The Center for Secure and Resilient Maritime Commerce:
A DHS National Center of Excellence in Maritime Security

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EXECUTIVE SUMMARY

The DHS National Center of Excellence in Maritime Security's (CSR) Maritime Domain Awareness (MDA) work develops and applies emerging technologies in support of layered surveillance. The layers include satellite-based wide area views, HF Radar systems providing over-the horizon situational awareness, and near-shore and harbor sensing utilizing underwater acoustic technologies. Integration of these systems accomplishes vessel detection, classification, identification, and tracking. Applications for end-users including U.S. Coast Guard (USCG) and Customs and Border Protection (CBP) have demonstrated the delivery of actionable information in operationally relevant settings. The Center won the DHS S&T impact award two years in a row for its role in providing vital data during the US Airways plane landing on the Hudson River and during the Deepwater Horizon oil spill. Furthermore, research in port resiliency has yielded a port disruption planning tool, the Port Mapper, that assisted government leadership during the closure of the Port of NY/ NJ by Hurricane Sandy. Work at the Center is focused on delivering MDA data streams from emerging and advanced technologies into the hands of the operators in ways that are compatible with command decision support systems.

INTRODUCTION

Post-9/11, securing our seaports while at the same time maintaining a flow of commerce has been a top priority for the Department of Homeland Security. For example, the Maritime Transportation Security Act implemented in 2004 stipulates risk-based port security measures and establishes Area Maritime Security Committees as coordinating bodies.

The Centers of Excellence provide DHS with the mechanism and capability to reach into the knowledge base of academia in specific areas of urgent need for science and technology development. The maritime domain is an area where advanced technologies can positively impact core DHS mission areas including maritime safety and security, search and rescue, contraband and migrant smuggling, terrorist activity, and illegal fishing interdiction. The Center for Secure and Resilient Maritime Commerce (CSR) was designed to rapidly develop, prototype and transfer new technologies so they can more quickly add value in assuring a safe, secure, and resilient Marine Transportation System (MTS).

The CSR brings together a unique group of academic institutions and public and private partners that is led by Stevens Institute of Technology, Hoboken, New Jersey. Besides Stevens Institute, the partnership includes the following academic institutions: Rutgers University, University of Miami, University of Puerto Rico, Massachusetts Institute of Technology, and Monmouth University. The non-university partners in the CSR include the Port Authority of New York and New Jersey, the Mattingley Group, the Pacific Basin Development Council, and Nansen Environmental Remote Sensing Center.

The CSR strategy to achieve its mission centers on the creation and sustainment of a truly collaborative research and education enterprise that draws on the strengths of each partner, as well as their leveraged relevant DHS and non-DHS research activities. We believe that these unique attributes – collaborative; integrated research & education; and leveraged relationships with Federal, State, local government, and industry stakeholders – position the CSR for continued long-term success and impact.

The CSR research activities are built around two primary realms:

1. Maritime Domain Awareness (MDA): the development of sensor technologies, analysis tools, and decision aides that can enable an effective understanding of anything associated with the Maritime Domain that could impact the security, safety, economy, or environment of the United States.
2. MTS Resiliency: the development of models, tools, and decision aides that can assist policy makers and decision-makers responsible for making organizational changes and resource allocations to enhance resiliency in our nation's MTS.

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