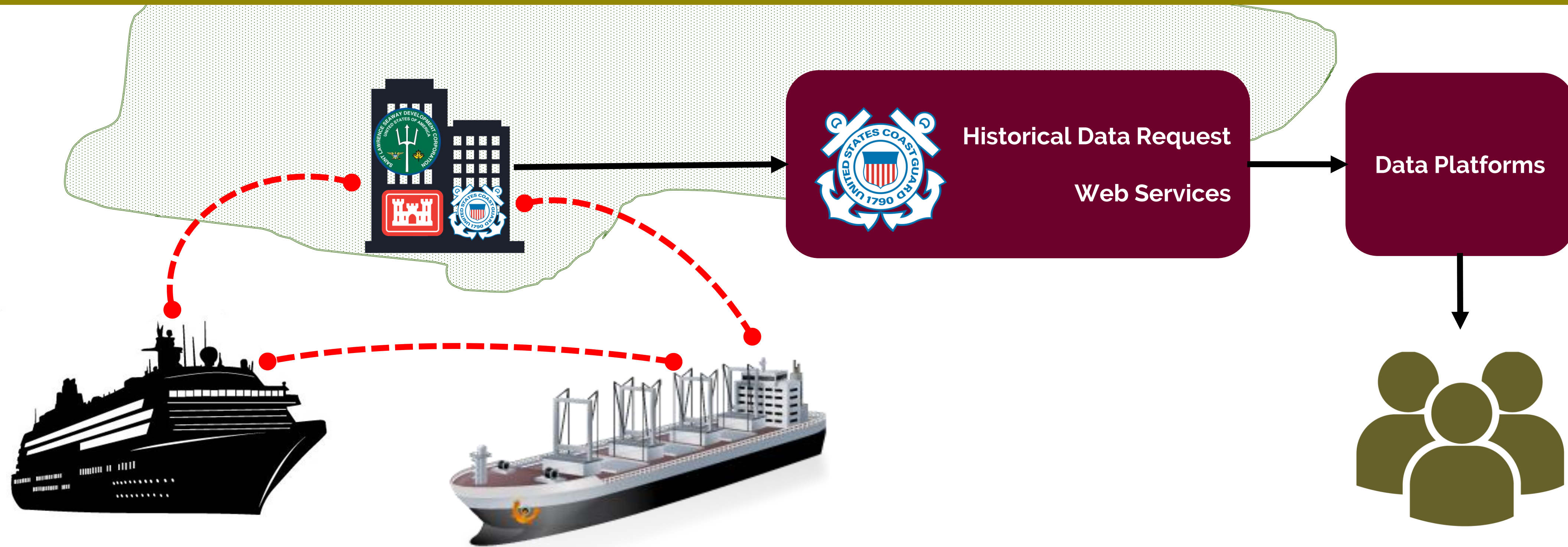


ENHANCING ACCESSIBILITY AND USABILITY OF AUTOMATIC IDENTIFICATION SYSTEM (AIS) DATA

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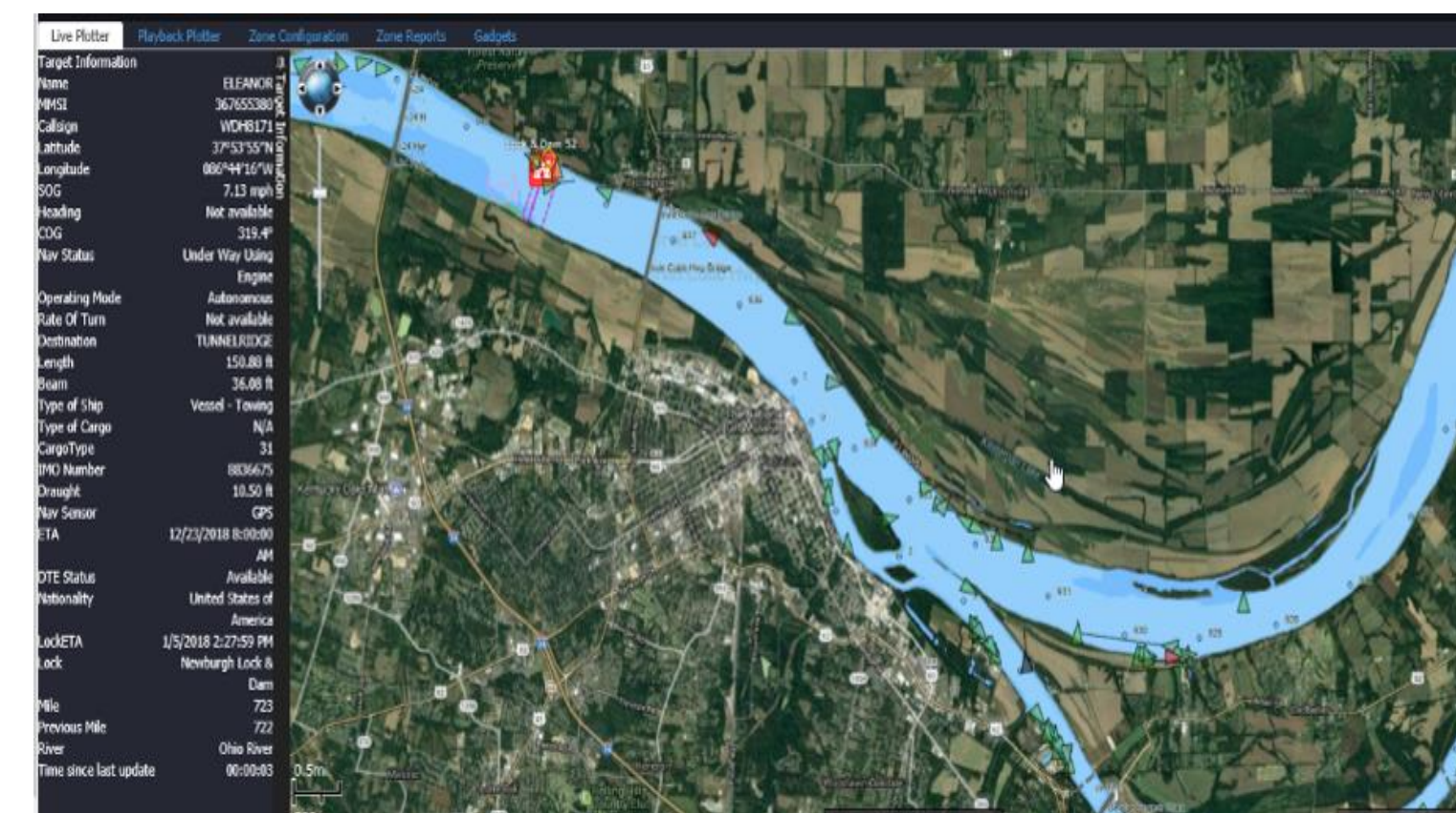
AUTOMATIC IDENTIFICATION SYSTEM (AIS) DATA FLOW



The ability to identify vessels on the waterways is essential to safe navigation, efficient movement of goods, and national security. Developed in the 1990s, Automatic Identification System (AIS) is a technology specifically designed to provide this maritime capability.

AIS is a system installed on marine vessels designed to send and receive information via radio waves that inform centralized command centers of the location and identification information of vessels. In all, about 400 data elements can be transmitted over AIS. The most commonly used data are position reports along with static and voyage related data that enables users to track a vessel's whereabouts and future direction. In recent years, archived and collected AIS data has become a source for research studying navigation, cargo movement, and even marine conservation.

At the end of 2004, the International Maritime Organization made it mandatory for AIS to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages, and all passenger ships irrespective of size



