Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.
NAVSEA #2021-0419

Topic # N192-093
Theater Anti-Submarine Warfare (TASW) Multi-Objective Threat Prioritization (TMTP)
Daniel H. Wagner, Associates, Incorporated

WHO

SYSCOM: NAVSEA
Sponsoring Program: PEO IWS 5E
Transition Target: USW-DSS
TPOC:
(360)315-0729
Other transition opportunities: USW-DSS Foreign Military Sales (FMS)

Aircraft Carrier-Tactical Support Center (CV-TSC)

FFG(X)

Maritime Tactical Command and Control (MTC2)

Distributed Common Ground Station – Navy (DCGS-N)

PEO Sub (through APB)

Commander Undersea Surveillance (CUS) (through ASB)

Notes: Picture Note 1: Friendly unit name is highlighted in red if risk is above operator specified threshold.
Picture Note 2: Prioritized risk is sorted by severity (computed based on threat capability) then by range.

☑ Threat Submarine Focused	☑ Capability Based Prioritization	☑ Not Using Friendly Search when Prioritizing
☐ Friendly Asset Focused	☐ Intent Based Prioritization	☐ Using Friendly Search when Prioritizing

Total Risk Based on Capability	Total Risk Based on Capability and Search	Friendly Asset within Weapon Range of Farthest on Region (FoR)	Threat Unit Number	Threat Class	Last Position	Data Age	Threat ASW Range	Threat ASUW Range
364.8	36.24	CVN 69, SSN 774, SSN 750	20-001	Oscar II	XX.XX.XX LAT XXX.XX.XX LONG	144 hours	30 nm	400 nm
64.8	54.24	CVN 69, SSN 774, SSN 750	20-002	Akula	XX.XX.XX LAT XXX.XX.XX LONG	72 hours	30 nm	300 nm

generated by DHWA

WHAT

Operational Need and Improvement: Current methods to produce prioritized Watch Lists and monitor the operational situation are cumbersome and include significant latency. TMTP automatically and continuously creates prioritized Watch Lists —a high priority for the Navy given the increasingly large number of near-peer submarines. These services will enhance existing capabilities, also developed by Wagner Associates, for evaluating and optimizing theater level USW planning and execution. These innovative tools are needed by the fleet and are mission critical.

Specifications Required: Need to automatically prioritize threat targets based on risk to friendly assets and monitor operational situation in order to minimize risk to friendly assets.

Technology Developed: TMTP automatically and continuously creates prioritized Watch Lists based on detailed, accurate risk computations that account for all relevant factors; and that also continuously monitors the operational situation, issuing alerts and recommending responses when necessary.

Warfighter Value: The expected benefits of TMTP are: (1) Reduced risk to friendly assets, and (2) Reduced operator time-on-task.

WHEN

Contract Number: N68335-21-C-0139 **Ending on:** December 16, 2022

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Prototype TMTP Components	Low	Successful tests in Wagner lab	5	December 2021
Prototype TMTP System	Low	Successful tests in Wagner lab	6	June 2022
Full Scale Prototype TMTP System	Low	Successful demonstration in USW-DSS DevSecOps cloud testbed	6	December 2022
TMTP Seminal Transition Event	Low	Successful demonstration of operational capability in USW-DSS DevSecOps cloud testbed	7	October 2023

HOW

Projected Business Model: Since 1963 Daniel H. Wagner, Associates, has provided innovative and cost-effective technical solutions to complex problems in Naval Operations Analysis and commercial/government applications, e.g.: custom resource optimization, decision support, multi-target tracking, and data fusion. Examples of successful transitions and deployments include:
1) Mission Optimization Configuration Item (MOCI) Web Service in Undersea Warfare Decision Support System (USW-DSS)
2) Acoustic Mission Planner (AMP) in MH-60R avionics system and shipboard Joint Mission Planning System (JMPS)
3) Computational modules for evaluating and optimizing mine countermeasures (MCM) operations and estimating risk in MINEnet Tactical
4) Net-Centric Data Fusion (NCDF) for USW-DSS
5) Data Fusion Engine (DFEN) in USW-DSS
TMTP is targeted for direct integration into USW-DSS, although additional marketing opportunities include other naval systems that could benefit from TMTP technology and software components.

Company Objectives: To use our operational experience and technical skills to address challenging problems in defense analyses and provide solutions and computational components that enable warfighters to reduce their vulnerability and conduct successful and operationally effective military operations.

Potential Commercial Applications: TMTP algorithms and methodology have potential applications to border surveillance and port/facility security, which need to prioritize targets for investigation; and also for mitigating risk to marine mammals from Naval operations.

Contact: Dr. W. Reynolds Monach, President
reynolds@va.wagner.com   757-871-6284