FT NavVision®

Remote monitoring

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4. References

[A] NavVision-Operator-Manual-v1.3

[B] NavVision Software installation and commissioning manual v1.9

[C] NavVision Technical description v2.2

[D] (FTI06020) Software Installation Manual - Moxa serial interface

5. Abbreviations

HMI	Human Machine Interface
AMCS	Alarm Monitoring and Control System
DNS	Dynamic Name Server
MMSI	Maritime Mobile Service Identity
AIS	Automatic Identification System

6. Safety instructions

 :

This section provides only a summary of the most important safety requirements and notes, which will be mentioned in the individual sections. To protect your health and prevent damage to the devices, it is essential to read and carefully follow the safety instructions.

The indications NOTE, CAUTION and WARNING have the following significance:

 *NOTE:*

An operating procedure, practice or condition etc., which it is essential to emphasize.

CAUTION

An operating procedure, practise or condition etc., which, if not strictly observed, may damage or destroy equipment.

WARNING

An operating procedure, practise or condition etc., which, if not carefully observed may result in personal injury or loss of life.

7. Revision history

Revisions issued since publication.

Issue	Date	Revision	Reason
1.0	July 24, 2013		initial release

8. Introduction

Remote monitoring is primarily used to observe ships data from a distance. Whether for control or life cycle management purposes. Through selection within the program it is possible to choose which values you want to have monitored. These data is send to a centralized database where it is kept for further analysing.

Through a log in on a web-based HMI, it is possible for customers to log in and see data in real time. It is also possible to see the trending over a certain amount of time for any specified field.

8.1 Dependencies

For remote monitoring there are two different installations necessary first there need to be a working version of FT NavVision© on board the vessel. This installation is necessary to gather all the platform I/O on board of the vessel and show it on board in the typical HMI of FT NavVision©.

Secondary there needs to be a database on the central server of Imtech where the data can be sent to. From there it will be made accessible to the client via a web based HMI.

The installation on board of the vessel will need to have an internet connection available all the time to send the data to the server.

For the installation of FT NavVision© on board of the vessel we refer to reference [A], [B] and [C]. In this manual we will focus on the database, the web based HMI and the connection with the onboard system.

9. Workflow

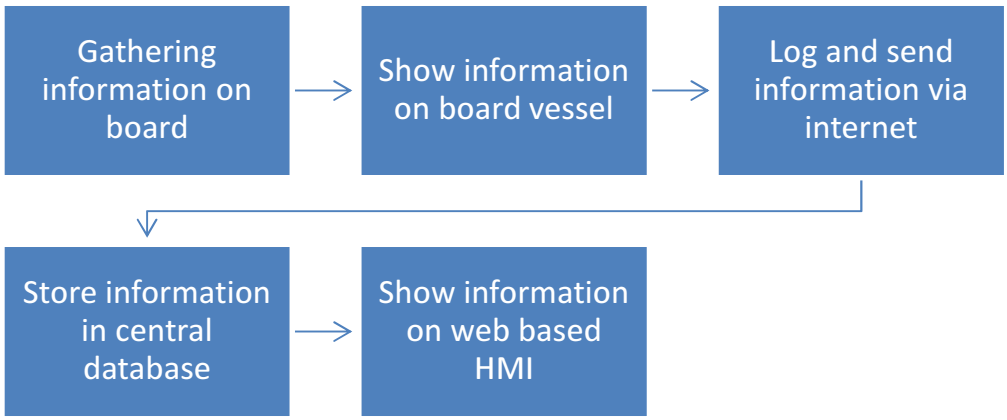

Figure 9-1: Workflow remote monitoring

9.1 Gathering information on board

As mentioned above, we will not get in too deep on how to install and maintain the platform information on board of the vessel. This is already explained extensively in the references [A], [B] and [C]. however it needs to be stressed out that the proper installation of the system on board of the vessel is the first priority. If this is not working properly, it effects the data in the database from wrong information up to no information at all.

9.2 Show information on board vessel

Independently of the remote monitoring, the system on board can be used as a full-function AMCS system. Depending on the extent of the system, the crew can use it as described in the referenced manuals.

The minimum requirement for remote monitoring consists of the following system components:

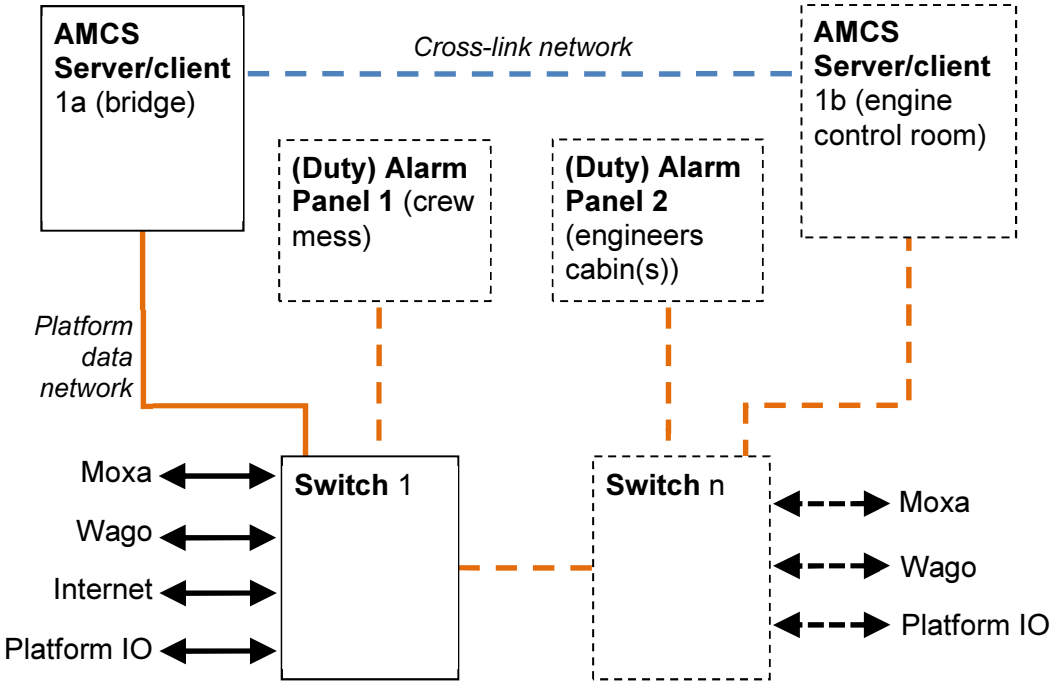

Figure 9-2: Minimum requirements on board platform

The uninterrupted lines represent the absolute minimum requirement, just for remote monitoring. Together with the interrupted lines it represents the minimum requirement for a AMCS system.

9.3 Log and send information via internet

Once the requirements are met we can start to configure the system to send data to the database. The following dependencies are checked:

- FT NavVision® is setup and running without errors
- The necessary platform data is shown on the system on board
- There is internet connection
- There is a license for remote monitoring
- The mysql.uc.ini file is correct (see next chapter).

9.3.1 Internet connection

The on board internet connection can be connected to the FT NavVision® system through a Moxa serial to Ethernet converter. This moxa board needs to be set up with specific firmware to make it possible to connect to a DNS server. This firmware will install a firewall on the secondary Ethernet port of the Moxa. For detailed information see reference [D].

9.3.2 Setup which fields to send

In FT NavVision® we can now select which fields we want to send to the database to be stored. This is done by put on the logging possibilities for each separate field. Although this is described in reference [A] and [B] we will give an excerpt here to make it clear.

In FT NavVision® we first go to the taskbar and click on settings (see Figure 9-3). After that, on the taskbar at the left side, we choose Field settings and then Log (see Figure 9-4).

Figure 9-3: Taskbar settings

Figure 9-4: Field settings, Log

Once you have opened this, you will see the following window:

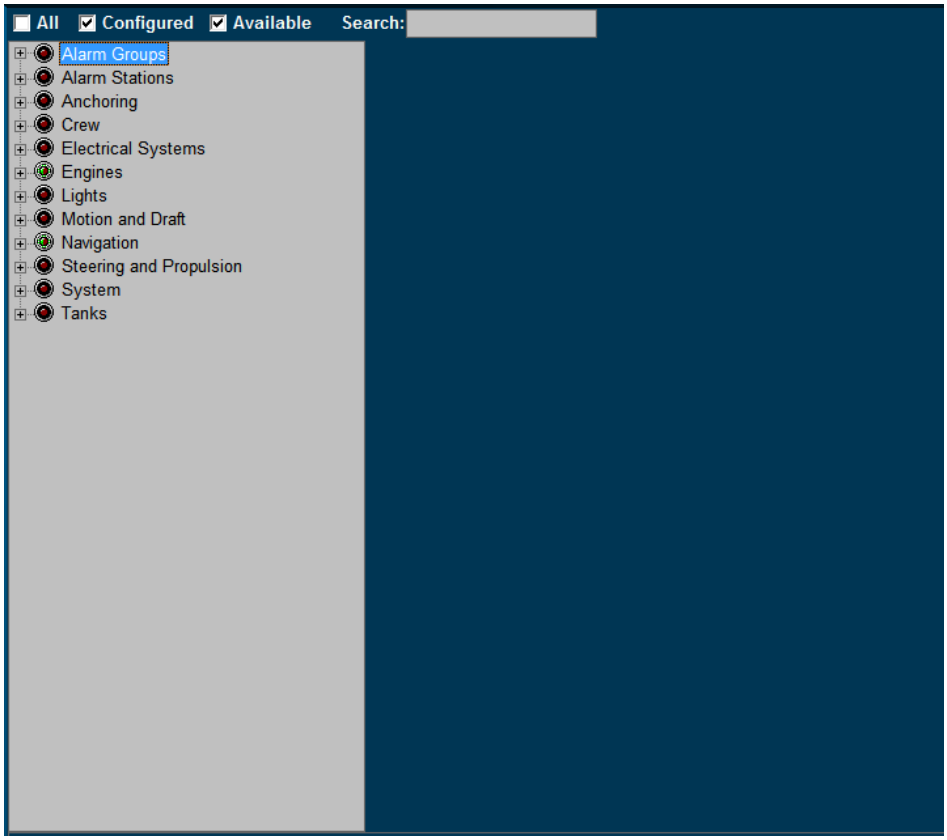

Figure 9-5: Log window

You will see all the groups available in FT NavVision®. By clicking the “+” sign you will extend the list and will get to see all the individual groups as follows:

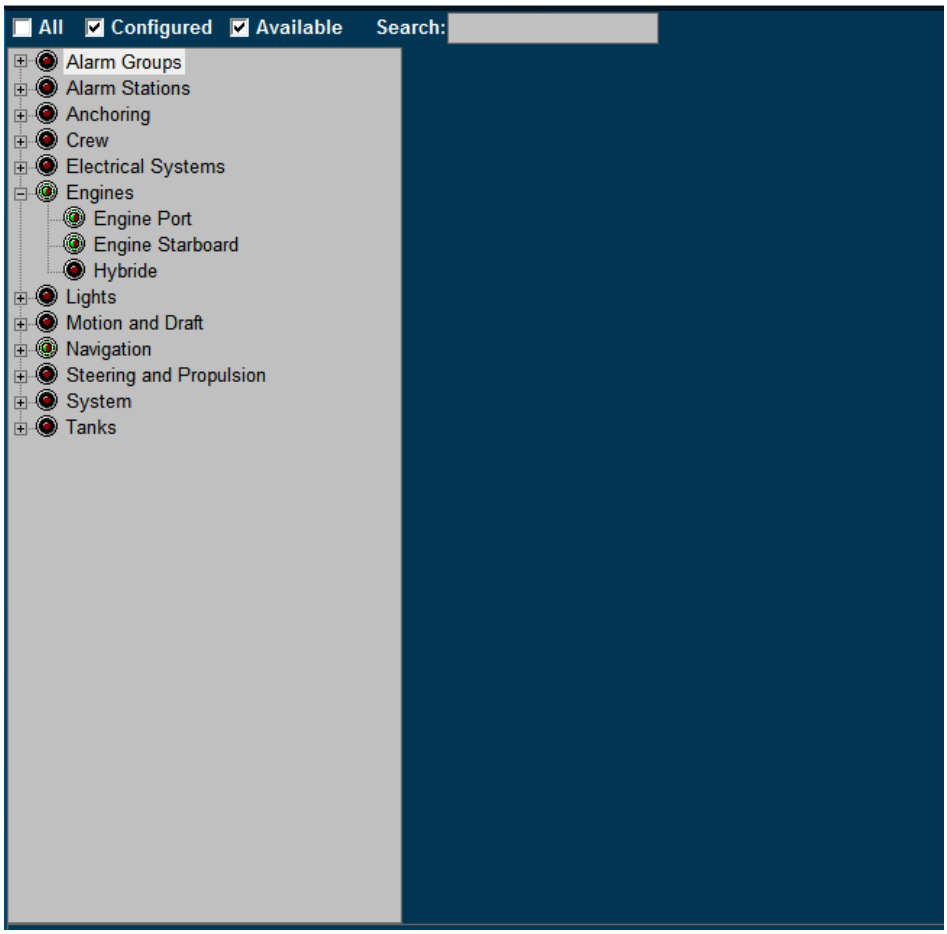

Figure 9-6: extended Log window with sub-groups

As you can see in the image, the “led” lights in front of, for example, “Engine port” and “Engine Starboard” are green. This means that some items in that group are already set for logging. Green means logging, red means not logging.

Once you click on a sub-group, it will open a window next to it with all the fields (I/O) for that sub-group as shown in the following image:

Figure 9-7: Sub-group with all fields

Now you can search for the field that you want to log in the right-hand window. Once you found it, click on the “led” light which will turn green and it will start logging.

Do this for all the fields that you want to send to the database. Once the field is selected for logging, FT NavVision® will automatically send it to the database if all the criteria are met.

9.4 Store information in central database

The logged items from the previous chapter will be sent to the database that FT NavVision® has provided. This is arranged in a file called “mysql.uc.ini” which can be found in D:/NavVision/config/local/ on the server on board.

For the correct functioning of the file you will need the following information:

- Host
- Username
- Password
- Name database
- MMSI

Except for the MMSI, the rest of the information you will get from the engineers at FT NavVision©. The MMSI is the one you got from the ship.

When you open the file “mysql.uc.ini” you will see the following:

```
[server]
host=freetechnics.xs4all.nl
user=nvision
password=nvision
database=ftlog
port=3306

[settings]
SampleBufferMaxSize=36000
Active=0
MMSI=305869000
FieldSampleRateSecond=5
AISSampleRateMinute=1
```

Figure 9-8:mysql.uc.ini

Fill in the Host, User, Password and database as you received from FT NavVision® under [server]. Fill in the MMSI of the ship under [settings]. Leave the rest as it is. Only if there are connection problems you can change the “FieldSampleRateSecond” and “AISSampleRateMinute”.

If this information is filled in correct: close, save and restart FT NavVision®. The data should now be sent to the central database.

9.5 Show information on web based HMI

When the data is stored in the database, it can be viewed and analyzed through a web-based HMI. This means that the data is available all over the world for wherever there is internet connection. Of course the data is protected with the proper means to avoid other people to look at the data. With a username and password, the data can be made available to the customer.

The web address will be supplied to each separate customer. When this web address is opened, the following login screen will appear:

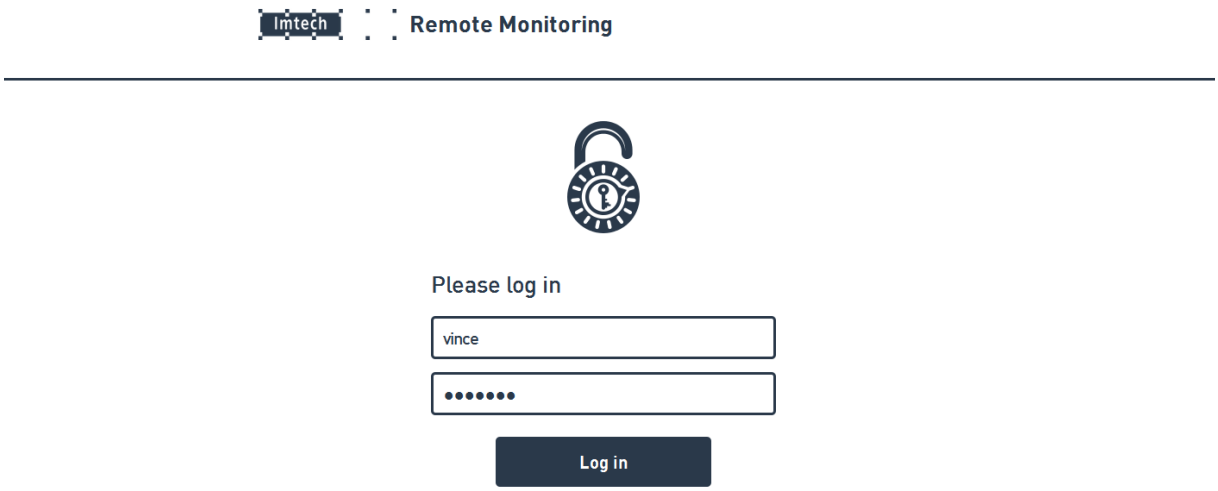

Figure 9-9:login screen

By filling in the supplied credentials the database will be unlocked with all the vessels that the viewer is allowed to see under the specified credentials. If there is more than one vessel, the following choice menu will appear.

