



Vehicle Tracking System Roadstar

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Introduction

Satellite vehicle tracking system **Roadstar** provides remote vehicle tracking and collecting vehicle data in real time.

System is available on internet addresses www.tracking.rs and www.avl.rs.

Available tracking data on this sistem is: vehicle speed, current GPS position (graphical interpretation on Google maps), movement direction, current speed, engine and door condition, points of interest.

Also, system provides informations such as history of vehicle movement in specific period of time, vehicle servicing, movement analysis and graphical interpretation of movement.

This instruction describes all available pages on the website and its functionalities.


Login

User can access **Roadstar** tracking system over internet and track vehicles, its position and other available parameters at any time.

To start tracking vehicles on www.tracking.rs you need to enter user name and password in given fields on login dialog. After that press button **Login**.

To add new vehicle into system for tracking, first check option **New user or vehicle** and then enter **IMEI** (unique number) of device **Roadstar** which will be installed in vehicle.

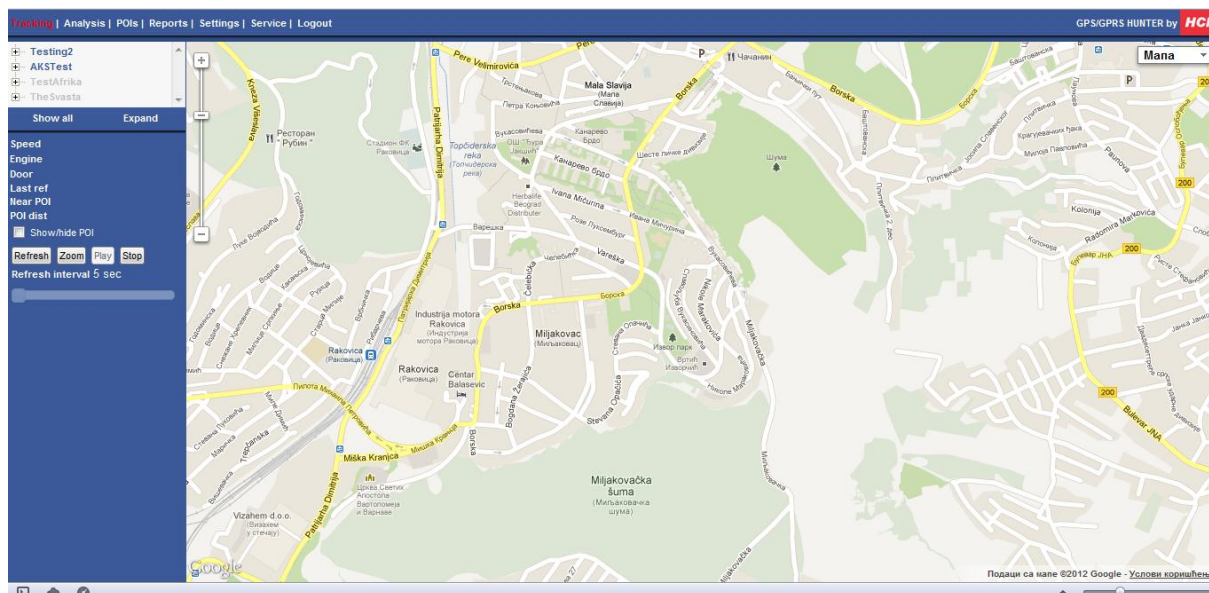
Login dialog is shown in picture 1.



Picture 1 – Login dialog

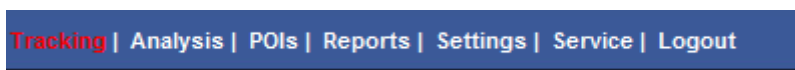
Website content

Once you are logged in you are ready to start tracking vehicles. This is the preview of the start page after login:



Picture 2 – Startup page

On the top of each page of the website there is a menu with links to all pages on the website. Menu is shown in picture 3.



Picture 3 – Menu

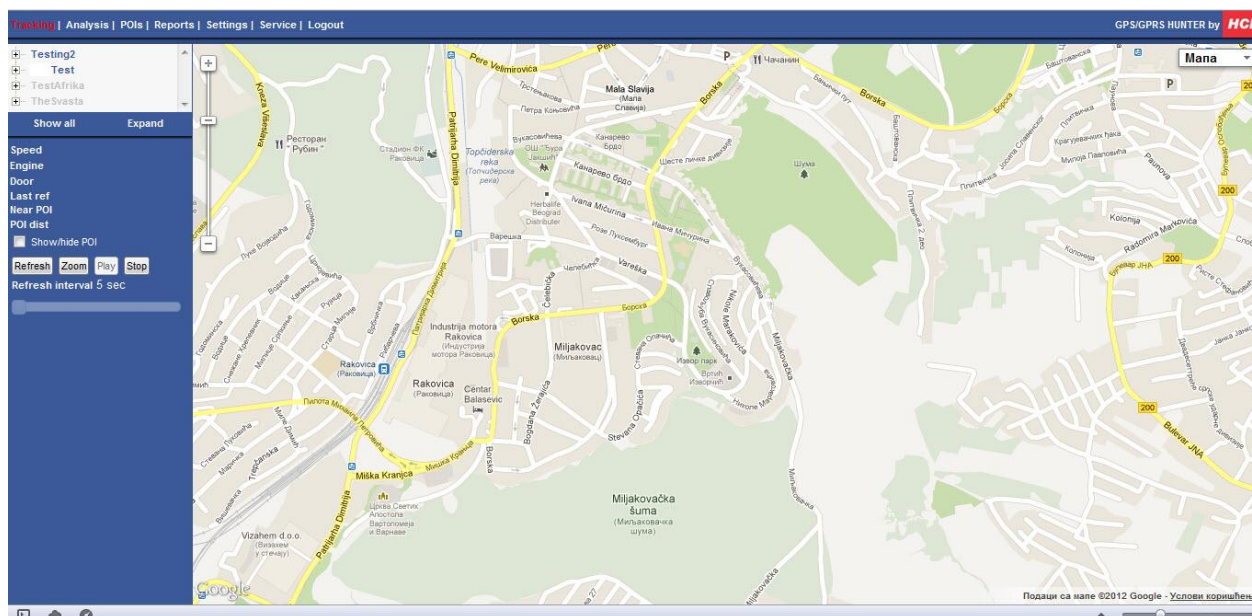
Menu contains links to all pages on website:

- Tracking
- Analysis
- POIs (Points of Interest)
- Reports
- Settings
- Service
- Logout

Each page is described in following text.

Tracking

On this page you can checkout where your vehicles currently are, track it on google maps in real time, and find out which way are they going.

