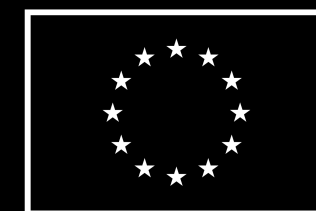


AI & ROBOTICS ESTONIA

aire-edih.eu/en



Co-funded by
the European Union

Heigo Mölder

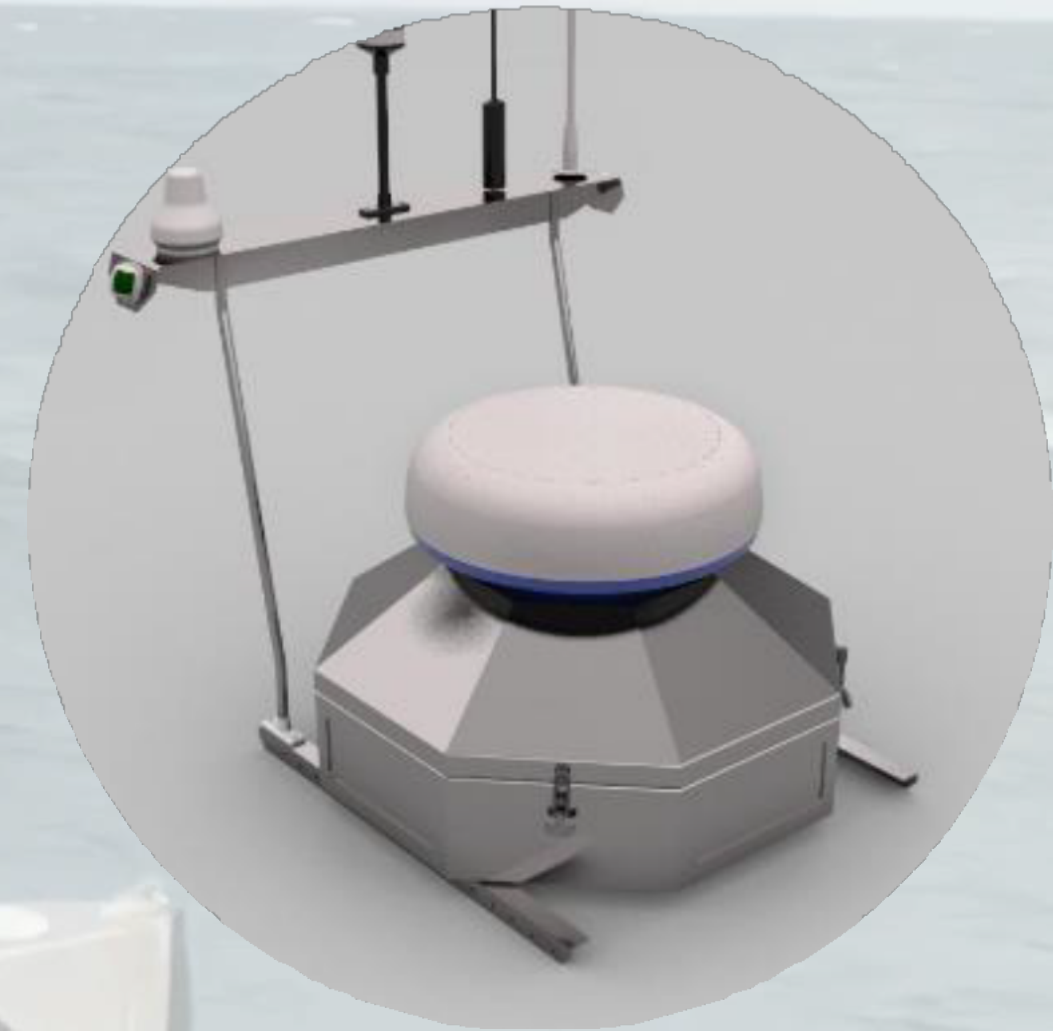
Mind for Ship

Never send a man to do a
machine's work

www.mindchip.ee

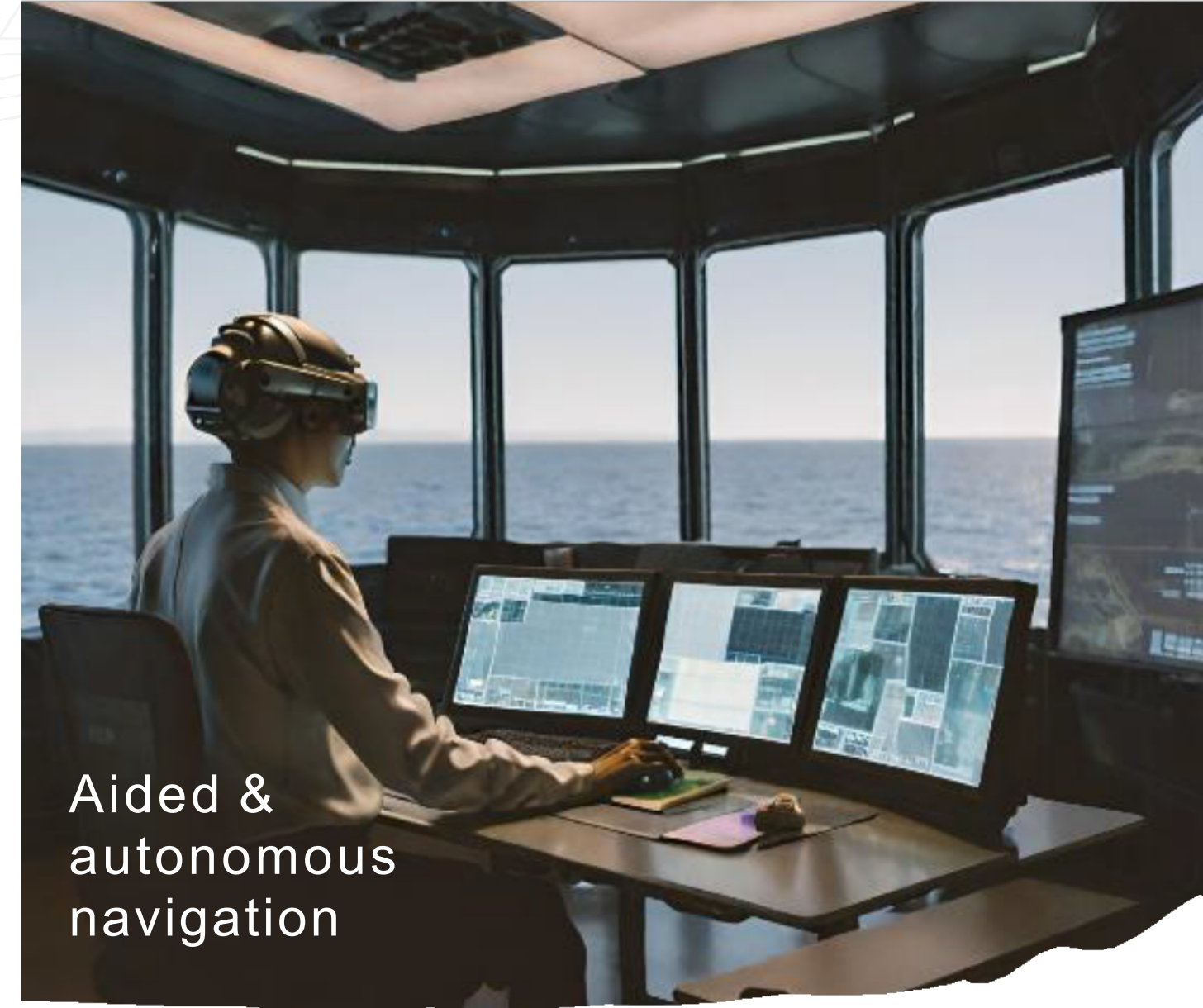
MindChip

ARTIFICIAL CAPTAIN





Condition monitoring



