

# Integrated Maritime Services EMSA integrated data

**IMDatE Meeting**  
19 October 2012

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**EMSA - European Maritime Safety Agency**  
**C.3.4 Maritime Monitoring Services**

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- b) Vessel Traffic Services (VTS)
- c) Integrated Ship profile

**Maritime  
Community**

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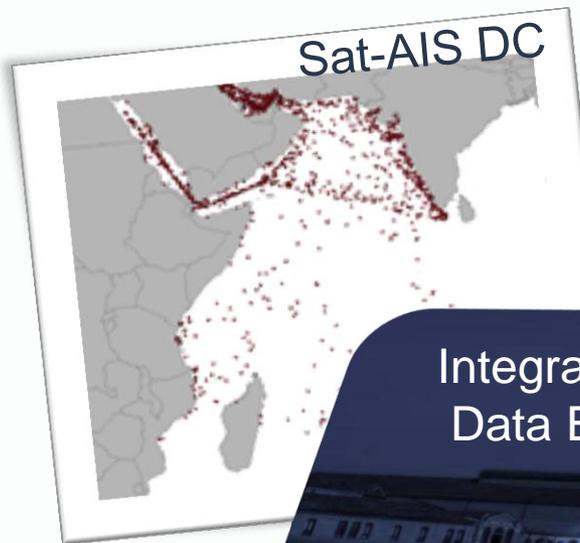
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- a) Anti-Piracy Monitoring (MARSURV-1)
- b) Border control (MARSURV 2)
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# EMSA operational systems