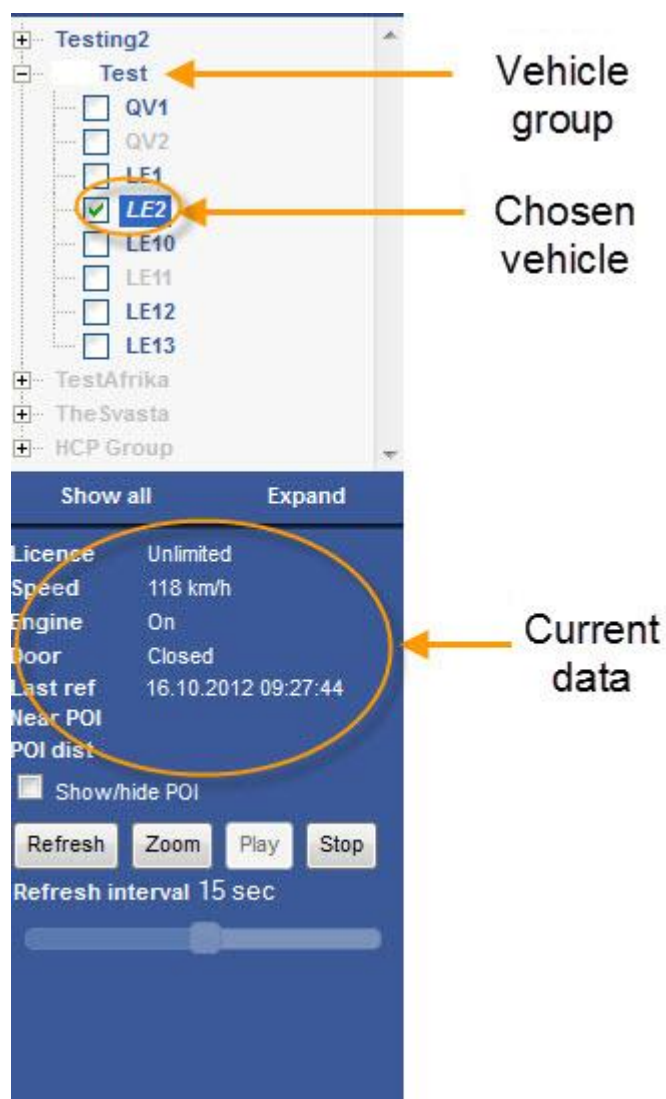


Picture 4 - Tracking

On the left side of the window is shown panel with vehicle groups and current data for a specific vehicle. By clicking + beside group name a tree with vehicles will appear. To select vehicle you want to track you need to check field beside vehicle name. In the field below you can check current data for this vehicle: vehicle speed, engine and door state, last reference (last time data was updated), nearest point of interest and destination to it, refresh interval.

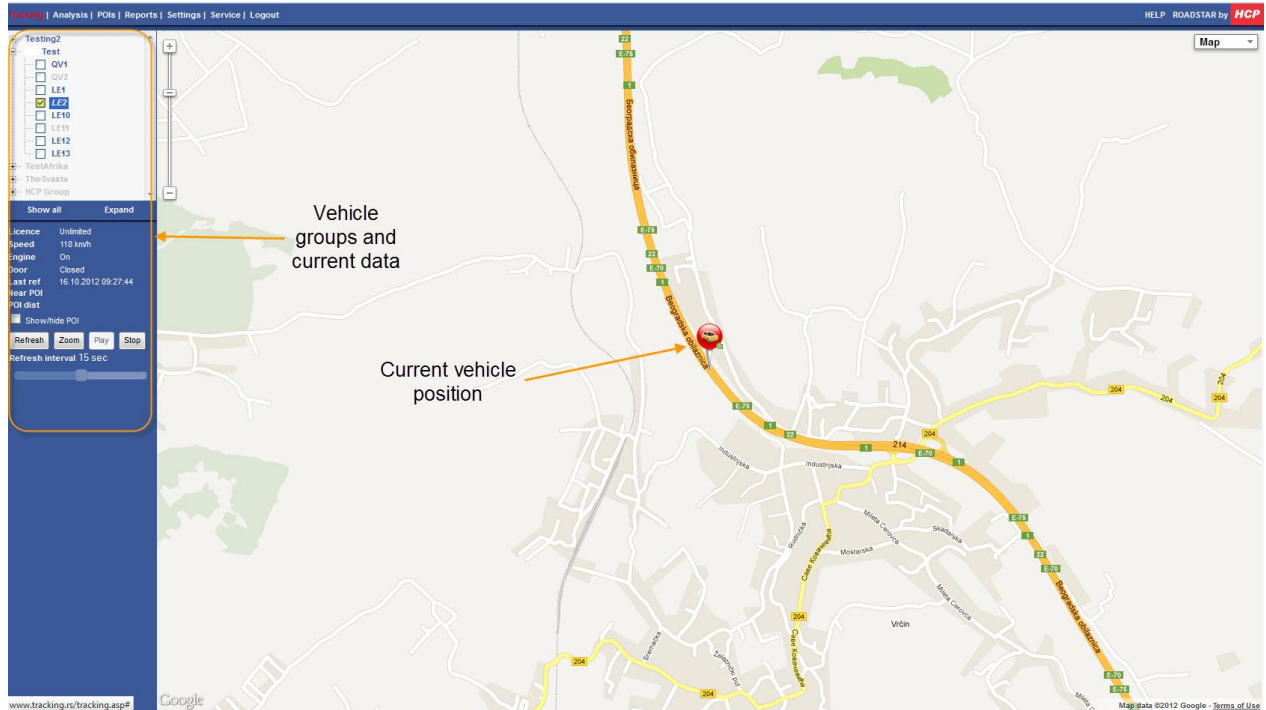
If you check option for nearest point of interest, nearest defined point of interest will appear, as well as distance to it.

On the bottom there are buttons which you can use either to start or pause tracking of selected vehicle, or zoom current position. Also you can select to show points of interest.



Picture 5 – Vehicle data

On the right side of the window you can check current position of the vehicle presented graphically on google maps. Vehicle is shown in red baloon, and you can check out where it is currently going and in which direction (shown by green arrow).

