

# BULGARIAN FISHING FLEET COMMUNICATION TOOLS INFORMATION TECHNOLOGIES

Bulgarian National Agency of Fisheries  
and Aquaculture

## BULGARIAN FISHING FLEET

- Total number of the fishing vessels in the fleet register
- Fishing vessels in the different segments

SEGMENTS REGARDING THE OVERALL LENGTH	No. of vessels in the fishing fleet register			
	31.12. 2008	31.12. 2009	31.12. 2010	31.10. 2011
under 6 m.	846	708	762	774
from 6 to 12 m.	1 593	1 392	1 471	1 465
from 12 to 18 m.	68	65	67	60
from 18 to 24 m.	29	28	27	25
over 24 m.	12	13	13	12
<b>TOTAL</b>	<b>2 548</b>	<b>2 206</b>	<b>2 340</b>	<b>2 336</b>

## **MAIN TARGETED FISH STOCKS BY THE FISHING VESSELS, FLYING THE FLAG OF BULGARIA**

- ANCHOVY
- EUROPEAN SPRAT
- MEDITERRANEAN HORSE MACKREL
- TURBOT
- PIKED DOGFISH
- WHITING
- RAPANA

**According to the legislation of the European Union, Bulgaria has implemented the system for allocation of fishing opportunities for two stocks (turbot and sprat) since 2008.**

## **Control, Monitoring and Reporting of the fishing activities**

- **Council Regulation (EC) № 1224/2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy**
- **Vessels Monitoring System**
- **Information Statistics system (ISS)**

# INFORMATION SYSTEMS

- ✓ NAFA - Bulgaria developed and implemented two information systems to serve the needs of different management and operative levels – Information Statistics system (ISS) and Vessels Monitoring system (VMS).
- ✓ The implementation of these Information systems is in conformity with the EU Regulations and recommendations.
- ✓ General features:
  - ✓ Produces authoritative fishing statistics reports in conformity with the EU legislation requirements related to data format.
  - ✓ Thorough analysis of the results, determining adequate management decisions.
  - ✓ Basic advantage of the adopted systems is their contribution to the enhancement of NAFA's control techniques efficiency
  - ✓ Effectiveness and high speed data processing.

## The VMS of Bulgaria

- Implemented in accordance with the provisions and the requirements of the European Union legislation
- Bulgarian VMS encompasses all fishing vessels over 15 m. overall length

**Remark:** In compliance with the EU legislation all EU vessels with 12 m. overall length or more should have installed on board equipment for VMS not later than 01 January 2012.

# VESSEL MONITORING SYSTEM

- ☒ Visualization of the vessel's movement
- ☒ Large scale vector electronic map in WGS 84 coordinate system
- ☒ Options for monitoring of predefined number of objects
- ☒ The data stored in the system (current coordinates, date, time...) could be checked and analyzed easily for programmable period of time.



# Message format

- The messages transmitted through the onboard equipment, installed on board of the fishing vessels contain the following information:
- Name of the vessel \ external mark
- Date and time of transmission
- Position time
- Reason for transmission (data report, message)
- Current coordinates
- Speed
- Course
- Distance from homeport
- Message number
- In case of text message transmission the message is displayed along with positions registration data

The screenshot displays the Navifleet monitoring software interface. The main window shows a map of the Black Sea region with various vessels tracked. A callout box highlights a specific event in the 'LAST EVENTS (266/266)' table, stating 'Text message, received in the VMS'.

