



EMSA's contribution to Task 1- Information Sharing

Closing Workshop of the Pilot Project 'Creation of a European Coastguard Function'

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Head of Operations

Department C

Lisbon, 2 June 2017

Activities under the article

Task	Topics	Activities	Coordination:
TASK 1	Sharing information	<ul style="list-style-type: none">Fusing and analysing data	EMSA
TASK 2	Surveillance services	<ul style="list-style-type: none">Remotely Piloted Aircraft SystemsMaritime Patrol Aircraft etc	EMSA Frontex
TASK 3	Capacity building	<ul style="list-style-type: none">Guidelines, recommendations & best practices	EFCA
TASK 4	Capacity sharing	<ul style="list-style-type: none">Multipurpose operations	Frontex



EU Pilot Project

Provision of services under Task 1



Task 1 – Information Sharing Coordinated by EMSA



**“Coast Guard
cooperation”
Article for the
three Agencies
states that:**

Each Agency to
support national
“coastguard”
authorities at
national and Union
level, international
level by:



a.

Sharing information
from *inter alia*...

...Ship Reporting
systems...other
information systems

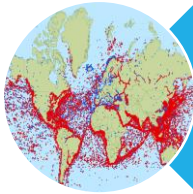
...without prejudice
to the ownership of
data by Member
States.

Objectives under Task 1

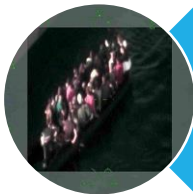
Objective:

- 1) List the services used for maritime surveillance for which the three Agencies are cooperating and sharing data and
- 2) Extend and intensify the sharing of information services under the pilot project.

Service Descriptions



Services which EMSA provides to EFCA and separately to Frontex



Services which Frontex provides for border control purposes

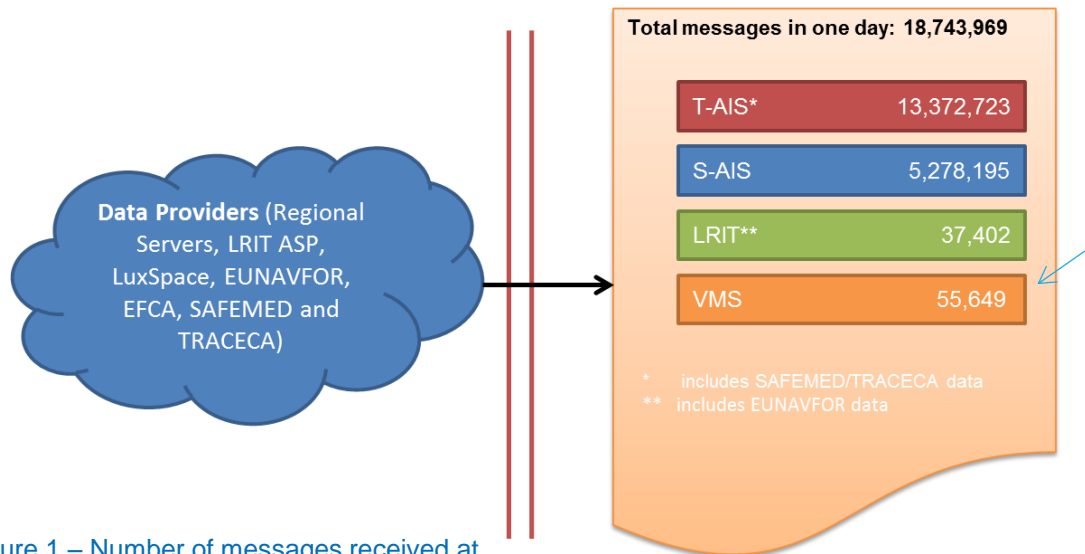


Services which EFCA provides for fisheries control purposes



Implementation, Measurable Indicators, Results

Ship positioning data on a given day



During the Pilot Project EFCA did a great job approaching Member States to provide VMS data to EMSA and Frontex for their purposes.

Figure 1 – Number of messages received at EMSA in one day (17-01-17)

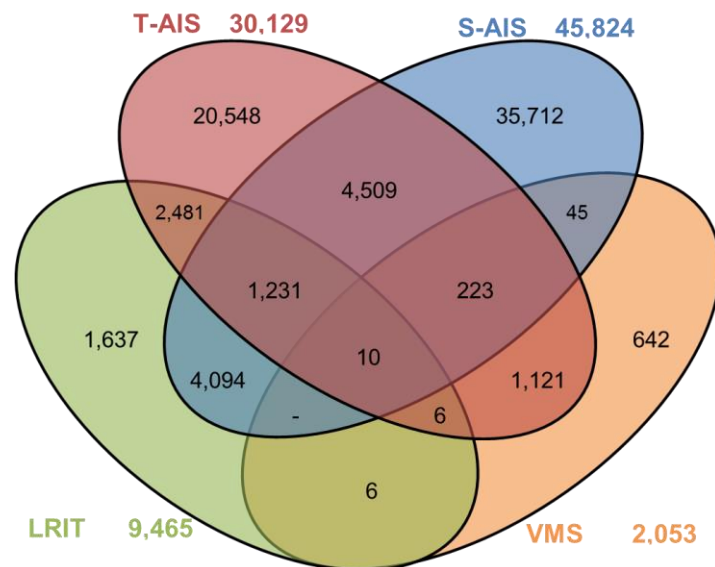
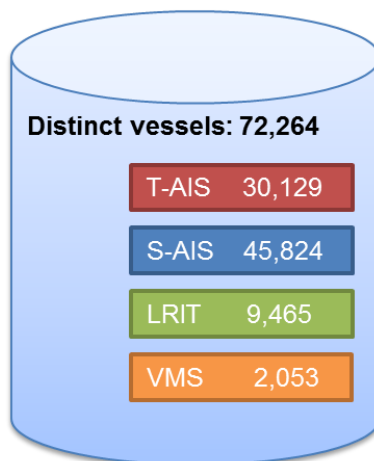
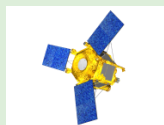


Figure 2 and 3 – Number distinct vessels (MMSI) detected in 1 day period per source

