

NEED & CUSTOMER REQUIREMENT

Need: There is a growing need for current and future space systems to respond rapidly and effectively to threats, failures, or changing mission requirements. Recent advances will soon allow in-space reconfiguration and re-tasking of satellites and ground stations that will improve overall mission responsiveness. As the number of deployed reconfigurable space assets increases so too will the number of potential configurations. Optimization tools are therefore needed to identify the best possible configuration in order to react to changing conditions.

Value to the Warfighter: This tool is designed to facilitate timely and effective decisions about the operation and reconfiguration of space assets. Valuable decision support capabilities can reach to all programs across DoD using customized workflows developed for a variety of scenarios, users and operators.

Operational Gap: Satellites are typically managed on an individual basis, with narrowly defined functions. Both the physical systems and the operational protocols are not designed to respond dynamically to changing events. There is untapped potential for current and especially future satellites to enhance responsiveness with the aid of optimal planning tools.

Customer Specifications: Facilitate satellite reconfiguration decision-making by generating multiple, ranked options and potential trade-offs; Interoperate with existing tool suites; Employ open interfaces and standards; Consider system constraints and operator's mission priorities.

Technology Description: The Satellite Planner for Execution and Reconfiguration (SPEAR) enables requirements-driven reconfiguration of one or multiple spacecraft. The tool automatically generates alternative courses of action through numerical optimization algorithms, and presents options visually in a user-defined operating picture (UDOP). A modular framework with drag-and-drop interface allows rapid development of custom workflows for each unique scenario and supports integration with other Joint Space Operations tools.

TECHNOLOGY DEVELOPMENT MILESTONES (SBIR/STTR)

Milestone	TRL	Risk	Measure of Success	TRL Date
Preliminary Concept Demonstration	3	Low	Analytical and experimental critical function and/or characteristic proof of concept	Sep 2010
Prototype System - MUOS Demonstration	5	Low	Component and/or breadboard validation in a relevant environment	Nov 2011
SPEAR version 1.0	5	Low	Component and/or breadboard validation in a relevant environment	Sep 2012
Full System - MUOS Demonstration	6	Moderate	System/subsystem or prototype demonstration in a relevant environment	March 2013
Integration with JMS	8	Moderate	Actual system completed and qualified through test and demonstration	March 2014

Open contract: N66001-10-C-5200 ending September 23, 2011

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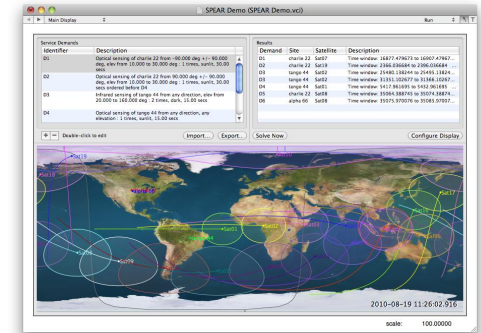
SPONSORSHIP of original SBIR/STTR Topic

SYSCOM: SPAWAR

Transition Target: Mobile User Object System (MUOS), Joint Space Operations Center (JSPOC) Mission System (JMS)

Original Sponsoring Program: PEO Space

TPOC Phone Number: 571-432-1406



TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)

Other Potential Applications: Dynamic planning for Intelligence, Surveillance, Reconnaissance missions; Contingency planning system for commercial spacecraft; Non-space applications: unmanned aerial vehicles (UAV), submarines.

Business Model: Integrate with current and future ground systems to provide augmented decision support capability. Revenue generated from software licensing and ongoing support services to develop custom plugins and planning solutions.

Objective: Integrate SPEAR at command and control facilities to assist commanders in making timely decisions for optimal use of space assets.