



AIS DATA SHARING AMONG EU MEMBER STATES

EXPERIENCE IN THE MEDITERRANEAN – BLACK SEA REGION

Lisbon, April 8th 2014

Giuseppe AULICINO
Italian Coast Guard HQ
giuseppe.aulicino@mit.gov.it



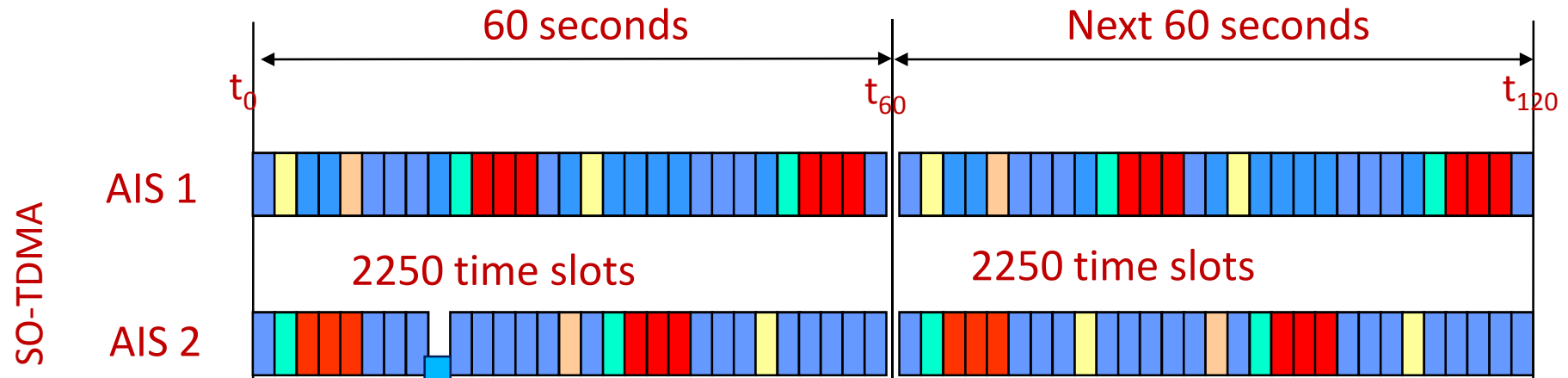
- 1990 – NAV 36 first documents on the AIS
- 1998 – MSC.74 (69) IMO performance standard for AIS
- 1998 – ITU-R M.1371-1 technical characteristics for an AIS
- 1998 – IEC 61162-2 Ed. 1.0
- 2000 – IMO SOLAS chapter V ratification
- 2001 – IEC 61993-2 electrical interface
- 2009 – IEC 62320 Ed. 1.1, AIS Base Station technical standards
- 2010 – IEC 61162-1 Ed. 4.0
- 2014 – ITU-R M.1371-5

Type:

AIS Mobile station

AIS Base station





Dynamic data

MMSI number
Position (lat/long)
Course and speed
Heading
Rate of turn
Navigational status
Position accuracy

Static data

MMSI and IMO number
Name of the ship
Call Sign
Length and beam
Type of ship
Location of GPS antenna

Voyage data

Ship draught
Type of cargo
Destination
Estimated time of arrival



AIS MESSAGES

Message ID	Name	M/B
1	Position report	M
2	Position report	M
3	Position report	M
4	Base station report	B
5	Static and Voyage related data	M
6	Binary addressed message	M/B
7	Binary acknowledgement	M/B
8	Binary broadcast message	M/B
9	Standard SAR aircraft position report	M
10	UTC/date inquiry	M/B
11	UTC/date response	M
12	Addressed safety related message	M/B
13	Safety related acknowledgement	M/B



AIS MESSAGES

Message ID	Name	M/B
14	Safety related broadcast message	M/B
15	Interrogation	M/B
16	Assignment mode command	B
17	DGNSS broadcast binary message	B
18	Standard Class B equipment position report	M
19	Extended standard Class B equipment position report	M
20	Data link management message	B
21	Aids-to-navigation report	M/B
22	Channel management	B
23	Group assignment command	B
24	Static data report	M
25	Single slot binary message	M/B
26	Multiple slot binary message with Communications State	M/B



Legal framework

Directive 2002/59/EC of the European Parliament and of the Council establishing a Community vessel traffic monitoring and information system

Article 9

Member States shall take all necessary and appropriate measures to provide themselves with appropriate equipment and shore-based installations for receiving and utilising the AIS information

The process of building up all necessary equipment and shore-based installations for implementing this Directive shall be completed by the end of 2007.

Member States shall ensure that the appropriate equipment for relaying the information to, and exchanging it between, the national systems of Member States shall be operational at last one year thereafter (*end of 2008*)

Directive 2002/59/EC of the European Parliament and of the Council establishing a Community vessel traffic monitoring and information system

