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SOFTWARE-MANAGEMENT GmbH



In-Vehicle Monitoring System (IVMS) for road safety and better driving behavior

Innovation and precision for better IVMS management

- Industry practices, reasons for IVMS, benefits
- IVMS devices, accessories, installation, partners
- IVMS software requirements, reports, alerts

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IVMS GPS Tracking devices



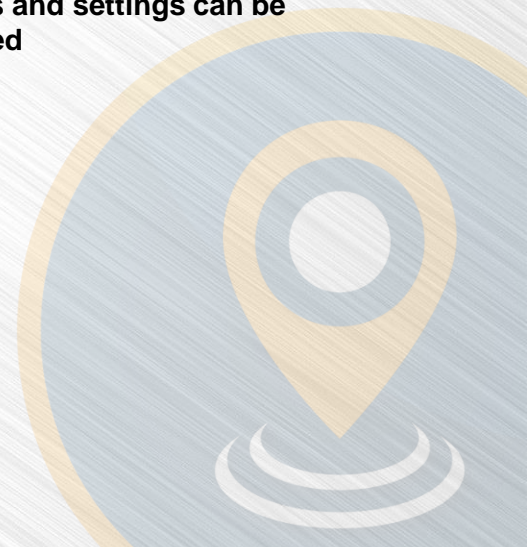
Fleet-X GPS device for enhanced IVMS features

The GPS Telematic device (on board computer) is a key element for data recording and therefore it must fulfill highest quality standards:

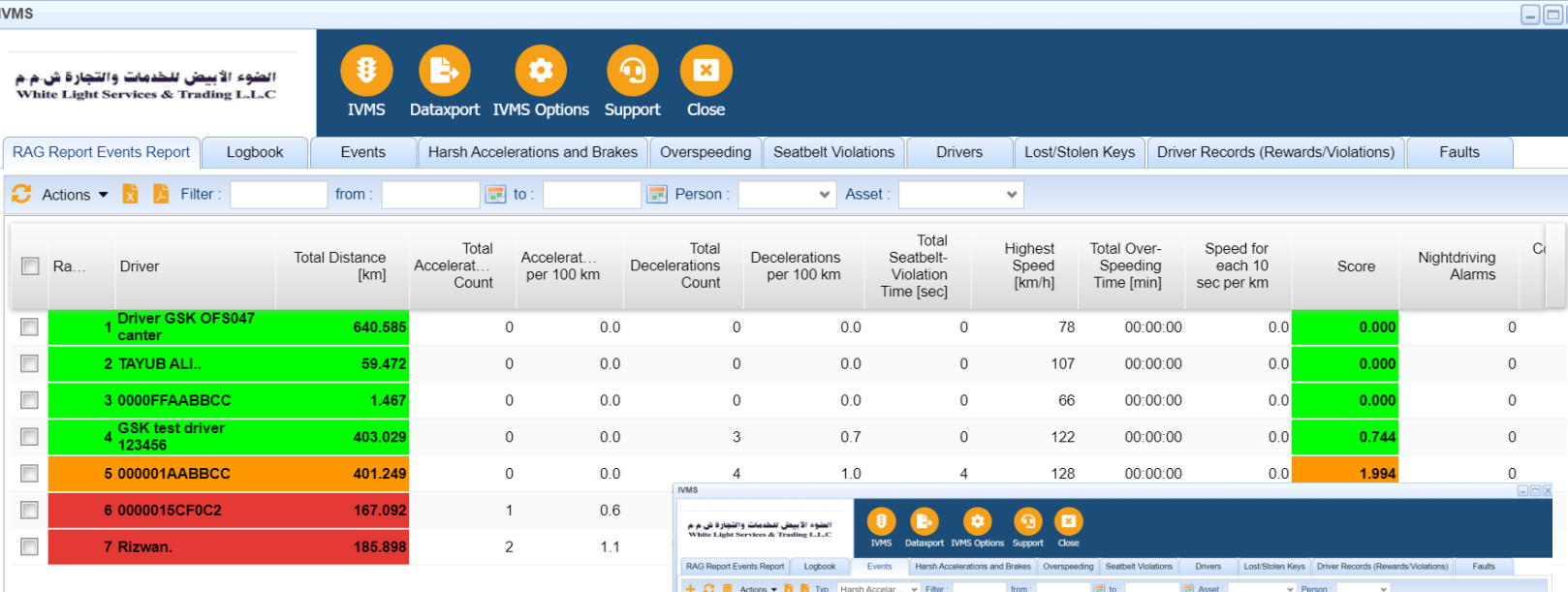
- **Micro SD card** for data storage (up to 2.5 million points per GB of SD storage)
- **Driver identification** (1wire RFID, iButton, RS232)
- External GPS&Glonass antennas for **maximum accuracy of 2.5 meters** (< 26 seconds cold start)
- Data communication using **LTE-4G** and 2G-GPRS for best coverage and future compatibility
- **6 inputs (0/1, analog, pulse counter for VSS)**
- 2x CANBUS lines (FMS, **CANOPEN**, etc.)
- RS232, **RS485**, ...

