

Fisheries Monitoring Centre (FMC)

Joint Workshop

“ Supporting the regional implantation of the FAO Port State Measures Agreement:
A decisive step toward an international Day of the fight against IUU fishing”

Tangier, Morocco, 6-8 December 2016

By

Christopher Sciberras

Senior Fisheries Protection Officer.

MALTA FMC

Department of Fisheries and Aquaculture (DFA)

How a FMC/VMS works



FMC



24 hrs / 7 days a week
6 officers

GPS SAT

Earth Station

FISHING VESSEL

VMS

MS & 3rd COUNTRIES



Malta's Vessel Monitoring System (VMS)

Article 16 of Cap 425.07

Article 18 to 27 of (EU) No 404/2011 Commission Implementing Regulation

Article 9 (1) of Council Regulation (EC) No 1224/2009

Article 9 (2) of Council Regulation (EC) No 1224/2009

Article 9 (9) CR of (EC) No 1224/2009

What is a VMS?

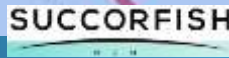
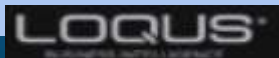
The most basic function of a VMS is to determine the vessel's location at a given time, and periodically transmit this information to a Fisheries Monitoring Centre (FMC).



ID: [REDACTED]
Label: [REDACTED]
Reg: [REDACTED]
Speed: 1.2125 mph, Dir: W
Last: 01/04/2016 11:27:38
Pos: 34.54921, 14.32107
Ghan Tuffeha, Malta

Article 19 of Commission implementing Regulation (EU) No 404/2011

Article 9 (3) of CR (EC) No 1224/2009



Monitoring of the 25 ENMZ and Protected Habitats in the past was done by VMS only

Only fishing vessels under 12m are permitted to operate inside the 25 nm Fisheries Management Zone of Malta, unless they have a License that's permits them to do so.

- ☐ Monitoring of Fishing vessels permitted to fish inside the 25 ENMZ.
- ☐ vessel not permitted to fish inside 25 ENMZ.
- ☐ Trawls Fishing 200m.
- ☐ Trawls Prohibited 1.5 NM of the coast (3 NM).
- ☐ Protected Habitats.
- ☐ Marine Parks.
- ☐ Wrecks.
- ☐ Depths and Distances.
- ☐ No towed gear inside 3 NM or 50 isobaths.



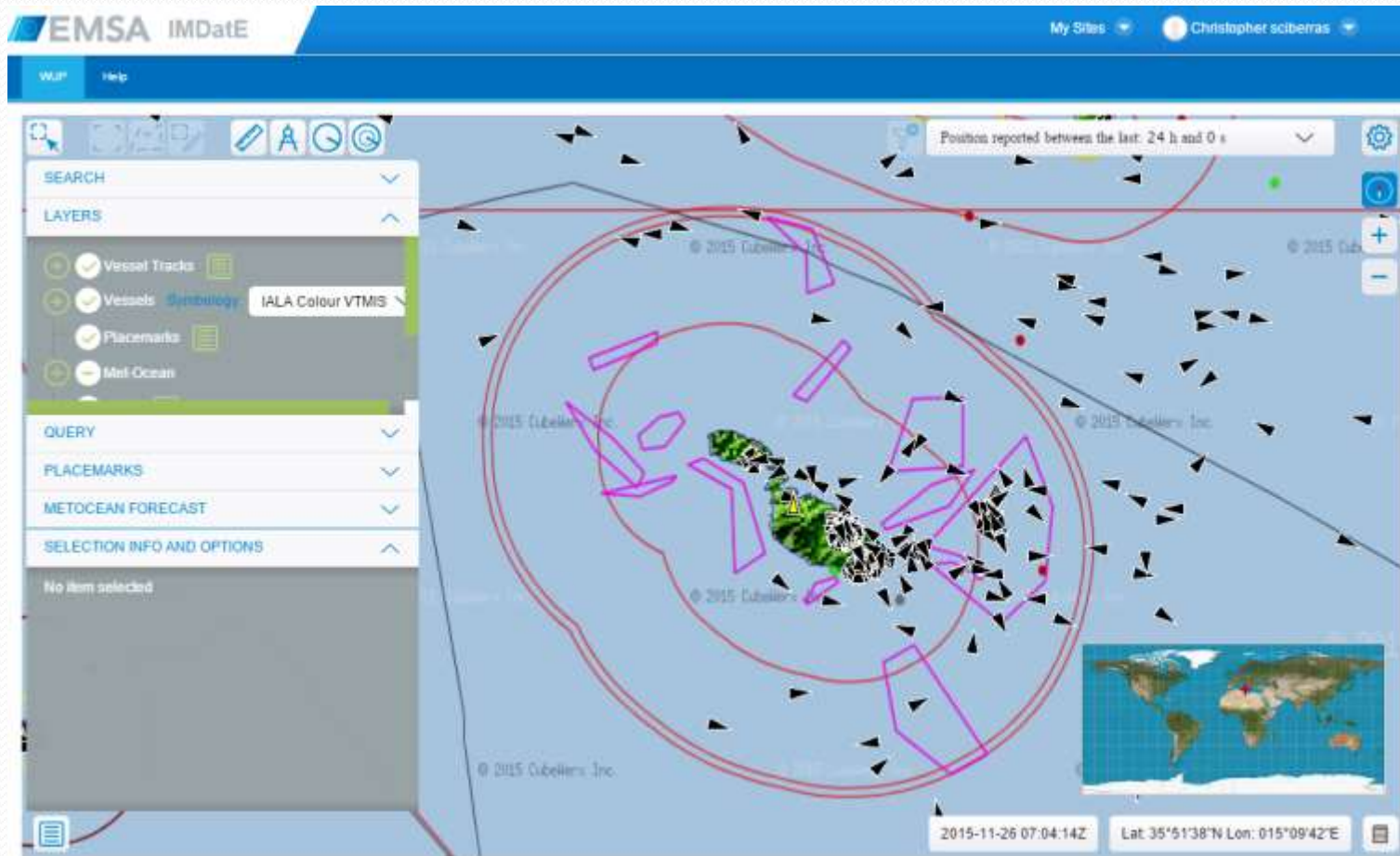
VMS Screen shot of 25 NMEZ.

EMSA IMDatE and Automated Behaviour Monitoring

The Integrated Maritime Data Environment (IMDatE) is a technical framework that collects and combines data from EMSA's maritime applications and other external sources to provide more comprehensive and configurable services to users. It also supports the relay of data between the maritime applications themselves, based on existing access rights.

