

WHO

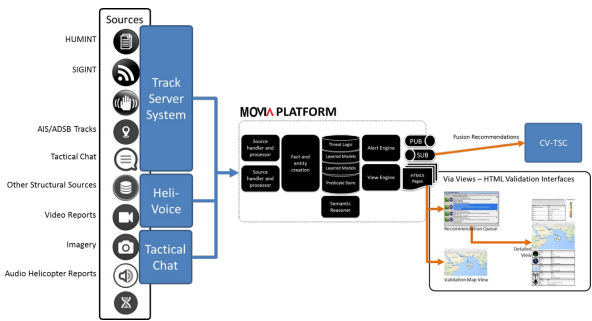
SYSCOM: NAVSEA

Sponsoring Program: Program Executive Office Integrated Warfare Systems (PEO-IWS) 5E

Transition Target: AN/SQQ-34 Aircraft Carrier Tactical Support System (CV-TSC)

TPOC:
(360) 315-5866

Other transition opportunities:
Littoral Combat Ship (LCS) Exterior Communications (EXCOMM)
US Coast Guard, Communications, Command, Control and Intelligence (C3I)
Office of Naval Research, Navy Tactical Cloud, Future Naval Capability (FNC)
Office of Naval Intelligence, Anti-submarine Warfare (ASW)



Mission-specific methodology and framework designed to address operators' information needs by presenting them with an integrated common operational picture
(www.modusoperandi.com)

WHAT

Operational Need and Improvement: The decision environment in which the Anti-Submarine Warfare (ASW) Commander must operate during threat prosecution is characterized by severe time pressure, complex, multi-component decision tasks, and rapidly evolving and changing information and situational state. There is an increasing need to extend ASW decision support capabilities with the ability to help operators more rapidly find, filter, format and fuse mission-specific information from both traditional "hard" data sources (i.e., physical sensor data) and "soft" data sources (i.e., human-sourced data) to support focused decision making and intelligence forecasting.

Specifications Required: Implement a prototype architecture to support the semantic integration, correlation and reasoning over hard and soft data sources to provide improved operator situational awareness. It is expected that such a runtime environment will utilize a modern service-based architecture to facilitate integration with other Navy systems. System Precision and Recall capabilities will be measured with targeted measures of success as recommended in the following publication: Gross, G.A., Date, K., Schlegel, D.R., Corso, J.J., Llinas, J., Nagi, R., and Shapiro, S.C., "Systemic Test and Evaluation of a Hard+Soft Information Fusion Framework," The 17th International Conference on Information Fusion, Salamanca, Spain, July 2014."

Technology Developed: Develop an Anti-Submarine Warfare Find-to-Forecast (ASW F2F) methodology, architecture and prototype that use mission-specific ontologies, vocabularies, grammars and reasoning capabilities to help ASW operators find and exploit mission-critical information from multi-modal sources, thereby increasing their situational understanding and decreasing their detect-to-engage timelines.

Warfighter Value: The proposed technology focuses on providing operators with an innovative "tap on the shoulder" to help focus them on actionable information hidden within the large volume of incoming sensor data. This technology leverages multiple SBIR investments to improve CV-TSC operator recognition of time sensitive actionable intelligence, in order to, speed decision making.

WHEN

Contract Number: N00253-14-C-0004 **Ending on:** February 15, 2016

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Processing of helo pilot voice comms	Low	Accuracy of voice to text translation	6	December 2015
Semantic understanding of converted text	Med	Precision, Recall, F-measure tgt = 0.8	6	February 2016
Semantic reasoning over soft (text-based) data sources	Med	Precision, Recall, F-measure tgt = 0.8	6	February 2016

HOW

Projected Business Model: Our approach is to develop a processing pipeline—from voice-to-text to structured knowledge—that is a Government off-the-shelf (GOTS) solution with SBIR data rights. Additional revenue is projected from engineering support to systems integration and post-deployment life cycle maintenance support either on a direct Phase III government contract or as a subcontracted partner to a large prime systems integrator (PSI).

Company Objectives: Modus Operandi (MO) is a software company serving the U.S. defense and intelligence community focusing on advanced technologies that support discovery and alerting of relevant and actionable information from overwhelming amounts of unstructured intelligence, surveillance, and reconnaissance (ISR) sensor data. MO believes this model is equally relevant to the commercial sector. As sensing technologies become smaller and more affordable data output is increasing by orders of magnitude which drives demand for scalable semantic, analytic, and knowledge management capabilities.

Potential Commercial Applications: Sustained competitive advantage is provided as this technology can be scaled across a wide spectrum of advanced analytics for commercial and defense Big Data challenges. As sensing technologies continue to become smaller and more affordable the challenges with data overload and efficient utilization will cross multiple sectors such as logistics, medical, and energy.