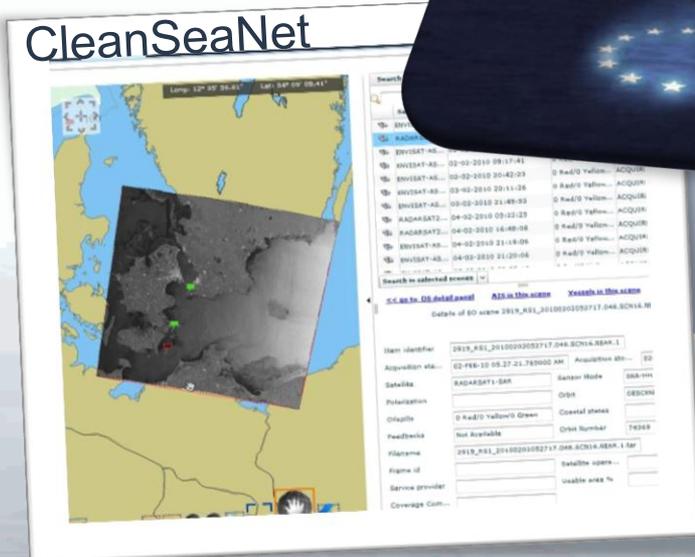
Sat-AIS DC



EU LRIT DC



Integrated Maritime Data Environment



CleanSeaNet



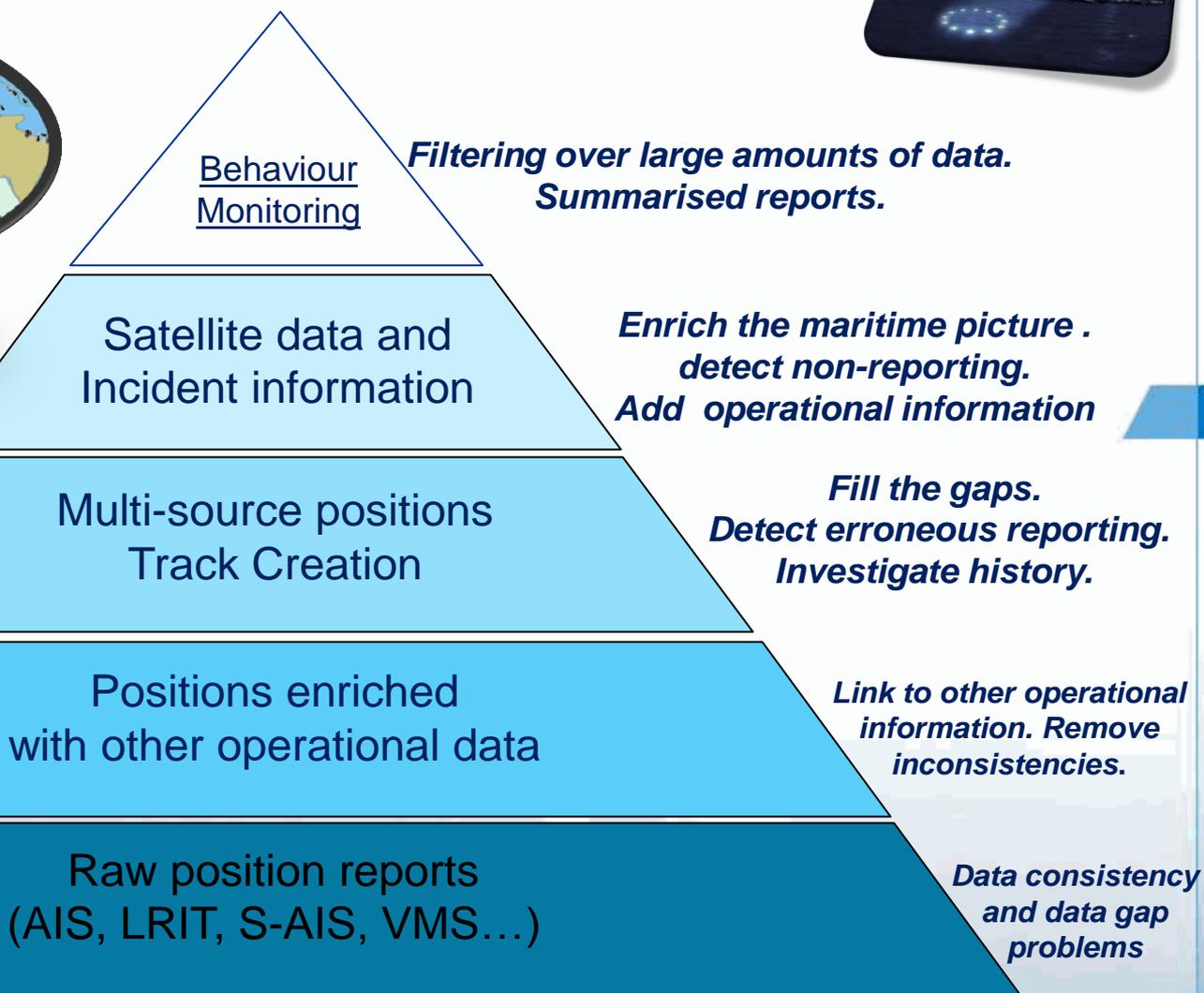
SafeSeaNet

# 1. Integrated Maritime Monitoring Concept

## Possible Use Cases

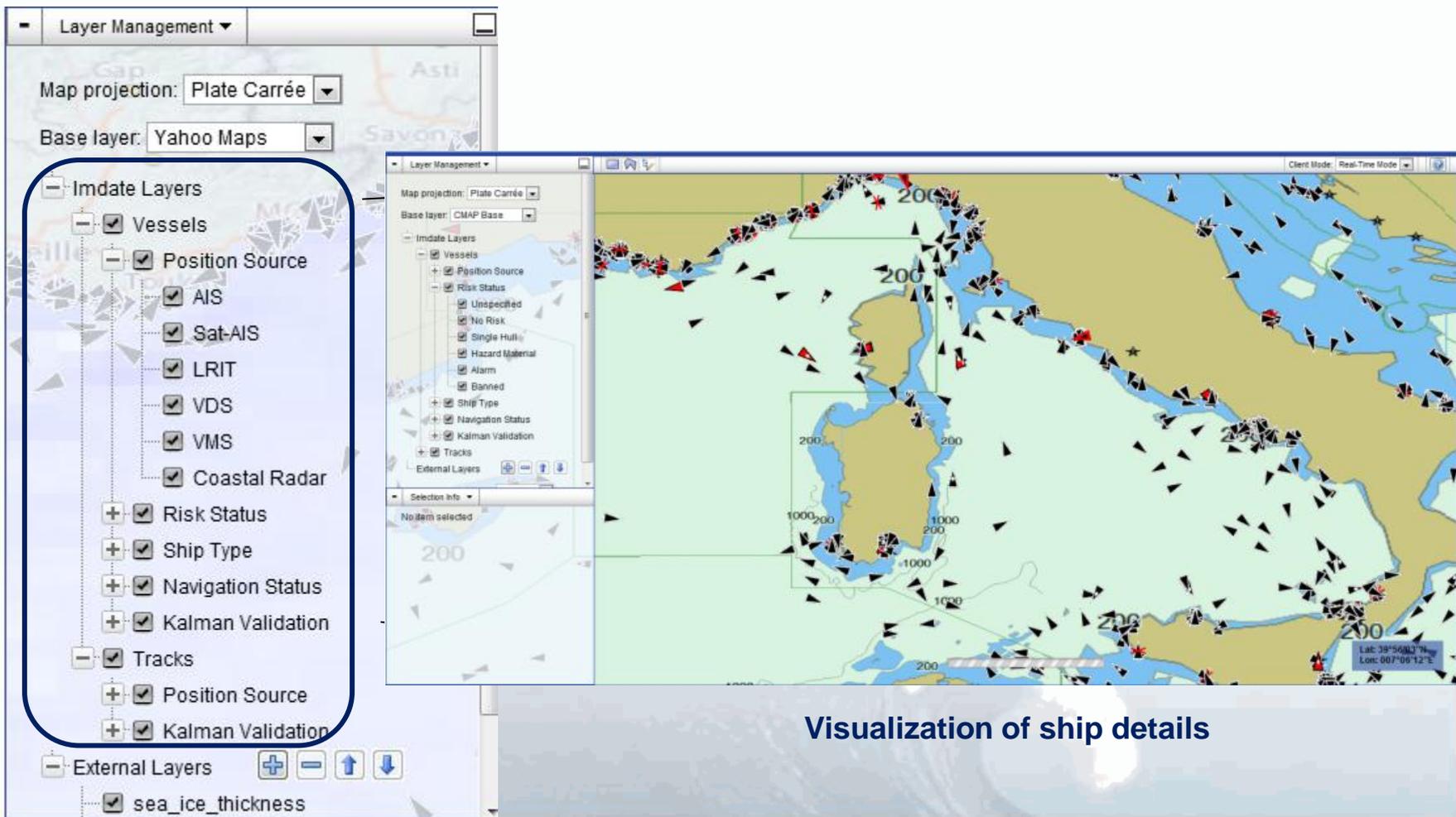
- a) Search and Rescue (SAR)
- b) Vessel Traffic Services (VTS)
- c) Integrated Ship profile

# 1 – Intro: Maritime Data – Higher Value Services



# 1 – Intro: Visualisation platform

## Multiple layers of data



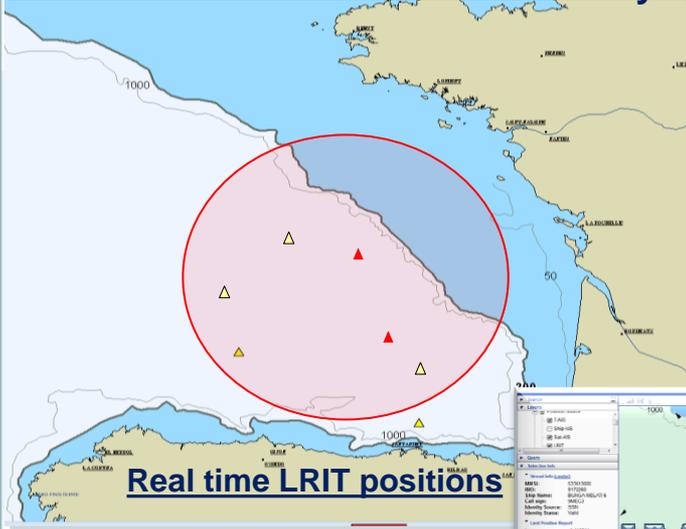
The screenshot displays the 'Layer Management' interface of the visualization platform. It features a 'Layer Management' window with a 'Map projection' dropdown set to 'Plate Carrée' and a 'Base layer' dropdown set to 'Yahoo Maps'. A large, rounded rectangular area highlights the 'Imdate Layers' section, which includes a tree view of data layers with checkboxes for each:

- Vessels
  - Position Source
    - AIS
    - Sat-AIS
    - LRIT
    - VDS
    - VMS
  - Coastal Radar
- Risk Status
- Ship Type
- Navigation Status
- Kalman Validation
- Tracks
  - Position Source
  - Kalman Validation

