



Vessel Traffic Monitoring and Information System

# ***VT Explorer***

**User Guide**

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# 1. INTRODUCTION

## 1.1 VT EXPLORER - OVERVIEW

During the last years Automated Identification System (AIS) has become mandatory for all vessels above 300GT, tankers and passenger vessels. Each vessel transmits real time data packets about its location, course, speed, name, IMO and MMSI number, size, draught etc.

VT Explorer is a system for collection, processing and displaying real time data received by the vessels AIS transponders. The main purpose of VT Explorer is to provide real time vessel traffic data to all companies and organizations in the field of maritime business.

## 1.2 TECHNICAL REQUIREMENTS

### 1.2.1 Workstation

For normal and flawless VT Explorer operation the user's workstation has to fulfill the following technical specifications:

- |                        |                                    |
|------------------------|------------------------------------|
| ▪ Processor (CPU)      | Intel / AMD, $\geq 1000\text{MHz}$ |
| ▪ Memory (RAM)         | $\geq 512\text{MB}$                |
| ▪ Free hard disk space | $\geq 20\text{MB}$                 |
| ▪ Video resolution     | $\geq 1024 \times 768$             |
| ▪ Color palette        | $\geq 16\text{-bit}$               |

### 1.2.2 Operating system

VT Explorer works under **Microsoft Windows 2000, 2003, XP, Vista and 7.**

### 1.2.3 Internet connection

VT Explorer receives real time data via Internet. The default update rate is 1 minute. The communication protocol uses compression algorithm optimized for slower Internet connections like dial-up or GPRS.

The minimum bandwidth for normal operation is **128 kbps** (16KB/sec) and the recommended bandwidth is **256 kbps** (32KB/sec).

Faster Internet connection provides faster update of data and premises more convenient operation of the product.

VT Explorer establishes standard **HTTP connection** to the server (TCP port 80) and can be easily configured for use behind corporate firewall and proxy servers.


## 1.3 SETUP

The setup process of VT Explorer begins with download of the last version from the product home page <http://www.vtexplorer.com>. After the execution of setup pack the installation process is automatic.

After the end of installation process the shortcuts to VT Explorer  will be created on:

- the desktop
- Windows start menu - Programs / VT Explorer

## 1.4 START UP

The startup of VT Explorer is performed by double clicking on the shortcut  on the system desktop or from the Start menu - Programs / VT Explorer.

VT Explorer performs automatic check for updates after each startup. If newer versions of the system files are detected the product performs update automatically.

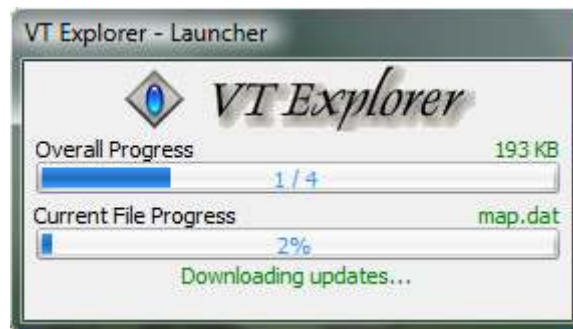


Fig.1 Update window



VT Explorer runs in demo mode after the first start up and displays vessel traffic data with more than 72 hours delay! A subscriber account is needed to receive the real time data!

## 2. USER INTERFACE

### 2.1 SCREEN COMPONENTS

The main components of the user interface are shown on Fig.2.

