



Navy SBIR/STTR Success



Multi-Sensor Data Fusion System (MSDFS)

MSDFS fuses data from multiple sources; automatically generates an accurate, operationally relevant Situational Awareness (SA) picture in near-real-time; and uses this SA picture to optimize the use of scarce naval resources and evaluate mission effectiveness.

Topic Number: N05-046

SBIR Investment:
\$1,852,092

Phase II Investment
(non-SBIR funds):
\$497,897

Phase III Revenue:
\$3,767,527

About the Technology:

Understanding the Situational Awareness (SA) picture is essential to the ship, strike group, and theater commander. An accurate SA picture that gives the best available estimate of the location and track of each physical object in the area of interest allows threats to be recognized and to be responded to effectively. Data Fusion aids in that process by combining data from dissimilar sources such as passive and active acoustic, radar, electronic intelligence, and electro-optic sensors. In addition, MSDFS uses this SA picture to optimize the use of scarce Anti-Submarine Warfare (ASW) resources and to evaluate the actual mission effectiveness of these resources when they execute their plan. MSDFS supports all standard Navy sensors, and has successfully processed passive sonar, active sonar, and radar data at-sea. Key features of MSDFS are a Genetic Algorithm to optimize the use of scarce ASW assets, and its sophisticated use of multiple hypotheses to deal with conflicting data, producing interim results that it revises as additional data becomes available.

Naval Benefit

MSDFS focuses the operator's attention on high-interest contacts by fusing data from all available sensors to produce one fused symbol for each real-world physical object. In addition, MSDFS maximizes the mission effectiveness of any available ASW resources. These capabilities allow Naval operations to be conducted cost effectively with less fuel, with reduced manpower, and at lower risk – resulting in fewer casualties to friendly forces and improved overall Navy and Joint Forces effectiveness. MSDFS components are designed for rapid and cost effective integration into any system requiring an accurate SA picture and/or the capability to optimize resource allocation.

Transition

Phase II.5 and Phase III funding from the NAVSEA PEO IWS SBIR office, NAVSEA PEO IWS 5E, and ONR matured these MSDFS technologies, allowing them to transition into two programs of record. These transitioned products, at the ship and strike group level, produce a significantly improved ASW Common Tactical Picture (CTP), generate more effective ASW search plans, and accurately evaluate ASW mission effectiveness in near-real-time. These transitioned products, at the theater level, produce a significantly improved Common Operational Picture (COP) that is both more accurate and less cluttered.

Dr. W. Reynolds Monach
(757) 727-7700

reynolds@va.wagner.com

559 West Uwchlan Avenue, Suite 140
Exton, Pa 19341

www.wagner.com



Daniel H. Wagner Associates, Inc.

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