

Potential business scenarios for Artificial Intelligence (AI) and Machine Learning (ML)

ABM and Advanced Analytics WS6

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- **Background**
- **Objective**
- **Potential business scenarios- data and calculations**

EMSA's single programming document 2020-2022 and EMSA's 5-years strategy

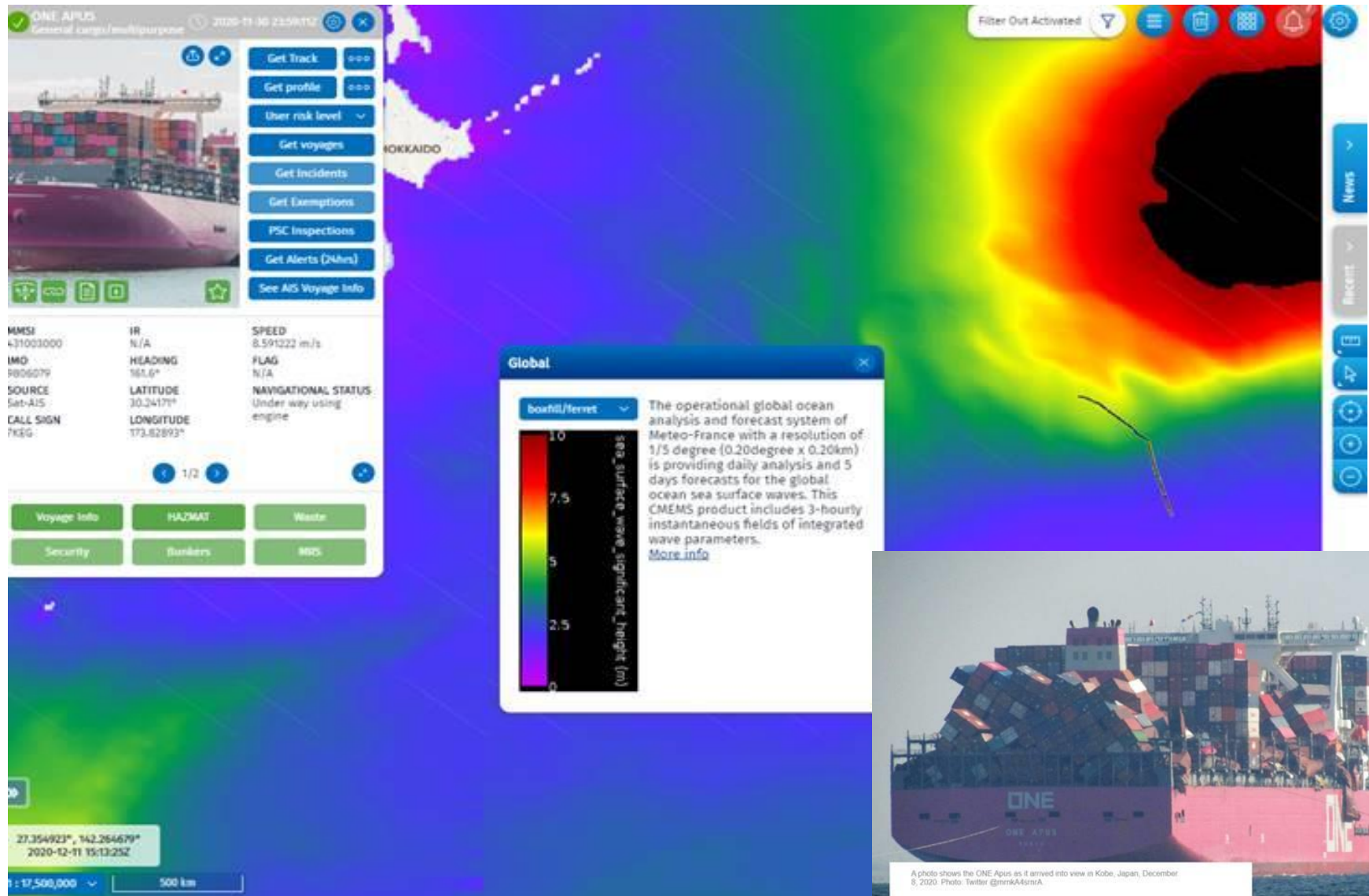
*'[...] further development of the ABM tools and the analysis of which “**big-data**” analytics techniques and products can support the IMS community [...]'*; and