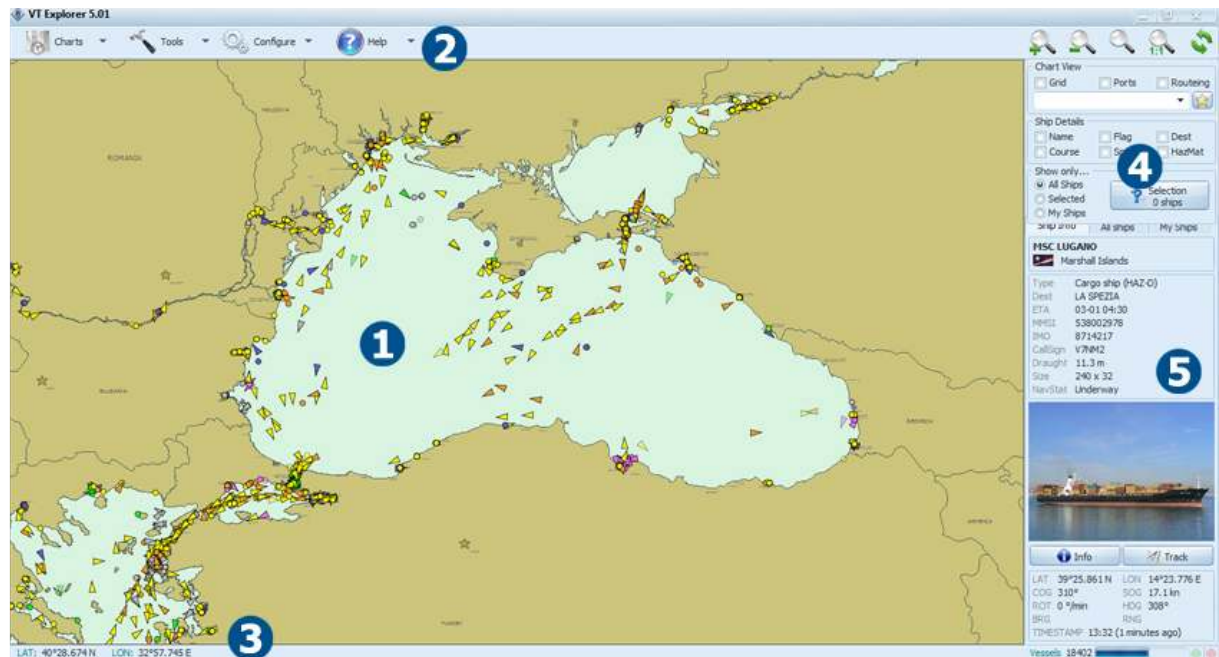


Fig.2 Main components of the user interface

The user interface components are:

- 1 - electronic chart
- 2 - main menu
- 3 - status bar
- 4 - control panel
- 5 - information panel

### 2.2 VT EXPLORER CONFIGURATION

#### 2.2.1 User account configuration

The user accounts are managed by Astra Paging Ltd and they are provided to the system subscribers. The default user account after the installation of the product is DEMO. The configuration of the user account is accessible via the main menu „Configure”, submenu “User Account”. After selection of this function the dialog window shown on Fig.3 is displayed. In order to activate the account you the user have to enter it in the text field and press “OK” button.

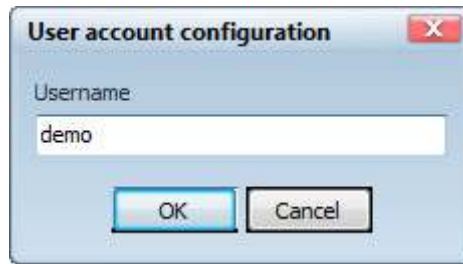


Fig.3 User account configuration dialog



The system displays “INVALID USERNAME” error message in case of entering of wrong user account! If your account is correct but bound to different PC or IP address you will receive “YOUR ACCOUNT IS NOT BOUND TO THIS PC” or “INVALID IP ADDRESS” error message. In this case please call at our office and we will reactivate the account on the new PC.

## 2.2.2 Connection settings

---

In most cases changing of the connection settings is not necessary after the installation. However if the product operates behind corporate firewall some of these settings have to be configured. The access to the configuration dialog is from the main menu „Configure”, submenu “Connection Settings”. The dialog window shown on Fig.4 is displayed.

