

# GTRI Develops New Technologies to Secure Cargo Containers

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The Port of Savannah is the fourth largest container port in the United States, handling cargo in large metal containers carried on ships like these. (Photo: Ga. Dept. Economic Development)

(PhysOrg.com) -- The Georgia Tech Research Institute (GTRI) demonstrated two cargo container security systems at a recent event sponsored by the U.S. Department of Homeland Security (DHS).

The two projects—GTRI's [Container Security Device \(CSD\)](#) and the Composite Container Security System—were developed under contract to the Department of Homeland Security's Science and Technology Directorate. They were among projects featured and demonstrated in simulated and realistic supply chain scenarios at the Department's Cargo Conveyance Security Technology Demonstrations held August 17-28 at Sandia National Laboratory in Albuquerque, N.M.

Representatives from a broad range of organizations with interest in

cargo security—including federal agencies, congressional and committee staffers, shipping industry representatives, and government officials from Japan, Canada, Singapore, and the European Union—attended the event. Among the federal agencies with cargo security responsibilities are the Department of Homeland Security, Department of Defense, Department of State, Transportation Security Administration and Department of Energy.

“GTRI was awarded a contract to develop a container security device based on a unique solution to this complex problem,” said Gisele Bennett, director of GTRI’s Electro-Optical Systems Laboratory. “The GTRI Container Security Device (CSD) is a small, inexpensive system that will detect unauthorized door opening or removals on ISO marine containers.”

ISO containers by design can flex because of forces applied to them as they travel through the supply chain. The GTRI design can account for the normal flexing of the containers without indicating a door opening when one has not occurred.

“The GTRI CSD design has been assessed by the government test team to be highly promising for its resistance to tamper or compromise,” Bennett added. “The GTRI CSD is integrated with another DHS-funded system, the Marine Asset Tag Tracking System (MATTS) developed by iControl Inc. MATTS will communicate GTRI CSD alarm data to customs organizations and industry.”

In collaboration with the University of Maine, Georgia Tech has also developed a system to secure lightweight composite containers. Teaming with the University’s AEWG: Advanced Structures and Composites Center and Maine Secure Composites, LLC, Georgia Tech has developed a novel, lightweight sensor grid to incorporate within the walls, doors and floors of the composite container developed at the

University of Maine.

“When combined with GTRI’s CSD, the resulting container will be approximately 10-15 percent lighter and more durable than current generation steel containers, but with an embedded security and communication system that will detect breaches to any of the container’s six sides and communicate security information, via MATTS, to customs organizations or carriers,” Bennett noted.

Shipping containers are potential means for smuggling weapons, drugs and other contraband items across national borders. Security systems are part of the solution because they can sound an alarm if the containers are tampered with in-transit.

The two-week demonstration was held in Albuquerque for those in government, research and industry to highlight technologies being developed to ensure that the contents of cargo containers are not tampered with or removed.

The Department of Homeland Security is sponsoring research in key topical areas to discover the necessary requirements for robust shipping container security standards. This research is structured to develop representative container security technologies that can be integrated into an effective system.

Provided by Georgia Institute of Technology

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