Vehicle	Date	Position time	Reason	Longitude	Latitude	S...	C...	Message	Message...	Nearest POI
PK ШЕНКОЗЕР	2008.04.06 15:27:07	2008.04.06 15:26:14	DATA_REP...	027 58 45'E	042 30 45'N	...	...	Switch off	1624112	Cozonon-24.9km
ПРИЯТЕЛ	2008.04.06 15:24:19	2008.04.06 15:26:00	DATA_REP...	027 51 55'E	042 30 47'N	012	184	...	1624112	Цапево-0.9km
PK ДЕВА	2008.04.06 15:16:11	2008.04.06 15:18:23	DATA_REP...	028 38 12'E	043 08 19'N	003	046	...	1624111	Батнак-49.0km
PK 26	2008.04.06 15:14:06	2008.04.06 15:16:22	DATA_REP...	027 54 45'E	042 25 26'N	014	268	...	1624109	Cozonon-15.8km
PK 3	2008.04.06 15:08:54	2008.04.06 15:08:00	Message	027 41 24'E	042 25 26'N	...	...	Switch off	1624109	Cozonon-0.2km [Co...
ОМЕГА	2008.04.06 15:01:44	2008.04.06 15:03:59	DATA_REP...	027 43 59'E	042 20 52'N	000	126	...	1624108	Cozonon-9.1km
В45159	2008.04.06 15:00:38	2008.04.06 15:02:50	DATA_REP...	028 39 43'E	043 17 23'N	003	230	...	1624107	Батнак-43.0km
PK 40	2008.04.06 14:59:38	2008.04.06 15:01:49	DATA_REP...	027 55 57'E	042 41 31'N	016	240	...	1624106	Неводво-17.8km
МЕДУЗА.3	2008.04.06 14:57:01	2008.04.06 14:59:14	DATA_REP...	027 41 28'E	042 25 19'N	000	030	...	1624105	Cozonon-0.2km
PK 37	2008.04.06 14:51:30	2008.04.06 14:53:45	DATA_REP...	027 41 28'E	042 25 47'N	011	242	...	1624104	Cozonon-0.7km
PK 3	2008.04.06 14:48:40	2008.04.06 14:48:00	Message	027 57 24'E	042 22 35'N	...	...	End to	1624103	Cozonon-22.4km
PK 26	2008.04.06 14:46:14	2008.04.06 14:46:26	DATA_REP...	028 37 38'E	043 07 59'N	003	070	...	1624102	Батнак-49.0km
PK ДЕВА	2008.04.06 14:45:04	2008.04.06 14:47:16	DATA_REP...	028 46 24'E	043 13 24'N	004	240	...	1624101	Батнак-54.0km
PK 26	2008.04.06 14:41:01	2008.04.06 14:43:14	DATA_REP...	027 58 57'E	042 28 40'N	005	010	...	1624100	Cozonon-24.6km
МЕДУЗА.3	2008.04.06 14:30:53	2008.04.06 14:30:00	Message	027 41 28'E	042 25 19'N	...	...	Switch on	1624099	Cozonon-0.2km
PK ШЕНКОЗЕР	2008.04.06 14:27:03	2008.04.06 14:29:16	DATA_REP...	028 46 48'E	043 13 33'N	004	250	...	1624098	Батнак-54.4km
ПРИЯТЕЛ	2008.04.06 14:24:35	2008.04.06 14:26:49	DATA_REP...	027 51 28'E	042 15 00'N	005	046	...	1624097	Цапево-8.7km
PK 3	2008.04.06 14:21:27	2008.04.06 14:23:39	DATA_REP...	027 44 02'E	042 23 55'N	011	002	...	1624096	Cozonon-4.5km
PK ДЕВА	2008.04.06 14:16:00	2008.04.06 14:18:12	DATA_REP...	028 37 38'E	043 07 59'N	004	190	...	1624095	Батнак-49.0km

## Communication between the FMC and the Master of the fishing vessel

- ☒ The system disposes with module designed for communication between the FMC and the Master of the fishing vessel. This is accomplished by the transfer of text messages – could be free style.
- ☒ Request for current position – suspecting IUU fishing activity the operator from the VMS center could generate request for reporting the current position, which will be responded automatically by the vessel's equipment – prevents data corruption by third parties
- ☒ Polling option – in case of infringement the vessels activity can be controlled more strictly. The frequency of transmission can be increased remotely.