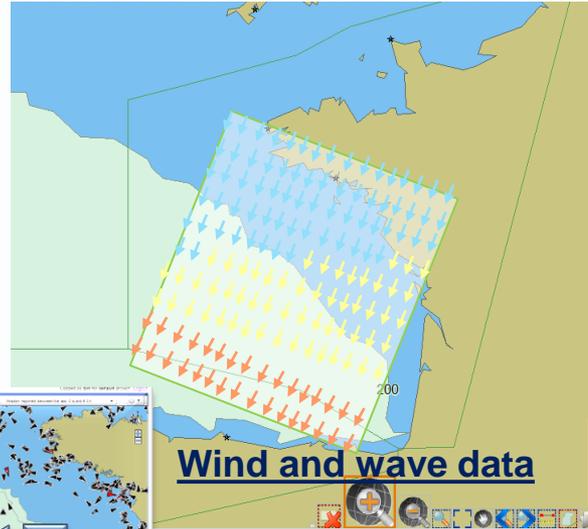
Below the 'Imdate Layers' section, there are 'External Layers' with a '+' icon and a 'sea\_ice\_thickness' layer with a checked checkbox. To the right, a larger window shows a map of the Mediterranean Sea with numerous ship icons. A 'Layer Management' window is overlaid on this map, showing a more detailed tree view of the 'Imdate Layers' section, including 'Risk Status' (with sub-items: Unspecified, No Risk, Single Hull, Hazard Material, Alarm, Banned), 'Ship Type', 'Navigation Status', 'Kalman Validation', and 'Tracks'. A 'Selection info' window at the bottom of this map view shows 'No item selected'. The map also displays depth contours (200, 1000) and a coordinate box in the bottom right corner: 'Lat: 39°50'03"N, Lon: 007°09'12"E'. The text 'Visualization of ship details' is positioned below the map.

# 1a – Possible Use Case: Search & Rescue

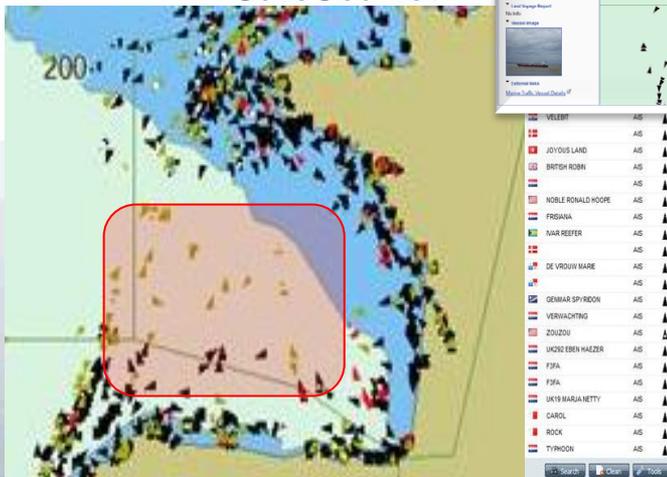
LRIT SAR SURPIC Functionality



CSN Satellite derived meteo info



SafeSeaNet



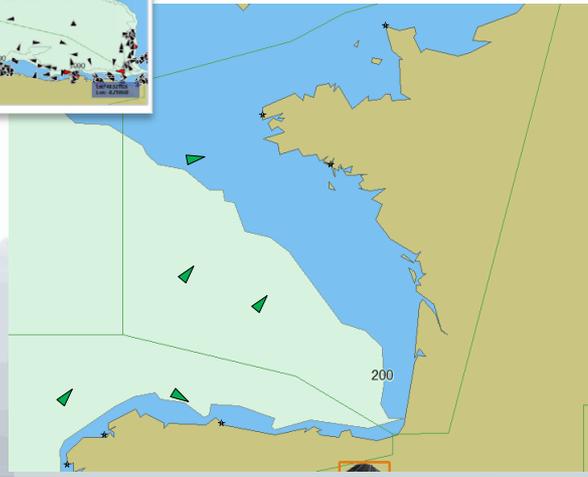
**IMDatE**

IMDatE interface showing a detailed view of a vessel's information, including:

- IMO: 97101100
- MMSI: 831000
- Call sign: 9M2014
- Call name: 9M2014
- IMO type: 200
- Length: 48.00 m
- Beam: 12.00 m
- Operator: 87100000
- Position Source: Starlink
- Registration: 87100000
- IMO type: 200
- Call name: 9M2014
- Call sign: 9M2014

VELEBT	AS
JOYOUS LAND	AS
BRTEH ROBIN	AS
NORLE RONALD HOSPE	AS
FRSIVANA	AS
WAR REEFER	AS
DE VROUW MARE	AS
GEMBAR EP-PHOON	AS
VERHACHTING	AS
ZOUZOU	AS
UCHOZ EBEN HAZZER	AS
FIFA	AS
FIFA	AS
UK19 MARGA NETTY	AS
CAROL	AS
ROCK	AS
TYPHOON	AS

VMS data



(NRT AIS, LRIT, Hazmat)



# 1b - Possible Use Case: VTS

The screenshot displays a VTS (Vessel Traffic Service) interface. On the left, there is a sidebar with a search bar, layers panel, and a detailed information panel for a selected vessel. The main area is a map of the Mediterranean Sea and surrounding regions, overlaid with various alert areas and vessel tracks. A large purple polygon highlights a significant area in the central Mediterranean. Other smaller alert areas are marked with circles and rectangles, some containing numbers like 10, 20, 45, and 24. The bottom of the interface features an event timeline and a time axis from 7hr to 21hr.

**other alert areas:**

- Marine protected areas
- Wind farms
- Fishing zones
- Areas prohibited for anchorage
- Wrecks
- TSS

**Vessel Info (center)**

**MMSI:**  
**Ship Name:**  
**Flag:**  
**Call sign:**  
**Ship type:** Pleasure Craft (37)  
**Length:** 45 m  
**Identity Source:** AIS TYPE 5  
**Identity Status:** Valid

**Last Position Report**

**Lon:** 14.502143  
**Lat:** 35.901550  
**Transmission Time:** 2012-10-17 09:44:18  
**Speed:** 0.00 knots  
**Heading:** 236 degrees  
**Position Source:** T-AIS  
**Navigational Status:** At anchor  
**Enrichment:** Single Hull  
**Validity Flag:** Validated

**Last Voyage Report**  
No Info

**Vessel image**

**External links**  
[Marine Traffic Vessel Details](#)

**Event timeline**

Position Report
Voyages

7hr 8hr 9hr 10hr 11hr 12hr 13hr 14hr 15hr 16hr 17hr 18hr 19hr 20hr 21hr

# 1b – Possible Use Case: VTS

The screenshot displays the Imdate Client VTS interface. The main map shows a coastal area with depth contours and several vessel icons. A search panel on the left allows for filtering by MMSI, area, time, and service options. Three alert pop-ups are visible: 'Route Check Alert ALR\_04', 'Reserved Zone Entry Alert ALR\_02', and 'Rendezvous Alert ALR\_01'. A table at the bottom right lists active alerts.

