



Novel MDA Technologies for Real-Time, Sophisticated Maritime Surveillance

The Maritime Domain Awareness project is developing and transitioning emerging technologies to support an integrated approach for both surface and underwater surveillance in ocean, near-shore, and harbor environments.

Developed by Stevens Institute of Technology, co-lead for the Center for Maritime, Island, and Remote and Extreme Environmental Security, a Department of Homeland Security (DHS) Science and Technology (S&T) Center of Excellence, this project aims to develop an integrated, real-time, all-weather, multi-domain maritime surveillance capability for coordinating and monitoring maritime commerce and traffic.



Featured Technologies

The MDA project focuses on the development of a robust surveillance toolkit for vessel detection, classification and tracking. Featured technologies include:

- Utilizing Satellite Wide-Area Surveillance for automated vessel tracking
- Exploring High-Frequency (HF) Radar for over-the-horizon surveillance of approaches
- Developing underwater acoustic surveillance technologies for near-shore and harbor vessel localization and classification

Meeting End-User Needs

The MDA project addresses a number of clearly defined gaps in current MDA surveillance capabilities. Results from the project may have numerous applications and will likely have significant impact on end-user operations. Potential applications include:

- Integrated MDA capabilities for the U.S. Coast Guard (USCG), including inland waterway acoustics.
- Illicit vessel detection and localization for U.S. Customs and Border Protection (CBP) operations, including go-fast and small vessels.
- Real-time, multi-static vessel detection using HF Radar networks for multiple customers.

Partners

A diverse group of partners inform the project and pilot its results, including:

- USCG
- CBP
- U.S. Department of Defense
- U.S. Integrated Ocean Observing System (IOOS)
- U.S. Intelligence Community
- Private Sector Firms
- Academia

Stevens Institute Awarded Patent for Passive Acoustic Detection

Stevens received a Notification of Allowance by the U.S. Patent Office for a patent that it filed for the Stevens Passive Acoustics Detection System (SPADES). This system provides the capability to detect and classify underwater and surface threats to ports and high value assets. The system was developed by Stevens researchers under grants from the Office of Naval Research and DHS S&T and has been tested in various ports and Navy harbors in the United States and abroad.