Aided & autonomous navigation



Clean & safe harbors

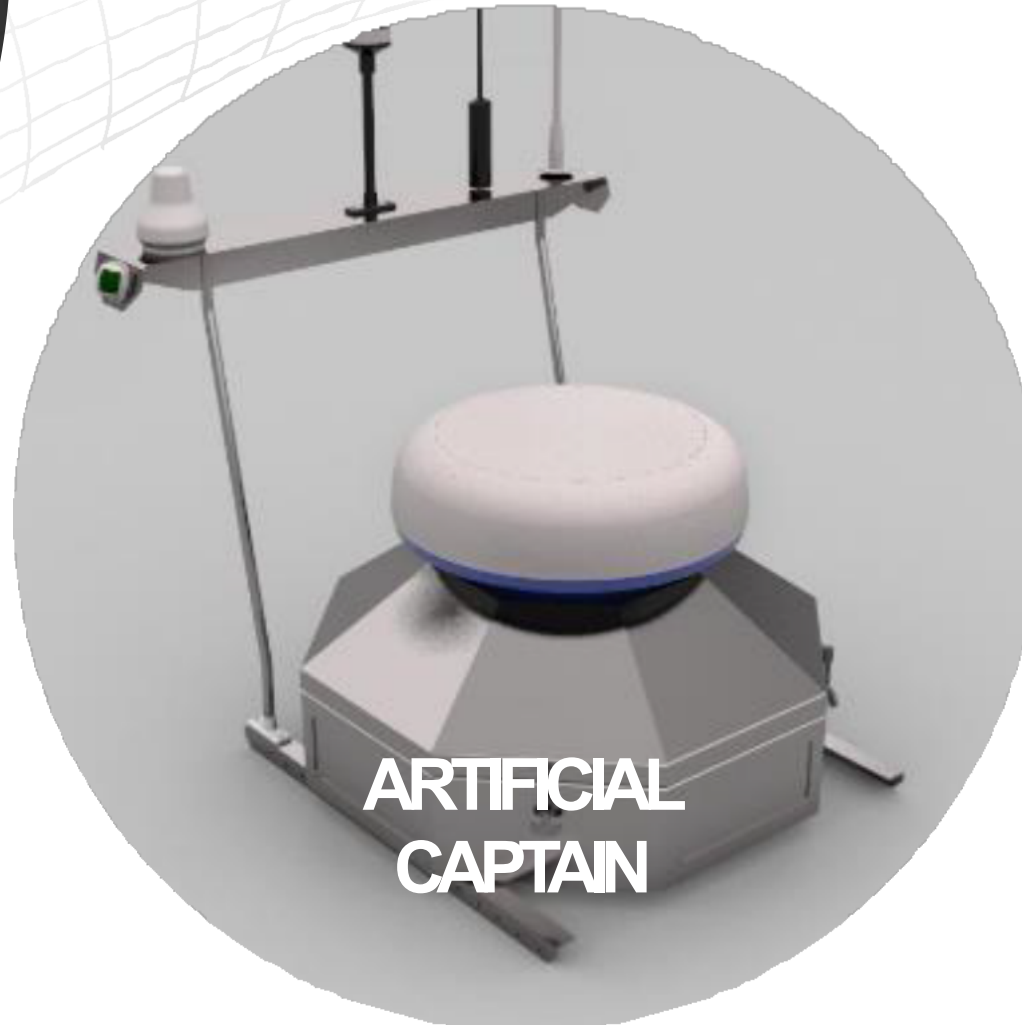
PROBLEM

A HUMAN IS NOT OPTIMAL FOR ROUTINE MARINE OPERATIONS

CLOUD SERVICES



Digital Twin



ARTIFICIAL
CAPTAIN



END USER



ASV

VISION

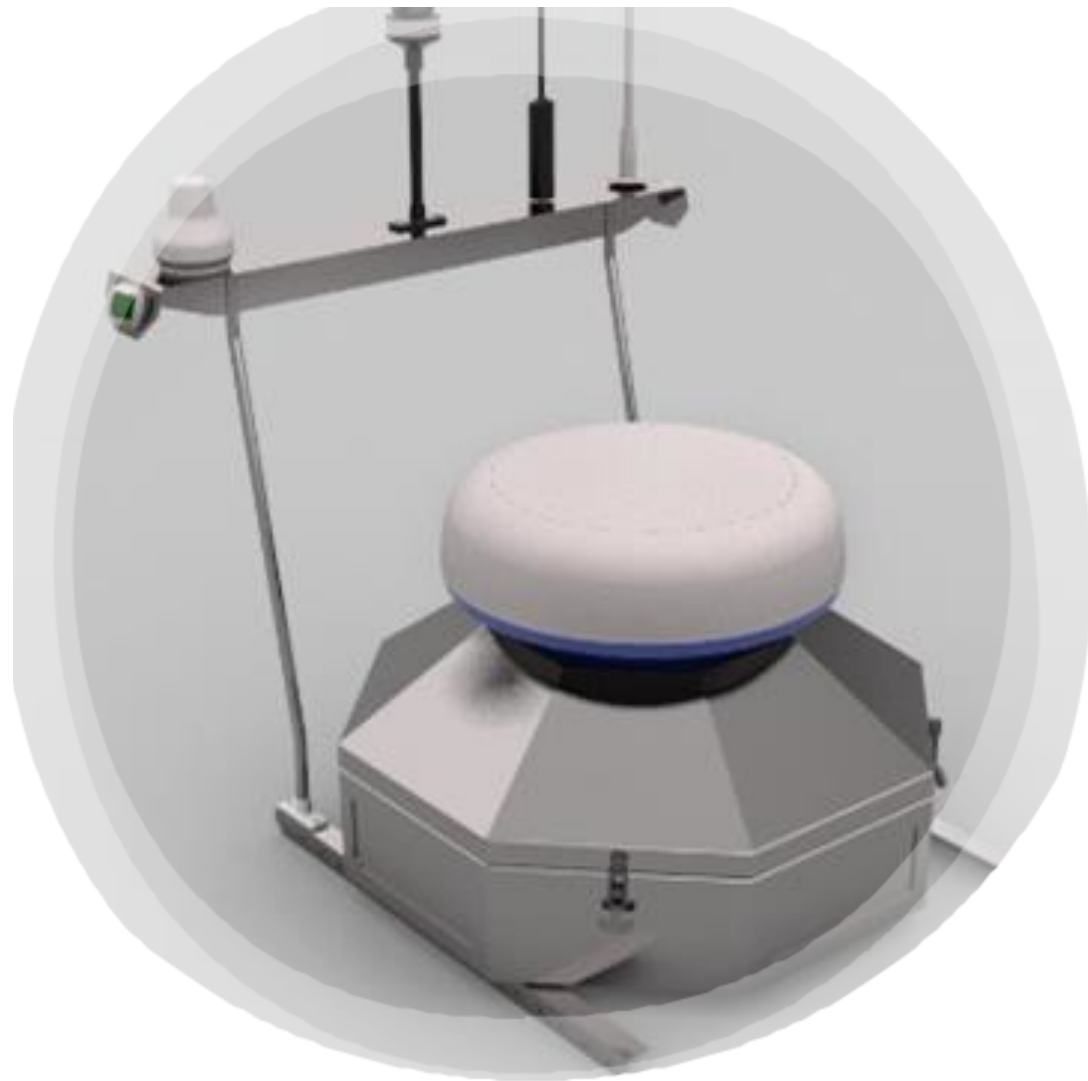
Replace a human with
machine-driven situational
awareness & navigation
capabilities

provided by MindChip's
Artificial Captain



CONVENTIONAL SHIPS

PRODUCTS



SITUATIONAL AWARENESS & NAVIGATION

ARTIFICIAL CAPTAIN

- AIS (class B)
- X-band maritime Radar
- mmRadar (up 100 m visibility)
- GPS
- Machine vision cameras
- Distance measurement cameras
- PTZ camera
- 4G, WiFi, satellite