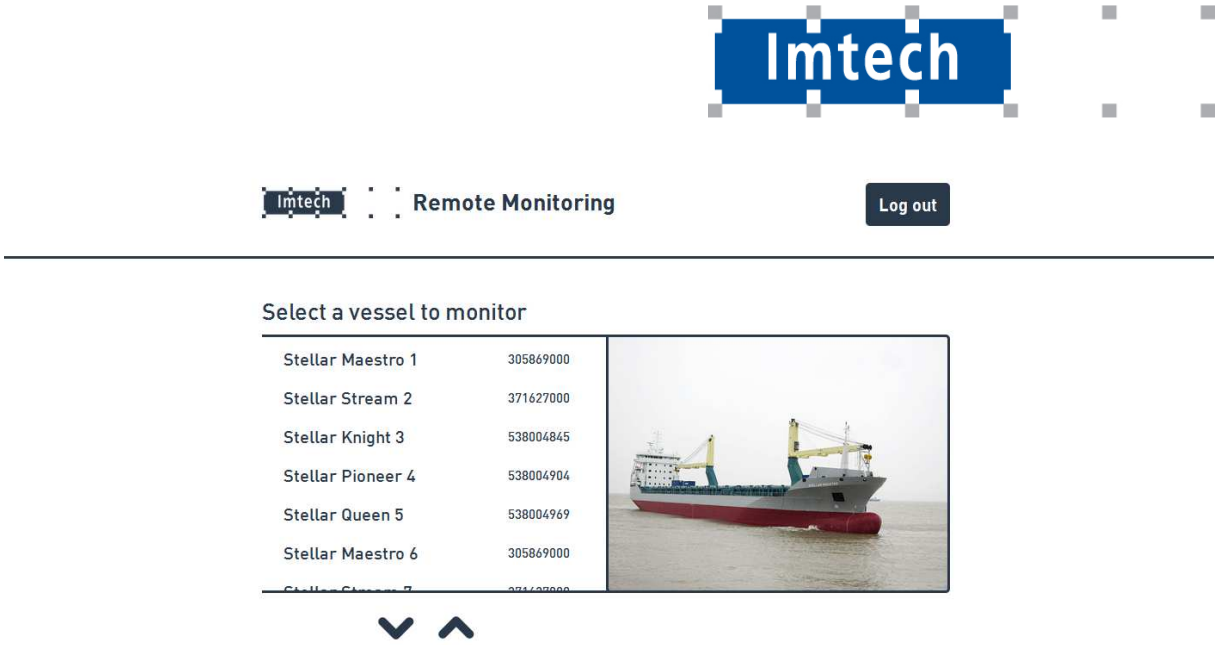

Figure 9-10: vessel selection page

Here you can click on the vessel that you want to monitor. You will get in to the section with all the data of that specific ship. Depending on which mimic page is set as standard you will see the following screen:

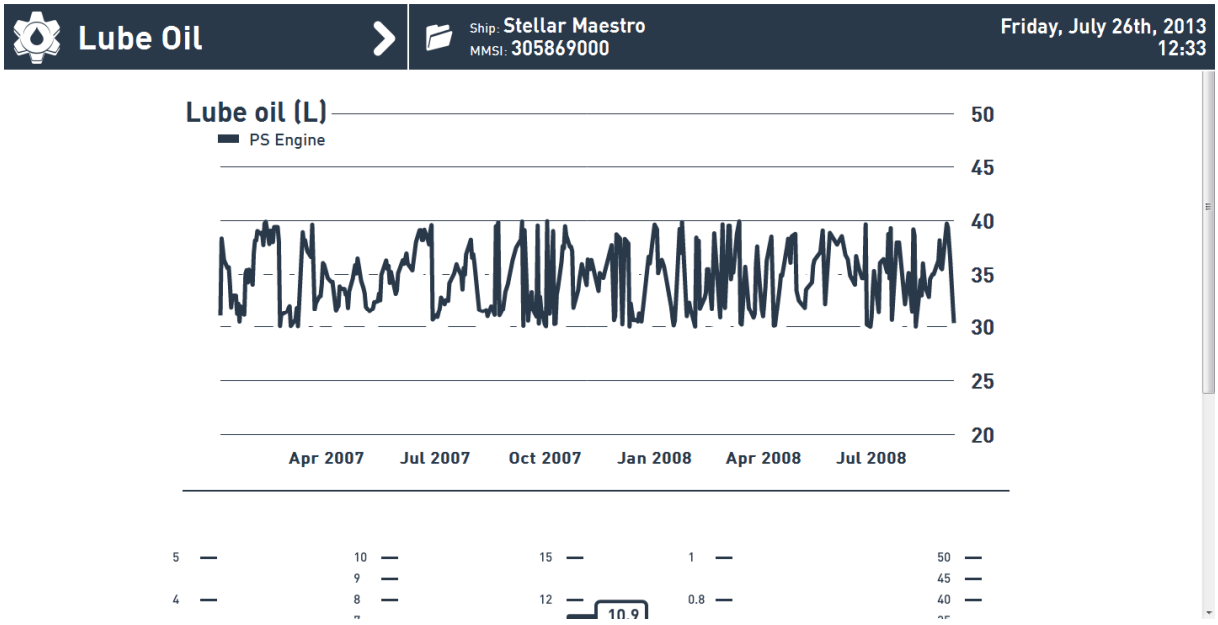

Figure 9-11: main page remote monitoring

In the main taskbar you will see the following items (from left to right):

- Name of the current page
- Selection arrow
- Ships name and MMSI
- Date and time

