The SMARTSHIP Overview, Architecture, Tools

SMARTSHIP 4th Training session, Online, HS4U 13/12/2023
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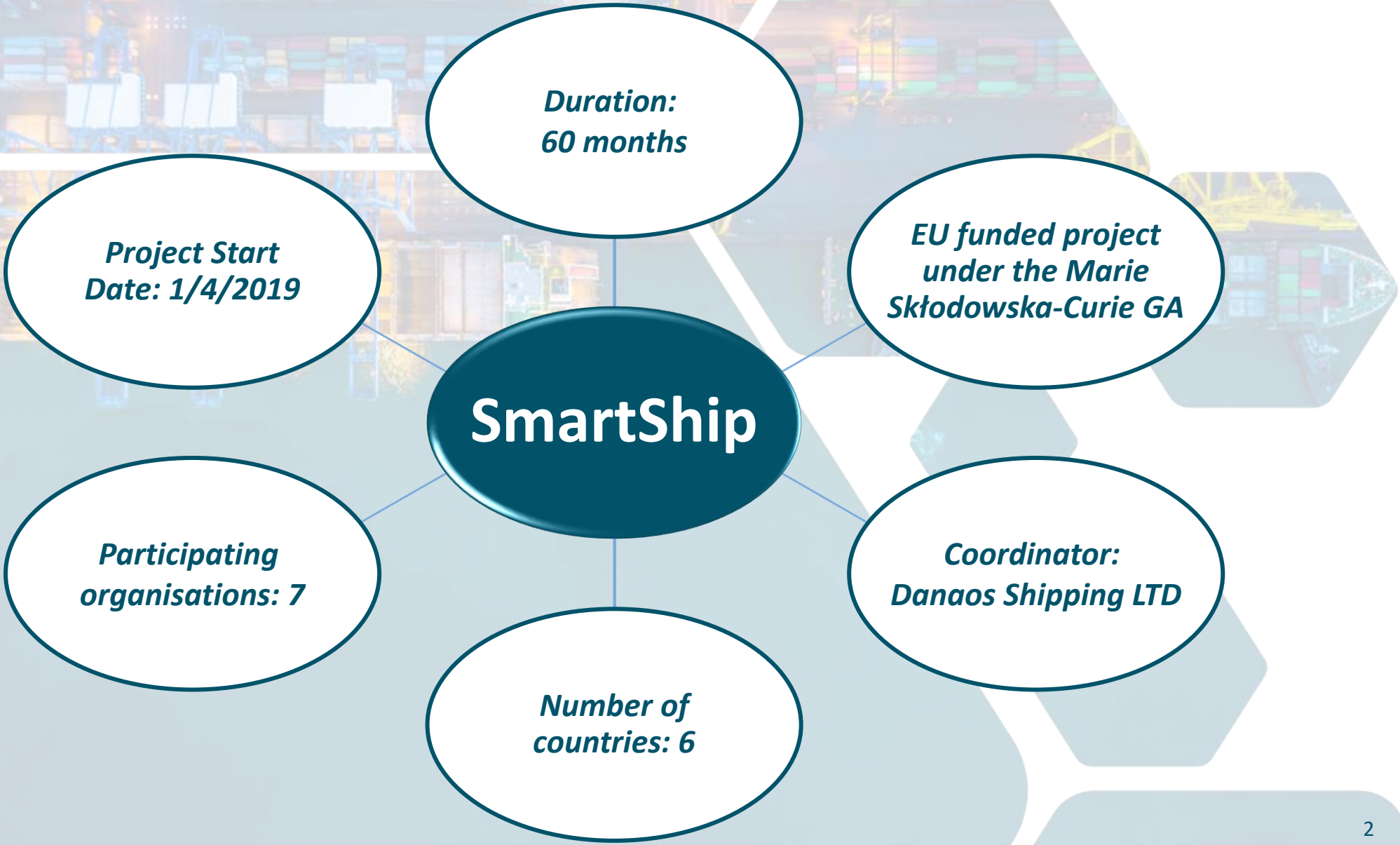
The SmartShip project has received funding from the European Union's Horizon 2020 research and Innovation programme under the Marie Skłodowska-Curie Grant Agreement No 823916