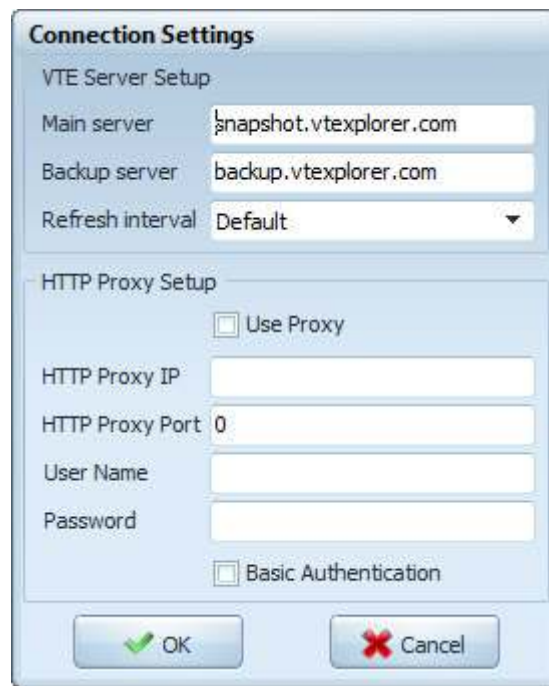


Fig.4 Connection settings dialog

The following parameters can be configured:

- Main VTE Server - main system server URL
- Backup VTE Server - backup system server URL
- Refresh interval - time interval between the sequential data refreshes
- Use Proxy - activation of proxy server

- HTTP Proxy IP - proxy server IP address (if “Use proxy” is checked)
- HTTP Proxy Port - proxy server TCP port (if “Use proxy” is checked)
- HTTP Proxy Username - proxy server authentication username
- HTTP Proxy Password - proxy server authentication password
- Basic Authentication - proxy server authentication mode



Wrong connection settings may cause problems in VT Explorer operation!

## 2.2.3 Visualization Settings

The access to the visualization settings dialog is from the main menu „Configure”, submenu “Visualization Settings”. The dialog window shown on Fig.5 is displayed.

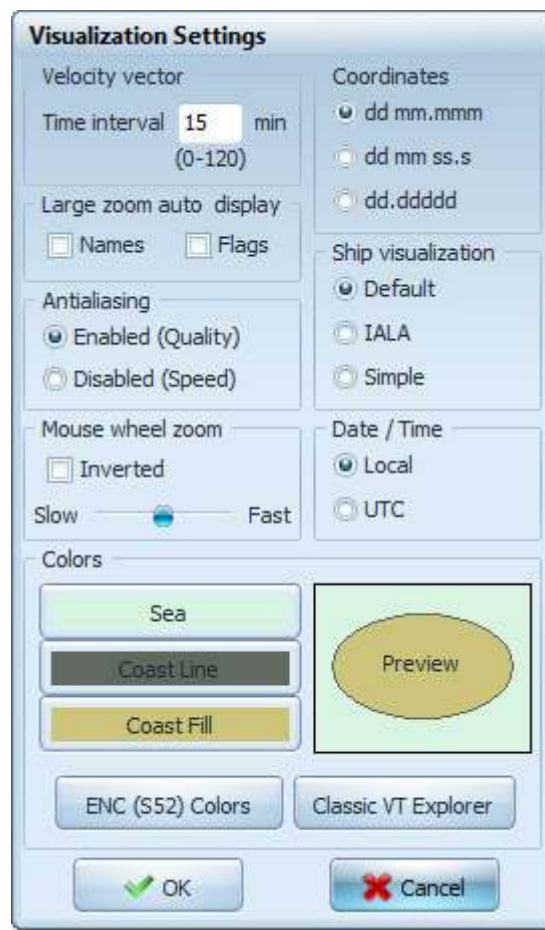


Fig.5 Visualization settings dialog

The following parameters can be configured:

- **Velocity vector** - length of the ships’ speed vectors (0-120 minutes)
- **Coordinates** - format of geographic coordinates (latitude, longitude)
- **Large zoom auto display** - automatic visualization of caption or flag when large scale of the chart is used even if captions, flags chart layers are disabled
- **Ship visualization** - selection of ship icons set visualization style
- **Antialiasing** - toggles line “smoothing” algorithm. It is recommended to turn off antialiasing to improve performance on slower PC.
- **Mouse wheel zoom** - mouse wheel sensitivity control and inversion
- **Date / Time** - time format (local or UTC)
- **Colors** - map colors (sea, coast line and coast fill)

## 2.3 ELECTRONIC CHART

### 2.3.1 Chart navigation

The chart navigation features are accessible by the mouse. It is highly recommended to use a mouse with scroll button!

