Europa
Telematics System

Detailed journey analysis allows a fleet manager, line manager or accident investigator to view the actions of a driver on a second by second basis

Improve fleet resource management and driver behaviour

STANDBY®

RSG

Europa Telematics System
Improve Fleet Resource Management and Driver Behaviour

SAVE LIVES, LITIGATION, MONEY, FUEL, TIME & ADMINISTRATION

FLEET RESOURCE MANAGEMENT BENEFITS

Reduce operating costs by:
- Knowing where your vehicles are and have been
- Increasing vehicle utilisation and reducing idling time
- Tailoring maintenance schedules and 'real' vehicle usage
- Reducing vehicle miss-use and incidents

DRIVER BEHAVIOUR IMPROVEMENTS

Achieve these through:
- Providing driver feedback via a simple and meaningful score
- Visual educational workshop training tools - removes ambiguity
- Direct exception reporting via text or email
- Change in individual attitude and corporate culture

Whether you are a single user, small, large or multiple fleet operator that require various levels of operational integrity and security Standby RSG has a platform to suit you. To ensure you obtain the best solution for your application RSG offers a free consultation service.

WEB ACCESS OR SOFTWARE AS A SERVICE (SAAS)
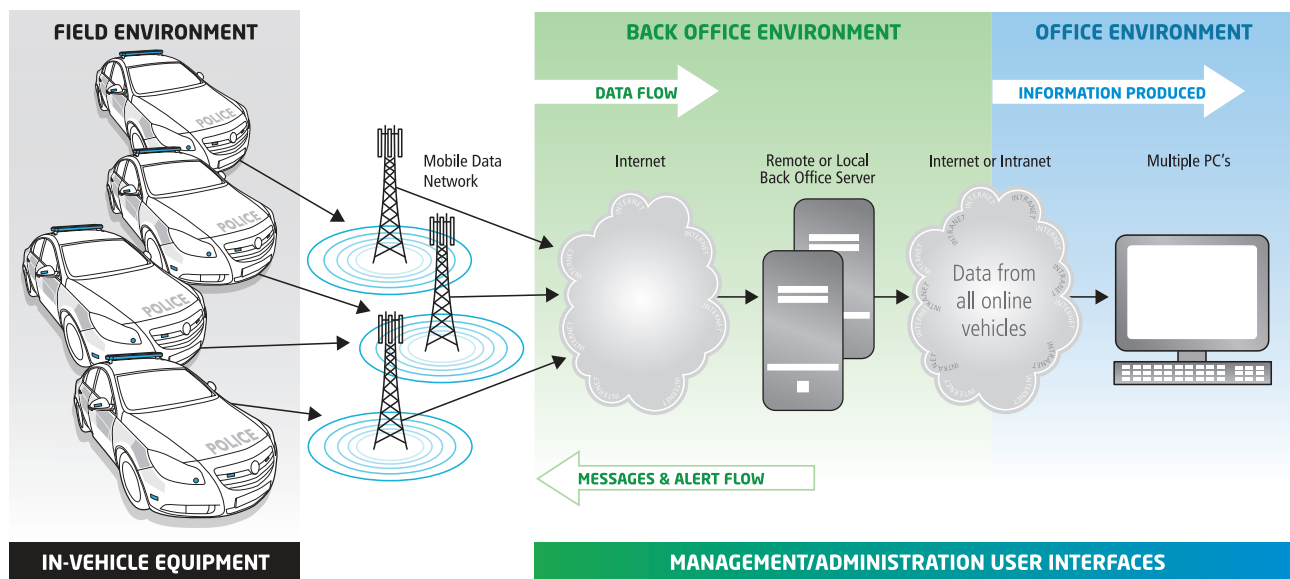
Key consideration points:
- Server is maintained and data is backed up
- Access from anywhere via web browser
- Package usually includes airtime
- Requires no capital outlay
- Requires internet access to connect to web server
- Data is not hosted within customers infrastructure

