

Transition

An example of Air Force supported SBIR/STTR technology that has been transitioned into an Air Force or other DoD system or subsystem or used by Air Force test ranges and facilities or maintenance depots.

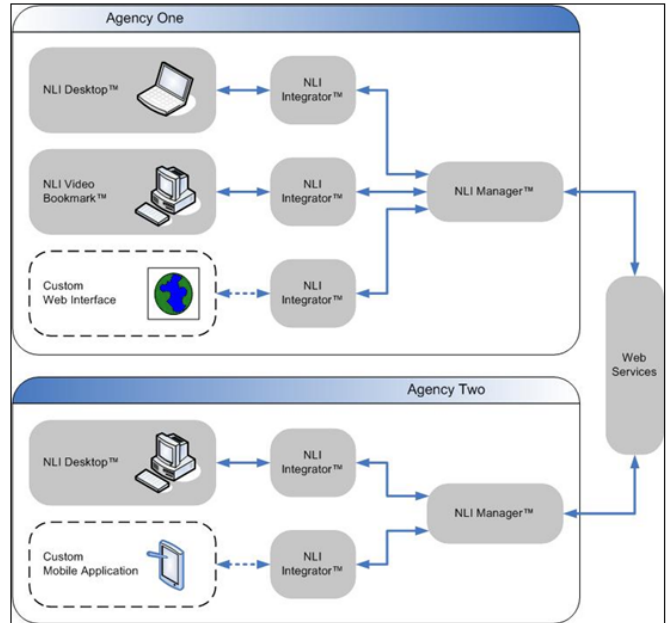
SBIR Topic Number:
 AF05-092

SBIR Title:
 Hardened or Deeply-Buried Target Optimization Techniques for Detecting Obscure Geomorphic States

Contract Number:
 FA8750-06-C-0033

SBIR Company Name:
 LPA Systems, Inc.,
 Fairport, NY

Technical Project Office:
 AFRL Information
 Directorate, Rome, NY



Left: Overlay of hypotheses on geo-referenced imagery provide context to analyst observations. Right: Solution Architecture and Messaging Components.

Intelligence Analyst Collaboration Tool

- Military commanders need the capability to discover, access, and visualize multiple Intelligence, Surveillance and Reconnaissance (ISR) data streams to obtain situational awareness and produce actionable intelligence
- The Hardened or Deeply-Buried Target Optimization Techniques for Detecting Obscure Geomorphic States (HOTDOGS) tool encourages consistency and efficiency through analyst collaboration within a common intelligence picture
- LPA Systems developed a simple, easy-to-use Intelligence Analyst Collaboration Tool designed to aid an image analyst in the detection, characterization, and monitoring of information
- With the inclusion of HOTDOGS, the Broad-Area Multi-Intelligence Ubiquitous Surveillance Enterprise (BMUSE) solution, now under development with LPA Systems serving in a subcontractor capacity, can correlate and store intelligence derived from multiple, complementary ISR data streams

Air Force Requirement

Military commanders need the capability to discover, access, and visualize multiple Intelligence, Surveillance and Reconnaissance (ISR) data streams to obtain situational awareness and produce actionable intelligence to meet critical information demands. Frequently, plentiful data exists but it is often difficult or impossible to discover complementary ISR data. Rapid and accurate decision-making requires both a correlation and visualization of intelligence derived from the ISR data to form actionable conclusions.

SBIR Technology

LPA Systems developed a simple, easy-to-use prototype Intelligence Analyst Collaboration Tool designed to aid an image analyst in the detection, characterization, and monitoring of information. The system quickly orients the analyst to “when and where,” allowing the analyst to focus on “how and why.” The Hardened or Deeply-Buried Target Optimization Techniques for Detecting Obscure Geomorphic States (HOTDOGS) tool encourages consistency and efficiency through analyst collaboration within a common intelligence picture.

HOTDOGS contains a structured database for storage of intelligence in the form of geospatial features identified from imagery or other intelligence sources. These features are characterized, at a minimum, by time, geo-location, and feature type. Unique in the HOTDOGS approach is the capability that allows an analyst to further characterize his/her impressions with a measure of uncertainty. This measure of uncertainty encourages analysts to share tentative results early in the exploitation process. Additionally, HOTDOGS allows analysts to forage any HOTDOGS server for intelligence developed by other analysts.

HOTDOGS is designed using a Service-Oriented Architecture (SOA). All of the intelligence collaboration capabilities are available as web services. Any tool that an analyst currently employs (e.g., Remote View) that can consume web services or expose an Application Programming Interface (API) that allows extensions to be built into the tool can utilize the HOTDOGS services.

HOTDOGS is made up of two primary components:

- Next Level Intel (NLI) Manager™ – A set of services for accessing a distributed database of intelligence objects
- NLI Integrator™ – Standard Client Interface for NLI Manager Services. NLI Integrator can be used to integrate non-Web Service aware applications with the NLI Manager Services

During Phase II of the SBIR project, these components were exercised through the development of two sample NLI-enabled applications:

- NLI Desktop™ – Collaborative image analysis user interface
- NLI Video Bookmark™ – Motion imagery feature identification that is capable of creating and persisting Geospatial Intelligence using NLI Manager Services

Transition Impact

Commanders consistently identify Persistent Surveillance (PS) as a capability gap. In this regard, the Broad-Area Multi-Intelligence Ubiquitous Surveillance Enterprise (BMUSE) solution, now being developed with LPA Systems serving in a subcontractor capacity, will provide the capability to exchange and generate multi-intelligence PS data and data products directly to the tactical levels. BMUSE will also provide robust, tailored visualization as well as data and information management, creating a timely integrated picture of actionable intelligence using a standards-based, Services Oriented Architecture (SOA).

With the inclusion of HOTDOGS, BMUSE can correlate and store intelligence derived from multiple, complementary ISR data streams. With a suitable visualization layer, tactical users will be able to visualize various intelligence derived from multiple sources in a meaningful context (e.g., on a map) and link intelligence “nodes” together to form a cogent picture that “connects the dots.”

Company Impact

“This SBIR project allowed us to gain experience in fusing data across modalities and combining such data with human intelligence,” said Donald Soule, President of LPA Systems. “This capability is directly applicable across our firm’s core business of fusing imagery and data solutions. We have been asked to put our solution into the U.S. Government’s Research and Development Experimental Collaboration (RDEC) System, where broader exposure may lead to leveraging LPA’s expertise by adding functionality and extending the solution.”



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SBIR/STTR

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