

# TAVL application user manual V3.1



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# 1. Introduction

TAVL application is software used to connect to the server and retrieve and display information that FM4 stores there.

TAVL user manual provides information needed to fully understand and operate TAVL application. Here you will find application installation guide, interface, reports, configuration and event description, operation list. Note, that some operations or functions can be enabled or disabled and may not be available in application.

# 2. Getting started

## 2.1 PC requirements

TAVL application runs on a PC with MS Windows XP or MS Windows Vista with latest service packs. MS .NET Framework v2.0 and Crystal Reports are also necessary components.

TAVL application supports MS MapPoint (copyright © 2008 Microsoft) or any MapX (copyright © 2008 MapInfo Corporation) maps (additional maps have to be installed on users PC).

#### 2.2 .NET Framework installation

Download .NET Framework 2.0 from Microsoft website and install it (url: <u>http://www.microsoft.com/downloads/thankyou.aspx?familyId=0856EACB-4362-4B0D-8EDD-AAB15C5E04F5&displayLang=en</u>). If the download doesn't start automatically, click on the "Start Download" button.

#### 2.3 Crystal Reports installation

Download and install Crystal Reports for .NET Framework (url: <u>http://213.226.139.30/Downloads/tavl/Tavl%5FClient/Crystal%20Reports%20Runtime/CRRedist2</u> 005\_x86.zip ).

## 2.4 TAVL application installation

Downloads and extract latest available version of TAVL application (url: <u>http://213.226.139.30/Downloads/tavl/Tavl%5FClient/</u>).

## 2.5 Launching TAVL application

Launch tavl.exe. Enter your login name and password. Additional settings can be found after clicking button: client name, destination server and language.



# 3. Interface

📲 Teltor	ika TAVL.NET	- SUPERVISOR MODE	. Client name	.@Teltonika (build:2.12.23.37)
File I	Edit View 🖌	Messaging Tools	Reports Hel	
@Teltoni	ka	🔹 🗄 🖬 Objects	≯Track Eve	nts RFID 🎱 Map 🔹 📚 KML 🔯 Stop 🥔 Help 📭 Exit : 🛤 Request 🐲 SMS Mail Box 🖭 Send Message : 🕵 Users 🌙 Send Command 🕰 Drivers
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C	245523	2008.02.27 16:55	11	VENTSPILS Gibuji Engure Pragana Siseo Franda Gibuji Engure Pragana CESIS Gada, GULBENE Galaxao Simani Vysho
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C	245579	2008.03.21.10:04	0	Liepāja Meldzene Salībus Lietieka Vandrājas Valkas Skalībus Salā Ukabpils Geļāni Burgar Vindrājas Vi
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C	245587	2008.03.05.16:33	0	Sejejciems Bartis Stolja Bartis Artika Bartis Stolja Barti
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C	245599	2008.03.15.11.34	0	Botingė Asėdžia Taikiai Drąsučiai Patrupils Subble Iutero KRASLAVA Sukoli.
C	245600	2008.03.13.10.00	0	Palanga Plunge Plunge Rursenai Slauliai Buter PA EVEZIO e Buter Peiki Svyatitsa Osveya
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C	245668	2008.02.16.22.19	1	Uzupiaje Uzupiaje Spraudi Vabaliai Šisulėna Beduva Panevezys Salos Shlotstai Užupiaje Vidany Spraudi Bio
E	245601	2000.04.21.00:47	0	Klaipėda kražiai balsūdais Viešintos Uzpeisis Urgeniai kara para kražiai Disn. Kvedama viešintos urgeniai transministrationa para kražiai para kražintos kražintos urgeniais viešintos viešintos
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E	245718	2008 04 14 14:53	0	Prelia KLAIPEDOS Skaudvile L OT H U A N I A Suginčia Obal a Obal Dzikevo Nove Se
F	245731	2008.04.09 12:42	0	Situte Taurage Simkaičial ••Seta •Vidiškai Moletal Guntauninka, Rabeki
F	245744	2008.04.04 14:00	0	Prokhladnove Sovietk TAURAGE - Longe Vendonélia Svendonélia Svendonélia
F	245843	2008.03.21 15:01	0	Lesnov Cuagoon Lagoon Value Value Value Karmalava Zhukovne Value Value Karmalava Zhukovne Value
5	245878	2008.03.19 13:13	0	Yantarnyy KALININGRAD Krasnovaramenak Kauna Palomena VILNIAUS Zhelyadzke Svir Sloboda Dokshitsy Bere
6	245881	2008.03.13 08:42	0	Celenovo Zelenovo Zales ye Dobrovoľsk Ežerelis Rumšskés Zezmarai Anyda Michalski Azatri Budslav ge <sup>ger</sup> Brezin
5	245883	2008.03.21 11:42	0	Pucka Gulfor Svetuy Cherryakhovsk MARIJAMPOLES Kaukine Jagel Set Wilnius Matski, Naroty Dzenisovo Shkivantsy Biospha
6	246841	2008.03.21 08:58	0	Rumia Baltiysk Ozerki Znamensk Gussev Kybartai Marijampole Aukštaterina Kena Devlidic Svinka Solv Solv Solv Solv
5	248691	2008.03.20 11:11	0	Brantsy Kutavicki Stiple Krutavicki Stiple S
5	248697	2008.04.07 11:14	0	IE Wsinský d Bagrationovo Bagrationovo Bagrationovo Simnas A V Auto Saktininka oktevní Maladzyechna Maladzyechna
	248698	2008.04.09 09:05	0	ruby Guarsk Elblag Lidzbark Barloszyce Goldap Viskovshchyzna Chebotary V
	248700	2008.04.09 08:39	0	Tczew Werkinski Kirki Subotnik Viratelski Solonay V
	248707	2008.04.18 14:21	0	Kolino Gizyokon Turkai Anaka
	248709	2008.04.14 14:15	0	Bolanski Andrew Wyominy Proschule Veleview Constraints Volma Diagowice Veleview Volma
	248720	2008.04.09 08:29	0	Kwidzyn Ostróda w z ry Erk Augustów Hrodna Skatowicz Myta Lyaknowich Zabotza M. H N S K
	250333	2008.04.07 10:38	0	liawa ®WARMINSKO-MAZURSKIE Pisz porajewo @ Kalechytse Vselyub Navahrudak
	250340	2000.01.01	N/A	SKO-POMORSKIE Szczytno Kolno
	250341	2008.04.11 11:01	0	Sokoka Struge Yakhnovshchina Novoye[nya J Zavov ye Guta Zagibel'ka
	250353	2008.04.10 15:08	0	Działdowo Działdowo PODLASKIE Lantseviche Shostake Zalozy Zazreche Seylowichi Kremok
	250365	2008.04.18 10:22	0 🚽	Golub-Dobrzynia Brothica Ostroleka Comza Białystok Subochi Wawkavysk Slonim Baranavichy Turkie Lyada Sta
			•	Torun Rypin Mława Przasnysz Zambrów Lapy Stok Kahesle Osavich Lesnaya Stok Kahesle Savich Lesnaya Stok Kahesle Savich Lesnaya Stok Kahesle Savich Kahesle Savich Lesnaya Stok Kahesle Savich Kahesle Savi
Refres	Refrest	every 0 🗧 min.		Missperified Line Slame M A Z O W LE C K LE
	🗕 🗖 Always	online		Virtual carcn Britisk Ostrowy Hajnówka Moglievský Griváza Staroselyje o Staroselyje Ostrowy Staroselyje Ostrowy Staroselyje Starose
			Offling Law	
			, ornine ( Fo	ina, aprilugeus y oujeus gouleus introtor y You have u message(s).