The following buttons can be used instead of mouse navigation:




The following navigation functions are available:

**Zoom In/Out** - mouse scroll button

**Pan** - press and hold the left mouse button, move the mouse and release the button when the desired position is reached.

**Fixed Zoom In/Out** - buttons 

**Window Zoom** - button 

**Overall view** - button 

### 2.3.2 Chart layers

The additional chart layers are accessible by two drop-down menus “Ship details” and “Chart details”. These layers are:

#### 1) „Ship details”

- a. Name - vessels’ names
- b. Flag - vessels’ flags
- c. Destination - vessels’ destinations
- d. Course - vessels’ course over ground
- e. Speed - vessels’ speed over ground
- f. Hazardous Cargo - vessels carrying dangerous goods will be colored in red

#### 2) “Chart details”


- a. Grid - Mercator grid
- b. Ports - visualization of port icons 
- c. Routeing - traffic separation schemes and anchorage zones



Fig.6 Chart layers



### 2.3.3 Favorite views

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In most cases the user has to display some specific regions more frequently. The feature “Favorite views” provides fast and easy positioning of the map view and adjustment of the zoom factor over such regions. This function is similar to the Bookmarks function of the web browsers. The favorite views can be selected from the “Favorite views” drop-down list (Fig.7)



Fig.7 Favorite views drop-down list

When a favorite view is selected the electronic chart automatically displays the region related to it.

New favorite views can be added to the list with the following steps:

1. Navigate the electronic chart until the desired area is displayed
2. Press the button  (on the right side of the “Favorite views” list)
3. The system displays the dialog window shown on Fig.8

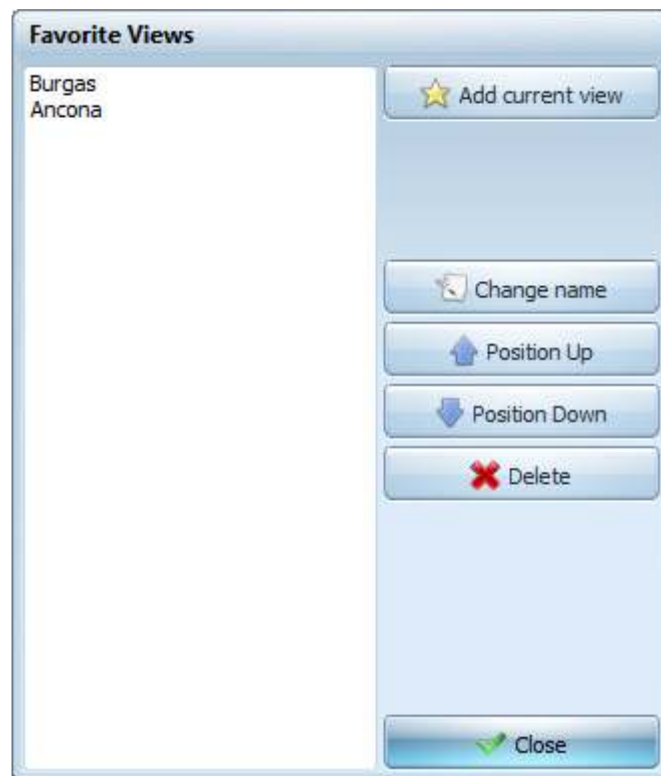


Fig.8 Definition of favorite views

The list in the left part of the window contains all currently defined favorite views. The right part of the window contains buttons with the following functions:

- “Add current view” - adds the currently selected view to the list
- “Change name” - changes the name of the selected view
- „Delete selected” - deletes the selected view
- „Position Up” - moves up the selected view
- “Position Down” - moves down the selected view
- “Close” - closes the dialog and saves the changes

## 2.4 SHIPS

### 2.4.1 Ships visualization

The ships visualization includes the components shown on Fig.9:



Fig.9 Components of the ships visualization

**Position** - the exact position of the AIS transponder fixed by the small colored icon (triangle, square or circle)

**Ship type** - the color of the icon indicates the type of the ship

**Silhouette** - the silhouette of the ship is drawn in real scale









**Velocity vector** - the vector is directed according to the ship's course and its length is equal to the speed of the ship multiplied by the "Velocity vector" from "Visualization Settings" configuration

**Name** - Name of the ship (if the layer "Ship details / Name" is activated or the ship is selected)

**Flag** - Flag of the ship (if the layer "Ship details / Flag" is activated or the ship is selected)

**Details** - course, destination and speed

The correspondence between the ship type and the color of the position square is:

 Cargo ship	 Hazardous cargo	 Fishing	 Unknown
 Tanker	 Passenger ship	 WiG / HSC	 Other type / auxiliary

### 2.4.2 AIS information

Left click on a ship selects it. The name, flag and details of the selected ship are displayed regardless of the status of the layers "Captions" and "Flags". The name of the selected ship is highlighted in yellow (Fig.10)

Right click on a ship selects it and displays context menu with shortcuts to "Info" and "Track" functions for the selected ship (see chapters 2.4.3 and 2.4.4).



Fig.10 Ship selection and context menu

AIS information related to the selected ship is displayed in the information panel, “Ship Info” tab. (Fig.11)

 A screenshot of the 'Ship Info' panel in the application. The panel has three tabs: 'Ship Info' (selected), 'All ships', and 'My Ships'. The main content area displays the following information:
 

- DINTELDIJK** (bold font)
- Netherlands (with flag icon)
- Type: Cargo ship
- Dest: CONSTANTZA
- ETA: 03-02 23:00
- MMSI: 245044000
- IMO: 9346677
- CallSign: PHMJ
- Draught: 4 m
- Size: 22 x 22
- NavStat: Underway

 Below the text is a photograph of the red cargo ship DINTELDIJK at sea. At the bottom of the panel, there are two buttons: 'Info' and 'Track'. Below these buttons, the following technical data is displayed:
 

LAT	42°10.554 N	LON	29°06.072 E
COG	351°	SOG	11.1 kn
ROT	0 °/min	HDG	352°
BRG		RNG	
TIMESTAMP 14:52 (7 minutes ago)			

Fig.11 AIS information panel

The information fields in the panel are:

1. **Name of the ship** - displayed in the upper part of the panel (bold font)
2. **Flag and flag state** - displayed under the name of the ship
3. **Type** - type of the ship (according to AIS specification)
4. **Dest** - port of destination
5. **ETA** - estimated time of arrival

6. **MMSI** - international MMSI number
7. **IMO** - IMO number
8. **CallSign** - international callsign
9. **Size** - sizes of the ship (length x beam) in meters
10. **Draught** - ship's draught in meters
11. **NavStat** - navigational status
12. **Photo** - ship's photo (if available)
13. **LAT, LON** - latitude longitude
14. **COG** - course over ground (degrees)
15. **SOG** - speed over ground (knots)
16. **ROT** - rate of turn (degrees / minute)
17. **HDG** - heading (degrees)
18. **BRG / RNG** - bearing and range related to the selected reference point
19. **TIMESTAMP** - time of the last position update



The accuracy of the information depends on the data entered in the ship's AIS transponder and to the quality of operation of the ship's GPS receiver!

### 2.4.3 Additional information

VT Explorer database contains additional ship information which is not included in standard AIS data format. This information can be displayed by pressing the "Info" button (Fig.12) or by right click onto the ship and selection of "Info" in the context menu.



If the IMO number of the selected ship is not valid the "Info" button and context menu option are disabled.

**Ship Info**

VTE Database  
General data

Name: **DINTELDIJK**

Type: General Cargo Ship      Built: 2007

IMO: 9346677      MMSI: 245044000      Call Sign: PHMJ

Registration

Flag: Netherlands

Port of registration: Groningen

Classification soc.: Bureau Veritas

Company Info

Builder: CHOWGULE

Owner: Dinteldijk

Manager: Navigia Shipmanagement BV

Operator: Navigia Shipmanagement BV

Dimensions		Tonnage	
Length	89.95	GT	2984
Beam	0	DWT	4450
Draught	5.85	NT	1551

Manually collected data - might be expired or inaccurate!

