



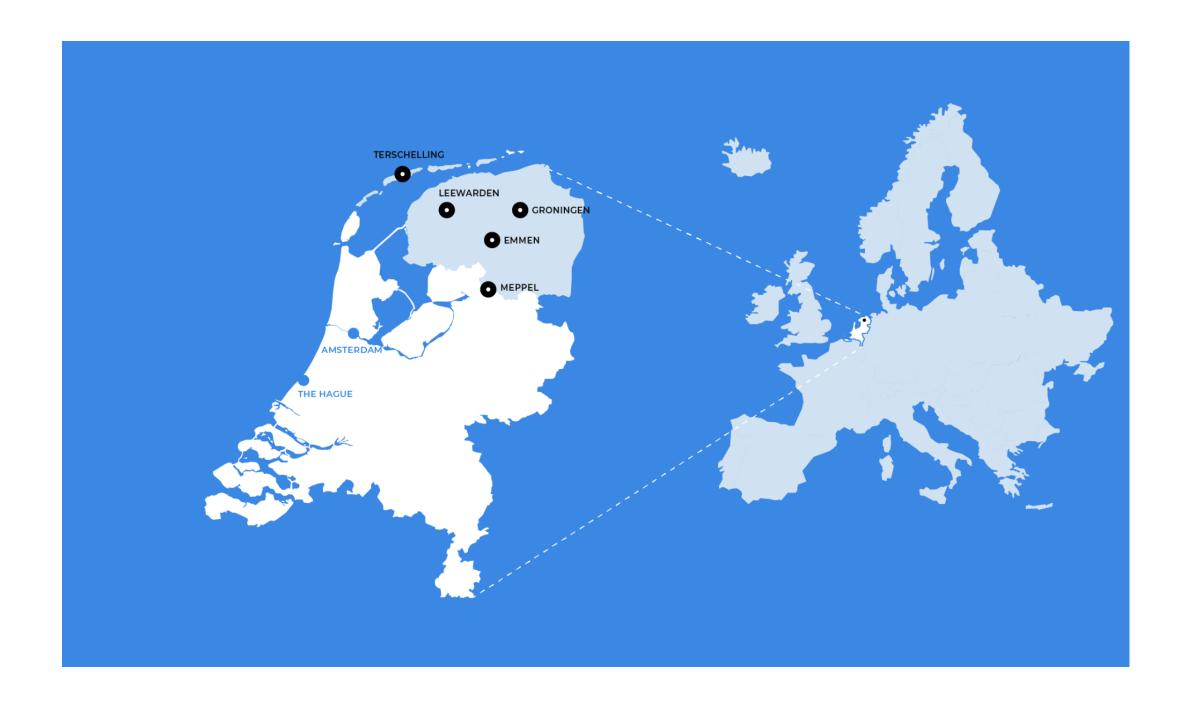
Maritime IT Security Research Group

Stephen McCombie



university of applied sciences



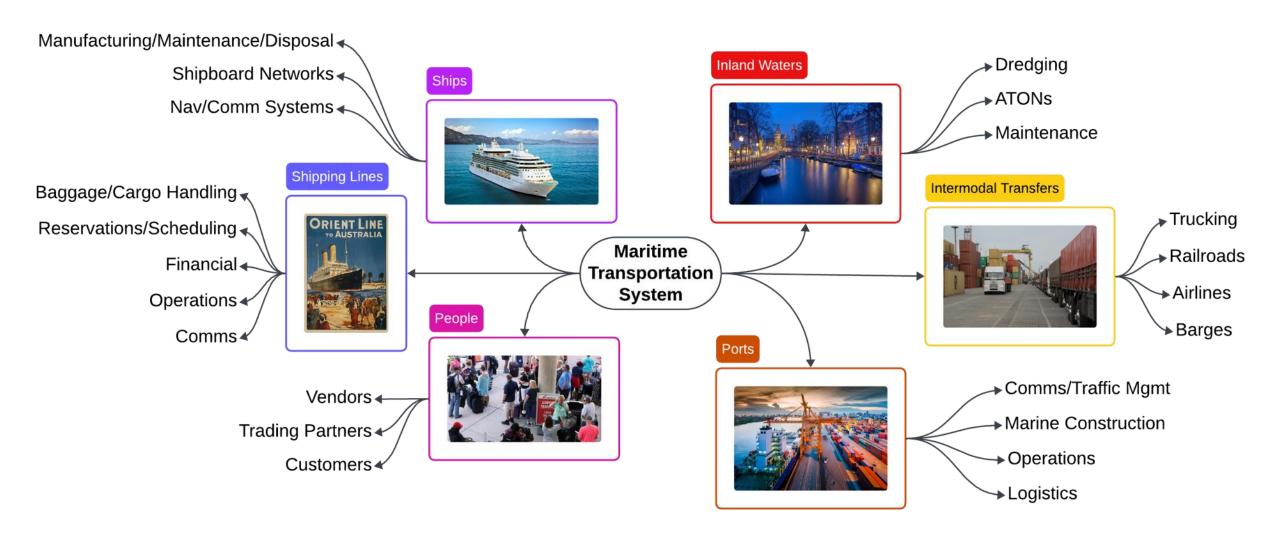




Maritime Cybersecurity Research Group



- Established September 2021
- Goal is to conduct impactful research into Cyber threats to the Maritime Transportation System (MTS)
- Our scope apart from traditional maritime activities includes inland waters, port facilities and other critical elements of the MTS
- This is achieved by leveraging our skills across disciplines within NHL Stenden in Ethical Hacking, Secure Programming, Serious Gaming, Maritime Technology, Maritime Officer Training, Marine Shipping Innovations and Cyber Safety
- Three major projects



Kessler and Shepard (2022)

Navigation Charts/ECDIS **Ship Network GNSS** Customs/Immigration Radar E-mail Weather Timekeeping **Updates and Remote Access Crew Network** E-mail Entertainment WiFi/Wired **Network Backbone Closed Circuit TV** Firewall/Internet **Intercom Stations Industrial Control Systems** Master Clock Cargo Handling

Communications

- AIS
- GSM
- Radio
- Satellite link
