

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

ABM and Advanced Analytics WS7

Lisbon, 14.12.2021

- **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*

EMSA intends to define how to implement AI and ML in IMS. Consultancy services were tendered for that purpose.

Expected outcome: feasibility analysis, summary of the AI and ML in transport modes, business requirements, evolution of the use cases.

- Operational objective - reduce the workload by automatizing certain analysis.
- The related data shall be presented in a user-friendly and aggregated form' supporting ad-hoc analysis.

1. User selects a vessel and wants to get a labelling for the **inconsistency** between the **destination declared and detected** (or predicted); potentially based on a **prediction of the vessel movement/route/ETA**, based on all available data sources.
2. User selects a vessel and a time criterion and wants to obtain a list and tracks of **vessels** that were **following similar (trading/routing) patterns**.
3. User selects a vessel and wants to get an information if the **ships conducts unsustainable/ not viable economic activity** or not.
4. User selects and area and wants to obtain an **aggregated list** of vessels with **detected anomalous or specific situations focusing on potential incidents** (e.g. fires on board of ships), close-quarter situations, and addressing also discrepancies ETA/Destination detected vs. declared; analysis of the draught; filtering per destination or last port of call.

Data	Data products/ Calculations
<p data-bbox="423 339 674 368">Position reports</p> <p data-bbox="359 404 736 432">Identifiers of the vessels</p> <p data-bbox="144 472 948 544">Destination of the vessels + other static information transmitted in the message 5</p> <p data-bbox="353 579 745 608">Nav. Status of the vessels</p> <p data-bbox="94 648 1002 719">Gaps in reporting - any gap of more than 4,6,8 hours in the position reports</p> <p data-bbox="353 755 741 783">PSC classification of flags</p> <p data-bbox="305 823 790 852">Detected port calls information</p> <p data-bbox="187 892 908 921">Enrichment data from SSN (Incident reporting)</p> <p data-bbox="355 961 739 989">EMCIP relevant data sets</p> <p data-bbox="440 1029 654 1058">Port locations</p> <p data-bbox="430 1098 664 1126">Nautical Charts</p>	<p data-bbox="1054 472 1856 544">Positions' calculation such as distance travelled and speed profiles</p> <p data-bbox="1209 579 1702 608">Calculations -Distance Travelled</p> <p data-bbox="1108 648 1802 719">Speed – average over a period of time (year/ month/ week)</p> <p data-bbox="1161 755 1750 783">ABM alerts – locations and meta-data</p> <p data-bbox="1298 823 1613 852">TDMS service for EU</p> <p data-bbox="1315 892 1595 921">EO products - VDS</p> <p data-bbox="1211 961 1700 989">EO products - activity detection</p>

- **Mark the operational objectives;**
- **Mark the data or calculations;**
- **Indicate other data/calculations or scenarios that you think may be needed.**

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