The screenshot displays the Navifleet VMS monitoring software. The interface includes a menu bar (System, Edit, Windows, Help), a toolbar, and several main sections:

- VEHICLES:** A list of vessels with columns for 'vle name', 'Status date', and 'Reason'. The list includes various vessel names like РУСАТКА, РК ДЕВА, РК ДЕЛТА, etc.
- MAP SYSTEM:** A map showing the Balkan region with markers for Bucharest, Sofia, and Skopje. A scale bar indicates 40 km.
- LAST EVENTS (254-254):** A table with columns: Vehicle, Date, Position time, Reason, Longitude, Latitude, S., C., Message, Message, Nearest POI. It shows a list of recent events for various vessels.
- Request for current position:** A dialog box with a 'Request type' dropdown menu (options: Minimal position request, Maximal position request, Group position request, Start timer, Stop timer) and a 'Send' button.

# Outbox

Navifleet [1212.50.31] 155 (supervisor/supervisor) - [Outbox]

System Edit Windows Help

GROUPS MONITORING **OUTBOX** ROUTE HISTORY DIAGNOSTIC

Message id	Vehicle	Request date	Status date	Action	State	Model	User	Client	Driver	Media	Operation
20702	PK 27	2006.12.14.08:57	2006.12.14.10:54	PK#	Sending failed	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20704	ETRC	2006.12.14.10:50	2006.12.14.10:51	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20701	PK 26	2006.12.14.08:57	2006.12.14.10:54	PK#	Sending failed	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20743	SEPHOR	2006.12.14.10:50	2006.12.14.10:51	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20742	EPHICER	2006.12.14.10:51	2006.12.14.10:51	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20746	HARDAK 1	2006.12.14.10:50	2006.12.14.10:51	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20745	PK 27	2006.12.14.10:51	2006.12.14.10:51	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20781	HARDAP	2006.12.14.10:50	2006.12.14.10:50	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20782	PK 26	2006.12.14.10:50	2006.12.14.10:50	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20783	PK 27	2006.12.14.10:50	2006.12.14.10:50	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20785	ETRC	2006.12.14.10:50	2006.12.14.11:00	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20784	EPHICER	2006.12.14.10:50	2006.12.14.10:50	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20786	HELYSA 3	2006.12.14.10:50	2006.12.14.11:00	PK#	Sending in progress	Interstat-mirac	Supervisor	Supervisor		IMARSATC-INT#	INTERNET
20785	PK 27	2006.12.14.11:46	2006.12.14.12:10	PK#	Sending in progress	Interstat-mirac	Monitor	Monitor		IMARSATC-INT#	INTERNET

Export View details Resend Cancel sending Hide Update

12:10:36

## VMS Features and aims

- **The system provides an indication of the fishing activity and records the vessel's track pattern**
- **Option for detailed analysis of the vessel's fishing activity**
- **The catch could be checked and registered even in case that the vessel is not discharged at it's homeport**
- **Enhances the control efficiency over the Bulgarian part of the Black sea coast**

## Scientific orientated data Trawl surveys for assessment of the resources of commercially important species

- One of NAFA's main activities is research of sustainable catch levels and determination of the national quotas of commercially important species.

The agency is financially involved in trawl survey projects and in data processing. The FMC provides information stored in the FVMS to support the surveys' reports preparation.

- Figure 1. Trace of the Fishing vessel "Elis" – trawl survey for turbot recourses
- Figure 2. Trace of the Fishing vessel "Prof. Vulkanov" – trawl survey for sprat recourses.