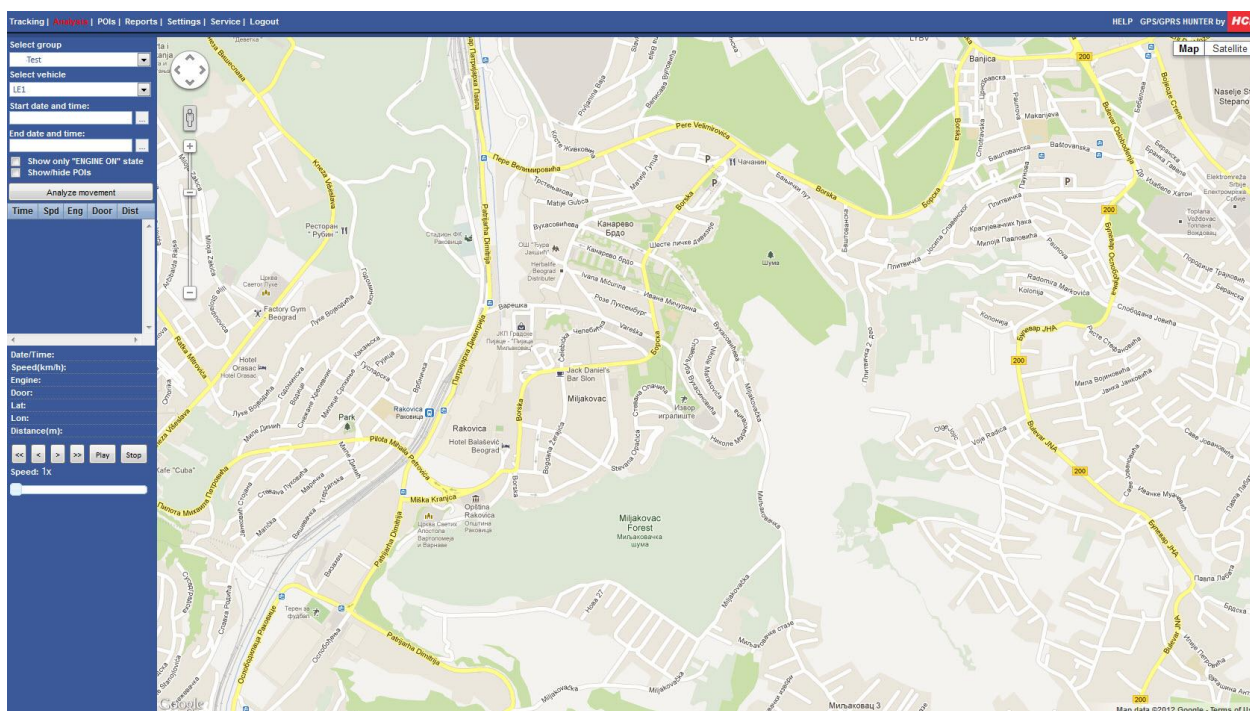


Picture 6 – Vehicle position on google maps

Analysis

This page contains data about movement of vehicles. For each vehicle you can see what was the route during a specific period of time (from-to date/time, which is limited to a period of maximum 5 days).

Left side of the window contains panel with vehicle groups and data about vehicle movement, and on the right side there is graphic of vehicle movement on google maps.

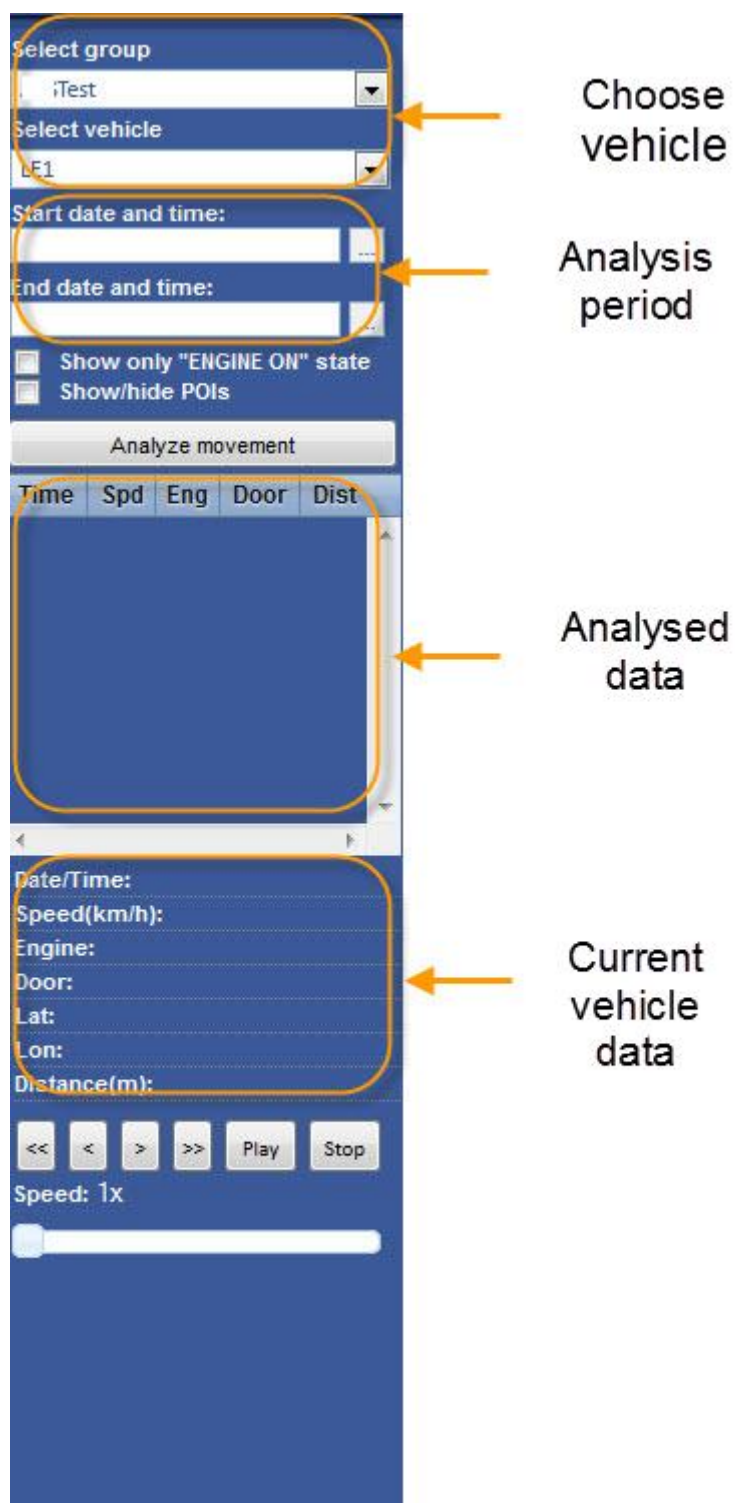


Picture 7 – Analysis

To create analysis for vehicle, first select group of vehicles and vehicle for which you want to create analysis. Then you need to define period of time for analysis – picture 8.

and click Analyze movement.

In the field below Analyze movement button, you can check data such as time, speed, engine and door state and current distance for specific moment of time inside given period. Below this you can also check out current parameters such as date/time, current speed, engine and door status, latitude, longitude, distance. Also, you can play animated movement of the vehicle during period of time you selected. It's followed by an animated movement on the right side of the window in google maps. Movement trajectory is shown as red line. You can either choose to watch movement in different speeds from 1 to 8 times faster than real time.



Picture 8 – Analysis panel

By clicking buttons beside fields for start and end of analysis period (Start date and time, End date and time) a calendar will appear as shown in picture 9. Use it to select start and end date and time for analysis.

September 2012

September 2012

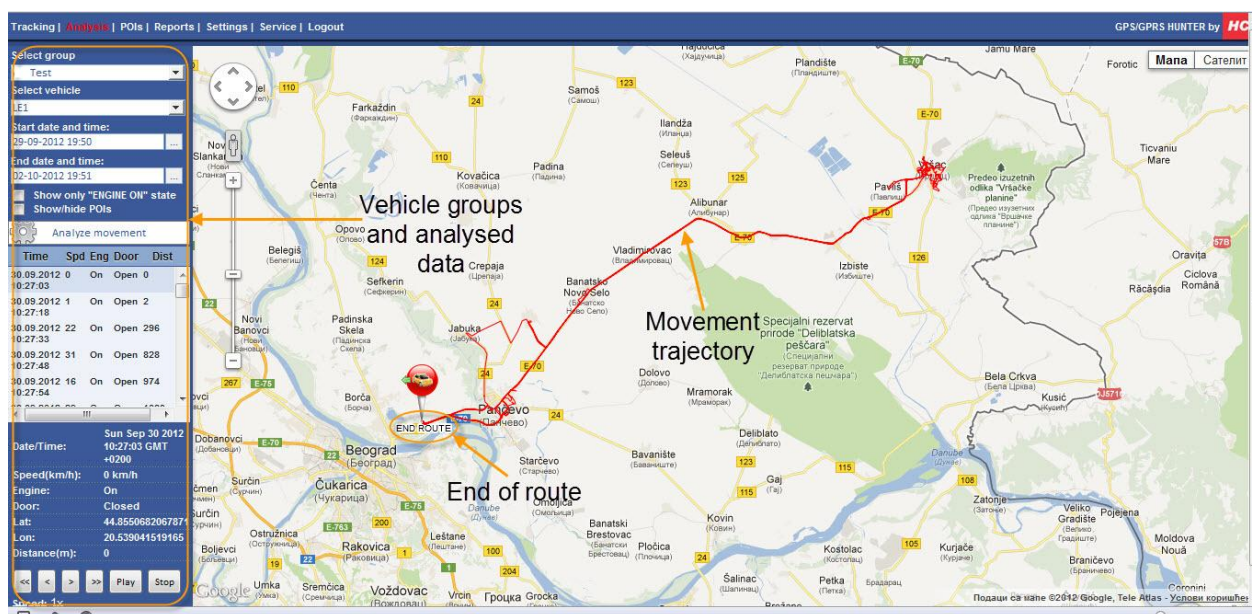
Mo	Tu	We	Th	Fr	Sa	Su
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