DIRECT SERVER ACCESS

Key consideration points:
- Customer controls their data
- Access data using desktop Apps - no need to use web browsers
- Customer can use their own SIM cards
- Does not require internet access to view historical data
- Customer to maintain their own server, storage, database and manage backups
- Access only from within customers network
- Requires IT expertise to set-up firewalls etc for data transport from vehicle device to server

Common System Attributes:

The Europa Telematics System processes data recorded and collected from a vehicle installed device over the mobile phone network or direct connection and Wi-Fi to produce information that can then be utilised to assist with effective Fleet Management and Improving Driver Behaviour. Plus, and unlike many equivalent systems, Europa provides at no extra cost 'High Resolution' incident data up to 100Hz resolution as well as standard 1Hz resolution journey data, where the overall solution provides:

- High Resolution 'Impact' Data (100Hz resolution) - generated and recorded in the event of an impact and 'always' transmitted to the server
- High Resolution 'Stopping' Data - generated each time the vehicle comes to a halt, sent to the server if the 'Incident Button' is pressed within 2 hours
- Medium Resolution 'Journey' Data - sent to the server at the end of each journey - provides 1Hz historic data
- Live Tracking Information - sent to the server at 20 second intervals showing location and speed
- Driver ID (various technologies available) - collected in the vehicle and appended to journey/incident data with 'driver audio warning' if not logged-in
- Combination of Linear and Angular Acceleration Data - via accelerometers, gyros and magnetometer constantly recorded (not just thresholds) to provide tri axis data including angular velocity
- Data Integrity - all information is admissible in a UK court of law as date time stamped with software watermark

SCHEMATIC OF EUROPA VEHICLE TELEMATICS SYSTEM FOR FLEET RESOURCE MANAGEMENT

FIELD ENVIRONMENT

BACK OFFICE ENVIRONMENT

OFFICE ENVIRONMENT

DATA FLOW

INFORMATION PRODUCED

Mobile Data Network

Internet

Remote or Local Back Office Server

Internet or Intranet

Multiple PC's

Data from all online vehicles

MESSAGES & ALERT FLOW

IN-VEHICLE EQUIPMENT

MANAGEMENT/ADMINISTRATION USER INTERFACES

Web based option via Standby RSG Server service also available

PRODUCT OVERVIEW

The Europa Multi-functional Journey Recording system consists of the main control unit and optional modules which adapt the products functionality to offer the most cost effective solution for specific applications.

MAIN PRODUCT FEATURES

- High Speed Incident Data Recording for in-depth accident analysis
- Economic Journey Data Recording for every day Fleet Management
- Statistical Data for quick view reports
- 8 x Digital (On/Off) Inputs and up to 32 from CANbus
- 2 x Analogue (Variable) Inputs
- 3-Axis Accelerometer for longitudinal, lateral and vertical movement measurement
- Speed/rpm fron CANbus
- 3-Axis Gyros
- 6MB Memory
- 2MB Incident Data
- 4MB Journey Data
- Dual CAN Interface
- 1Hz GPS Data on every journey data point and 10Hz GPS data for incidents
- Battery Backed-up memory
- USB Connectivity for Laptop PC
- Manual Incident (Catch Event) Switch
- Interface to drivers status module
- Internal auto reset fuses
- Internal transient protection
- Automotive robust enclosure
- 2 x CAN Bus Interfaces Can be programmed to read vehicle CAN Bus data and/or hazard warning controller
- GPS See Position Monitoring