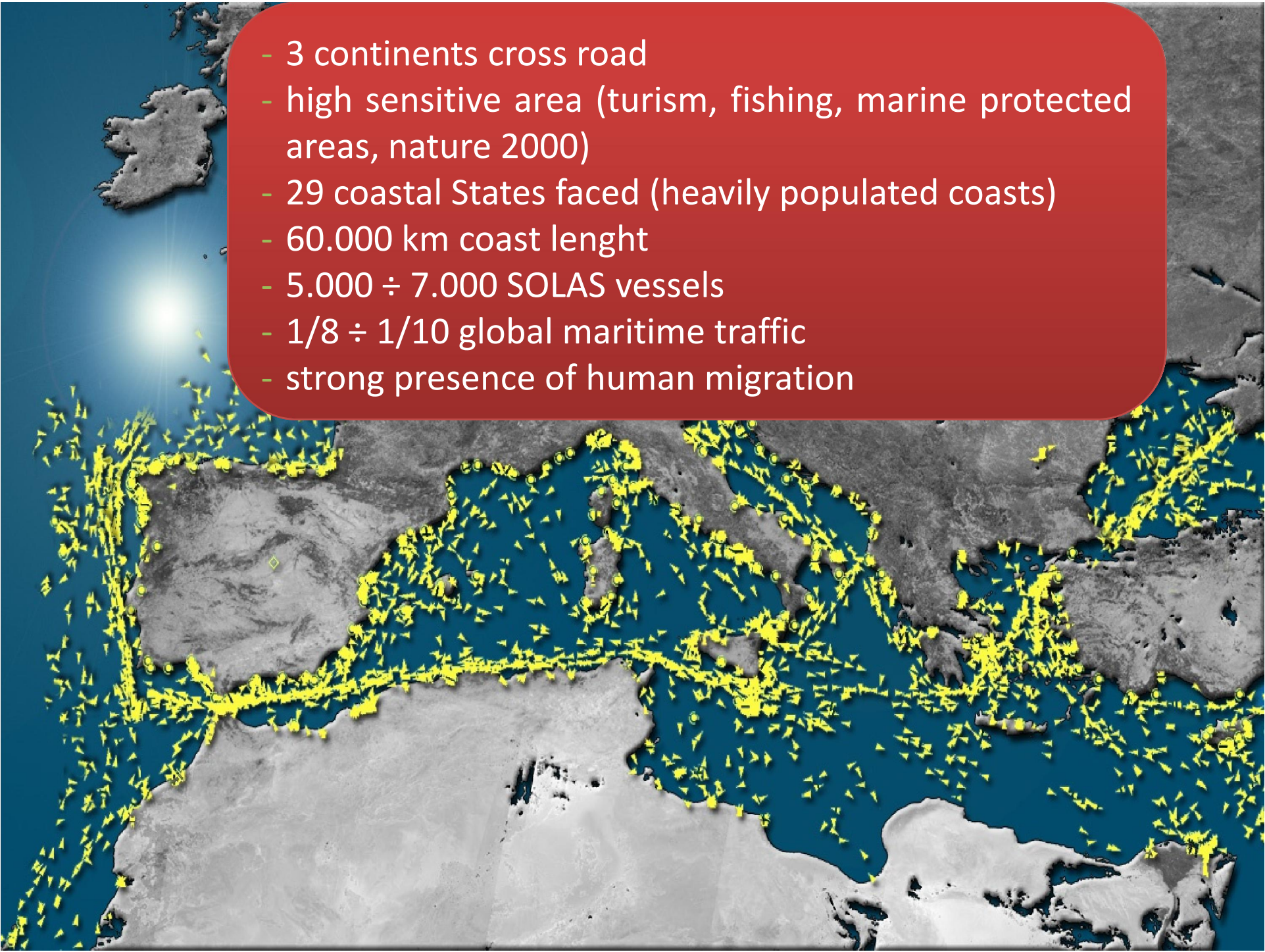
Article 9

Member States shall take all necessary and appropriate measures to provide themselves with appropriate equipment and shore-based installations for receiving and utilising the AIS information

The process of building up all necessary equipment and shore-based installations for implementing this Directive shall be completed by the end of 2007.

Member States shall ensure that the appropriate equipment for relaying the information to, and exchanging it between, the national systems of Member States shall be operational at last one year thereafter (*end of 2008*)

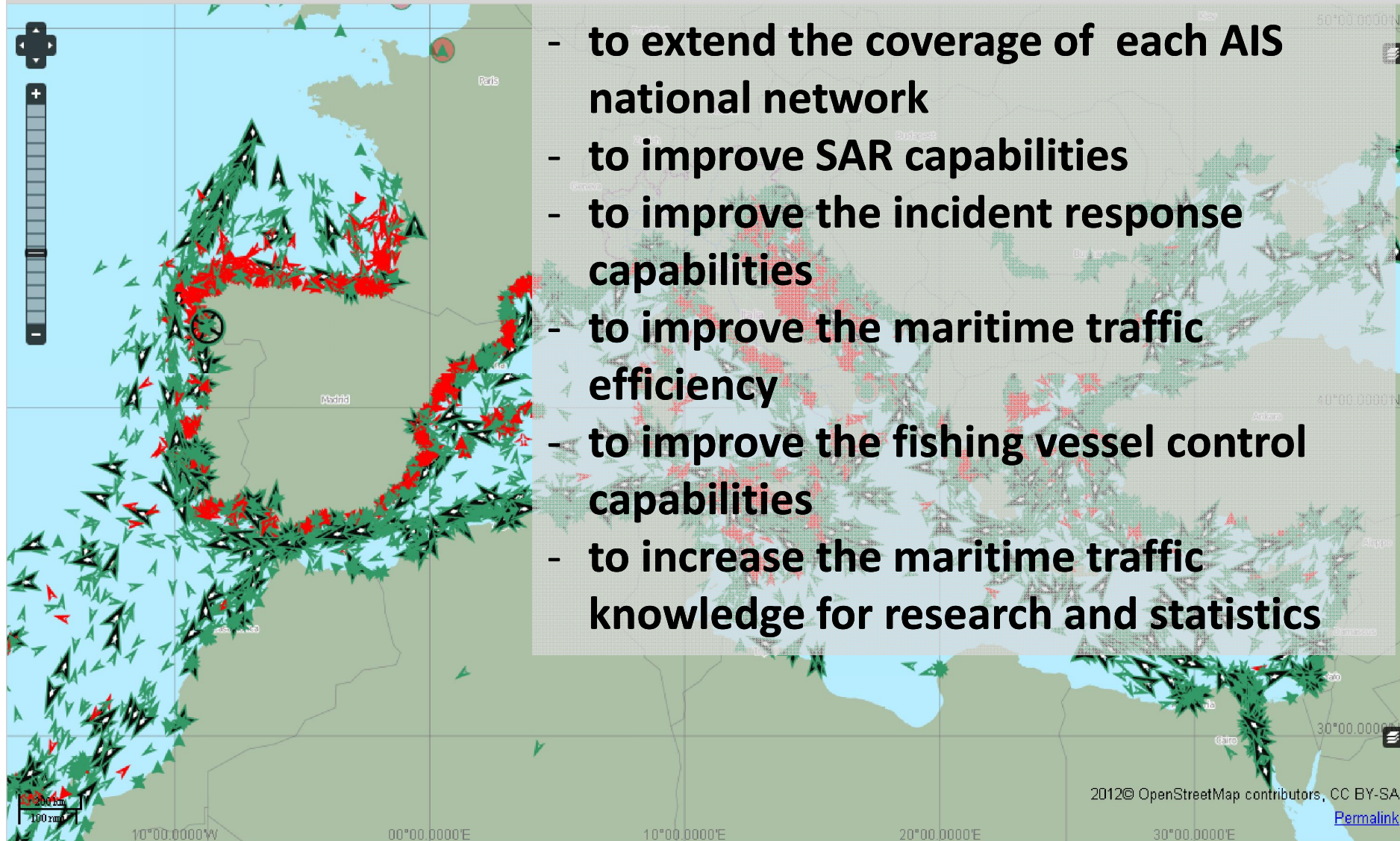


- 
- A map of the Mediterranean Sea and surrounding landmasses, including Europe, North Africa, and the Middle East. The sea is colored blue, and the land is grey. Numerous yellow arrows of varying sizes are scattered across the sea, representing maritime traffic. A red rounded rectangle is overlaid on the upper left portion of the map, containing a list of bullet points.
- 3 continents cross road
 - high sensitive area (turism, fishing, marine protected areas, nature 2000)
 - 29 coastal States faced (heavily populated coasts)
 - 60.000 km coast lenght
 - 5.000 ÷ 7.000 SOLAS vessels
 - 1/8 ÷ 1/10 global maritime traffic
 - strong presence of human migration

