

# 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

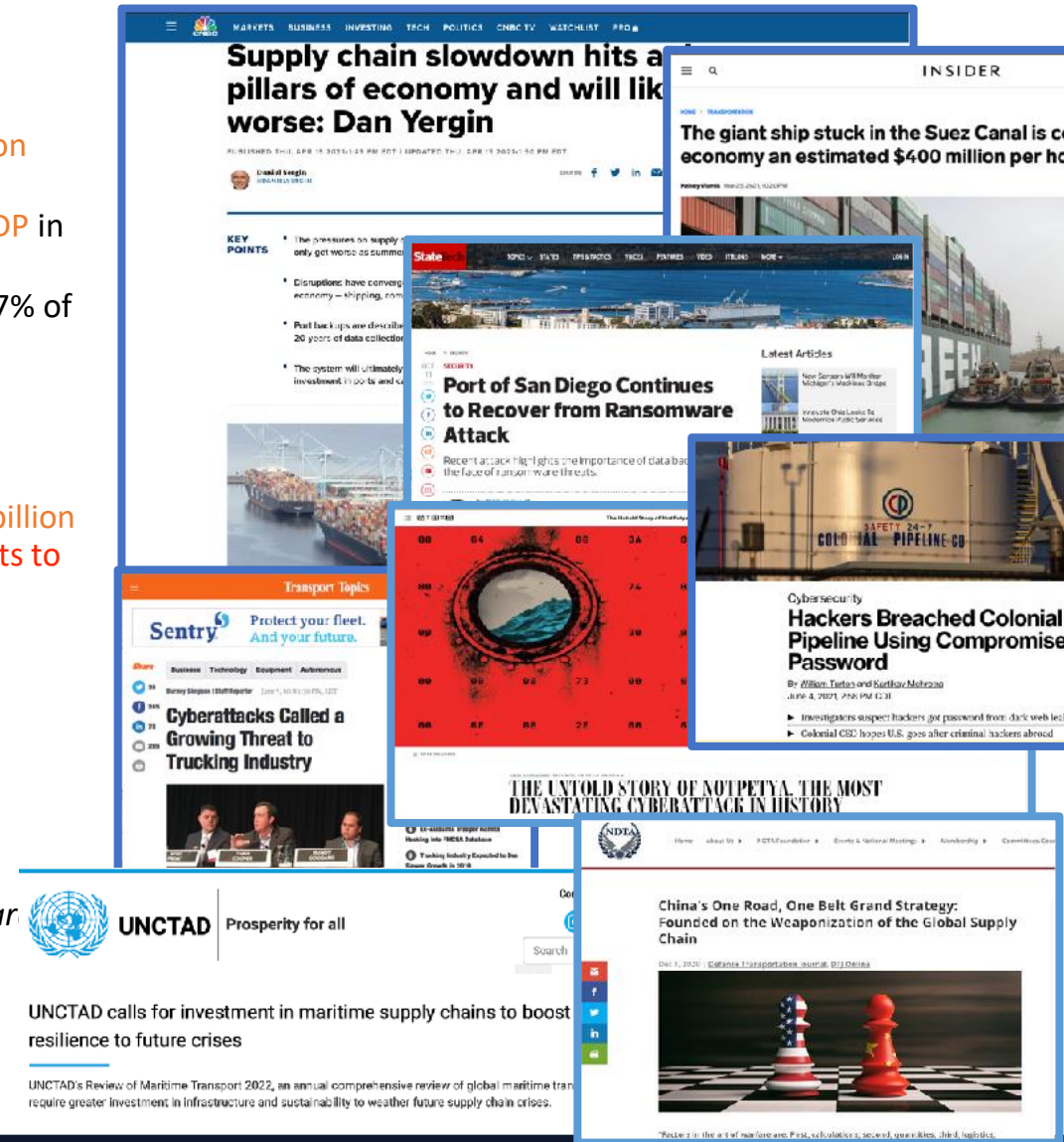
- Heavily reliant on information and communications technology
- “Between 2022 and 2027, the global smart ports market is projected to increase from \$1.9 billion to \$5.7 billion. Throughout this process the sector will need to attend to the associated threats to security in the use of IT.” [UNCTAD 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.*



UNCTAD calls for investment in maritime supply chains to boost resilience to future crises

UNCTAD's Review of Maritime Transport 2022, an annual comprehensive review of global maritime transport, require greater investment in infrastructure and sustainability to weather future supply chain crises.