*'[...] development of **machine learning and artificial intelligence applications** in order to **improve risk assessment, vessel position predictability, statistics and innovation**'.*

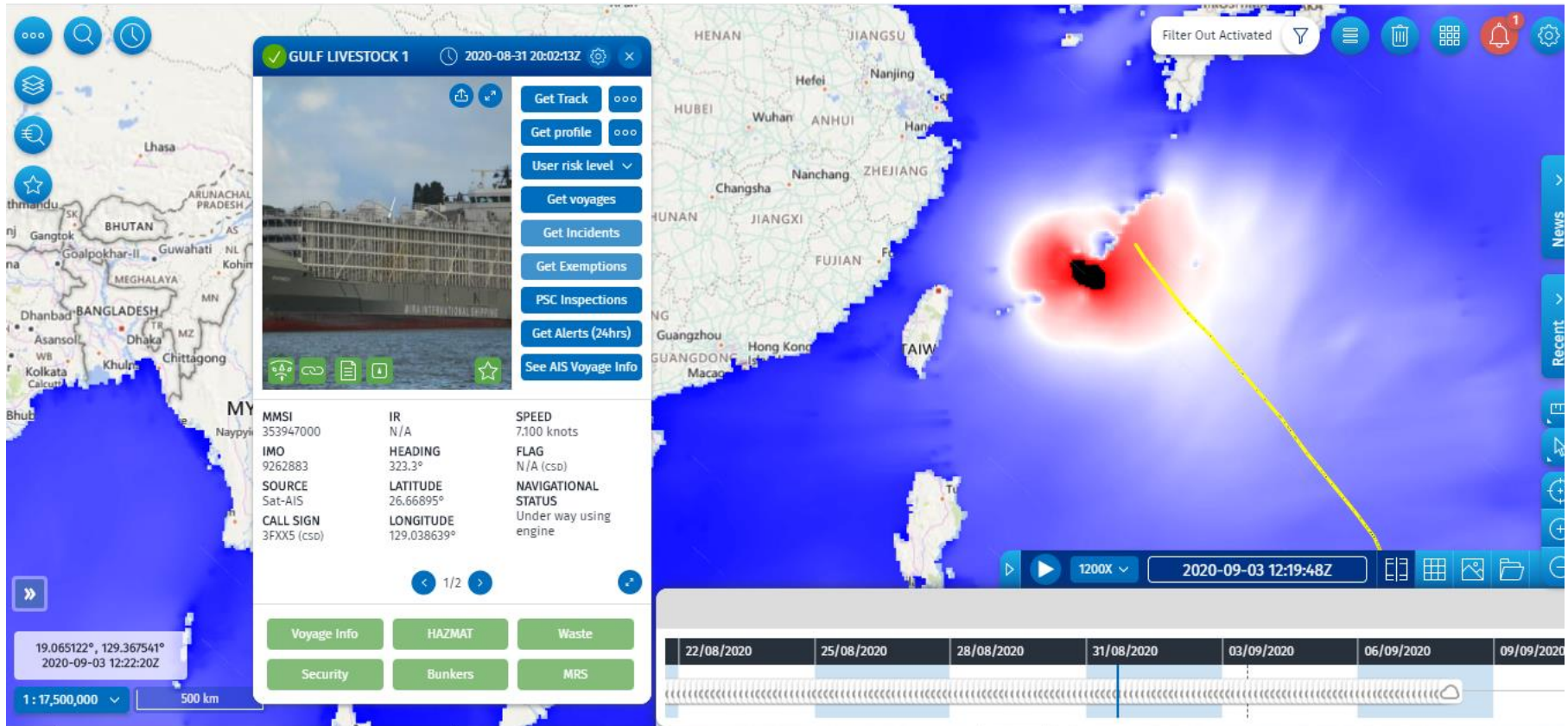
*[...] using the potential of **automation** or Artificial Intelligence*