**Area Centric Query Panel:**

- Area: Lat: 49° 43' 16" N, Lon: 0° 40' 48" W, +/- 10 Nm
- Time: 2012-10-18, 0 min
- Service options:  Vessel Tracks,  Uncorrelated Positions,  Incidents
- Position sources: ALL
- Category: All
- Type: All

**Alert Pop-ups:**

- Route Check Alert ALR\_04:** Type: Route Check, Timestamp: 2012-10-17 03:00:00, Lon: 003°10'48"W, Lat: 50°17'24"N, Description: Alert description
- Reserved Zone Entry Alert ALR\_02:** Type: Reserved Zone Entry, Timestamp: 2012-10-16 22:00:00, Lon: 001°43'48"W, Lat: 49°10'12"N, Description: Vessel entered in reserved zone
- Rendezvous Alert ALR\_01:** Type: Rendezvous, Timestamp: 2012-10-16 06:47:00, Lon: 000°40'48"W, Lat: 49°43'16"N, Description: Rendezvous between two vessels, Involved Vessels: EYPERE DANIEL, EYL EUROPE

**Active Alerts Table:**

ID	Type	Lat	Lon	Timestamp
ALR_01	Rendezvous	49.721	-0.68	2012-10-16 06:47:00
ALR_02	Reserved Zone Entry	49.17	-1.73	2012-10-16 22:00:00
ALR_04	Route Check	50.29	-3.18	2012-10-17 03:00:00



# 1c – Possible Use Case: Integrated Ship Profile

Logged as bill for default project. [Logout](#)

**Search**

**Layers**

**Query**

- Area Centric Query
- Vessel Track Query
- Integrated Ship Profile Query**

Vessels:

Last search [dropdown] [icon] [icon] [icon]

Vessels

- NAUTILUS

Begin Date: 2012-10-15 00:00:00

End Date: Now

**Selection Info**

IMO:  
Ship Name:  
Call sign:  
Identity Source:  
Identity Status:

**Last Position Report**

Lon: -9.229697  
Lat: 44.199377  
Transmission Time: 2012-10-18 07:54:06  
Speed: 12.00 knots  
Heading: 33 degrees  
Position Source: T-AIS  
Navigational Status: Under way using engine  
Enrichment: Haz Materials  
Validity Flag: Validated

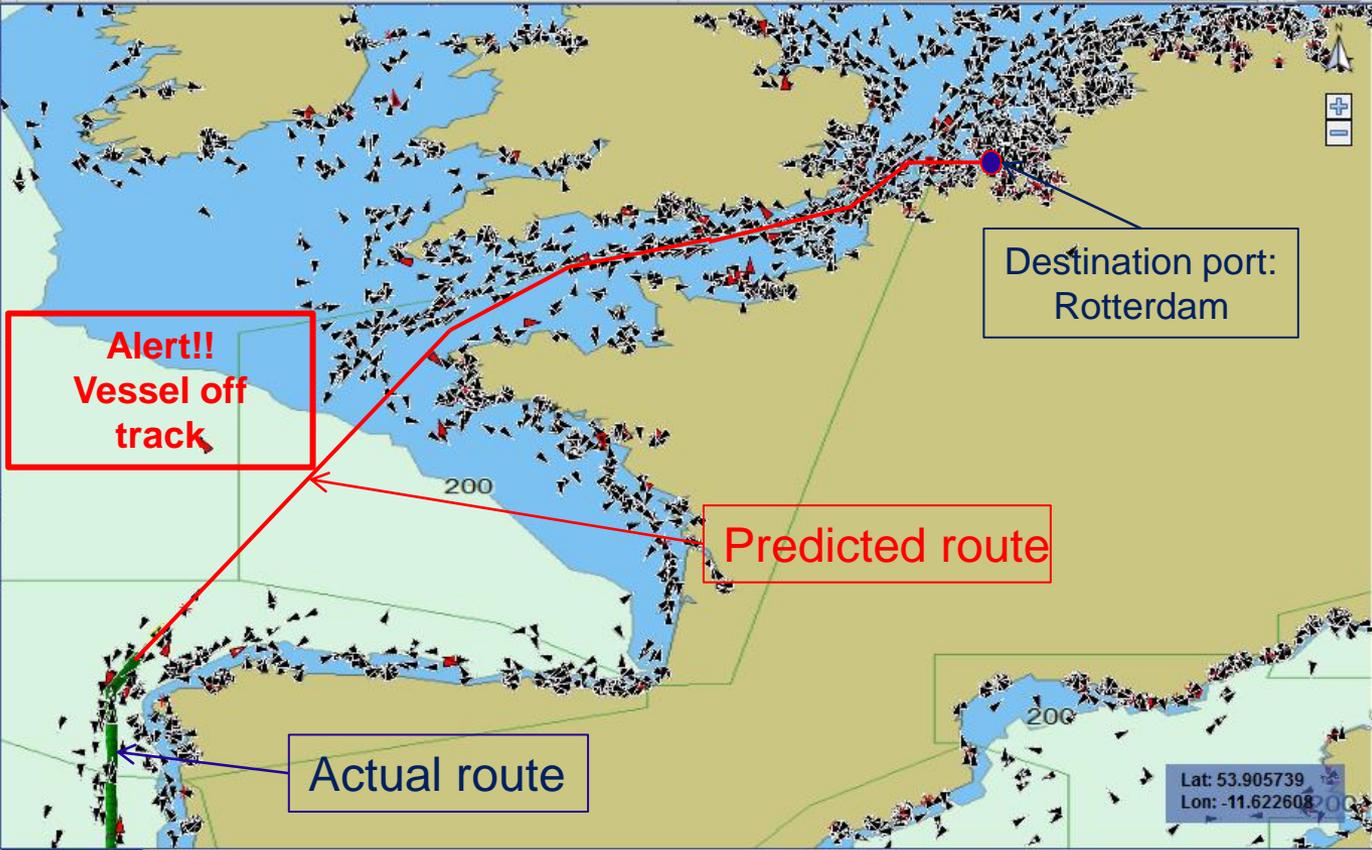
**Last Voyage Report**

Origin: [ROTTERDAM](#)  
Destination: [ROTTERDAM](#)  
Departure Time: 2012-10-17T22:15:26Z  
ETA: 20 Oct 22:00