SmartShip at a Glance



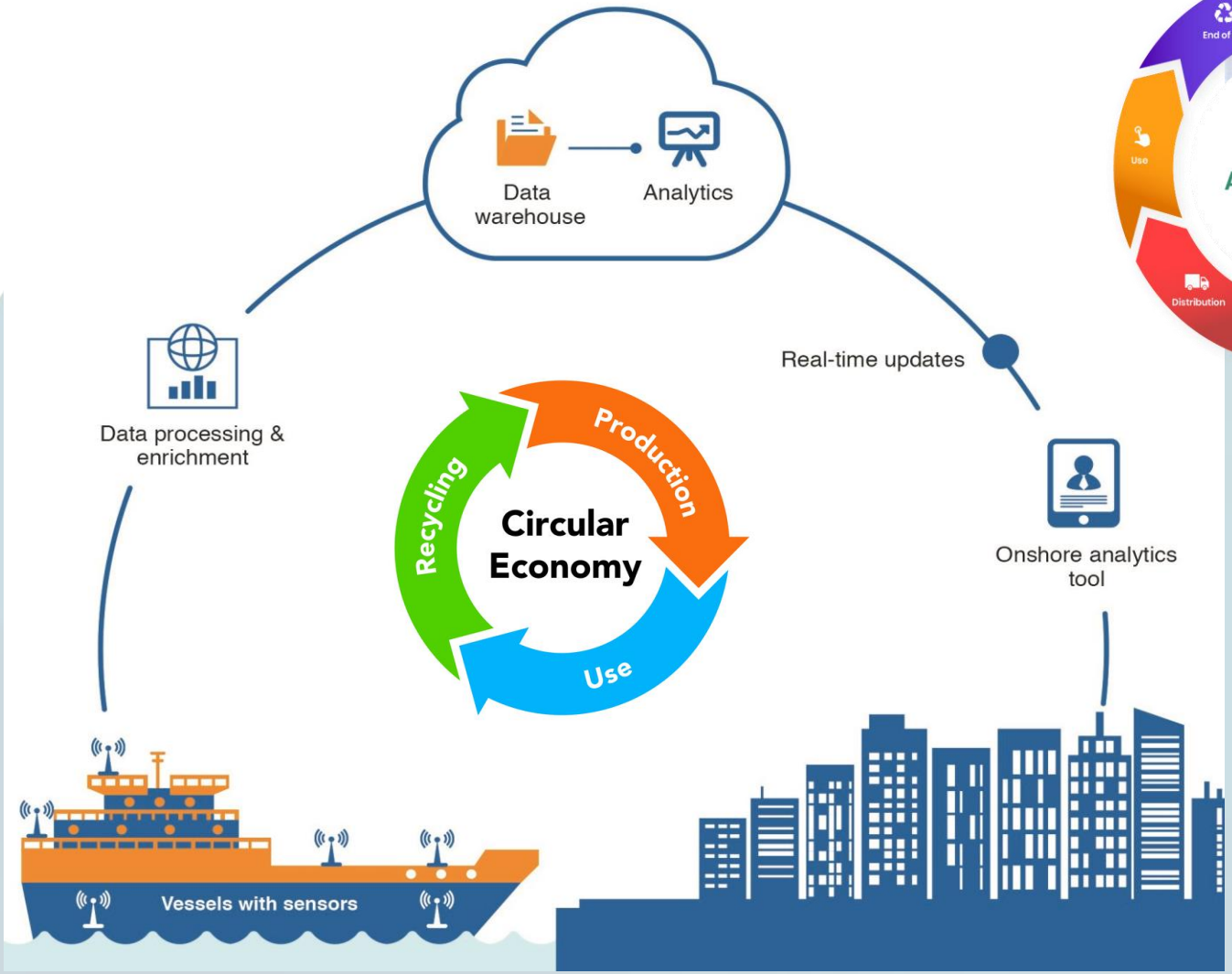
Motive : Towards Green Shipping

TRADITIONAL APPROACH:

Hardware driven

- *Huge Capital expenditures*
- *Unpredictable Return of Investment*
- *Feasibility of solutions is under investigation*
- *Low Motivation for Investment from the owner*

Towards Green Shipping (Reducing GHG by 50% in 2050)



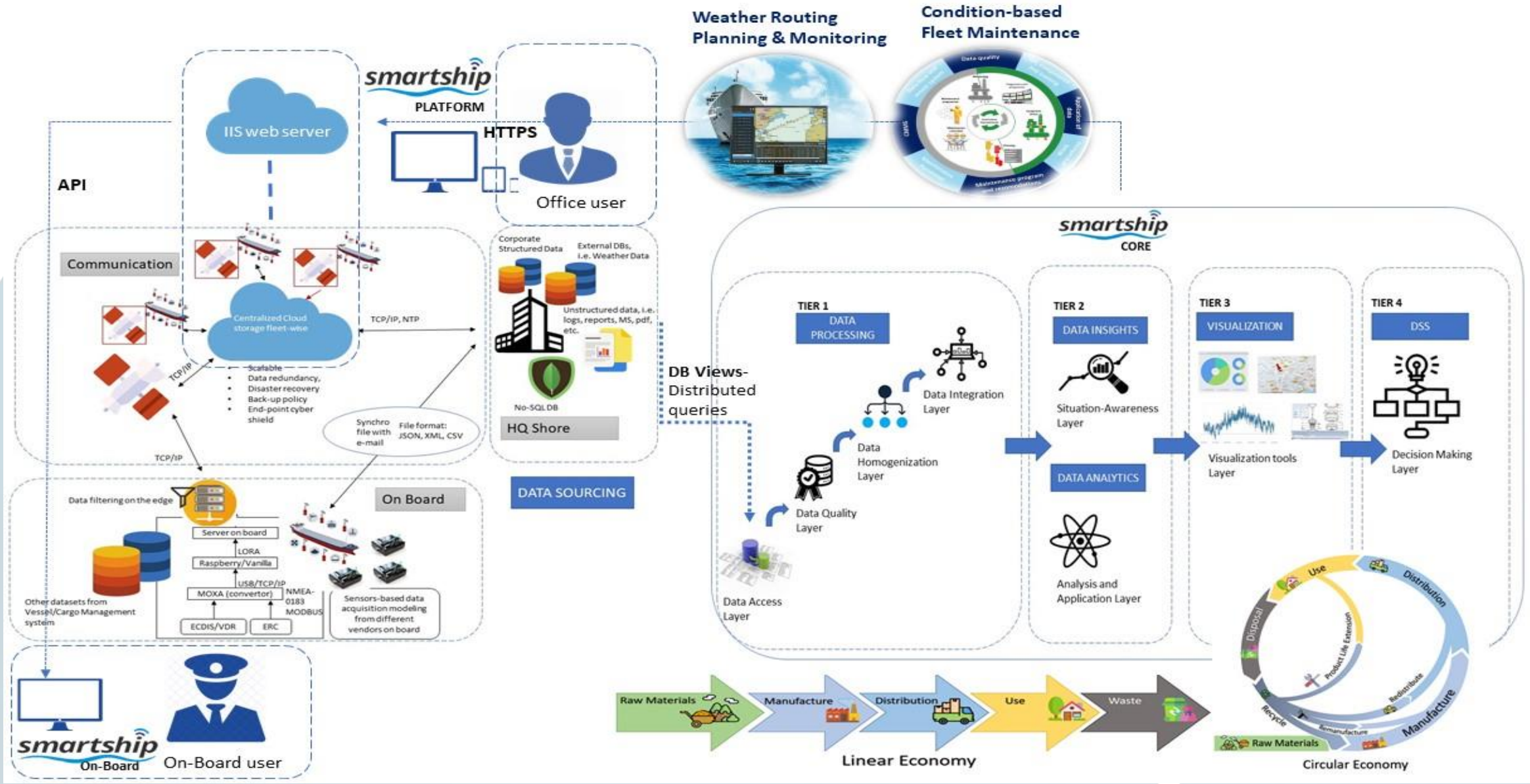
SMARTSHIP APPROACH:
Data Driven Model

- *Re-Thinking. Monitor, Analyze, predict and improve operation in a cost effective manner*
- *Life Cycle Multi-parametric Analysis for decision making*
- *Sustainability and Compliance*
- *Circular Economy design*