Flexible IVMS device programming

- Device can store local geofence speed limits
- Local geofence zones can be uploaded automatically
- Device can manager driver alerts
- New events and settings can be programmed



IVMS Module

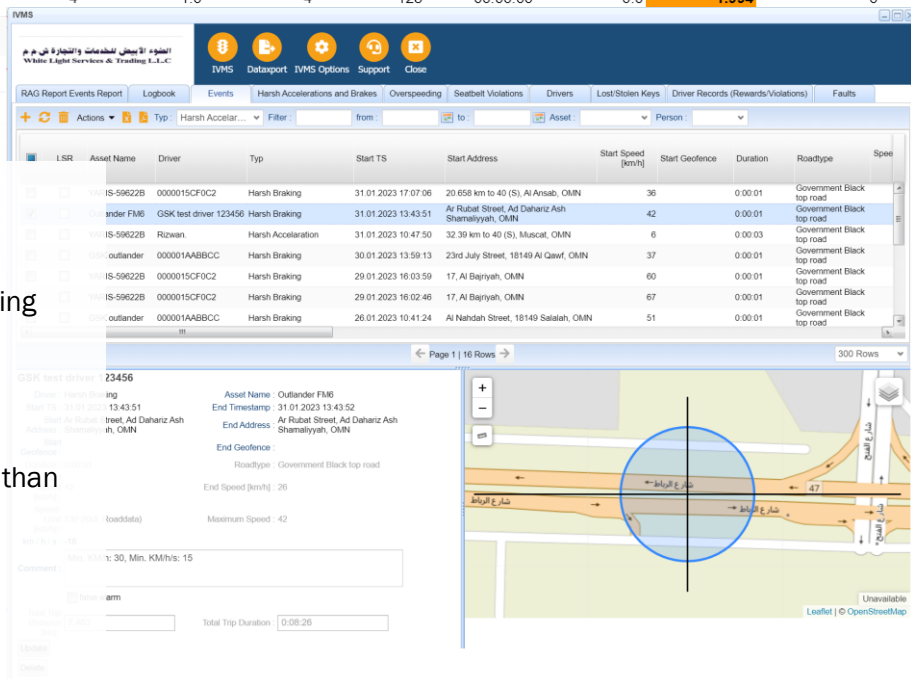


The screenshot displays the IVMS software interface with a navigation bar at the top containing icons for IVMS, Dataexport, IVMS Options, Support, and Close. Below the navigation bar is a menu with options like RAG Report Events Report, Logbook, Events, Harsh Accelerations and Brakes, Overspeeding, Seatbelt Violations, Drivers, Lost/Stolen Keys, Driver Records (Rewards/Violations), and Faults. A search bar is present with fields for Filter, from, to, Person, and Asset. The main area shows a table of driver performance data:

Driver	Total Distance [km]	Total Accelerat... Count	Accelerat... per 100 km	Total Decelerations Count	Decelerations per 100 km	Total Seatbelt-Violation Time [sec]	Highest Speed [km/h]	Total Over-Speeding Time [min]	Speed for each 10 sec per km	Score	Nightdriving Alarms
1 Driver GSK OFS047 canter	640.585	0	0.0	0	0.0	0	78	00:00:00	0.0	0.000	0
2 TAYUB ALI..	59.472	0	0.0	0	0.0	0	107	00:00:00	0.0	0.000	0
3 0000FFAABBCC	1.467	0	0.0	0	0.0	0	66	00:00:00	0.0	0.000	0
4 GSK test driver 123456	403.029	0	0.0	3	0.7	0	122	00:00:00	0.0	0.744	0
5 000001AABBCC	401.249	0	0.0	4	1.0	4	128	00:00:00	0.0	1.994	0
6 0000015CF0C2	167.092	1	0.6								
7 Rizwan.	185.898	2	1.1								