**Vessel image**



Vessel filter: [icon] Position reported between the last: 0 s and 6.0 h



**Alert!! Vessel off track**

**Destination port: Rotterdam**

**Predicted route**

**Actual route**

Lat: 53.905739  
Lon: -11.622608

**Event timeline**

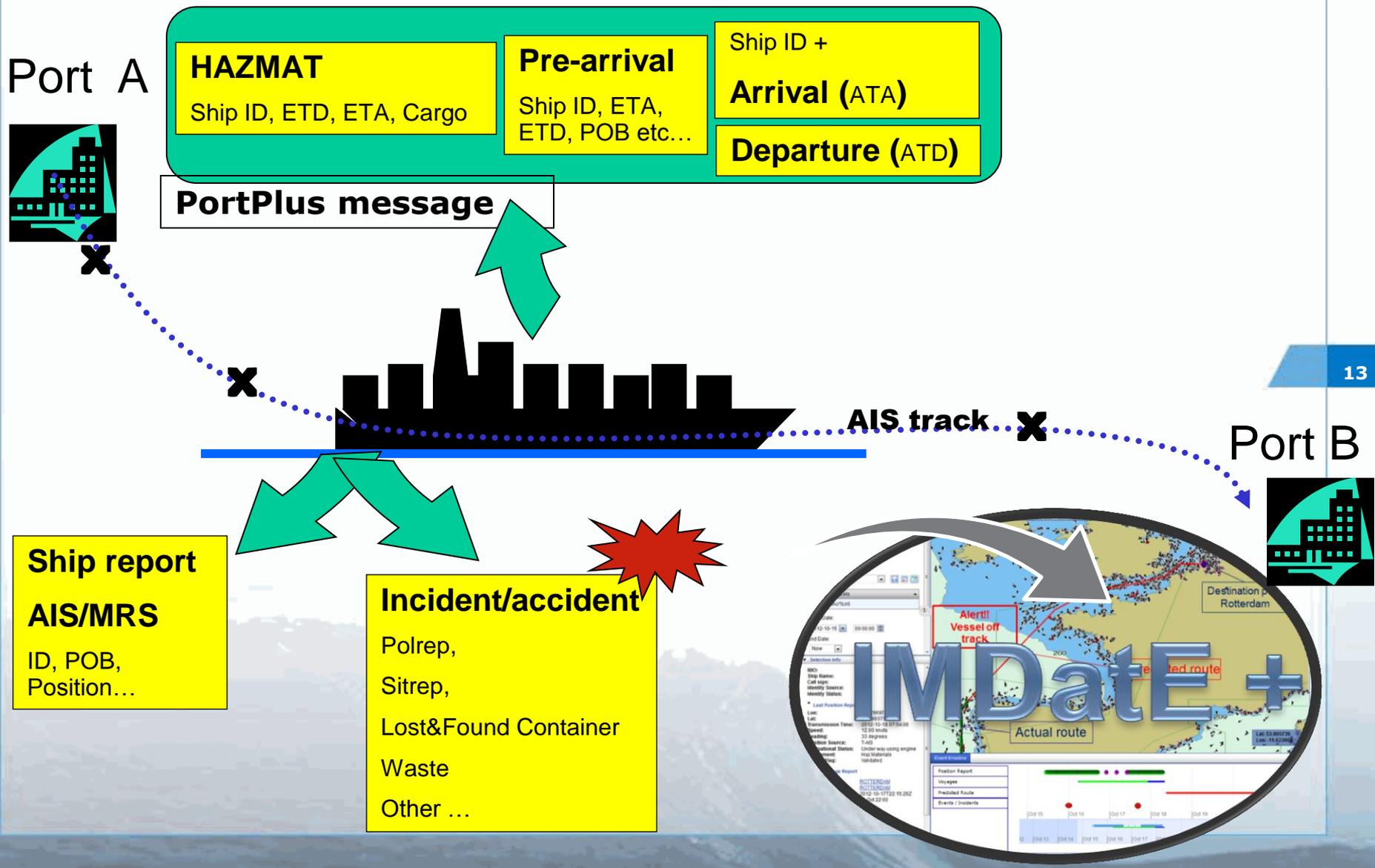
Position Report
Voyages
Predicted Route
Events / Incidents



Oct 15 Oct 16 Oct 17 Oct 18 Oct 19 Oct 20 Oct 21

Oct 12 Oct 13 Oct 14 Oct 15 Oct 16 Oct 17 Oct 18 Oct 19 Oct 20 Oct 21 Oct 22 Oct 23 Oct 24