Malta's 25 nm Fisheries Management Zone

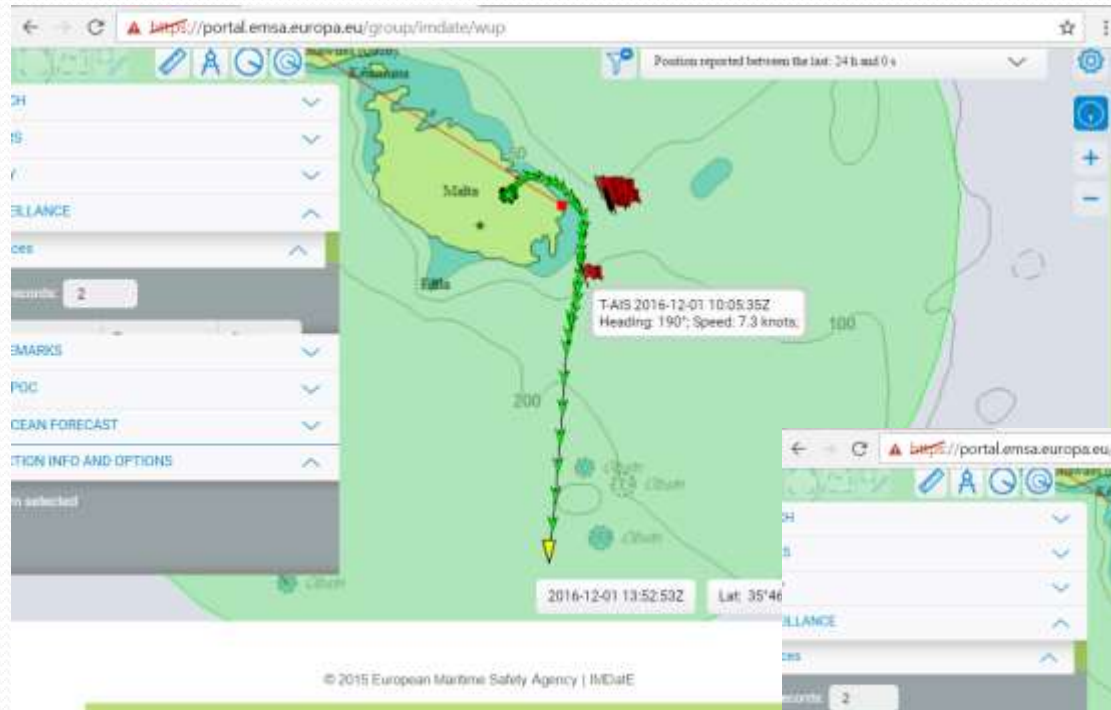
Introduction of AIS monitoring



With the introduction of the IMDatE and Automated behaviour monitoring, it has proven very Important to Fisheries due to the high level of F/V traffic around / entering Malta's 25 nm Fisheries Management Zone (FMZ).

Correlation of AIS and VMS data

AIS



VMS



IMDatE screenshot



Monitoring

EMSA IMDatE - Alert Report

ID: 1450726498745
 Surveillance type: InArea
 Surveillance instance: MT_25NMZONE
 Start Time: 2015-05-04T08:00:26-00:00
 End Time: 2015-05-04T08:00:26-00:00
 Event locations:

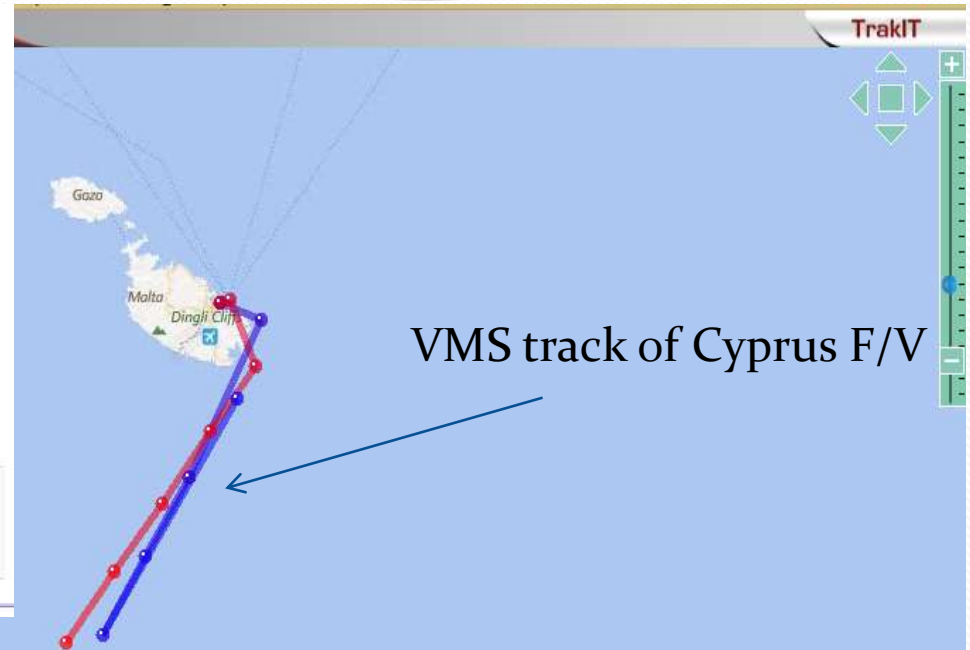
Longitude	Latitude
14.517	35.897

InArea event

status: IN
 position.timestamp: 2015-05-04T08:00:26-00:00
 position.latitude: 35.897
 position.longitude: 14.517
 Involved vessels:

InArea ID: 112211 MMSI: [REDACTED] IMO: N/A IR: [REDACTED] Call Sign: [REDACTED] Name: [REDACTED] Flag State: CY

Timestamp	Longitude	Latitude	Heading	Speed
2015-05-04T08:00:26Z	14.517	35.897	0	0



VMS track of Cyprus F/V

When AIS alerts are received of a Community F/V entering Malta 25 nm FMZ, the message is cross checked with Malta's VMS. If no VMS has been received then the F/V MS is alerted.

Mobile List Watchboxes Status Display Find History User Zoom Window Landmarks Converter

Mobile [REDACTED] From [REDACTED] 05-May-15 11:55

Updates/sec: 20

LOCATION Search Result

Path History Mobiles

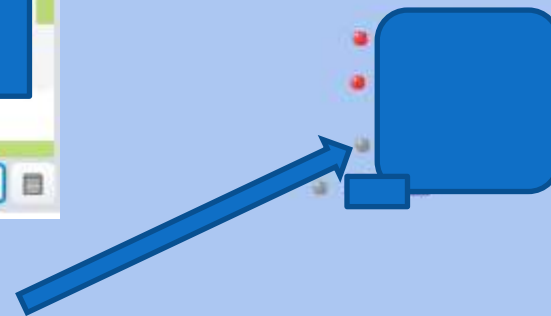
00:00:00

ID	Date	NM	Dir	Cor	Location
0	03/05/2015 ...	50	49	✓	0 miles U of Not Found
1	03/05/2015 ...	50	24	✓	0 miles U of Not Found
2	04/05/2015 ...	50	31	✓	0 miles U of Not Found
3	04/05/2015 ...	50	42	✓	0 miles U of Not Found
4	04/05/2015 ...	50	3...	✓	0 miles U of Not Found
5	04/05/2015 ...	0	1...	✓	0 miles U of Not Found

atarow_Msg (AVL_Update); Mobile_ID: 35692751; Date: 27/M

30 N Lng: 14.20532 DMS Lng: 14.12.19 E

CROSS CHECKING VMS/AIS



Vessel of interest

Satellite image

Position reported between the last: 24 h and 0 s

VESSEL OF INTEREST

ACTIVE ALERTS

CSN-DC EO Product
Acquisition Time: 2016-11-19 17:03:29Z
Type: L1_PRODUCT
Acquisition Station: CLS-Vigisat

CleanSeaNet – CSN - service

	Begin Timestamp	End Timestamp	Vessel MMSI	Vessel Name
38°28'E	2016-11-19 09:30:17Z	2016-11-19 09:30:17Z		
38°28'E	2016-11-19 09:26:55Z	2016-11-19 09:26:55Z		
38°10'E	2016-11-19 09:07:56Z	2016-11-19 09:07:56Z		
39°22'E	2016-11-19 09:05:53Z	2016-11-19 09:05:53Z		
39°10'E	2016-11-19 09:05:53Z	2016-11-19 09:05:53Z		