*[...] **intelligent tools** and service*

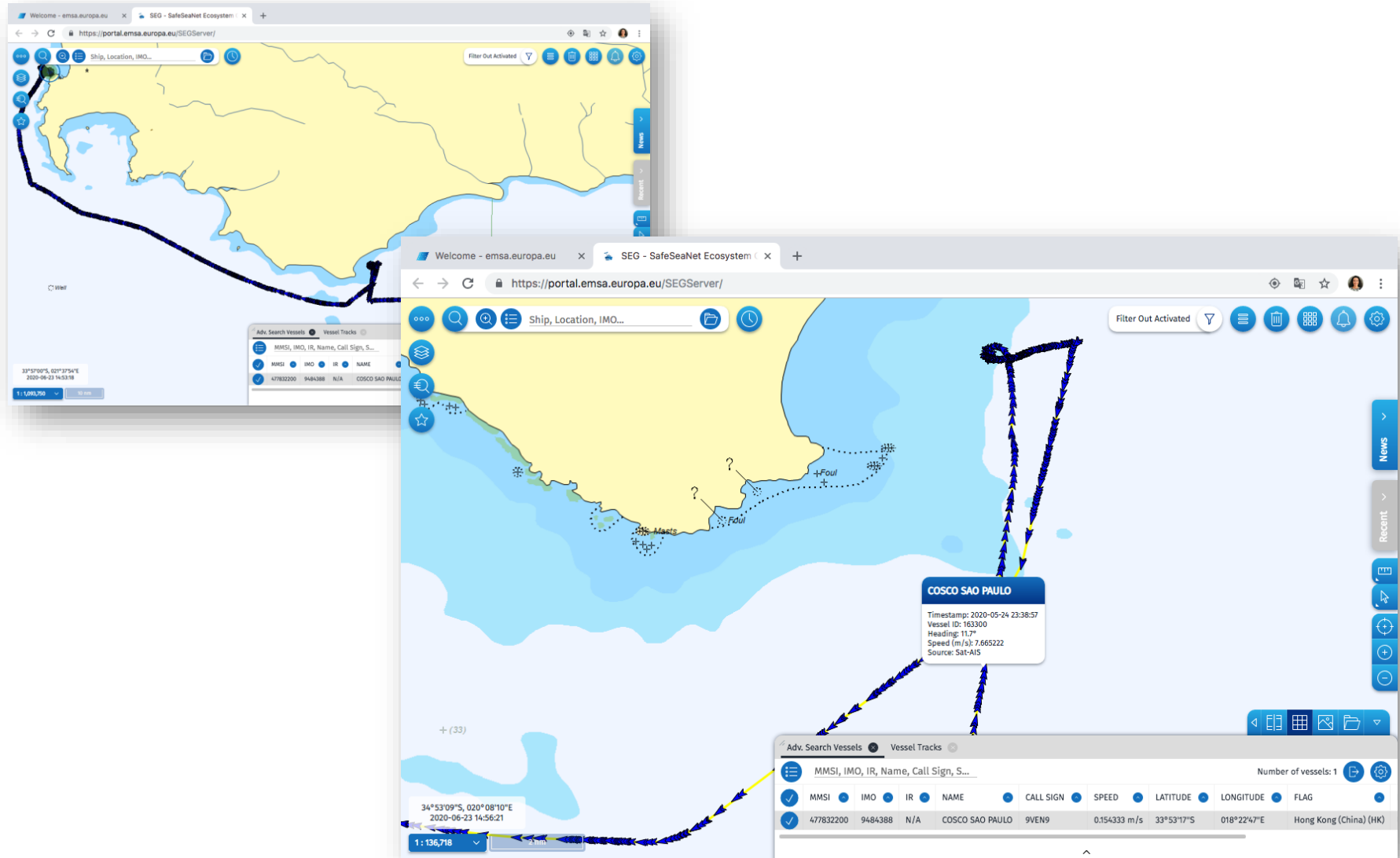
Track data and meteo data (1)