MAREΣ



AIS Targets

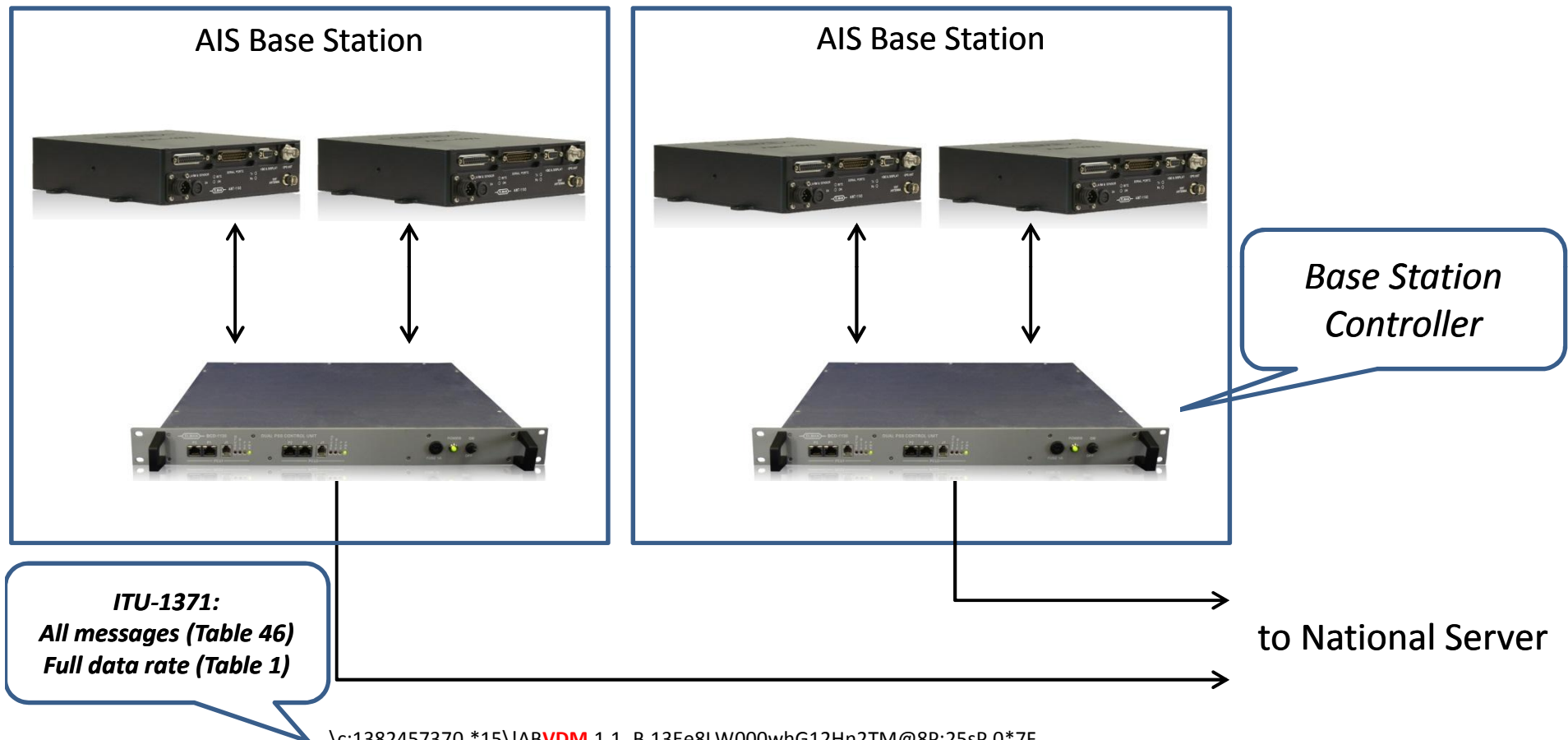


2012© OpenStreetMap contributors, CC BY-SA

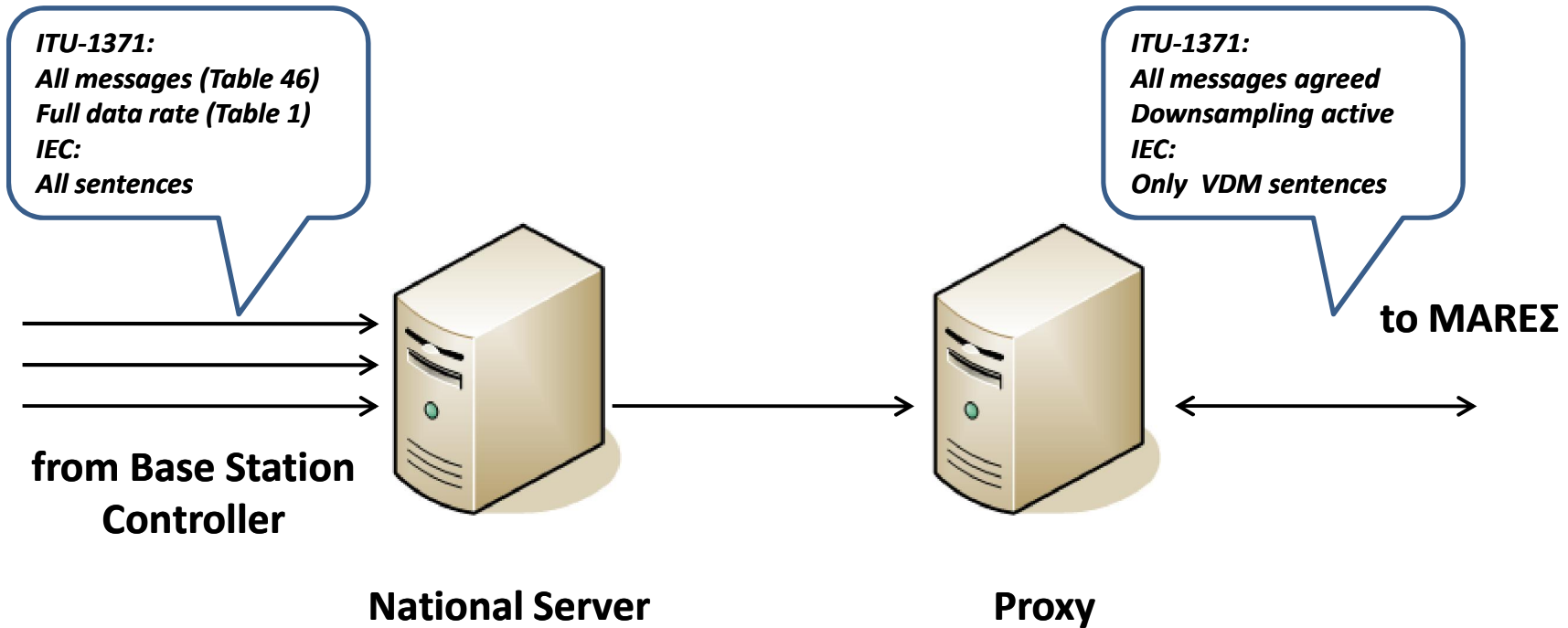
[Permalink](#)