Lock Operations Management Application, U.S. Army Corps of Engineers

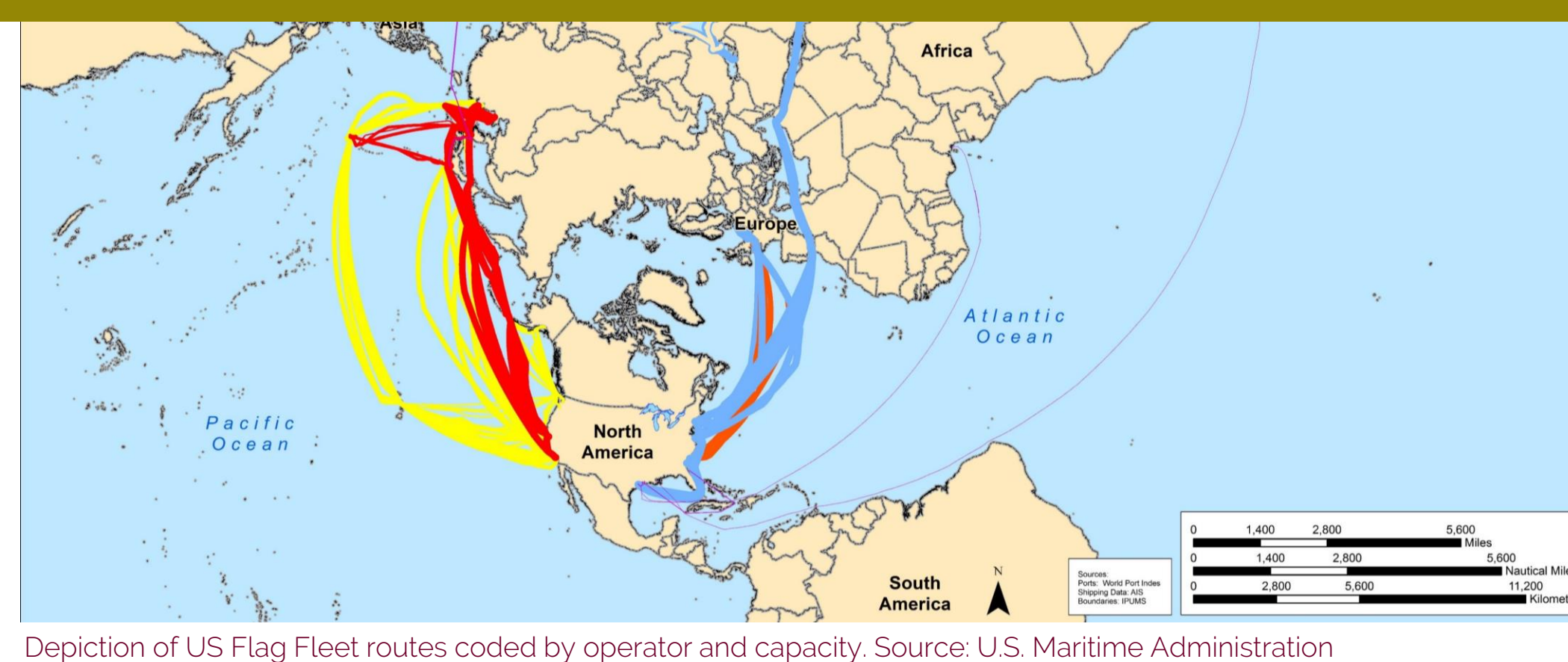
THE CHALLENGE

The objective is to assess gaps and challenges in the accessibility and usability of AIS data, with the goal of increasing data accessibility, eliminating resource overlaps, and sharing developed capabilities and expertise between agencies.



Information derived from AIS data provides great opportunities to the U.S. Government and other maritime stakeholders to enhance marine transportation system safety, efficiency, and security. However, consistent access to, management of, and analysis of AIS data is hindered by challenges that can be broadly grouped into four categories:

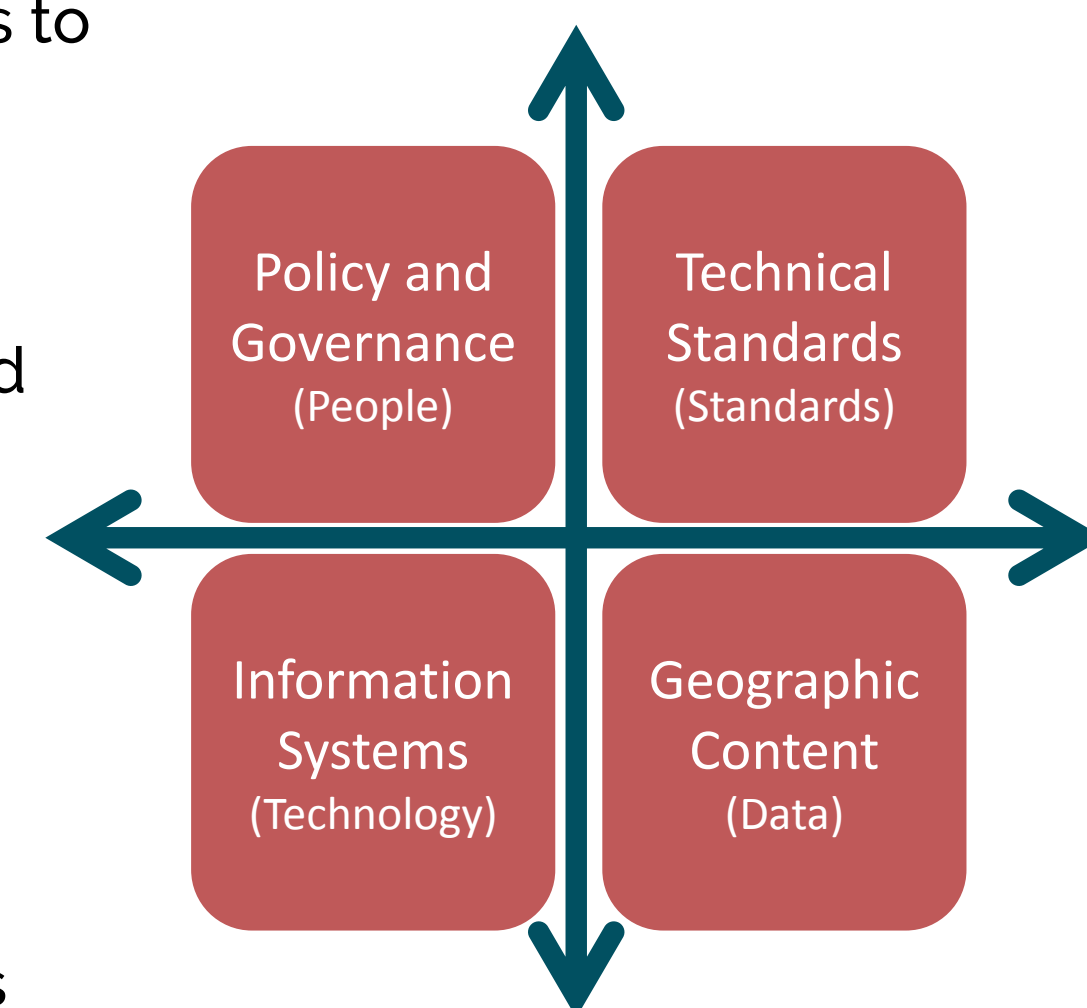
1. Access to Data
2. Validity of Data
3. Data Management
4. User Support



Depiction of US Flag Fleet routes coded by operator and capacity. Source: U.S. Maritime Administration

Key challenges include, but are not limited to:

- Policy and technical barriers to interagency data sharing,
- Inability to access data in a timely manner,
- Inconsistent data format and quality,
- Absence of accessible long-term data storage,
- Need to validate data from third-party sources, and
- Need for standard analysis products or decisional tools for users with limited capacity or expertise in AIS.