19 : 50

OK Cancel

Picture 9 – Setting date and time

After setting all necessary parameters click button **Analyze movement**.
Example of movement analysis is shown in picture 10.



Picture 10 - Analysis example

In table below movement button **Analyze movement** analysed vehicle data will appear. Table contains specific moment of time (column **Time**) and following data for each moment of time: vehicle speed (column **Spd**), engine state (column **Eng**), open door state (column **Door**) and measured distance from the beginning of analysis period (column **Dist**).

If you choose **Show only engine on state** table will contain only states in which engine was on.

By choosing **Show/hide POI** all defined points of interest will appear on the map. More about points of interest in chapter **POIs**.

Below this table, current vehicle data is shown: date and time, current speed, engine state, door state, longitude, latitude and measured distance.

Example of data made by analysis is shown in picture 11.

Vehicle group

Vehicle

Start of analysis

End of analysis

Analyse movement

Time	Spd	Eng	Door	Dist
30.09.2012 0 10:27:03		On	Open	0
30.09.2012 1 10:27:18		On	Open	2
30.09.2012 22 10:27:33		On	Open	296
30.09.2012 31 10:27:48		On	Open	828
30.09.2012 16 10:27:54		On	Open	974

Analyse data

Current vehicle data

Simulation

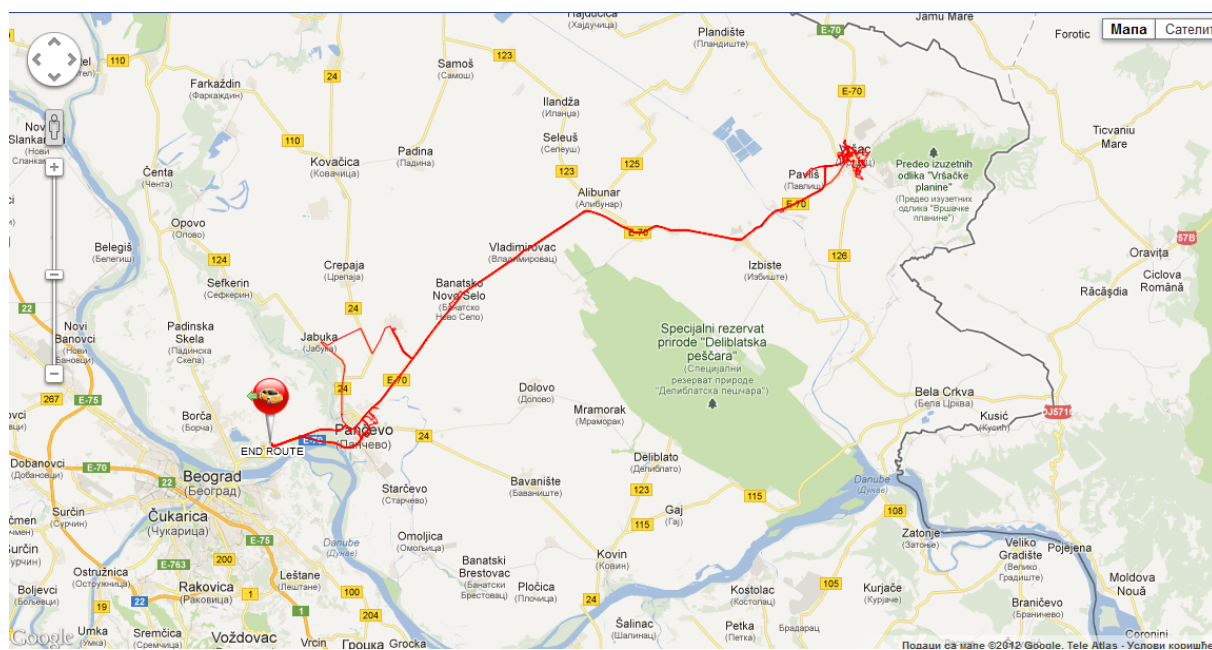
Speed: 4x

Picture 11 – Example of analysis

On the right side of window, movement trajectory is shown on google maps as red line. **END ROUTE** defines end of the movement trajectory in specified period of time.

Also, you are able to simulate vehicle movement on the trajectory using buttons on the bottom of the panel (in real time or up to 8 times faster).

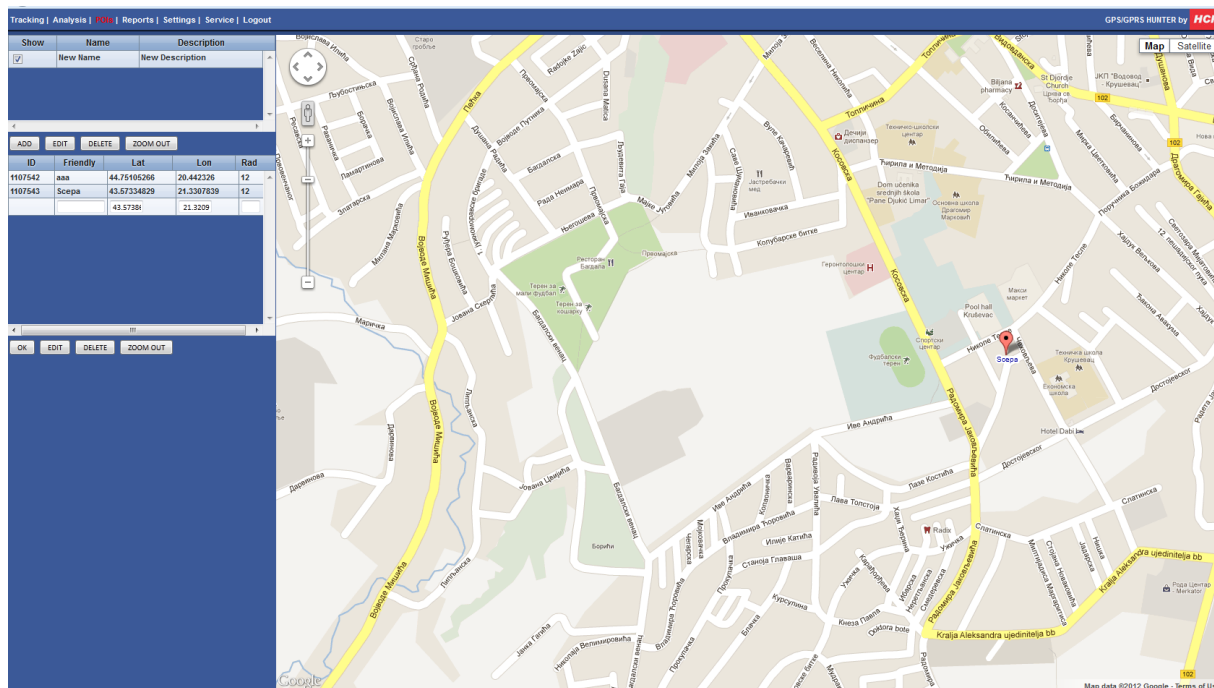
Graphical representation of trajectory is shown in picture 12.