TAVL application consists of three basic parts:

- 1. Toolbar;
- 2. Object window (may contain track or event window);
- 3. Map window.

# 3.1 Objects

Ob	jects								×
	Number 4	Date/Time	Speed (km/h)	FM4 GSM Signal Level	A (V)	B (V)	FM4 Current Profile	GPS Power	
	263337	2008.04.22 16:04	0	4	13.6	9.4	1	1	
	263338	2008.04.24 14:50	0	5	13.5	9.3	3	1	
	263341	2008.04.22 16:20	0	4	13.5	9.5	1	1	
	263342	2008.04.25 15:23	0	3	25.8	9.3	1	1	
	263345	2008.04.22 16:46	1	4	13.5	9.3	3	1	
	263382	2008.04.24 10:24	3	4	13.5	9.6	1	1	
	263585	2008.04.21 16:43	0	5	14.3	9.4	1	1	
	263586	2008.04.28 14:31	61	3	27.9	9.2	1	1	
	263593	2008.04.22 10:50	0	5	13.6	9.6	1	1	
	263594	2008.04.24 14:39	0	5	13.5	9.7	1	1	-
┛								•	
	Refresh every 0 min.								

Object window contains a list of all available objects that are available for the client. Red color indicates idle state, green – moving. Date column shows timestamp for the latest coordinate received from device along with other additional properties (if any). After clicking 'Objects' in toolbar, TAVL displays them on a map. Left-click on the object in the list centers view on that object. Right-click on the object displays the following menu:

- Info displays object information entered in database
- Hide hides current object from visible list ('Objects' or 'Refresh' has to be clicked to take effect)
- Unhide All reveals all hidden objects
- Edit Columns ability to set up available columns order, size, etc.
- Configuration opens object configuration menu (see below)
- GeoFence opens FM GeoFence menu
- Edit Object ability to modify object number and comments
- Send Command displays available SMS commands for FM

'Refresh' button displays the latest information available on server. Option 'Refresh Every' allows you to enter time interval in minutes for automatic refresh function. 'Always Online' refreshes data every 15 seconds.

#### 3.2 Track

'Track' button in toolbar displays additional track window in object list. Choose an object, set time interval and click 'Find' to see the track of the object for that period. All additional properties are displayed as well for every timestamp. 'Skip Min Distance' is used to discard records that are too close to each other – you can enter minimum distance between coordinates to be displayed. Left-click on the list centers the map on that record. Right-click allows to modify columns and to switch to 'Replay' mode. If two coordinates are selected while holding 'Ctrl' key, application calculates distance between them and (if available) fuel consumption for that period.

Replay mode displays each coordinate for defined time interval in 'Pause' field creating a live review the track. 'Play', 'Pause' and 'Stop' buttons are used to start, hold and stop preview, while 'Reverse' button replays track from the end to beginning.

'Reports' button is explained in 'Graphic Reports' chapter (see below).