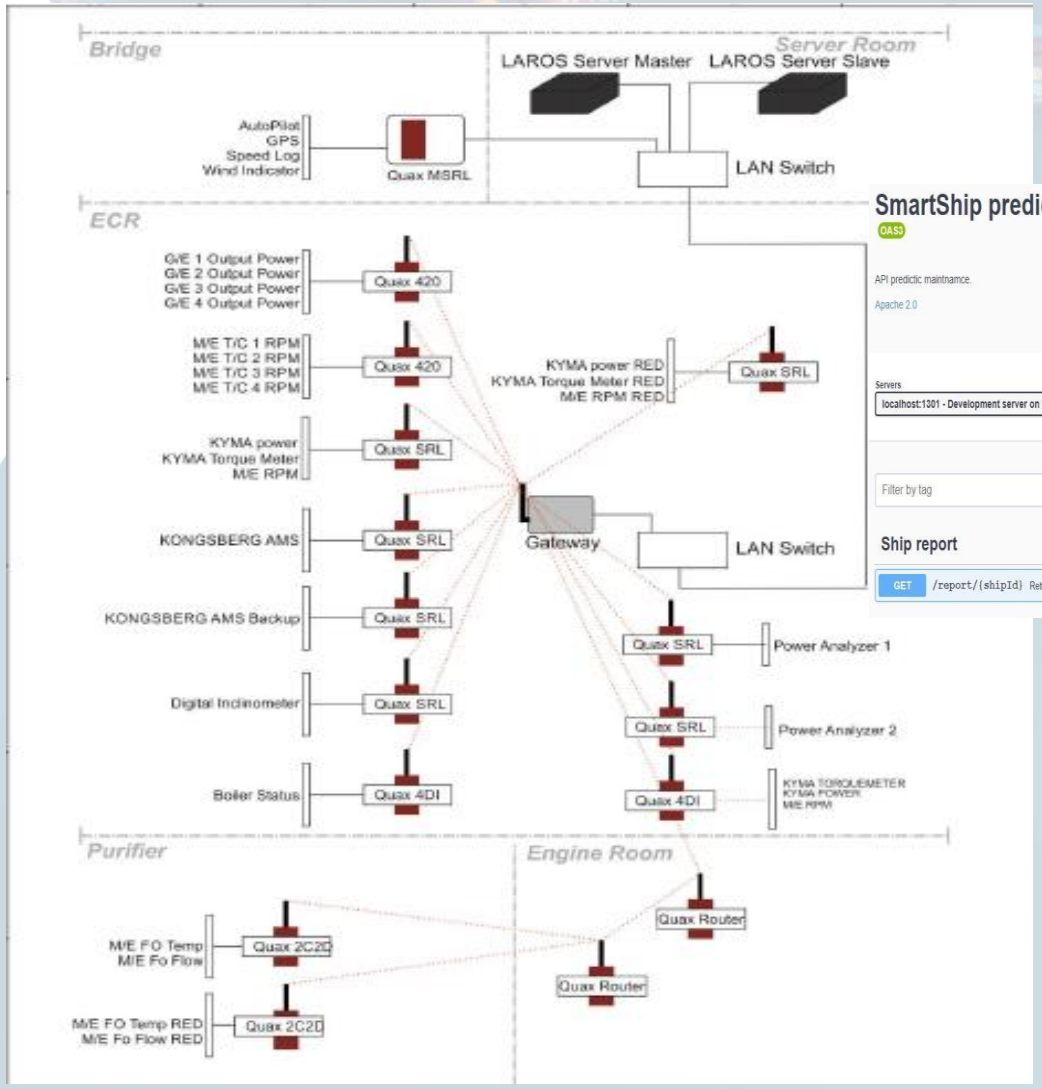
SmartShip Objectives

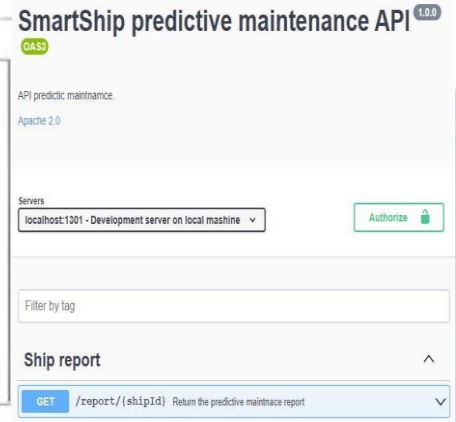
- *Describe and identify marine market needs in energy efficiency and emissions control.*
- *Foster knowledge exchange between academic and non-academic experts in the fields of IoT, Data analytics, decision support and optimization.*
- *Design and develop a Data Analytics and a Decision Support Tool.*
- *Enhance the implementation of Circular Economy in the maritime field in terms of management of engines' components.*
- *Offer a holistic framework for energy efficiency and emissions control in maritime for optimizing the efficiency of daily operations.*
- *Demonstrate system effectiveness based on real-life use cases towards the reinforcement of the European Maritime Industry.*
- To develop new *long-lasting* research collaborations, achieve transfer of knowledge between participating organizations, and foster improved research and innovation potential.