# What Will Success Look Like?

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

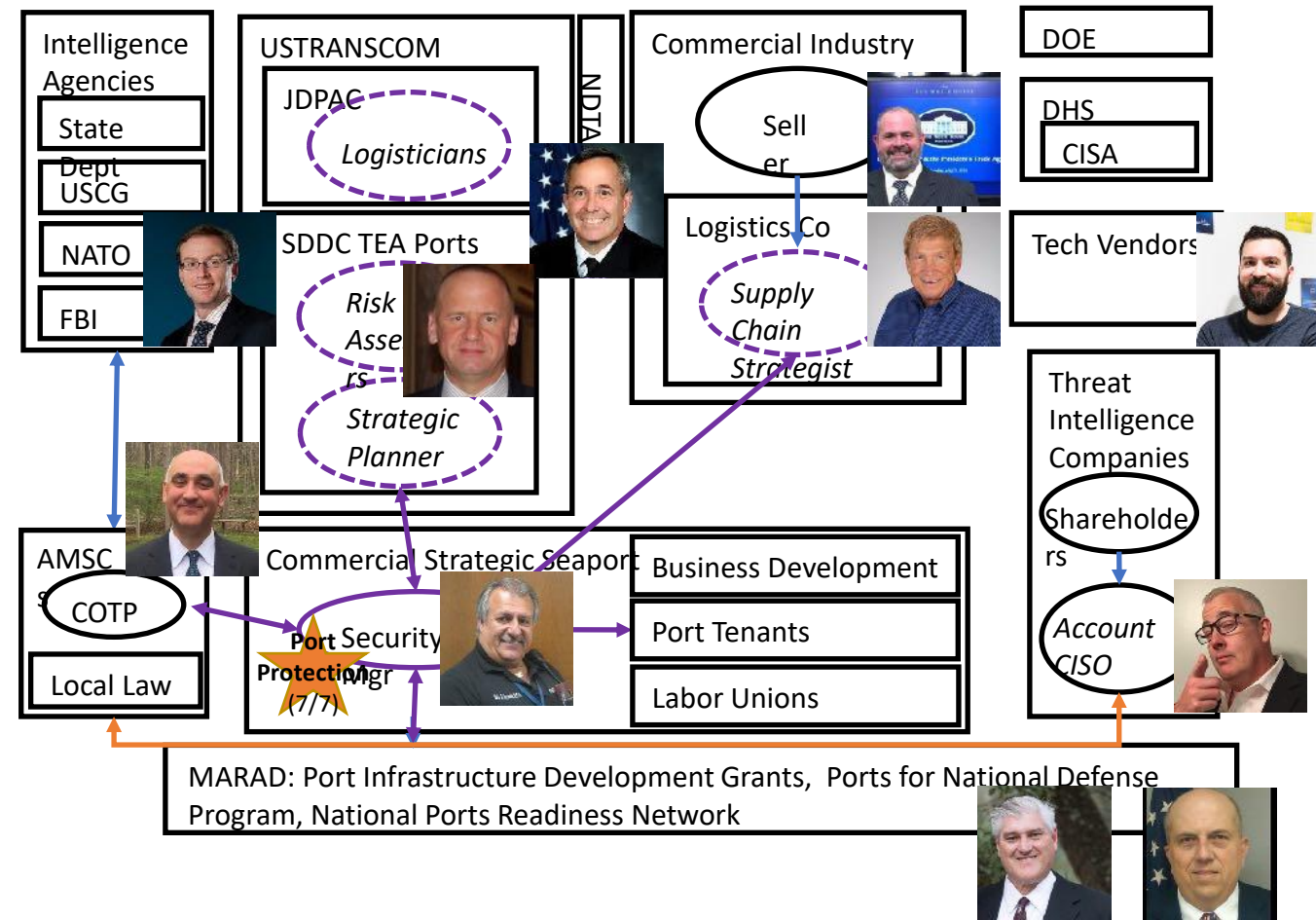
- Employ **data-driven analyses** to manage **emerging risks** and their relevance/impact within their **specific operational contexts**.
- Use those analyses to more **efficiently plan and prioritize** risk **mitigation** activities.
- **Continually estimate** seasonal, economic **impacts of disruptions** 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**.

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



# 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
- Spring 2021: Invited panelist to National Defense Transportation Association (NDTA) Surface Force Projection Conference.
- Summer 2021: National **NSF I-Corps Summer Cohort Participant** at NERIN (**100 interviews**). Invited panelist on DHS CoE Workshop on Suez Canal Incident.
- Fall 2021: **Publications** of PDT capabilities in WinterSim 2021, IEEE JCDL 2021, and Transportation Research, Part C. Invited speaker to **NDTA Fall Meeting's Transportation Academy**. Invited panelist at Maritime Security Regimes Roundtable, **NATO CoE**.
- 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.