SAR and optical satellite imagery

OPTICAL
MISSIONS



SPOT 6/7



Pleiades 1A/1B



WorldView-1



WorldView-2



WorldView-3



WorldView-4

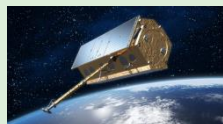


DEIMOS-2



GeoEye-1

SAR
MISSIONS



TERRASAR-X



TanDEM-X



Radarsat-2



Sentinel-1 A/B



Service providers



CLS

KSAT

MDA

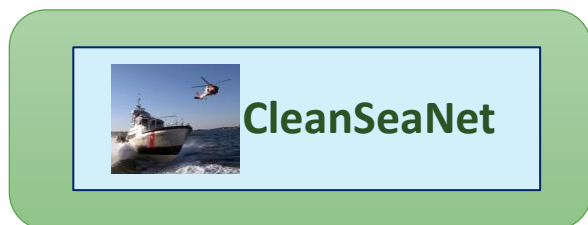
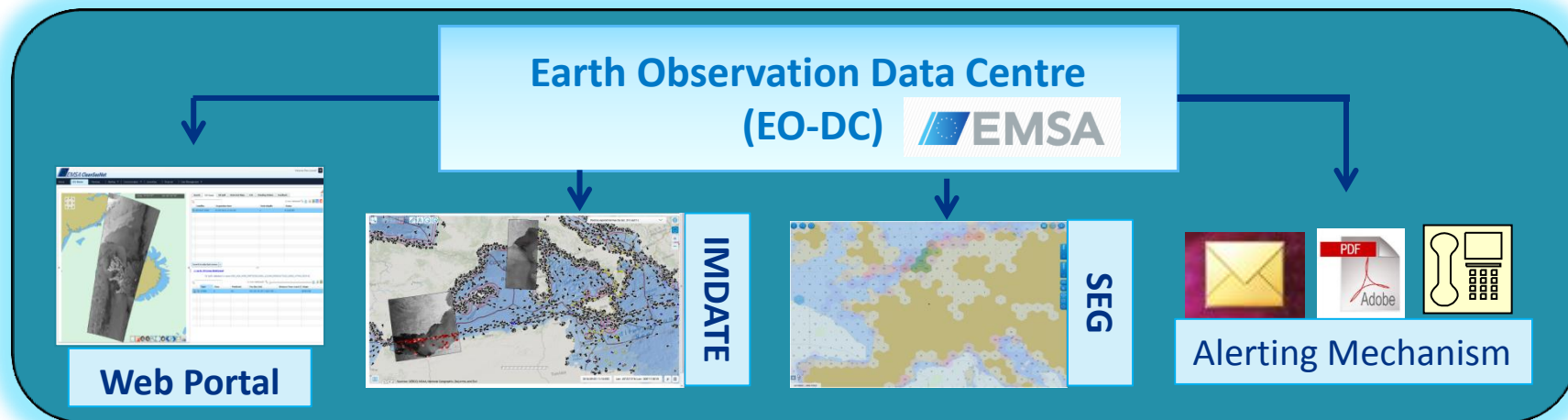
EDISOFT

EGEOS

AIRBUS-
DS

EUSI

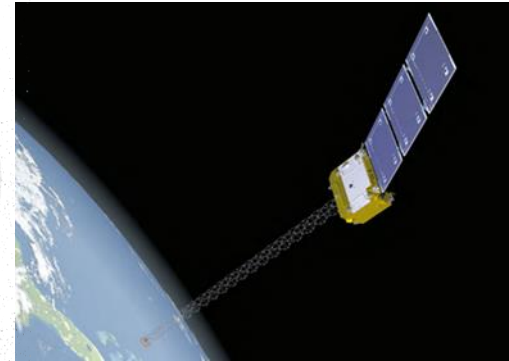
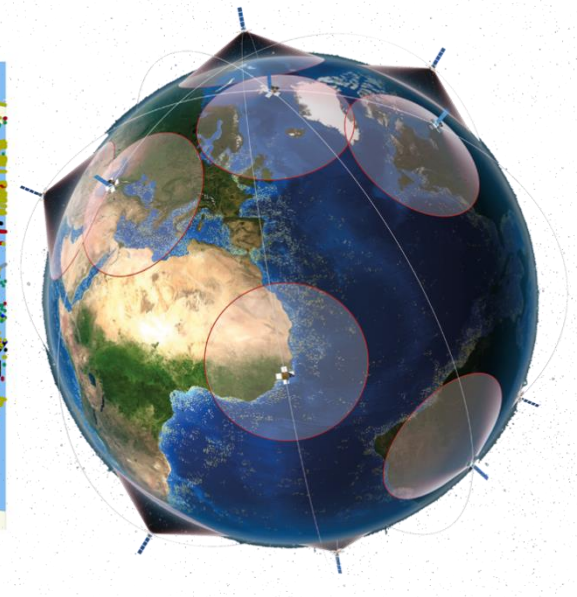
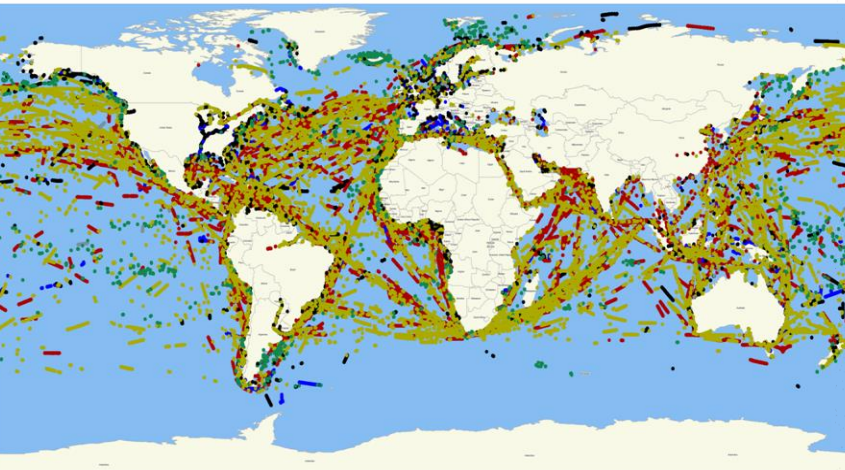
Overview: Earth Observation Services



Incl. EFCA

SAT-AIS data services as a service delivery of Task 1

Provision of high quality SAT-AIS data services to EFCA and Frontex in support of Coast Guard functions