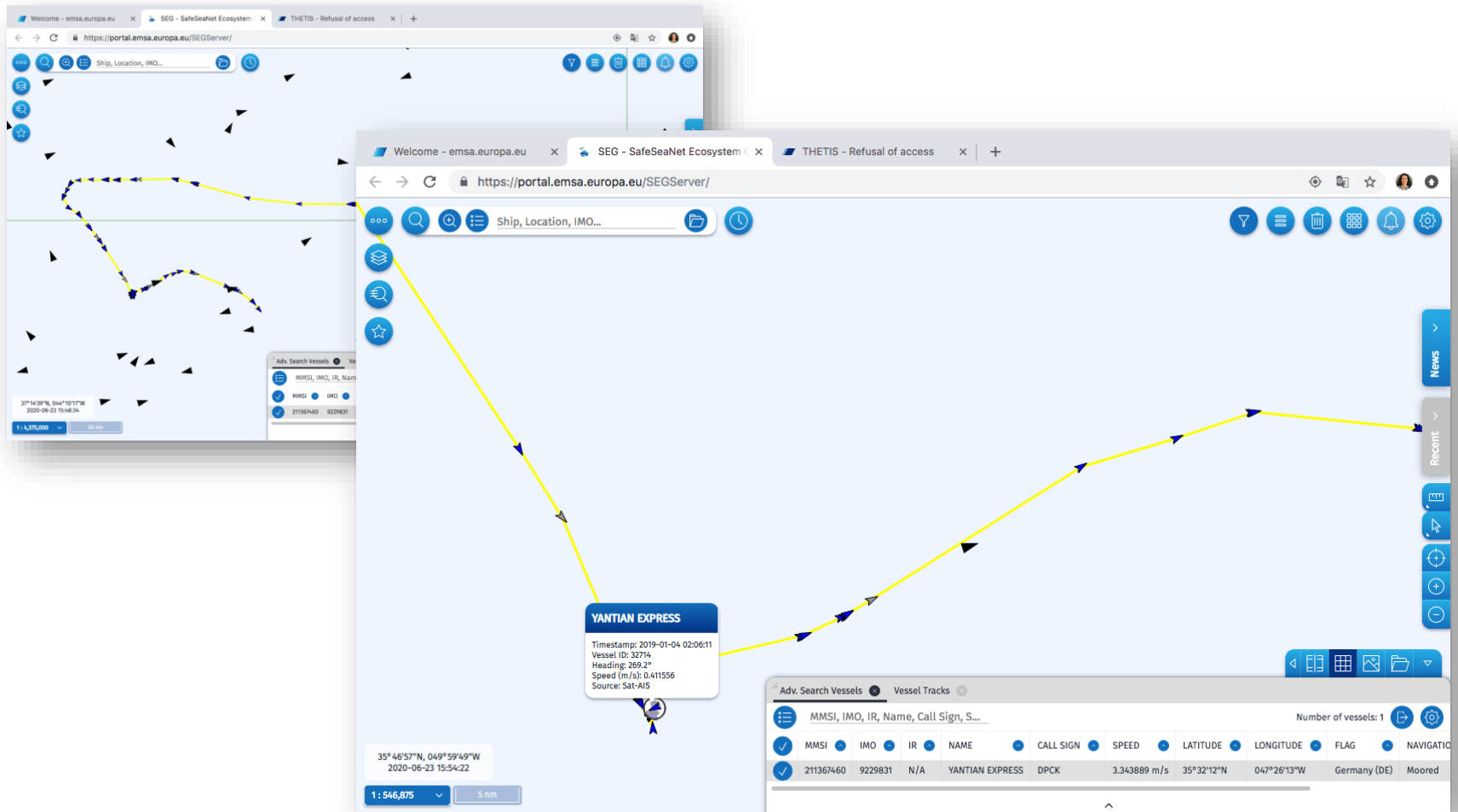
Track data and meteo data (2)