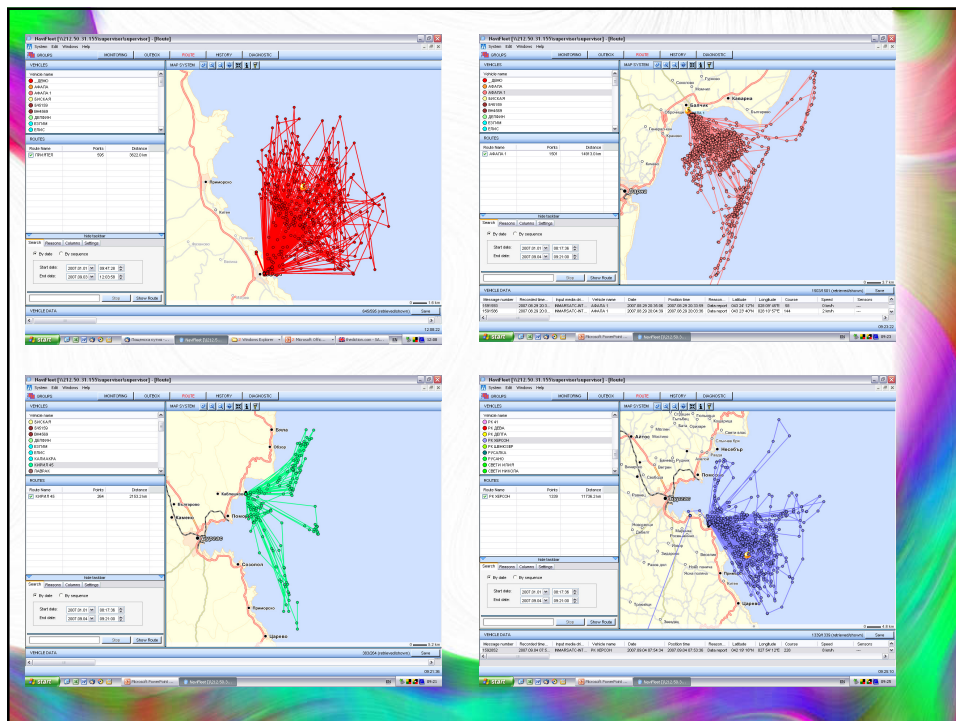




Figure 1

