INTEGRATED MARITIME SERVICES

OPERATIONAL AWARENESS ACROSS SECTORS AND SEAS

EMSA

A TAILORED APPROACH TO
MARITIME AWARENESS

Getting an overview of activities at sea is a challenge for most authorities working in the maritime domain. Coast guards and border guards, customs authorities, naval forces, pollution response centres, rescue coordination centres and vessel traffic management services — all need detailed, reliable information about what is happening at sea in real time to be able to perform their duties effectively.

At EMSA, we have the flexibility to integrate and combine maritime information according to unique operational requirements. Through EMSA's Integrated Maritime Services, a clear picture can be provided responding directly to the specific needs of a diverse and growing body of maritime users across Europe.

USING INTEGRATED MARITIME SERVICES

Over 150 different authorities across 26 EU and EFTA member states, five EU bodies and the European Commission currently use EMSA's Integrated Maritime Services (IMS) to access a tailored maritime traffic picture. This is made possible through a collaborative process involving information sharing and exchange, combined with advanced maritime data analysis which draws on EMSA's existing maritime applications and other external sources.

Since IMS became operational in 2014, EMSA has been developing and refining the individual services based on user feedback, ensuring that each is focused on the key objectives set. Regular information sessions and user consultations are held to share best practices, gather requirements and promote awareness of the maritime domain in Europe and beyond.

The services are offered directly to the participating member states and organisations, sparing them the cost and complexity of buying and managing the underlying hardware and software, and hosting separate data integration systems themselves.

Extensive training opportunites are available in the form of national sessions for the authorities of one or more member states, remotely held webinars for all IMS users, and train-the-trainer sessions for particular users within different authorities and user communities.

Users are also given full operational support, 24 hours a day, seven days a week through EMSA's Maritime Support Services centre.

DATA EXCHANGE AND DISTRIBUTION

The Integrated Maritime Services platform integrates and combines many different types of data, including data provided by the end user, to provide the most comprehensive and up-to-date maritime picture possible for a customised service tailored specifically to the user's requirements. The data can be shared easily and selectively based on a set of unique capabilities:

Data sources
Data is extracted from: vessel tracking systems (terrestrial AIS, LRIT and VMS); a global stream of satellite AIS; Earth Observation satellite imagery and related products; an enhanced search and rescue feature (E-SARSURPIC); additional ship and voyage information (Hazmat, port, waste, security and incident related); nautical charts; and, meteorological-oceanographic data.

Data serving different functions
Integrated maritime services are offered to all authorities with a function in the maritime domain and respond to the needs of users from a wide range of different functions. Users can share relevant and function-specific information with other national, regional and international authorities for missions at sea.

Data from users
Users may also provide their own data which can be correlated with other data, then sent back to them, and to those with whom they choose to share it.

Scale and geographical coverage
Different levels of detail can be shared at different geographical scales (national, regional and international). Users can choose to receive a general overview or specific data covering the areas of most interest to them. They can also query a specific time in the past, going as far back as 12 months.

Access rights management
Distribution policies are set by the data and information owners, complying with complex landscapes of access rights management.

Automated Behaviour Monitoring
This algorithm-based system analyses ship positions for the automatic detection of abnormal and specific vessel behaviour. Users are alerted automatically in real time when certain behaviour patterns are detected. A number of algorithms have been developed and can be programmed by the user directly. Approximately one thousand alerts are generated daily for different operational functions (safety, security, border protection, fisheries).

