

WHO

SYSCOM: NAVSEA

Sponsoring Program: IWS-5A

Transition Target: AN/SQQ-89A(V)15 ACB-27

TPOC: (202) 781-4233

Other Transition Opportunities: Submarine sonar systems. Air-based sonar systems, including MH-60R and P-8A. Optimal settings for UUV/USV sonar systems.



<https://www.navy.mil/Resources/Photo-Gallery/igphoto/2003237880/>

Notes: Daniel H. Wagner Associates has long been at the forefront of Navy Research and Development. Our software includes a variety of Tactical Decision Aids (TDAs). These TDAs include the Acoustic Mission Planner (AMP) on the MH-60R, as well as the Mission Optimization Web Service for Undersea Warfare Decision Support System (USW-DSS). These powerful TDAs leverage innovative optimization algorithms to deliver operationally effective mission plans to Navy operators.

WHAT

Operational Need and Improvement: The effectiveness of sonar operators could be greatly improved by providing an enhanced tactical picture generated by analytically combining detailed information concerning: (1) acoustic environmental conditions (and their uncertainty), (2) potential target evasion tactics, and (3) expected costs and benefits of multiple target-specific ASW search techniques/doctrine. Sonar operators need to rapidly account for changes in the environment and tactical situation when executing active sonar searches and make the most of a limited window of detection by using the best possible strategy.

Specifications Required: There is a significant cognitive demand on sonar operators who must assimilate all available data to track and manage threats and recommend steps to maintain tactical advantage. Intelligent software services can reduce the cognitive overload and improve the situational awareness of sonar operators. This includes recommendations on when to go active, and with which system, to maximize the probability of detecting, classifying, and tracking threat submarines and to reduce their chance of successful evasion.

Technology Developed: Modern active sonar systems employ numerous software tools including advanced signal processing algorithms, contact tracking and classification algorithms, and tactical decision aids (TDAs), with each generating crucial information that must be absorbed. ITAAS will function as a tactical assistant, like those on smart phones, to connect the user to the TDAs and acoustic models, prompting users when conditions have changed, and recommending search strategies that maximize likelihood of mission success.

Warfighter Value: The expected benefits of ITAAS include: (1) improved Anti-Submarine Warfare (ASW) performance over simple, commonly used strategies, (2) improved situational awareness, especially regarding acoustic environmental factors and their underlying uncertainty, (3) reduced operator cognitive demand. ITAAS will enhance ASW mission success rates and improve search effectiveness by accounting for threat responses that could degrade track quality or detection/classification performance.

WHEN

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Initial Prototype Validation	Medium	ACB27 Step 1 validation	5	1st QTR FY25
Technology Seminal Transition Event	Medium	ACB27 Step 2 validation	6	1st QTR FY26
Software Integration	Medium	Successful Test in ACB27 on SQQ-89	7	4th QTR FY26

Contract Number: N68335-23-C-0192 **Ending on:** Feb 14, 2025

HOW

Projected Business Model: Continue to work with government sponsor to identify instances where TDAs and existing tools are not used efficiently, and where ITAAS could provide improved decision-making capability. Demonstrate ITAAS capabilities in these types of scenarios to show and quantify the value provided.

Identify potential customers and program offices who could benefit from this technology and demonstrate it by analyzing the performance and proper application of existing TDAs to show potential value to these customers.

Company Objectives: The company objective is to become a trusted provider of smart tactical assistants to the Navy and other customers.

Potential Commercial Applications: Could be adapted to other sonar systems, including those involved in homeland security, marine biology research, and petroleum exploration.