Picture 12 – Movement trajectory

Points of interest (POIs)

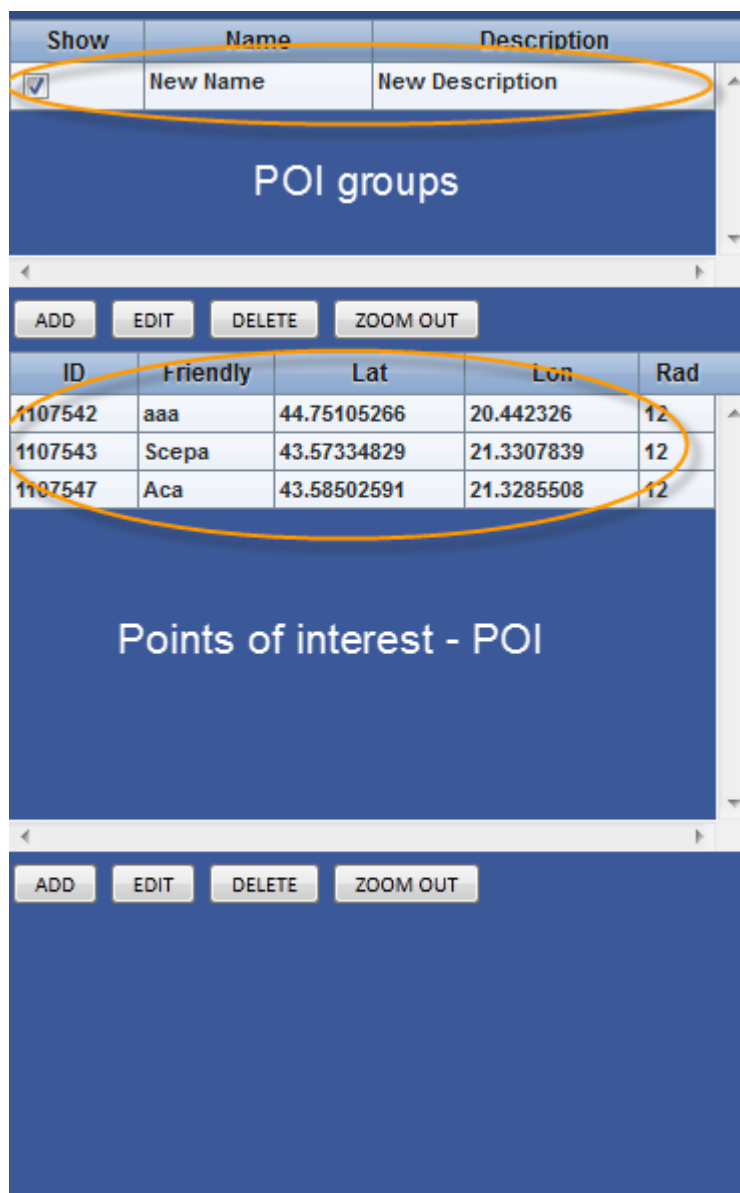
On this page you can define your own points of interest anywhere on google maps. Point of interest can be any important location on map for tracking vehicles (company headquarters, gas station, hotel, restaurant etc).



Picture 13– Points of interest

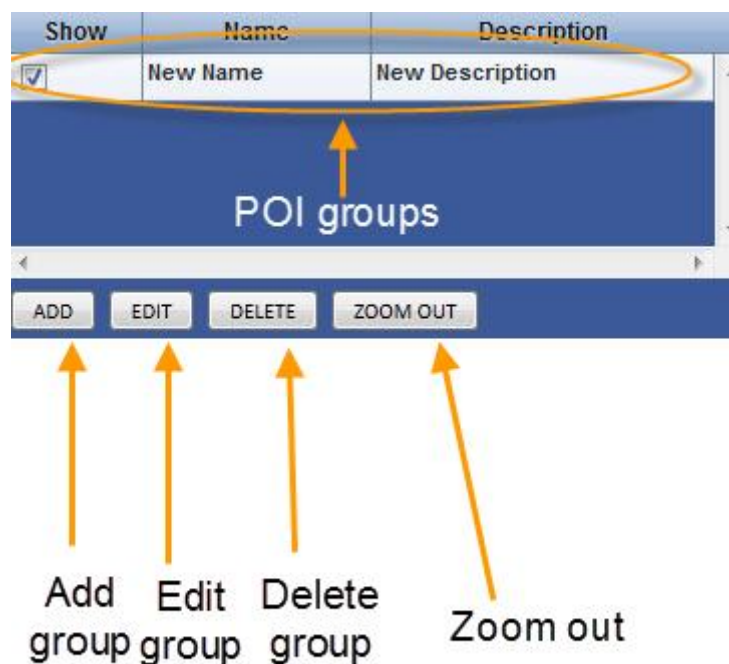
On the left side is shown panel with defined groups and points of interest.

Upper part of panel contains point of interest groups, and lower part contains points of interest within one group. Each group can contain infinite number of points of interest – picture 14.