OPTIONAL FEATURES

- GPRS Provides high speed data down load over the mobile telephone network, ideal for large fleets
- WiFi Provides data down load over a local wireless network
- TETRA Interact with Airwave Radio
- Driver ID Log who's driving the vehicle via a variety of card/key technology essential for Notice of Intended Prosecutions (NIPS Data), with support for existing ID cards
- Battery Back-Up Fit to keep product operating if vehicle supply is lost
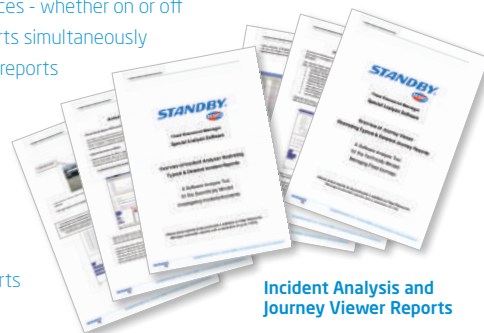
Position Monitoring

- Historically Track vehicles anywhere down to street level
- Operates with online mapping such as Google Earth mapping software
- Store over 2000 Journeys and over 100,000 Waypoints (location references) with adjustable intervals and typically could represent over 10,000 miles
- View movement of individual vehicles for each complete journey made
- Vehicle activity data like speed, RPM, location and device functions can be viewed in association with Waypoints
- Latest GPS combined technology allows accuracy down to 2.5 metres and resilience against satellite failure and urban/city building shielding

SOFTWARE FEATURES

Journey Analysis

The Europa Fleet Management software provides a multitude of features that enable a wide range of reports to be produced:-

- View Journeys zoom in and out
- Incident indicators
- Scrolling cursors to get precise time and speed of any event to within 1 second
- Confirm status of vehicle devices - whether on or off
- View Journey and Status reports simultaneously
- Harsh and Dangerous braking reports
- Driver scoring league table
- Exception reporting
- Statistical reports
- 3-D Histogram reports
- Vehicle data base for MOT, service and insurance details
- A whole range of tabular reports

Incident Analysis

The Europa Incident Analysis software has an extensive range of features specifically designed to make accident investigation faster and more efficient, with up to 100Hz resolution.

View data as pre, during and post incident information in terms of:-
- Journey information
  - Accelerometer data
  - Direction data
  - Gyroscope data
  - Actual speed
  - Reconstructed speed
- Adjust calibration to match roadside bench marks

Modular Software accommodates secure distribution of data only to authorised personnel and is comprises of the following modules:-
- Server software to manage the system
- Client Journey Viewer & Incident Analyser software to analyse the recorded data into meaningful information
- Data Collect to download the recorded or live data
- Configuration software used when the product is installed

GPRS
Optional Module

Data communication module for transferring information at high speed and in the most cost efficient manner over the mobile telephone network

GNSS ENGINE
GPS/GLONASS

Uses the latest satellite positioning technology to provide the highest accuracy currently available

WIRELESS
Optional Module

Data communication module for transferring information at high speed and in the most cost efficient manner via a local wireless hotspot

Incident Analysis and Journey Viewer Reports

DUAL CAN BUS INTERFACE
Module

Interface with both vehicle and auxiliary equipment CAN Bus

BATTERY BACK-UP
Optional Module

Fit to keep product operating if vehicle supply is lost

DRIVER ID
Optional Module

Available options:
iButton
MiFare
PAC Key
HID Key

Management and Administration of User Interfaces

TOOLS TO IMPROVE FLEET RESOURCE MANAGEMENT AND DRIVER BEHAVIOUR

Journey Viewer

A specialised software analysis tool for the technically minded Fleet Manager and/or Administrator to enable standard and special reports to be produced at a resolution of 1Hz.

- A journey is defined form 'Ignition On' to when the vehicle comes to rest with 'Ignition Off'
- A graphical representation of Speed/RPM, Direction and Acceleration
- All vehicle inputs can be displayed simultaneously
- Second by second analysis of every logged input
- A scrolling feature offers precise time and incident analysis to within one second
- Zoom In, Zoom Out graph views
- View parts of interest of journey, whole journey, multiple journeys over weeks/months
- View individual or multiple journeys
- All data tagged with essential information
- Journey summary reports - provide detailed data for up to 4 weeks worth of vehicle activity
- Essential information such as speed and RPM shown in a graphical view against time together with other data such as blue lights and footbrake usage

Incident Analyser

A specialised software analysis tool for the scientifically minded to enable standard and special reports to be produced up to a resolution of 100Hz.