Last AIS Data

Time: 02-03-2010 14:52:51

Name: <b>DINTELDIJK</b>	Flag:
Type: Cargo ship	Call Sign: PHMJ
Size: 22 x 22 m	Draught: 4 m
Dest: CONSTANTZA	ETA: 03-02 23:00
MMSI: 245044000	IMO: 9346677
LAT: 42°10.554 N	
LON: 29°06.072 E	
COG: 351.2°	
SOG: 11.1 kn	

OK

Photo



Port History

Port	Enter	Exit	Destination
CONSTANTA	12-02-2010	19-02-2010	BANDIRMA
BOURGAS	06-02-2010	11-02-2010	CONSTANTZA
CEUTA	29-01-2010	29-01-2010	CEUTA
TARRAGONA	08-01-2010	09-01-2010	ROUEN
BARCELONA	06-01-2010	08-01-2010	TARRAGONA
CEUTA	06-11-2009	06-11-2009	FOR ORDER
SAGUNTO	20-09-2009	21-09-2009	AVEIRO PORTUGAL
THESSALONIKI	11-09-2009	14-09-2009	PIRAEUS
BARCELONA	01-02-2009		
ROTTERDAM		21-01-2009	ROTTERDAM

Fig.12 Additional ship information



Astra Paging Ltd collects the additional data manually from different information sources. Some fields may contain old information.

## 2.4.4 Movement history

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The movement history (track) of the selected ship can be displayed by pressing the “Track” button or by right click onto the ship and selection of “Track” in the context menu. The drawn blue line will be erased when other ship is selected. If the MMSI number of the selected ship is not valid the “Track” button is disabled.



Fig.13 Movement history

Small blue arrow markers display the sequential positions of the ship. Additional information about the specific position (Time, Course and Speed) can be acquired by clicking on the dot marker.

## 2.5 LISTS AND FILTERS

### 2.5.1 „All Ships” list

“All Ships” list contains the names of all ships which are in the limits of the currently selected chart. The list is displayed in the information panel, tab “All Ships” (Fig.14)



Fig.14 „All Ships” list

The ships in the list are sorted by name in alphabetical order. Searching for particular ship can be done by using the scroll bar or by filtering of the list. The filter works by matching the ship’s name with the string in the text field “Filter”. Vessels are only considered to match the text in the filter text field if this text is a part of their name. For example, when entering „KOR” the following ships will match the filter - “KORADO 1”, “ALKOR”, “KOR KAROLI”, “ALKORA” etc.

Centering of the view over the selected ship can be done by double clicking on the name of the ship in the list.

The check box on the left side of each ship name shows whether this ship is included in “My Ships” list or not. By clicking on the check box the user can add or remove the ship from “My Ships” list (see the next section).

## 2.5.2 „My Ships” list

---

“My Ships” list contains frequently searched ships. The list is in the information panel right to the “All Ships” list (Fig.15).

