

Update on ABMs

IMS UCM 16.2

Lukasz Bibik

Senior Project Officer
Maritime Digital Services
Digital Services and Simplification

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- **Status and evolution of the ABMs - ‘Near real-time’ and ‘Historical’ capabilities**
- **‘Near real-time’ (NRT) ABMs usage**
- **New, ABM-related developments**
- **ABM and Advanced Analytics Workshop**
- **ABM Interfaces**
- **Analytics – IMS prototype - EMAT**
- **Actions**



Automated Behaviour Monitoring (ABM) tool is a computer, rule-based system analysing vessel positions for the detection and alerting of abnormal and/or user specific vessel behaviours.



To support Integrated Maritime Service users in their maritime surveillance functions.



When specific, user-defined criteria are met, operators are alerted: in the graphical interface (and IMS Mobile App) and by means of e-mail notifications.

- **ABM admin accounts**

+270, granted to 21 MS, 1 candidate country, 5 EU Bodies and EMSA

- **ABMs**

+720 running; 1,300 additional were used during last years

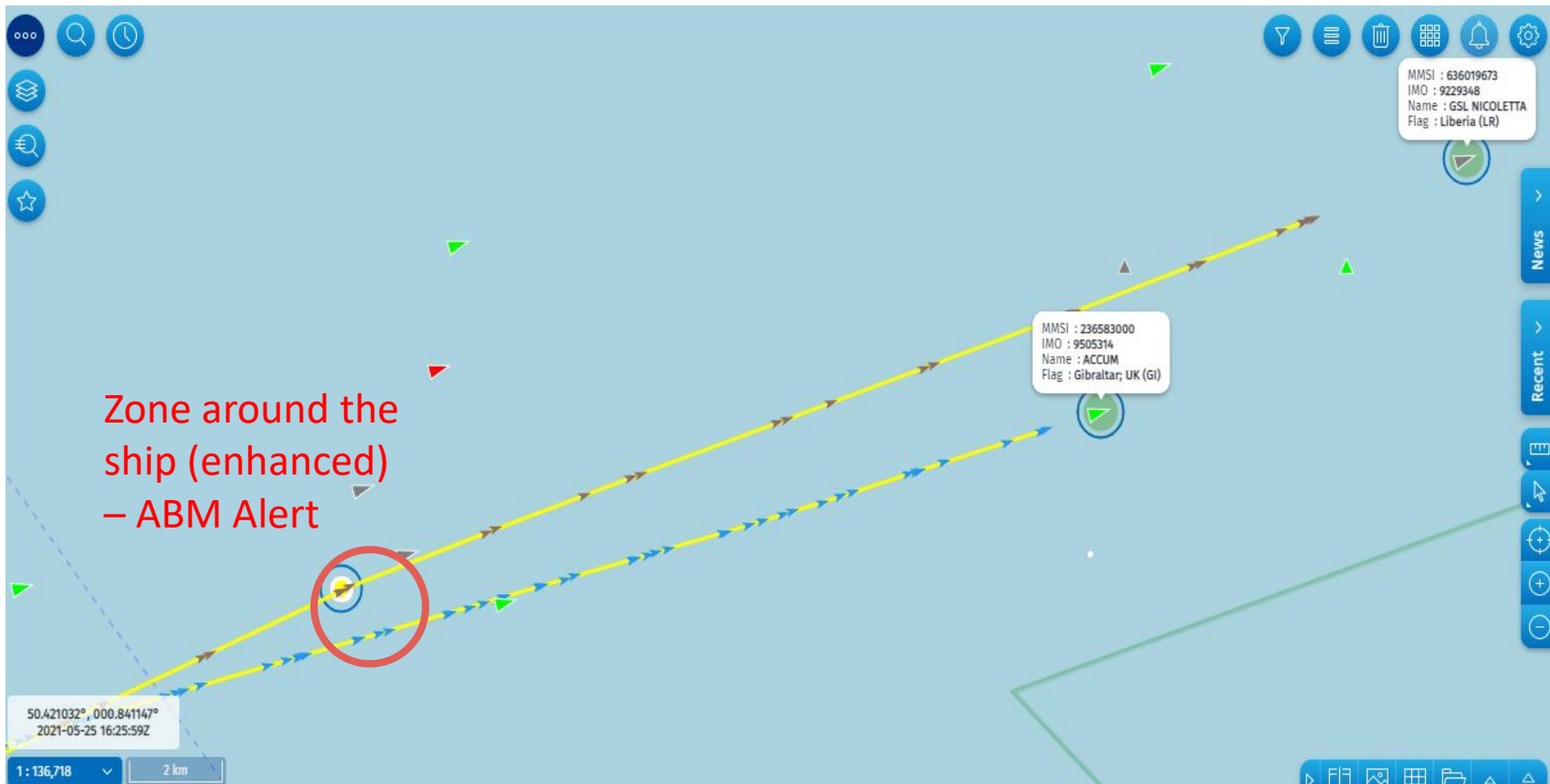
- **Distribution**

+300 lists to more than 400 users

Over 7,000 alerts are sent to ABM users via S2S interface, by email or displayed in the SEG or IMS Mobile App graphical interfaces (SEG or the Mobile App)

No	Situation	Name of the ABM	Status	VTMIS Dir. context
27	Vessels entering a radius (bubble) around other, selected ship(s)	<i>ZoneAroundShipEnhanced</i>	Operational	Ships posing potential risk - monitoring
28	Vessel has specific navigational status in AIS transmission	<i>NavigationalStatus</i>	Operational	Reporting to the coastal stations e.g. engine breakdown
29	Vessel crosses a defined line (e.g. a reporting line)	<i>LineCrossing</i>	Operational	MRS reporting or VTS reporting obligations
30	Vessel enters the area	<i>AreaEntering</i>	Operational	Departure and Arrival notifications verifications/ check/ obligations

Example (Zone Around) CPA < 1,000 m



New data