FLEXIBLE ACCESS VIA MULTIPLE INTERFACES

Integrated Maritime Services can be accessed through an online graphical user interface (known as SEG) available on desktop, laptop, and mobile devices (via the IMS app). The services are also available on system-to-system (S2S) interfaces. These interfaces enable users to view integrated data on their own systems, as well as receive alerts for specific pre-determined surveillance cases.
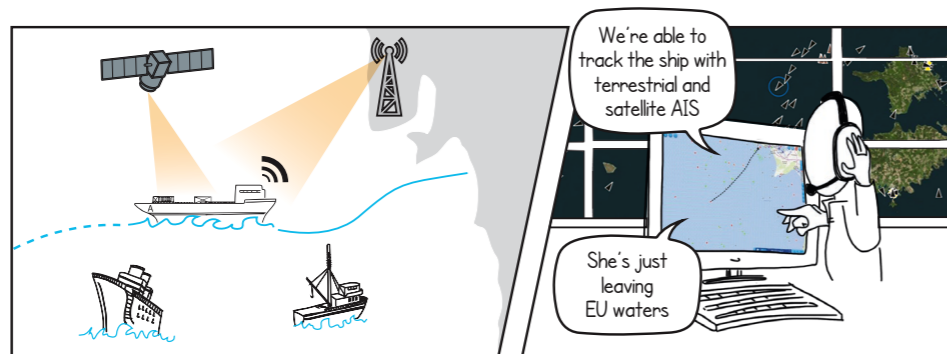
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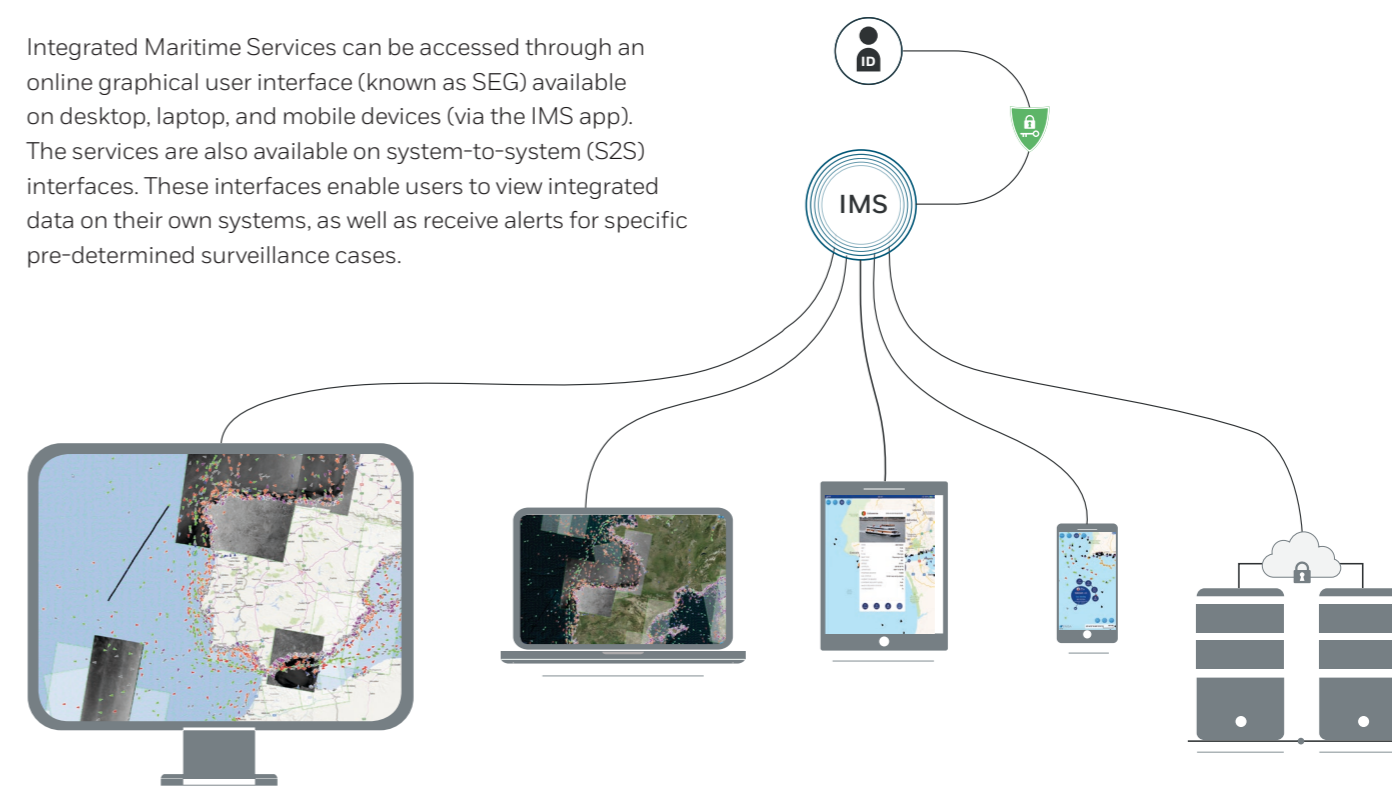
The scenario below shows EMSA's Integrated Maritime Services in an operational context. It takes us through one multi-faceted example in which