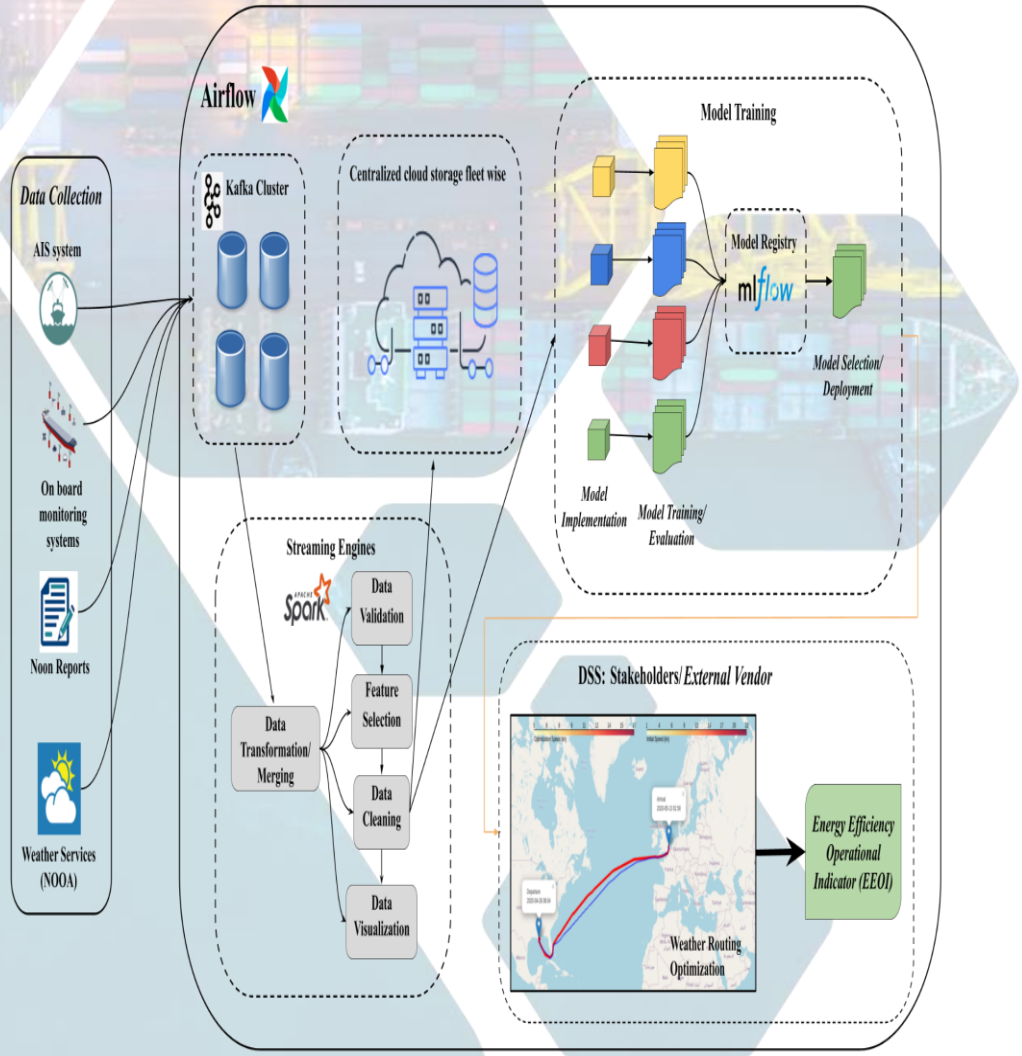
Architecture design and Use Cases



From Data Sourcing to Model deployment (DSS)