IVMS Module

- ✓ Driver listing with red-amber-green colours indicating drivers' performance
- ✓ Highlighting number of IVMS events over time
- ✓ Easy download or deep-dive into the data
- ✓ Road-based speed alerts (Driving at speed higher than 10km/h above the speed limit for consecutive 30 seconds)
- ✓ Overspeeding in geofence areas
- ✓ Excessive Over Speeding (life-safety critical event)
- ✓ Seatbelt Violations
- ✓ Harsh Braking
- ✓ Night Driving alerts for driving outside geofence areas for a longer period
- ✓ Panic button pressed for the duration exceeding 5 seconds
- ✓ Power/Battery Disconnection and tampering alerts (movement without ignition)
- ✓ Exceeding driving time limits for light and heavy vehicles



The screenshot shows a detailed view of an IVMS event. The top part is a table of event logs with columns for LSR, Asset Name, Driver, Typ, Start TS, Start Address, Start Speed [km/h], Start Geofence, Duration, and Roadtype. Below the table, there is a detailed view of a specific event for 'GSK test driver 123456', showing details like Asset Name (Outlander FM6), Start/End timestamps, Start/End addresses, End Geofence, Roadtype (Government Black top road), Maximum Speed (42), and Total Trip Duration (0:08:26). To the right of the details is a map view showing the location of the event on a street map.

IVMS Events analysis

- Check location, timings and details for each event
- Comment events
- Download IVMS Reports for single assets, selected drivers or whole fleet

Important IVMS Software settings

Special IVMS Event Parameter Settings

- Road-based speed alerts (driving at speed higher than 10km/h above the speed limit for consecutive 30 seconds)
- Overspeeding in geofence areas
- Excessive Over Speeding (life-safety critical event)
- Seatbelt Violations
- Harsh Braking
- Night Driving alerts for driving outside geofence areas for a longer period
- Panic button pressed for the duration exceeding 5 seconds
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Alarms | RAG Report Events Report | General | Driving/Rest Alarms (Mode 3) | IBUTTON Code Tool

Overspeeding
 Speed violation of X km/h above the speed limit for the minimum duration
 Alarm Type: [-] Min. Duration [sec]: 30 Limit [km/h]: 10

Roundabout Speeding
 Driving fast than X km/h in a roundabout for longer than Y sec (dataserver limits ending with RA)
 Roundabout Alarm Type: [Report, View] Roundabout Min. Dur [sec]: 10 Limit Asset Light [km/h]: 40

Excessive Overspeeding
 Driving at speed X over the limit for longer than X seconds.
 Alarm Type: [-] Min. Duration [sec]: 0 Limit [km/h]: 20

Seatbelt Violation
 Not using the seatbelt at speeds greater than X km/h for consecutive X seconds,
 Alarm Type: [E-Mail] Min. Duration [sec]: 10 Min. Speed [km/h]: 10

Braking
 Deceleration exceeding X km/h per second while driving at speed higher than X km/h
 Alarm Type: [E-Mail] Limit [km/h/s]: 15 Min. Speed [km/h]: 30

Harsh Acceleration
 Acceleration exceeding X km/h/s for consecutive X seconds

IVMS Road Safety Report WLT Demo-VA

from: 24.01.2023 20:51:21
 to: 31.01.2023 20:51:21

KPI	01.01.2023 - 31.01.2023	24.01.2023 - 31.01.2023
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Figures

Account	WLT Demo-VA	WLT Demo-VA
Home Geofence / Site		
Total IVMS units installed	9	1
Total IVMS drivers	158	158
Total Violations	654	21
KM's driven	11422.957	1861.192
Violations per 100km	5.7	1.1

RAG KM

Green KM Driven	1127.083	1107.551
Amber KM Driven	0.000	401.284
Red KM Driven	10295.874	352.357

Driver Safety Performance

Green KM %	9.9	59.5
Amber KM Driven %	0.0	21.6
Red KM Driven %	90.1	18.9

Total driver numbers

Green Drivers	2	4
Amber Drivers	0	1
Red Drivers	6	2
Green Drivers %	25.0	57.1
Amber Drivers %	0.0	14.3
Red Drivers %	75.0	28.6

Event Details

Overspeeding Events	193 (0)	1 (0)
Excessive Overspeeding Events	319 (0)	0 (0)
False speeding alarms	0	0
Harsh Braking Events	119 (0)	13 (0)

Overdriving violations

Excessive Driving Events	20 (0)	2 (0)
Continuing Driving - Daily Driving Time Events	0 (0)	0 (0)
200 KM for LV Events	13 (0)	0 (0)
Unauthorised night driving Events	0 (0)	0 (0)
Unauthorized night driving (advanced) (200.0 KM) Events	21 (0)	4 (0)