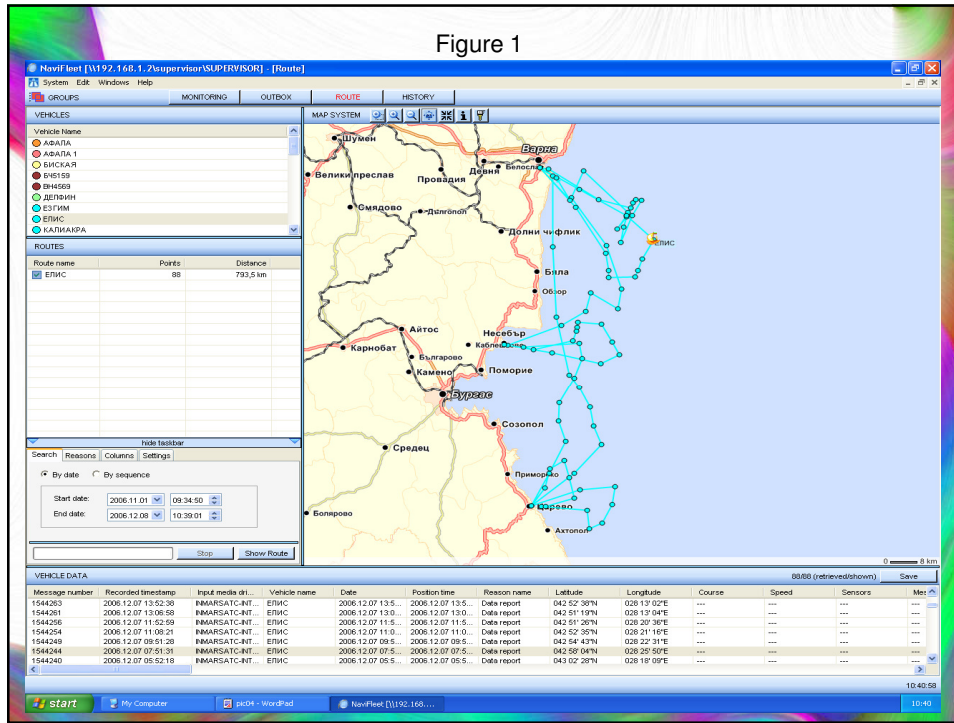
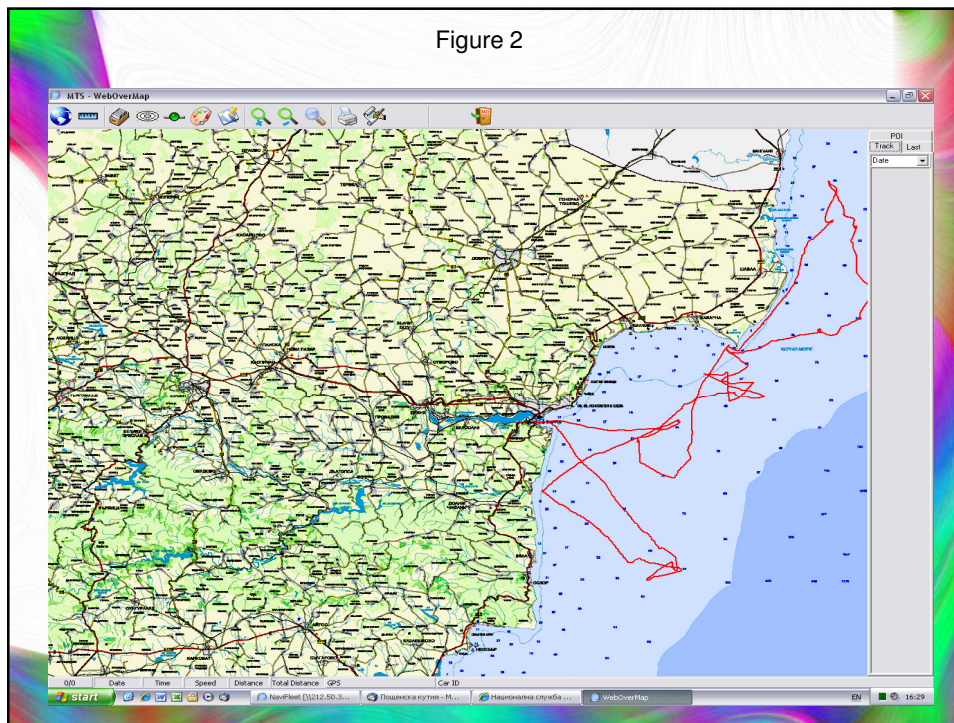