Track				<b>4</b> ×
Revers	Play	Pause	, s	itop
Pause 0,5	(s)	·)		_
Find	t l		Report	
Message from AHI	M 047:			
Date/Time 🗠	Speed	A (V)	B (∀)	Movement 📥
2008.04.29 06:55	0	12.4	10.6	0
2008.04.29 07:25	0	12.4	10.6	0
2008.04.29 07:52	0	12.1	10.6	1
2008.04.29.07:53	12	14.0	10.6	1
2008.04.29 07:53	10	14.1	10.6	1
2008.04.29 07:53	10	14.0	10.6	1
2008.04.29 07:53	16	14.1	10.6	1
2008.04.29 07:53	15	13.9	10.6	1
2008.04.29 07:53	15	14.0	10.6	1
2008.04.29 07:53	27	14.1	10.6	1
2008.04.29 07:53	14	14.0	10.6	1
2008.04.29 07:54	15	14.1	10.6	1
2008.04.29 07:54	13	14.1	10.6	1
0000 04 00 07 54	140	1 4 4 4	100.0	

Info	
Hide	
Unhide All	
Edit Columns	
Configuration	
Geofence	
Edit Object	
Send Command	





## 3.3 Graphic Reports



After clicking 'Track' button and generating a track of the object a 'Reports' button appears. This opens a new window with all properties changes in time scale graphics – speed, power voltage, CAN bus information, etc. Information provided here is same as displayed in 'Track' window, except that it is in graphic mode. Left-click on a record in 'Track' window shows a vertical line on a graph at specified timestamp.

Some functions to manipulate the view of graphics are available. Middle button of a mouse increases or decreases the scale of timeline, right-click displays a view settings menu. Image can be copied to clipboard, saved as picture format or sent to printer. It is also possible to choose point symbols and size for them as well as line filling options. 'Set Scale To Default' is used to set back to default view.

	Сору		
	Save Image As		
	Page Setup		
	Print		
,	Show Point Values		
	Un-Zoom		
	Undo All Zoom/Pan		
	Set Scale to Default		
	Line	⊁	
	Symbol	۲	





#### 3.4 SMS operations

SMS operations have several buttons dedicated: 'SMS mailbox', 'Send Message', 'Send Command' and 'Drivers'.

#	Drivers			
	Name	GSM Number	Notes	IButtonId
	<u>N</u> ew Driver	<u>E</u> dit	<u>D</u> elete	ose

'Drivers' allows a user to create virtual SMS receivers. These receivers are used in following cases:

- 1. To enter a vehicle driver name and GSM number for a possibility to send SMS from TAVL application;
- 2. To enter a device number and GSM number for a possibility to send FM commands to the unit;
- 3. To enter object number or driver name and iButton ID for identification.

'Send Command' allows a user to send predefined commands to FM unit. Commands are entered on database using Management interface (see TAVL Management User Manual). Choose an object, choose a command from a list and click 'Send' to send a command.

'Send Message' allows a user to send any text message to receiver defined in 'Drivers' menu. These can include configuration messages for FM unit, simple text messages for drivers, or any other SMS message.

'SMS Mailbox' provides a simple SMS monitoring tool for sent and received messages. Some configuration messages request certain information from FM units which is usually sent by SMS. This information can be seen in SMS mailbox window along with delivery reports (if activated). A time interval for sent and received messages can be set. 'Refresh' option allows periodic update of SMS mailbox window, 'All Clients' allow to see all messages from all available clients on the server.

rom: [2008.04.:	29 📕   00:00:00	To:  2008.04.29 🔽  23:59:59 📻ilter	] 🗌 Refresh 📋 All	clients
From	To	Message Text	Date	Client
@Test	Office	INI:2008/4/29 11:7 RTC:2008/4/29 11:10 RST:0 ERR:0 S	2008.04.29 14:11	@Teltonika
@Test	Office	IO ID:3 Value:0	2008.04.29 14:11	@Teltonika
@Test	Office	SMS delivered	2008.04.29 14:11	@Teltonika

#### 3.5 Other operations

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'Map' button allows turning on or off available maps on TAVL application.

After clicking 'KML' button, TAVL application launches Google Earth (copyright © 2008 Google) application and exports current view of map – all objects or track of selected object. Note that Google Earth has to be installed on a PC for this option to be available. Same can be done by clicking 'File -> Export -> To KML File'.

'Stop' button cancels current job - object or track loading.

'Users' allows creating a new TAVL application login for active client. Enter new username and password and choose available functions. Currently logged in user is able to change the settings of account using 'Edit' -> 'Login' menu.

'Events' displays a new window with preconfigured events. They can be received for a defined period of time from selected or all objects available for the client. Event configuration is explained in configuration chapter (see below).

All data (object list with subscribed properties or track information) can be exported to .CSV file. Click 'File -> Export -> To CSV File' and choose a folder to save it.

#### 3.6 Advanced filtering

TAVL application has ability to set certain categories for every client. These categories can have different sub-categories that can be attached for every object. If this functionality is enabled, TAVL application has additional filter settings in toolbar. Vehicle identification to certain category or sub-category is done using TAVL application.

File	Edit View	Messaging	Tools R	eports Hel	D						
🔜 Ob	jects 🤸 Track	Events RF	ID   🏈 Map	• 👻 🚫 KML	Sto	р [ 🧶 Н	telp 🛛 🚺	Exit	🔣 Reques	st 🛯 🚋 SMS Mail Box	🛂 Se
1	and a	-	7 V I	leavy duty				ht duty		-	
Objects				<b>4</b> ×	Virtual	Earth					
	Heavy duty	Heavy duty	Light duty	Light duty		-	Road	Aerial	Hybrid		
-					6	1	-				
	type1	truck				+					
-			type3	SUV							
			type3	SUV	Ð						
			type1	sedan	Q						





# 4. Operations

## 4.1 GeoFence

When coordinates are sent to the server, they are proceeded using application's algorithms. If coordinate is in the specified area, a notification is sent.

In the toolbar click 'Tools' – >'Geofencing'.