National AIS Network



```
\c:1382457370 *15\!ABVDM,1,1,,B,13Ee8LW000whG12Hn2TM@8P:25sP,0*7F
\1G2:5537,s:SVELM28,c:1395323148*20\SSVALR,100009,057,A,V,SVA:
\1G2:5495,s:MONTE_CAPANNE,c:1395323146,i:<O>IT</O>*75\!ABVDM,1,1,6,A,33P7rbU0000`moFIJCe13beJ0000,0*77
\2G2:5503*7E\ABVSI,LIVORNO_01,0,134547.231003,1771,-83,*65
```





Proxy configuration editor

Edit AISCore User "MARES_ITA"

Registries OUT Filters IN Filters

☒ RX Enabled - OUT Filters Configuration (External)

☐ Core User can receive encrypted data

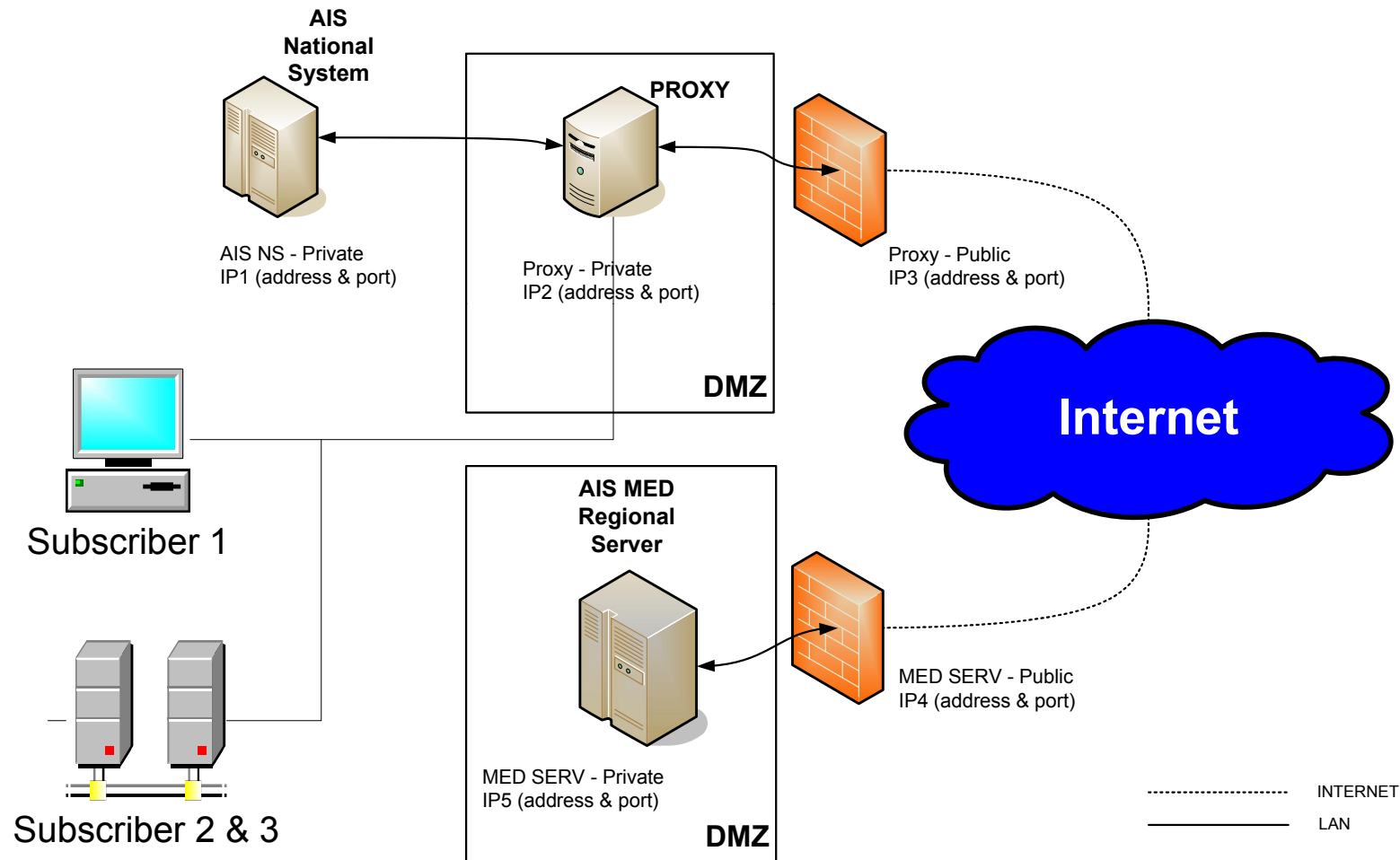
Message Types Areas Device Country AIS Device Types Ship Types * Data Providers

	Selection	Description	Description Extended	Label	Downsampling
1	<input checked="" type="checkbox"/>	Messages 1, 2, 3	Position reports	1	60
2	<input checked="" type="checkbox"/>	Message 4	Base station report	4	60
3	<input checked="" type="checkbox"/>	Message 5	Ship static and voyage related data	5	60
4	<input checked="" type="checkbox"/>	Message 6	Addressed binary message	6	0
5	<input checked="" type="checkbox"/>	Message 8	Binary broadcast message	8	0
6	<input checked="" type="checkbox"/>	Message 9	Standard SAR aircraft position report	9	60
7	<input checked="" type="checkbox"/>	Message 12	Addressed safety related message	12	0
8	<input checked="" type="checkbox"/>	Message 14	Safety related broadcast message	14	0
9	<input checked="" type="checkbox"/>	Message 18	Standard Class B equipment position report	18	60
10	<input checked="" type="checkbox"/>	Message 19	Extended Class B equipment position report	19	60
11	<input checked="" type="checkbox"/>	Message 21	Aids-to-navigation report (AtoN)	21	60
12	<input checked="" type="checkbox"/>	Message 24A	Static data report	24A	60
13	<input checked="" type="checkbox"/>	Message 24B	Static data report	24B	60