Figure 2



# Fishing Vessels Database

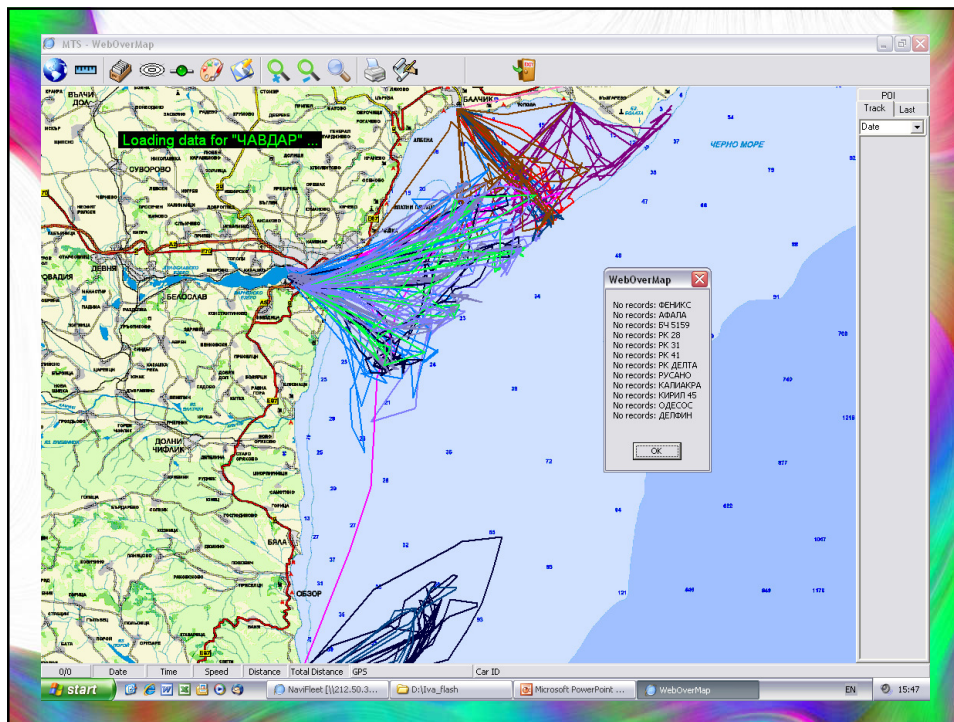
A special database is created within the VMS to serve the operators and inspectors, allowing faster identification of the fishing vessel. In this database are stored such vessel's characteristics like:

- ▶ Name of the vessel
- ▶ Registration number
- ▶ Call sign (vessel's main identification elements)
- ▶ MMSI (vessel's main identification elements)
- ▶ Technical parameters like length, width ...
- ▶ Actual picture of the fishing vessel
- ▶ Contact details of the Master of the vessel
- ▶ Contact details of the vessel's owner

The screenshot displays the Navifleet VMS monitoring interface. The main window shows a map of the Black Sea region with several vessels tracked. A 'Vehicle manager' dialog box is open, displaying detailed information for a vessel named 'РУСАНО'. The dialog includes fields for Name, Unit model (INMARSAT-MINIC), Model, Vehicle color, Creation date (2008.11.03), Reason level profile (dnd), Garage number, and Shassis number. A photo of the vessel is shown on the right. Below the dialog, a 'LAST EVENTS (30:30)' table shows recent data reports for the vessel 'МЕДУЗА 3'.

Vehicle	Date	Position time	Reason	Latitude	Longitude	Message	Speed
МЕДУЗА 3	2007 02 01 06:36:08	2007 02 01 06:34:05	DATA_REPORT	042 25' 21"N	027 41' 28"E	---	---
МЕДУЗА 3	2007 01 31 16:33:53	2007 01 31 16:36:00	DATA_REPORT	042 25' 21"N	027 41' 28"E	---	---
МЕДУЗА 3	2007 01 31 14:33:56	2007 01 31 14:36:05	DATA_REPORT	042 25' 19"N	027 41' 28"E	---	---
МЕДУЗА 3	2007 01 31 10:33:01	2007 01 31 10:35:09	DATA_REPORT	042 25' 19"N	027 41' 28"E	---	---