# 1c – Possible Use Case: Integrated Ship Profile



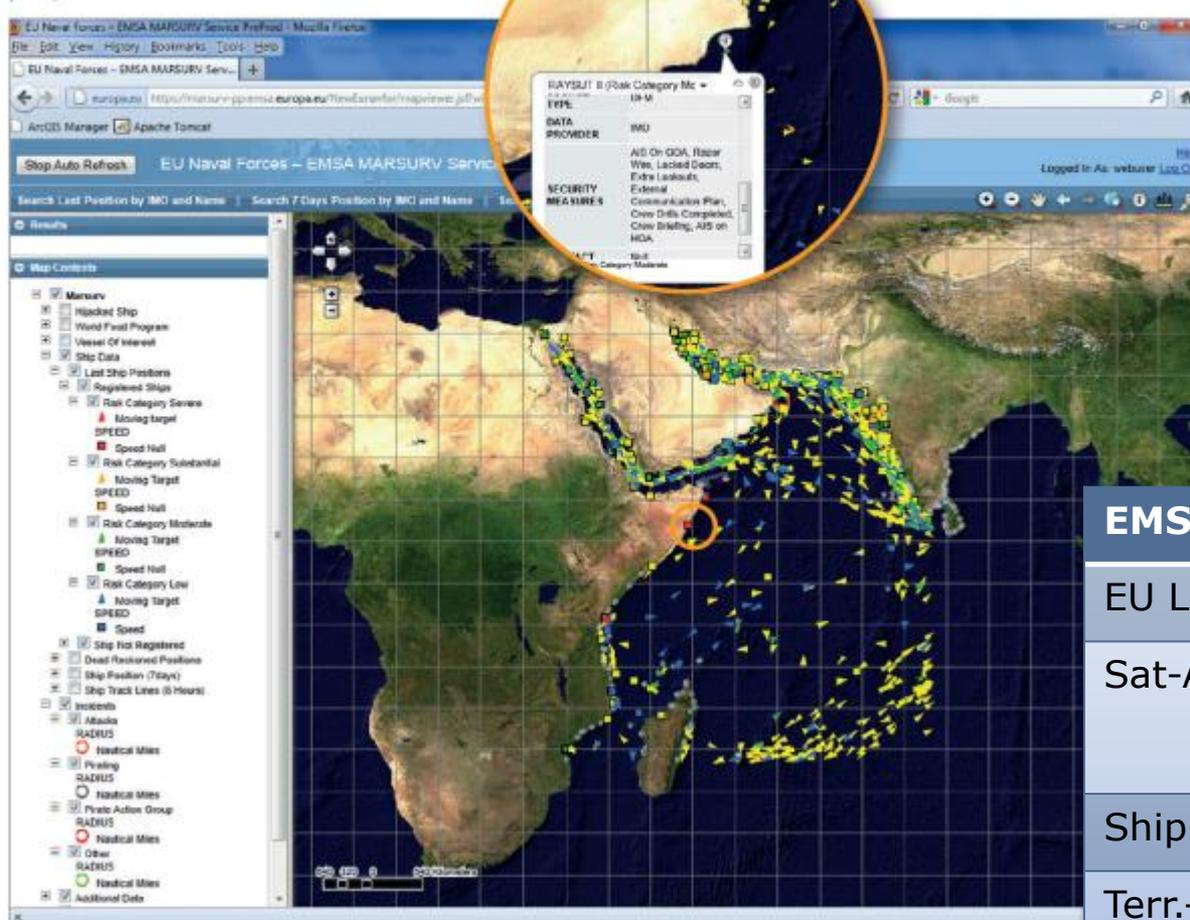
## 2. Integrated Maritime Monitoring Concept Pilot Projects

- a) Anti-Piracy Monitoring (MARSURV-1)
- b) Border control & Drugs Trafficking (MARSURV 2)
- c) Fishery control (MARSURV-3)

# 2a – anti-piracy support merchant fleet monitoring (pilot project MARSURV-1 for EUNAVFOR)

Dedicated services: MarSurv combines relevant EMSA vessel traffic and satellite information with vessel-related piracy risk information from EUNAVFOR.

The result: a near-real-time, enhanced maritime "white picture" of the users area of interest.



15

EMSA data	EUNAVFOR data
EU LRIT	Int. LRIT up to 85%
Sat-AIS	Piracy Risk register (incl. measures, communication info)
Ship-AIS	Piracy incidents
Terr.-AIS	

# 2b - border monitoring (pilot project MARSURV-2 for FRONTEX)



Detected Vessel

The screenshot shows a web browser window displaying the MARSURV-2 interface. A map shows several detected vessels. A callout box provides details for a specific vessel:

Satellite Detected Vessels (1)	
SPOTS_HRG1_2011-12-15-14-23-06-338_3-1412 / 2011-12-15T14:24	
Detection ID:	SPOTS_HRG1_2011-12-15-14-23-06-3
Time stamp:	2011-12-15T14:24:22Z
Latitude:	36°12.56' N
Longitude:	2°48.15' W
Heading:	
Length:	330
Width:	

The main map area shows a satellite image of a vessel with the following data overlaid:

```

29N02009 0000 VIC SPA 1000 EUL AUTO 0000
16:00:32 CEAT
UTC+0.0
    
```

Below the satellite image, there is a table of vessel parameters:

ACFT	7 00 09 10 11 11	TGT
4:38:06S 066°	162°	4:40:30S
52:20:05E 2644FT	0N	2.0NM 52:20:53C

Incident details

The incident details window shows the following information:

Detection (1) Incident Route (1)	
IR_010_2011_05_27_Almeria_M	
Place of Departure:	Les Sablettes (Mostaghanem)
Means of Transport:	inflatable/rubber boat
Comments:	Boat detected by Italian airplane of Guardia de Finanza. Intercepted at 17:30 hours of May 27th by Maritime Rescue "Salvamar Calope" and Maritime Guardia Civil Patrol "Rio Nacimiento" at 24.7 NM Southeast of Cabo de Gata (Almeria). Twenty Algerian migrants on board, all adults in good health
Provided by LCC:	Almeria
Reference to Operation	IN (incl. Early Detection)

Image snapshot

Feature information box

## 2c - Fishery control monitoring (*pilot project MARSURV-3 for EFCA*)

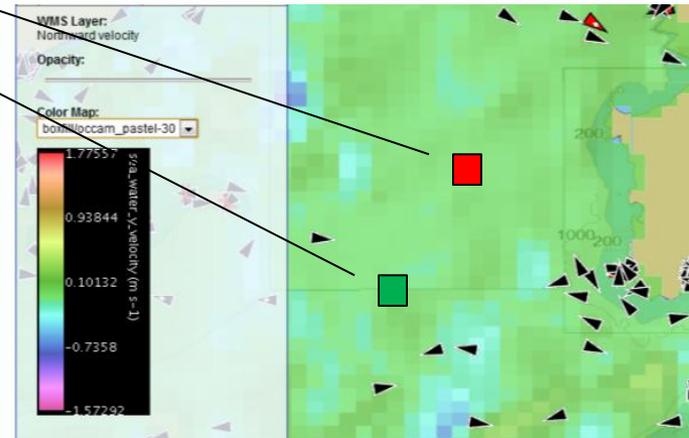
- The European Fisheries Control Agency (EFCA) coordinates the monitoring of Bluefin Tuna fisheries in the Mediterranean Sea and the Eastern Atlantic waters.
- The control, inspection and surveillance of fishery activities both at sea and ashore are done in cooperation with the Member States and the Commission.
- The MARSURV-3 pilot project began on 15 May and covered six pre-defined zones of interest in the Mediterranean Sea.
- The MARSURV-3 monitoring service combines specific fisheries information with maritime data available at EMSA for which access has been granted.
- The project was developed using the first version of EMSA Integrated Maritime data Platform (IMDatE).