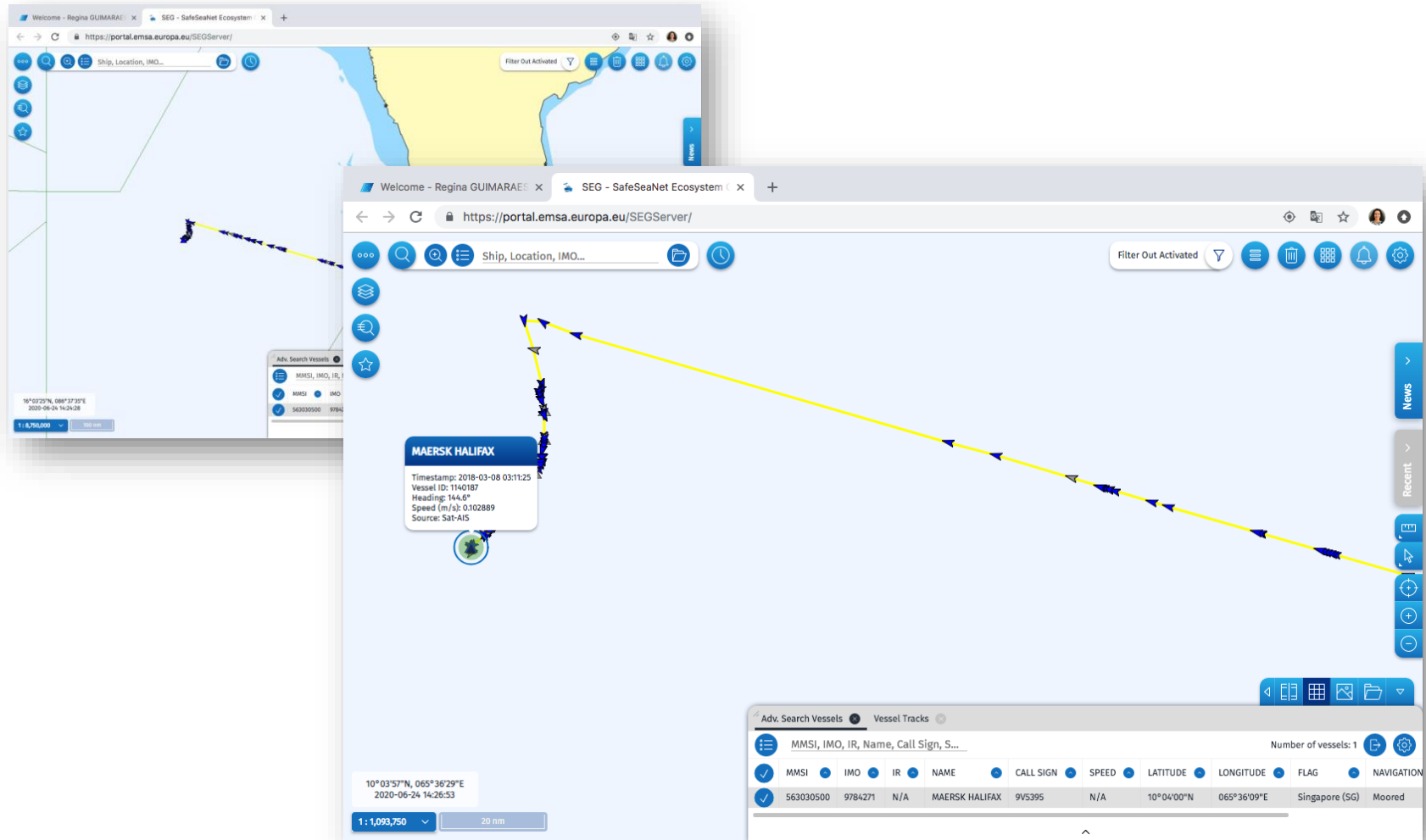
Track and analysis - Cosco Sao Paulo



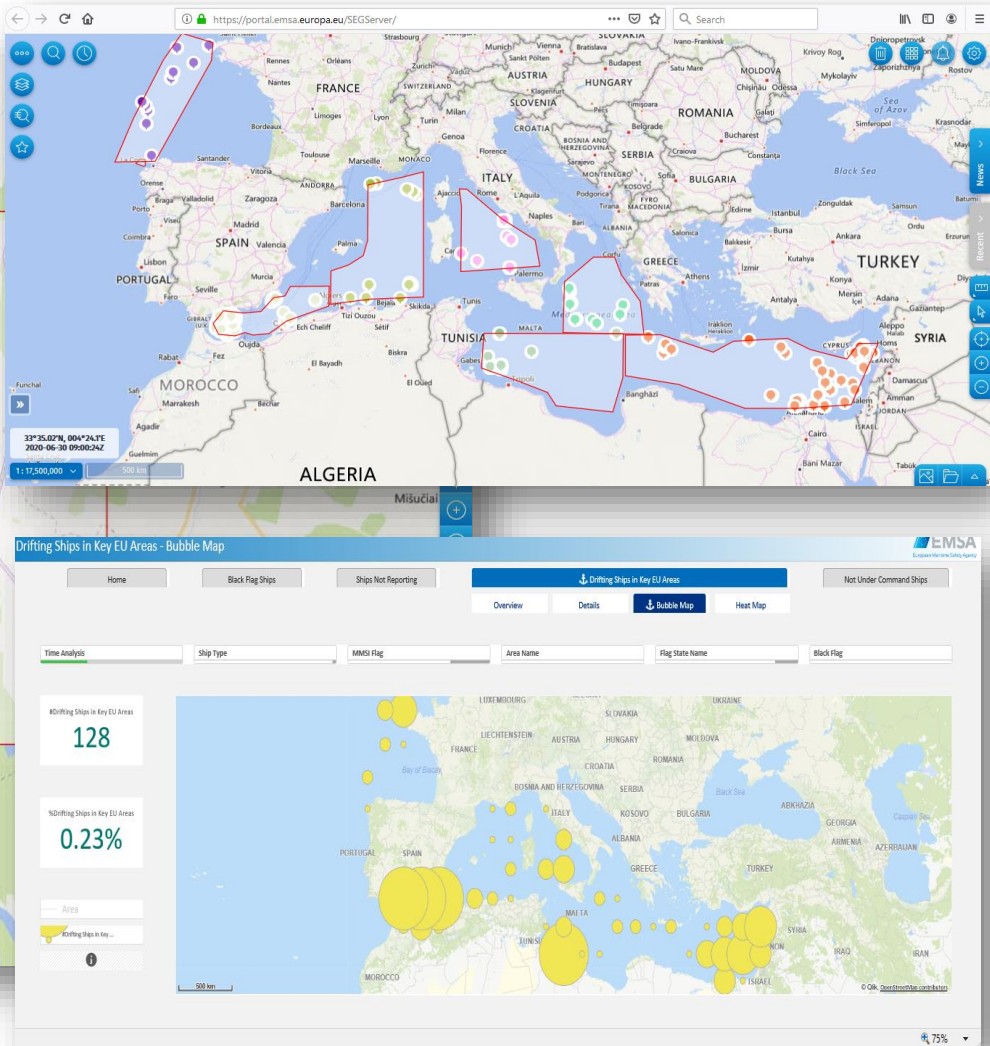
