Topic: N141-036

Numerica Corporation

Surface Composite Tracker Component
The Surface Composite Tracker Component, a multi-sensor tracking and fusion system, built upon Numerica's patented Multiple Frame Assignment (MFA) tracking algorithms, developed over 20+ years and deployed in a variety of environments, performs integrated surface threat tracking for Navy surface platforms. Intended to be a Navy Product Line Architecture compliant software component that can be integrated ("plugged-in") into numerous Navy platforms, it has been analyzed and tested on a significant amount of sensor data from various Navy test events on multiple ships. Numerica seeks to transition its algorithm into current and future Navy surface platforms such as AEGIS, the Ship Self-Defense System (SSDS), Littoral Combat Ship, and others to provide the situational awareness and target information necessary for effective defense.

Technology Category Alignment:
Machine Perception, Reasoning and Intelligence
Command, Control, Communications, Computers, & Intelligence (C4I)
Information Collection/Management
Synthesis/Analytics/Decision Tools
Distributed/Coordinated/Net-Enabled Systems

Contact:
Benjamin Slocumb, Ph.D.
ben.slocumb@numerica.us
(970) 207-2212
http://www.numerica.us
SYSCOM: NAVSEA
Contract: N00024-16-C-4013

Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N00024-16-C-4013

Department of the Navy SBIR/STTR Transition Program

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NAVSEA #17-564

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WHO

SYSCOM: NAVSEA

Sponsoring Program: PEO IWS 1.0, Integrated Combat Systems, AEGIS

Transition Target: AEGIS

TPOC:
(540)653-5955

Other transition opportunities: The Surface Composite Tracker Component is intended to be a Navy Product Line Architecture compliant software component that can be integrated into many different Navy platforms such as such as the AEGIS, the Ship Self-Defense System (SSDS), Littoral Combat Ship, and others.

Notes: The system has been analyzed and thoroughly tested on a significant amount of sensor data from various Navy test events on multiple ships. The system is built on core tracking software that has high maturity and is deployed in a variety of environments.

http://www.navy.mil/management/photodb/webphoto/web N-ZZ999-003.jpg

WHAT

Operational Need and Improvement: Due to the existing uncertainties of the littoral regions significant track association and correlation anomalies, and/or track ambiguities which are inherent with multiple closely spaced contacts occur. These limitations caused by the challenges unique to the littoral regions create a need for improving situational awareness. A new composite tracker component that combines multiple sensor sources will enable one to optimize surface vehicular track accuracy.

Specifications Required: The software component will be capable of subscribing to any sensor as a service and to a wide variety of kinematic sensor input forms and will include raw contact data as well as reports of track state. The surface tracker can expect data in the form of contact and track data from surface radars, electro-optical and non-organic sensor sources. The surface tracker component will publish a multiple source contact-to-composite track developed for maritime vehicular applications. It will be componentized and compliant with the US Navy's Product Line Architecture to facilitate integration. Development of robust tracking techniques will facilitate integration of future sensor technologies.

Technology Developed: The Surface Composite Tracker Component is a multi-sensor tracking and fusion system that performs integrated surface threat tracking for Navy surface platforms. The product incorporates Numerica's patented Multiple Frame Assignment (MFA) tracking algorithms and surface target tracking enhancements to provide high quality, consistent and accurate tracks on surface threats from all available sensor data.

Warfighter Value: A surface composite tracker capability that is integrated will improve situational awareness and increase engagement success.

WHEN
Contract Number: N00024-16-C-4013 **Ending on:** November 16, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Demonstration on Relevant Simulated Scenarios	N/A	Surface Tracking Performance Metrics	4	October 2015
Offline Demonstration on AEGIS Data	N/A	Surface Tracking Performance Metrics	5	April 2017
Real-Time Demonstration on AEGIS Data	Low	Surface Tracking Performance Metrics	6	September 2017
Live Test Analysis and Validation	Med	Surface Tracking Performance Metrics	7	October 2018

HOW

Projected Business Model: Numerica is an industry leader in the development of multi-sensor, multi-target tracking and fusion algorithms and has successfully deployed high-quality tracking systems for domains including air and missile defense and space situational awareness. Founded in 1996 to commercialize its patented tracking algorithms, Numerica continues to innovate and deploy new technology for customers throughout the DoD. Numerica has successfully commercialized advanced tracking algorithms through licensing of software and selling of IP rights. In 2012, Numerica licensed an advanced Integrated Air and Missile Defense tracker to the Army with Government Purpose Rights and has, since 2010, licensed a commercial tracking product known as Numerica Track Manger (NTM). Similar opportunities are being pursuing for the new surface tracking capability as part of our commercial offering and with Lockheed Martin, the AEGIS Combat System Engineering Agent (CSEA) prime contractor.

Company Objectives: Numerica's objective is to secure transition of the Surface Composite Tracker into current and future Navy surface platforms to provide the situational awareness and target information necessary for effective defense against a wide array of surface threats.

Potential Commercial Applications: The Numerica NTM product is licensed commercially to DoD customers and as an international variant to support the integration of multiple radar systems for different surveillance applications. Numerica is integrating the new surface tracking capability into the product to support a new integrated air and surface surveillance capability.

Contact: Benjamin Slocumb, Ph.D., Principal Scientist
ben.slocumb@numerica.us   (970) 207-2212