- Ship-to-Ship/Shore
- VolP

Loading and Stability

- Bay Planning
- EDIFACT
- Hull/Ballast System

Public Address/Alarm

Remote Management of

Source: Atlantic Council

Human-Machine Interface

Operational Technology

Propulsion/Steering

Sensors

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EUROPEAN L



ISA THREAT NDSCAPE: ANSPORT SECTOR

ry 2021 to October 2022)

The ENISA Report

Published March 21, 2023

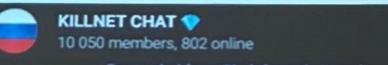
Prime threats affecting the transport sector:

- Ransomware attacks
- Data related threats
- Other Malware
- Denial-of-service (DoS), distributed denial-of-service (DDoS) and ransom denial-of-service (RDoS) attacks
- Phishing/spear phishing
- Supply-chain attacks

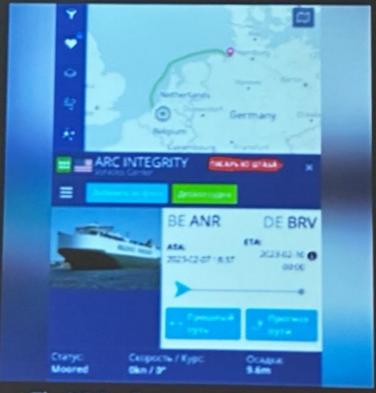
Why is the maritime industry so vulnerable?



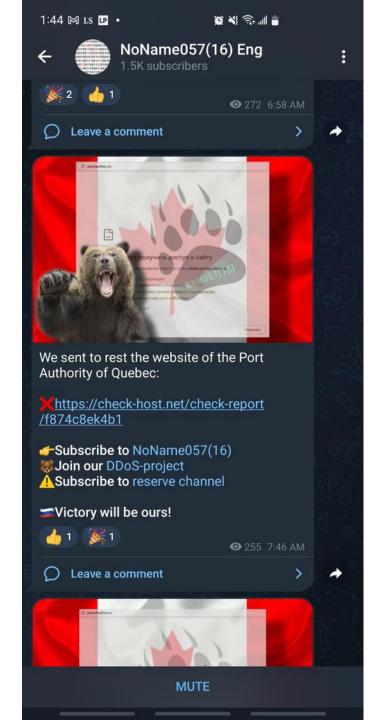
- Poorly maintained and aging equipment
- Low level of cyber security maturity and awareness
- Lack of cyber security staff
- Potentially serious safety issues as a result of cyber attacks
- Critical nature of Maritime Sector for global economy and security
- Various threat actors targeting it