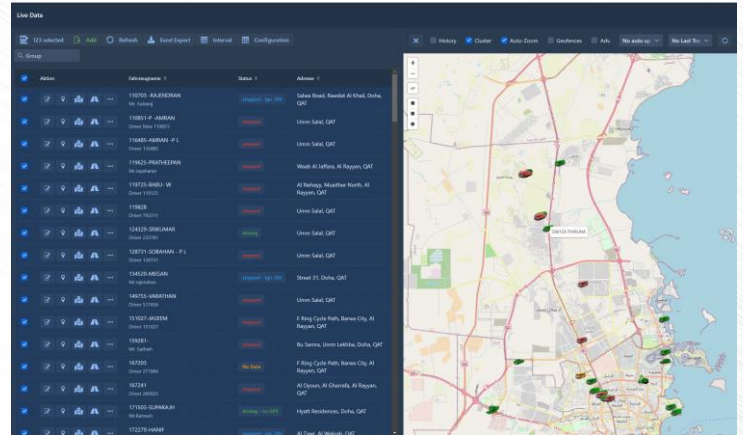
Seatbelt Violations

Seatbelt Violation Events	9 (0)	3 (0)
False seatbelt alarms	0	0

Live Tracking and Analysis Features

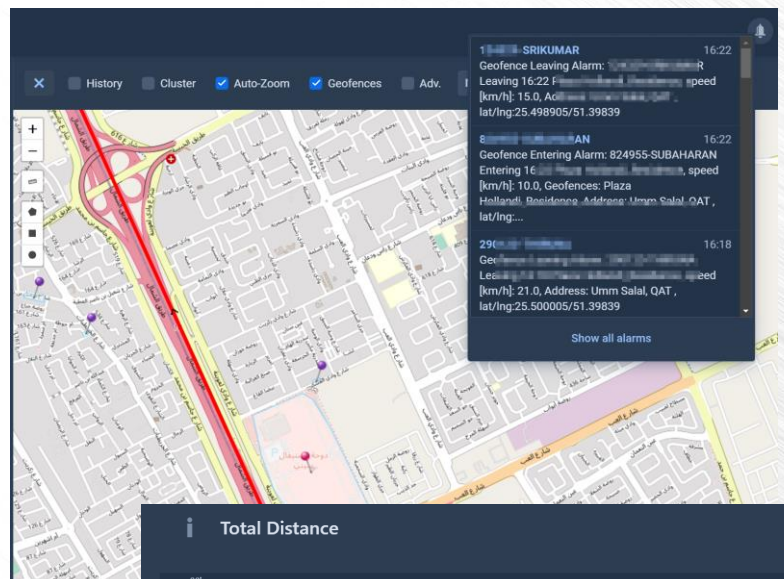
Current fleet position at a glance

- Map overview with asset symbols and status colours
- Use different maps
- Show geofence hotspot areas
- Asset lists with colour codes and add-on information
- Working with asset groups



Analyzing past and events and speeds

- Displaying historic trips and stops for several days on the map
- Analyze events, alerts and driving speed and additional data
- Working with different speed limits depending on road types and day vs. night time



Work with geofence areas

- Display geofence areas in the map as polygon, circle or square
- Import contacts as geofence
- Flexible alerts when entering/leaving a designated hotspot (based on time requirements, different assets, via sms, email or call)

Alerts and events

- Different alerts can be configured for each asset or each geofence
- Set alert recipients for each asset or for all assets
- Different alerts are available
 - Driver notification via buzzer
 - Email alert
 - Sirene alert for the operator
 - SMS or call alert (future feature)
- Alerts can be configured with time restrictions





In-Vehicle Monitoring System (IVMS)

The global necessity for safe and environmental friendly transportation

- Transportation, operation fleets and driving vehicles is a major expense for any business, thus cost control is necessary for prudent management.
- Every year, road fatalities and accidents causing deaths and heavy injuries are a severe issue that no one likes to deal with. A company with a safe driving policy is doing everything to reduce the number of accidents and consequently also lowers the costs associated with the severe road accidents.
- A reliable company with a good reputation will do everything to train the drivers to drive their vehicles carefully and to attain to life-critical rules.
- Global players such as SHELL keep their drivers safe through periodic training, by limiting their journeys, avoiding too long driving hours and by enforcing road safety standards.

IVMS rules & standard

- The oil & gas industry is the major driver for enforcing stricter IVMS standards. The names of the IVMS standards differ from country to country, for instance, in Oman it is called OPAL Road Safety Standard 2017.
- Most standards follow the same rules and procedures and companies and subcontractors that work in the oil & gas industry are obliged to fulfill the criteria.