Figure 9-12: Taskbar

By clicking on the selection arrow, the menu will open with all the available mimic pages. An example is shown in the following image:

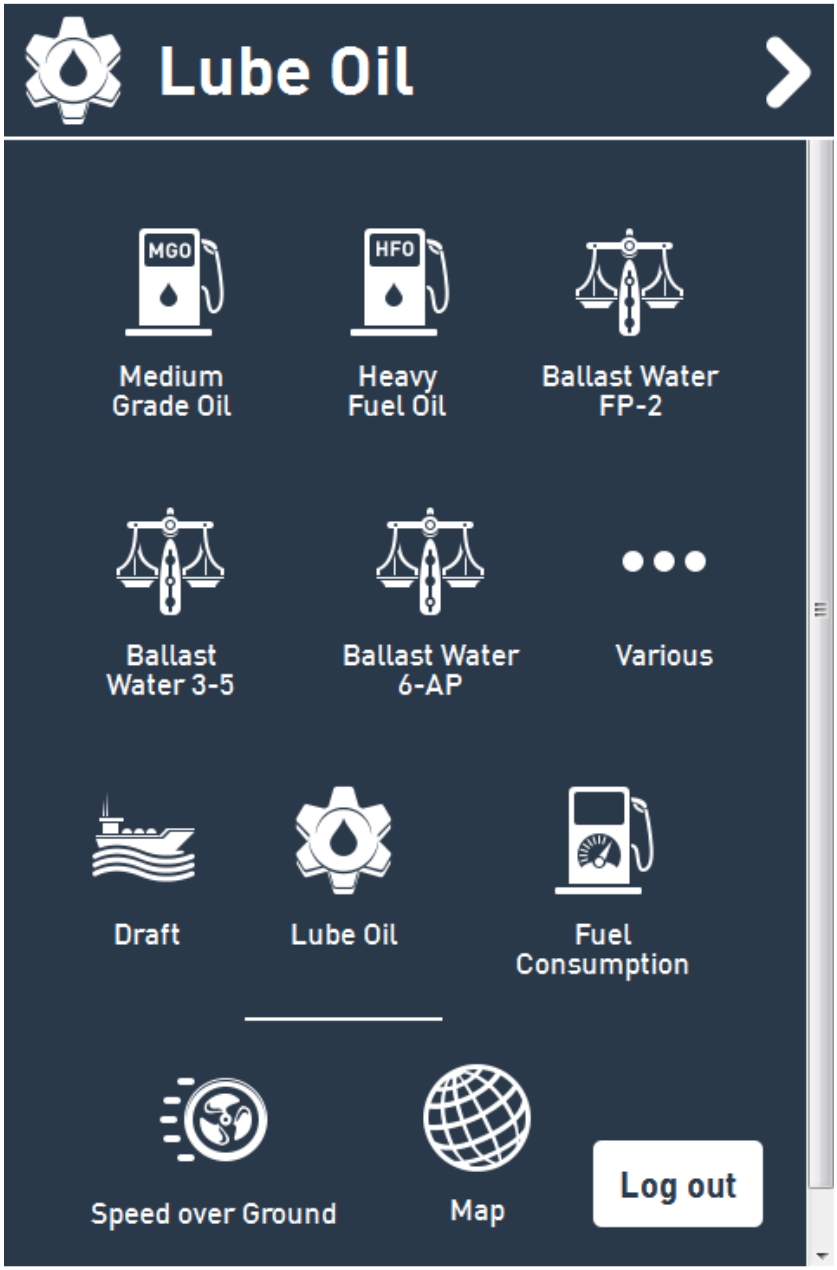

Figure 9-13:Mimic menu

Here you can click on any icon that represents a mimic page. Depending on your setup it will show you the pages that are configured for that specific ship.

For example, if you click on the “Fuel Consumption” icon, it will open the page where the fuel consumption is shown (see following image):

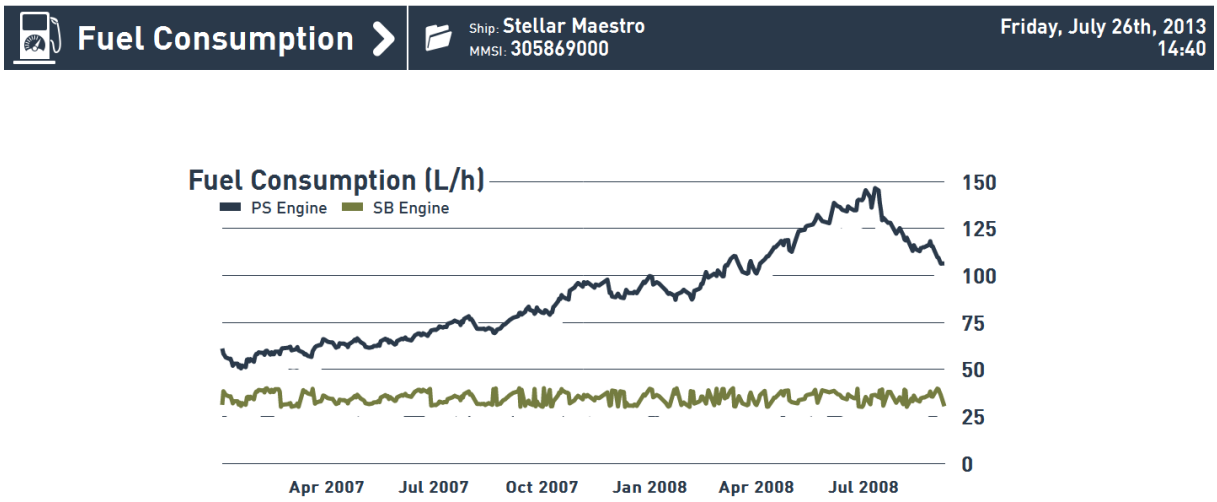

Figure 9-14: Fuel consumption mimic

You see the graphical display of the fuel consumption of the PS and SB engine over a certain amount of time.