Zone		×
	🛯 🎯 🌒 🗔	
List Details		
Properties -		
Name	Zone 5	
Comment	Home Address	
Zon group		
Margin (km)	0.1	
Туре	Circle	
Enabled	<u> </u>	
Square Circle Radius (km) Latitude Longitude	Polygon )	

'Zones' menu allows you to create new, edit or view existing zones, which can be in shape of quadrangle, circle or polygon. To create new area, click . Enter name, attach to the zone group (optional) and specify coordinates by entering them in the fields or click and choose the area on the map window. For quadrangle two corner points are required, for circle - center and radius. If you choose the polygon, double click while selecting last point and application will automatically connect first and last points specified.

× 🖬	🛅   🧼 🔍	15			
Enabled	Name	Туре	Margin	Group	Comment
~	Zone 1	Circle	0,1	Destination Places	Destination 1
•	Zone 2	Square	0,1	Destination Places	Destination 2
V	Zone 3	Polygon	0,1		Destination 3
•	Zone 4	Circle	0,1	Not Allowed Places	Not Allowed 1
	Zone 5	Polygon	0,1	Not Allowed Places	Not Allowed 2

When you click 'Zone Groups' you will be able to attach zones to groups. This makes object management more easy, because you can specify groups as destination addresses, not allowed places, checkpoints and set different messages to be sent for each group.

Geofencing Rules							
🗋 🗙 🛃 📑							
List Details							
Properties	Properties						
Name Deviation Fro	Deviation From Course						
Comment warnings, wh	en objects reach unallowed places						
Objects Zones Zone Group	V/arnings						
Assigned zone groups	• wanings						
C All © List							
Assigned	Group						
	Destination Places						
Not Allowed Places							
<u></u>							

When you are setting Geofencing rules, you can choose which objects to monitor and specify included zones or zone groups. Click 'Warnings' and choose recipients and message sending policies. These two are specified in Warnings menu (click 'Tools' -> 'Warnings' -> 'Warning Recipients'). Also set parameter in 'Transition' field for message sending when objects enters or leaves (or both) area, specify oldest possible warning message in 'Reject State' field and set if messages require user confirmation in 'Confirmation' field.

Warning Recipi	ents 🛛
List Details	]
Properties -	
Client	Teltonika
Name	Transport Supervisor
Туре	Email
Email addres	s supervisor@mail.com
Valid from (h	purs) 8 📑
Valid to (hou	s) 17 📫

Geofencing Rul	es									
	1									
List Details	List Details									
Properties										
Name	Deviation From (	Course								
Comment	warnings, when	objects reach unallow	ved places							
Objects Zone Warnings	es Zone Groups	Warnings								
÷ ×			1							
Reci	pient	Warning Policy	Transition	Valid from	Valid to	Reject stale (days)	Confirmation			
				2007-02-13	2007-02-21					

If you want to view messages in TAVL application, click 'View'  $\rightarrow$  'Warning Console'. In the new window Geofence warning along with other generated waning can be viewed. Settings, how information should be displayed are made in 'Settings' window – click to open it. You can define which messages should be displayed, time interval to check for new messages and how should they be displayed (more detailed explanation in chapter below).

#### 4.2 Events and Warning Console

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Events are displayed in separate window, when FM configuration has certain events defined (see Configuration chapter below). If current value of any property exceeds or drops below the defined range, an event is generated.

Warning console is able to display these events if it is enabled. Enter time interval to check for new events, and define what should happen when new event is received. Different type of warnings can be chosen to view.

Settings			X
General			
🔽 Enable warnings			
Auto refreshing			
Automatically check for new warn	ings		
Check for new warnings every 300	second(s	).	
On new warning displa	ay popup balloon.		•
Watch for new warnings when cons	ole active.		•
Subscribe/unsubscribe warning types			
All types			
Configuration failed			
No data			
Data server			
<u>1</u> 2	<u>0</u> k	Apply	<u>C</u> ancel

#### 4.3 Filtering

Loading lots of objects takes more time and sometimes it can be very confusing. Filtering lets you choose which object you want to view, and hides the rest. When refreshing objects, data is sent only about those that are marked, so it takes less time. In the TAVL toolbar click on 'View' and 'Filter' or hit Ctrl + F. In the new window click on object you want to be displayed and click 'Ok'.

#### 4.4 Options

'Options' allows you to customize TAVL applications settings. In the 'View' menu choose 'Options' or hit F9.

Stop Speed - speed value at which the object is treated as not moving. This is used when coordinates error occurs and object is displayed on new location, it should not be indicated as changing its stopping point.

Events menu – sets a sound used with warnings, sets if passive data is displayed in new window when its state changes or with all data in the objects window. Interval sets the period in seconds when the data is to be refreshed.

GeoFence menu - settings let you specify line colors and width.

Graphic Parameters menu - these settings define same graphic reports parameters as right-clicking on them (see Graphic reports above) - fonts and their sizes, symbol types and sizes, etc. 'Work Time Graphic Min Time' and 'Work Time Graphic Min Speed' define minimum time and speed values at which object's engine is being treated as working.

'Use iButton' – enables iButton column in object and track windows.

'Map' menu defines visual parameters in the TAVL map window. 'Exclude Engine Off Points' sets object to not moving when engine is turned off. With this parameter 'Min Distance In Track When Engine Is Off' is set in kilometers to indicate how far object can move and still not be treated as moving. 'Min Distance In Track' sets minimum distance from one point to another in the map. 'Min Satellites In Track' specifies how many satellites module should be using when setting its position. Note that minimum four satellites are used, but more - means better accuracy.

'Messages Refresh Rate' - rate at which data is refreshed in mailbox.

'Objects' menu - shows last known good coordination when no GPS satellites are in view.

'Remember Windows Layout' - saves windows layout in TAVL on exit.

It is also possible to set different symbols to represent the object while ignition is on or fuel counters are used.