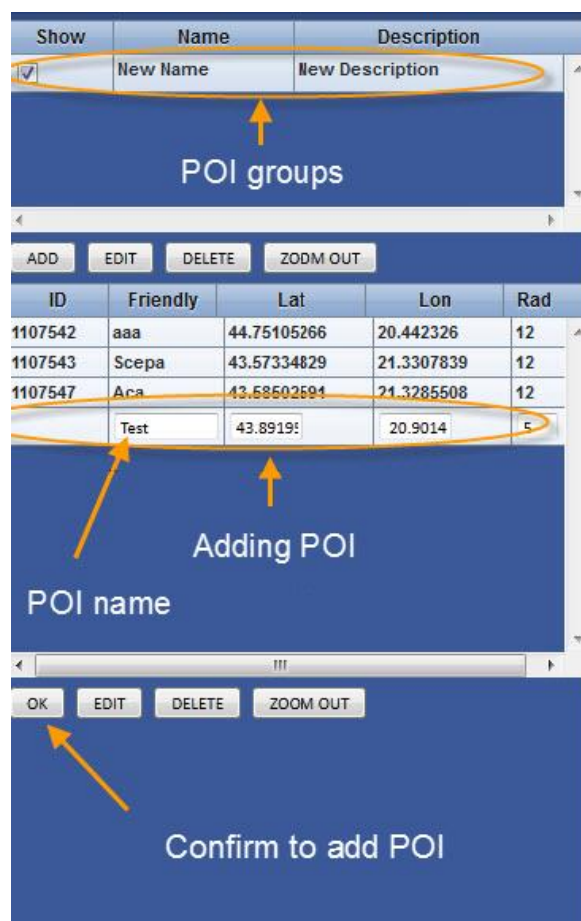
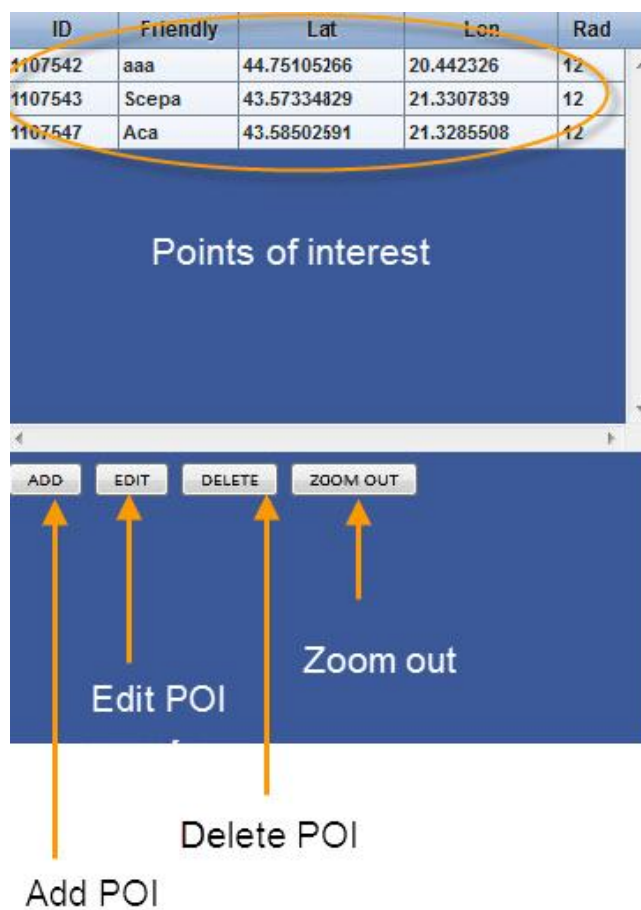
Picture 14 – POIs panel

To add POI group, click on **ADD** button shown below groups. Enter group name (column **Name**) and description (column **Description**). If you choose option in column **Show**, all points of interest within selected group will be shown on google maps. To delete group of POIs, first select group you want to delete and then press button **DELETE**. To change group data, first select group and press button **EDIT**. Using button **ZOOM OUT** you can zoom out view on google map – picture 15.



Picture 15 - POI groups

Adding point of interest is pretty easy. First click on group for which you want to add new POI. Then click on button **ADD** (inside POIs field) to add new POI. New empty row will appear with data for name, latitude, longitude and rad (radius from point of interest to object). In the right side of the window click on google maps where you want to put point of interest. Right click on the map where to put POI. Small window with text **ADD MARKER HERE** will appear. Click on it. On the left side, empty fields for latitude and longitude will show latitude and longitude for added POI. You can also add manually latitude and longitude. After this add name for POI (column **Friendly**), add radius parameter and click **OK**. You can delete point of interest by clicking button **DELETE**, or edit current data by clicking button **EDIT**. Panel with points of interest is shown in picture 16.



Picture 16 – Points of interest

Reports

On this page you can create reports for vehicle movement during a period of time. There are two available reports:

- Distance Report
- Activity Report

The screenshot shows the 'Reports' section of the Roadstar Vehicle Tracking System. It features a navigation bar at the top with links: Tracking | Analysis | POIs | **Reports** | Settings | Service | Logout. Below the navigation bar are three main panels, each highlighted with an orange border and an arrow pointing to a label below it:

- Choose Vehicle:** Contains two dropdown menus. The first is labeled 'Select group' and has 'Test' selected. The second is labeled 'Select vehicle' and has 'LE10' selected.
- Date/time range:** Contains two date/time input fields. The first is labeled 'Start date and time:' and has '01-10-2012' entered. The second is labeled 'End date and time:' and has '03-10-2012' entered.
- Report types:** Contains a dropdown menu with 'Distance report' selected. Below the dropdown are three buttons: 'VEHICLE', 'GROUP', and 'ALL'.

Picture 17 – Reports

As shown in picture 17, first in panel **Choose Vehicle** select group (drop menu **Select group**) and vehicle (drop menu **Select vehicle**) inside it. Then in panel **Date/time range** define a period of time for which you want to create report (begin date - **Start date and time**, end date – **End date and time**). At last, in panel **Report Types** from drop menu choose one of report types (**Distance Report** or **Activity report**). Time range is limited to maximum 5 days (any 5 days in the past from current moment).

Distance Report

This report can be generated for selected vehicle or selected group of vehicles. Click on button **VEHICLE** inside **Report Types** panel to generate report for selected vehicle, or button **GROUP** to generate report for selected group.

Report contains information about distance during each day for selected vehicle or group. Also, there is total, maximum, minimum, average and cumulative distance. If you press button **Group**, report is generated for each vehicle in the group. Reports for one vehicle and group of vehicles are shown in pictures 18 and 19.

Tracking | Analysis | POIs | **Reports** | Settings | Service | Logout

Choose Vehicle

Select group
Test

Select vehicle
LE10

Date/time range

Start date and time:
01-10-2012

End date and time:
03-10-2012

Report types
Distance report

VEHICLE GROUP ALL

DATE	KM	CUMULATIVE
2012-10-03	0.139	0.139
2012-10-02	977.532	977.671
2012-10-01	633.051	1610.722
Total: 1610.722 km Average: 536.907 km Daily Max: 977.532 km Daily Min: 0.139 km		

Picture 18 – Distance report for one vehicle

Example in picture 18:

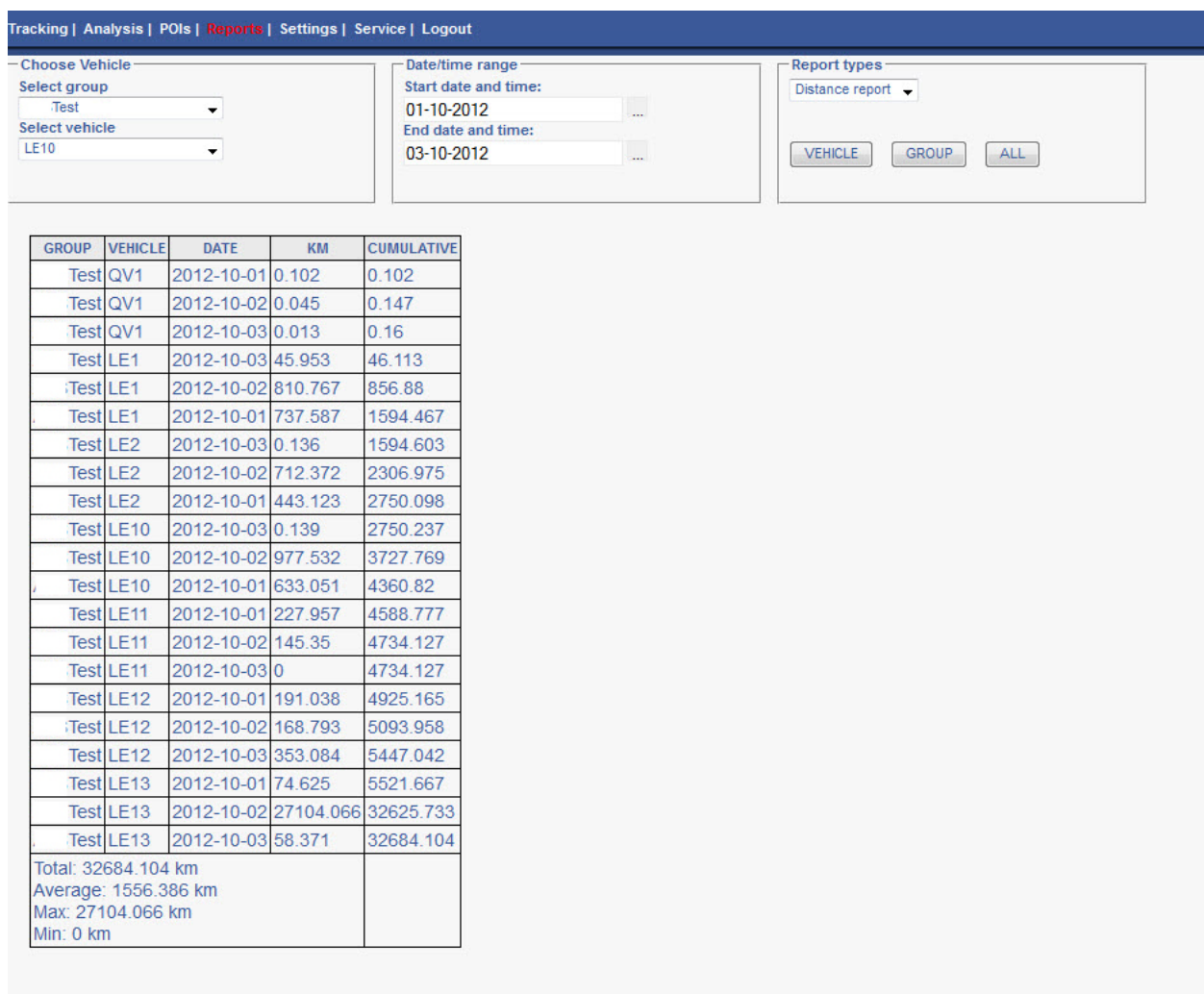
We chose group **Test** and **LE10** is selected vehicle in group **Test**.

Start date is 01.10.2012, and end is 03.10.2012.

Distance report is chosen.

By pressing button **VEHICLE**, report with following data is generated:

- Date (column **DATE**)
- Measured distance for current date (column **KM**)
- Total measured distance to current date (column **CUMULATIVE**)
- Total measured distance for selected time period (**Total**)
- Average distance during a day for selected time period (**Average**)
- Maximum measured distance by day for selected period (**Daily Max**)
- Minimum measured distance by day for selected period (**Daily Min**)



Picture 19 – Distance report for group of vehicles

Example in picture 19:

Chose group **Test**.

Start date is 01.10.2012, and end is 03.10.2012.

Distance report is created.

Clicking button **GROUP** report is generated, similar to previous example, but for each vehicle in chosen group.

Lwer part of table contains following data:

- Total measured distance for all vehicles in group for chosen time period (**Total**)
- Average measured distance by day for all vehicles in group for chosen time period (**Average**)
- Maximum measured distance by day for all vehicles in group for chosen time period (**Max**)
- Mimimum measured distance by day for all vehicles in group for chosen time period (**Min**)

Activity Report

This kind of report is generated only for one vehicle. Select group and desired vehicle inside it. Select period of time for which you want to generate report (limited to 5 days maximum). Choose **Activity Report** inside **Report Types** panel, and click on button **VEHICLE**.

Report contains informations about usage of vehicle – total usage during selected period of time, driving, idle, maximum speed and distance.

Example for Activity Report is shown in picture 20.

USAGE	DRIVING	IDLE	MAX SPEED	KM
1:14:17:20	14:06:37	03:47:55	150	1608.413

Picture 20 – Activity Report

Example in picture 20:

Chosen group is **Test** and **LE10** is vehicle chosen from group **Test**.

Start date is 01.10.2012, and end is 03.10.2012.

Activity Report is chosen.

By pressing button **VEHICLE**, following information is generated:

- Total usage of vehicle (**USAGE**)
- Total time driving (**DRIVING**)
- Total idle time (**IDLE**)
- Maximum speed (**MAX SPEED**)
- Measured distance (**KM**)

Settings

On this page you can change your personal and data related to your vehicles and vehicle groups. Page contains two panels:

- User Data panel
- Vehicle Data panel

Page view is shown in picture 21:

The screenshot shows the 'Settings' page with a navigation bar at the top containing links: Tracking | Analysis | POIs | Reports | **Settings** | Service | Logout. The page is divided into two main panels: 'User Data' and 'Vehicle Data'.

User Data Panel:

- Username:** BoleQTest
- Email:** test@test.rs
- New Password:** (empty field)
- Re-type New Password:** (empty field)
- First Name:** Test
- Last Name:** Test
- Phone:** 094e03940
- Timezone:** GMT+1:00 (dropdown menu)
- Daylight Savings:** Yes (dropdown menu)
- SAVE USER DATA** button

Vehicle Data Panel:

- Select group:** HCP Group (dropdown menu)
- Select vehicle:** Test vozilo (dropdown menu)
- Group name:** HCP Group
- Friendly name:** Test vozilo
- Registration:** KS123XX
- Manufacturer:** Skoda
- Model:** Fabia
- Max load(kg):** 400
- Licence valid until:** 10/22/2013 7:11:30 AM
- Distance param:** 1000
- IMEI:** 353234027468204
- SAVE VEHICLE DATA** button

Picture 21– Settings

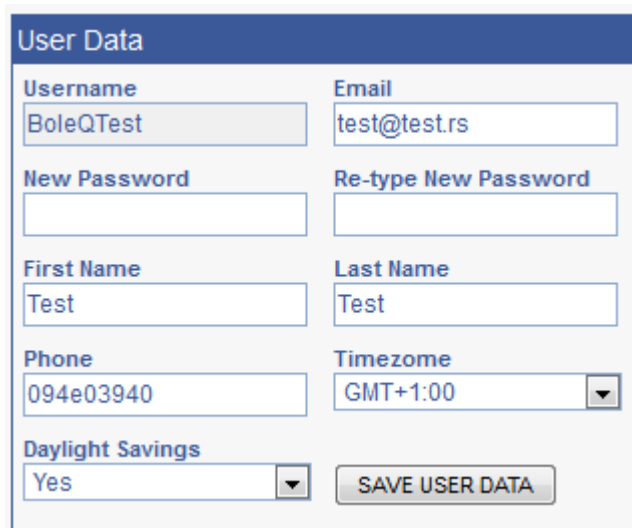
User Data

In this panel you can change your personal data:

- Username
- Email
- Password
- Telephone number
- Timezone
- Daylight savings

Panel is shown in picture 22.

To save data press button **SAVE USER DATA**.



User Data	
Username BoleQTest	Email test@test.rs
New Password	Re-type New Password
First Name Test	Last Name Test
Phone 094e03940	Timezone GMT+1:00
Daylight Savings Yes	SAVE USER DATA

Picture 22 – User Data

NOTE: If you switch to some other page of site and you didn't press button **SAVE USER DATA**, entered data will not be saved!

Vehicle Data

In this panel you can change data related to your vehicles and vehicle groups.

Choose vehicle for which you want to change data. Current vehicle data will be shown in panel – picture 23..