2016-11-19 18:44:08Z Lat: 35°52'56"N Lon: 014°38'32"E

VESSEL OF INTEREST



CROSS CHECKING CONTINUED

മിഷൻ
ഉറപ്പായും സമാധാനപരമായും
ലക്ഷ്യം നേടുന്നതിനായി



മിഷൻ
സ്ഥിരമായും സമാധാനപരമായും
ലക്ഷ്യം നേടുന്നതിനായി

Department of Fisheries and Aquaculture

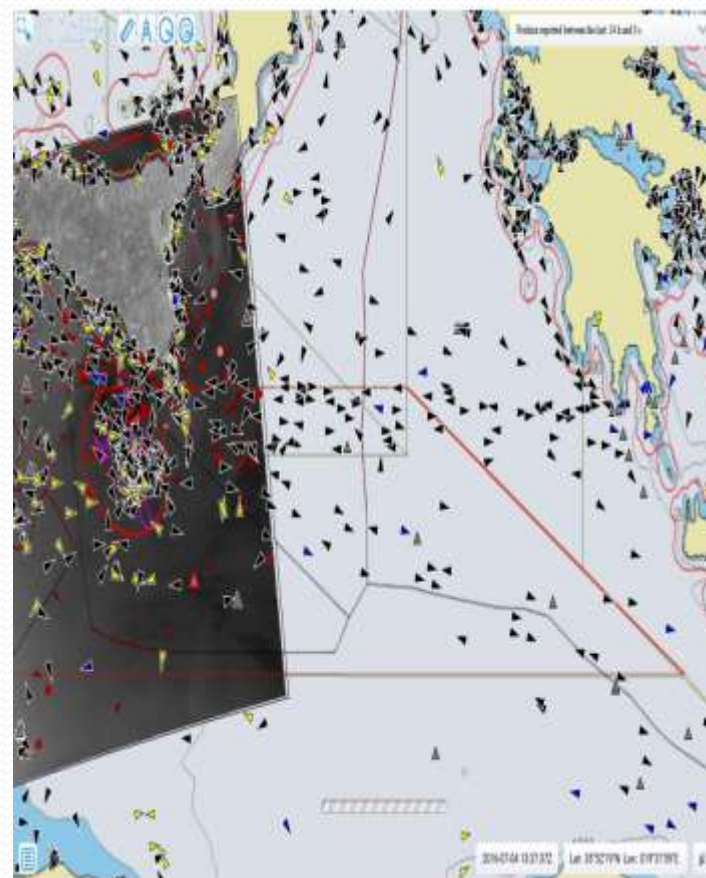
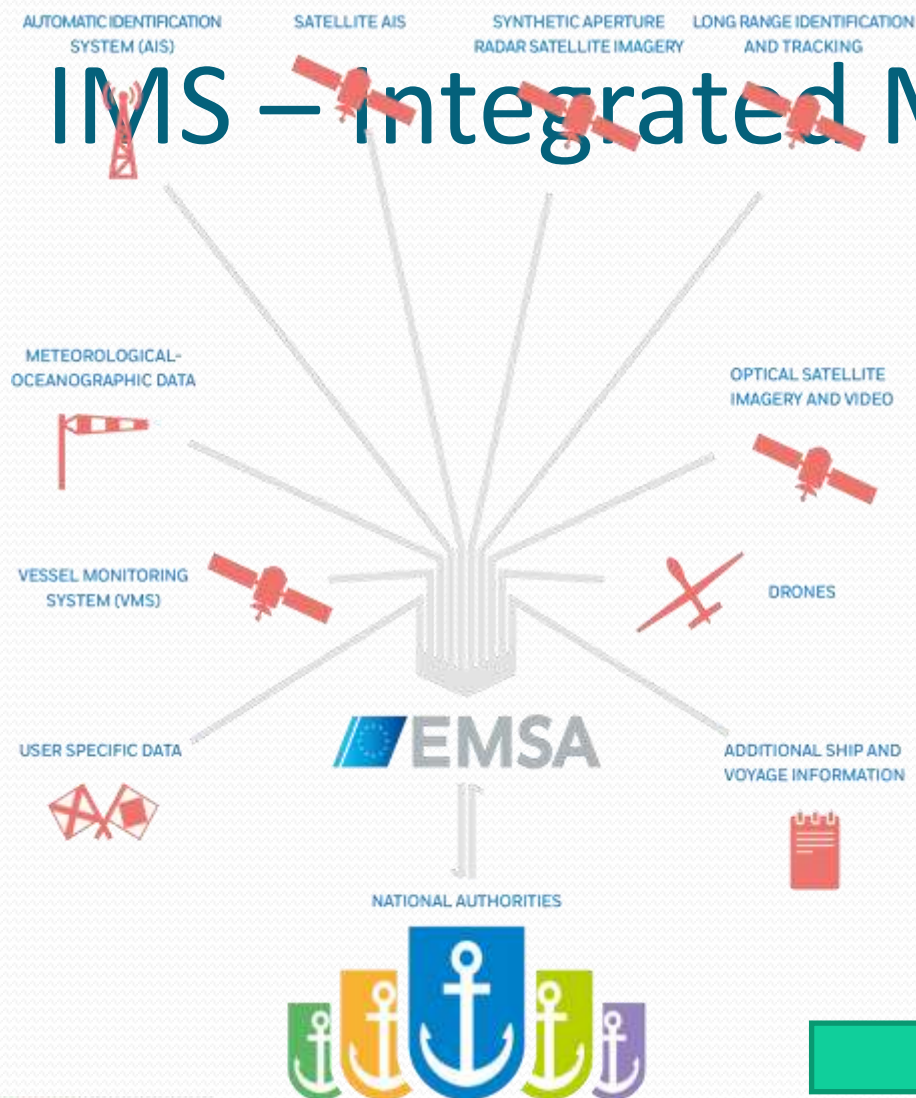
Department of Fisheries and Aquaculture

Automated Behaviour Monitoring (ABM) algorithms

- ABM is a part of IMS and analyses real time vessel position reports provided for a specific time period and area of interest (AOI), as defined by the users.
- The system focuses on the detection of specific events, and therefore may be categorized as 'event' based.



IMS – Integrated Maritime Services



Trawlers

Out of the 12 trawlers in the Maltese fishing fleet, 7 are permitted to operate inside the 25 FMZ.

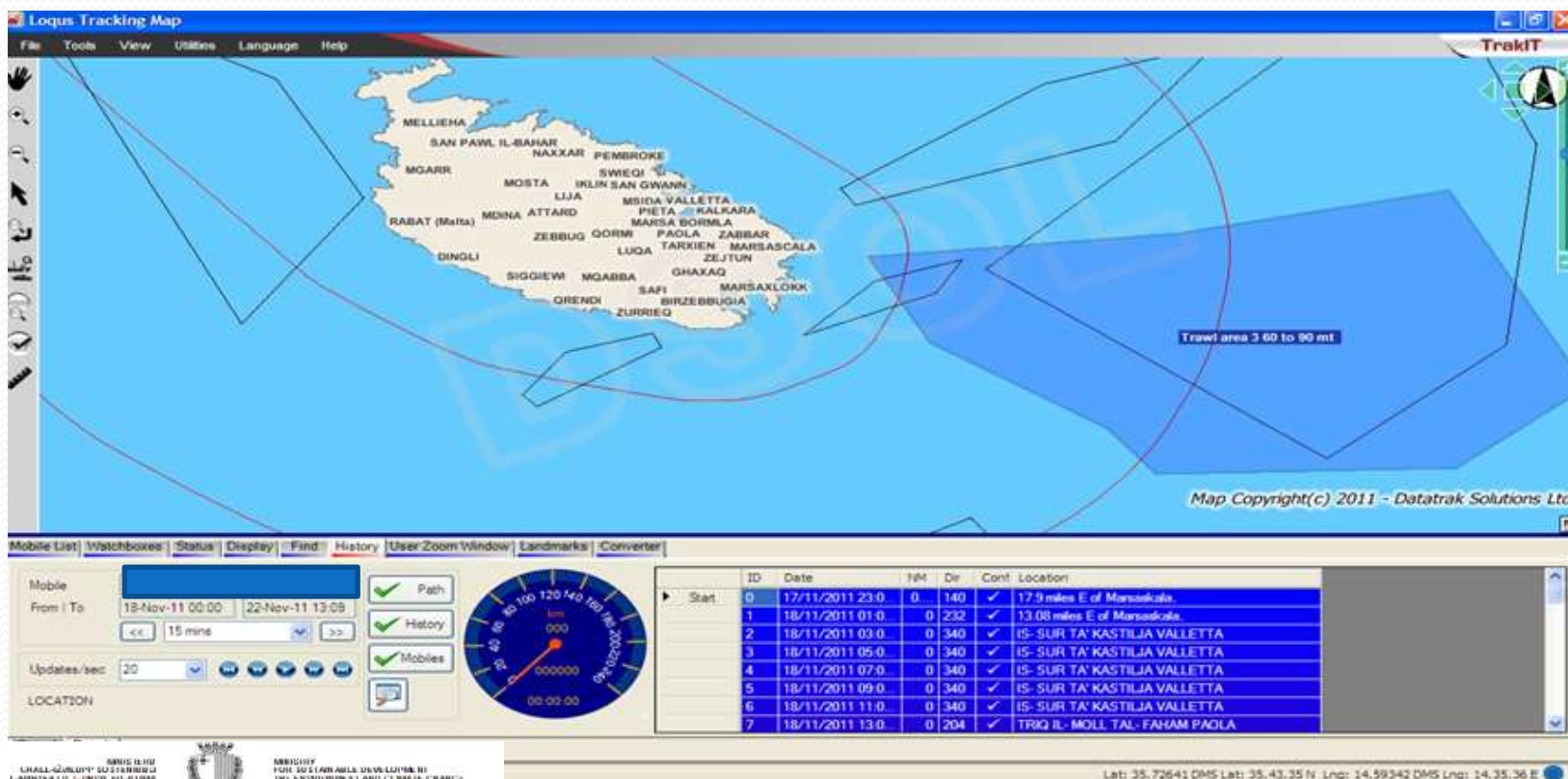
3 trawlers – In all waters within the 25 FMZ.

