

# Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.  
NAVWAR

Topic # N181-089

LAKE: Large-Scale Data Storage for Knowledge DiscovEry  
Intelligent Automation, Inc.

## WHO

**SYSCOM:** NAVWAR

**Sponsoring Program:** PEO C4I, PMW 130

**Transition Target:** Distributed Control Ground Station - Navy (DCGS-N).

**TPOC:**  
(619)221-7810

**Other transition opportunities:**

**Notes:** Combat Information Center of USS Germantown underway in the East China Sea as part of the America Expeditionary Strike Group, as a ready response force to defend peace and stability in the region.



U.S. Navy photo by Mass Communication Specialist 2nd Class Taylor DiMartino) <https://www.navy.mil/Resources/Photo-Gallery/igphoto/2002573555/>.

## WHAT

**Operational Need and Improvement:** To maintain maritime supremacy, the U.S. Navy must collect, understand, and leverage ever-increasing volumes, variety, variability, velocity, and veracity of sensor and intelligence information to ensure proper force application across greater distances under ever compressing time constraints. To this end, Navy's Information and Intelligence Platforms must quickly aggregate, correlate, and fuse "All Domain/All Source Intelligence" to produce current and predictive, operational to tactical, battlespace awareness required to make better decisions faster.

**Specifications Required:** The volume and velocity of data coming into the information platforms varies widely; the IAI LAKE system must dynamically adjust to the changes in data delivered, with the data provisioning goal not to exceed 30 seconds after ingest to consumer availability. It is also critical the LAKE mechanism enable rapid retrieval (within 2 seconds) of stored data to meet the demands of operators working in different security enclaves in a tactical environment.

**Technology Developed:** Large Scale Data Storage for Knowledge Discovery (LAKE) is a multi-domain streaming analytics framework enabling data distribution of multi-domain information analytics and products to users operating at different security levels following the Navy Multi-Domain Federated Query (MDFQ) architecture. Navy's development of LAKE provides an enhancement and extension to other data domains such as images, videos, and text-based products outside of the cyber domain. LAKE has been developed as a modular, extensible software suite of containerized RESTful services that leverages high-performance data pipelines for streaming analytics and data ingestion allowing for seamless integration into mission-critical applications.

**Warfighter Value:** LAKE will enable the automated combining of high volumes of data from differing intelligence sources and different intelligence community (IC) entities, National Technical Means (NTM) systems, and multi-domain network feeds to aid analysts and decision makers in building a more coherent and comprehensive view of the battlespace.

## WHEN

**Contract Number:** N68335-19-C-0514 **Ending on:** March 31, 2022

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Develop Prototype for domain separation of video streams on each domain	Med	Rapid retrieval (within 2 seconds) of stored data and data provisioning goal not to exceed 30 seconds after ingest to consumer availability	4	March 2021
Demonstrate Enhanced Governance, provenance logging and exploration	Med	Show multi-domain data lineage at appropriate security level	4	March 2022
Produce a prototype data management virtual machine and/or containers	Med	Deliver unclassified software suite to Navy	5	March 2023

## HOW

**Projected Business Model:** IAI will continue to maintain LAKE components and make them available for other tactical and commercial applications through contract engineering and licensing agreements. LAKE will be made available to multiple information and combat systems through integration with DISA's Unified Platform and Big Data Platform including those being piloted via the AEGIS Virtual Pilot Ship (VPS) program and other efforts to more rapidly deliver combat capability to the Fleet, e.g. the Virtual Twin (VT).

**Company Objectives:** Identify other Department of Navy and Department of Defense information and combat system stakeholders and other opportunities for additional LAKE evaluation and integration.

**Potential Commercial Applications:** LAKE is a Zero Trust based architecture providing streaming analytics framework to operate on disparate data lakes. LAKE provides discovery, subscription, and alerting services to allow users to watch and monitoring live video, audio, and publicly available data in near real-time.

**Contact:** Dr. Bryan Stewart, PhD, Principal Scientist, Intelligent Automation, Inc.  
[bstewart@i-a-i.com](mailto:bstewart@i-a-i.com) (240) 406-5506