You can change following data:

- Vehicle name (**Friendly name**)
- Vehicle group name (**Group name**)
- Vehicle registration (**Registration**)
- Vehicle manufacturer (**Manufacturer**)
- Vehicle model
- Vehicle maximum load (**Max load - kg**)
- Measured distance (**Distance param**)

Press button **SAVE VEHICLE DATA** to save entered data.

NOTE: If you switch to some other page of site and you didn't press button **SAVE VEHICLE DATA**, entered data will not be saved!

Vehicle Data	
Select group	Select vehicle
Testing2	ST Lokator 1
Group name	Friendly name
Testing2	ST Lokator 1
Registration	Manufacturer
AA	aa
Model	Max load(kg)
aa	1000
Licence valid until	Distance param
Unlimited	13816
SAVE VEHICLE DATA	

Picture 23 – Vehicle Data

Service

On this page you can document and create all services you need to perform on your vehicles. Page view is shown in picture 24:

The screenshot shows the 'Service' page with the following panels:

- Choose Vehicle:** Select group (HCP Group), Select vehicle (Test vozilo), Start date (01-10-2012), End date (03-10-2012), SHOW HISTORY, SAVE, DELETE, NEW buttons.
- Service History:** Table with columns: Date, Type, Place, Km. One entry: 10-3-2012 10:17:00, Regular, Krusevac, 10000.
- Vehicle Data:** Registration (KS123XX), Type (Car), Manufacturer (Skoda), Model (Fabia), Driver (HCP), User (HCP).
- Service description:** Service Type (Regular), Service Location (Krusevac), Kilometers (10000), Next service (km) (10000), Description (empty text area).
- Changed:** Oils (Oil Filter, Fuel Filter, Air Filter, Pollen Filter), Brakes (Front pads, Front discs, Rear pads, Rear Discs), Belts (Timing belt, V-belt), Service date and time (10-3-2012 10:17:00).
- Tyre Change:** Front Tyres, Front Tyres Type, Rear Tyres, Rear Tyres Type.

Picture 24- Service

As you can see, there are several panels inside the page with some specific informations: Choose Vehicle, Service History, Vehicle Data, Oil Change, Service Description, Changed, Tyre Change. We will describe each panel.

Choose Vehicle

In this panel you need to choose vehicle group and vehicle for which you plan to create, delete or show service. First you need to select group and vehicle. Then define period of time which is predicted for service (fields **Start Date** and **End Date**). Clicking on button **SHOW HISTORY**, in the panel **Service History** you will be able to check all previous services in defined time range. Clicking on **SAVE** button, you save current service informations. **DELETE** button will delete selected service in **Service History** panel. Button **NEW** will create new service in the panel **History Service**. Preview of **Choose Vehicle** panel is shown in picture 25.

The 'Choose Vehicle' panel includes the following elements:

- Select group: HCP Group
- Select vehicle: Test vozilo
- Start date: 01-10-2012
- End date: 03-10-2012
- Buttons: SHOW HISTORY, SAVE, DELETE, NEW

Picture 25 – Choose Vehicle panel

Service History

This panel contains table with all performed or appointed services in selected time range. By clicking on certain service, all its data is shown in other panels, so you can check what interventions are declared in service. Preview of this panel is shown in picture 26.

Service History			
Date	Type	Place	Km
10-3-2012 10:17:00	Regular	Krusevac	10000

Picture 26 – Service History panel

Vehicle Data

In this panel vehicle data is shown: registration, type, manufacturer, model, driver and user for selected vehicle. You can enter data for your vehicle into text fields, and save settings when service is finished, by clicking button **SAVE** in **Choose Vehicle** panel.

Preview of this panel is shown in picture 27:

Vehicle Data	
Registration	Type
KS123XX	Car
Manufacturer	Model
Skoda	Fabia
Driver	User
HCP	HCP

Picture 27 – Vehicle Data panel

Oil Change

This panel contains data about oil change in service. When creating new service, you can enter this data and save it by clicking button Save in Vehicle Data panel.

Preview of this panel is shown in picture 28:

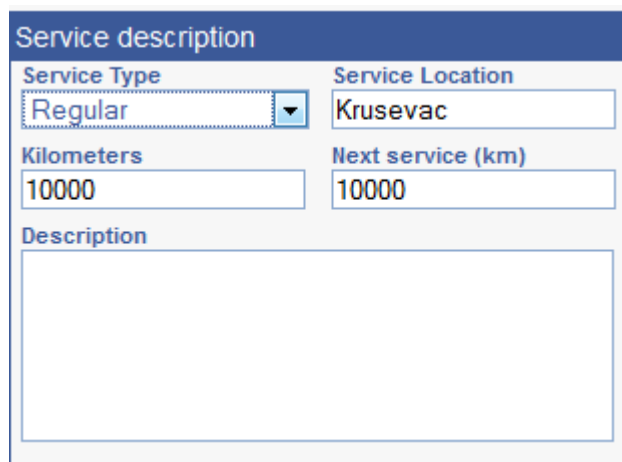
Oil Change	
<input checked="" type="checkbox"/> Motor oil	Motor Oil Type
<input type="checkbox"/> Brake Oil	

Picture 28 – Oil Change panel

Service Description

In this panel you check data about service, or enter data for description of new service. Available data to add or read is: service type (regular, ad-hoc and tyre change), service location, kilometers (current), next service (after specific number of kilometers) and custom description for the service.

Preview of this panel is shown in picture 29.



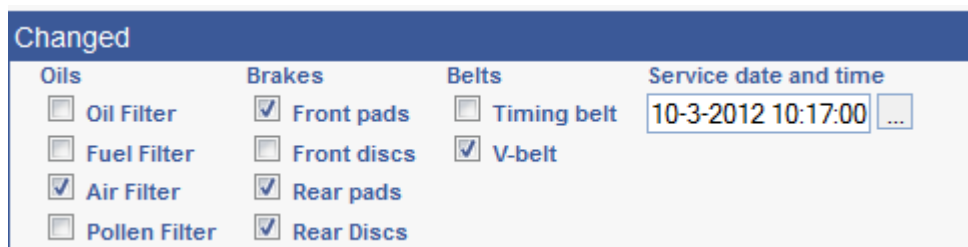
Picture 29 – Service Description panel

Changed

This panel contains data about changes being made by service. You can add or read data regarding changes of:

- Oil (oil filter, fuel filter, air filter, pollen filter)
- Brakes (front pads, front discs, rear pads, rear discs)
- Belts (timing belt, V-belt)
- Date and time for service

Preview of this panel is shown in picture 30.



Picture 30 – Changed panel

Tyre Change

In this panel you can add or read data about tyre changes on your vehicle. You can check either front or rear tyre change, and enter tyre type for front and rear tyres.

Preview of this panel is shown in picture 31.

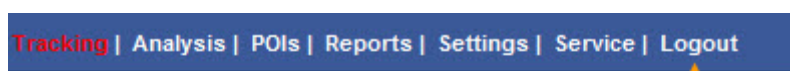


Tyre Change	
<input type="checkbox"/> Front Tyres	<input type="checkbox"/> Rear Tyres
Front Tyres Type	Rear Tyres Type
<input type="text"/>	<input type="text"/>

Picture 31 – Tyre Change panel

Logout

When you are done with work on our website you can logout by pressing **Logout** in the menu.



Click to
logout

Picture 32 - Logout