OPEN SEA

MC-6000

- LxBxT 6.2x2.5x0.4
- Payload 500 kg
- Diesel-electric
- Range 500 km
- Max speed 7 kn
- Sonar launcher



HARBOURS AND SHELTERED WATERS

MC-2500

- LxBxT 2.6x1.1x0.2
- Fully electric
- Payload 100 kg
- Range 100 km
- Max speed 6 kn
- Autonomous docking station

VIDEO: <https://youtu.be/koKxkKH5E>

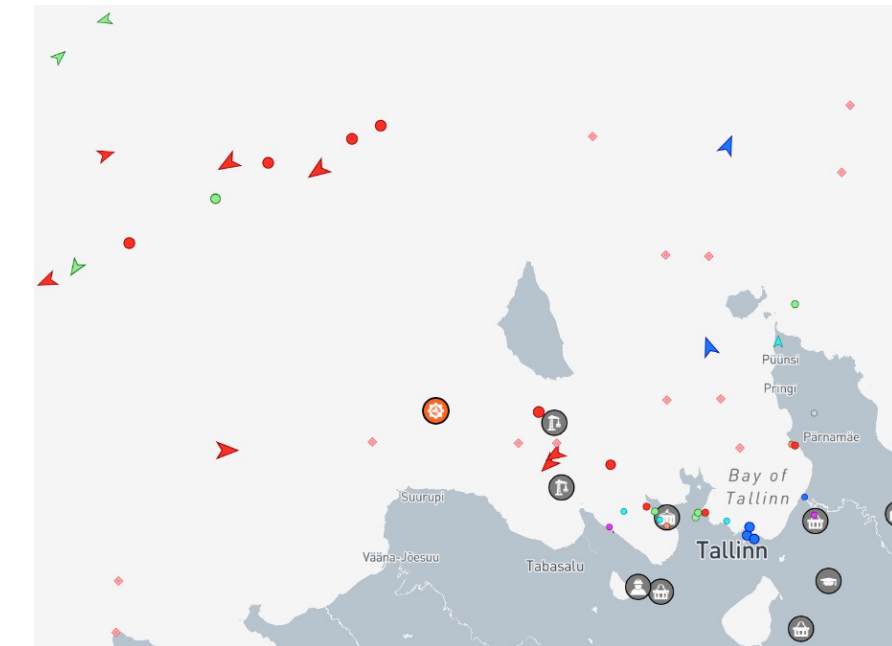
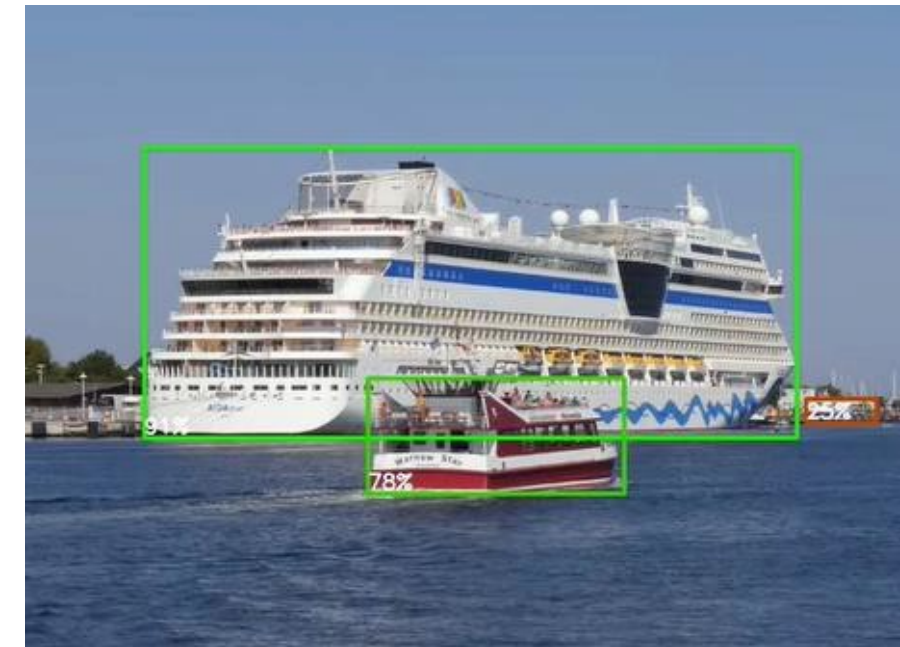
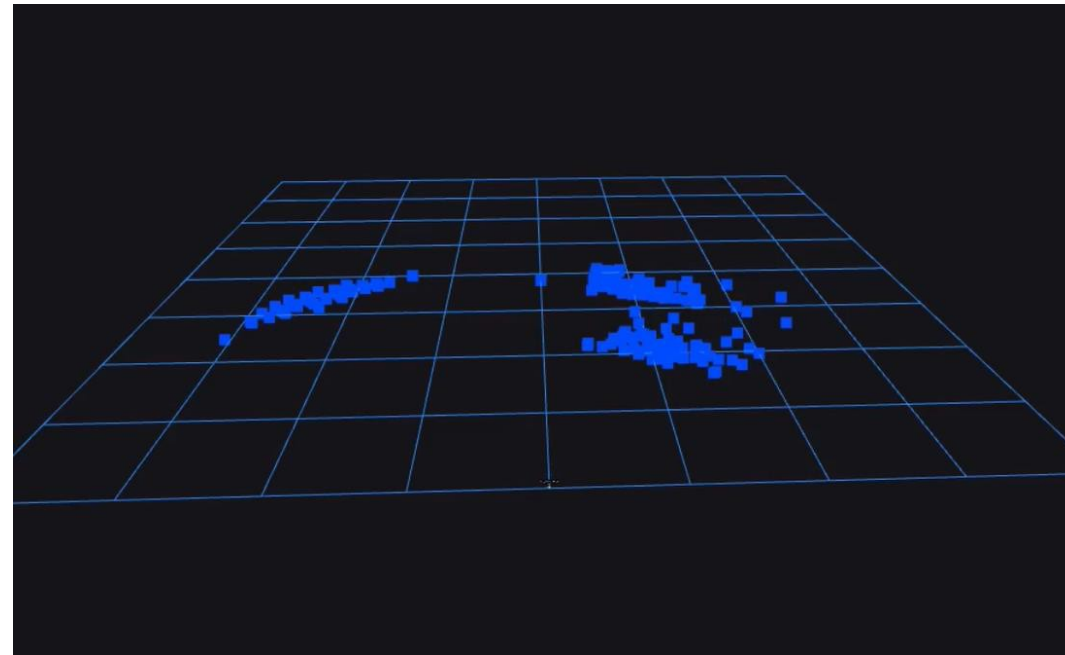
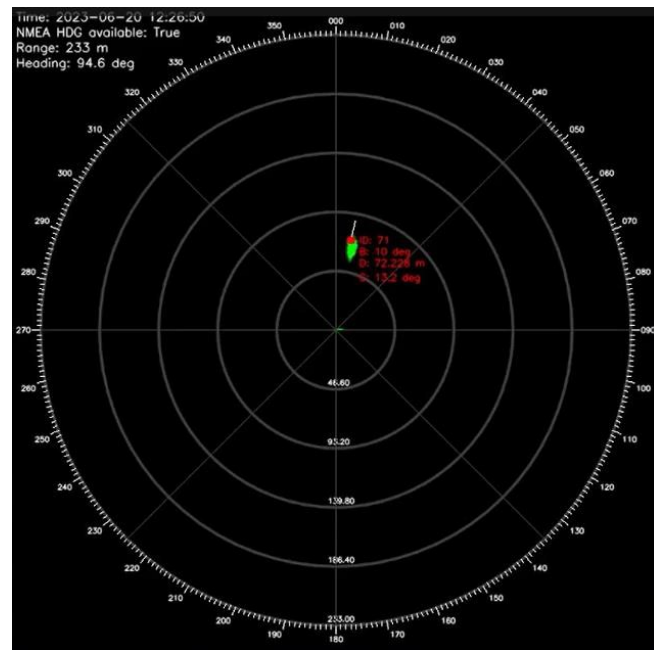
ARE 1 – what has been done