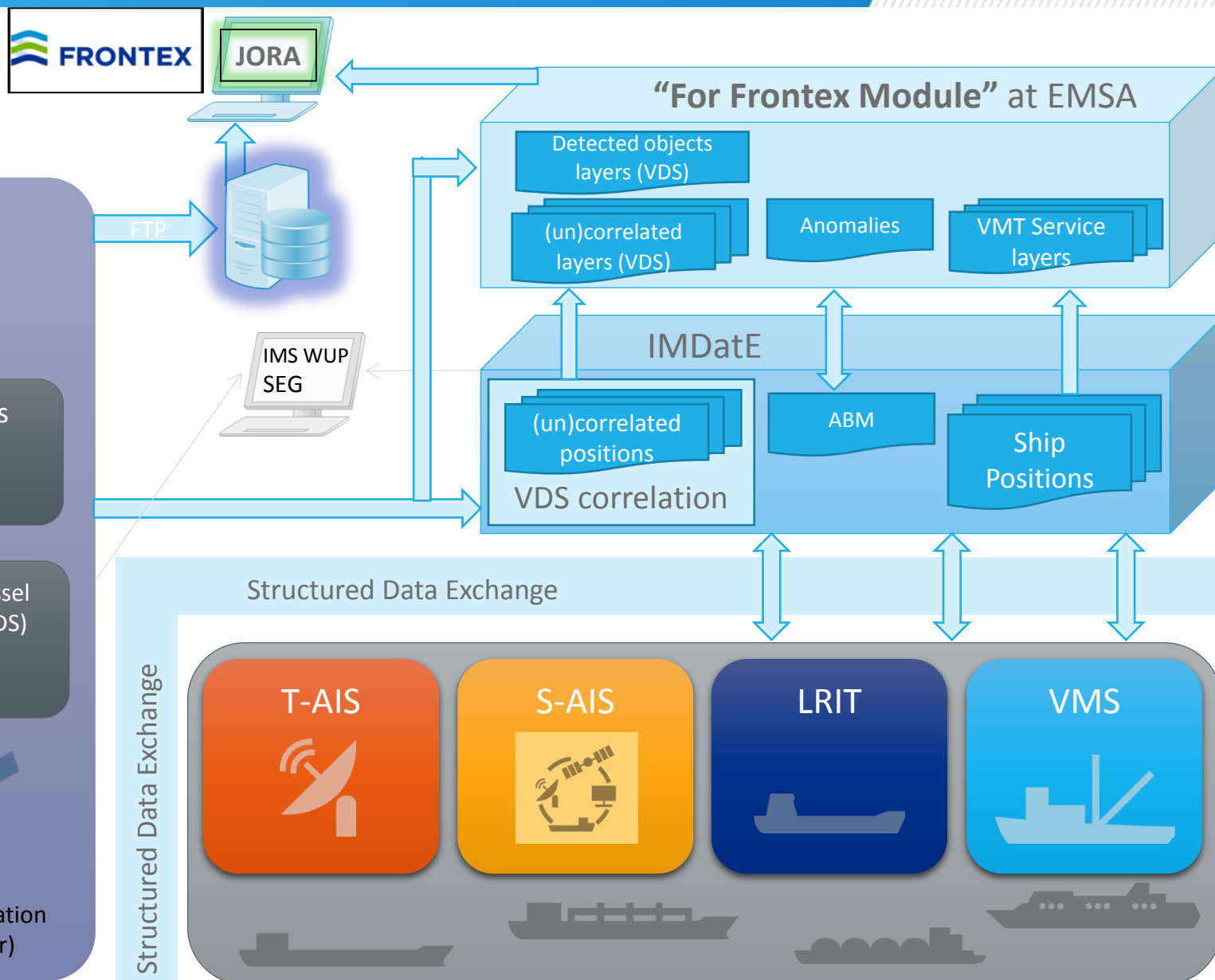


Framework Service contract for the provision of a global feed of SAT-AIS data to the 3 Agencies is in place.

- 16 satellites, 16 earth stations
- Value of contract: 10.2 million Euro – 4 years

Data/Service	Deliverables	Total 2016	
Terrestrial AIS	No. of Messages	1,563,000,000	
LRIT	No. of Messages	5,943,000	
Satellite AIS	No. of Messages	66,000,000	
Earth Observation Products ADS	No. of Optical VHR images	412	
Earth Observation Products VDS	No. of SAR images (RS-2 & TSX)	638	
Anomaly Alerts	No. of Alerts	139,500	

“All in one” – EMSA services to Frontex



VESSELS MONITORING AND TRACKING

- Last vessel positions reported
- Filter options for individual data sources (LRIT, AIS, etc.)
- Historical track for individual vessels

VESSEL DETECTION SERVICE

- Satellite radar detection of vessels over sea areas of interest
- Correlation with vessels tracks
- Highlighting small unidentified boats

ANOMALY DETECTION SERVICE

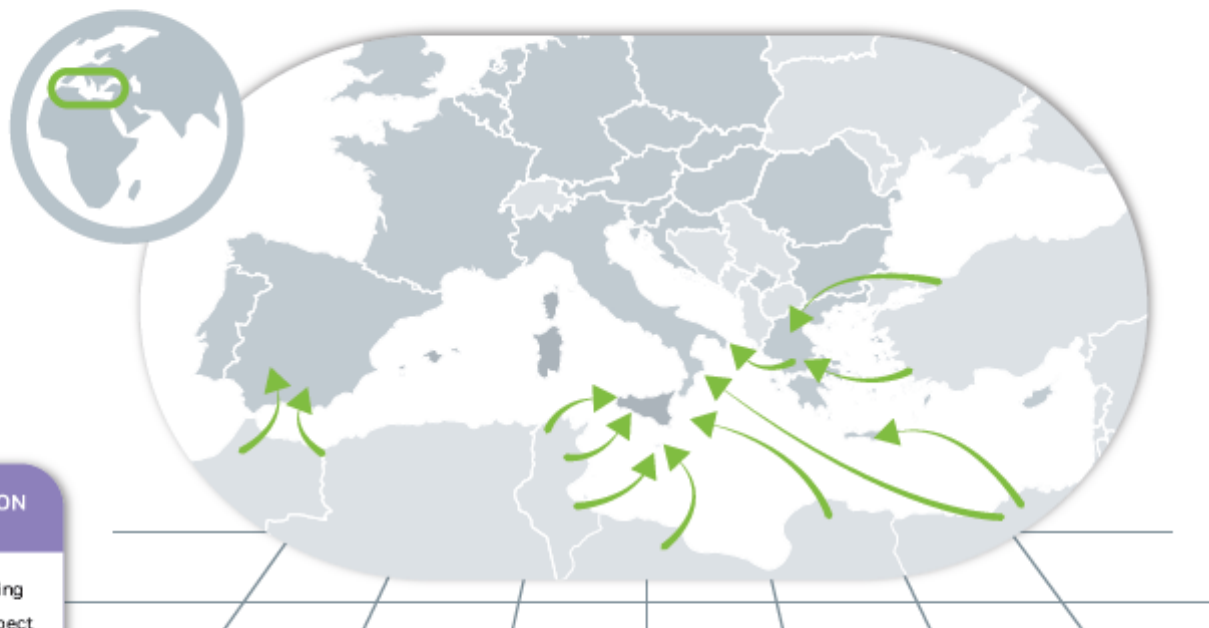
- Vessel behaviour monitoring
- Alert notifications for suspect behaviour
- Advanced anomaly detection algorithms

