



A new level of maritime situational awareness is available via EMSA's Integrated Maritime Service. Users can now benefit from advanced automated behaviour monitoring algorithms which run on a global scale to offer robust support for maritime traffic monitoring and surveillance.

WHAT IS AUTOMATED BEHAVIOUR MONITORING?

Automated Behaviour Monitoring (ABM) is a computer-based system that analyses ship positions for the automatic detection of abnormal and/or specific vessel behaviour. The purpose of ABM is to support EMSA's Integrated Maritime Service (IMS) users in their maritime surveillance or monitoring functions, by providing an enhanced maritime situational picture either in near real time or for historical analysis.

Operational since 2015, the service is used by more than 20 IMS Member States and five EU bodies including the European Fisheries Control Agency (EFCA), the European Border and Coast Guard Agency (Frontex), EUROPOL, the EU Naval Force (EUNAVFOR) and international bodies such as the Maritime Analysis and Operation Centre – Narcotics (MAOC-N).

MEET THE SYSTEM

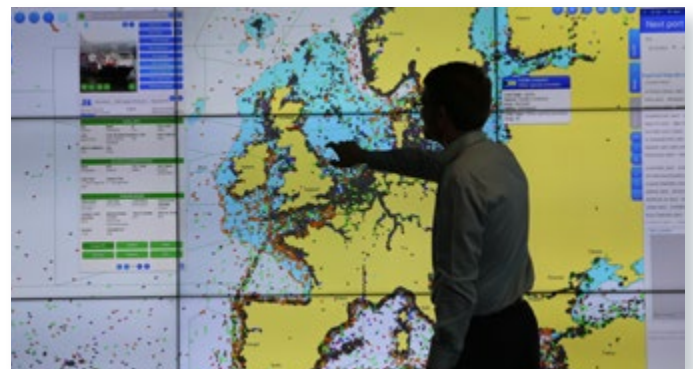
The system analyses ship position reports using data from available tracking systems such as Terrestrial-AIS, Satellite-AIS, Vessel Monitoring Systems (VMS), Long Range Identification and Tracking (LRIT) and Vessel Detection Service (VDS) products from Earth Observation satellites.



Operators have access to an enhanced maritime picture with worldwide coverage, showing historical vessel tracks combined with ABM detected events

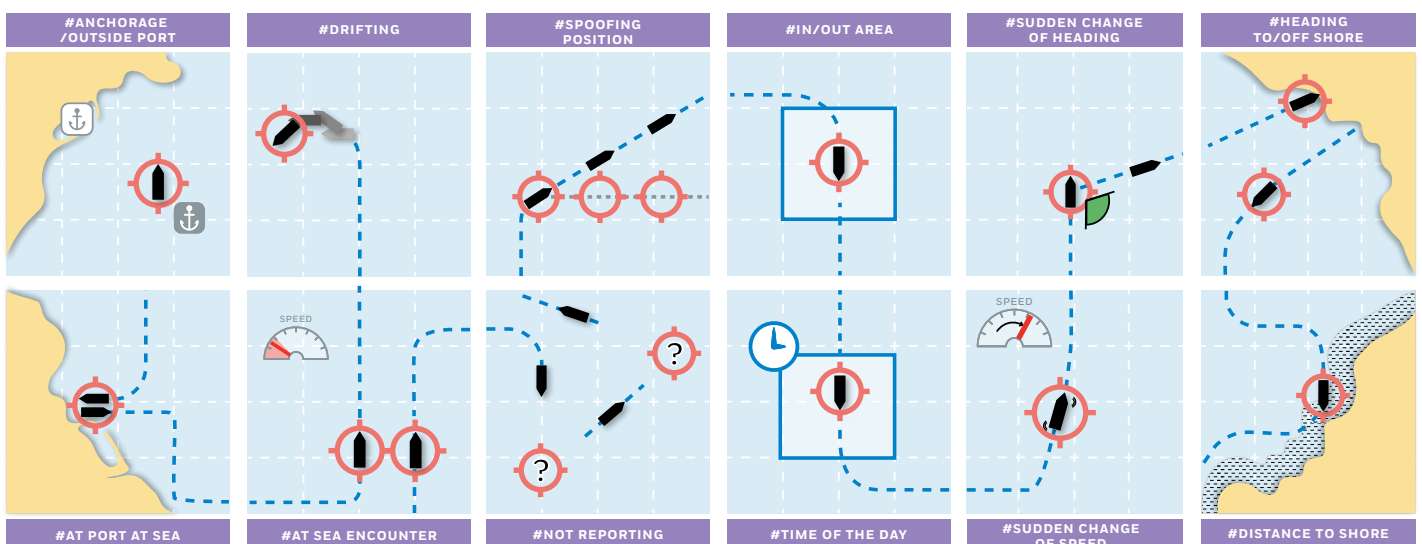


The heat map above generated with the EMSA maritime analytics tool (EMAT) displays ABM detected drifting events over a 24-hour period