3 trawlers – In waters deeper than 200 metres only.

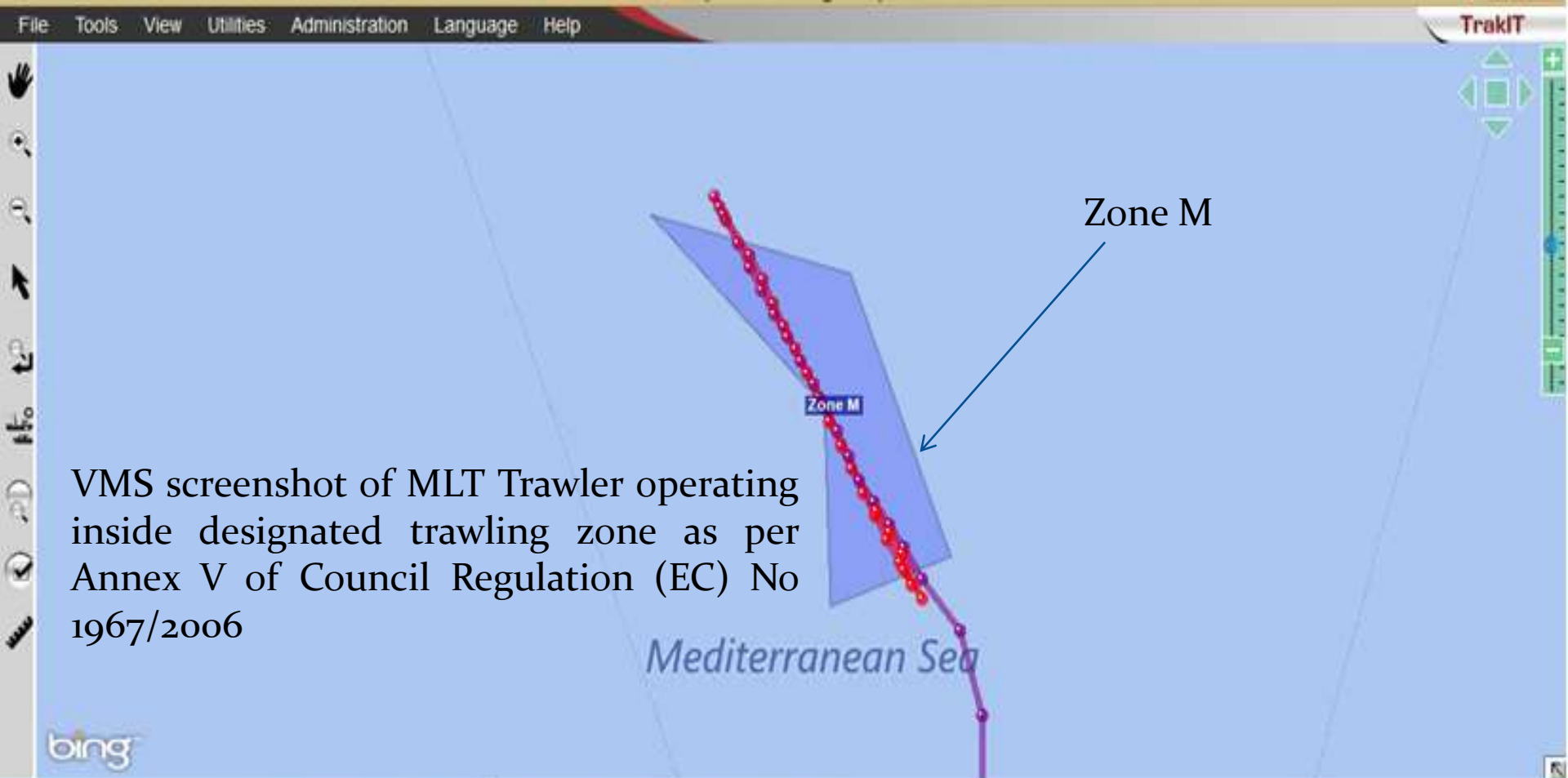
5 trawlers - not permitted to operate in the 25 nm FMZ.



Trawler



VMS Screen shot of trawl area



VMS screenshot of MLT Trawler operating inside designated trawling zone as per Annex V of Council Regulation (EC) No 1967/2006

Mobile List Watchboxes Status Display Find History User Zoom Window Landmarks Converter

Mobile: 425699319

From | To: 18-May-15 00:00 | 19-May-15 14:34

<< 15 mins >>

Updates/sec: 20

LOCATION: Search Result

Path History Mobiles

000000 00:00:00

ID	Date	NM	Dir	Cor	Location
0	18/05/2015 ...	0	N	✓	0 miles U of Not Found
1	18/05/2015 ...	0	N	✓	0 miles U of Not Found
2	18/05/2015 ...	0	N	✓	0 miles U of Not Found
3	18/05/2015 ...	0	N	✓	0 miles U of Not Found
4	18/05/2015 ...	0	N	✓	0 miles U of Not Found
5	18/05/2015 ...	0	N	✓	0 miles U of Not Found

Msg Type: Authentication; User_ID: 686; User_Name: Chris Sciberras

Lat: 36.31015 DMS Lat: 36.1837 N Lng: 14.29939 DMS Lng: 14.1758 E

Automated behaviour Monitoring - ABM

The screenshot displays the EMSA Fisheries Centre web application. The interface includes a search panel on the left, a map in the center, and a selection info panel at the bottom left. Two alert pop-ups are visible over the map, providing details for specific MT_ZONEM alerts.

Search Panel:

- Place Search
- Vessel OVR search
- New search...
- MMSI: [Redacted]
- Vessels: No vessel found
- Apply filter / Remove filter
- Layers
- Query
- Placemarks
- Selection Info

Selection Info:

- MMSI: [Redacted]
- Ship Name: [Redacted]
- Flag state: Malta
- Call sign: [Redacted]
- Ship type: Fishing vessel (315)
- 19 m

Alert 1: MT_ZONEM Alert 1432022312962

Surveillance instance:	MT_ZONEM
Begin Timestamp:	2015-05-19 07:48:31Z
End Timestamp:	2015-05-19 07:48:31Z
Lon:	014°22'52"E
Lat:	36°28'19"N
MMSI:	[Redacted]

[Select vessel](#)

Alert 2: MT_ZONEM Alert 1432005654891

Surveillance instance:	MT_ZONEM
Begin Timestamp:	2015-05-19 03:11:10Z
End Timestamp:	2015-05-19 03:11:10Z
Lon:	014°27'58"E
Lat:	36°21'36"N
MMSI:	[Redacted]

[Select vessel](#)

Example of a vessel leaving area of interest

Page Footer:

- EMSA
- Small Quality Sustainable Livelihoods
- Malta
- Ministry for Sustainable Development, Environment and Climate Change
- Department of Fisheries & Aquaculture

