Department of the Navy SBIR/STTR Transition Program

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ONR Approval # 43-2203-16

Topic # N132-135
AquaQuIPS Multi-INT Data Fusion in a Cloud
Jove Sciences, Inc.

WHO

SYSCOM: ONR

Sponsoring Program: Code 30

Transition Target: Distributed Common Ground System-Navy Increment 2 (DCGS-N Inc. 2)

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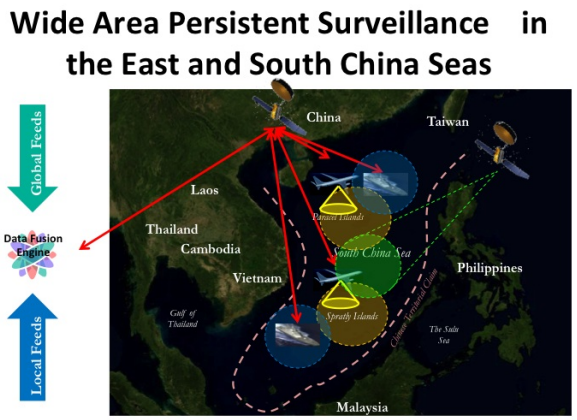
Other transition opportunities: Net-centric Collaborative Targeting (NCCT), battle groups, submarines, MQ-9 Reapers, Triton, unmanned aerial vehicles (UAV), and P-8, for example. have the same critical need for ship tracks on demand in their specific Area of Interest (AOI).

Notes: With this ONR Code 30 sponsored capability to have a near real-time data base of ship tracks at all times in all locations, AquaQuIPS (AQ) can deliver critical ship track information upon tactical unit request without waiting hours for the ship track picture to develop.



WHAT

Operational Need and Improvement: Being able to data fuse all ship tracks worldwide in near real-time using modern cloud computing software and random access memory (RAM) dense computers has several tactical advantages.For example, submarines on independent missions need ship tracks in their operation areas (OPAREAs) immediately when they encounter a possible threat.Navy and other Department of Defense (DoD) assets have operational situations where they can't wait for hours to build up tracks in their AOI.

Specifications Required: The processor must be capable of tracking approximately 2 million ships in real-time using inputs from as many as 15 sensor sources.The data base manager must be capable of storing track histories plus ship meta data for all ships in real-time. Ship tracks need to be displayed in multiple smaller AOIs.

Technology Developed: Jove Sciences (Jove) is developing a RAM dense computer at SPAWAR that will process approximately 2 million ships worldwide in real-time. Jove's AQ is the first display capable of displaying 2 million ship tracks on a worldwide view in a meaningful way. AQ is searching for a data base manager that will store ship tracks with meta data for 2 million ships, and may have found one from the Global Command and Control System Maritime (GCCS-M)Tactical Data Base Manager (TDBM) that operates with a windows OS.Three display technologies are being evaluated.

Warfighter Value: Surface ship threats must be detected, tracked, classified, and interdicted prior to delivering damage to their intended target.Preventing arms, weapons of mass destruction (WMD), and other contraband from harming U.S. interest is critical, and AQ is uniquely qualified to accomplish this.

WHEN

Contract Number: N00014-15-C-0168

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Obtaining an Authority to Operate (ATO) approval	Med	ATO approval granted by Office of Naval Intelligence (ONI)	8	September 2016
Processing ~2 million ship tracks	Low	Demonstration in real-time on the AQ RAM dense computer.	8	December 2016
Data Base Manager handling 2 million ship tracks with meta data	Med	Demonstration in real-time	8	March 2017
Displaying ships in a large AOI for DCGS-N Inc. 2	High	Demonstration in real-time in a large AOI	8	March 2017
Technology Transition Agreement with DCGS-N Inc. 2	Med	Demonstrate playback	8	June 2017

HOW

Projected Business Model: For DoD and Department of Homeland Security (DHS) customers there will be no license fees and AQ software will be installed on each Program of Record's (POR's) hardware. In this case AQ will be rewarded by getting into the POR's funding cycle for installation of new, enhanced versions of AQ and for 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 sales to PORs, and for sales to commercial customers are critical commercial applications for AQ. Illegal fishing results in multi-billion dollars in lost revenue for countries with good fishing areas within their Economic Exclusion Zone (EEZ).AQ has a unique ability to detect illegal fishing in near real-time due to AQ's multiple data fused sensor source inputs showing the location of potential illegal fishing vessels, and AQ's ability to connect in near real-time with sensor sources on aircraft platforms.Jove is interested in selling to existing and future PORs as well as commercial customers.

Potential Commercial Applications: Ship routing agencies and large commercial shipping companies, such as Maersk, would benefit greatly from AQ in avoidance of Pirate ships, large storms, and other hazards. Trans oceanic ship routes are now diverted to "land hugging" routes from traditional great circle paths to avoid Pirate ships, especially in the Western Indian Ocean and near Indonesia and the South China Sea.This results in large increases in transit times at many million dollars a day.Applications include: illegal fishing detection, Pirate ship detection, drug runner and illegal arms carrier detection. enhance ship routing services.

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