CAIT
Center for Advanced Infrastructure and Transportation

With ever-increasing traffic throughout the nation's waterways and today's heightened concerns over homeland threats, the safety and security of our ports–as well as the roads, bridges, tunnels, and coastal waters that surround them–are crucial to the smooth operation of the nation's supply chain and our peace of mind.

RUTGERS
THE STATE UNIVERSITY OF NEW JERSEY

LPS
Laboratory for Port Security

Growing consumption of petroleum products worldwide has resulted in the proliferation of vessels carrying oil, chemicals, and gases into our harbors. Meeting our society's surging demand for commodities and finished goods places a heavy responsibility on local authorities to secure both infrastructure and the public. Disruption of port operations—whether from terrorist actions, accidents, or natural disasters—not only affects our quality of life, but also can have devastating global economic impacts by impeding or even halting international supply chains. To keep the myriad goods and services we need flowing freely, the risks inherent in port operations and vessel traffic need to be analyzed and effective strategies must be developed to prepare for, respond to, and recover from high-consequence events.

The Laboratory for Port Security (LPS) is a focal point of research and training on marine/land port security for harbors and their environs. It is a joint effort of Rutgers' Center for Advanced Infrastructure and Transportation (CAIT) and the Center for Discrete Mathematics and Theoretical Computer Science (DIMACS). CAIT-DIMACS LPS collaborates with and coordinates its activities with key local, state, and federal agencies.

Focus Areas LPS's mission is to improve port security and safety by researching the complexities of cargo vessel traffic and container inspection processes, developing workable solutions, and supporting their implementation. The port complex of New York and New Jersey and ports on the Delaware River annually process millions of containers and bulk products we use every day. LPS takes advantage of its central New Jersey location, using the area's infrastructure as an *in situ* laboratory for research, education, and training projects that concentrate on the logistics involved in:

- Port operations
- Vessel traffic management
- Handling of dangerous cargo vessels
- Waterway/canal maritime traffic
- Security inspection processes of containerized cargo
- Cargo information/communication systems
- Surface and underwater maritime domain awareness
- Managing disruptive events and their consequences

Research LPS's technical expertise includes large-scale simulation models for port and waterway logistics, risk analysis, supply chain logistics, and economic analysis—all of which are crucial to mitigate risks, optimize operations, and develop effective procedures for readiness and recovery in the face of high-impact port closures. LPS cooperates with a number of national and international academic and government institutions to advance state-of-the-art modeling and analysis of port and waterway security and safety.




Recent projects include:

- Modeling and analysis of vessel traffic in the Delaware River and Delaware Bay: Risk assessment, mitigation, and recovery
- Risk analysis and mitigation of vessel traffic in the Istanbul Strait, Turkey
- Performance evaluation of container inspection processes in New York/New Jersey marine terminals
- Capacity planning of bauxite-loading ports in Brazil, Guinea, and Jamaica

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LPS participates in the U.S. Coast Guard's Area Maritime Security Committees of both Sector Delaware and Sector New York, is a member of the Maritime Exchange for the Delaware River and Bay, and is heavily involved in research and training activities with the New Jersey Office of Homeland Security and Preparedness.

Program Officers and Affiliated Faculty LPS comprises an interdisciplinary team of more than 20 faculty from Rutgers and other institutions worldwide, drawing on expertise from many program-related areas.

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Academic Partners

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Center for Secure and Resilient Maritime Commerce, Stevens Institute of Technology

Center for Supply Chain Management, Rutgers Business School–Newark and New Brunswick

Homeland Security Center for Dynamic Data Analysis (DyDan), Rutgers University

University Center for Disaster Preparedness and Emergency Response (UCDPER), Rutgers-UMDNJ-Robert Wood Johnson University Hospital

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