



SafeNav

TOWARDS AN AUTONOMOUS **FUTURE**

SafeNav – is a European Commission and UKRI co-funded project **with private entrepreneurs from the maritime domain** - Started September 2022 and now under development to reach MASS level 1 (Maritime Autonomous Surface Ships)

THE CHALLENGE



Navigational Accidents

There are thousands of collisions every year, leading to crew injury and even death, and the loss of billions in repairs



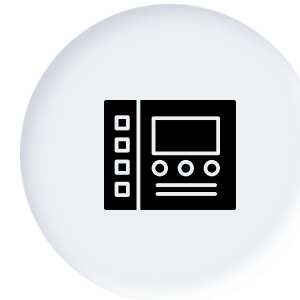
Harm to Marine Mammals

High frequency of collisions with cetaceans, as they are more difficult to spot, resulting in loss of life for our beloved marine mammals as well



Inability to Detect Hazards

The human factor resulting in collisions: the inability to detect hazards due to dense traffic, floating debris and marine mammals



Too Many Bridge Screens

Too many screens on the bridge can cause mental overload for the navigator



Loss of Containers

Bad weather conditions can cause loss of containers and precious cargo, and leads to the potential collision risk for other vessels



Slow Move to Autonomy

The maritime industry is slow in moving towards autonomy, with limited functional offerings in the space



Lack of Existing Solutions

The few existing offerings fail to prove easy to use for the end user, with overly complicated menus and functionality

SAFENAV OFFERS



Reducing Accidents at Sea

To develop, test and operationally verify the SafeNav solution, with the goal to eliminate or at least significantly reduce the frequency of navigational accidents



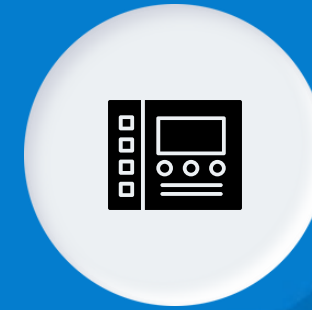
Saving Marine Mammals

Promoting the timely detection and conservation of marine mammal life through the development of an alert system for cetaceans



Stress-Free Hazard Detection

Providing real-time information from multiple sensors, and reducing their stress through a reliable navigational decision support system (DSS) with automated COLREG-based suggestions



Singular Point of Access

Enhancing the crew's situational awareness through a singular-point of access – a dynamic dashboard to optimize the workplace and promote wellness



Container Tracking & Recovery

Utilizing computer vision technology to issue automated notifications to a centralized Navigational Hazard Database and aid in the tracking and recovery of lost containers at sea



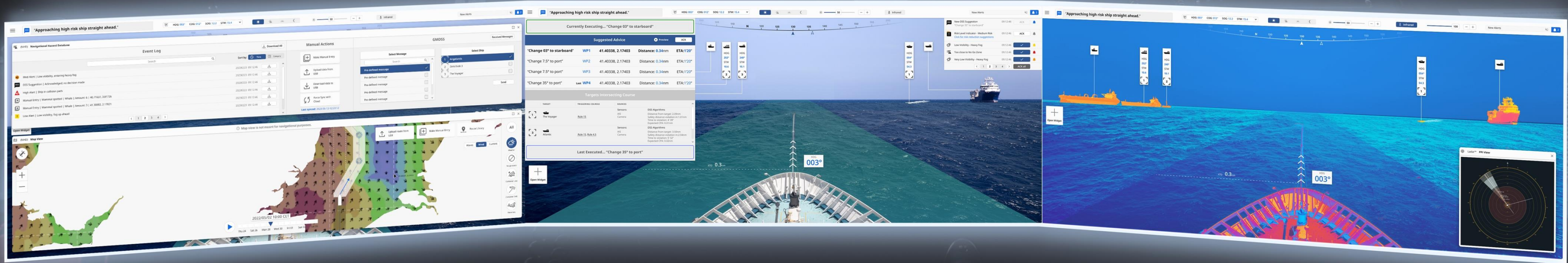
Moving Towards Autonomy

The SafeNav system will serve as a stepping-stone towards autonomous navigation while shifting how decisions regarding navigational hazards are made on-board



User-Friendly GUI

Our team of end user advisors have worked with a UI/UX designer to create a user-friendly, human-centered Graphical User Interface (GUI)



What will SafeNav actually do?