- 20 second pre- and post-accident data at 20Hz and 5 second impact data at 100Hz
- Wheel (Road) Speed and Distance Travelled (mile or kilometres)
- Engine Revolutions (RPM)
- Vehicle Movement Measurements including:
    1. Longitudinal, vertical and transverse acceleration and deceleration
    2. Vehicle direction
    3. Vehicle rotation - angular velocity
    4. Measurement of slope and camber
    5. GPS data at 10Hz

Incident and Accident Analysis

RSG is able to provide a mature and widely used Incident Analysis suite of software with these features:

- Approved track record of providing analytical evidential material for use in a court of law
- Data stored for over two weeks before over-written
- Works in conjunction with all captured data
- Data resolution up 100 Hz if required
- Easy to use by trained operators
- Data available in various presentation formats
- The accident functionality can be available on standard networked machines running relevant software
- Highly refined for city use and pedestrian impact as well as glancing blows
- System supported by a comprehensive range of training packages ranging from incident appreciation overview for lay users up to expert accident investigators
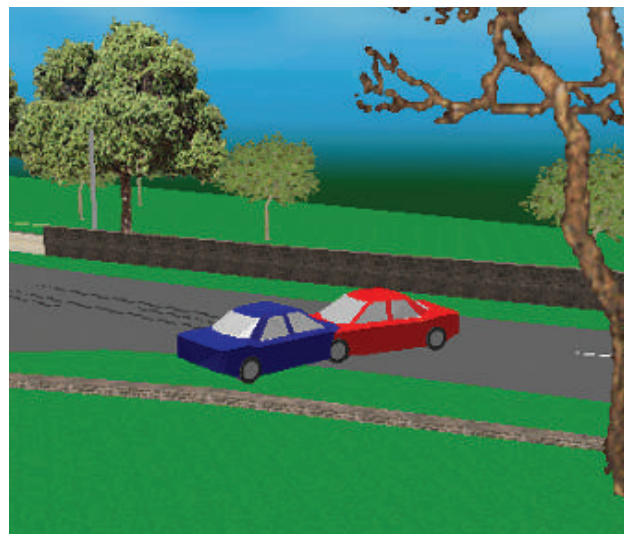
In-Vehicle Equipment and Servicing

EUROPA IN-VEHICLE TELEMATICS EQUIPMENT

The Europa System provides the following features and functions:

- The Europa Data Recorder is a vehicle telemetry device that captures and transfers data about a vehicle and its operating parameters including utilisation
- The Driver ID device will associate a driver with a journey to monitor driver behaviour
- The Driver Feedback device indicates driving mode/style
- Manufactured at a facility that has ISO 9001 accreditation
- Compliant with standards BS EN 60068 (environmental tested) and BS EN 60529 IP55 (water, dust and sand ingress)
- AES Spec 5 accredited
- CE and/or e marked
- In line with 'Driver Vehicle Data Management System (DVDMS)' parameters

Equipment Set-up and Servicing

Installation Training and Software
Standby RSG is able to offer a range of mature and comprehensive 'Installation' training packages that are fully supported by hard copy manuals and software for all vehicle equipment, examples of which are available on request.

Calibration Training & Software
Standby RSG is able to offer a range of mature and comprehensive 'Calibration' training packages fully supported by soft/hard copy manuals and software for all vehicle equipment, examples of which are available on request. This procedure is also approved to allow data collected to be provided as analytical evidential material for use in a 'court of law'.

Dual Port CAN Bus Integration
On modern vehicles, manufactured from 2001 onwards, it is now possible to monitor speed, RPM and many other vehicle derived signals via the CAN bus network. The Europa supports CANbus data including CIA447, CANopen and many other protocols, CAN signals are provided by the use of a jcl file which is updated regularly to support new vehicles and new variants of existing vehicles. The Standby RSG Europa supports connectivity and interfacing with the majority of emergency services vehicles.