	Options	
	2↓ □	
	Data Representation	
	Stop speed	4
Ξ	Events	
	Sound file	
	Sound on new event(s)	False
	Trace events	False
	Trace events interval	60
	Geofence	
	Geofence line color	Red 📕
	Geofence line width	3
	New geofence line color	Green
Ξ	Graphic Parameters	
	Fill line in graphic	False
	Font size in graphic	16
	Show activity time span in Worktime graphic	True
	Show line in graphic	True
	Symbol size in graphic	5
	Symbol type in graphic	None
	Worktime graphic min speed	15
	Worktime graphic min time	15
	IButton	
	Use IButton	False
	Map Fuch de consiste d'éculete	Taur
	Exclude engine orr points	1 rue
	Max speed between two adjacent points in track	0.02
	Min distance in track	0,03
	Min distance in track when engine is on	0,0
	Min stop time to show stop point in track	0
	Object sumbol size	Small
	Object symbol size	Falca
	Show directions	True
	Show information about all intermediate stops	False
	Show intermediate stop points	False
	Show object numbers in man	False
	Track line color	
	Track line width	3
Ξ	Messaging	
	Messages refresh rate	0
Ξ	Objects	
	Object status timeout	00:00
	Show last known location	False
Ξ	Track Replay	
	Pause (ms)	500
	Show info balloon	False
Ξ	User Interface	
	Remember windows layout	False
G	eofence line width	
G	eofence rectangle line width.	
	Change object symbol based on data source:	
	Close and Save	



#### 4.5 MapInfo MapX maps integration

In addition to the standard software packet, MapInfo MapX (copyright  $\Circle 2008$  MapInfo Corporation) should be installed.

TAVL application supports files with .GST extension. These can be compiled using MapInfo MapX packet.

When TAVL is launched, click on MapX icon in the lower left corner near the map window or click on 'Maps' – 'MapX' button on a toolbar.



Click 'Open' and browse to the folder with new geoset (file with .gst extension)





Your new custom maps are ready to use.



# 5. Statistic reports

TAVL application has ability to generate statistic reports based on GPS data and/or external sensors or properties. These reports can be launched by clicking 'Reports' and choosing one of available.

## 5.1 Driven Distance

🔡 Driven Distanc	e Daily				
:					
Query From: 2008.04.28	3 💌 00:00:00 🔹	To: 2008.04.30 💌 23:59	:59 🔹 🔽 Object: 🗾	<b>•</b>	
📀 📄 🍊 🚦 Main Report	3 H 4 🕨 H -	£) ⊠ M1 M1 +			
	2008.04.30 Driven Dis Number:	stance Daily 2008.04.2 Commer	18 00:00:00 - 2008.04 nt:	.30 23:59:59	
	<u>Daγ</u>	Fuel Used	Fuel Rate	Distance	
	2008.04.28	52,5	35,/	146,9	
	2008.04.29	58,0	43,4	133,/	-
	2008.04.30 Total par abiaat	59,U 169,5	J7,0 Aura 207	100,3	· I
	rotal per object	105,5	Avig. 30,7	430,Z	J
	Total	169,5	Avrg. 38,7	438,2	-
		Tabal Darra Marca		Zeer Fester 1000	
Current Page No.: 1		ji otal Page No.: 1		200m Factor: 100%	

Driven Distance reports contain information about total track for define time interval. If fuel measurement is present for the vehicle, this data is used to calculate total fuel used and fuel rate for 100 km. Click settings to define distance calculation – distance can be calculated using CAN or GPS data, fuel source – CAN or fuel counters information and maximum fuel rate limit, which is displayed highlighted if exceeded.

Name 🖉	Value	Туре	Description
Distance calculation source	1	enumeration	Possible values: 0 - no data; 1 - GPS data; 2 - distance data from can virtual intu
Fuel source	2	enumeration	Possible values: 0 - no fuel data; 1 - fuel data from client data source Fuel Count
Maximal fuel rate	40	1/100 km.	Fuel used for 100 km. greather than this value will be highlighted in report.



## 5.2 Moto Hours

🛃 Moto Hours Daily	•				<u>_</u> _×
Query From: 2008.04.28	▼ 00:00:00 × To:	2008.04.30 23:59:59	I✔ Object:	▼ Min spe	eed: 5 🔹 Min time: 15 🔹
🌀 📄 🍊 🎦 Main Report	н ч 🕨 🖓	⊠ Ma Ma <sup>*</sup> •			
	2008.04.30 Moto H	ours Daily 2008.04.28 00:00 Comment:	:00 - 2008.04.30	) 23:59:59	
		<u>Work Time</u>	Fuel Used	Fuel Used / Hour	-
	2008.04.20	2:02	58.0	28.47	
	2008.04.30	3:18	60,5	18,26	
	Total per object	8:23	171,0	Avrg. 20,36	
	Total	8:23	171,0	Avrg. 20,36	-
Current Page No.: 1		Total Page No.: 1		Zoom Factor: 100%	

Moto Hours report calculates total time spent while driving a vehicle. Work time is calculatd when vehicle is moving at greater speed than the one defined in 'Min Speed' field. Additional settings can be made to define fuel source and timeout in case FM is configured not to send data frequently.

As alternative, Work Time Detailed reports provide same information more detailed.