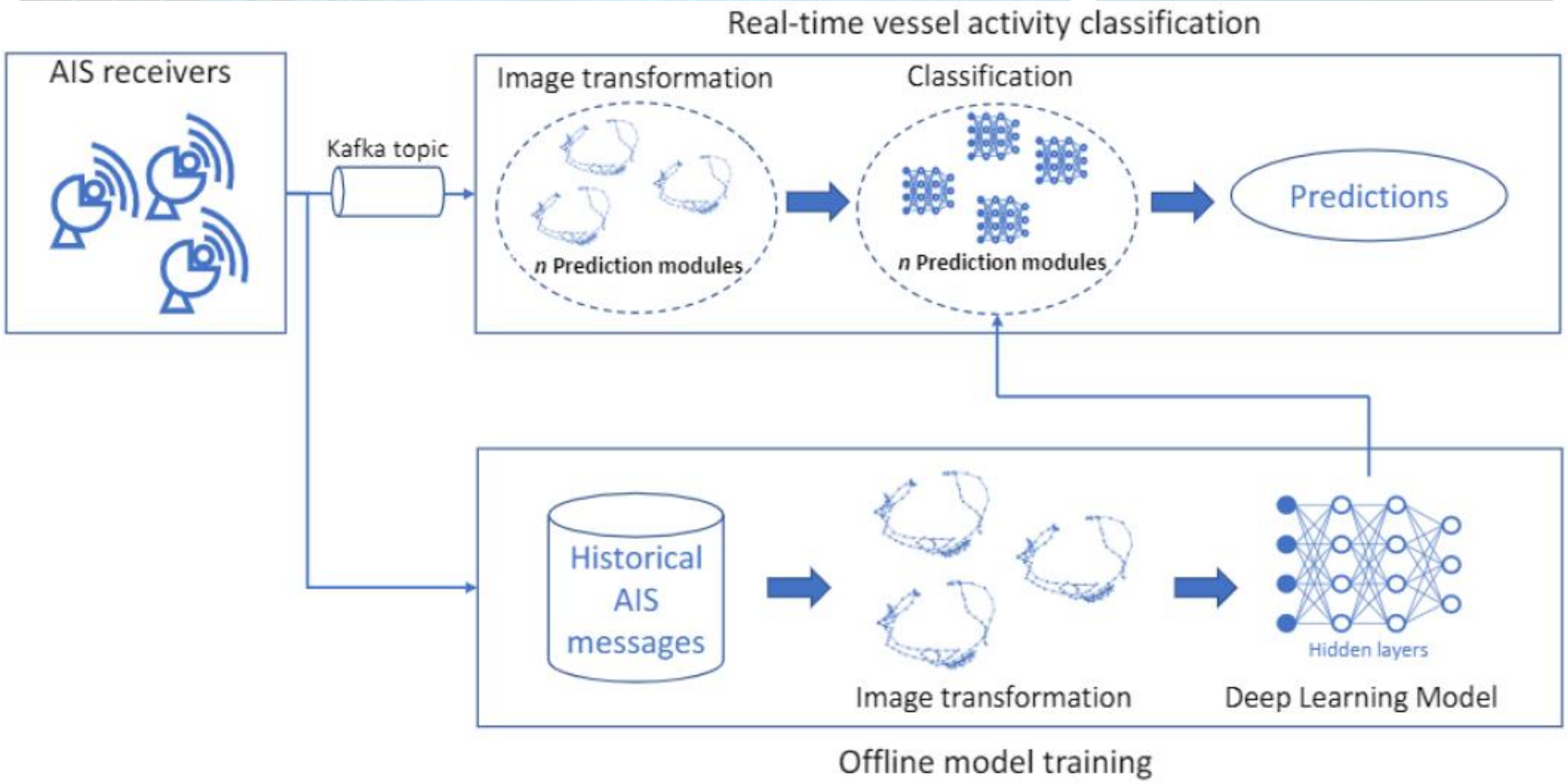




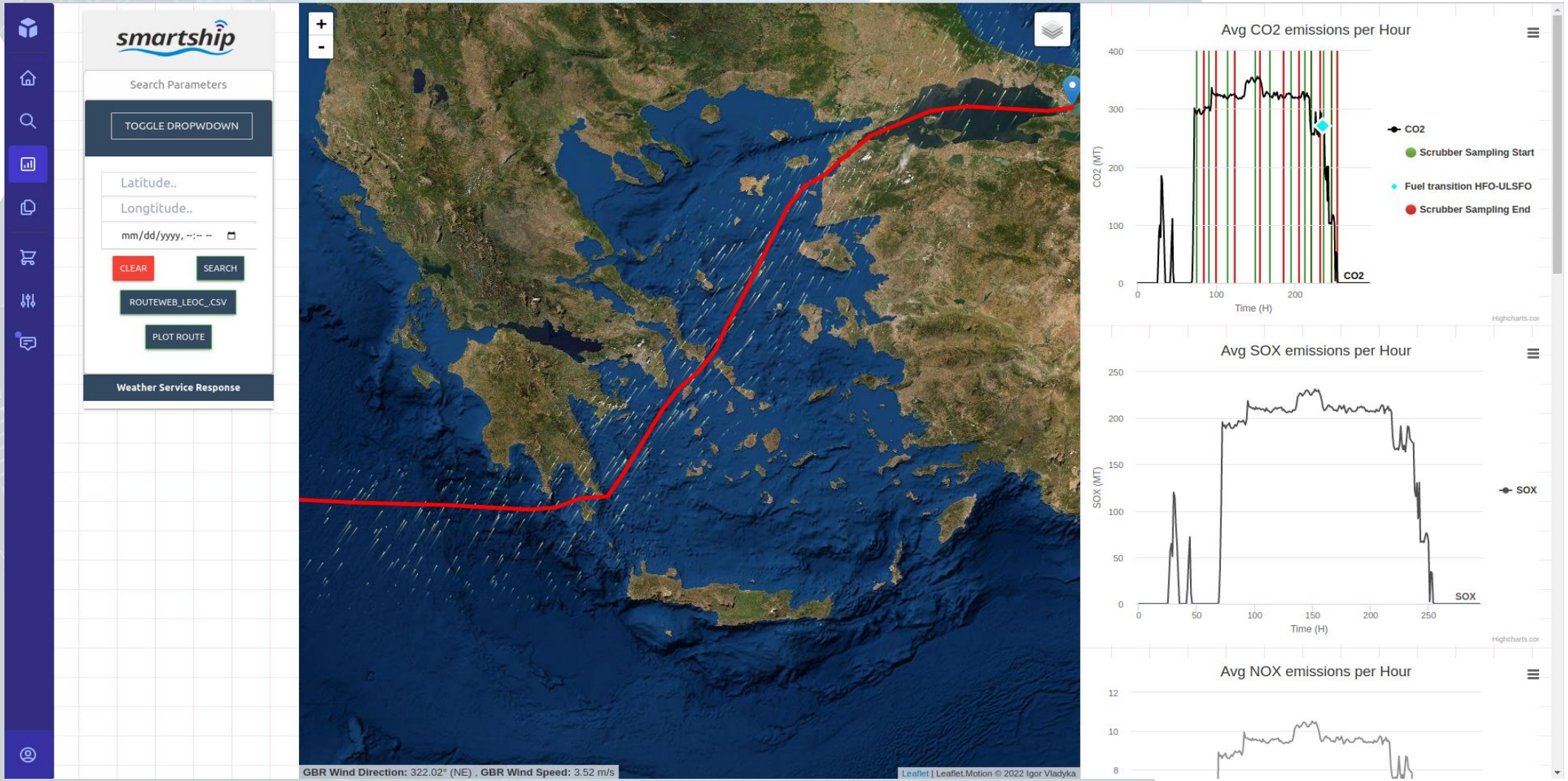
Sensors-Based Data Sourcing

From Data Collection to Model Training

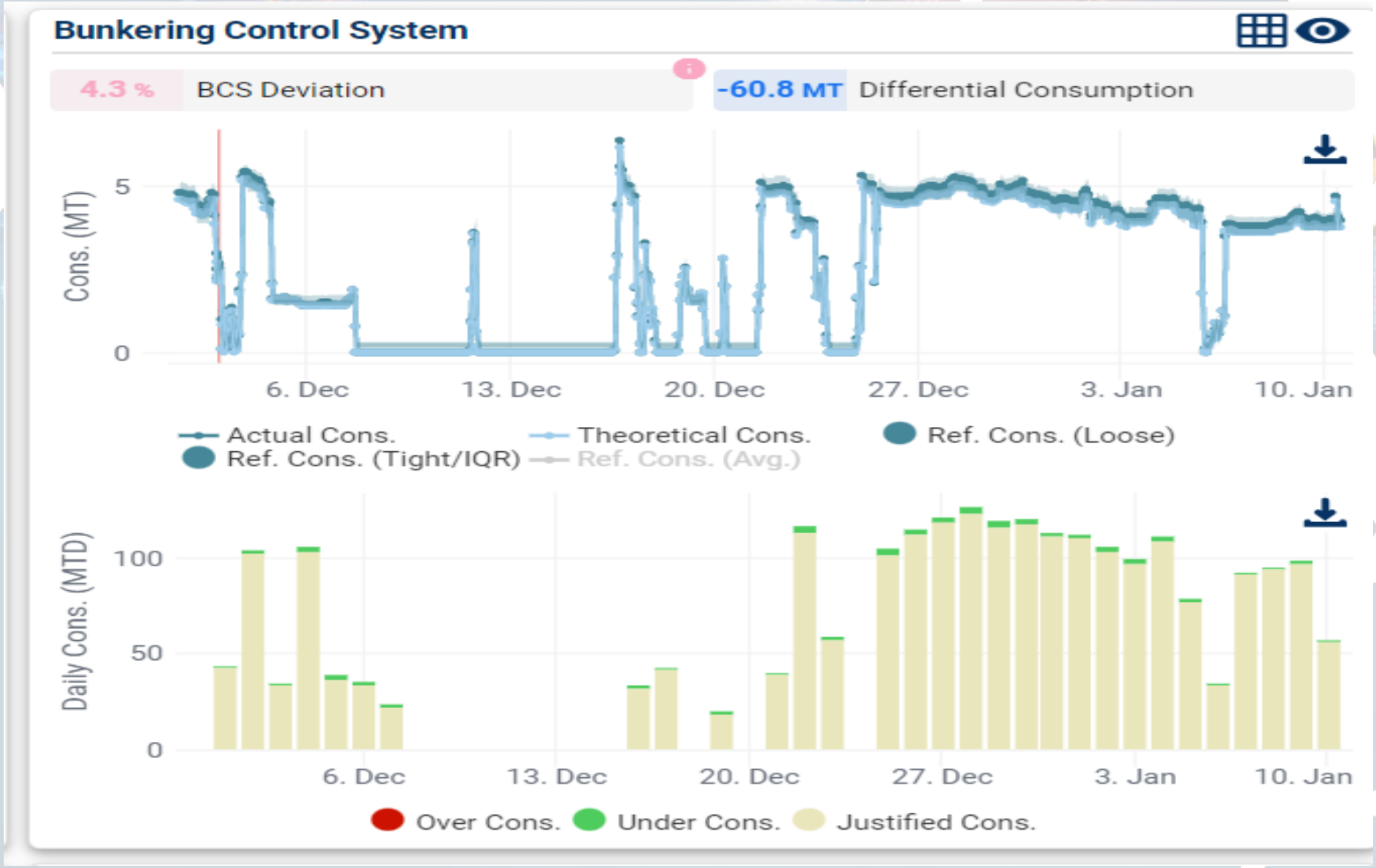
Showcase #1: External Service



Showcase #2: Voyage Performance Monitoring and Weather Routing Optimization