- Use of the 'SafeSeaNet enrichment' in the filtering of vessels of interest

Combined ABM algorithms

- DriftingThenHeadingToShore
- OutAreaThenDrifting
- OutAreaThenEncounterAtSea
- ZoneAroundShipThenDrifting
- UncorrelatedVDSThenZoneAroundShip

Technical adaptations in the STAR ABM module

Requirements for the new ABMs (new contract)

ABMs and SEG - VOIs/Imports/Lists/Layers

Admin console

Applicable layers

Table with alerts generated over last 24 hours

Layers Panel:

- My Filters: Default >
- Projections >
- Base Layers >
- PLACEMARKS
- VESSLS
- PORTS AND OFFSHORE INSTALLATIONS
- ORGANISATIONS
- EO DATA
- METOCLEAN
- AREAS
- ALERTS
- AOI

Active alerts

Number of Alerts: 847

ID	VESSEL NAME	VESSEL IMO	VESSEL MMSI	VESSEL FLAG	VESSEL TYPE	
1556441874923	SICHEM RUBY	9344174	256442000	Malta (MT)	N/A	OPER_VA
1556442415044	MARIT	9235464	258276000	Norway (NO)	N/A	OPER_VA
1556442235767	BBC COURAGE	9267285	305975000	Antigua and Barbuda (AG)	N/A	FR_EEZ_F
1556442235909	MAN FU TSAI NO.88	N/A	416002825	China (CN)	N/A	FR_EEZ_F
1556442236268	CAPITAINE TASMAN	9167423	564519000	Singapore (SG)	N/A	FR_EEZ_F
1556445799996	MAN FU TSAI NO.5	7878563	416245700	China (CN)	N/A	FR_EEZ_F
1556442236933	XINLONG66	N/A	412420896	China (CN)	N/A	FR_EEZ_F
1556442236664	BRAVO SUPPORTER	9165944	236578000	Gibraltar, UK (GI)	N/A	FR_EEZ_F

Showing items 1 to 200 of 847

Items per page: 200

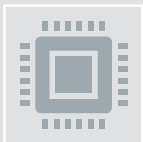


New, ABM-related developments in the Cloud.

(See agenda point 16.4.3)



Using - High Performance Integrated Maritime Services (HP-IMS) Long Term Storage (LTS) infrastructure (Cloud).



Implement essential historical capabilities of the Automated Behavior Monitoring (ABM), including automatic detection of the port calls, at the global scale.

Past



**New
Capability !**

Now



Future



Workshop 6, that took place on 14 December 2020 via videoconference



The 'Cloud' related developments (HP-IMS) were put into context



feedback on the usage of the current ABMs,



AI and ML scenarios were reviewed and ranked.