Forwarded from Clerk from the Headquarters /



» The M2 Bradley armored personnel carrier in the transport and cargo vessel ARC Integrity (USA) is now in the Belgian port of Antwerp. the intermediate point is the port of Bremerhaven, Germany. It is on this ship that Bradley goes to the crests. What prevents our DRG from sinking a bulk carrier? (avenge the Novorossiysk in 1955m) Technically



Russian hackers block websites in retaliation for Leopard tanks

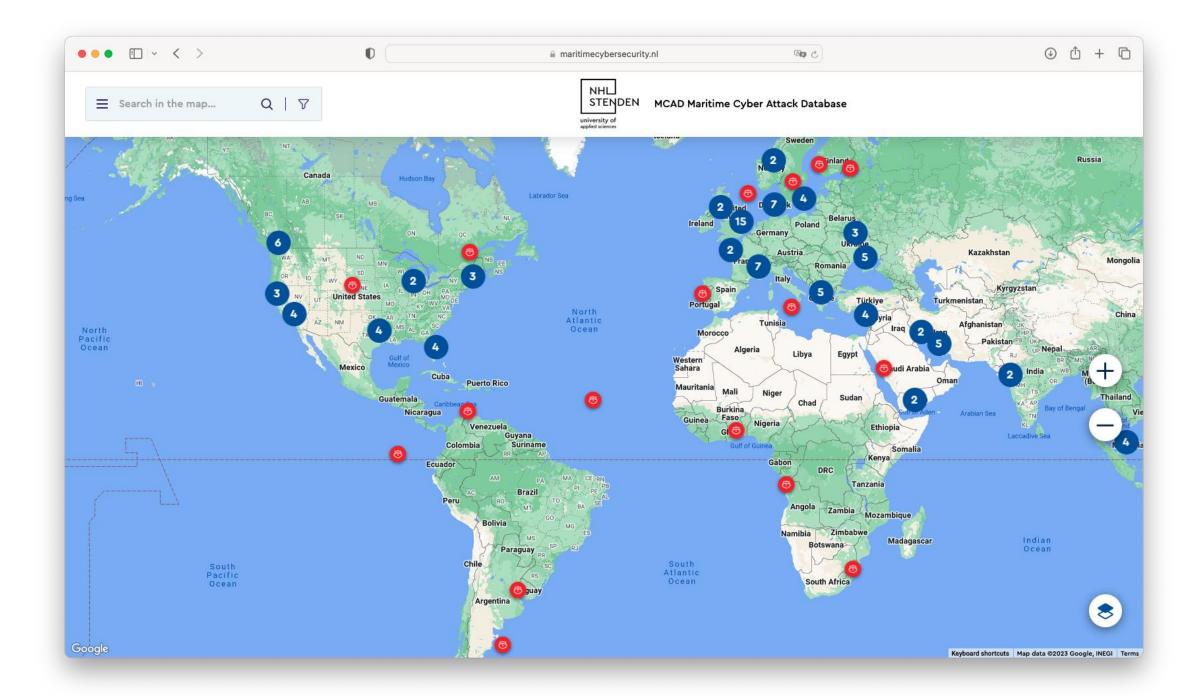
June 14, 2023



Rotterdam harbour. Photo: Quistnix via Wikimedia Commons

Pro-Russian hackers have been blamed for forcing the websites of Dutch commercial ports offline last week.

Groningen Zeehaven's site was down all weekend, while Amsterdam, Rotterdam and Den Helder were all offline for several hours on Tuesday.



MCAD Android/iOS App

- Our MCAD web application also has a mobile app available for both iOS and Android.
- You can find it on Google Play or on the Apple App Store.