Reporting Deviation

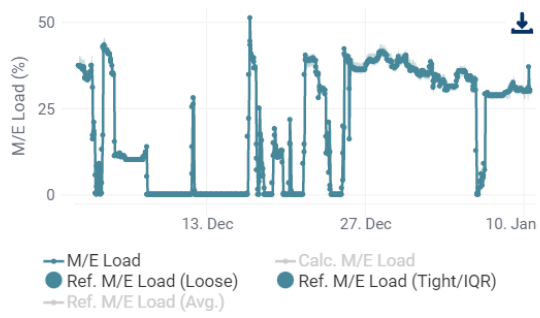


Fleet Performance Dashboard

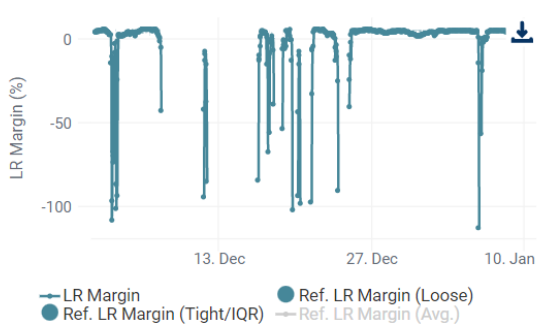
smartship

Instruments Checks

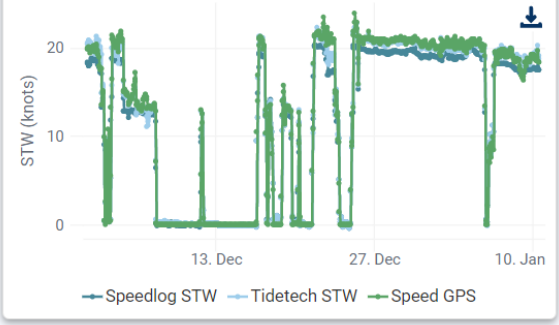
M/E Load Cross-check Torquemeter vs T/C RPM