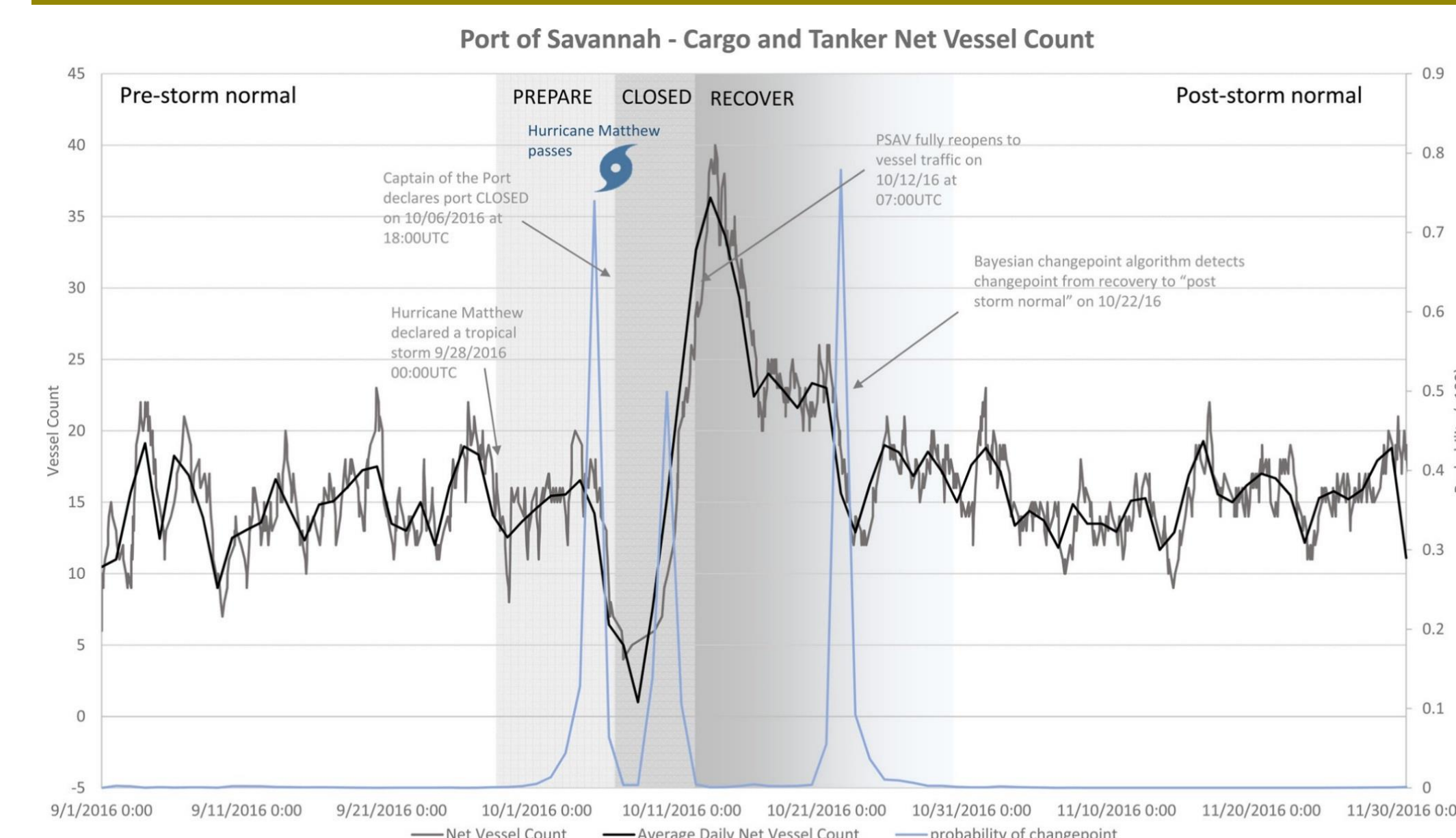


Pillars of Spatial Data Infrastructure, modified from International Hydrographic Organization

FEDERAL ROLES AND RESPONSIBILITIES WITH AIS

Federal Agency	AIS Lifecycle Role				Application			
	Provider	Disseminator	User	Regulator	Waterways Management	Waterways Safety & Security	Marine Planning	Statistical Analysis
BOEM		X	X				X	X
BTS			X					X
EPA			X					X
FCC			X	X				
MARAD			X					X
NAVY	X		X			X	X	
NOAA			X			X	X	X
SLSDC	X		X		X	X		
USACE	X		X		X	X	X	X
USCG	X		X	X	X	X	X	X