ACTIVITY DETECTION SERVICE

- Optical high resolution monitoring
- Activity detection over shore, ports or sea areas

VESSEL REPORTING SERVICE

- Regular reporting on vessels of interest
- Intelligence driven approach for monitoring potentially suspicious behaviour



5 EMSA SERVICES TO FRONTEX UNDER THE INTERAGENCY SERVICE LEVEL AGREEMENT

BIG VESSEL CASE SCENARIO

300 GT vessels and above
Ships reporting position data via LRIT, AIS, etc.

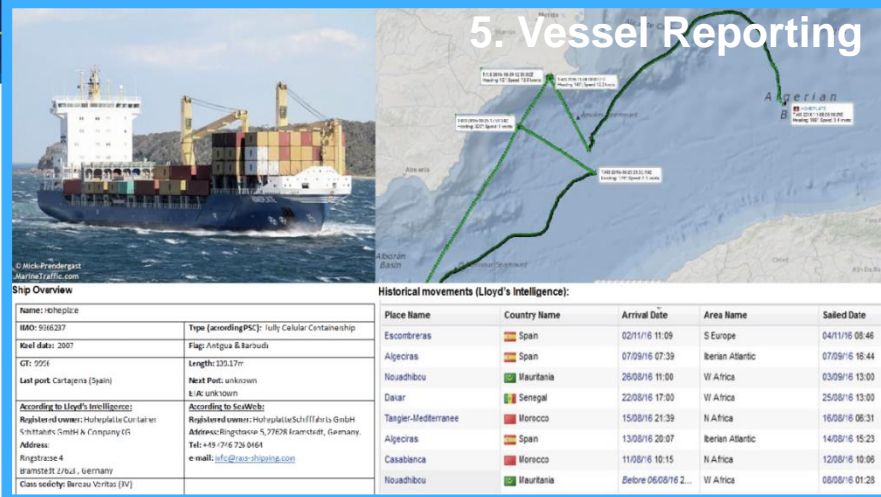
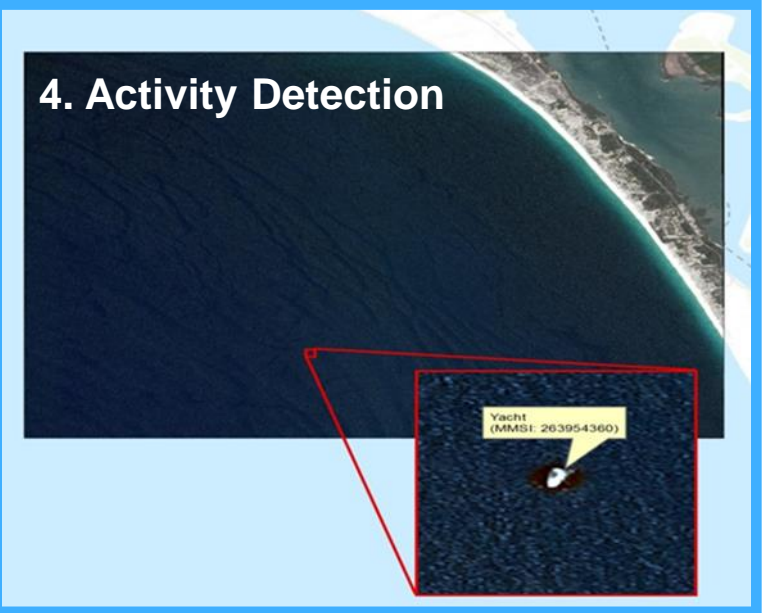
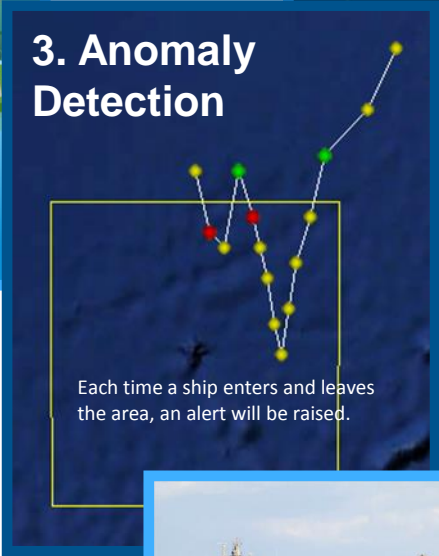
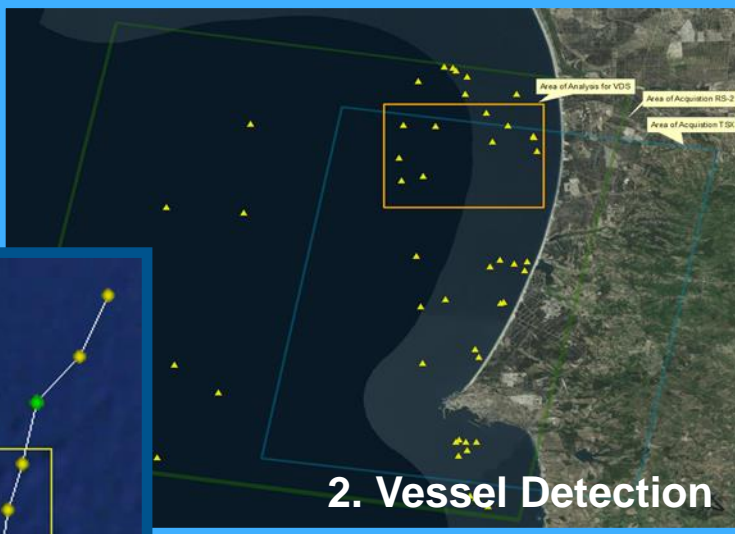
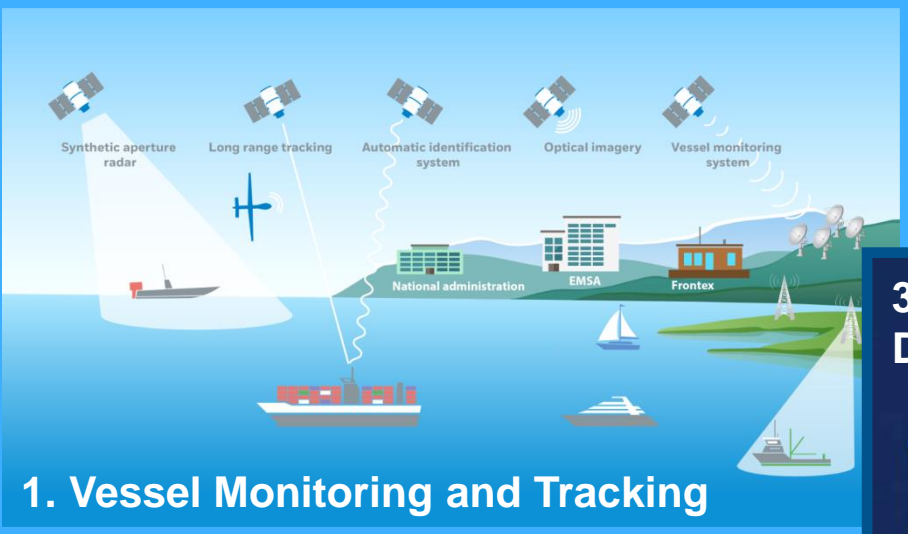
- ✓ MONITORING SERVICES FOR CROSS-BORDER CRIME (SMUGGLING MIGRANTS, WEAPONS, TOBACCO, DRUGS)
- ✓ TRACKING OF PARTICULAR VESSELS OF INTEREST
- ✓ IDENTIFYING BEHAVIOURAL PATTERNS OF UNLAWFUL ACTS AT SEA