When you want to narrow down the search, you can click and drag your mouse on the spot in the diagram that you would like to see (see Figure 9-15). You will get a diagram for that specific time then (see Figure 9-16). When you want to go back, just click “Zoom out”.

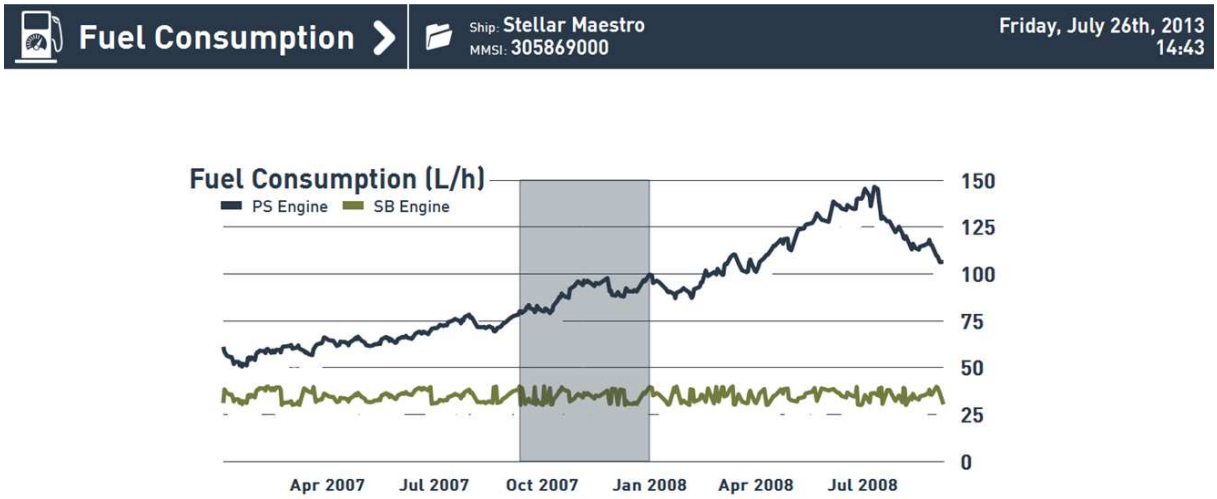

Figure 9-15: diagram selection

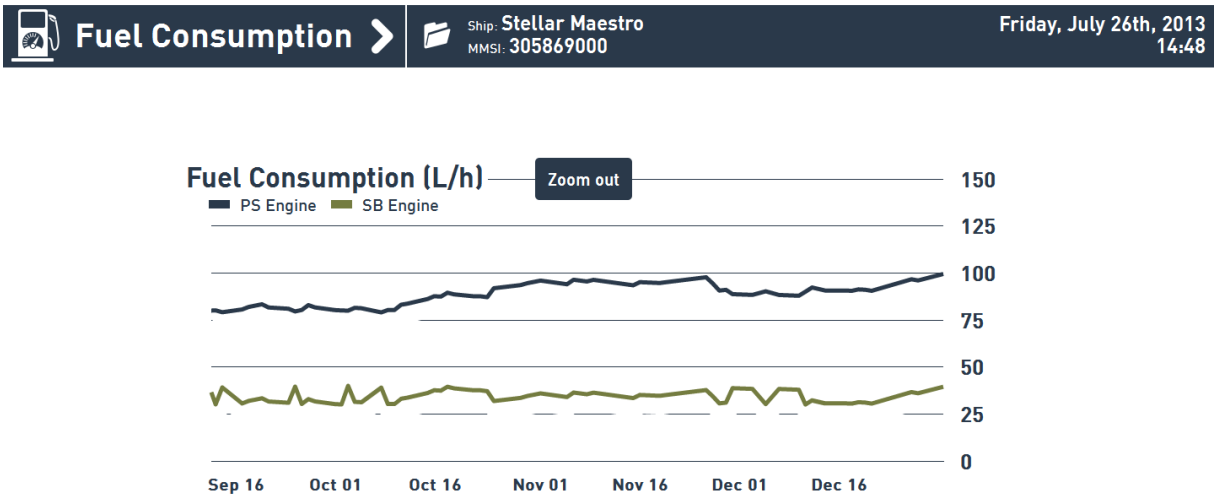

Figure 9-16: Selected diagram with "zoom out" button

You can also have a mimic page with just instruments or barographs on it (see Figure 9-17) or you can have a combination of those (see Figure 9-18).