authorities use the IMS services available to monitor a maritime traffic picture as it unfolds. Using integrated vessel reporting data, Automated Behaviour Monitoring and Copernicus Maritime Surveillance satellite imagery, the authorities are able to carry out their roles effectively and intervene for law enforcement and maritime safety purposes.
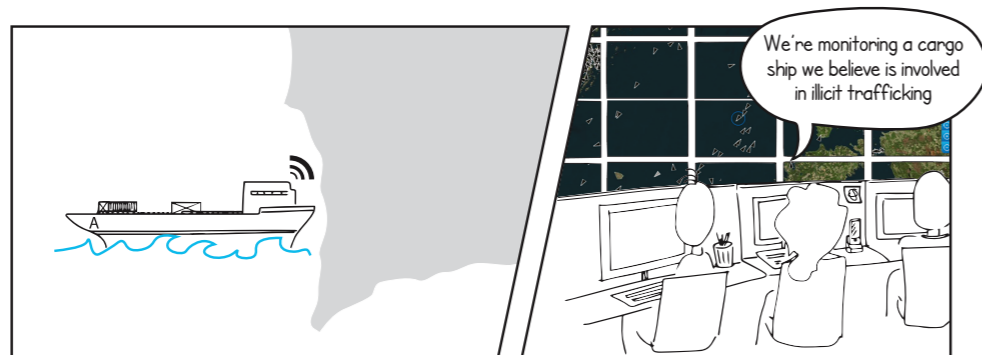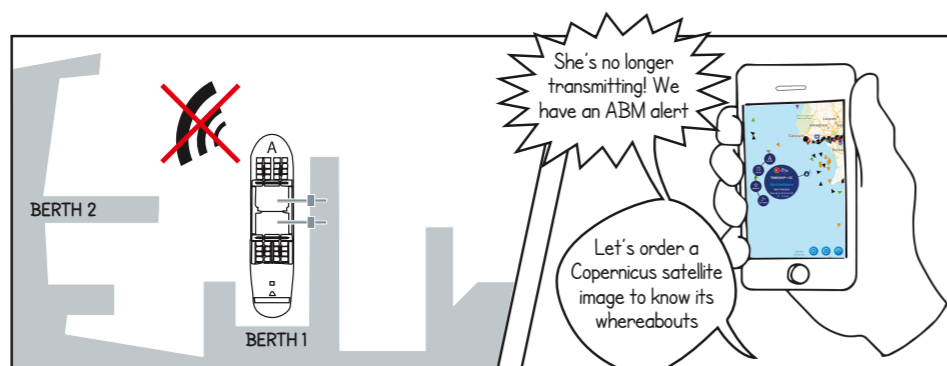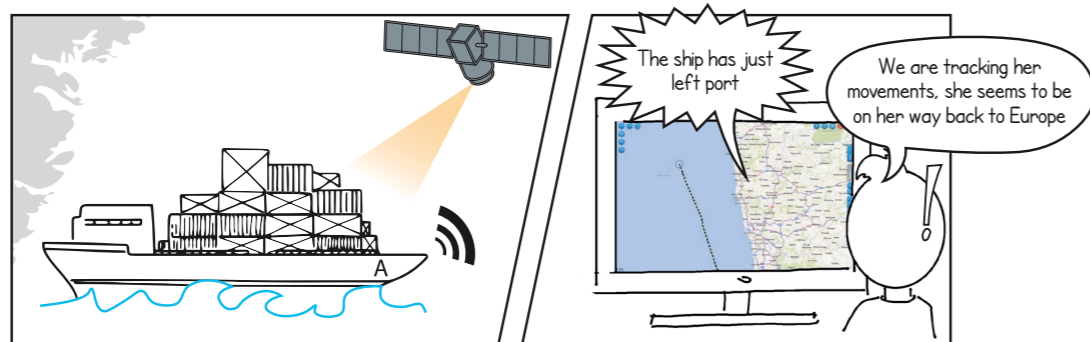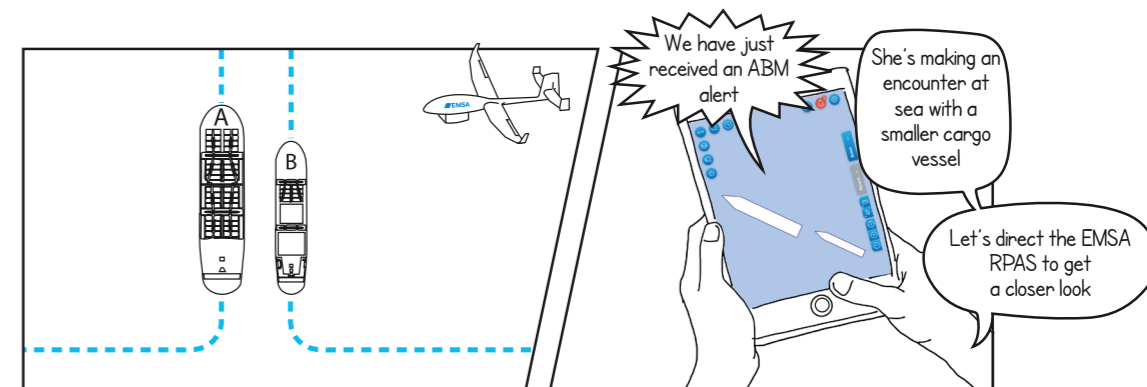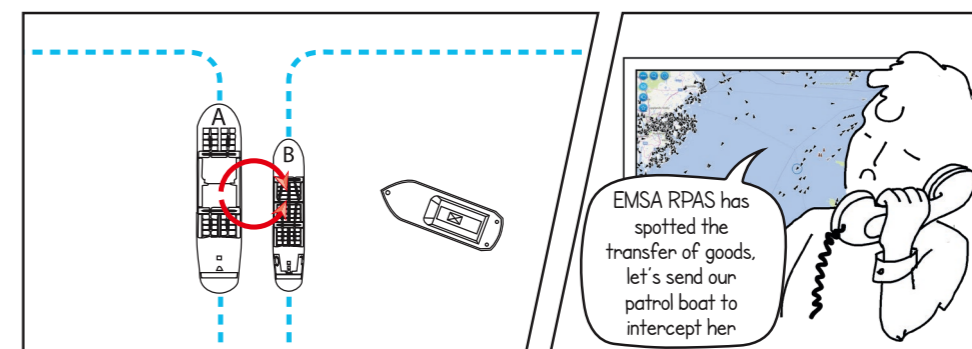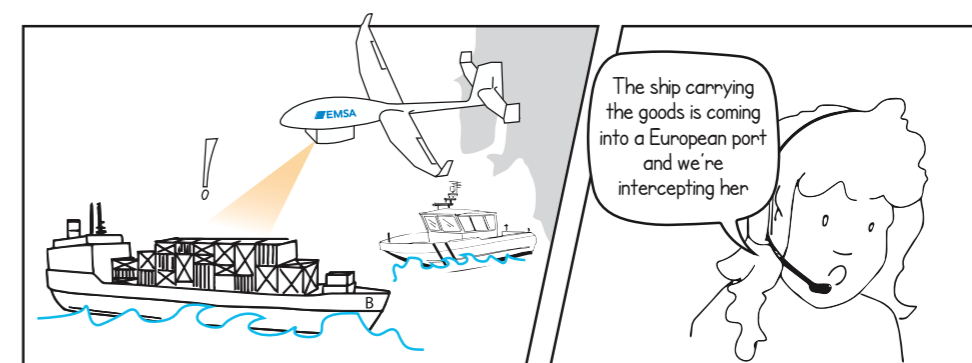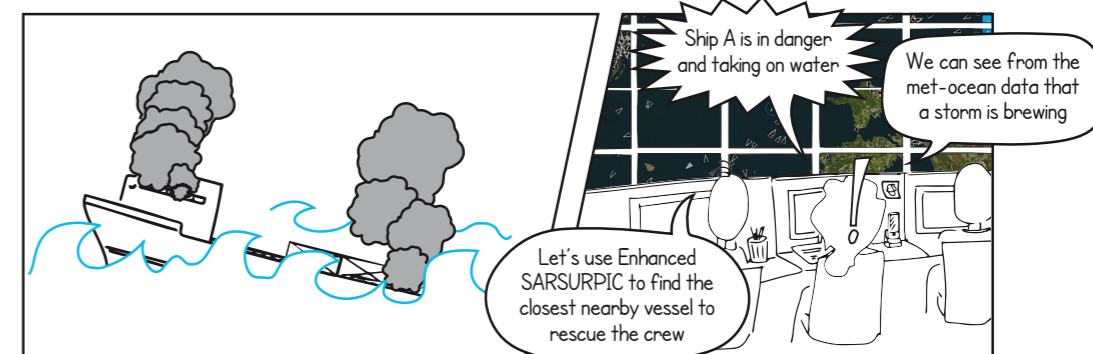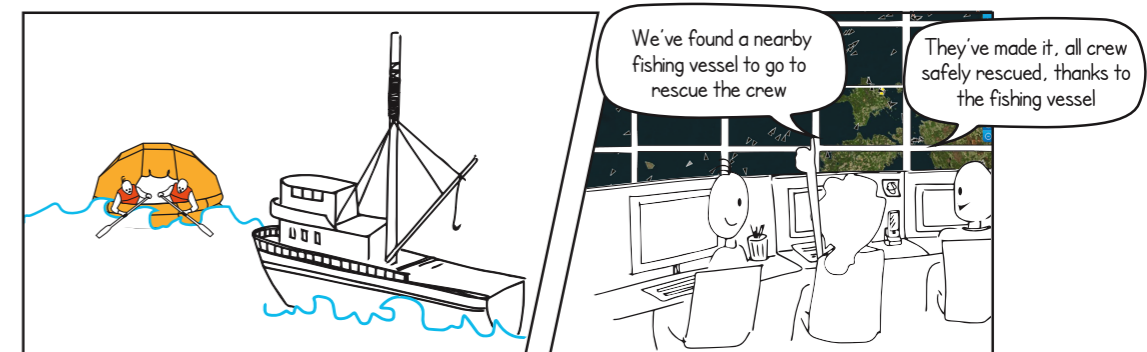
IMS IN USE ACROSS MULTIPLE SECTORS