## 2c - Fishery control monitoring (pilot project *MARSURV-3* for EFCA)

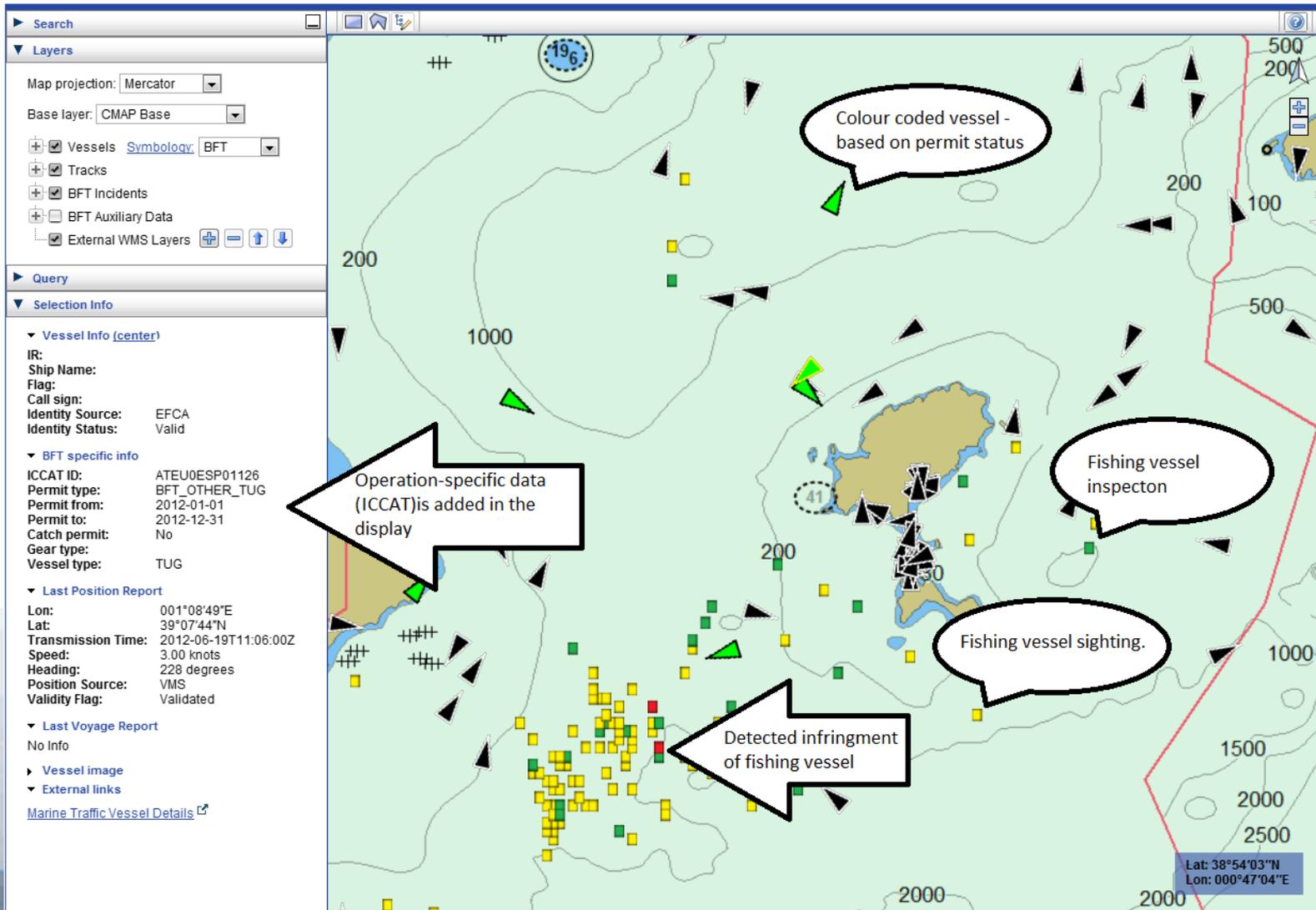


On-site inspections,  
intelligence data,  
sightings, etc.

Visualisation of external information



## 2c - Fishery control monitoring (pilot project MARSURV-3 for EFCA)



# 2c - Fishery and maritime traffic control monitoring

## (pilot project MARSURV-3 for EFCA)

Imdate Client  
Logged as: Bill Evans on project: 3 Bluefin Tuna  
Lon: 014 30 42 E

Map projection: Mercator  
Base layer: CMAP Standard

Vessels **Symbology: BFT**  
 Tracks  
 BFT Incidents  
 BFT Auxiliary Data  
 External WMS Layers

**Query**  
**Selection Info**

**Vessel Info (center)**

MMSI:  
Ship Name:  
Flag:

Call sign:  
Ship type: Fishing (30)  
Length: 27 m  
Identity Source: AIS TYPE 5  
Identity Status: Valid

**Last Position Report**

Lon: 014°30'43"E  
Lat: 35°53'11"N  
Transmission Time: 2012-09-02T23:09:40Z  
Speed: 0.00 knots  
Heading: 0 degrees  
Position Source: T-AIS  
Navigational Status: Engaged in Fishing  
Enrichment: No Notification  
Validity Flag: Validated