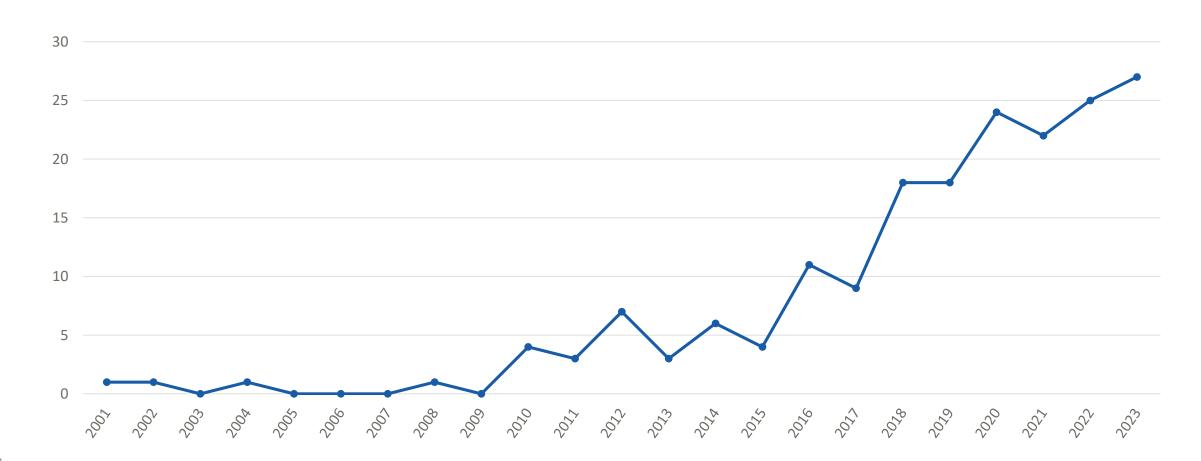






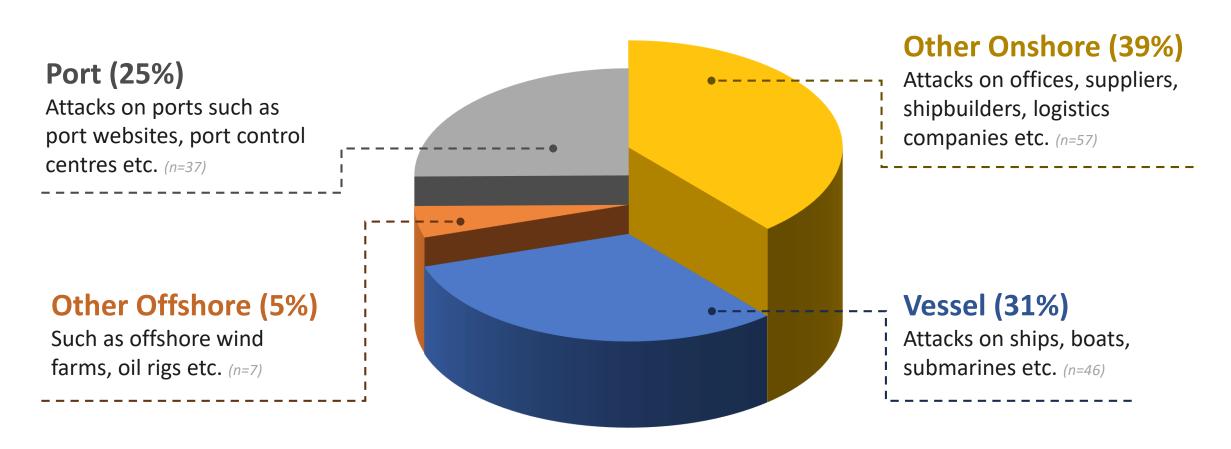
Maritime Cyber Incidents by Year

BETWEEN YEARS 2001 AND 2023 (INCLUSIVE)