Major goals of road-traffic-safety systems

- To foster environmental friendly, safe and economical driving style
- To reduce the number of (fatal) accidents for the corporate fleet
- To avoid unnecessary trips with better planning and unnecessary risks (by fatigue driving)



No alcohol or drugs while working or driving



While driving, do not use your phone and do not exceed speed limits



Wear your seat belt

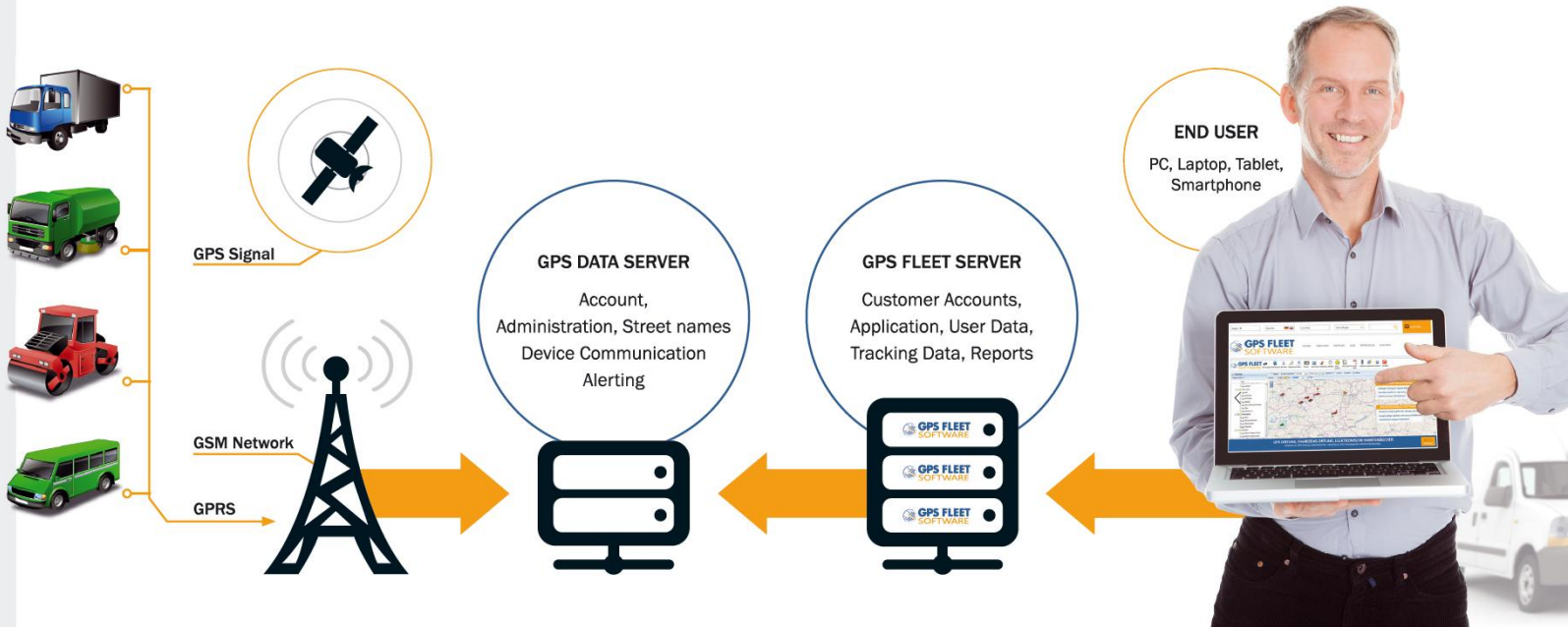


Follow prescribed Journey Management Plan

4 life-saving rules for drivers



IVMS Software basics



How to make an IVMS system run

GPS signal

- Our devices use the American GPS and the Russian GLONASS as well as Galileo to document the driving track and speed.
- If there is no GPRS network coverage, the tracking data is stored on the device

What about the SIM cards?

- Your IVMS vendor will take care for supplying the necessary data SIM cards

GPS Data Servers

- All data is sent to the global GPS Data Server that can be hosted by us, the vendor or by big customers.
- All tracking data can be stored locally in your company (respectively country)
- Different customer account can be safely operated on one GPS Fleet Server that can be hosted by the vendor.

Important general requirements

- Works with different mapping and reverse geocoding sources such as OpenstreetMaps, Google Maps, TeleAtlas
- Multilingual web-based software
- Reports can be downloaded as PDF or Excel or generated automatically via Email
- Future updates and customization are possible
- APIs and JSON interfaces are available
- European quality software documentation and quality control with testing scenarios
- Smartphone apps are available

Important standards

- ✓ Complies with OPAL Road Safety Standards 2017
- ✓ SP2000 Road Safety Standard
- ✓ Other certifications are possible at any time upon request





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Contact us or our local partners

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