The system is used by operation centres across Europe, including EMSA's 24/7 Maritime Support Services centre

BEHAVIOUR PATTERNS



Patterns, such as entering an area of interest, encounters at sea, approaches to shore, drifting and deviations from usual routes are detected and operators alerted automatically in near real time. Behaviour detection can also take place by analysing past events across a specific timeframe. Added to this, there is also the possibility of running a continuous global detection of certain behaviour patterns and voyage related changes of draft, destination or ETA, so that they can be recorded in a dedicated database for future use. The system has 50 different algorithms with the possible of more being added as the system grows according to user needs.



Vessel making a sudden change of heading as detected by ABM in near real time



Two vessels meeting in at sea encounter detected by ABM in a specific area of interest



Operators can select behaviours to monitor, define areas of interest and select alert methods

ADVANTAGES OF NEAR-REAL-TIME ABM

By offering an automated analysis of ship positions to trigger specific alerts, the system reduces the workload of the operators. The system is also simple and easy to use. The user need only:

- Identify the type of behaviour to be monitored (e.g. #drifting, #not reporting, #sudden change of speed);
- Define the area of interest;

- List those users to be alerted;
- Select the preferred means of alert.

Alerts can be received via notification on the graphical user interface; via email to a user distribution list; and, via system-to-system alerts made directly to the user's own national system.

CURRENT APPLICATIONS

Multiple maritime surveillance domains are benefiting from the system:



Safety

Detection and early warnings for vessels posing a potential risk, arriving at specific areas or following unusual routes. These situations can be automatically detected via #in area; #anchorage; #time of the day or #at port ABM.



Border protection

Detection of vessels approaching shores to transfer goods or persons illegally. These situations can be automatically detected via #in area; #heading to shore; or #distance to shore ABM.



Security

Tracking for vessels involved in potentially illegal activities, smuggling prohibited substances or breaking embargoes. These situations can be automatically detected via #drifting; #at sea encounter; #not reporting; #spoofing position or # in area ABM.



Fisheries

Detection of illegal fishing activities. Situations such as the launching of fishing gear and the transhipment of illegal catch can be automatically detected via #sudden change of speed; #at sea encounter; or #sudden change of heading ABM.

ADVANCED CAPABILITIES

The ABM service has been developed to offer an extended spectrum of maritime analytical, intelligence and awareness capabilities for assessing ship positions, covering both real-time and historical dimensions.

Key features include:

① Near real-time algorithms (NRT-ABM)

- Swift detection of specific or anomalous ship behaviours.
- Users receive timely alerts within approximately 15 minutes via email or on-screen notifications.

② Historical ABM (H-ABM) – On-Demand

- Enables users to detect and analyse events in the past based on user-configured scenarios.
- Provides flexibility for users to explore historical data as needed.

③ Historical ABM (H-ABM) – Always-On

- Continuous detection and recording of events such as port calls, ships drifting, Ship-to-Ship (STS) activities, reporting gaps, or ships exceeding defined speed thresholds, or voyage related changes like ETA or destination change.
- Establishes a comprehensive-global level database of recorded events. This capability became available mid-2023 via the 'detect port calls' functionality on the IMS mobile app as well through the EMSA Maritime Analytics Tool (EMAT).

All ABM capabilities can be seamlessly integrated through System-to-System (S2S) web services or database queries, offering a versatile and efficient means of access. The service ensures that users can exploit the information in an ad-hoc manner or through pre-configured dashboards, allowing for intuitive and insightful data exploration.



HOW TO GAIN ACCESS

Seamless access to the system is available through various platforms: the SafeSeaNet Graphical User Interface (SEG) on desktops, the Integrated Maritime Services application (IMS mobile app) on mobile devices, or the EMSA Maritime Analytics Tool (EMAT).

Current users include maritime administrations, navies (e.g. for piracy prevention), coast guards, maritime safety and traffic monitoring centres, law enforcement bodies, water police, pollution response centres, and fisheries and border control authorities.

Public authorities interested in the service can request access by emailing: ims@emsa.europa.eu.

GET IN TOUCH FOR MORE INFORMATION

European Maritime Safety Agency

Praça Europa 4
1249-206 Lisboa Portugal
Tel +351 21 1209 200
emsa.europa.eu

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