ABM types

ABM Type – description which events are automatically detected	ABM name
Entry of a particular vessel(s) to an area of interest	<i>In Area</i>
Passage of a vessel close to the shore	<i>Distance To Shore</i>
Vessels entering or leaving ports	<i>At Port At Sea</i>
Anchored vessels	<i>Anchorage</i>
Frequency of vessels' position reports higher or lower than expected	<i>UnderOverReporting</i>
Vessels approaching one another closer than an indicated distance, with a speed below defined threshold	<i>At Sea Encounter</i>
Change of heading higher than a threshold (e.g. more than 20 deg.)	<i>Sudden Change Of Heading</i>
Sudden change of speed	<i>Sudden Change Of Speed</i>
Change of speed above or below a limit set	<i>Speed Anomaly Over Period</i>
Passage of a vessel close to an area of interest	<i>Distance to Area</i>
Vessels entering a closed area at a specific time	<i>Time And Period Of Day</i>

Automated Behaviour Monitoring (ABM) scenario



ABM SCENARIO

Findings were that the Issue was with MLT server

EMSA IMDatE - Alert Report

ID: 1479725348387
 Surveillance code: InArea
 Surveillance instance: [REDACTED] FT Farm_clone
 Start Time: 2016-11-21T10:48:31-00:00
 End Time: 2016-11-21T10:48:31-00:00
 Event locations:

Longitude	Latitude
14.642	35.89

InArea event

status: OUT
 position.timestamp: 2016-11-21T10:48:31-00:00
 position.latitude: 35.89
 position.longitude: 14.642
 Involved vessels:

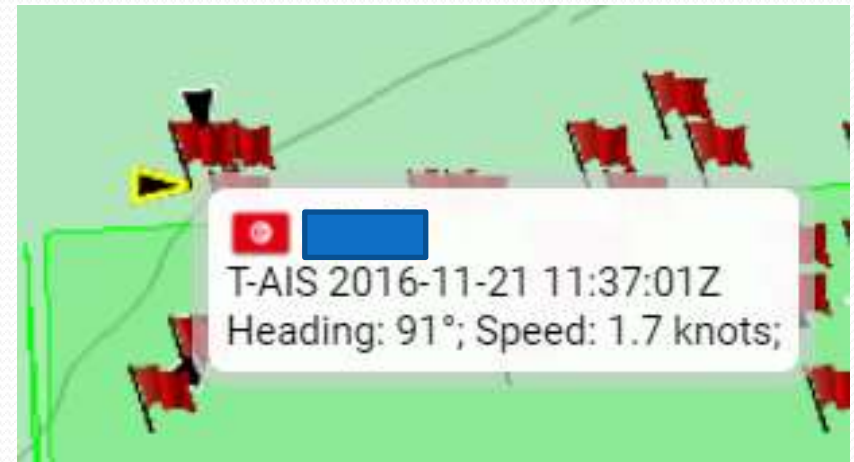
Imdate ID: 267472 MMSI: 0 [REDACTED] IMO: N.A. IR: [REDACTED] Call Sign: 3 [REDACTED] Name: [REDACTED] Flag State: TN

Positions:	Timestamp	Longitude	Latitude	Heading	Speed
	2016-11-21T10:48:31Z	14.642	35.89	NaN	NaN

ABM ALERT SENT FROM EMSA TO FMC VIA EMAIL



VMS SHOWING VESSEL IN PORT



AIS SHOWING VESSEL AT SEA

GPRS

LOQUS[®]
EQUIPMENT INSTALLATION

DataByte
CYBTEC[®]

PHERIES



MINISTERIO DE AGRICULTURA
Y PESCA
L. 11-11-2011



SECRETARÍA DE POLÍTICA
Y PLANIFICACIÓN
AGRICOLA Y PESQUERA

Departamento de Pesca y Acuicultura

Departamento de Política y Planificación

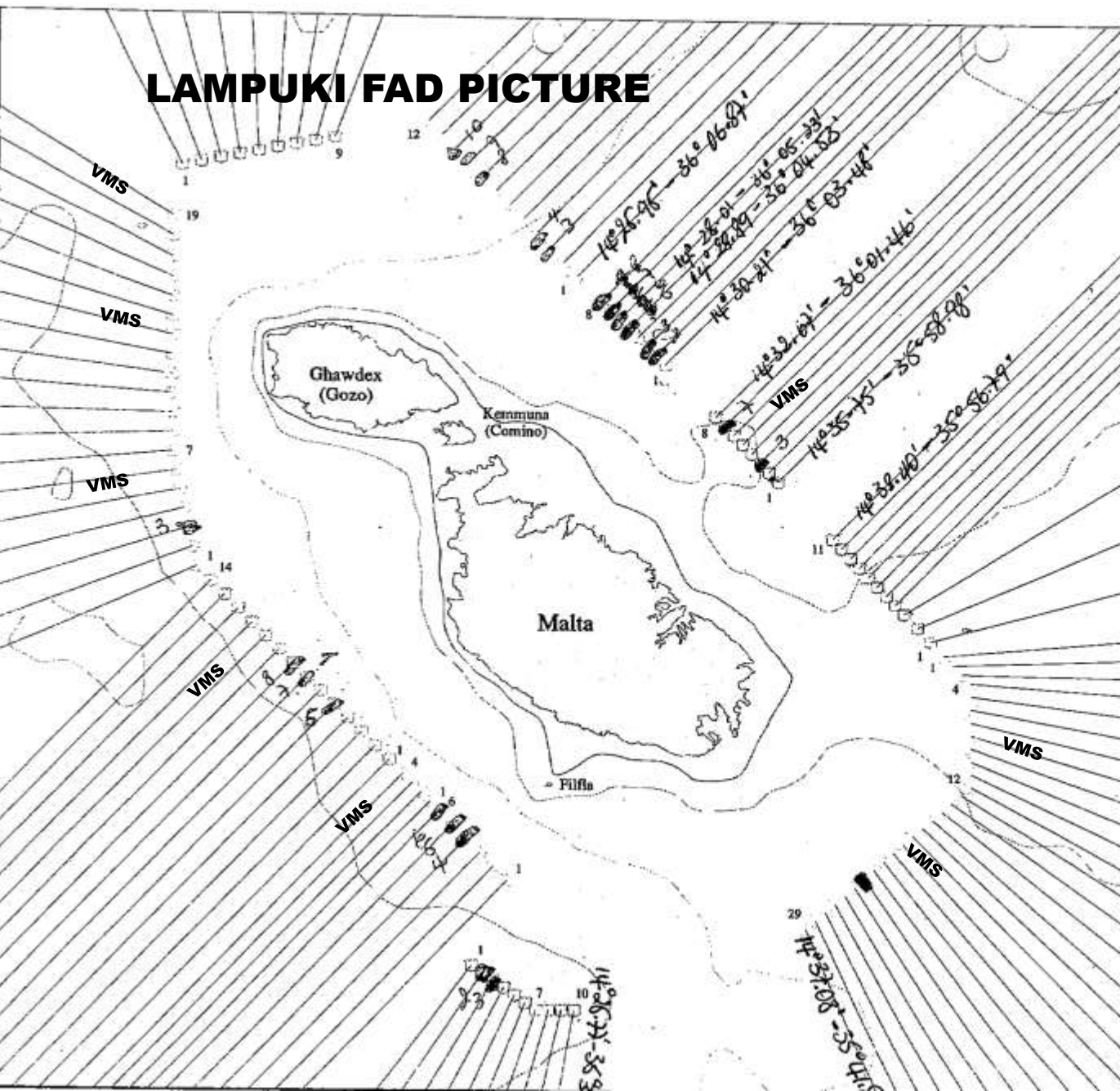
Lampuki (DOL) and GPRS

- The lampuka (DOL) (*Coryphaena hippurus*) is mainly fished by ring net fished on FADs. Sometimes taken by trolling, as a bycatch to LLD and of interest to anglers.
- **Season** – 16th August to 31st December
- Thus to monitor small scale fisheries whom are licensed to fish for DOL, Malta made it a requirement that all fishing vessels authorized for DOL fisheries had a tracking device installed (2014). To keep cost to a minimum vessels from 6 mts to 9 mts were installed with a GPRS tracker.