◀ Back Next ▶ Cancel



Architecture





Main features:

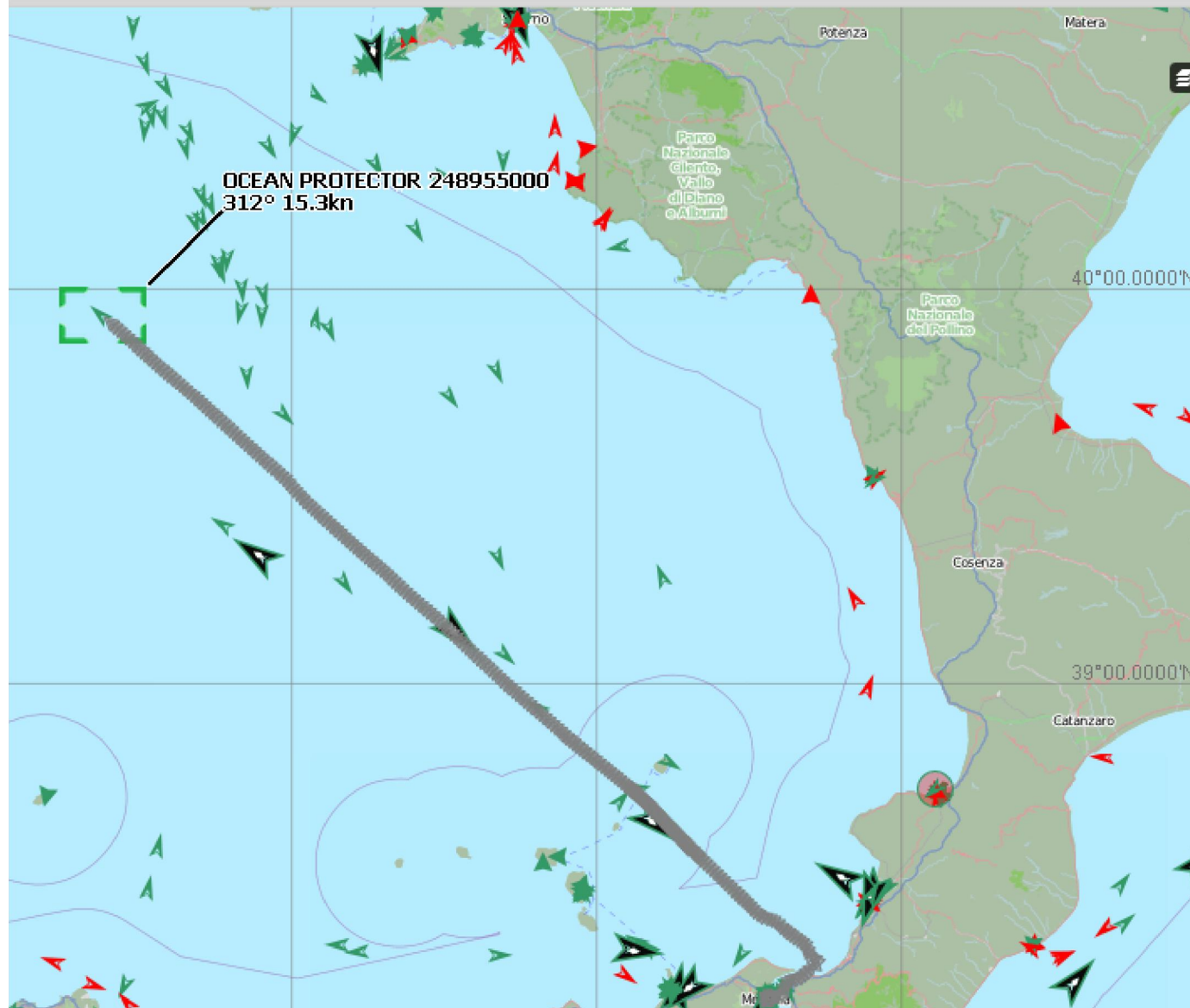
- open system with Data Distribution Plan**
- data collecting , distributing and storage**
- data package @ IEC/ITU standards**
- AIS messages 1, 2, 3, 4, 5, 9, 18, 19, 21, 24-A, 24-B**
- variable data rate (standard 6 minutes)**
- planned for > 20.000 vessels**
- internet transport layer**
- secure connection SSL**
- comply with EMSA standards (part of SafeSeaNet)**
- statistical functions**
- web user interface**

MAREΣ



Web user interface

AIS Targets



Targets Info:

Search

Ship Information - MMSI: 248955000 - **Live GIS**

Add to History

STATIC INFO

Target Name: ✓ OCEAN PROTECTOR
Country: Malta (MLT)
Ship Type: Cargo ship (79)
IMO Number: ✓ 9064798
MMSI: ✓ 248955000
Call Sign: ✓ 9HA2589
Max static draught: 7.7
Length: 203 m.
Width: 30 m.
Hazardous Cargo: non Hazardous Cargo
Gross Tonnage: - tons.

DYNAMIC INFO

Contact DT: 07 Apr 2014 20:05:18 UTC
Destination: FOS
ETA: 04-08 23:00
SOG (kn): 15.3
COG (deg): 312.4
True Heading (deg): 312
ROT Sensor: 0

