Annual Meeting: Assessment and Measurement of Port Disruptions

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The Problem

Our nation’s economy and national security are highly dependent upon the Maritime Transportation System (MTS).

- **Nationally:** The MTS accounted for more than $4.6 trillion of economic activity (1/4 of US GDP in 2014, 2019).
- **Globally:** The MTS accounts for more than 80% of global merchandise trade in volume and 67% of its value.

To handle ever-increasing shipping volumes maritime ports have become highly automated
- Heavily reliant on information and communications technology
- “Between 2022 and 2027, the global smart ports market is projected to increase from $1.9 billion to $5.7 billion. Throughout this process the sector will need to attend to the associated threats to security in the use of IT.” [UNCTAD 2022]

Maritime ports are at risk of disruption from cyber attacks and natural disasters
- Superstorm Sandy
- NotPetya, etc.

*How to enhance the security and resilience of maritime ports?*

**Our Contribution:** The CIRI Port Disruptions Tool (PDT) enables data-informed decision making regarding risk mitigation and management. Agile and resilient logistics.
What Will Success Look Like?

Via the Port Disruptions Tool (PDT), customers will:

- Employ data-driven analyses to manage emerging risks and their relevance/impact within their specific operational contexts.
- Use those analyses to more efficiently plan and prioritize risk mitigation activities.
- Continually estimate seasonal, economic impacts of disruptions within the MTS.
- Proactively identify bottlenecks and single points of failure from adopting new technologies to drive efficiencies.
- Easily share data and analyses with other stakeholders in the intermodal ecosystem to coordinate mitigation and response.

<table>
<thead>
<tr>
<th>Year</th>
<th>Date</th>
<th>Event/ Article Title</th>
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<tr>
<td>2021</td>
<td>March</td>
<td>Suez Canal Obstruction</td>
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<td>July</td>
<td>&quot;Supply-Chain Backlogs Turn Chicago into New Chokepoint&quot; [Wall Street Journal]</td>
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<td>October</td>
<td>&quot;America's Jammed-Up Ports Need Help&quot; [Washington Post]</td>
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<td>2022</td>
<td>July</td>
<td>&quot;Record container ship traffic jam as backlog continues to build&quot; [FreightWaves]</td>
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<td>&quot;Russia strikes Ukraine's Black Sea port of Odesa hours after grain deals signed&quot; [NPR]</td>
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<td>Cyber attacks on the Port of Los Angeles have doubled since pandemic [BBC]</td>
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<td>September</td>
<td>&quot;Freight train worker strike could cause massive supply chain crisis as well as halt commuter trains&quot; [CBS News]</td>
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<td>December</td>
<td>&quot;Senate passes legislation to avert nationwide rail strike&quot; [Axios]</td>
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Benefits to Users

• Enhanced, data-driven risk management for owners and operators of ports and shipping companies.
• Ability to quantify the risks and benefits of integrating emerging technologies into their long-term strategic planning.
• Re-prioritize infrastructure assets *continually* due to an evolving natural and adversarial landscape.
• Ability to quantify the financial impact of historically-attested disruptions within the context of their shipping ports or region.
• More efficient responses to local and regional disruptions to commodity flows.
• Reduced losses from disruptions when they do occur.
Benefits to HSE

• National Economy:
  • More efficient, more resilient maritime-dependent supply chains
  • Reduced economic losses from disruptions at maritime ports

• US Coast Guard
  • Assess a broader range of types of disruptions across the maritime stakeholder ecosystem, including cyber.
  • Prioritize potential targets relative to evolving threat intelligence that may exploit dependencies vital to critical functions.
  • Reduce the time spent by Port Security Analysts to model risk.
  • Data-driven approach to injects for Area Maritime Security Exercises, in particular the cybersecurity committee.

• National Defense and Security
  • More efficient, more resilient strategic maritime ports.
  • Integration of real-time data sources within the PDT can provide more timely, more accurate data to planners to better estimate evolving DoD capacity needs.
  • Improved readiness of strategic maritime ports to support force projection missions.
Technology Transition Accomplishments

- Fall 2020: Army Cyber Institute (ACI) Jack Voltaic v 3.0 Exercise Ports Table Exercise Coordinator and Fort to Port Analyses Report
- Summer 2021: National NSF I-Corps Summer Cohort Participant at NERIN (100 interviews). Invited panelist on DHS CoE Workshop on Suez Canal Incident.
- Winter 2021/22: RTI International Technology Screening
- Summer 2022: Homeland Security Startup Studio (HSSS) Cohort Participant and formation of Koru Ports
- Fall 2022: Invited Speaker to NDTA Fall Meeting’s Transportation Academy
- Winter 2022/23: Participant in British Telecom (BT) Regional Security Summit. UIUC Office of Technology Management (OTM) to resubmit Patent Application
Activities Remaining

• Continue to engage with customers and potential licensing partners to develop opportunities for CRADAs and funded pilots.
  • Improve usability via PDT Model Builder (Deliverable 1.1)
  • Address requirement gaps opportunistically with customer engagement to access data and work toward funded pilot (Deliverable 1.2)
• Entity formation to maintain and license PDT IP.