- Merging all screens and data on the bridge
- Make a new design on GUI for the navigators
- Digitalize the COLREGs (rules of the road)
- Decision Support System
- Navigation hazardous database
- Detection with LADAR and cameras/thermal, Marine mammals and containers floating at sea and for MASS level 1 (autonomous)
- Brand new GUI solution for navigators
- SeaDetect collision avoidance for mammals, (GRE)
- Risk module + container detection, tracking and suggesting a recovery method



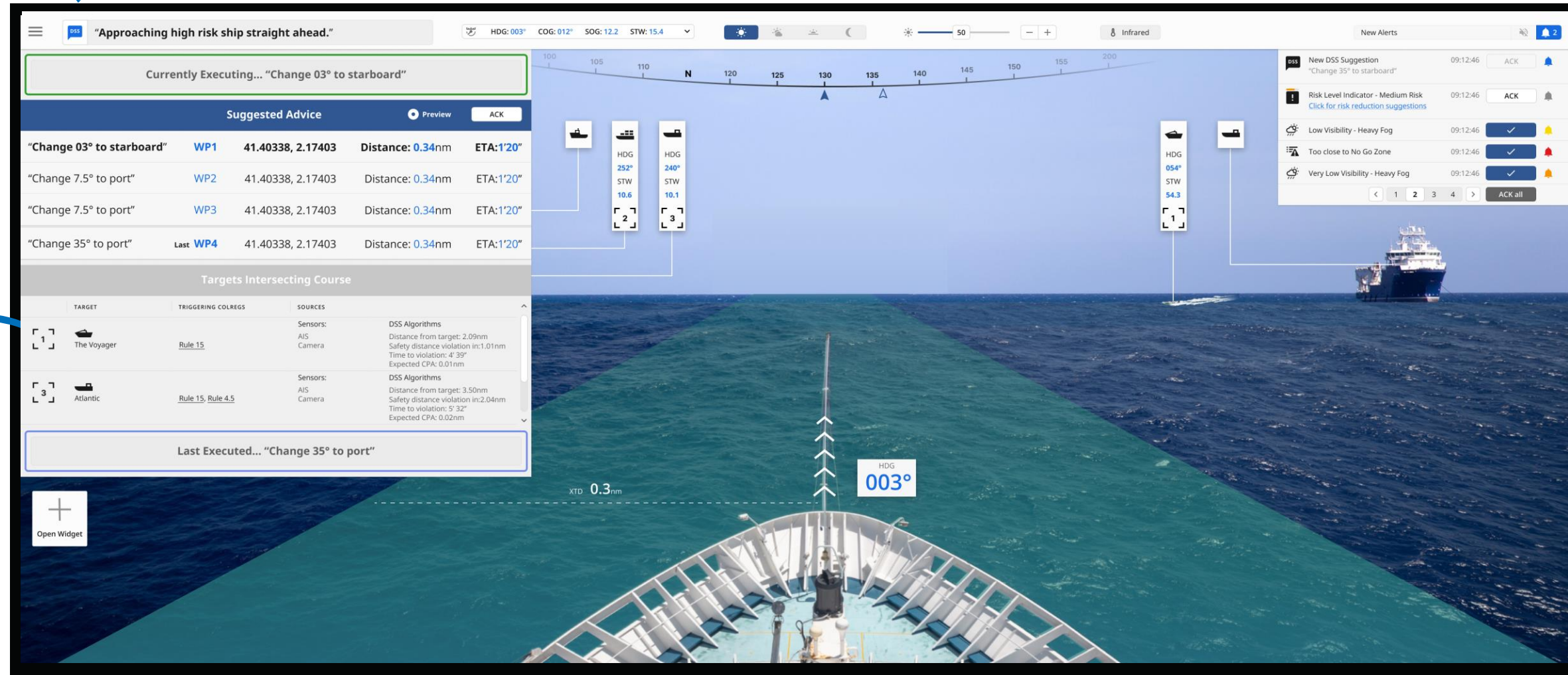
OUR PRODUCT

DECISION SUPPORT SYSTEM (DSS)