- **Provisional planning for December 2021**
- **Online meeting (TBC)**





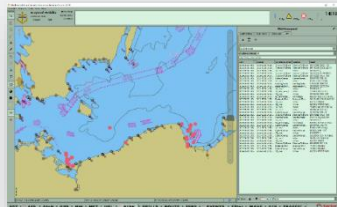
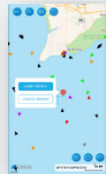
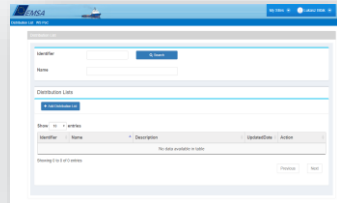
Objectives: operational experience sharing, best practices, feedback on the usage and future priorities, EMSA advanced maritime analytics prototype feedback.

- **ABM S2S interfaces**

- EBCGA (for configuration and ABM alerting);
- Poland (for ABM alerting)
- integrated report distribution (IRD) system (ABM alerting/events)

- **Most popular ABM algorithms**

Over the last year, the top five most popular ABM algorithm types, have been: 'In Area'; 'Speed Anomaly'; 'Drifting'; 'Not Reporting'; 'From Area to Area'.

Functionality	ABM configuration	ABM- alerting mechanism	Configuration of the ABM alerts distribution
			
Interface	<p>S2S</p>  <p>SEG (new interface)</p>	<p>S2S; SEG (new interface)</p>  <p>IMS Mobile App (with exemption of the Historical ABMs)</p> <p>E-Mail</p> 	<p>EMSA Maritime Portal (new interface, with exception of the Historical ABMs)</p> 