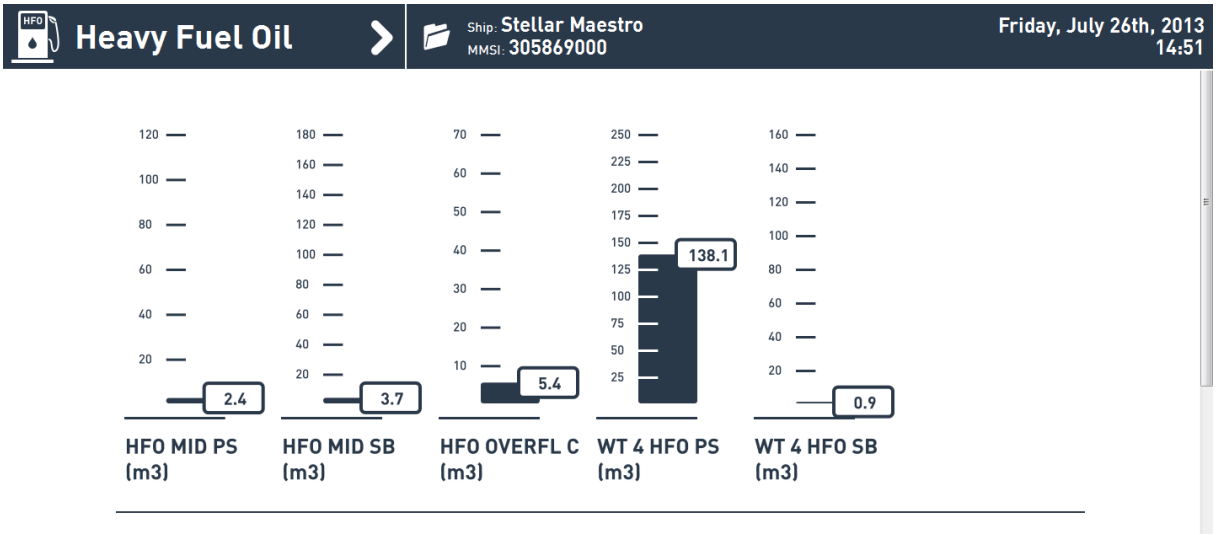

Figure 9-17: Instrument mimic

Figure 9-18: Combination mimic

9.5.1 Special mimic pages

One special mimic page that has to be discussed separately is the “Map” mimic. This is a navigational kind of mimic where you can see the present whereabouts of the ship. Once opened you will see the “world” map, with in the center the specific vessel (see Figure 9-19).

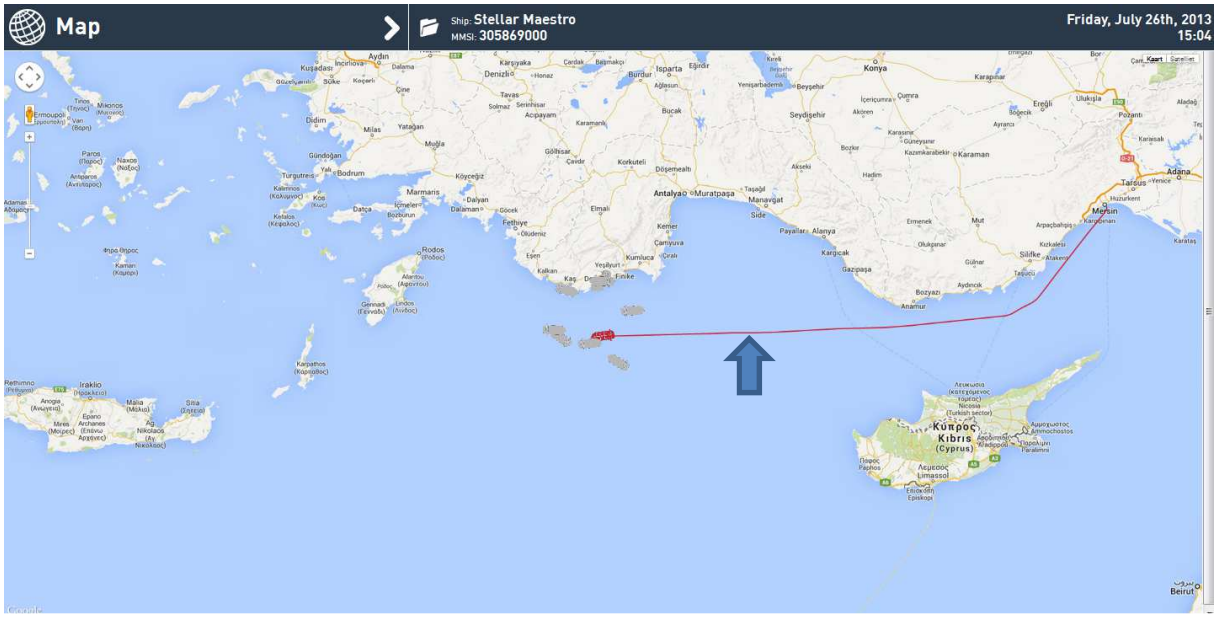

Figure 9-19: World mimic

You can choose to see the map or the satellite images. Also it is possible to zoom in and out and to scroll along the map.

The Red ship-icon is the monitored ship. The red line behind that is the track. This track will be recorded for approx. 10 hours.

If you zoom in you will notice 10 grey ship-icons (see Figure 9-20). These are the 10 closest AIS-contacts. Clicking with your mouse on one of these icons, shows detailed information about that AIS-contact (see Figure 9-21).

