

INSTITUTE OF MARINE Engineering, Science & Technology

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4–8 July 2022

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IMarEST Annual Conference 2022

IN PURSUIT OF MARINE SUSTAINABILITY

Cybersecurity & Autonomy

Understanding cyber related risks and vulnerabilities



Evolving technology

Semi-Autonomous Full autonomy Clean maritime growth Efficiency Monitoring Safety/Security



IN PURSUIT OF MARINE SUSTAINABILI





Increased connectivity/digitisation





Technology, cyber-risk, and people

- There are similarities, but specialisation may mean unique risks that need to be understood
- Changes in environment/context are important for cyber-physical

- Anything can be an asset (if designed/trained correctly) or a vulnerability.
- This includes the human element which can be a layer of protection.



Maritime cyber attacks

Growing exponentially, with ports and ships experiencing costly attacks now on a monthly basis (Port of Barcelona in 2017, Maersk Not Petya in 2018, and CMA Ransomware in 2020 being recent high-profile examples)

2022: The **Port of London Authority** (PLA) fell victim to a **cyberattack** and German **wind farm operator** confirms **cybersecurity incident**



Maritime cyber attacks

Complex and myriad system-of-systems that could present many thousands of attack surfaces

Some again are known, but as technology changes and evolves, we move more and more into the unknown



The Console Room









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The Vault















IN PURSUIT OF MARINE Sustainability



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Cyber-SHIP Lab



- Testing real hardware
- Testing real hardware as a system-of-systems
- Started with ships but now examining USVs and Ports
- Beginning to include offshore platforms (renewable energy)
- Automated audit tests and testbed configuration



Projects – EC H2020 Cyber-MAR

Proposal Title: Cyber preparedness actions for a holistic approach and awareness raising in the maritime logistics supply chain {Cyber-MAR}

Why ports? A recent hypothetical cyber attack on 15 major ports across Asia Pacific, estimate losses up to £90 billion





Cyber-MAR project has received funding from the European Union Horizon 2020 research and innovation programme under grant agreement no 833389. Content reflects on the authors' view and European Commission is not responsive for any use that may be made of the information it contains

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Dynamic risk assessment

Cyber-physical risk assessment for ships initially, but has been expanded to ports and could be used on sectors with both IT and OT elements.





The Plymouth "ecosystem"



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Thank you