X-band radar object detection

mmWave radars object detection

Machine vision development and training on previously collected data

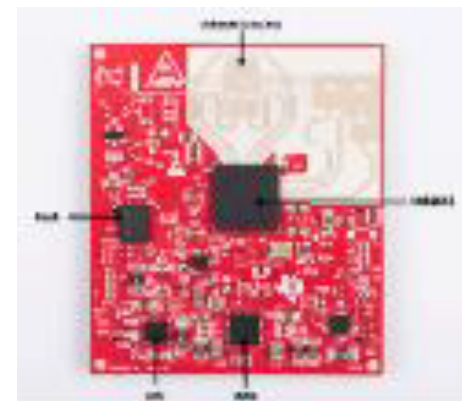
AIS - Automatic identification system



Sensors



X-band radar



4 x mmWave radars



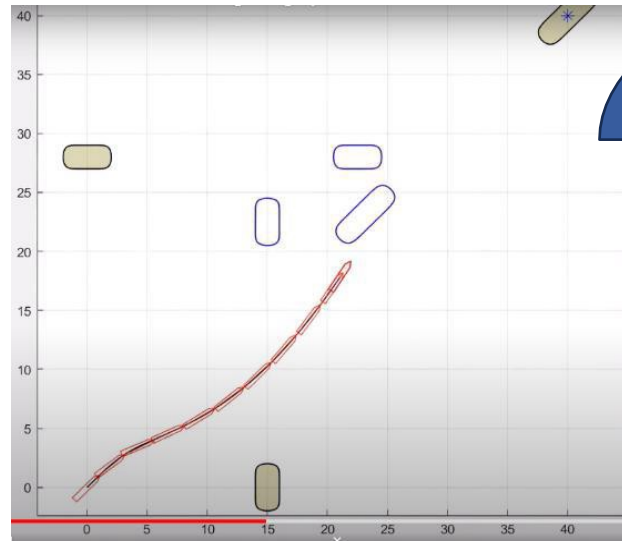
12 x cameras



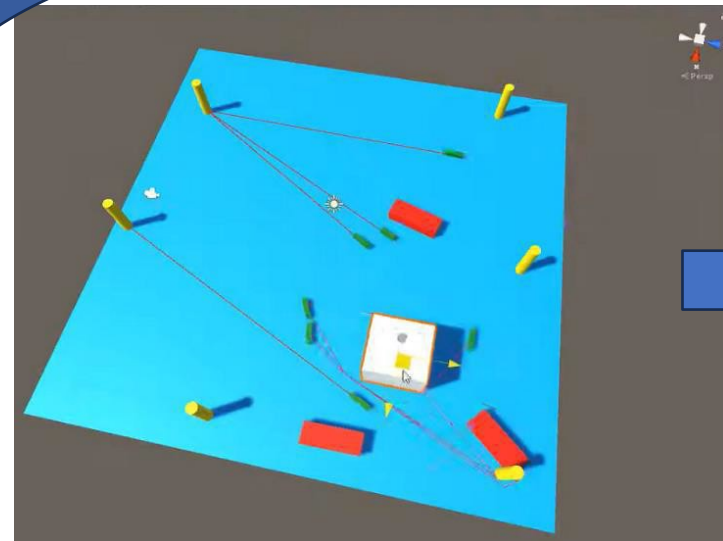
AIS

ARE 2 – what is currently in development

AIRE 2



Simulation environment for testing navigation algorithms



Creating a 2D model of the surroundings (sensor fusion + SLAM)

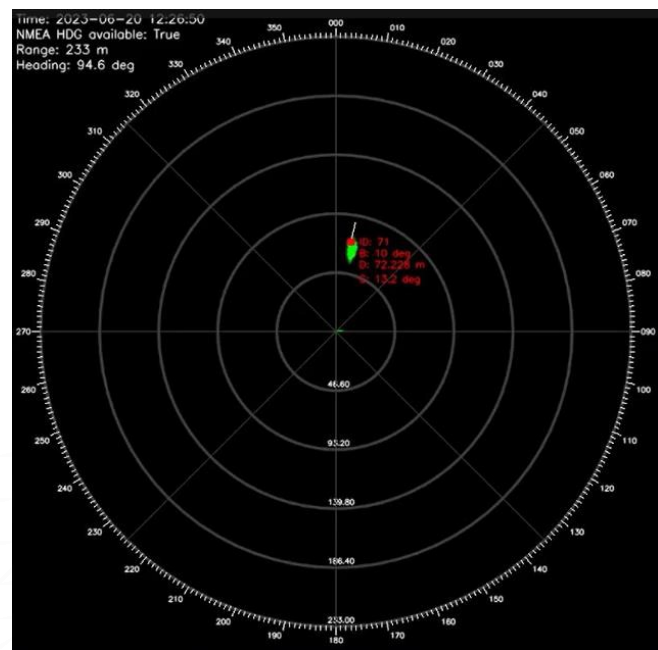


Development of predictive navigation algorithms (AI)