Integrated Maritime Services are being used to support a range of different maritime activities. Some specific examples are provided below.

FISHERIES MONITORING AND CONTROL

Supporting the fight against IUU

The European Fisheries Control Agency uses the full set of IMS services and data sets, integrated with fisheries specific information for regional fisheries monitoring and control activities. Copernicus Maritime Surveillance Earth Observation products and Automated Behaviour Monitoring capabilities are used in specific control campaigns.

VESSEL TRAFFIC MONITORING

A national, regional and global view

IMS are used by the Irish Coast Guard to monitor the situation at sea and to generate enhanced SARSURPIC (search and rescue surface picture) in the event of an emergency far from the coast. The Irish authorities also use the services' Automated Behaviour Monitoring capability to oversee Traffic Separation Schemes.

MARITIME BORDER CONTROL

Supporting EU agencies and member states

IMS provide Frontex with information on vessel positions from all sources, as well as with Earth Observation data and products and Automated Behaviour Monitoring capabilities for anomaly detection.

MARITIME POLLUTION MONITORING

Awareness for a clean sustainable ocean

Danish organisations use the SEG graphical interface to access IMS in order to monitor vessels of interest, as well as to detect and follow up on potential cases of pollution.

MARITIME LAW ENFORCEMENT

Upholding national and international law

The Maritime Analysis and Operations Centre-Narcotics (MAOC–N) uses the full set of IMS services and data sets, including Automated Behaviour Monitoring capabilities and Copernicus Maritime Surveillance Earth Observation products for the detection of illicit activities.

SYSTEM-TO-SYSTEM

Enriching national information systems

Maritime authorities of Iceland, Italy and Poland all use the IMS system-to system capability, enabling them to have satellite AIS data streamed directly to their own national information systems for an enhanced maritime picture in the area of maritime safety and security.

MARITIME SAFETY

Supporting rescue operations

The Spanish Maritime Safety and Rescue Society, SASEMAR, uses the IMS services' integrated data sets and Satellite AIS to locate vessels in remote areas. Enhanced SARSURPIC capabilities make it possible for SASEMAR to locate casualties and get on-the-spot assistance for emergencies located far from the coast.

MARITIME CUSTOMS CONTROL

An historical and real-time perspective

Spanish customs authorities use both the IMS historical track and Automated Behaviour Monitoring capabilities to follow vessels of interest and support relevant investigations.

Looking forward

In an Age of Big Data, more information is available to us than ever before. We can now process, store and share this information at unprecedented volumes in a relatively seamless way. The extent to which we can harness this information to enhance maritime surveillance and use modern technology to analyse, link and extract value from big data will play a central role in determining the future of EMSA's Integrated Maritime Services. For this reason, EMSA is investing in cloud-based infrastructure, artificial intelligence and deep learning. This will help to further develop capabilities in the areas of detecting and monitoring vessel behaviour patterns, providing risk analysis, and facilitating access to historical aggregated vessel data going back five years and more. The features will bring benefits to participating member states and the European Commission as shared efforts and investments pay off by building a clear and comprehensive, common picture encompassing the full range of EU maritime interests.
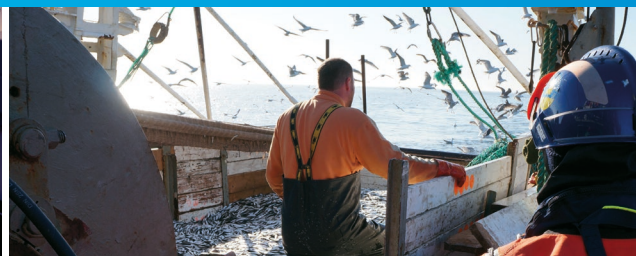
ABOUT THE EUROPEAN MARITIME SAFETY AGENCY

The European Maritime Safety Agency is one of the European Union's decentralised agencies. Based in Lisbon, the agency's mission is to ensure a high level of maritime safety, maritime security, prevention of and response to pollution from ships, as well as response to marine pollution from oil and gas installations. The overall purpose is to promote a safe, clean and economically viable maritime sector in the EU.

How to gain access to IMS

Requests for access to EMSA's Integrated Maritime Services should be made via email to:
ims@emsa.europa.eu

emsa.europa.eu

Get in touch for more information

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