MAREΣ



Maritime traffic efficiency



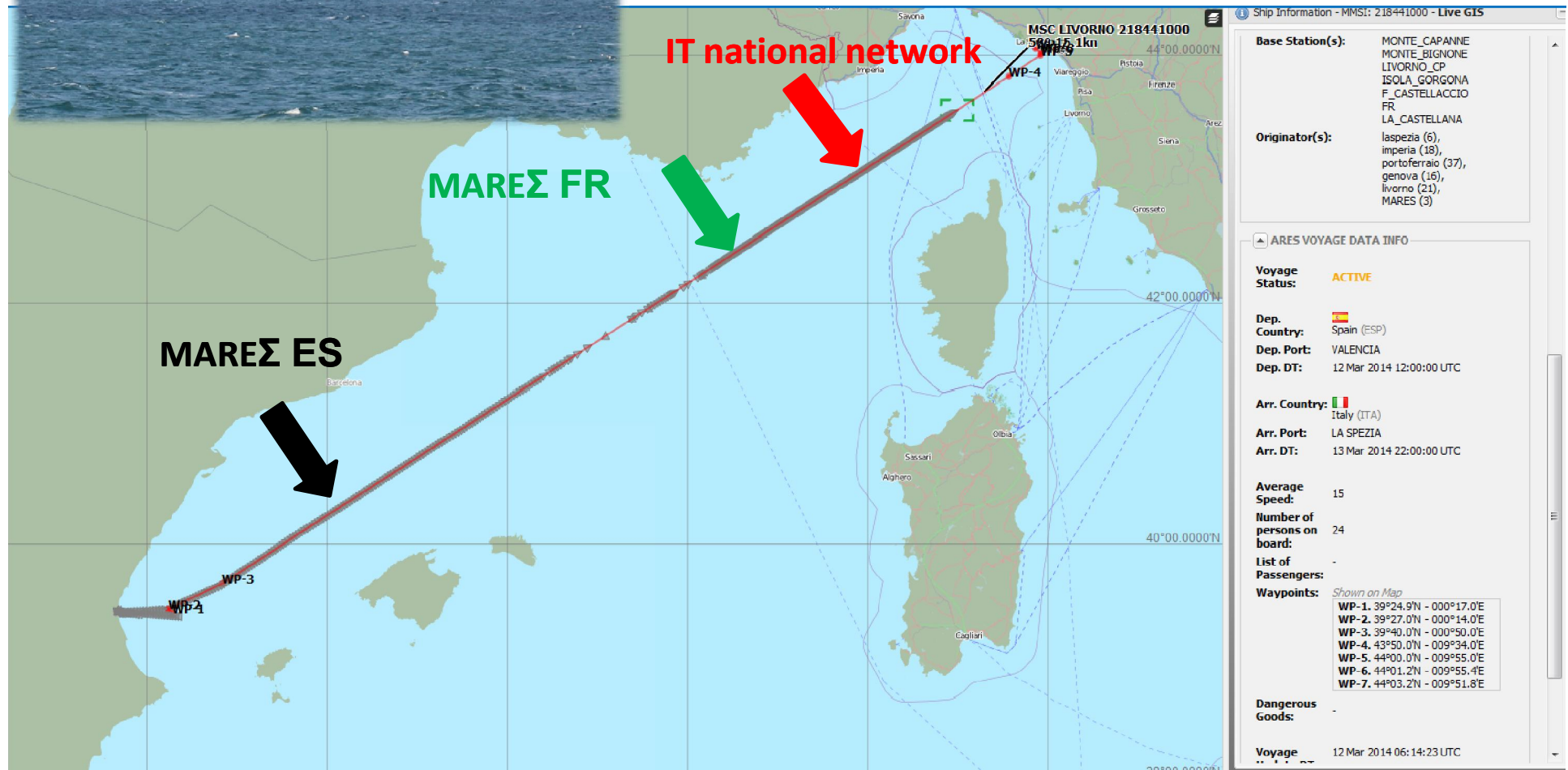
MSC LIVORNO:

GT: 153.000 tons Loa: 366 mt

Destination: *La Spezia*

Cargo manifest early closure: 35 h

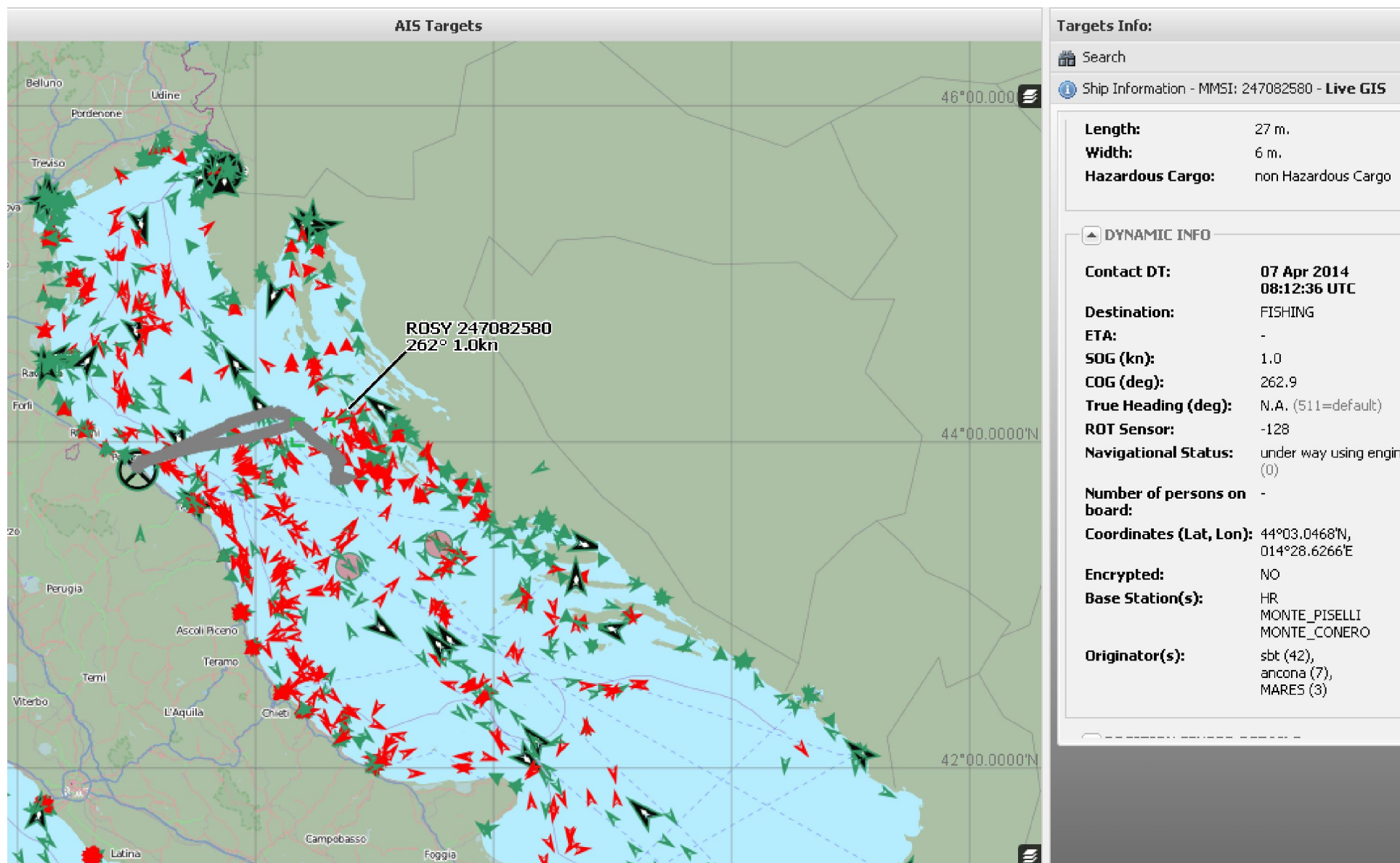
Container disembarked: 500



MAREΣ



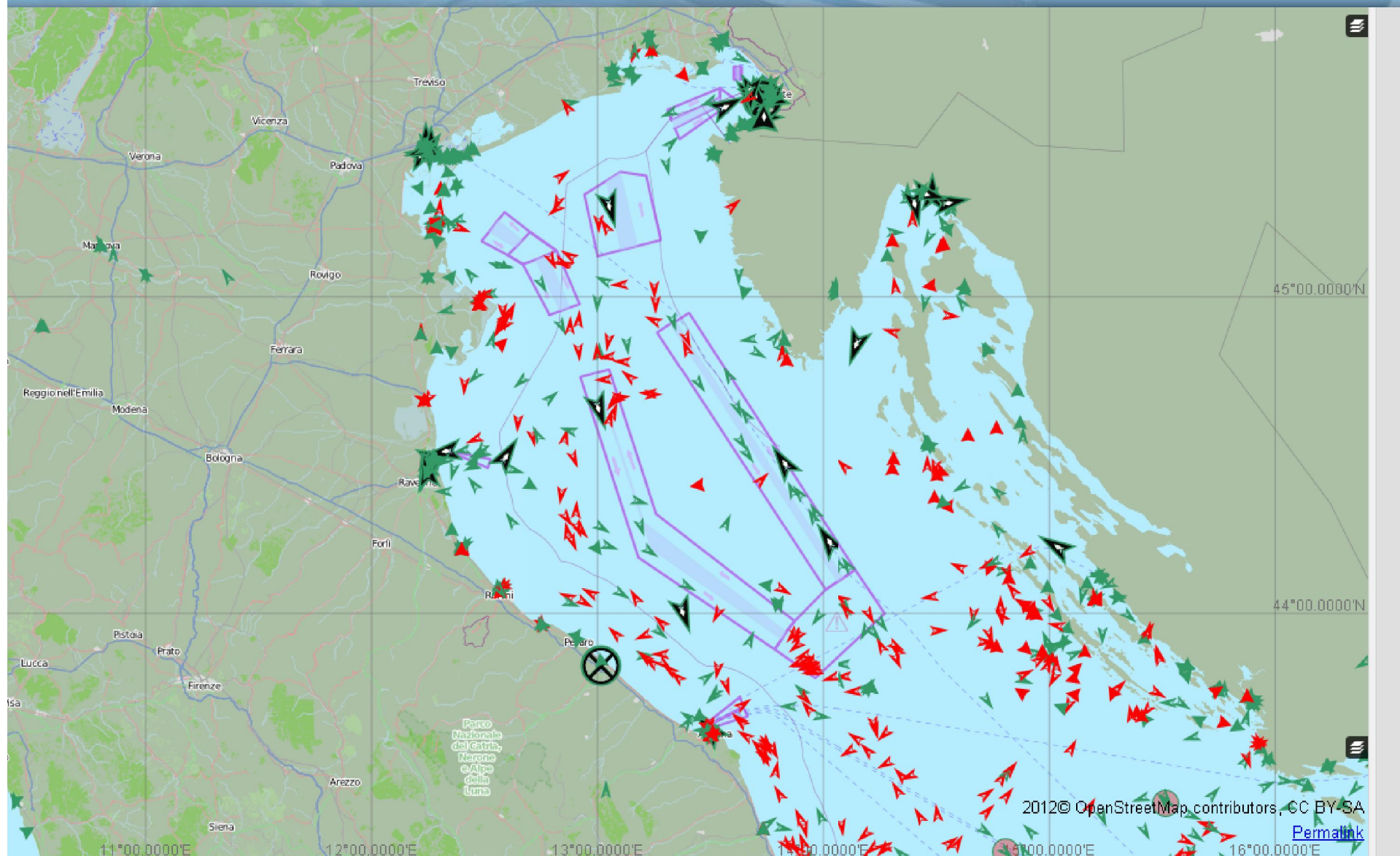
Fishing control



MAREΣ



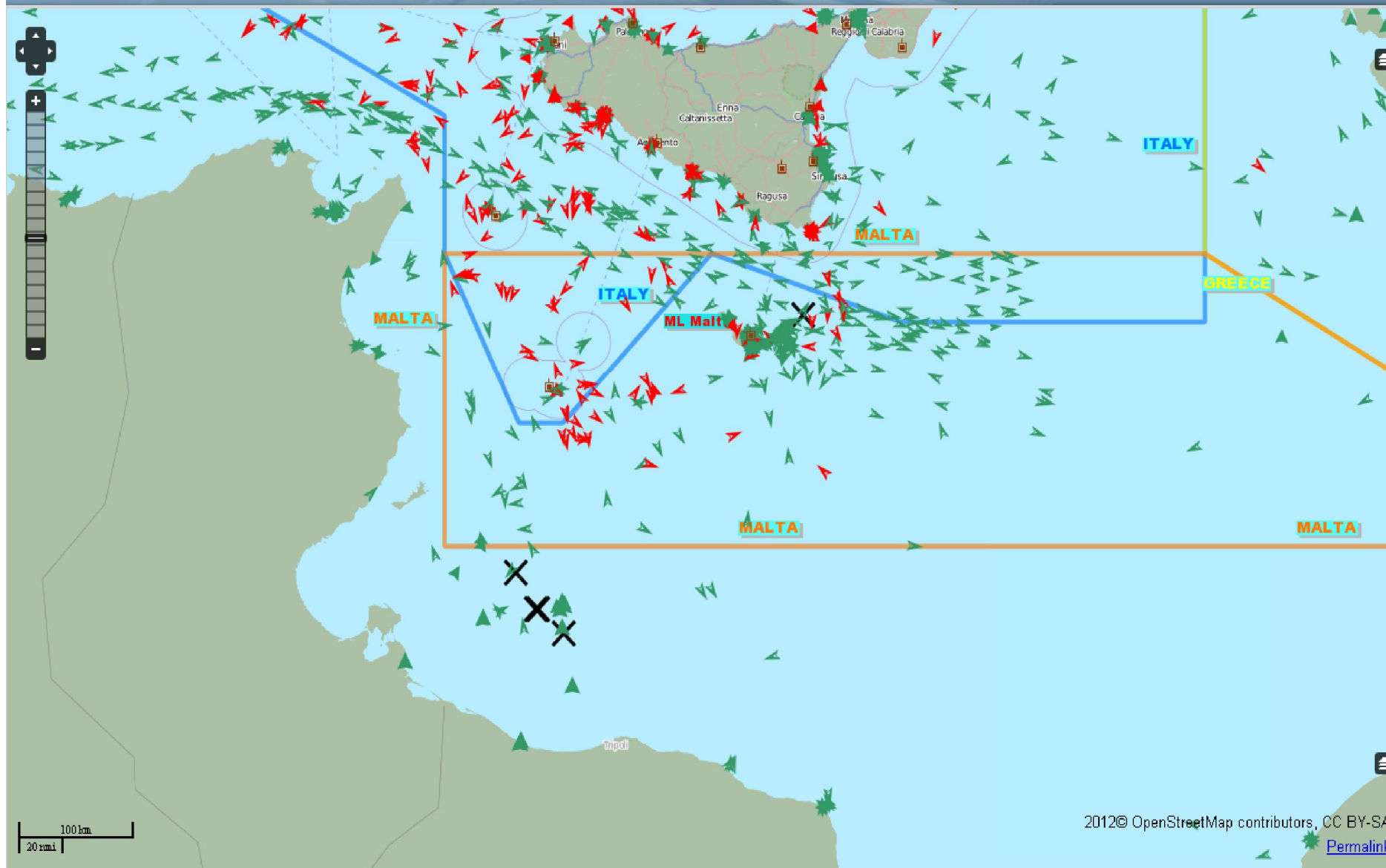
Traffic monitoring



MAREΣ



Search and Rescue



ON LINE - 07 Apr 2014 21:27:13 UTC

Refresh in: 6.6 s

Targets: No data...

Data Providers: 56/61



Notifications: **636 unread Safety Messages (7 targets)** - No violations

Lat: 37°28.3320'N, Lon: 014°37.8360'E



Zoom Level:



Member State	Total number of AIS information acquired by MAREΣ (June 2012 – September 2013)															
	June	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	August	Sept.
Bulgaria	1,284,391	1,418,365	1,188,216	1.258.222	937.346	750.381	746.378	709.532	684.764	823.239	920.455	1.459.657	.3199.490	1.254.360	1.532.847	1.011.127
Cyprus	3,876,958	3,891,518	3,899,258	2.967.215	1.891.248	1.451.289	818.585	863.266	1.181.978	1.630.038	1.907.428	2.768.011	3.295.714	3.707.370	4.026.219	2.360.980
Spain	11,729,830	12,157,789	13,410,095	12.530.631	13.120.438	12.614.756	12.216.798	12.711.095	11.393.747	12.888.596	16.197.524	69.265.923	25.501.504	19.868.390	19.444.211	17.098.340
France	1,449,207	1,574,582	1,854,412	1.857.634	1.936.381	1.487.983	1.375.161	1.097.681	1.400.361	1.595.335	4.042.027	3.718.729	1.571.696	613.365	1.202.070	1.780.562
Greece	3,217,433	3,746,901	4,071,153	3.274.812	3.798.898	3.082.448	2.766.336	2.746.821	2.916.687	3.827.542	3.956.722	4.623.723	4.069.238	4.075.174	4.271.355	4.297.356
Croatia	/	/	/	/	/	/	/	/	/	/	/	/	/	1.926.986	1.283.165	1.856.410
Italy	14,029,158	18,774,679	15,459,634	12.074.172	10.531.250	7.999.967	7.993.973	8.363.792	7.876.593	10.495.192	11.571.646	13.455.650	14.983.200	18.485.402	16.578.133	14.582.414
Malta	754,318	680,420	587,545	634.256	769.792	843.344	811.717	547.277	575.568	1.219.183	1.259.240	1.556.760	793.318	818.683	682.961	701.647
Portugal	2,402,757	2,851,403	2,721,304	3.074.358	2.916.518	2.402.979	2.348.422	2.043.386	3.383.434	3.457.285	16.021.375	10.810.744	3.271.789	2.371.434	2.552.961	2.624.316
Romania	2,208,226	1,952,453	1,833,344	1.889.973	1.662.840	1.312.519	1.480.272	1.407.885	1.262.838	1.418.052	1.504.350	1.822.791	1.442.416	1.764.562	1.876.576	1.637.156
Slovenia	399,938	217,492	198,718	151.800	249.928	278.877	357.819	335.193	306.269	342.794	855.152	819.243	1.102.975	1.141.386	912.267	1.013.066