Also, due to having a second CAN Bus port the Europa system is able to connect to other vehicle equipment with CAN Bus connectivity such as hazard warning control equipment, making installation more cost effective and timely.

Driver Identification (ID) Device

General Operation
Utilising a RFID card and in-vehicle card reader or similar devices each journey the vehicle makes will be logged to the driver. Should a driver fail to scan their card a warning 'beep' will continue to sound until a successful card scan takes place.

The RFID card technologies supported include Mifare, HID, ISO, PAC and others and allow for high level card encryption as well as organisation confirmation, plus the option for vehicle immobilisation.

The data transmitted to the server will only contain the identifying number string of the driver and be subject to standard encryption to protect the driver identity prior to synchronisation with the current driver/employee database in use by the organisation.

- Robust, impact resistant and discrete, designed to withstand in-vehicle environment
- Driver audio 'prompt to use' facility
- Has the protocols to interface to 'Active System Directory' by way of driver name and collar number to present a unique ID
- Transmission protocols and security provides anonymous ID during transfer from vehicle to server
- Driver name and collar number only collated at point of storage to provide required private protection - part of system set-up

Driver Monitoring and Feedback Device

General Operation
A discreet dashboard mounted device (various options available) that provides instant and continuous average visual and/or audio feedback regarding how the vehicle is being driven.

Typically an LED traffic light display provides 'at a glance' average driver behaviour along with an audible alarm for 'extreme' driving. Where LED indicators: Green = Good Driving, Amber = Average Driving and Red = Poor Driving.

Event triggers are based on G-Force and speed changes while an automatic 'exception' mode changes the trigger levels during an emergency 'blue light' situation. Parameters can be adjusted so every vehicle can be uniquely set.

By influencing driver behaviour in the vehicle immediate savings will be made in fuel use and maintenance whilst reducing the need for the administration of driver correction programs.

Typical Management/Administration Web User Interface

MANAGING DRIVER AND VEHICLE GROUPS

The system allows a fully flexible driver and vehicle structure as shown below noting that drivers can belong to Multiple Groups and managers can manage Multiple Areas.

Dual Mode Driving

The system allows vehicles to be operated in two modes based on the state of digital inputs. This is usually used by emergency service customers to allocate driving into a 'blue light mode' and 'non-blue light/normal driving mode'. The required driving characteristics for the vehicle can be altered for the two operating modes. This means the system can place differing expectations on drivers depending on the mode of operation of the vehicle.

Personal and business mileage is dealt with in two ways. The first approach is to have personal use allocated to an alternative driving mode which could then be set up to ignore driving performance in these modes. A better solution would be to allocate two RFID cards to drivers, one for personal use and one for business use. The system would then be set up to allow specific line managers visibility on business and/or personal use driving as required.

System Reporting Capabilities

The driver reporting section of the user interface includes a dashboard feature summarising the performance over the last few days or weeks.

This dashboard feature provides a quick summary of the daily and weekly scores as well as the contributors to their scores. Some of the graphs are clickable to allow a drill-down and see a list of journeys made and identify the score for each journey.
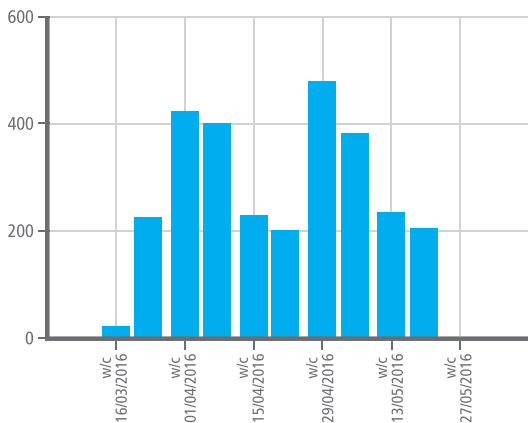
Typical driver reports available are:

• Single driver report
Allows a driver to compare their miles driven and performance over regular periods over a selected time period. For example, a monthly report run from 1st March to 31st May will compare the scores for a single driver from March with the scores from April and May.

