FORT MONMOUTH CONDUCTS C4ISR ON-THE-MOVE DEMONSTRATIONS IN SUPPORT OF OBJECTIVE FORCE TASK FORCE

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On August 17, 2001, Dr. A. Michael Andrews II, Deputy Assistant Secretary for Research and Technology, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, stated, "The Army's transformation to the Objective Force will provide a strategically responsive force that dominates across the full spectrum of operations. The cornerstone of this transformation is our ability to achieve enhanced lethality and survivability through the effective use of command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) while on the move (OTM). The commander must be supported by robust intelligence, surveillance, reconnaissance, and beyond line-of-sight fires." Andrews directed that the U.S. Army Materiel Command stand up a Special Projects Office at the Communications-Electronics Command (CECOM) Research, Development and Engineering Center (RDEC) to conduct a series of C4ISR technology demonstrations, with the first completed in February 2003, as the capstone scenario.

These demonstrations will illustrate that state-of-the-art, beyond-line-of-sight sensors, weapons, and communications can effectively be integrated into a C4ISR system-of-systems, capable of supporting the successful development of the Army's Future Combat Systems (FCS). Included in these technologies are a variety of science and technology (S&T), program manager (PM), Defense Advanced Research Projects Agency, and commercial systems. In response to this direction, the RDEC authorized the Special Projects Office to establish a C4ISR laboratory and testbed to perform a series of on-the-move vignettes in a relevant field environment. Fort Dix, NJ, with a maneuver area of 30 by 40 kilometers, was selected for the field maneuver area.

GIC Sets Up Laboratory

The Government Integration Center (GIC) at Fort Monmouth, NJ, was established to provide laboratory facilities for hardware and software integration, worldwide communications, and laboratory testing. To facilitate the migration of technologies from the lab to the field, as well as provide mechanisms for a distributed laboratory structure, the testbed at Fort Dix and the GIC were connected on a high-bandwidth data network. The demonstration area at Fort Dix also uses a high-bandwidth connection to Fort Belvoir for video teleconferencing applications and data exchanges.

Further, this effort provides a common venue for the FCS Lead Systems Integrator, U.S. Army Training and Doctrine Command (TRADOC), and the FCS program management team to evaluate emerging tactics, techniques, and procedures (TTPs); develop baseline C4ISR architectures; and reduce risk during the acquisition process with "in-the-mud" evaluations. The scenario developed for the first demonstration is separated into a series of 22 vignettes. There are four primary vignette categories:

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–Dr. A. Michael Andrews II
Deputy Assistant Secretary for Research and Technology
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command and control, communications, sensors, and fusion.

Command And Control

The command and control vignettes focus on mission collaboration and rehearsal, and information management across echelons. They examine the physical and cognitive impact of conducting complex, highly automated command and control (C2) functions while OTM and the ability to enable significant enhancements in force synchronization through collaborative planning and execution. They will also examine C2 requirements for controlling and tasking unmanned ground vehicles, hunters, and killers in a networked environment.

Communication

The communication vignettes examine how well a multitier communications network supports the ability to sustain continuous connectivity—stationary and OTM—over varying terrain conditions. They also examine OTM high-bandwidth range extension, OTM satellite communication reachback, scalable mobile network, quality of service resource management, and admission control function in heterogeneous ad hoc wireless networks.

Sensors

The sensor vignettes examine sensors and sensor groupings required to provide levels of convergence (timeliness, target type, and environment) adequate to support the levels of lethality and survivability the FCS requires. Specifically, the ability to execute the commander's tasking; detect, identify, and track targets; and operate at extended ranges will be examined. Sensors participating in the first demonstration include tactical unmanned aerial vehicle (TUAV) countermine, unattended ground sensor, ground-based signals intelligence, TUAV electro-optical/infrared, and synthetic aperture radar/moving target indicator/tracking systems.

Fusion

The objective of the fusion vignette is to examine, quantify, and qualify the impact of semiautomated fusion architecture on the accuracy, deconfliction, completeness, timeliness, and reliability of an FCS unit of action (UA) common operational picture (COP). Specifically, it measures to what extent a fused UA COP provides continuous situation awareness of unfriendly targets over a specified range within a specified time. Measures of effectiveness include classification, deconfliction and completeness, timeliness, targeting accuracy, and reliability.

Conclusion

In summary, these series of demonstrations are crucial to developing the Army FCS C4ISR baseline architectures in support of the Objective Force. It is the only viable alternative to conducting C4ISR hardware demonstration prior to Milestone B and is significant as it allows TRADOC to evaluate TTP, PMs to reduce acquisition risks, and the S&T community to insert technology during the spiral development and acquisition processes.

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