VISTA

Vertical/horizontal Integration of Space Technologies and Applications

Summary

- Relevant threat warning at the tactical edge to include individual handheld devices

- Space and missile defense enhanced situational awareness for brigade-and-below Warfighters

- Seamless and automatic interoperability of current Army Battle Command Systems (ABCS) with space and missile defense systems

The Vertical/horizontal Integration of Space Technologies and Applications (VISTA) program normalizes space and missile defense products and services within the U.S. Army's brigade-and-below battle command environment.

Space developed products, while considered indispensable by the Warfighter, are not automatically integrated with the U.S. Army brigade-and-below battle command systems. Space-resourced products and services are normally developed by strategically oriented production facilities and the information is distributed to theater-level analysis functions to determine relevancy to tactical Warfighters. The ability of Warfighters, brigade and below, to receive relevant, near real-time information directly from space and missile defense assets is limited. Operating automatically in the background of the Army's current network-centric battle command environment, VISTA provides the capability for current ABCS to receive relevant information directly from strategically oriented space and missile defense systems using current communications systems, computer systems, and message formats.

Purpose

To automatically and seamlessly integrate space and missile defense capabilities with Army Warfighting elements, brigade and below, in a "space to foxhole" LandWarNet environment.

Benefits to the Warfighter

VISTA provides the capability to distribute relevant space-and-missile defense-developed products and services to all levels of Army battle command from corps and theater needs to the specific needs of individual Warfighters at brigade and below. The capability to identify what specific pieces of space-and-missile defense-developed information are relevant to individual Warfighters is a key component of VISTA's support capability. In addition, VISTA provides the means for individual Warfighters to define what information they need in their specific area of interest. In this manner, VISTA supports defined Warfighter needs for force protection and situational awareness.

Background

The VISTA effort is a core technology development effort for Strategic Information Dissemination and Management in the Tactical Information Technologies for Assured NetOps (TITAN) FY08-FY11 Army Technology Objective program. TITAN is an assistant secretary of the Army (Acquisition, Logistics and Technology) (ASA[ALT])-approved science and technology cooperative development effort between the Space and Missile Defense Technical Center and the Communications-Electronics Research, Development and Engineering Center.

Initial VISTA capabilities have been successfully demonstrated during a Limited Objective Experiment at Battle Command Battle Lab, Fort Leavenworth Kan., October 2009, and during Department of Defense-sponsored Coalition Warrior Interoperability Demonstration 2010 in June. The CWID effort was a Joint demonstration between SMDTC and the Air Force's Space Based Infra-Red System (SBIRS) program office. VISTA technology is currently at a Technology Readiness Level 5 (TRL 5).

VISTA technology has successfully integrated with Force XXI Battle Command Brigade and Below (FBCB2), Command and Control Personnel Computer (C2PC), Command Post of the Future (CPOF), the TITAN Service Oriented Architecture (SOA), and hand-held devices.

Technical Concept

The VISTA "space to foxhole" technical approach uses a Multi-Agent System (MAS) operating in the background of the Army's tactical network-centric environment, utilizing intelligent knowledge management techniques and adaptive applications to seamlessly integrate space and threat warning products with ABCS. These "Software Entities" are known as Multi-Agent Knowledge Online (MAKO), and operate in a flexible, autonomous, and non-hierarchical manner from the strategic command level to brigade and below, on existing battle command computer systems. The VISTA MAKO MAS provides application-level software that is: (1) reactive, or able to perceive its environment and respond in a timely fashion to needs and changes, responding to dynamic events on the battlefield such as a missile launch; and (2) pro-active, or able to exhibit goal-oriented behavior to support individual Warfighter needs. VISTA capabilities are able to develop knowledge and distribute it in a timely manner in a format that can be directly integrated into the applicable Battle Command system at the "Tactical Edge."

VISTA Advantage

- The right information to the right destination at the right time in the right format, seamlessly.
- No new hardware, communications systems, or protocols.
- Easily adaptable to meet additional functional Battle Command needs.
- VISTA is government-owned, non-proprietary software built in Java, and can be run on multiple operating systems and hardware platforms.
- Software components can be distributed and are multi-threaded allowing for high scalability.
- VISTA software has a small foot print: less than 50 megabytes excluding database.