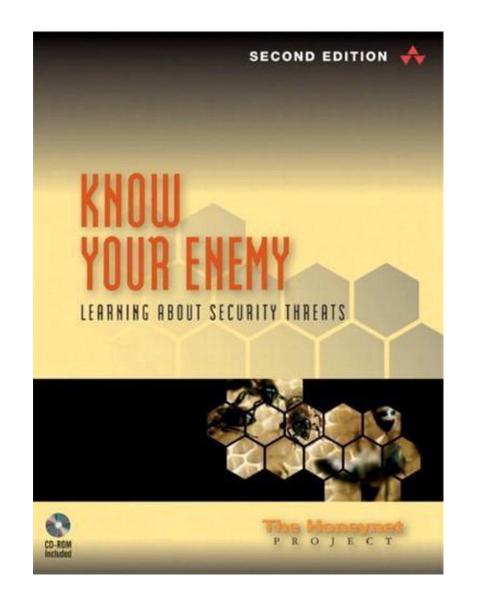
Maritime Cyber Incidents by Victim Type

BETWEEN YEARS 2001 AND 2023 (INCLUSIVE)

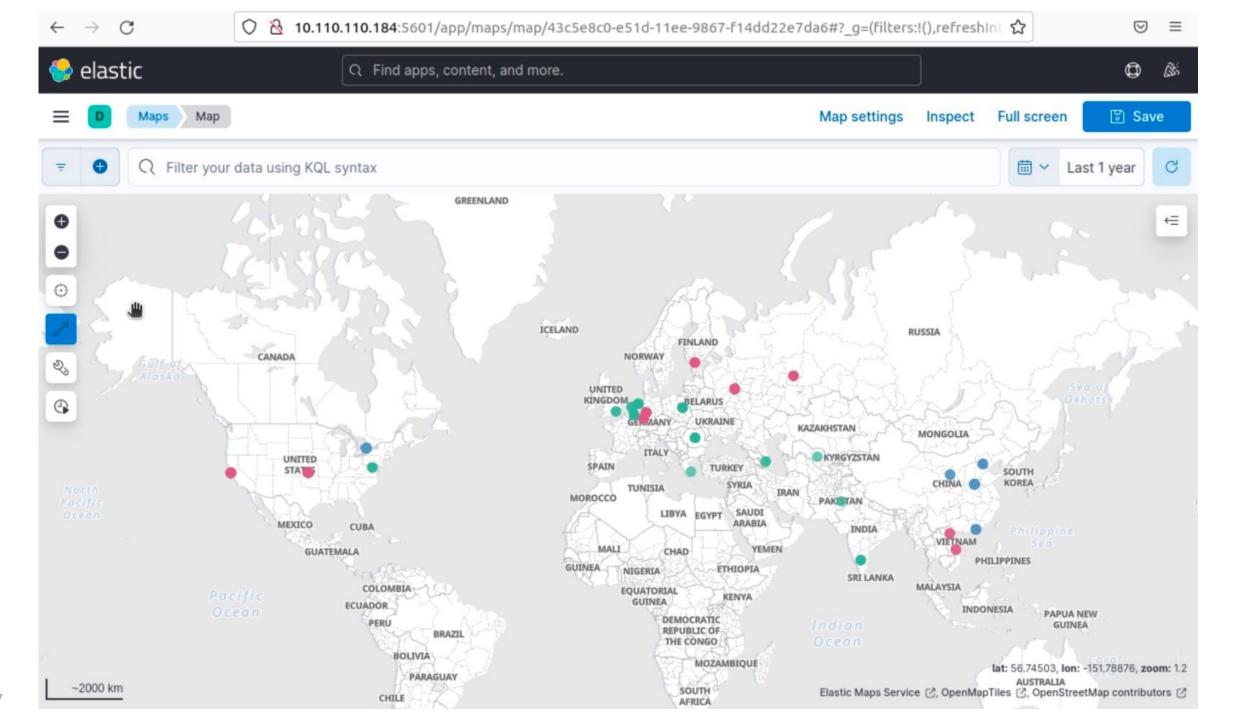


Ship Honeypot

- A honeynet is a network set up with intentional vulnerabilities hosted on a decoy server to attract hackers
- So a honeynet consists of one or more honeypots









Maritime Cyber Incident Simulations

- Maritime Cyber Incident simulations will be developed to enhance security awareness, train participants in correct response procedures and study human factors in these types of scenarios.
- These simulations will include:
 - Crew simulations using facilities at the Maritime Institute on Terschelling
 - Tabletop exercises for executives, conferences, etc.
 - Large scale exercises utilising a combination of the above across multiple sites