Total	41,352,216	47,265,602	45,223,679	39.713.073	37.814.639	32.224.543	30.915.461	30.825.928	30.982.239	37.697.256	58.235.919*	110.301.231*	57.431.340	56.027.112	54.362.765	48.963.374



Things to do (1/2)

Provide to Italy relevant IP addresses

Participant Country will provide to Italy the following information:

- one static IP address (IP1) together with the related port from which all AIS data collected by the national network will be sent to the proxy.
- one static IP address (IP2) together with the related port from which proxy application shall receive/send data to the national server;
- one static IP address (IP3) together with the related port, resident on the public network (internet). By the mean of this address the regional server shall acquire/send the AIS data.

Set up the firewall

Participant Country shall set up their firewalls in order to connect IP2 with IP3, establishing a logical connection between private and public network.

Provide adequate bandwidth

Participant Country shall provide adequate bidirectional bandwidth of at least 256 kbps for the internet connection. This value is based on a 6 min down sampling rate.

Italy will provide one IP address exposed on the public network with adequate bandwidth.

Provide hardware and basic software



Proxy minimum hardware and software requirements

Processor	2.66 GHz Dual core Intel Xeon 5150
RAM	4 GB DIMM PC2-5300
Driver	Slim line CD-RW/DVD ROM 24x
Storage	80 GB Proxy SW dimension MS Window : 10 MB LINUX: 4 MB
Network card	Gigabit network adapter
Video Card	
Monitor, keyboard and mouse, USB ports	
Operating System	MS Windows Server 2003, MS Windows XP LINUX



Things to do (2/2)

SSL certificates

Italy will deliver the one way SSL certificate that will be installed within the Regional Server.

There is no requirement for participating Countries in regard to the certificates.

Provide the required technical information and coordinates

Each participating Country shall compile a form to provide the required technical information (IP addresses). The information has to be sent at the following e-mail address:

giuseppe.aulicino@mit.gov.it

Each participating Country has to provide the coordinates of the contact persons responsible for the project for technical and operational matters.

MAREX



ATS Targets

Thanks for the attention

giuseppe.aulicino@mit.gov.it

MSC EVA 371218000
64° 9.5km

ZONA DI RESPONSABILITÀ ITALIANA

ZONA DI PROTEZIONE ECOLOGICA

