Topic: N101-101

Jove Sciences, Inc.

Mission Intelligence Sensor Management and Data Fusion Automation & Collaboration Tool (MISMADFACT) for Dense Target Environments
Accurate ship tracks is complex and difficult, especially in crowded shipping environments. AquaQuIPS (AQ) is a near real-time, ship track, data fusion processor that ingests post processed sensor data and tracks from afloat and ashore providers (includes Department of Defense National Technical Means, airborne, surface, subsurface, as well as law enforcement and commercial collection assets). AQ has shown exceptional performance in detecting, classifying, and tracking rogue surface ships in four Navy Trident Warrior Experiments, and is currently being assessed for integration into programs like the Distributed Common Ground Station - Navy (DCGS-N) and Air Force MQ-9 Reaper Unmanned Aerial System. Jove Sciences specializes in multi INT data fusion, radar and sonar signal processing, underwater acoustic noise and propagation modeling and analysis, ocean wave energy conversion, and Quantum Electrodynamics. The company is seeking Primes and Navy sponsors for transition, and commercial shipping line customers.

Technology Category Alignment:
EO/IR Components for sensing, transmission and communication
RF Components for sensing, transmission and communication
Fixed Wing Vehicles (includes UAS)
Fixed Wing Vehicles (includes UAS)
Distributed/Coordinated/Net-Enabled Systems

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SYSCOM: NAVWAR
Contract: N66001-11-C-5228

Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N66001-11-C-5228

Department of the Navy SBIR/STTR Transition Program

Statement A: Approved for public release, distribution is unlimited.

SR-2016-353

Topic # N101-101

Mission Intelligence Sensor Management and Data Fusion Automation & Collaboration Tool (MISMADFACT) for Dense Target Environments

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WHO

SYSCOM: SPAWAR

Sponsoring Program: SPAWAR

Transition Target: Distributed Common Ground System-Navy (DCGS-N)

TPOC:
(619)524-7638

Other transition opportunities: Undersea Warfare - Decision Support System (USW-DSS), Maritime Tactical Command and Control (MTC2), Net-centric Collaborative Targeting (NCCT), TacMobile, Maritime Awareness Global Network (MAGnet), DCGS-A, DCGS-AF, DCGS-MC, MQ-9 Reaper, and MQ-4C Triton.

Notes: The USS Cole was damaged by a dark contact.The AquaQuIPS (AQ) technology ingests organic/tactical sensors supporting threat analysis to detect, track, and classify potential threats. AQ situation awareness supports timely identification of potential threat intentions for appropriate operational response.

Courtesy of US Navy, www.defense.gov/Media/Photo-Gallery/newsphoto/newsphotoid/3092

WHAT

Operational Need and Improvement: Dark surface ships and submarines can deliver weapons of mass destruction (WMD) against U. S. assets, and cause severe damage. Real-time processing to fuse large volumes of all-source sensor data and provide situation awareness of potential threats (composite tracks with classification / ID) in dense contact areas is critical to timely formulation of appropriate tactical Courses of Action (COAs).The Navy of the future will have significant organic / tactical sensor data ingest requiring commensurate processing, fusion, assessment tools to provide the situation awareness required.

Specifications Required: Reduction in kill chain time line is gained primarily in timely find, fix, track elements if automated through data fusion processing.The processor must be capable of tracking a large number of ships in real-time using inputs from all available sensor sources.Storing track histories plus ship meta data for all ship tracks within the Area of Interest (AOI) in real time is required.The AQ display only needs to display ship tracks within the AOI, but must have access to tracks outside the AOI that will penetrate that AOI and display when inside the AOI. AQ could hold a world-wide database while displaying defined AOIs.

Technology Developed: The real time, multi-INT AQ ship track data fusion engine can perform automated Level 1 and some Level 2 fusion.A random access memory (RAM) dense computer is being developed at SPAWAR that will perform real-time processing for vessels of interest (VOI) worldwide. AQ is investigating storing of ship track history with meta data that operates with a windows OS.Three display technologies are being evaluated.

Warfighter Value: Real-time, automated, all-source fusion for ship tracking is a game changer to provide significant situation awareness and prevent tactical surprise.Tactical, as well as OperaQional, insight to maritime movement combined with environmental impact data can allow operational forces to adjust COAs to optimize operational effects.Such capability significantly reduces the kill chain time line, potentially enabling operational forces to achieve tactical surprise.

WHEN

Contract Number: N66001-11-C-5228   **Ending on:** March 27, 2017

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Obtaining an Authority to Operate (ATO) or Interim Authority to Test (IATT) approval	Med	Approvals granted by Office of Naval Intelligence (ONI)	8	September 2016
Ingesting Sensor Information	Med	Demonstration of detection, tracking, and classification of maritime threats, including dark contacts	8	September 2016

HOW

Projected Business Model: The AQ processor is ready for application now. ATO approvals will be required to address in every application.For Department of Defense (DoD) and Department of Homeland Security (DHS) customers there will be no license fees, and AQ software will be installed.In this case, AQ will be rewarded by having Programs of Records (PoRs) fund software maintenance, enhanced versions (additional sensor sources, better algorithms / tools) of AQ, and life cycle software management. AQ will also be funded to train operators on AQ's installation and for maintaining operator proficiency on an ongoing basis for out years.For commercial customers,AQ's software/hardware will be sold for a price, and installation of new versions of AQ software and improved hardware will be available for purchase on at least a yearly basis.

Company Objectives: Jove is interested in selling to existing and future PoRs as well as commercial customers.

Potential Commercial Applications: Commercial applications can include commercial cruise ship movement, environmental impacts to shipping, and ship route planning.In addition, AQ can be used to report illegal fishing detection, pirate ship detection, drug runner and illegal arms carrier detection, and to enhance ship routing services.

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