**Last Voyage Report**  
No Info

**Vessel image**

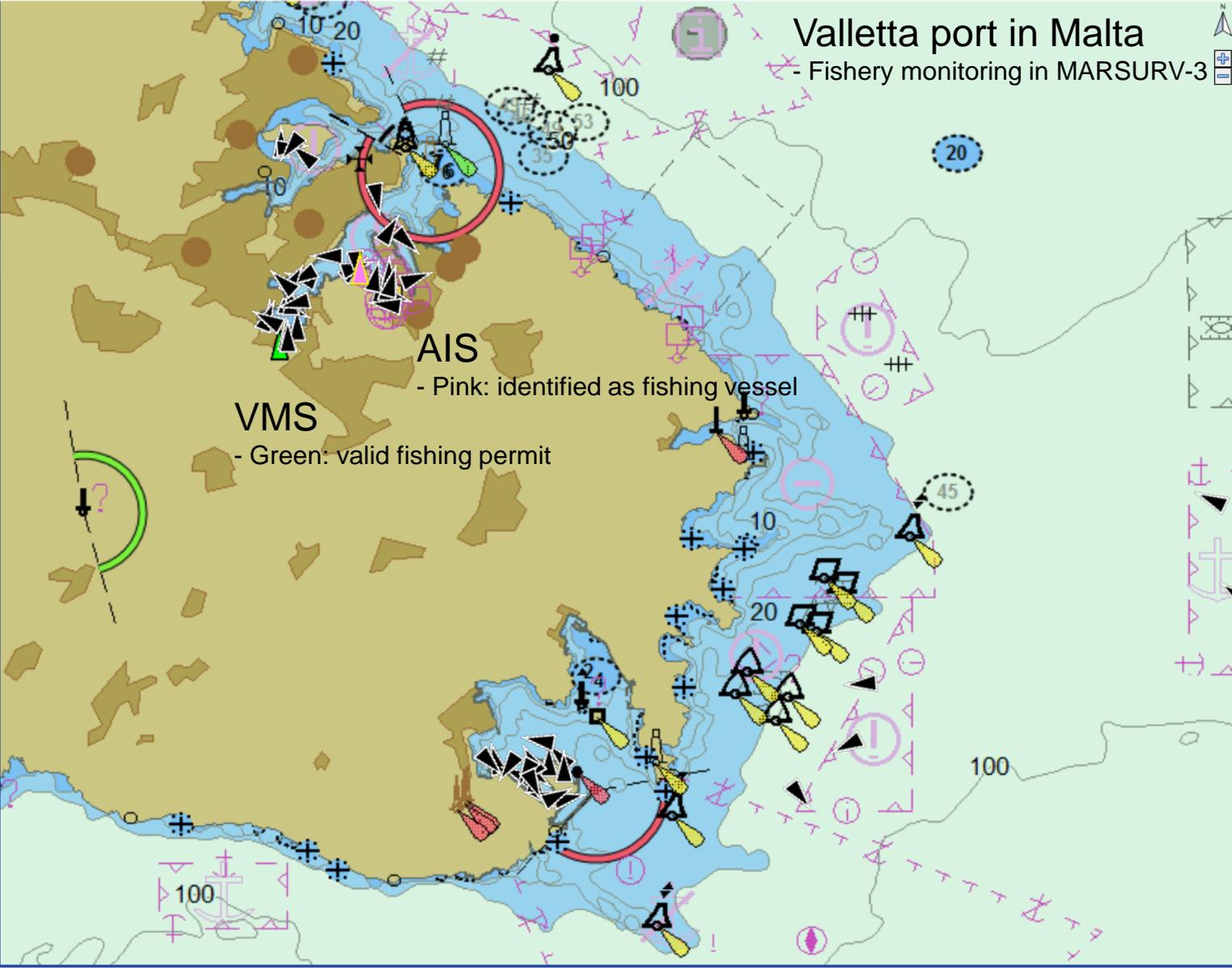


**External links**  
[Marine Traffic Vessel Details](#)

**Valletta port in Malta**  
- Fishery monitoring in MARSURV-3

**VMS**  
- Green: valid fishing permit

**AIS**  
- Pink: identified as fishing vessel



# 2c - Fishery and maritime traffic control monitoring

(pilot project MARSURV-3 for EFCA)

The screenshot displays a maritime monitoring application with several panels:

- Search Panel:** Includes a search bar and map controls.
- Layers Panel:** Shows map projection (Mercator) and base layer (CMAP Base). Layers include Vessels (Symbolology: BFT), Tracks, BFT Incidents, BFT Auxiliary Data, and External WMS Layers.
- Query Panel:** Contains Selection Info and Vessel Info (center).
- Vessel Info (center):**
  - IR: Ship Name, Call sign, Identity Source, Identity Status
  - Last Position Report:
    - Lon: 001°02'28"E
    - Lat: 38°39'04"N
    - Transmission Time: 2012-06-19T09:54:00Z
    - Speed: 8.00 knots
    - Heading: 105 degrees
    - Position Source: VMS
    - Validity Flag: Validated
  - Last Voyage Report: No Info
  - Vessel image and External links
  - Marine Traffic Vessel Details
- Vessel Tracks Panel:**
  - Number of tracks: 1
  - MMSI: [dropdown]
  - Vessel Info (center):
    - MMSI: [blank]
    - Ship Name: [blank]
    - Flag: [blank]
    - Call sign: [blank]
    - Ship type: [blank]
    - Length: [blank]
    - Identity Source: AIS TYPE 5
    - Identity Status: Valid
  - Last Position Report:
    - Lon: 001°24'41"E
    - Lat: 39°12'46"N
    - Transmission Time: 2012-06-19T11:23:23Z
    - Speed: 3.00 knots
    - Heading: 233 degrees
    - Position Source: T-AIS
    - Navigational Status: Invalid (15)
    - Enrichment: No Notification
    - Validity Flag: Validated
  - Last Voyage Report: No Info
  - Vessel image and External links
  - Marine Traffic Vessel Details
- Map:** Shows a vessel track (green dashed line with arrows) moving from the coast towards the open sea. Bathymetry contours (100, 200, 1000) are visible. A coordinate box shows Lat: 39°06'18"N and Lon: 001°18'36"E.
- Bottom Panel:**
  - Number of tracks: 1 | Total track points: 226
  - MMSI: [dropdown]
  - Number of positions: 226
  - Export Format: EXCEL
  - Table with columns: Timestamp, Lat, Lon, Heading, Speed

### 3 - Way forward

- IMDatE has demonstrated:
  - good interchangeable integrated platform for EMSA services
  - the benefit of integrated data fusion and visualization tools
  - Flexible import and export of new data or information streams
- Options for the future with regards to maritime services to MS:
  1. EMSA to design together with MS also a permanent integrated “Maritime Monitoring” service for daily monitoring duties and to support operations for the maritime community
  2. EMSA to provide *ad-hoc* support for specific operations

Map projection: Plate Carrée

Base layer: Yahoo Satellite

Imdate Layers

- Vessels [Symbol legend](#)
- Position Source
- Risk Status
- Ship Type
- Navigation Status
- Kalman Validation
- Tracks [Symbol legend](#)

External Layers

Vessel Symbol library: IALA



**THANK YOU !**

**European Maritime  
Safety Agency**

**[www.emsa.europa.eu](http://www.emsa.europa.eu)**

**[mms@emsa.europa.eu](mailto:mms@emsa.europa.eu)**

Lat: 38°00'23"N  
Lon: 010°37'48"W