Department of the Navy SBIR/STTR Transition Program

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NAVSEA ##2021-0441

Topic # N193-A01

Machine Learning (ML) to Develop Capabilities to Track AIS Ships Worldwide and Detect Anomalous Behavior to Impact Mission Success

Jove Sciences, Inc.

WHO

SYSCOM: NAVSEA

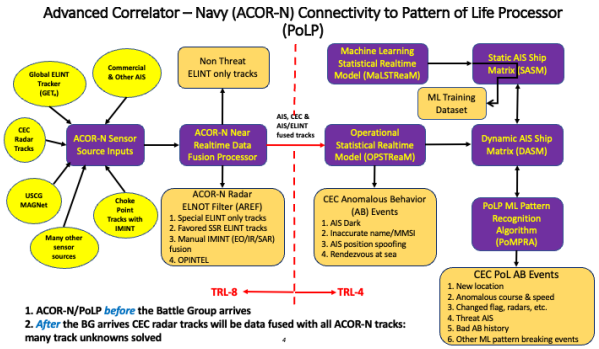
Sponsoring Program: PEO-IWS 6.0

Transition Target: CEC (Cooperative Engagement Capability) Increment II, Future Capability Group

TPOC:
(202) 781-3014

Other transition opportunities: All CEC Platforms (CVN, DDG, CG, E2D, and Future);
AEGIS Combat Systems
Surface Ship Self Defense (SSSD) Combat System

Notes: Suitable for integration with AEGIS and SSDS combat systems, Distributed Common Ground System Navy (DCGS-N), MQ-4C Triton, P-8A Poseidon



Advanced Correlator-Navy(ACOR-N) and the Pattern of Life Processor (PoLP) Near Realtime Connected Data Fusion Processors

WHAT

Operational Need and Improvement: Integration of Automatic Identification System (AIS) Data through AI/ML Applications - AIS data are obtained from publicly available sources. The Navy seeks to develop models and algorithms using AI/ML processes to autonomously characterize behaviors of self-reporting maritime traffic using AIS data in order to use these behavioral models and data to (1) identify apparent shipping lanes and (2) detect anomalous behavior in support of determining surface vessel intent.

Jove Sciences' ACOR-N, a multi-INT ship data fusion processor, utilizing EO/IR and Synthetic Aperture Radar (SAR) Imagery Intelligence (IMINT) from national overhead sensors (NOS) and Full Motion Video (FMV) sensors from the MQ-9 Maritime Wide Area Surveillance (MWAS) Unmanned Aerial System with ACOR-N SIGINT (Signal Intelligence) tracks, enables the Warfighter to accurately identify (i.e., hull tech), track and target threats of high interest in real time.

Specifications Required: Capable of ingesting data from multiple sensor sources – to include National Overhead Sensors; Accurately predict and generate target tracks in near real time.

Technology Developed: The Advanced Correlator-Navy (ACOR-N) – a real time, multi-INT ship data fusion processor with the capability to accurately detect, track, classify and identify (DCTI) combatants operating under Emissions Control (EMCON) Silent or "dark" ship conditions and masquerading as commercial shipping in crowded shipping lanes.

Warfighter Value: ACOR-N enables Warfighters, in real time, to accurately detect, track, classify, identify, track and target, if appropriate, threats of high interest – to include combatants and their support ships operating under EMCON conditions and masquerading as commercial shipping – operating in crowded shipping lanes such as the East and South China Seas.

WHEN

Contract Number: N68335-20-F-0461 **Ending on:** December 31, 1969

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Detect, track, and classify exercise with adversary combatants using C3F as processing partner.	Med	Produce the track and verify classification with C3F	7	December 2021
Develop real time Java code for the PoLP modules.	Med	Process PoLP for known AIS ship names and MMSI numbers	5	March 2022

HOW

Projected Business Model: Sell directly to the Navy and other DoD and Government agencies

Company Objectives: Transition ACOR-N to PoLP connectivity and PoLP to CEC Increment II

Potential Commercial Applications: Ship routers, US Coast Guard, anti-pirate ship forces, countries impacted by illegal fishing, detection and tracking of self powered semi-submersibles for various intelligence agencies.

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