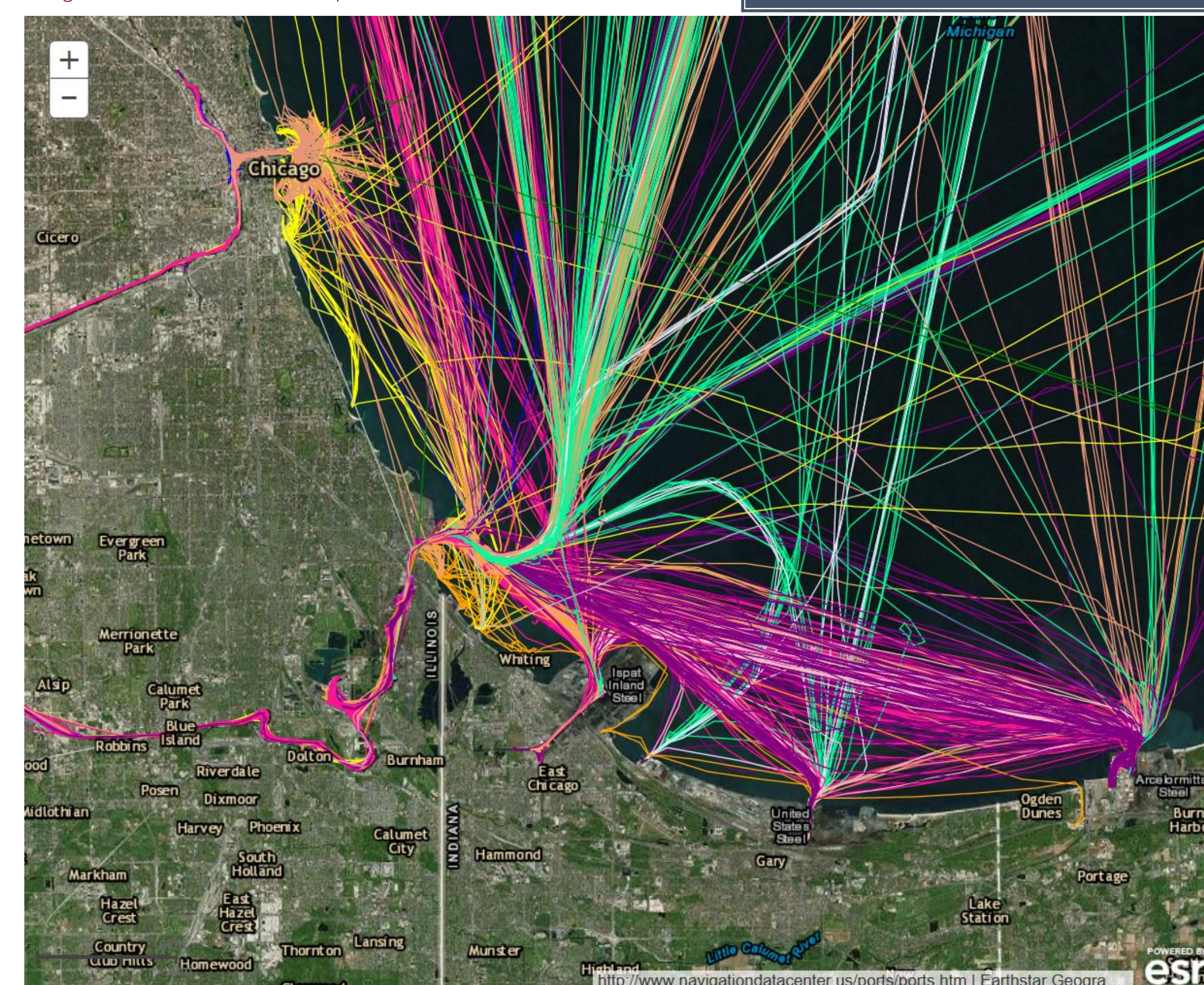
DATA APPLICATIONS



Above: Fig 4 from Touzinsky, Katherine F., et al. "Using Empirical Data to Quantify Port Resilience: Hurricane Matthew and the Southeastern Seaboard." Journal of Waterway, Port, Coastal, and Ocean Engineering 144.4 (2018).

AIS data forms a key piece of ocean knowledge, which can be used to better inform operational and policy decisions and enhance entrepreneurial opportunity.

Below: AIS Historical Vessel Track Lines in Lower Lake Michigan Area. Source: U.S. Coast Guard Nationwide AIS Archive. Processed using AIS Analysis Package (AISAP) developed by U.S. Army Corps of Engineers Engineer Research and Development Center. Credit: KN. Mitchell



RECOMMENDATIONS

1. Better define and articulate the value proposition of open and easy access to AIS data across the Federal Government and public stakeholders.
2. Expand options for user access to AIS data by leveraging the Federally-managed MarineCadastre.gov as a platform for enhanced accessibility.
3. Increase awareness of existing AIS tools for Federal use that enable AIS information accessibility and usability.
4. Improve the usability of AIS-derived information products by establishing links to external data sources.
5. Identify geographic and temporal coverage gaps in U.S. AIS data and develop plans to fill them.

U.S. COMMITTEE ON THE MARINE TRANSPORTATION SYSTEM (CMTS)

The CMTS serves as a Federal interagency coordinating committee for the purpose of assessing the adequacy of the marine transportation system, promoting the integration of the marine transportation system with other modes of transportation and other uses of the marine environment, and coordinating, improving the coordination of, and making recommendations with regard to Federal policies that impact the marine transportation system.

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