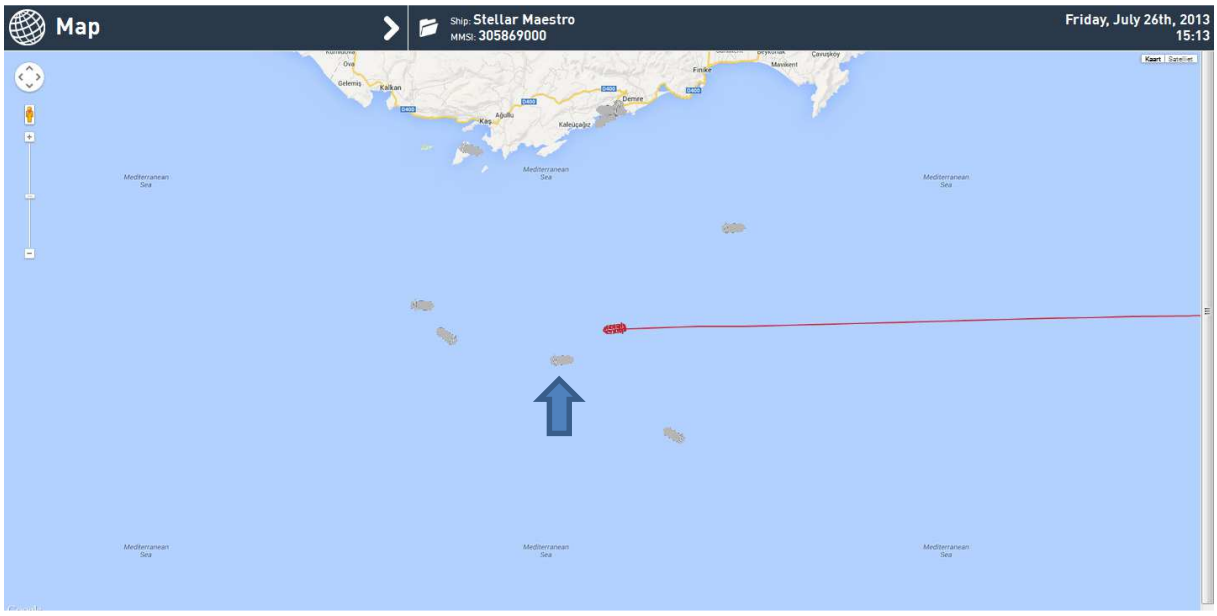

Figure 9-20: zoomed world mimic with AIS-icons

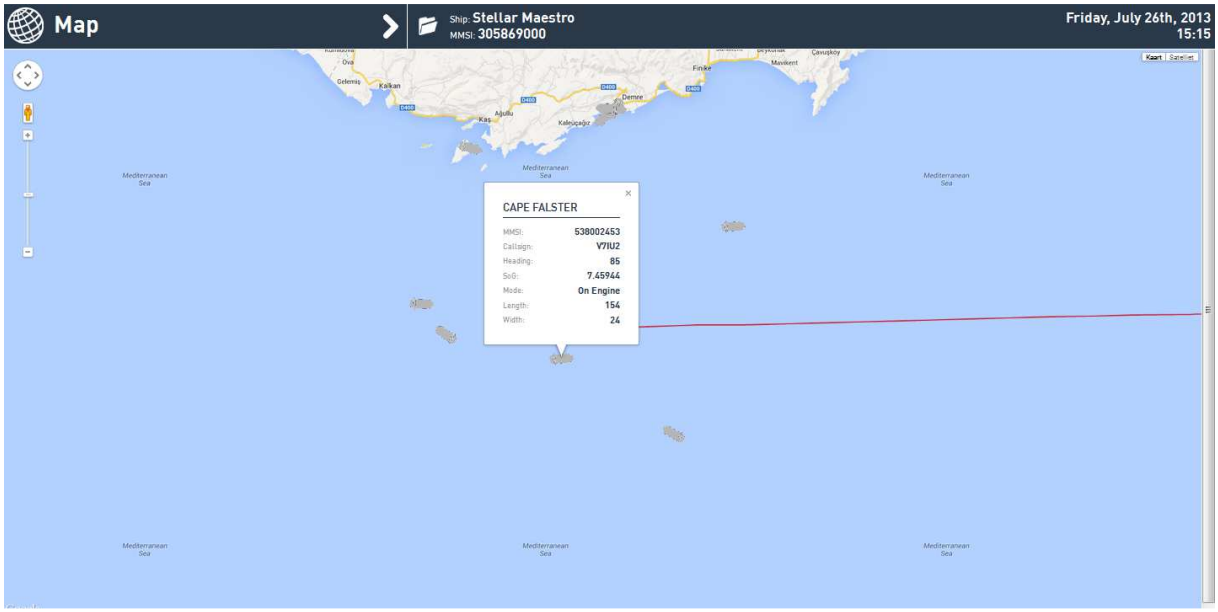

Figure 9-21: Detailed AIS information

10. Software items

10.1 Relationship system element and software items

System elements:	Software items:	Buy / make:
AMCS server/client	Windows XP embedded	Buy
	FT NavVision	Make
LPU	NavVision ACS (PLC)	Make
	Wago (PLC)	Buy
	NavVision Watchdog (PLC)	Make
	NavVision Gateway (Moxa)	Make
	Linux (Moxa)	buy
	NavVision serial-to-ethernet (Moxa)	make
	NavVision Watchdog (Moxa)	Make

Table 10-1: Relationship system elements and software items

10.2 Software item description

Software item:	Description:
FT NavVision	Application for Alarm, Monitoring and operator control.
Windows XP embedded	Operating system, supporting all other software items
NavVision ACS (PLC)	Automatic control sequences (with more than one condition).
Wago (PLC)	Standard operating system for relay of sensor information or actuator commands and execution of control sequences.
NavVision Watchdog (PLC)	Checks status of PLC.
Linux (Moxa)	Standard operating system.
NavVision serial-to-ethernet (Moxa)	For conversion of serial input data to Ethernet and for conversion of output data from Ethernet to serial data.
NavVision Watchdog (Moxa)	Checks status of Moxa serial interface.

Table 10-2: Software item description

11. Hardware items

11.1 Relationship system element and hardware items

System elements:	Hardware items:	Buy / make:
AMCS server/client	AMCS PC	Buy
	Trackball	Buy
	Display (optional: touch screen)	Buy
	Option: Keyboard	*Buy*
	Alarm buttons	Buy
LPU	Wago PLC controller	Buy
	I/O modules	Buy
	Redundant power supply	Buy
	Network switch	Buy
	Serial to network interface	Buy
Remote monitoring	*Network Interface Moxa*	*Buy*

Table 11-1: Relationship system elements and hardware items

11.2 Hardware item description

Hardware item:	Description:
AMCS PC	• Product approved PC • Dual network • Solid state disk • Fan-less • RS232 interface
Trackball	Keytouch trackball
Display	Hatteland/Conrac/Lauer/KEP
Option: keyboard	*Keytouch keyboard*
PLC controller	WAGO 750-series
IO modules	WAGO 750-series
Network switch	Phoenix Contact SFNT 5TX of SFNT 8TX
Serial to LAN converter	The Serial to LAN Converters enable the serial data coming from all kinds of equipment to be transferred over the network. These converters have two serial ports and redundant network port per unit. Moxa U7110-x

Table 11-2: Hardware item description