- The GPRS software application can also provide Journey reports of a fishing trip either in Excel, PDF or XML.
- Update of vessel position is approx 5 to 8 mins.
- The equipment has proven to be very robust with minimal repairs required upon the GPRS fishing fleet.
- Presently there are 136 fishing vessels from 6 to 10 metres operating with GPRS in small scale fisheries (DOL, SWO, WHB, LLS).

**It is envisage that all vessels active in SWO fishery will have a GPRS tracker.
Approx 675 vessels.**

LAMPUKI FAD PICTURE



Dolphin Fish F.A.D. Distributir Malta

Skeda II Aness (a).

Legend:

1 st. F.A.D.	District
	Marsalforn (1-9)
	Mgarr N/E (1-12)
	San Pawl (1-8)
	Valletta (1-8)
	Marsascala (1-11)
	Marsaxlokk S/E (1-29)
	Marsaxlokk S/W (1-10)
	Zurriq (1-6)
	Gnejna (1-4)
	Mgarr S/W (1-14)
	Xlendi (1-19)

Bathymetric Heights in Metres

	- 50m.
	- 100m.
	- 200m.
	- 500m.
	- 1000m.

Fisheries Conservation & Control Division,
Ministry for Rural Affairs & Environment,
Barraġa Wharf,
Valletta.

Tel : 21225236, 21225238
Fax : 21231294



GPRS cont...

Type of vessels installed with GPRS



Small scale fisheries.

16 (b) S.L.425.07 / Article 9 (9) CR of (EC) No 1224/2009

Malta monitors its small scale fisheries for control purposes that are involved in fishing for controlled species e.g. SWO,BFT and DOL.

Approx 136 Fishing vessels from 5 to 10 m are installed with a GPRS tracker.

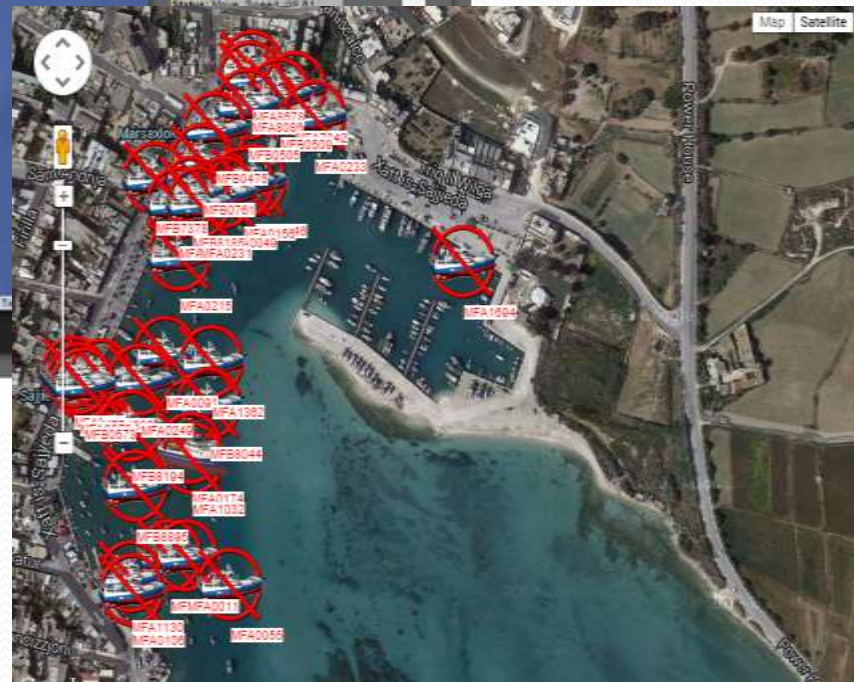


Article 23 of Commission Implementing Regulation (EU) 404/2011

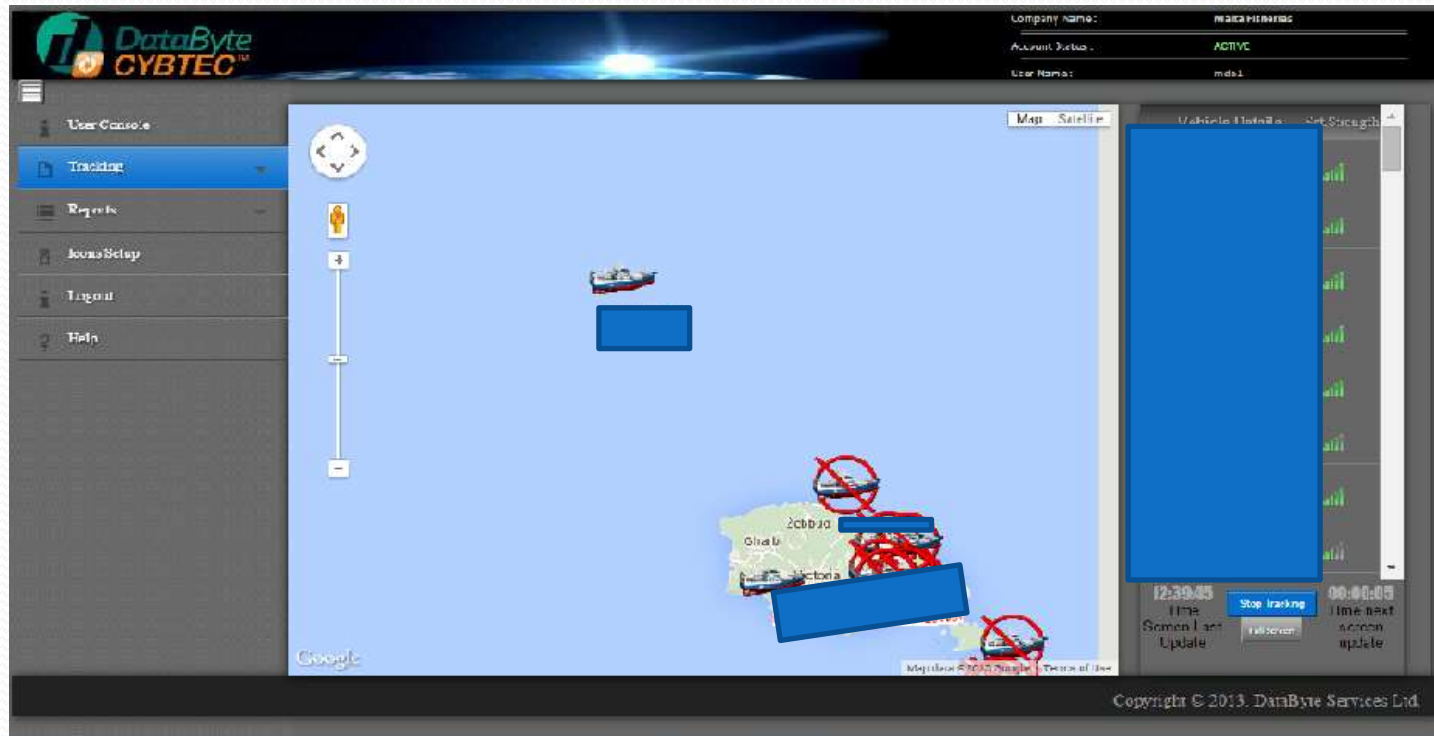
The GPRS system also comes with monitoring software for the FMC



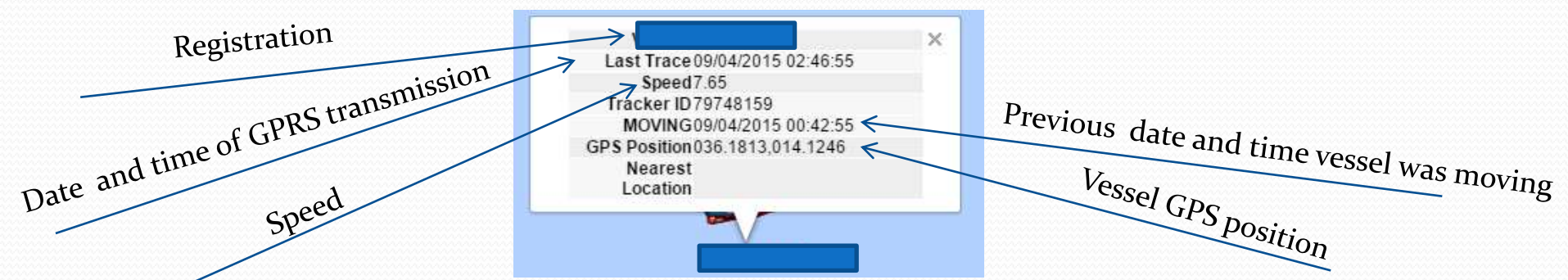
Close up view of Marsaxlokk port



GPRS cont...

