

Department of the Navy SBIR/STTR Transition Program

Statement A: Approved for Release. Distribution is unlimited.

NAVSEA #2016-0611

Topic # N141-039

Automated Active Sonar Interference Avoidance Algorithms (ASIA)

Daniel H. Wagner, Associates, Incorporated

WHO

SYSCOM: NAVSEA

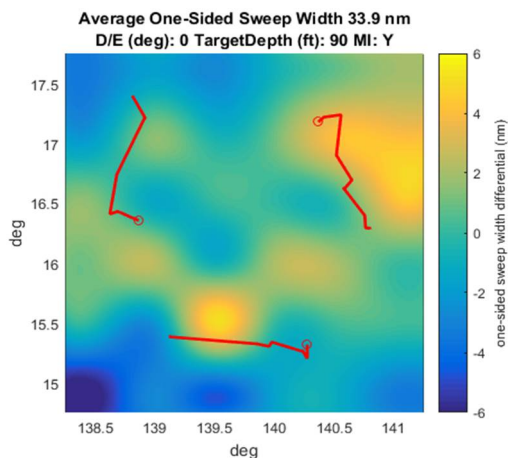
Sponsoring Program: PEO IWS 5E

Transition Target: Undersea Warfare Decision Support System (USW-DSS) Build 3

TPOC:
(301)227-5218

Other transition opportunities: Aircraft Carrier Tactical Support System (CV-TSC) Build 9, PMS-485 for Undersea Surveillance Systems, Joint Mission Planning System (JMPS)

Notes: Cumulative Detection Probability (CDP) increased to 78%, from 67%, due to mitigation of active sonar Mutual Interference (MI).



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WHAT

Operational Need and Improvement: Very limited tools for optimally preventing mutual interference among ship sonars.

Specifications Required: Need to optimally reduce the effects of mutual interference from ship active ASW search assets.

- 1) Current approaches simply assign frequency bands and cannot handle more than a few active systems in an area.
- 2) Need a holistic approach that looks at combined ASW performance.

Technology Developed: Active Sonar Interference Avoidance Plan (ASIAP) modules that optimally mitigate active interference among ship-based active sensors by automating and recommending search routes for ASW search and screening missions.

Warfighter Value: 1) Significantly more effective active sonar combined performance using optimal ASW search routes and screening patterns resulting in MI mitigation.

- 2) Higher probability of defeating threat submarines.
- 3) Reduced vulnerability of friendly forces to threat submarines.
- 4) Reduced operator time-on-task and improved operator performance.

WHEN

Contract Number: N00024-16-C-4014 **Ending on:** October 19, 2017

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Optimized frequency allocation	Low	Successful test in USW-DSS Build 3	6	October 2017
Optimized search and screen plan generation and evaluation. Monitoring for potential future mutual interference.	Low	Successful test in USW-DSS Build 3	6	October 2018
Optimized frequency allocation	Low	Extensive successful test in USW-DSS Build 3	7	October 2018
Optimized search and screen plan generation and evaluation. Monitoring for potential future mutual interference.	Low	Extensive successful test in USW-DSS Build 3	7	October 2019

HOW

Projected Business Model: Daniel H. Wagner Associates designs, develops, markets, implements and provides training for custom data fusion, decision support and resource optimization software. Our goal is to support Navy program offices and collaborate with defense contractors to integrate these advanced data fusion solutions for ship and aircraft platforms. Examples of successful transitions include:

- 1) Acoustic Mission Planner (AMP) in MH-60R avionics system and shipboard Mission Planning System (MPS).
- 2) Data Fusion Engine (DFEN) in Undersea Warfare Decision Support System (USW-DSS).
- 3) Net-Centric Data Fusion (NCDF) for USW-DSS.
- 4) Mission Optimization Configuration Item (MOCI) Web Service in USW-DSS.

Company Objectives: Rapidly and cost-effectively integrate ASIA active sonar mutual interference mitigation components into larger combat or command and control system.

Potential Commercial Applications: Enhancements to commercial active sonar systems (e.g., fish finding, seismic surveys).

Contact: Dr. W. Reynolds Monach, Vice President
reynolds@va.wagner.com 757-727-7700