Collision avoidance manoeuvre advice

Open pop-up windows

option to open either one of the following features:

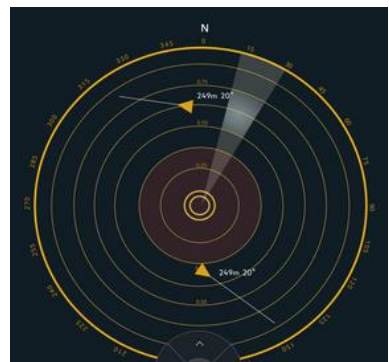


NOTIFICATIONS

- Risk level indicator
- Risk analysis module
- Heavy weather and other hazards

AUGMENTED REALITY (AR) LAYERS

- Camera and Infrared view underneath
- AR target info overlay from Data Fusion Module and Machine Learning



LADAR™ PPI VIEW

Near proximity object detection from the Ladar™ Sensor Suite

or

NAVIGATIONAL HAZARD DATABASE (NHD) VIEW

- List view event log
- Selection of hazard categories
- Communication with mammal detect web application

or

MAP VIEW

- Heavy weather areas
- Cargo loss risk and drift trajectory
- Cetacean info from GRE web app
- Location based hazards from NHD



OUR FUTURE

Step into the future of maritime navigation, where the traditional role of today's navigators transforms into pioneering operators of tomorrow's vessels.

Whether retrofitting existing ships or incorporating this cutting-edge technology into new builds, SafeNav marks a paradigm shift in bridge operations. It's not just a new way of working—it's the evolution of maritime excellence.

Benefits of fewer, larger screens on the bridge

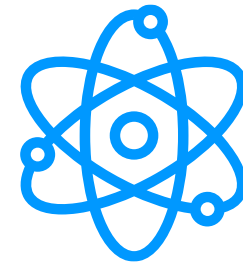
Simplified Information Management: Less clutter and complexity, making it easier to manage and interpret critical information effectively.

Enhanced Visibility: Better visibility and readability, allowing navigators to quickly grasp the situation at hand.

Streamlined Workflow: Data consolidation onto a few screens promotes a smoother decision-making processes and reduces the risk of errors or oversight.

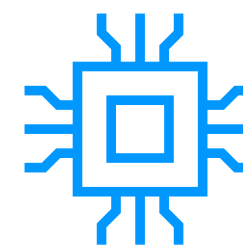
Improved Focus & Reduced Alarm Fatigue: Navigators maintain better focus on the most relevant data, enhancing situational awareness and response times.

OUR MISSION



Scientific

- Multi-Sensor Data Fusion (digitalize the lookout)
- Decision Support System (DSS)
- Development of Collision Avoidance Algorithms
- Use of the Existing Patented LADAR® Sensor Suite
- Use of Acoustic/Electromagnetic Pingers for avoiding collision with marine mammals.
- Develop systematics and data platform for root causes of navigational accidents and incidents.
- Risk module for container loss and floating container drift trajectory prediction



Economic & Technological

- Anti-Collision Automated Module
- Sensor Fusion for Enhanced Detection & Tracking Performance
- Web Application for Reporting Marine Mammal Detection and Collision Statistics
- Digital Training for Navigators (the system will be so easy to understand for a normal navigator, but the training will be focusing on the limitations of the system.



Environmental & Societal

- Improvement of the Navigational Crew's Decision-Making using the user-friendly SafeNav screens on bridge
- Collection and Storage of Observational Data in the SafeNav Navigational Hazard Database which will Support the Decision-Making onboard the vessels and ashore for voyage planning and monitoring.



OUR PARTNERS



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In collaboration with **11 esteemed partners**

spanning the maritime industry, research and development institutes, as well as Small and Medium-Sized Enterprises (SMEs), the SafeNav Project is a team mission moving towards a joint objective.

Read more on our website: www.safenavsystem.com

If you're keen on discussing SafeNav, exploring investment opportunities in this innovative technology, or obtaining further information about SafeNav, please reach out to:



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THANK YOU