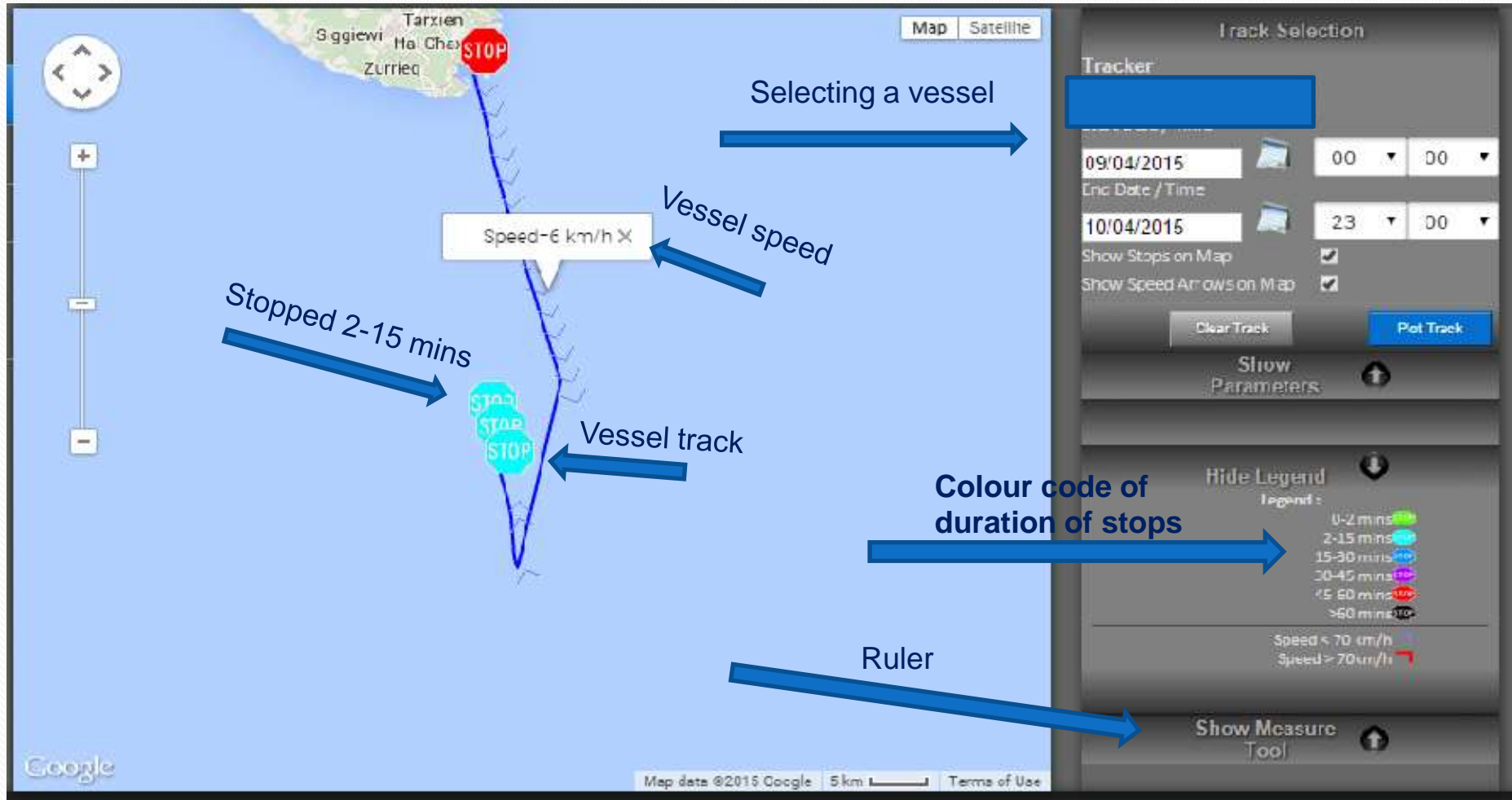


Display of a fishing vessel less than 9 mt equipped with GPRS at sea



GPRS cont

Display of a vessel fishing trip



User Console

Tracking

Geofencing

Reports

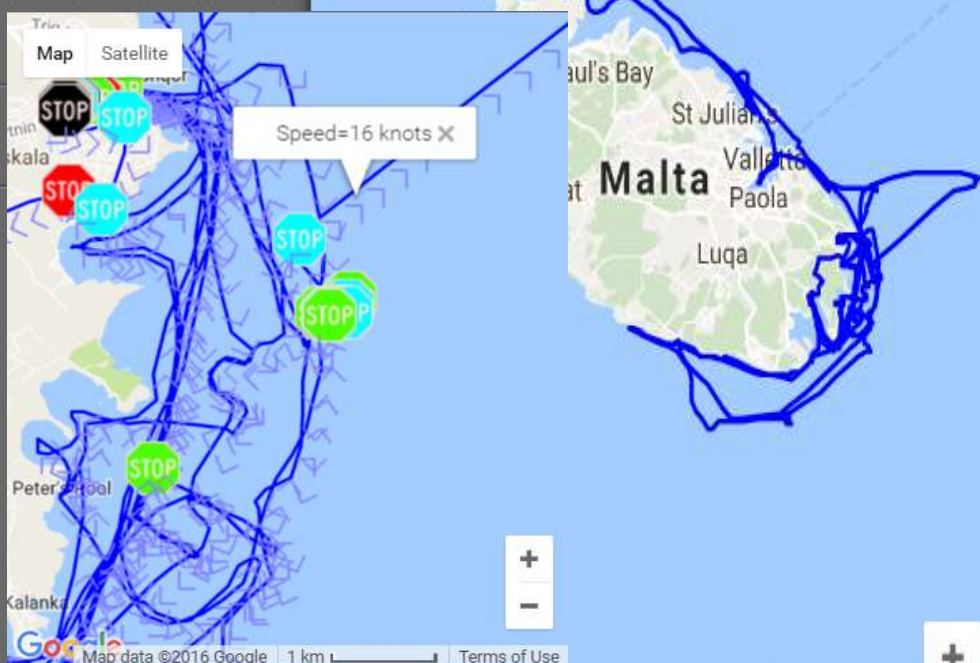
Icons Setup

Logout

Help

Latitude : 35°47'14 Longitude :

Stop	Stop:26
Stopped From	19/10/2016 10:21:01
Stopped To	19/10/2016 10:22:32
Interval	00:01
Address	35.83416,14.57104
GPS Position	035.8342, 014.5710



Track Selection

Tracker

DFA RIB

Start Date / Time

01/10/2016 00 00

End Date / Time

01/11/2016 23 00

Show Stops on Map

Show Speed Arrows on Map

Clear Track

Plot Geofences

Start Measuring

Plot Track

Show Parameters

Hide Legend

Legend:

- 0-2 mins STOP
- 2-15 mins STOP
- 15-30 mins STOP
- 30-45 mins STOP
- 45-60 mins STOP
- >60 mins STOP

Speed < 70 knots

Speed > 70 knots

User Console

Tracking

Geofencing

Reports

Icons Setup

Logout

Help

Daily Movement Report

Tracker

DFA RIB

From

01/11/2016

To

01/11/2016

Time From

00

00

Time To

23

59

Stop Trigger

33

(secs)

Speed Threshold

2

knots

Stop Detect Mode

Detailed Mode

Coarse Mode

All Records

Hourly Summary

Detail/Summary

PDF

Excel

XML

Popup

Summary Window

Report Output

Excel

XML

Output Window

Popup

Summary Window

DataByte
CYBTEC

Daily Movement Report

Tracker: OFA RIB | Date: 01/10/2016 (00:00 - 23:59)