# 5.3 Trip Stops

🔛 Trip Stops							_ 🗆 ×
E Querv							
From: 2008.04.30 💌 00:00:00 🗮 To: 2008.04.30 💌 23:53	9:59 🕂 🔽 Object:	•					
🕼 🖓 🏪 н ч 🕨 н 🖓 🗵 🕅 м?-							
Main Report							
2008.04.30							
	rip Stops 2008.04.30 00:00:00	- 2008.04.30 23:59:59	9				
Number: Comment	15.000 10.00	1				-	
Geografical Place Information Lietuva, Šalčininkai, Šalčininkai (1,3), Naujakiemis (1,4)	Zone	2008.04.30.00:15:01	Stop Durati 6:54	Driving Dur	<u>Driven Dist</u>	<u>Comment</u>	
			0.01	1:48	51,2		
Lietuva, VILNIUS, VILNIUS (2.8), Paplaujos g. 9	Vilnius	2008.04.30 08:58:26	0:17	0:43	9,6		
Lietuva, VILNIUS, VILNIUS (6.7), Savanorių pr. 191	Vilnius	2008.04.30 09:59:24	0:19	0.49	20.0		
Lietuva, VILNIUS, VILNIUS (15.2), Prūdiškės (1.6)		2008.04.30 11:07:06	0:09	U.40	20,9		
Lietuva, Šalčininkai, Šalčininkai (2.0), Didieli Baušiai (1.2)		2008 04 30 12:12:36	0.06	0:55	31,1		
		2000.04.30 12.12.30	0.00	0:26	6,7		
Lietuva, Salčininkai, Salčininkai (0.5), Naujoji g.		2008.04.30 12:46:08	0:09	0:38	22.8		
Lietuva, Šalčininkai, Šalčininkai (15.9), Jašiūnai (0.7)		2008.04.30 13:34:56	0:04	0.00	11.0		
Lietuva, Šalčininkai, Šalčininkai (15.9), Jašiūnai (0.7)		2008.04.30 14:01:43	0:04	0:21	11,8		
Listure Čelžiniskej Pelteji Veld (12.4), ležičnej (2.2)		2009 04 20 14 12 29	0.00	0:06	1,9		
Lietuva, Saicininkai, Baitoji Voke (13.4), Jasiunai (2.3)		2006.04.30 14:12:36	0:09	0:10	5,1		
Lietuva, Šalčininkai, Šalčininkai (13.1), Gojus (1.8)		2008.04.30 14:33:36	0:10	0.16	70		
Total			8:28	15:16	168,3		
							<b>•</b>
Current Page No.: 1	Total Page No.: 1		Zoom	Factor: 100%			



Trip Stops report is used to monitor when, where and for how long vehicle was idle. Settings include:

- 'Detect stops based on' identifies when vehicle is considered as idle. Stops can be based on ignition (they have to be configured as 'Engine' data source) and/or speed.
- 'Location Info' reports have ability to show the place where vehicle was idle either locations from server database and/or location titles used in GeoFence settings.
- 'Location Info Source' selects between available databases on server.
- 'State shift timeout' these two fields define time intervals to check for ignition or speed changes. If value has not changed for the period of time, vehicle is considered as idle.
- 'Minimum Stop Speed' a speed value which identifies vehicle as idle, if it not exceeded.

Report Parameters	×
Trip Stops	
Detect stops based on	Speed and Ignitior 💌 🔄
Location info	Both 💌 🖄
Location info source	Auto
Minimal engine state shift time (minutes)	5 🕂 🔊
Minimal speed state shift time (minutes)	5 🔹 🔊
Maximal stop speed (km/h)	0 🕂 🔊
ОК	Cancel Apply

# 6. Configuration

#### 6.1 Module Configuration

TAVL application has an interface for remote FM configuration via GPRS. Note, that current SMS username and password for FM device must mach those entered in database, else all configuration attempts will result in failure. Remote configuration can also be done by sending simple text SMS to the module with special commands (see FM4 user manual for more details). In the object list right-click on the object and choose 'Configuration'.

Configuration interface has a list of available configurations for module. These can be:

- 'Active' currently available configuration. Note, that when new object is added, server does not receive configuration from FM device and all fields are left blank. 'Active' configuration will show currently used values only when FM device is configured with TAVL application.
- 'Template' this is a template configuration. 'Template' settings are not stored in FM device, but on server. A selected configuration can be saved as template for one or more modules.
- 'New' new configuration is displayed when new settings are about to be sent to the device.
- 'Synchronizing' a configuration that is queued for update. When saving new settings (configuration), new configuration is renamed to 'Synchronizing' until process is successful or time-out expires. If configuration is successful, then 'Synchronizing' is renamed to 'Active' and new date can be seen indicating when it was became available. If configuration is not successful, 'Synchronizing' is renamed to 'Failure'.
- 'Failure' last unsuccessful configuration.

Configuration	Date	Event Configuration	Module Configuration Global Parameters
	2007.11.20 14:03:12	Profile FM4.1	
TEMPLATE	2008.03.26 15:20:52		1 1 1 14
		GPS	GPRS
		GSM GPRS	GPRS enabled 🔲
		SMS Send parameters	
		Accelerometer	APN
		1/0	User name
			Password
		-	IP address 0
		-	Port number 0
		-	
•	E E E E E E E E E E E E E E E E E E E		

Another window has 'Event Configuration', 'Module Configuration' and 'Global Parameters'. 'Module Configuration' and 'Global Parameters' have same interface as FM4/FM2 configurator and is described in FM4/FM2 User Manual. Note, that TAVL application interface only allows configuring those IO elements that are enabled in database.

'Send Method' field identifies how configuration should be sent to FM4/FM2 – by GPRS, binary SMS or both. 'Save Full' button saves selected configuration as 'New' and renames it to 'Synchronizing' when server tries to contact module. 'Save Changes' only saves new changes since last active configuration, but have in mind, that first configuration for module always has to be saved using 'Save Full' option. 'Update From Server' refreshes available configurations list. It does not read current configuration from module, only refreshes status of all available configurations. 'Save as Template' saves currently selected configuration as template for one or more objects.

