, resupply, UAVs, bridge laying, countermine, medical), overhead assets (SATCOM), seismic/acoustic unmanned guided sensors (UGS), and JSTARS. The PPS will have to handle a barrage of line-of-sight (LOS) and non-LOS onboard/offboard data. Threats are multispectrally guided and unguided, and PPS response times will be as short as 1/20 second, with likely salvo attacks where the PPS must address simultaneous or near-simultaneous threats. Both cooperative vehicle sensing and countermeasures are required, and handling data with varying levels of accuracy, confidence, time-lines and coordinate systems is required. Responses will include sensor cueing, threat avoidance, and counterfire (use of weapons). Both rural and MOUT (military operations in urban terrain) offer a wide host of challenges for the PPS in that the PPS needs to respond to “real” threat situations – verses false alarms, spoofing, and real threats that are aimed at other vehicles or misguided. In this paper we review the CDA architecture, its functions, and high-level algorithm set. Next we reveal the FCS PPS interface diagram with the basic data available for processing, and delineate the extensions of the CDA to become the PPS. We close the paper by listing FCS/PPS challenges.