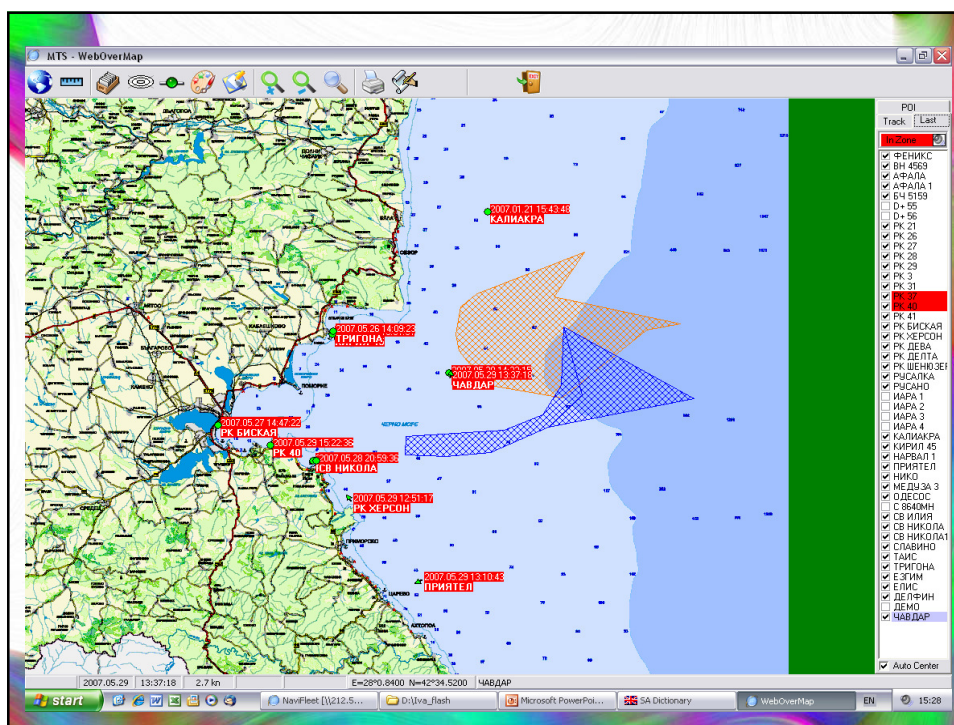
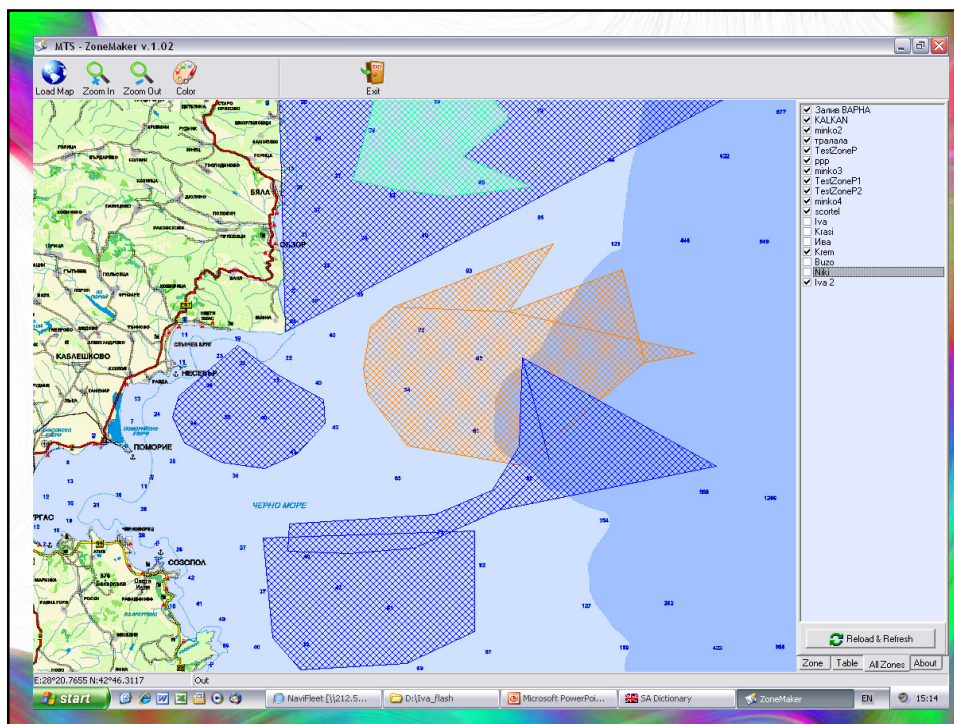


## 2. "ZoneMaker"

The purpose of this software is to link information about forbidden areas with other programs like "WebOverMap" and to allow the operator to monitor if the offence will occur.

