CSR Newsletter – October 2014

CSR completes Port Resilience Decision Framework, Data Flows and Critical Systems study resulting in two white papers. CSR researchers composed of Jim Rice and Kai Trepte of MIT, and Jeffrey Nickerson and Grace Python of Stevens Institute of Technology, together with Rick Luettich of the University of North Carolina and Kaethe Beck of Purdue University, have recently completed a year-long study sponsored by the U.S. Coast Guard Research (USCG) Research and Development Center (RDC) to assess the processes, data sources and decision support systems used by the USCG Captain of the Port in planning for and responding to disruptions to port operations.

The team’s study included visits to the Ports of New York and New Jersey, Houston and San Francisco, where they conducted interviews with USCG leadership and personnel in mission areas ranging from search and rescue operations to salvage and recovery. The team’s research approach focused on the following five tasks: 1. Define and Prioritize Port Resiliency Decisions; 2. Identify Information Requirements for the Selected Critical Decisions; 3. Identify Present Sources of Information Requirements; 4. Identify Existing Information Gaps, and 5. Document the Results and Approach.

The research team’s observations and data gathered resulted in two white papers entitled Port Resilience Decision Process Framework and Port Resilience Decision Data Flows and Critical Systems. The papers are intended to provide the USCG R&D Center with a high-level outline on the current state of practice and needs for Captains of the Port for port resilience decision-making and support.

The Port Resilience Decision Framework Toolkit Project is part of the Center’s ongoing research to develop the essential tools and processes necessary to create a capability of “design for resilience” for maritime resiliency.

DHS CDG Doctoral Fellow deploys Passive Acoustic Signal Recorder 360 device to detect security zone intrusions. Alex Pollara, a DHS-funded doctoral fellowship student at Stevens Institute of Technology, recently completed a second in a series of security zone monitoring experiments to test the vessel detection, tracking, and acoustic recording capabilities of Passive Acoustic Signal Recorder (PASR) devices in areas of concern for the U.S. Coast Guard. The goal of the experiments is to successfully track and identify vessels intruding in sensitive or prohibited areas.

Pollara received permission from the Command Center at USCG Sector New York to conduct the experiment and was assisted by members of the USCG Auxiliary First District, Southern Region to manually deploy two PASR devices in the Hudson River. Results gathered from the day-long experiment will be analyzed and will be used to support his doctoral research in the area of passive acoustic detection systems for maritime and homeland security.

DHS CDG Doctoral Fellow, Alex Pollara, assembles a frame to support a PASR 360 device prior to deployment.

Stevens Institute of Technology researcher provides vital data to assist cruise ships coming to port in the New York Harbor. Dr. Alan Blumberg, Director, Davidson Laboratory, is providing critical information on river currents to assist cruise ships coming into the Port of New York and New Jersey and docking along New York piers. In addition to the dense vessel traffic in the nation’s third largest Port, cruise ship operators must also navigate volatile currents inherent to the NY Harbor, where fresh water from the Hudson River meet with the Atlantic Ocean.
Treacherous currents and the narrow width of the river makes maneuvering a large cruise ship extremely challenging. To get into berth safely the ship’s captain needs to determine the direction and size of the current and whether it is high tide or low tide. Dr. Blumberg is able to provide this critical data in real-time and in forecasts up to 72 hours using the New York Harbor Observing and Prediction System (NYHOPS), a system he founded at Stevens Institute of Technology.

Data from the NYHOPS system was also used in 2009 to provide emergency responders with the water conditions and current forecasts for guiding the wreckage of the U.S. Airways Flight 1549, following the plane’s emergency landing in the Hudson River. For a complete story on how NYHOPS is assisting cruise ships coming to port please visit: Stevens Data Helps Create Safe Harbor for Cruise Line.

The Port Authority of NY and NJ awards Stevens Institute of Technology with a five-year contract to support coastal resiliency and to predict storm surge. Stevens Institute of Technology has recently received a five-year contact by the Port Authority of NY and NJ to improve preparedness and resiliency at critical Port Authority infrastructure sites through an observation and forecast system that provides information on the potential risk and magnitude of flooding prior to and during significant storm events. The system is being developed by Stevens Davidson Laboratory and will integrate the Lab’s NYHOPS coastal monitoring system and Stevens Storm Surge Warning System. The contract will facilitate 26 new sensors to be deployed in the New York Harbor to measure water levels, temperature and salinity every six minutes and transmit that data in real time to a new Stevens supercomputer. To learn more about the Port Authority contract, click here for the Stevens news story: Stevens - Coastal Resiliency.

DHS CDG Master’s Degree Fellows attend NJ OHSP Annual Conference. Stevens CDG-funded Maritime Systems fellowship students attended the NJ Office of Homeland Security and Preparedness (NJ OHSP) 2014 Annual Conference. The theme of the conference was Emerging Issues in the Homeland Enterprise and included an agenda of presentations focused on cybersecurity vulnerabilities, unmanned aircraft systems, active shooters, and the evolution of extremist groups. The conference facilitated a tremendous opportunity for the students to connect and network with a range of local, state and national homeland security practitioners.

Stevens researchers, Dr. Alan Blumberg, Dr. Nickitas Georgas and Dr. Thomas Herrington (L to R) awarded PANYNJ contract to support coastal resiliency.

Stevens-based USCG Auxiliary Program recognized in Planking Ceremony. Photo credits: Hope Wright.