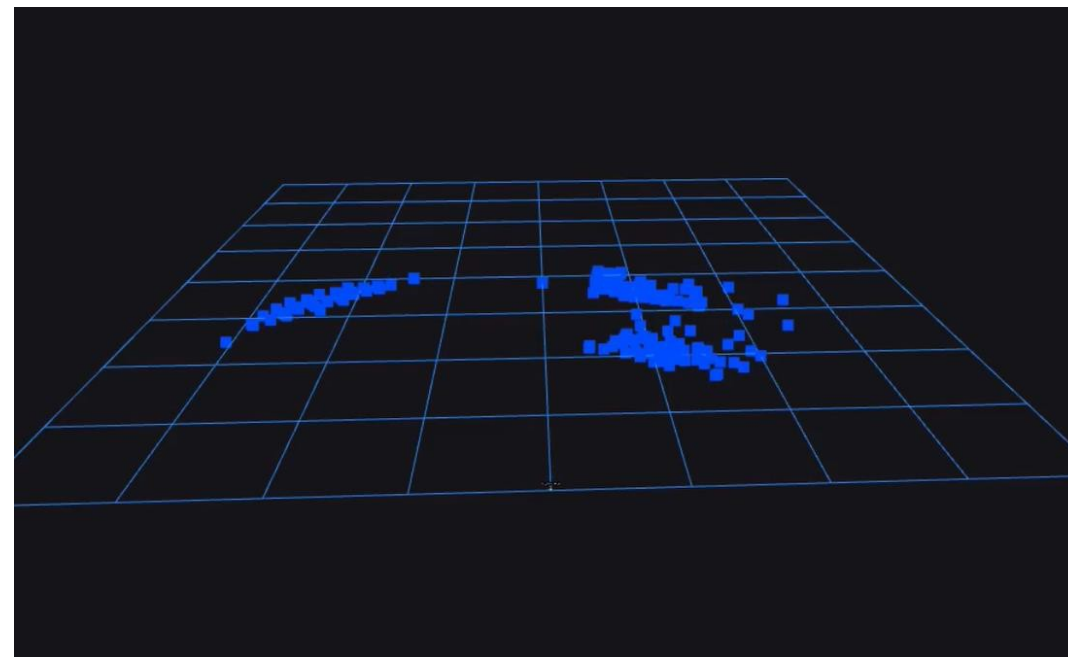


ASV

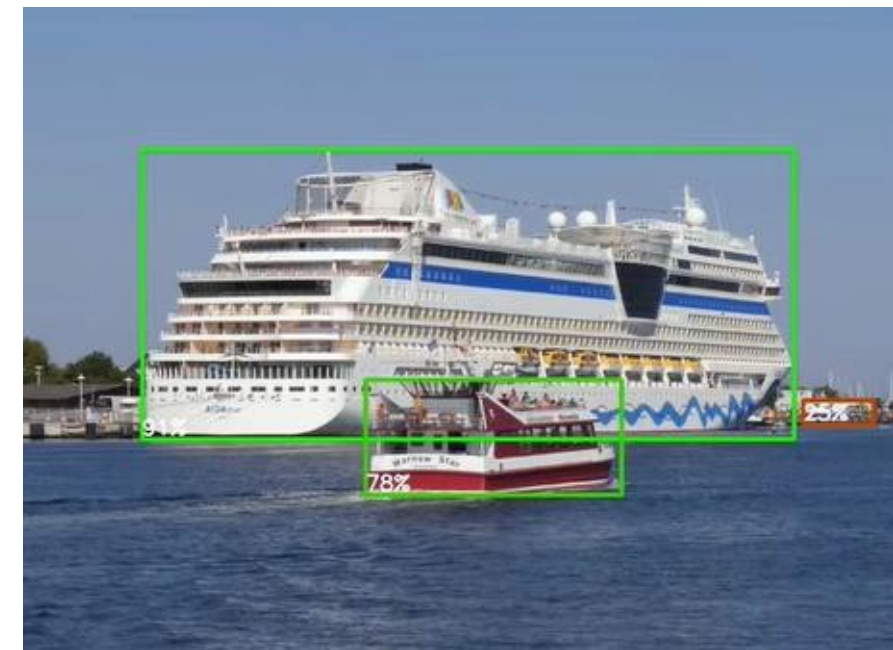
AIRE 1



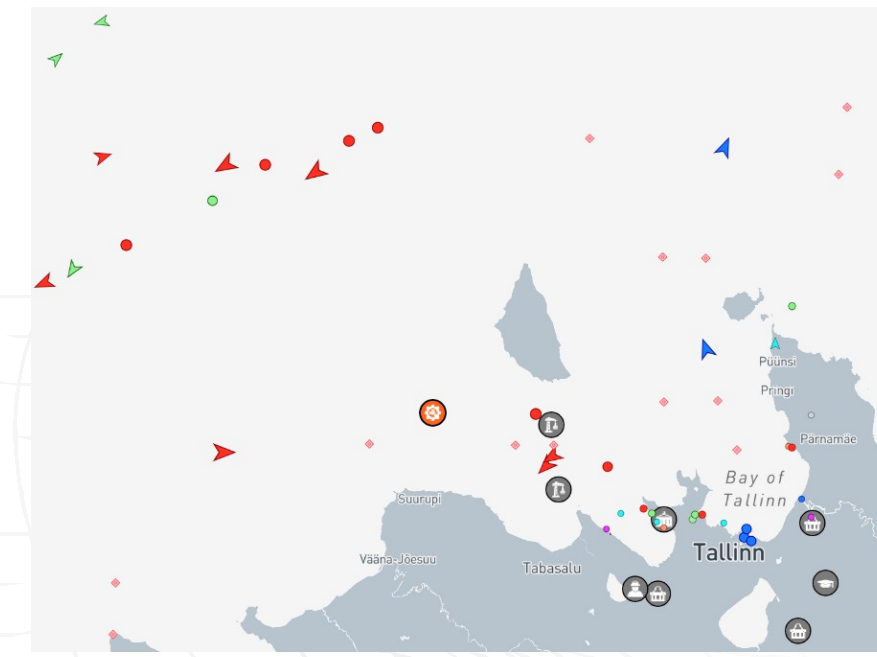
X-band maritime radar object detection



mmWave radars object detection



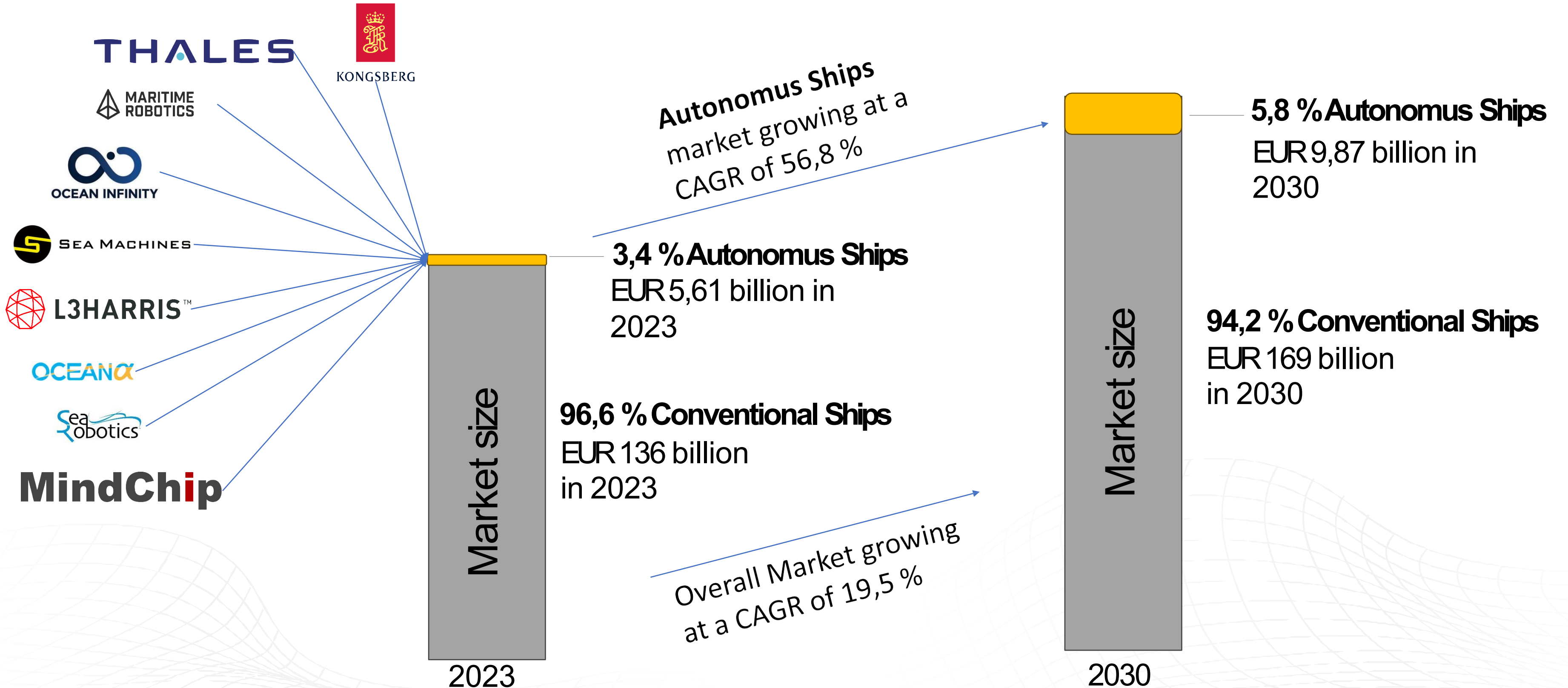
Machine vision development and training on previously collected data



AIS - Automatic identification system

COMPETITION

Key developers of autonomous ships and systems



TRACTION OF CLIENTS

COMPLETED

OPERATIONAL
PROTOTYPE
(completed)



COMPLETED

SITUAT. AWARENESS &
NAVIGATION FOR MANNED
VESSEL (completed)



COMPLETED

ASV FOR FISH STOCK
MONITORING
(delivered)



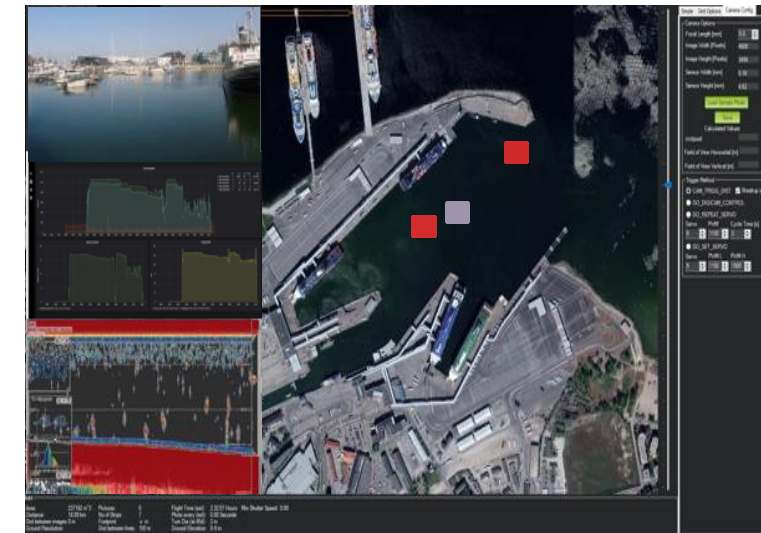
LOI

WINDFARM PLANNING
AND MAINTANANCE



LOI

ASV HARBOUR
MONITORING VESSEL



PORT OF  TALLINN



 TARTU ÜLIKOOL
1632

 UTILITAS

PORT OF  TALLINN

PIPELINE



RIIGILAEVASTIK



elearning
Enefit Green 



KESKKONNAAMET

MindChip

ONGOING & NEAR-TERM PROJECT

AIRE

Artificial Captain: object detection and collision avoidance (ONGOING)



2023-2024

ESABIC

Precise navigation using satellite data (ONGOING)



2023-2024

Horizon Europe: CERTIFY

Certification of server solution (ONGOING)



2023 - 2027

Port of Tallinn

Harbour monitoring vessel (LOI)



2024 - 2026

BLRT

Water surface cleaning and residue collection around the building docks (CONTRACT NEGOTIATIONS)



2023 - 2024

Estonian State Fleet

Multi-purpose autonomous platform (UNDER EVALUATION)



2024 - 2026

EDF FEMMICOS

Future Maritime Mine Counter-Measures Capability System (UNDER EVALUATION)



2024 - 2028

Horizon Europe: SEA-SAB

Capabilities for Border Surveillance and Situational Awareness (UNDER EVALUATION)



2024 - 2028

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THANK YOU!

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