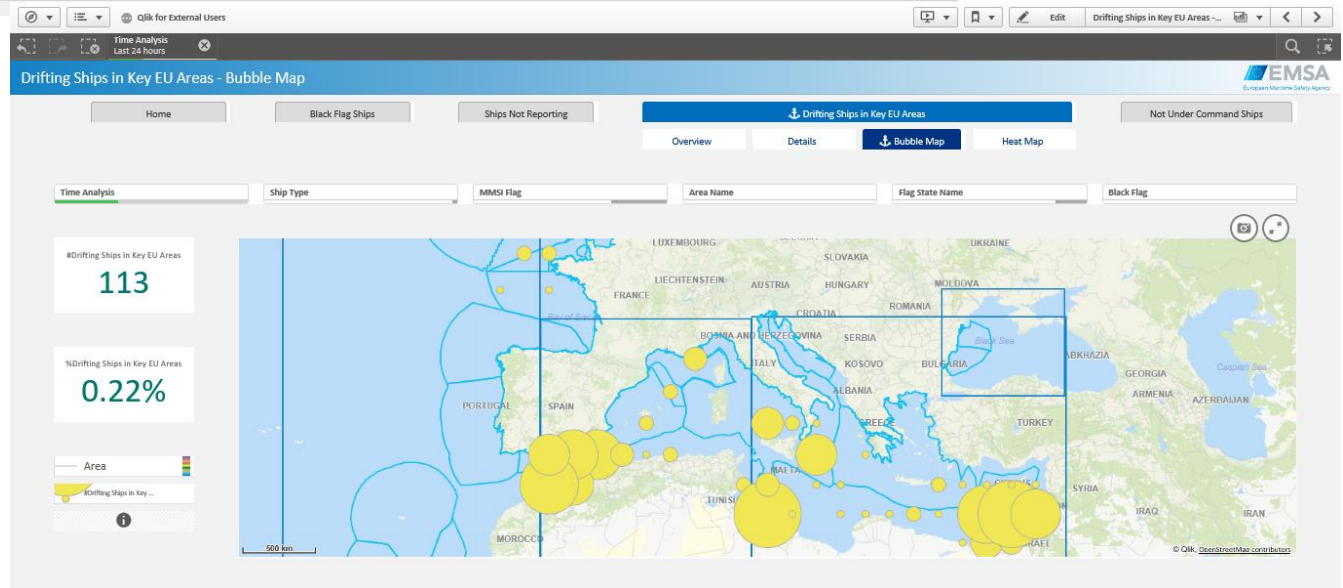
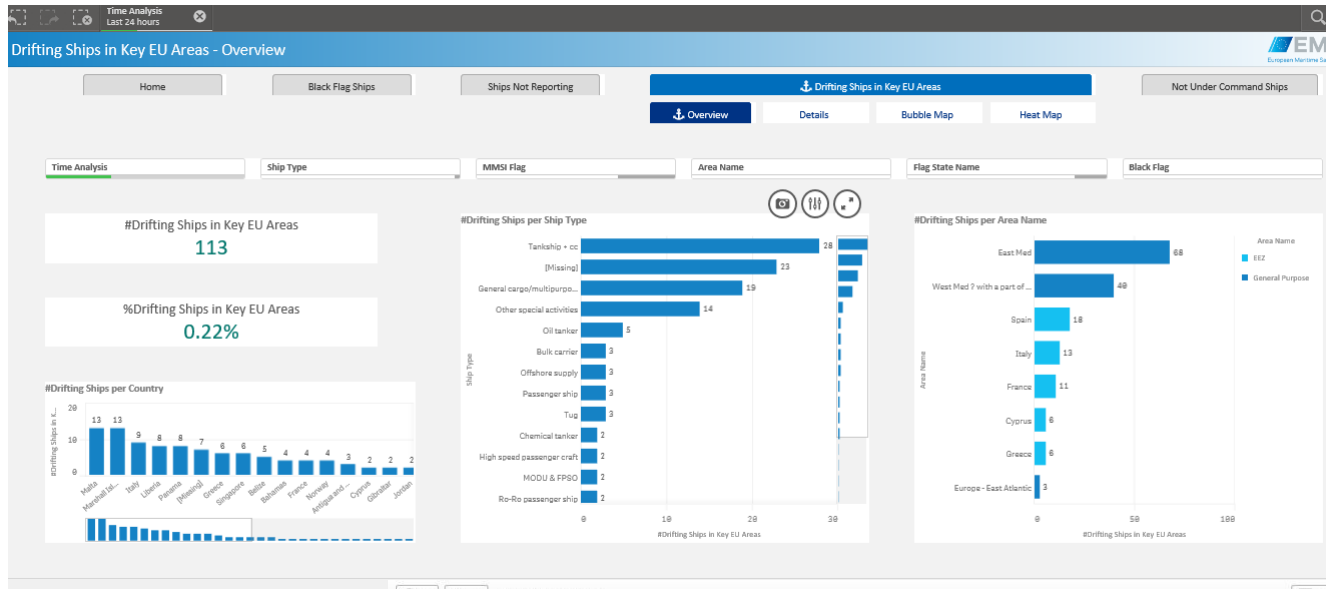
- IMS User Consultation and ABM Workshop meetings' reports.
- Single Programming Document (SPD)

[...] ‘...Advance the collaboration with the IMS Member State and EU bodies within the context of the “Automated Behaviors Monitoring and Advanced Analytics” Working Group, to further develop the portfolio of ABM services and **define the requirements for Data Analytics tools and products...**; with a planned 2020 output: ‘...further look into data analytics exploitation tools..’ [...].

In consultation with users from the Member States and EU Bodies, the following priority scenarios using aggregated statistics are included:

1. Black Flag¹ ships operating around the EU
2. Black Flag ships not reporting regularly (8 hours gap between positions in the consolidated vessel track) around the EU
3. Ships drifting in key EU areas - based on ABMs configured for detecting this behaviour
4. Ships Not Under Command in key EU areas - based on analysis of the navigational status transmitted by vessels in their position messages

EMAT Dashboards



- **Sat –AIS quality indicator dashboards**
- **ABMs mapping – sudden change of heading, at sea encounter**
- **Paris MoU Low performance companies**
- **First time visits in EU**
- **Late SSN notification**
- **Discrepancy destination SSN vs. Message 5 AIS**
- **Frequent changes of identifiers**
- **Timeliness extension (12-60 months)**
- **New users, SEG links**

- **Take note of the current ABM status**
- **Analyse operational needs + communicate them to EMSA (ABM WS 7 and UCM#17)**

Volunteers are needed



- Further validation of the combined ABMs scenarios (near-real time).
- Further validation of the EMSA' Advanced Analytics Tool prototype + definition/ prioritization of new user scenarios requirements for the IMS analytical tools.



Integrated Maritime Services

Showing the bigger picture

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European Maritime Safety Agency