SMALL VESSEL CASE SCENARIO

15 metres in length and below
Boats not reporting position data

- ✓ EARLY WARNING DETECTION SERVICE BY SATELLITE RADAR FOR SMALL UNIDENTIFIED BOATS AT SEA
- ✓ FOLLOW-UP BY MEMBER STATES/FRONTEX ASSETS FOR IDENTIFICATION AND POSSIBLE SEARCH AND RESCUE OPERATIONS
- ✓ TRANSFER OF INFORMATION IN NEAR REAL TIME TO ALL OPERATIONAL AUTHORITIES INVOLVED

5 EMSA services to Frontex under SLA



Vessel Detection Service & Correlation



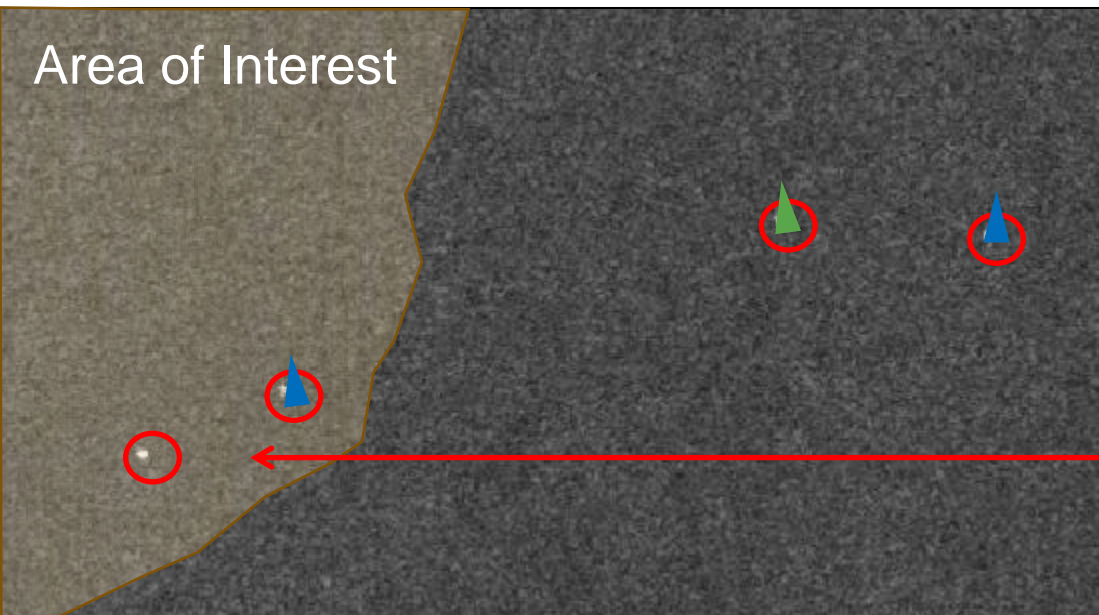
Step 1:

Satellite (SAR) monitoring of Area of Interest: Automated detection of vessels

Step 2:

Vessel identification: Cross-referencing maritime position data (Automated)