Configuration - Active	
Configuration       Date         Active       2007.11.2014:03:12         TEMPLATE       2008.03.26 15:20:52         Available events       Available events         AIN1       FM4 GSM signal Level FM4 GSM signal Level FM4 Current Profile         B       B         GPS Power       Add >>	Event Addres Transport Message     + +370POLICE SMS overspeeding     **
Send method  urns	

## 6.2 Event configuration

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'Event Configuration' menu allows configuring events for IO elements. In the picture a sample is shown how to configure over-speeding event that will send SMS to defined recipient.

Choose an IO element from available in 'Available Events' window (more can be added by enabling IO elements in database) and click 'Add'. Enter minimum and maximum values in the fields 'Min' and 'Max'. When current value of IO elements drops below or raises above defined range, a message will be sent to the recipient entered in 'Event Address' field

# 7. Localization

TAVL language localization tool is used to build localized (translated) version of TAVL application.

## 7.1 System Requirements

Download and install .NET Framework SDK v2.0 from: <u>http://www.microsoft.com/downloads/thankyou.aspx?familyId=FE6F2099-B7B4-4F47-</u> <u>A244-C96D69C35DEC&displayLang=en</u> Download Zeta Resource Editor from: <u>http://213.226.139.30/Downloads/tavl/Tavl%5FClient/Local/ZetaResourceEditorEx.zip</u> Download localization resources from:

http://213.226.139.30/Downloads/tavl/Tavl%5FClient/Local/Localization.zip

## 7.2 Modifying Files

Extract Localization.zip and launch WinRes.exe from 'Start' – 'Programs' – 'Microsoft .NET Framework SDK v2.0' – 'Tools' – 'Windows Resource Localization Editor'. Open and modify the .resx files in your folder. If text is too long, nearby fields can be adjusted or moved so it would fit.

Image in the calculation of the calculat	🔛 Windows Resource Localization Editor - [FrmLogin-Lithuanian]		
Image:			
Iebel3 System Windows Forms Label         Vardas:			
Verskite naudotojo vardą ir slaptažodį     Vardas:     Slaptažodis:     Erisijungli Atsisakyti     Erisijungli Atsisakyti     Server:     Language:     Vardas:     Server:     TextAlign TopLeft     Behavior     True     Dock None     Location 12; 33.0     Mainteen     Singin 3; 0; 3, 0     Padding 0; 0; 0; 0     Size 48; 13		label3 System.Windo	ws.Forms.Label 📃 💌
Jveskite naudotojo vardą ir slaptažodį         Vardas:         Slaptažodis:         Prisijungti         Atsisakyti         Prisijungti         Atsisakyti         Klientas:         •         •         Language:         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         •         • <td< th=""><th>Letonika TAYL.NET Prisijungimas</th><th>2↓   □</th><th></th></td<>	Letonika TAYL.NET Prisijungimas	2↓   □	
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Slaptažodis: Brisijungti Atsisakyti          Brisijungti Atsisakyti         Brisijungti Atsisakyti         Brisijungti Atsisakyti         Server:         Server:         Language:         Server:         Language:         Server:		Font	Microsoft Sans Serif
Brisijungti       Atsisakyti         Brisijungti       Atsisakyti         ImageAlgn       MiddleUenter         ImageAlgn       (none)         ImageAlgn       Text         Server:       ImageAlgn         Language:       ImageAlgn         ImageAlgn       TopLeft         Behavior       Enabled         ImageAlgn       TopLeft         Behavior       Enabled         ImageAlgn       TopLeft         Language:       ImageAlgn         ImageAlgn       TopLeft         Language:       ImageAlgn         ImageAlgn       TopLeft         Language:       ImageAlgn         ImageAlgn       TopLeft         Anchor       Top. Left         AutoSize       True         Dock       None         Location       12; 35         Imagin       3; 0; 3; 0         Padding       0; 0; 0; 0         Bize       48; 13	Slaptažodis:	Image	(none)
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Klientas:       I puelt         Server:       Image         Language:       Image         Language:       Image         Language:       Image         Language:       Image         Language:       Image         Image       Image		T ext	Server:
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Anchor         Top. Left           AutoSize         True           Dock         None           El Location         12: 35           El Margin         3: 0: 3: 0           Padding         0: 0: 0: 0           El Size         49: 13           Text			Titue
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□ Dock         None           □ Location         12; 35           □ Margin         3; 0; 3; 0           □ Padding         0; 0; 0; 0           □ Size         48; 13           □         Text		AutoSize	Тпр
Image: Decision in the second secon		Dock	None
E         Margin         3;0;3;0           E         Padding         0;0;0;0           E         Size         48;13           Text		E Location	12:35
Image: Constraint of the second sec		E Margin	3:0:3:0
Size 48;13		- E Padding	0.0.0
Text			48:13
Text			· · · · · ·
The text associated with the control.		Text The text associated will	h the control.



Modified files must be saved in form <Original Filename>.<Culture Name>.resx in the same folder (i.e. FrmLogin.resx  $\rightarrow$  FrmLogin.lt.resx) simply by clicking 'Save As...' and choosing your language. Do not change original file name.

Some files do not contain material that is displayable in the tables and can not be edited with Windows Resource Localization Editor. An error "Error - InvalidDialogMissingName Valid dialog or user control resource files must be generated by the Visual Studio Form Designer and the Localizable property of the Form must be set to 'true'." is displayed in the window. In such cases, these files have to be edited with Zeta Resource Editor. Open the table – on the right column a list of names available in TAVL application is displayed.