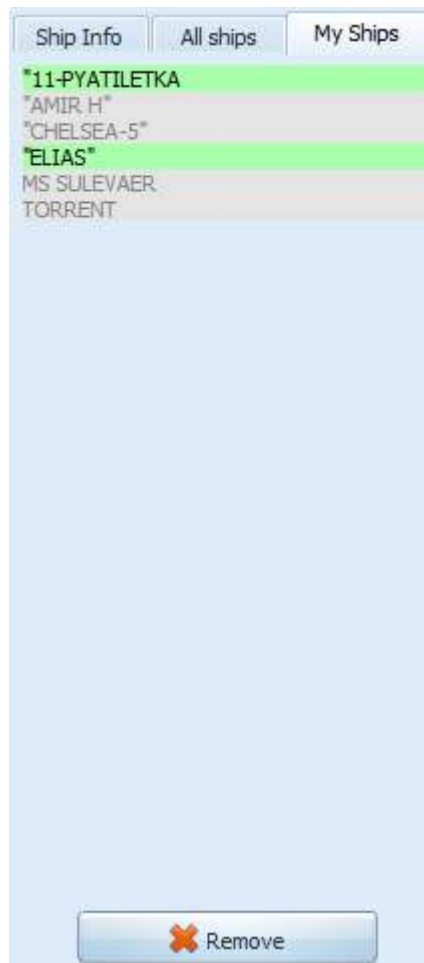


Fig.15 „My Ships” list

The user can add/remove ships to/from the list by checking the check boxes in “All Ships” list (see previous section). The ships in the list are sorted by name in alphabetical order and the highlight color indicates whether this ship is in the current coverage of the system and currently selected chart (green color) or it can not be found (gray color).

The selected ship can be removed from the list by pressing “Remove” button. Centering of the view over the selected ship can be done by double clicking on the name of the ship in the list.

## 2.5.3 Filters

---

VT Explorer provides three different modes of selective filtering for displaying only the ships which are matching the defined criteria. The modes are (Fig.16):

- All Ships - all ships will be displayed
- My Ships - only ships in “My Ships” list will be displayed
- Selection - the ships selected by “Selection” button will be displayed



**Fig. 16 Filters**

The “Selection” button shows the window on Fig.17. The form provides selection by matching different criteria set.

N	Name	Type	Flag	Destination
1.	KONSTANTINOS	Tanker	Greece	CHITTAGONG
2.	MAA SAMUDA KHATUN	Cargo ship	Bangladesh	CHITTAGONG
3.	LOLA W	Cargo ship	Cocos Islands	CHITTAGONG

Selected vessels: 3

**Fig. 17 Filtering by „Selection”**

After entering of new search criteria “Search” button should be pressed. By pressing the button „Clear All” all selected ships will be cleared. The confirmation of changes can be done by pressing “OK” button.



## 2.6 TOOLS

### 2.6.1 Coordinates of the mouse cursor

The coordinates of the mouse cursor are displayed in the bottom left corner of the status bar (Fig.18). WGS84 datum is used in all VT Explorer charts.

Right click on the coordinates displays a popup menu for quick selection of the coordinates format (Fig.18)



Fig.18 Mouse cursor coordinates and format selection

### 2.6.2 Measuring of bearing and distance

Measuring of bearing and distance between any two points on the chart (Fig.19) follows these steps:

- when the mouse cursor is over the starting point, press and hold the right mouse button
- drag the mouse to the end point (do not release the right mouse button)
- the calculated bearing (in degrees) and distance (in nautical miles and kilometers) are displayed next to the mouse cursor

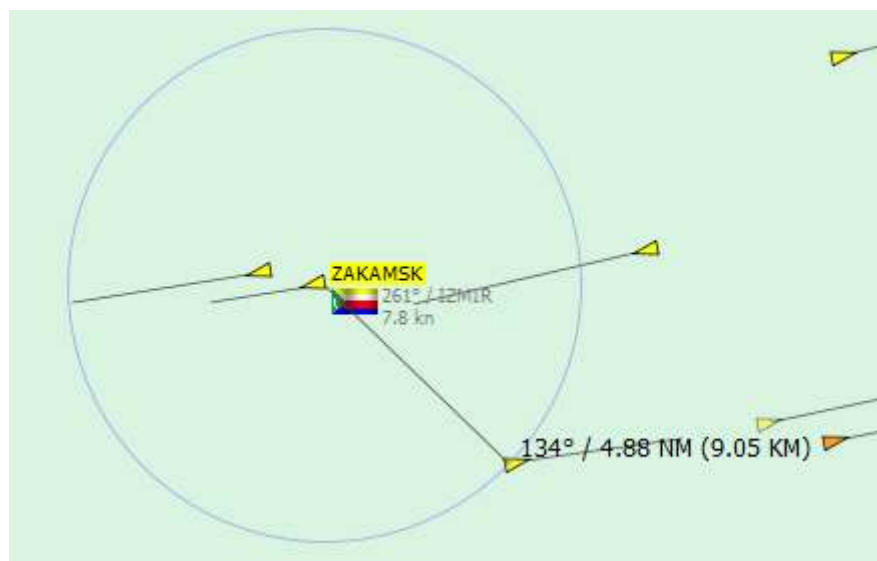


Fig.19 Measuring of bearing and distance between two points

## 2.6.3 Screenshot export

The export of the current view in image (BMP / PNG) format can be done by choosing the menu „Tools” / “Screenshot”. The exported image includes the electronic chart only and all adjacent control panels and menus are not included. After the activation of this function the user has to select folder and name of the exported file and to press “Save” button.