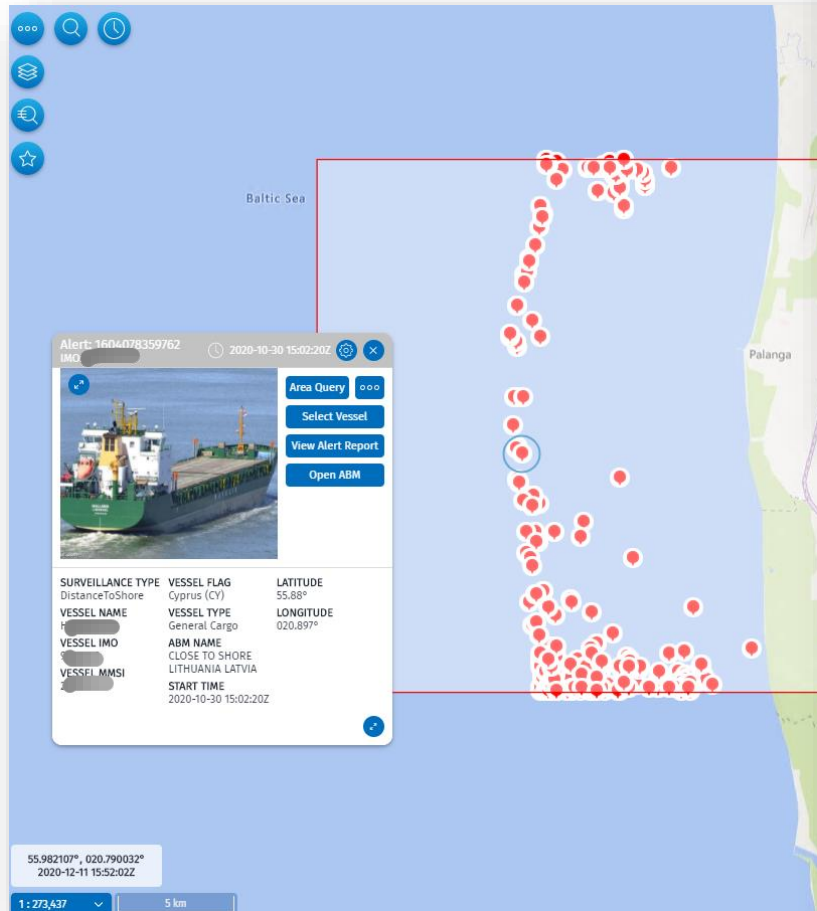
Track and analysis - Yantian Express



