

SECURING AND IMPROVING THE MARINE TRANSPORTATION SYSTEM

The United States Coast Guard (USCG) is responsible for the care and maintenance of maritime aids to navigation (ATON). Much like drivers need stoplights, street signs, and universally accepted driving rules, boaters need equivalent nautical navigation rules. This network of signs, symbols, buoys, markers, lighthouses, and regulations must be functional and accessible so that commercial, recreational, military, and government vessels can safely navigate in the Marine Transportation System (MTS). Currently, the USCG expends considerable time and resources to fulfill its mandate to ensure the safety and economic security of U.S. maritime ports and waterways as well as the resiliency of the MTS.

Ensuring the free flow of goods and vessels along the MTS requires addressing evolving threats to its infrastructure and modernizing capabilities. Modern technologies are needed to monitor the status of ATON, predict and assess risk, identify and respond to evolving cyber threats, and harden the MTS against natural disasters.

USING NEW TECHNOLOGIES

The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) is developing port and waterway resiliency analytical visualization tools, data, and technologies to provide USCG waterway managers with more effective and user-friendly capabilities. This effort will enhance the USCG's Waterways Analysis and Management System (WAMS) and will include research on other capabilities to address DHS maritime management challenges, while maintaining fiscal responsibility.

S&T is partnering with the United States Army Corps of Engineers (USACE) to develop the River Information Services Enterprise (RISE), a cloud-based platform that will synchronize the collection, integration, analysis, and exchange of information between the marine industry and government agencies responsible for maintaining the MTS. This effort also includes innovative approaches that leverage artificial intelligence and machine-learning (AI/ML) techniques to develop decision support tools for river information services.

A study will be commissioned by DHS S&T to examine the vulnerabilities of commercial ports within the MTS. This effort will use a cyber testbed that will virtualize commercial port networks to study how they are deployed, identify possible common vulnerabilities, and assess the state of the regulatory regime to identify areas of improvement.



IMPACT

The MTS is a complex network of interconnected systems overseen by agencies at various levels of government with overlapping authorities and missions. It is a critical part of the U.S. economy, responsible for contributing more than \$212 billion annually in port-sector federal, state, and local taxes; sustaining 13 million jobs; and contributing \$650 billion to the U.S. gross domestic product. It also ensures the systems that manage the MTS are both efficient and resilient, which is critical to the continued economic health of the United States and the many communities that depend on inland waterways. The tools developed under this program will prevent disruptions to economic activity along the MTS and maintain safe operation of vessels along U.S. inland waterways.

STAKEHOLDERS

- USCG
- USACE
- U.S. Department of Transportation Maritime Administration
- National Oceanographic and Atmospheric Administration