## 2.6.4 Ship search

“Ship search” is accessible via the menu “Tools” and provides search for ships which are outside the current coverage of the system. This tool provides information about the last position report (time, coordinates, course and speed) received by the system.

## 2.6.5 Traffic analysis

“Traffic analysis” is an external feature of VT Explorer service. It can be launched by choosing the menu „Tools” / “Traffic analysis”. This feature is accessible via the default web browser and provides statistical information about all ports covered by our system and vessel transits via important straits (Bosporus, Gibraltar etc.).

Country	Port	In port	Arrivals	Departures	Expected
Ukraine	Berdyansk	6	2	0	2
Ukraine	Feodosiya	5	0	1	1
Ukraine	Ilichevsk	24	3	1	7
Ukraine	Kerch	17	9	9	7
Ukraine	Kherson	32	6	4	4
Ukraine	Mariupol	15	4	9	9
Ukraine	Nikolaev	39	21	23	4
Ukraine	Odessa	35	7	11	4
Ukraine	Sevastopol	25	2	1	7
Ukraine	Yalta	8	6	8	0
Ukraine	Yuzhny	23	11	12	3

Fig.23 Port status

GMT +03:00	Name	IMO	GT	Type	Destination
20-07-2009 13:17	MARIO A	9337377			CONSTANTA
20-07-2009 13:11	MSC MIA SUMMER	9169067	25219	Container Ship (Fully Cellular)	NOVOROSIYSK
20-07-2009 13:06	LIGURIA	7705403	14050	Container Ship (Fully Cellular)	CONSTANTA
20-07-2009 12:55	EGMONDGRACHT	9081320	8448	General Cargo Ship	ILYICHIVSK
20-07-2009 12:51	TRAPEZITZA	9145231	13967	Bulk Carrier	VARNA
20-07-2009 12:40	MT ERAS	9400356			ILYICHEVSK
20-07-2009 12:35	FEDERAL DANUBE	9271511	22654	Bulk Carrier	BOSPORUS
20-07-2009 12:30	WAEEL_F	7638959	3898	General Cargo Ship	ODESSA / UKRAINE
20-07-2009 12:14	KEMAL REIS 5	9378101	644	Passenger Ship	
20-07-2009 12:11	LADY BAYAN	7106994	1840	General Cargo Ship	BURGAS=====

Fig.24 Vessel transits via Bosporus

### 3. ERROR MESSAGES

When an error occurs during the communication or the authentication process a message with the description of the error will be displayed. The error messages are displayed in the right part of the status bar (Fig.22).



Fig.25 Error message

The following error messages are possible:

**NO CONNECTION** - problems with the Internet connection or wrong configuration of the connection settings (see section 2.2.2).

**INVALID USERNAME** - invalid User ID (see section 2.2.1)

**YOUR ACCOUNT IS NOT BOUND TO THIS PC** - the account is bound to different PC fingerprint



After reinstallation of the operating system or changing of the system hardware the fingerprint of the workstation is changed. In this case the user has to contact the support team of Astra Paging Ltd for reactivation of the account.

**INVALID IP ADDRESS** - this message is displayed if the IP protection of the account is activated by the administrator and the user's IP address does not match the allowed IP address/addresses.

**EXPIRED ACCOUNT** - the account is expired

**BLOCKED ACCOUNT** - the user account is blocked by the administrator

**ACCESS DENIED: MORE THAN xxx LOGIN!** - each user account is licensed for single user operation. If more instances of VT Explorer are executed this message will be displayed.