To help the operators in data analysis.

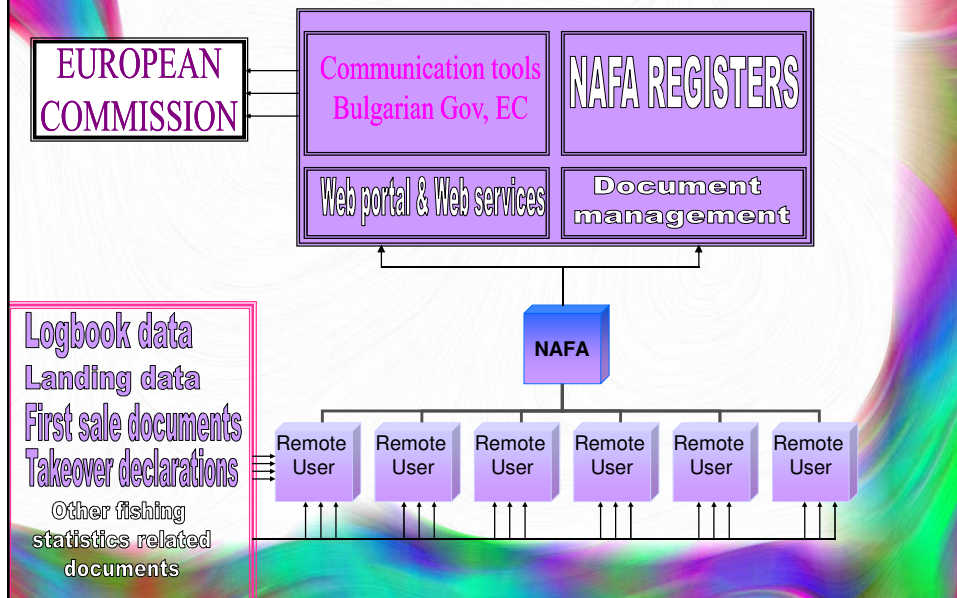
The offenders will be marked in red and sound signalization is also provided.



# Information statistics system of NAFA



## DATA FLOW SCHEME



## General features and aims

- To carry out processes of centralized collection of fishing statistics data, processing, validation and storage
- To receive, store and exchange data with other systems – VMS, Other Information systems
- To analyze the data and to facilitate revealing non-conformity of data
- To summarize data and automatically supply it to EC
- To render various e-services to public - part of e-government

## Structure, Information Modules

- ❖ The information system is web server based system, working in real time and the data stored is renewed up to date by the authorized operators. The access to the system is secured by individual password assigned to the relevant authorized operator.
- ❖ The system is a combination of information modules related to the different directions in the fishing statistics. The data collected could be transferred from one information module to another automatically or depending on the user's classification criteria.

## Structure, Information Modules

- **Fishing fleet register:** the data collected includes registration number, name of the vessel, technical parameters, producer information, personal details of the vessel's owner;
- **Commercial Fishing licenses register** – the information collected in this information module is for the fishing licenses issued by the agency: the number of the license, the type of the fishing gears, the number of the logbooks etc.. This module corresponds with the fleet register automatically
- **Recreational fishing register**
- **Catch register:** contains information like: landing declarations, take over declarations, transport documents – corresponds with Commercial Fishing licenses register.
- **Branch organizations register.** Contains: list of main data of branch organizations and operational program list of projects
- **Register of Producer Organizations.** Contains: Registration of Producer organizations. Production and processing data. Operational program list of projects.

## Subsystem analyses and reports

- Quota expiry reports
- Scientific data – available resources and catches effected
- Fishing effort
- Catches effected (different species)
- Fishing fleet capacity
- Warning for delayed submission of landing declarations and sales notes





**Thank you  
for the attention!**