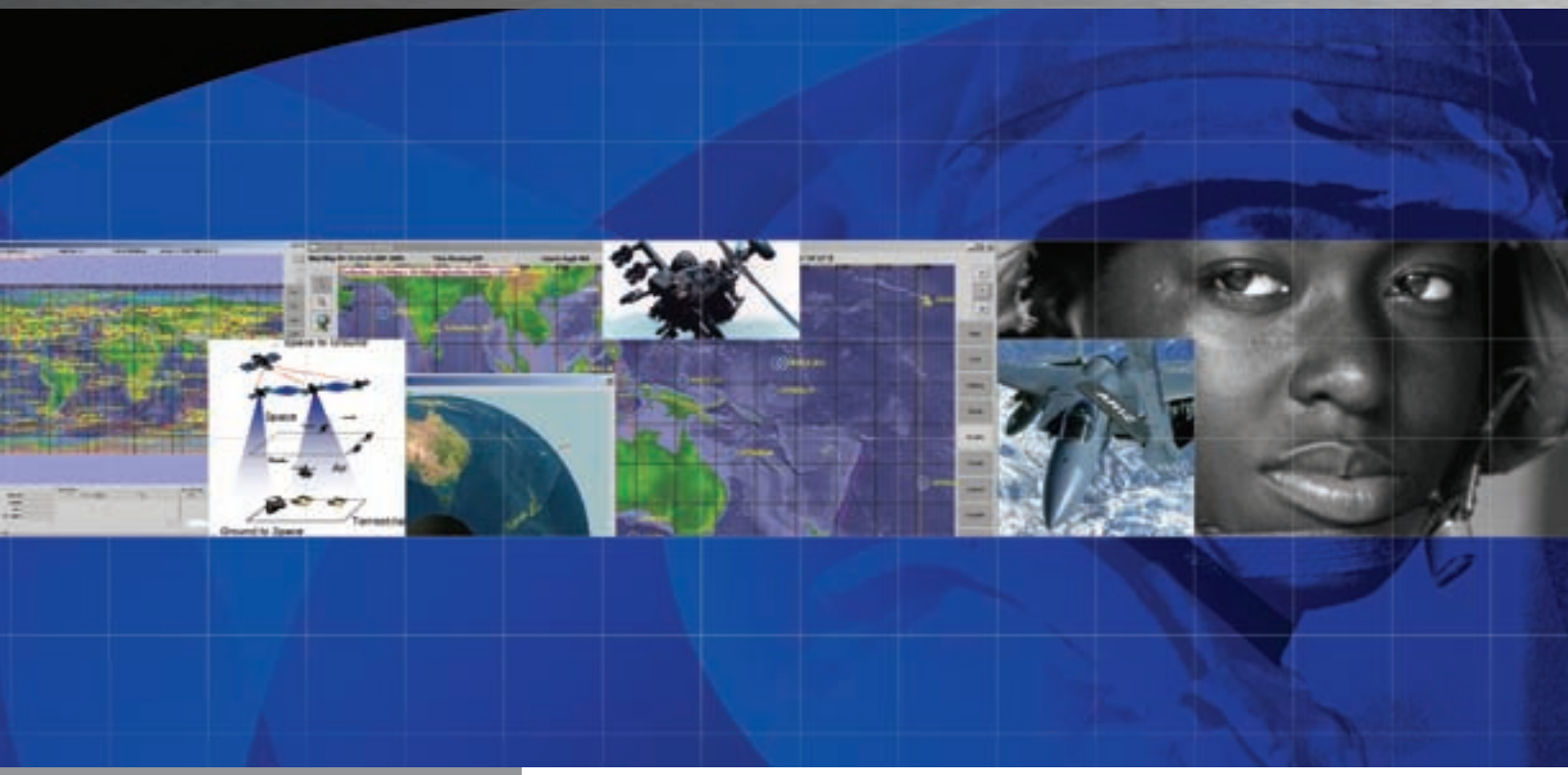
UNITED STATES ARMY
SPACE AND MISSILE
DEFENSE COMMAND

Technical Interoperability and Matrix Center

JAWS

Joint Awareness Warfighter–Space



Summary

- Intelligent Agent technology provides automated decision support for space situational awareness
- Net-centric architecture supports the User Defined Operational Picture (UDOP)
- Incorporates terrestrial and space weather for effective impact analysis
- Presents data, alerts, and courses of action based on mission needs
- Provides functional interfaces and interoperability with Army and Air Force Space Situational Awareness Tools

JAWS provides intelligent agent decision support to ensure integrated space situational awareness, furnishing the soldier fast, accurate decision-making capabilities for theater and joint missions.