Step 3: Unidentified Vessel = Target of Interest

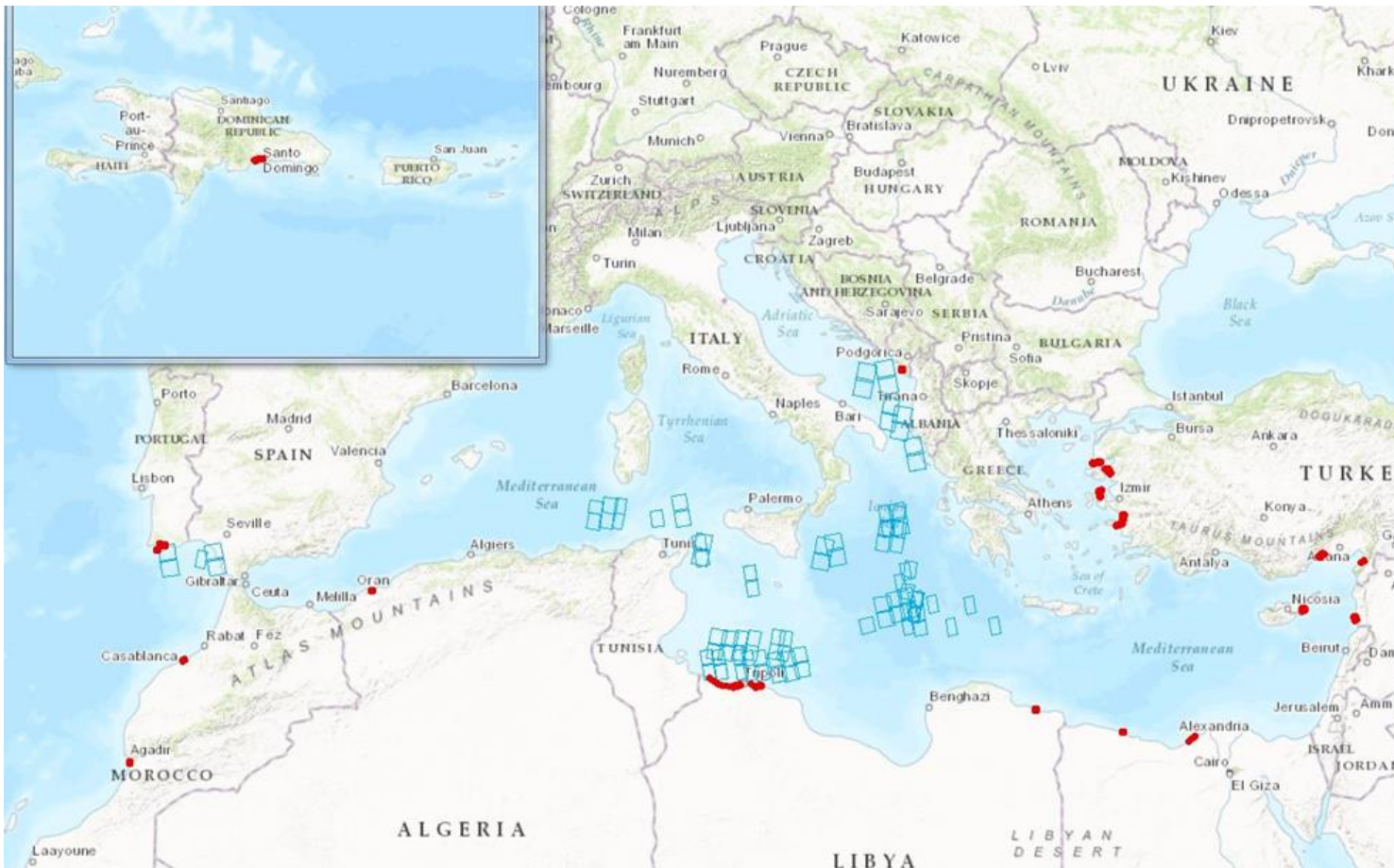


○ Satellite detected vessels

▲ Correlated targets - Fishing (VMS)

▲ Correlated targets - Cargo (AIS)

Unidentified Vessel
Target of Interest for
further analysis



An overview map of Earth Observation images acquired in March 2017. Radar images are shown in blue and optical images in red. Some optical images were acquired from Dominican Republic (shown in the small image on the left).

SUCCESS CASE

- ✓ 5th of September 2016: unidentified small object in the sea area between Morocco and Spain reported by EMSA to Frontex.
- ✓ Information forwarded by the Spanish Coordination Centre (Guardia Civil) to an Italian plane from Guardia di Finanza, patrolling the area.
- ✓ The plane reported a small rubber boat (5 meters long) with 35 people on board close to the detection spot.
- ✓ A local patrol vessel rescued the people, bringing them to safety.

EMSA services to Frontex help to save lives and tackle cross-border crime.



EMSA services to EFCA stakeholders



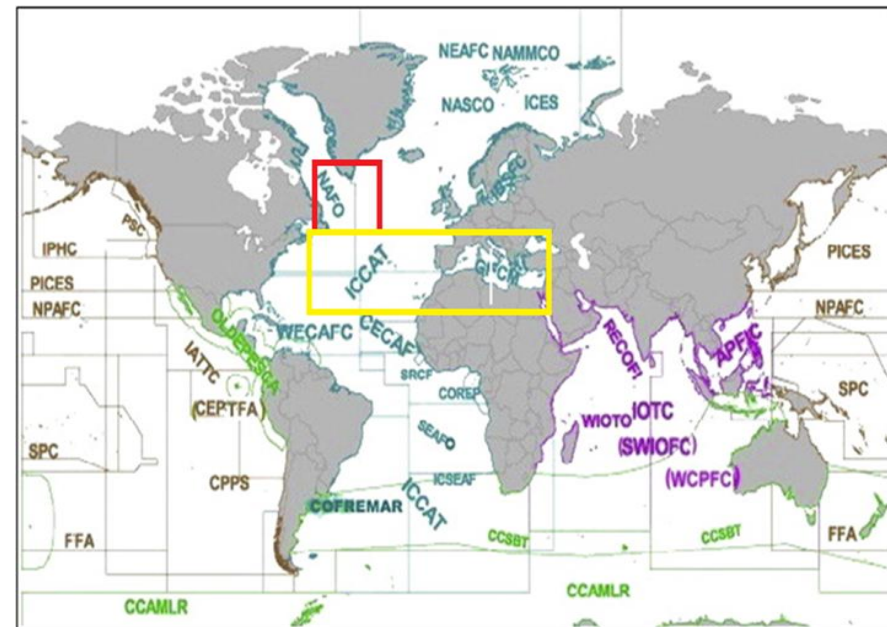
EMSA provides EFCA with Integrated Maritime Services delivered to more than 300 users in Fisheries Monitoring Centres in EU MS to support EFCA coordination activities.

- ✓ EU Joint Deployment Plans: Baltic Sea, North Sea, Western Waters and Mediterranean
- ✓ International operations (NEAFC, NAFO, GFCM, ICCAT)



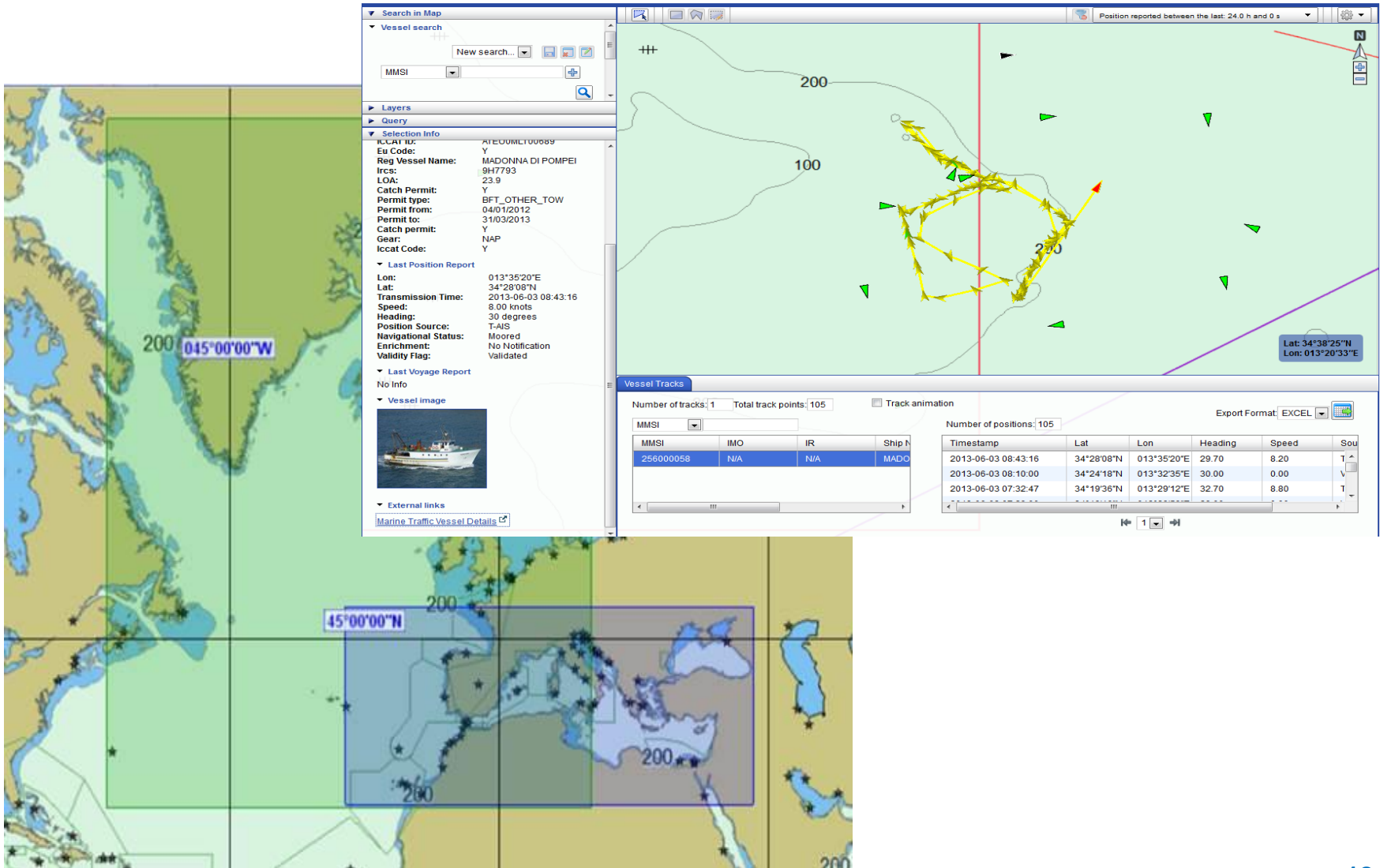
Enriched maritime picture merging:

- ✓ vessel position data (T-AIS, SAT-AIS, LRIT)
- ✓ VMS data received from EFCA
- ✓ Vessel detection services from Copernicus Maritime Surveillance services
- ✓ Fishery specific information



Source: FAO

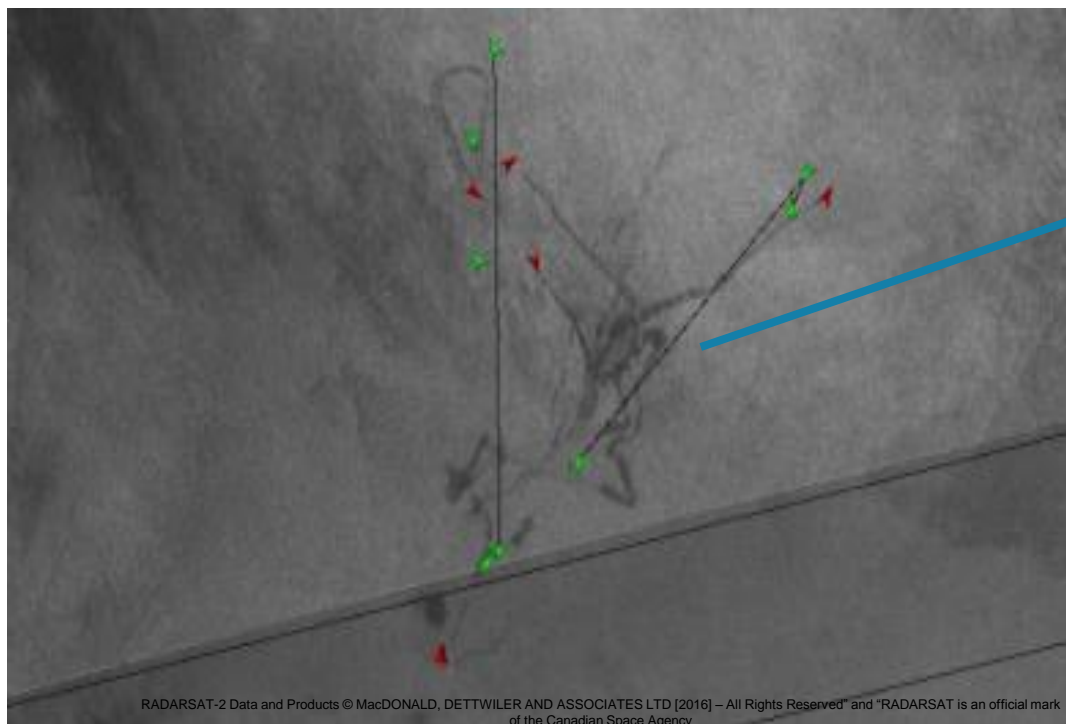
EMSA Services to EFCA stakeholders



Combined service to EFCA for Fisheries Control

With the support of Copernicus:

- Earth Observation data for vessel detection
- Correlation (in this case) with Satellite-AIS
- Identification of “uncorrelated vessel(s)”



Fishing activity pattern



VDS targets



Reporting positions
Sat-AIS

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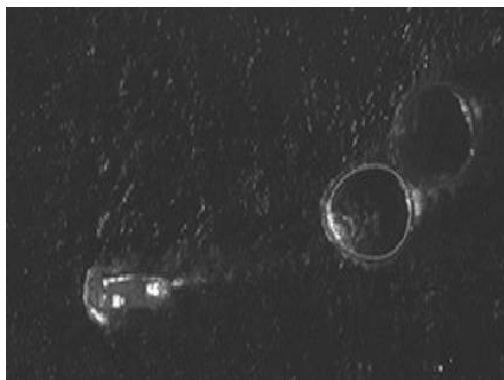
EMSA services to EFCA stakeholders: Monitoring of fish cages/farms



- ✓ Monitor operations and vessels close to fish farms
- ✓ Reveal unreported fish farming in 3rd countries
- ✓ Detect tug vessels towing cages

■ EO elements

- ✓ SAR images
 - ✓ Vessel Detection
- ✓ Optical images
 - ✓ Optical High Resolution images for visual interpretation
 - ✓ Vessel Detection



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EMSA services to EFCA:

Monitoring of fishing ports



- ✓ Monitor recording and reporting requirements of EU fleet
- ✓ Monitor 3rd countries' ports
- ✓ Detection of non-reporting vessels combined with intelligence information



■ EO elements

- ✓ Optical Images
 - ✓ Activity Detection Service- activities close to the fishing vessels
 - ✓ Optical High Resolution images for visual interpretation
 - ✓ Vessel Detection

Small Fishing vessels <10m



© CNES [2016], Distribution Airbus DS

Medium size Fishing vessels >20 m



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Actions undertaken



Action	Agency	Deadline
Identify which of these services can be better shared between the Agencies.	EFCA, EMSA, Frontex	Completed
Organise the testing and validation of these services within and outside Joint Maritime Operations	Frontex, EFCA	On-going
Further develop these and/or other services in consultation with the Agencies and hosting/interested MSs, where applicable.	EMSA, EFCA, Frontex	Completed

1. Key Performance Indicators identified, agreed, and put in action.
2. Policy for data flow among 3 Agencies was drawn up and agreed.

