

THE CHALLENGE: IMPROVING OUR MARINE TRANSPORTATION SYSTEM'S RESILIENCE

The Department of Homeland Security (DHS) U.S. Coast Guard (USCG) is responsible for providing for the safety and economic security of U.S. maritime ports and waterways. The USCG is authorized to establish, maintain, and operate aids to maritime navigation in order to aid navigation, and to prevent disasters, collisions, and wrecks of vessels. Under a charter signed by the DHS USCG and the Science and Technology Directorate (S&T), S&T will develop and transition software systems, tools and data management systems to: "improve the marine transportation system (MTS) resilience (the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies) by providing analytical visualization tools, data, and technologies to provide USCG waterway managers with more effective and user-friendly capabilities to prepare for, mitigate, respond to, and recover from an incident or disaster affecting the MTS." Significant technological innovation is required to optimize riverine information gathering and dissemination, for the benefit of mariner safety and commerce.

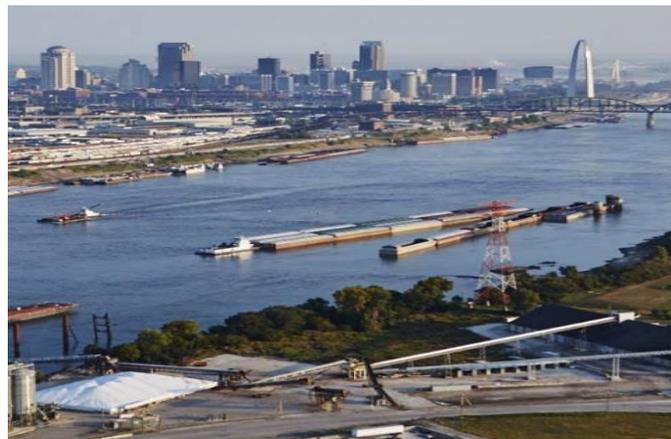
THE SOLUTION: RIVER INFORMATION SYSTEMS ENTERPRISE (RISE)

S&T is partnering with the U.S. Army Corps of Engineers (USACE) and the USCG to develop the river information systems enterprise (RISE). RISE is a cloud-based platform designed to synchronize the collection, integration, analysis, and exchange of information between the marine industry and government. This effort also includes innovative approaches that leverage artificial intelligence and machine-learning techniques to develop decision support tools for river information services (RIS).

ACTIVITY DESCRIPTION

- Collaboration with the USACE engineering research and development center
- Machine-learning and "big data" enterprise architecture for river transportation management

- Automation of bi-directional communications with commercial river traffic, lock and dam operators, and port commanders



ACCOMPLISHMENTS

- Development of air bridge gap capability (measuring clearance between bridge and water)
- Two virtual demonstrations to USCG district practitioners (110+ attendees)

UPCOMING MILESTONES

- Commercial transition (envisioned as a commercial service with open availability for government operators)
- Validation of concept via maritime resiliency testbed
- Incorporation of enhanced waterway action planning and other technical functionalities

PERFORMERS/PARTNERS

- Trabus Technologies, San Diego, CA
- USACE
- USCG