🧱 Zeta Resource Editor		<u>_8×</u>
Eile Iag Operations Extras Help		
📴 🛃   💁 🗙 🦛		
Resources Grid		
Name	A Resources.resx	<u> </u>
Abort	&Abort	
AddDriver	Add Driver	
Address	Address	
AddRFID	Add RFID	
AddUser	Add User	
Age	Age	
AllClients	All Clients	
AllCommandsWasSentSuccessufuly	Command to all objects was sent successufuly.	
Altitude	Altitude	
AltitudeFormat	Altitude = {0}	
AltitudesDateFromTo	Altitudes ({0} - {1})	
Angle	Angle	
Any	Any	
AppConfigDataRepresentationCategory	Data Representation	
AppConfigEventsCategory	Events	
AppConfigExcludeEngineOffPointsDescription	Exclude points from track where engine is off.	
AppConfigExcludeEngineOffPointsDisplayName	Exclude engine off points	
AppConfigFillLineInGraphicDescription	Fill line in graphic.	
AppConfigFillLineInGraphicDisplayName	Fill line in graphic	
AppConfigFontSizeInGraphicDescription	Font size in graphics.	
AppConfigFontSizeInGraphicDisplayName	Font size in graphic	
AppConfigGeofencingCategory	Geofence	
AppConfigGeofencingLineColorDisplayName	Geofence line color	
AppConfigGeofencingLineWidthDescription	Geofence rectangle line width.	
AppConfigGeofencingLineWidthDisplayName	Geofence line width	
AppConfigGeofencingNewLineColorDescription	Geofence new rectangle line color.	
AppConfigGeofencingNewLineColorDisplayName	New geofence line color	
AppConfigGeofencongLineColorDescription	Geofence rectangle line color.	
Abort		
Resources.resx		
&Abort		<u>_</u>
		~
		Update in grid

Rename only text in this column and leave brackets and number as they are – changing these values might cause errors in application. Rename necessary fields and save the changes. Later rename the file so it has correct extension (i.e. lt.resx).

#### 7.3 Compiling TAVL Application

After changes were made, TAVL application must be compiled. Run cmd.exe ("Start" - "Run" write "cmd" in the field, press "OK") and go to your localization folder (C:\Documents and Settings\<your user>\Desktop\Localization).

To move between directories in cmd use command "cd":

- cd <exact destination> to move to directory you want.
- cd.. move one directory back



Next element to type is exact path to your "msbuild.exe" file (C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\msbuild).

After this you can build solution (builds all projects) or single project.

- To build solution type: tavl.sln /property:Culture=<culture-name> e.g.: msbuild tavl.sln /property:Culture=lt
- To build single project type:
   <projectName.csproj> /property:Culture=<culture-name>

Final command line should look like this:



Note: if you get any errors about missing files during compilation process, launch WinRes.exe again and create missing files.

Copy new satellite assembly files (\*.resources.dll) from bin folder to TAVL application folder. Copy entire folder with name corresponding to your language (in this case – folder "lt") from the directory C:\Documents and settings\<your user>\Desktop\ Localization\tavl\bin\Debug and paste it to TAVL application folder.

Next time when you run the TAVL application, you will be able to set new language.



8. Frequently asked questions (FAQ)

1. Why doesn't objects trail match roads that are shown in the map? What is the accuracy of GPS?

Object trail doesn't coincide with roads shown in the maps because GPS limited of accuracy. GPS location depends accuracy on (geographic latitude, longitude), satellites' location and ionosphere's In perfect conditions conditions. (sunny weather, no clouds, in open area, without skyscrapers, woods) accuracy can be about 3-5 meters.

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Usually accuracy is estimated using statistical method CEP (Circle of Equal Probability). This method allows us to consider, that in



probability of 50%, object's coordinates' error does not exceed designated values.

Otherwise, roads in the map not always are defined very precisely (especially considering Eastern Europe). Another possibility is that new roads don't exist in the map.

2. Why do data transfers from server to application take so long?

Duration of data transfers from server to user application depends on amount of data and speed of Internet connectivity. While object registers many parameters very often grows data quantity. Then transfer time for long requested period of time could be very long. So if you want to increase data transfer time you should decrease requested data time period.

One more way to decrease data transfer time is to decrease frequency of object's parameters data (time  $T_1$  should be not 1 minute but 2 – 3 minutes).

3. Why it is impossible to request current object position?

In most cases you are unable to receive information about current object's location, because it is out of GSM coverage (is in the sea, in deep woods, etc.)

4. It's one or two hours since module sent its data. Why is it not refreshed?

Module is sending data to the server at fixed time. If the connection is not possible (there is no GPRS context), the next sending will be at fixed time. Still You can send the request, and get the latest data. Also profile may define data acquirement less often (i.e. every 10 minutes when object is not moving) and setting allow only full packet sending.

5. Why only yesterdays data is shown?

Either module didn't sent data because it's not time to do it or it couldn't send it because of network problems. Solution is to configure module so it sends data at desired time.

6. How can I know objects location if it is not sending data by GPRS?



You can send a request and get the SMS with 24 coordinates (see chapter 4.4.4).

7. Why is object changing its coordinates even when engine is off?

It is because of GPS accuracy. If object is standing between tall buildings or in from of the wall, module doesn't see enough satellites to set its exact coordinates. Then each coordinate is calculated with a slight error. Error depends on number of visible satellites. If object is standing between tall buildings or in front of a wall it may not be enough for module to set its position correctly.

8. I'm receiving incorrect time - it's always same interval ahead or behind current time.

This is happening because of incorrect timezone settings on PC. Please choose matching timezone in windows regional settings.

Nr.	Date	New version number	Comments
1	080625	3.1	Localization description revised

# 9. Changes Logsheet