Data mapping and KPI's

Data Sharing Policy

Data Source	Data Type	EFCA			EMSA			Frontex- EBCA		
		data collection	user interface	data usage	data collection	user interface	data usage	data collection	user interface	data usage
Flight observation data	pollution sightings	✓	x	x	x	✓	✓	✓	x	x
Flight observation data	migration sightings	✓	x	x	x	✓	x	x	✓	✓
Flight observation data	law enforcement sightings	✓	x	x	x	✓	✓	✓	✓	✓
Flight observation data	fishing activity sightings	✓	Marsurv (EMSA)	✓	x	✓	x	✓	x	x
Satellite observation data	pollution detection	x	x	✓	✓	✓	✓	EUROSUR (EMSA)	x	x
Satellite observation data	vessel detection	x	Marsurv (EMSA)	✓	✓	✓	✓	EUROSUR (EMSA)	✓	✓
RPAS data	pollution sightings	x	Marsurv (EMSA)	✓	✓	✓	✓	border pack. (EMSA)	x	x
RPAS data	migration sightings	x	x	x	✓	✓	x	border pack. (EMSA)	✓	✓
RPAS data	law enforcement sightings	x	x	✓	✓	✓	x	border pack. (EMSA)	✓	✓
RPAS data	fishing activity sightings	x	Marsurv (EMSA)	✓	✓	✓	x	border pack. (EMSA)	x	x
Position reporting data	coastal AIS	x	Marsurv (EMSA)	✓	✓	✓	✓	x	EUROSUR (EMSA)	✓
Position reporting data	satellite AIS	x	Marsurv (EMSA)	✓	✓	✓	✓	x	EUROSUR (EMSA)	✓
Position reporting data	LRIT	x	Marsurv (EMSA)	✓	✓	✓	✓	x	EUROSUR (EMSA)	✓
Position reporting data	VMS	✓	Marsurv (EMSA)	✓	x	✓	✓	x	EUROSUR (EMSA)	✓
Position reporting data	EUNAVFOR assets positions	x	Marsurv (EMSA)	x	x	Fx / EFCA	x	✓	✓	✓
Position reporting data	JO assets positions	✓	Marsurv (EMSA)	x	x	Fx / EFCA	x	✓	✓	✓
Meteorological data		✓	✓	✓	✓	✓	✓	✓	✓	✓

Legend:

data collection	data is collected by the Agency
user interface	data is visualised in one of its application user interfaces
data usage	data is used under their mandate by MSs authorities accessing their monitoring applications

x	no - not applicable data-wise for the Agency
✓	yes - applicable data-wise for the Agency
text	set-up is hybrid - relates to another Agency, as described in the 'text'

KPIs

1.	Platform availability	95% of platform availability to users
2.	Service availability	95% of service specific data availability within the platform
3.	Data reliability	2 validation exercises at sea per year to ensure that the data provided is confirmed at sea

Task 1: Final outcome



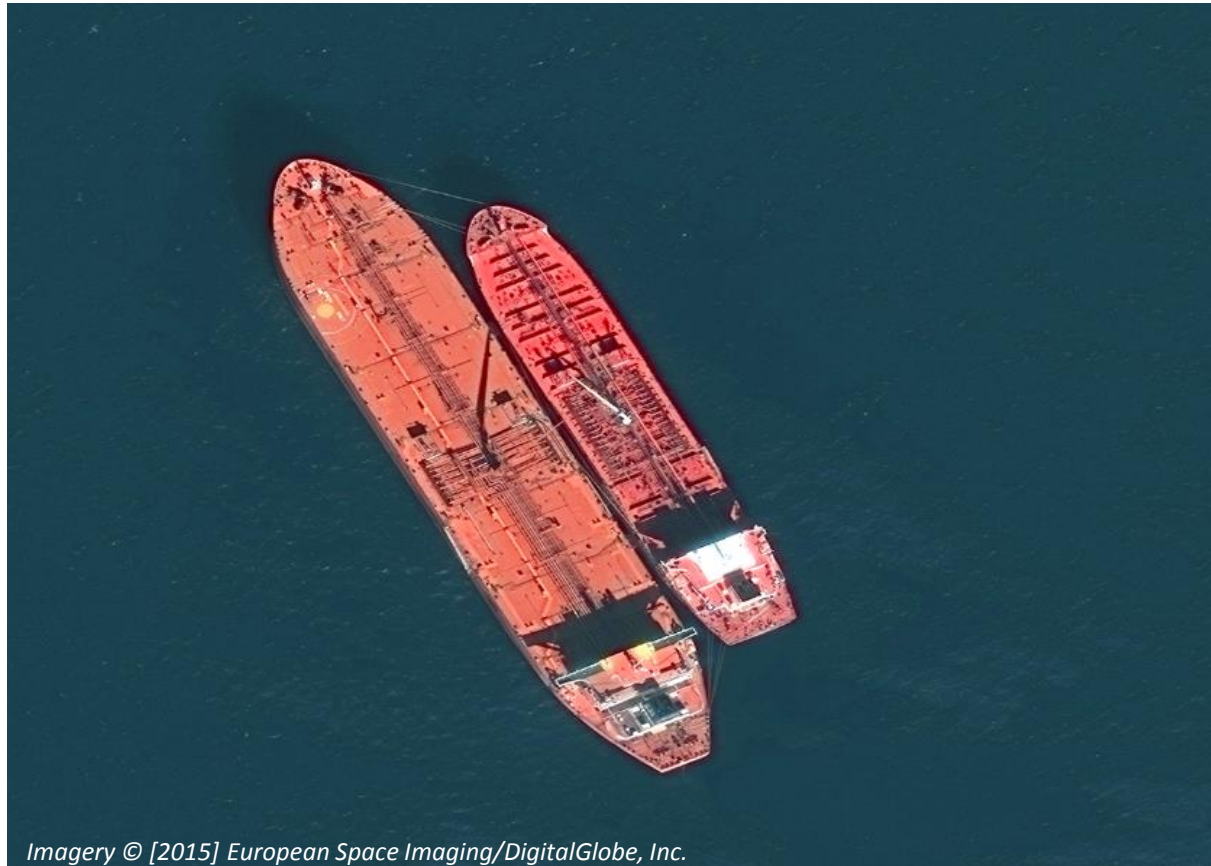
Pilot Project, through:

- The 5 EMSA services to FRONTEX within the Eurosur framework
- The EMSA Integrated Maritime Services for EFCA
- Improved provision of VMS data by EFCA

demonstrated:

- ✓ Benefits of sharing information between the three Agencies.
- ✓ Added value of such interagency cooperation: increasing the exchange of data

The services that have been provided by EMSA were used in the multipurpose operations (Task 4).



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