01/10/2016 7:48:03

Action	Start	End	From	To	Duration	Distance (Km)
04/10/2016						
MOVE	8:47:20	8:51:23	35.80360100000007,14.50218	35.80528000000007,14.50741	00:03:32	1.12
MOVE	8:52:54	9:29:53	35.80528000000007,14.50741	35.840985,14.58806	00:34:58	11.04
MOVE	9:31:24	9:32:50	35.840985,14.58806	35.840775,14.58801000000007	00:01:02	0.32
MOVE	9:34:27	9:34:57	35.840775,14.58801000000007	35.84089,14.58870000000007	00:00:30	0.16
MOVE	9:40:32	9:42:33	35.84089,14.58870000000007	35.847065,14.58586	00:02:01	0.64
MOVE	9:50:09	9:51:10	35.847065,14.58586	35.846995,14.59005000000007	00:01:01	0.32
MOVE	9:54:43	9:55:13	35.846995,14.59005000000007	35.84757,14.59009	00:00:30	0.16
MOVE	10:01:49	10:02:49	35.84757,14.59009	35.84818,14.59100000000007	00:01:00	0.32
MOVE	10:04:21	10:06:22	35.84818,14.59100000000007	35.85297,14.58595	00:02:01	0.64
MOVE	10:09:24	10:29:41	35.85297,14.58595	35.88962100000007,14.650105	00:19:47	6.24
MOVE	10:34:45	10:36:47	35.88962100000007,14.650105	35.890435,14.655548	00:02:02	0.64
MOVE	10:37:48	11:23:54	35.890435,14.655548	35.83683000000007,14.54594	00:45:34	14.40
MOVE	11:59:53	12:28:16	35.83683000000007,14.54594	35.86498000000007,14.56422000000007	00:28:23	8.96
MOVE	12:30:17	12:32:18	35.86498000000007,14.56422000000007	35.86397,14.58226100000007	00:02:01	0.64

07/10/2016

MOVE	8:40:34	7:12:29	35.86397,14.58226100000007	35.884235,14.55738100000007	00:31:25	9.92
MOVE	7:13:30	7:15:32	35.884235,14.55738100000007	35.88788,14.5531	00:02:02	0.64
MOVE	7:17:03	7:44:24	35.88788,14.5531	35.90814,14.519315	00:26:20	8.32
MOVE	7:48:28	7:48:58	35.90814,14.519315	35.90888100000007,14.51905	00:00:30	0.16
MOVE	7:50:29	7:53:01	35.90888100000007,14.51905	35.91361,14.51517000000007	00:02:32	0.80
MOVE	7:55:03	8:11:16	35.91361,14.51517000000007	35.921545,14.50152100000007	00:15:42	4.96
MOVE	8:13:17	8:16:50	35.921545,14.50152100000007	35.917955,14.50627	00:03:33	1.12
MOVE	8:21:54	8:32:32	35.917955,14.50627	35.944305,14.45996100000007	00:10:38	3.36
MOVE	8:33:33	8:34:04	35.944305,14.45996100000007	35.94434,14.45989	00:00:31	0.16
MOVE	8:35:04	8:49:46	35.94434,14.45989	35.96552100000007,14.412495	00:14:11	4.48
MOVE	8:50:47	8:56:52	35.96552100000007,14.412495	35.964285,14.39821	00:06:05	1.92
MOVE	9:06:59	9:12:34	35.964285,14.39821	35.96943,14.38301	00:05:35	1.76
MOVE	9:20:10	9:24:43	35.96943,14.38301	35.98053,14.373635	00:04:33	1.44
MOVE	9:25:44	9:26:15	35.98053,14.373635	35.98011000000007,14.37381000000007	00:00:31	0.16



GPRS

Able to access data for 1 year

GPRS integrated with VMS system

File Edit View Favourites Tools Help		Request From:		3 October 2010, 09:00	
Labels:		Request To:		6 October 2010, 16:23	
Registration No.:		Name:		Sueyary	
Filetype(s):		Interval:		1 Day 0h0	
Ignored Services:		Priority Label:		€ 0.00 per hour	
Filter(s):		Billing Cycle:		Same as Priority Cost	
Update Status:		Resolving Cost:		€ 0.00 per mile	
Click Here for More Data					

JOURNEY 1									
DATE	TIME	LOCATION	LOCATION ID	DRIVER	DRIVER ID	DISTANCE	CAR	DRIVE TIME	COST
03/10/2010	07:17:44	Journey Started at Request From's location, Noordwijk.							
03/10/2010	07:17:44	Request From's location	56	35.8214721,52	no driver	Good	0s		
03/10/2010	07:18:44	Request From's location	5	35.8214725,62	0.1miles	Good	3m 00s		
03/10/2010	07:19:44	Request From's location	5	35.8214725,5	0.1miles	Good	2m 00s		
03/10/2010	07:20:44	Request From's location	50	35.8214730	0.1miles	Good	3m 00s		
03/10/2010	07:21:44	Journey has been after for No. 24 at Request From's location, Noordwijk.							
03/10/2010	07:24:44	Request From's location	W	35.8214730	0.1miles	Good	4m 00s		
03/10/2010	07:25:44	Journey finished at Request From's location, Noordwijk.							
									€ 0.00

Journey Start/End:		Request From's location, Noordwijk, to Request From's location, Noordwijk.	
Journey Period:		03/10/2010 to 06/10/2010 16:23:00	
Journey Summary:		0.1miles to see 34s Oncharging 3m 34s Mile Time (53.374s)	
Cost:		€ 0.00 (0.11miles @ € 0.00 per mile + tax 24s @ € 0.00 per hr)	

JOURNEY 2									
DATE	TIME	LOCATION	LOCATION ID	DRIVER	DRIVER ID	DISTANCE	CAR	DRIVE TIME	COST

Date	NM	Dir	Conf	Location
10/2016 18:09	5.625	S	✓	2.4 miles S of Birzebura
10/2016 18:11	5.625	S	✓	2.55 miles S of Birzebura
10/2016 18:13	5.625	S	✓	2.72 miles S of Birzebura
10/2016 18:14	5.625	SW	✓	2.8 miles S of Birzebura
10/2016 18:16	5.625	S	✓	2.98 miles S of Birzebura
10/2016 18:17	5.625	S	✓	3.06 miles S of Birzebura
10/2016 18:19	6.25	N	✓	2.99 miles S of Birzebura
10/2016 18:21	5	S	✓	3.08 miles S of Birzebura
10/2016 18:23	5.625	N	✓	3.02 miles S of Birzebura
10/2016 18:24	5.625	N	✓	2.93 miles S of Birzebura
10/2016 18:25	5	N	✓	2.85 miles S of Birzebura
10/2016 18:28	5.625	N	✓	2.58 miles S of Birzebura

Msg Type: Datarow_Msg (AVL_Update); Mobile_ID: 990005584; Date: 02/Dec/2016 10:06:00; Lat: 35.88; Lon Lat: 35.78343 DMS Lat: 35.47.0 N Lng: 14.56977 DMS Lng: 14.34.11 E

NOW MORE FISHERY MONITORED

Location	Fishing Gear	Species
Offshore bottom	Longlines	Dogfish, Skate, Ray, Grouper, Bream
Inshore/reefs (rocky shoals)	Trammel-nets and Gill-nets	Bogue and Horse-Mackerel
Offshore	Trolling lines	Frigate Mackerel, Bronze Bream, Bonito and Small Tunas
Coastal	Purse-seining	Bogue, Mackerel and Horse-Mackerel, Tuna
Offshore	Long-Lines	Tuna and Swordfish
Offshore	Kannizzati	Dolphin fish, Pilot fish and Amberjack
Offshore / Coastal	Lampara / Trawl	Mackerel, Horse Mackerel

CONTACT INFORMATION



MALTA FMC – OFFICE / 0035622926888 / 24 HRS.
MOBILE / 0035699674933 / 24 HRS.

EMAIL / infofisheries.msdec@gov.mt



Thank you,
Questions?