Today's battlefield commander experiences an unprecedented dependence on the information network and has to analyze large amounts of data to reach a decision. In order to sift through all the information and get quickly to the actionable knowledge, a combat commander needs decision support tools to assist him with planning and operational decisions in order to maintain his operational superiority. Combat commanders depend on space situational awareness to understand and analyze the land and air picture, communicate, navigate, target, find and fix the enemy, anticipate weather, receive missile warning, track units and logistics, avoid fratricide, and perform search and rescue. Joint Awareness Warfighter-Space (JAWS) will provide the Army Space Support Officers a robust, state-of-the-art, highly automated, net-centric tool that will support critical space tasks.

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Overview

Joint Awareness Warfighter-Space (JAWS) is a Small Business Initiative Research (SBIR) Program now in Phase III. The objective of the contract is to develop modular software to provide Space Situational Awareness (SSA) and automated decision support using Intelligent Agents (IA) for the Army Space Warfighter.

The decision support focuses on courses of action, matched to mission tasks and objectives, in response to detected and predictable events. Intelligent Agents perform the processing necessary to correlate data from different sources in order to derive actionable knowledge. For example, JAWS provides alerts for space and terrestrial weather effects on imagery satellites, satellite communications outages, and periods of high or low Global Positioning System (GPS) navigational accuracy. In addition, it provides recommended courses of action in response to these events for a specific user in a specific area of interest.

The JAWS application is being developed in three iterations with user input from Army Strategic Command's soldiers. At the end of this two-year Phase III, 21st Century Systems Inc. (21CSI) will provide an advanced prototype demonstrated on the Army's Space Operations System (SOS) in an operational environment. In future spirals, 21CSI will develop additional functionality to integrate other data feeds, support multiple security levels, integrate aspects of the Single Integrated Air Picture (SIAP), provide capability to assist with predictive avoidance, and provide an enhanced set of GPS features.

Technical Description

JAWS software framework is based on 21CSI's extensible multi-component Decision Support Systems (DSS) architecture known as the Agent Enhanced Decision Guide Environment (AEDGE®). AEDGE® is an open-architecture software environment supported by a software development toolkit for the creation of decision support applications. While the product features advanced 2D and 3D graphics capabilities, the Intelligent Agent components are built upon a modular framework that can be utilized with other visualization tools.

Benefit to the Warfighter

JAWS Intelligent Agents correlate missile, space, air and intelligence information against mission objectives and provide an automated set of recommendations for courses of actions supporting space force enhancement, space control operations, and deliberate and crisis action planning. Mission objectives might include the generation and dissemination of space environmental reports, missile warning probability, MILSATCOM status capabilities, targeting process and employment of precision munitions, GPS status on Blue Force Tracking (BFT), GPS enhancement in theater and other critical space support tasks.

By redefining mission parameters, a warfighter can respond to changing criteria in support of one or more missions. Likewise, a combatant commander can receive actionable knowledge tailored to his area of interest and immediate mission perspective, while space analysts in strategic positions can analyze the longer term picture using the same toolset by redefining their mission parameters.

Joint Integration and Interoperability

Air Force and Army are working to develop a networked set of software applications that provide for space planning and situational awareness. JAWS capability is being developed to work with the Air Force led program, Single Integrated Space Picture (SISP). As SISP evolves to become the Space C2 Weapons System, the Army is working in the joint community to identify and prioritize Army requirements, develop joint acquisition strategies and integrate JAWS functionality into SISP. The addition of automated decision support providing timely courses of action will enhance the ability of the strategic or theater support officer to make rapid and accurate assessments.

This capability will support the already established and evolving combatant commander's operational concepts throughout times of peace, war, terrorism and natural disaster.

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