Track and analysis - Maersk Honam



Density of certain occurrences



Overall objective of the Artificial Intelligence (AI)

Support, reduce workload, find the right information for decision-making, automatize labour-intensive processes, predict developing or dangerous situations

Involve stakeholders in the discussion on the business scenarios and potential developments

Validate scenarios

Confirm the scenarios or identify new ones

Do they add value? Are they realistic? What data (other data) sets could be used? Where EMSA could support?

Scenario	Data	Data products/ Calculations
Recognition of the similar trading patterns.	Position reports	Positions' calculation such as distance travelled and speed profiles Calculations -Distance Travelled Speed – average over a period of time (year/ month/ week) ABM alerts – locations and meta-data TDMS service for EU EO products - VDS EO products - activity detection
Inconsistency destination declared and detected.	Identifiers of the vessels	
Identification of economically viable activities.	Destination of the vessels + other static information transmitted in the message 5	
Advanced Analysis of the TDMS - Global density maps; per flag; per type; per activity etc.	Nav. Status of the vessels	
Close quarter situations detections - outside territorial waters/ VTS; Detecting 'near-miss ' situations.	Gaps in reporting - any gap of more than 4,6,8 hours in the position reports	
Analysis of the offshore activities- vessel behaviours per type - patterns of life.	PSC classification of flags port calls information	
Vessels not following recommended routes/ TSS-es/ common routes.	enrichment data from SSN (Incident reporting)	
Density/ frequent occurrences of specific anomalous behaviours.	EMCIP relevant data sets	
Automatic assignments of risk associated to particular vessels – by combining specific data attributes' values and data products/ calculations	Port locations Nautical Charts Open-source data (information on the accidents from the newswires or social networks OSINT	
Flagging 'white' / positive examples of activities		

- **Feedback of the users**

For fine tuning scenarios and the logic

Data sets and calculations that can be reused

- **Experience sharing/ operational validation**

Once the tools/prototypes/services are in place



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 **EMSA**
European Maritime Safety Agency