LR Margin Cross-check against Same M/E Load



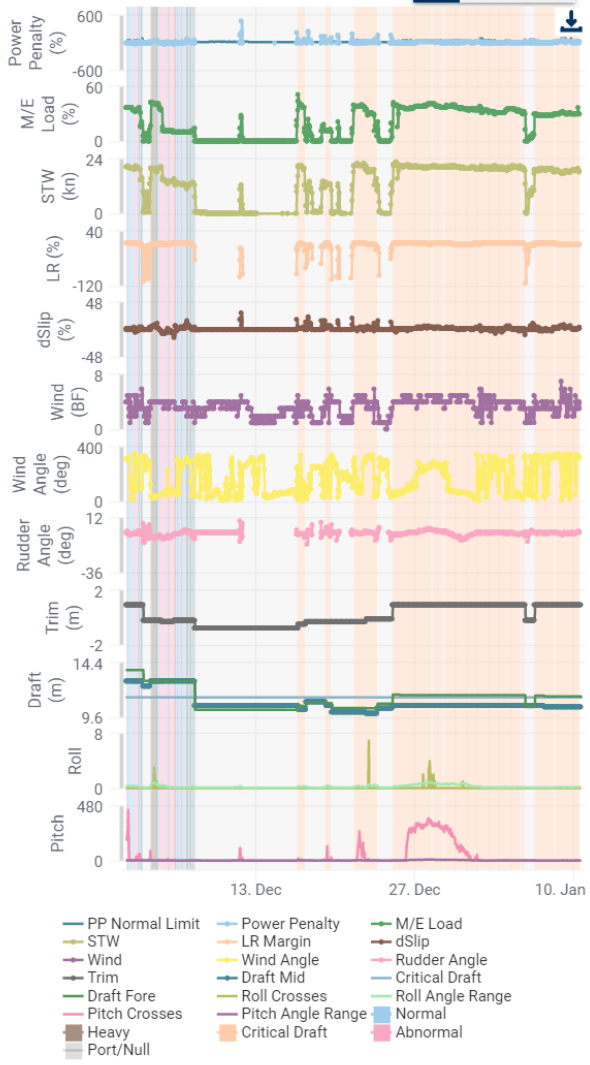
STW Speedlog vs Tidetech vs Speed GPS



Performance Analysis

TideTech | SpeedLog

All | C/P Filtered

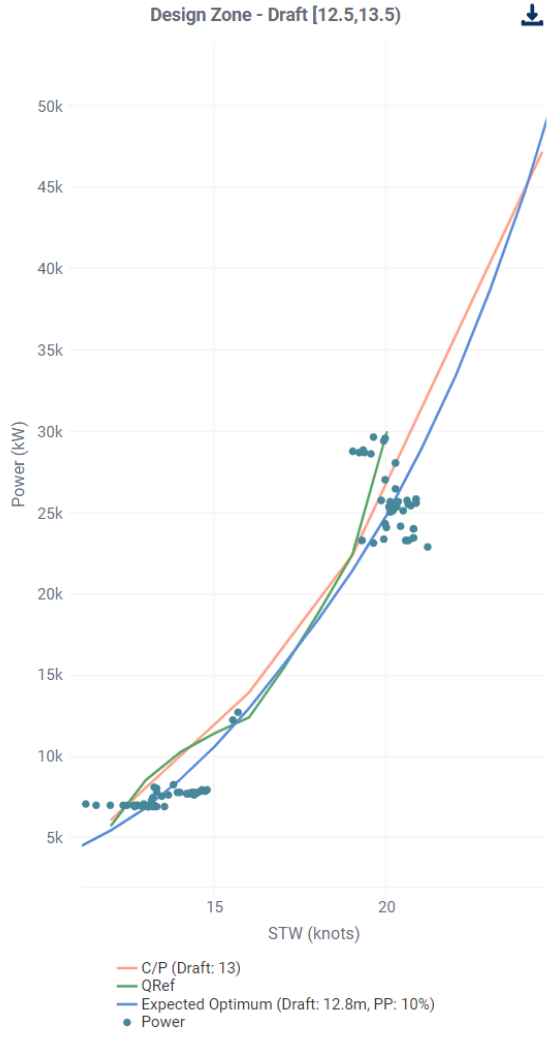


Draft-dependent Power

Performance Spots Inspector

TideTech | SpeedLog

All | C/P Filtered



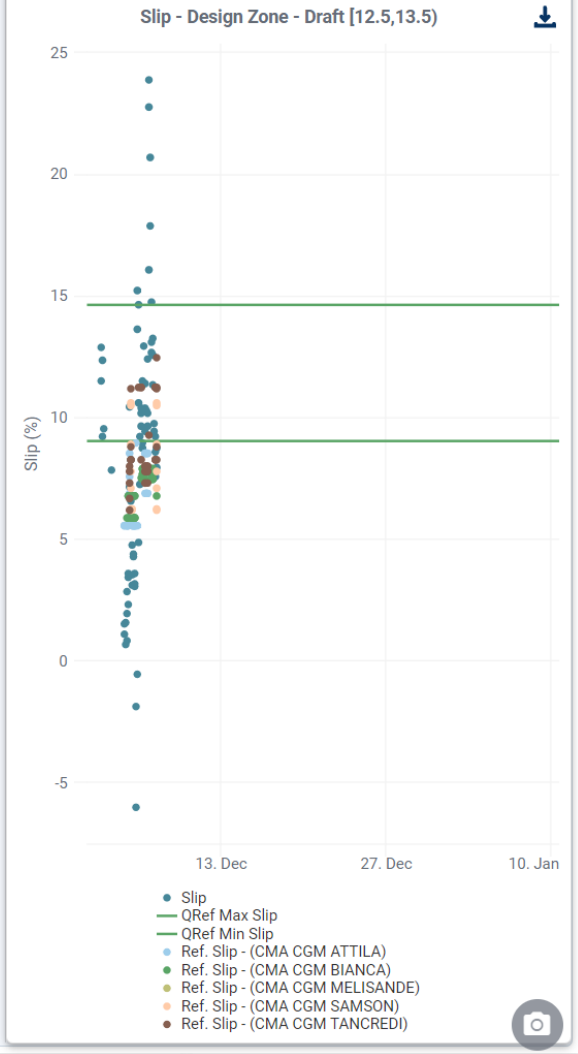
Draft-dependent dSlip

Slip Sisters Comparison

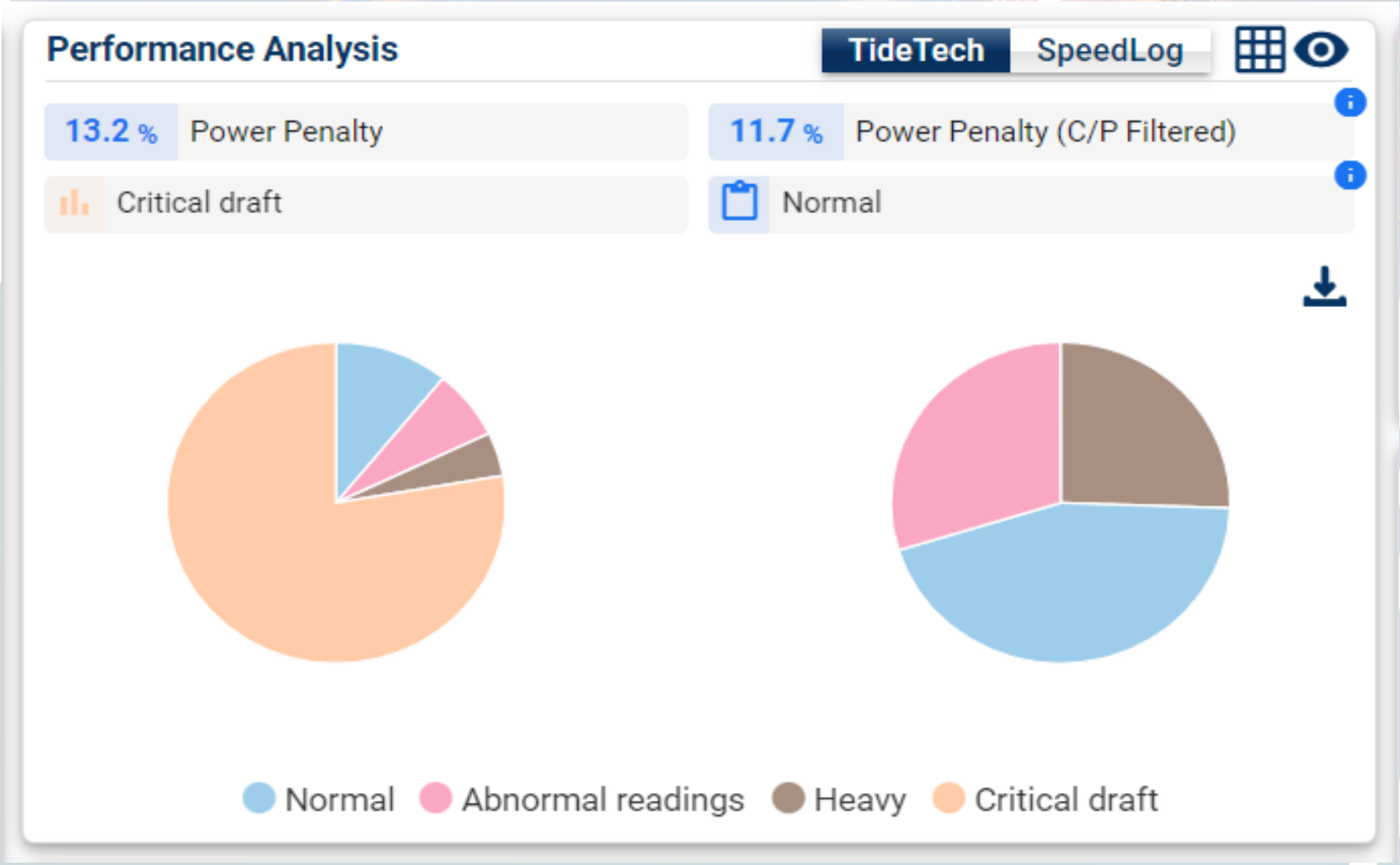
TideTech | SpeedLog

STW < 16kn | STW >= 16kn

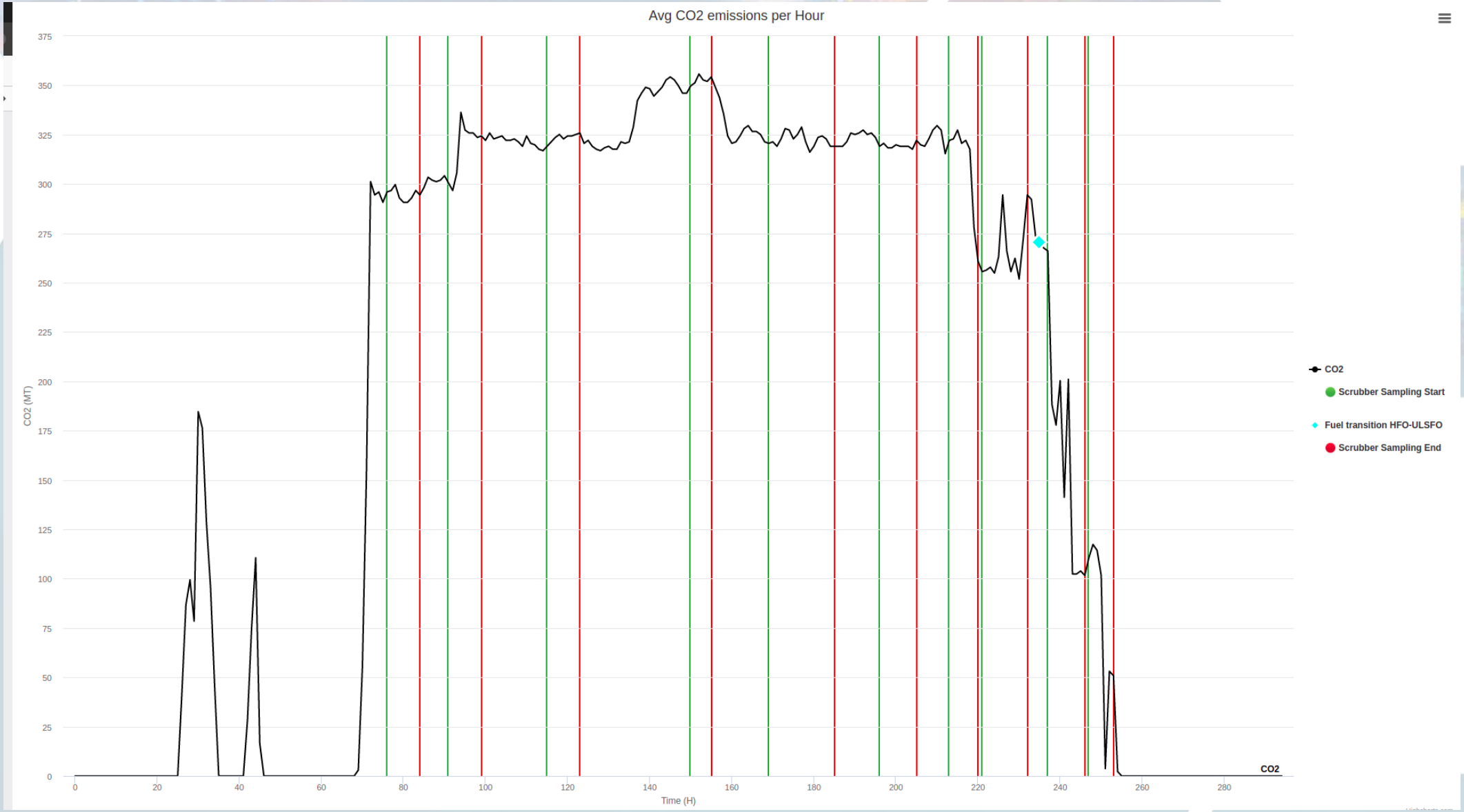
All | C/P Filtered



Compliance Performance Analysis



Time series with voyage environmental performance



Circular By Design

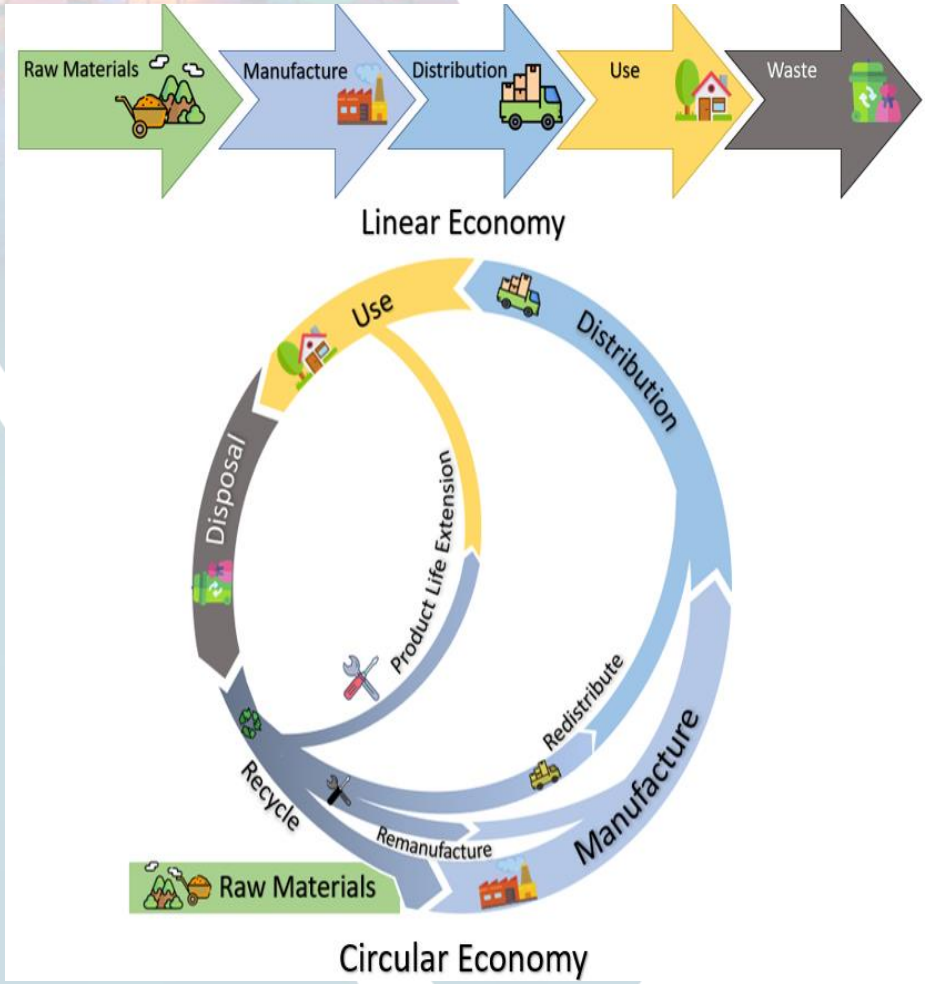
Emerging Class of Smart Assets: Maximize sustainable vessel utilization and ensure long-lasting durability of the asset

Value Driven: Extract value from the large amount of data generated by smart maritime assets. Effective flow of Information for natural capital rebuild

Eliminate Waste: Through Re-Using of data and lean management in decision making for fleet operation and maintenance

Green Thinking and Sustainability: Minimize energy consumption per unit by combining technologies effectively

Integrated Framework: Extends across the entire fleet and lifetime of the vessel. Values drivers are paired and efficiency is achieved through comparison analysis. Critical mission objectives are met.



SmartShip Consortium

Thank you!

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