• Weekly performance report
This report can be generated automatically and emailed to drivers. The report shows the driver's score for the week together with the distance driven. It also shows the average score for all drivers over the period. It shows a breakdown of the elements of driving that have contributed to the score together with some generic advice on how to improve their score.

• Monthly performance report
This report can also be generated automatically and emailed to drivers. The report is the same format as the weekly performance report but covers a one month period

• Group comparison report
This report allows a manager to compare any group they manage with groups at the equivalent level in the organisation structure. This report can be emailed automatically to managers at regular intervals.

• Driver League Table report
This report generates a league table of drivers within a group managed by a manager. This report can be emailed automatically to managers at regular intervals.

When a vehicle connects to the server for the first time the calibration information is collected and the vehicle entry will automatically be created in the appropriate database tables, meaning the client does not need to be involved at this stage of the data entry.
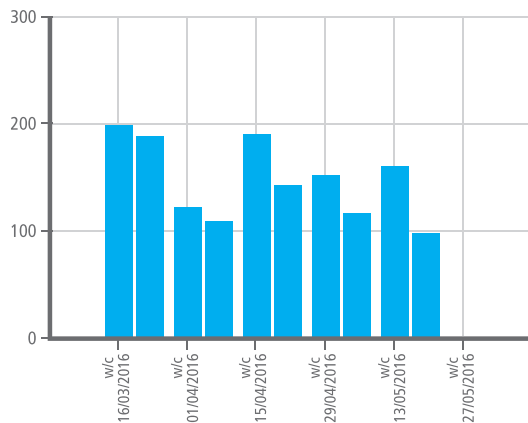
If appropriate the existing management structure of an organisation can be extracted from a staff database to replicate a hierarchical structure in the drivers' database. The system administrator can change management permissions on an ad-hoc basis via the user's interface. If required a utility that would allow a suitably authorised member of staff to generate a file from the existing organisational database can be provided. Similarly, driver details and vehicle data can be read from appropriately generated files.
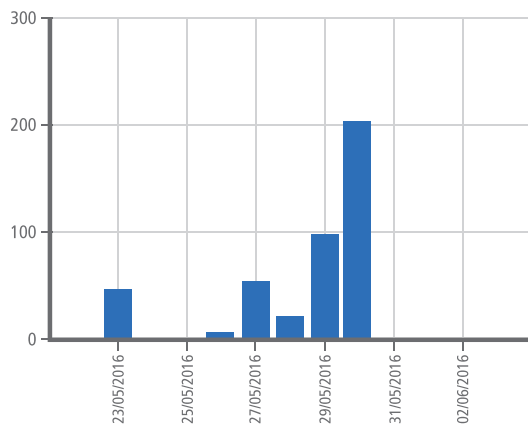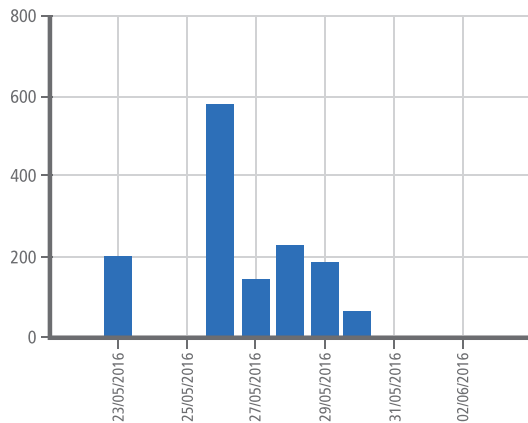
Single Driver Breakdown For The Last Week

- Over Revs Time
- Over Revs Count
- Over Speed
- Idle Time
- Harsh Braking
- Cornering
- Incident
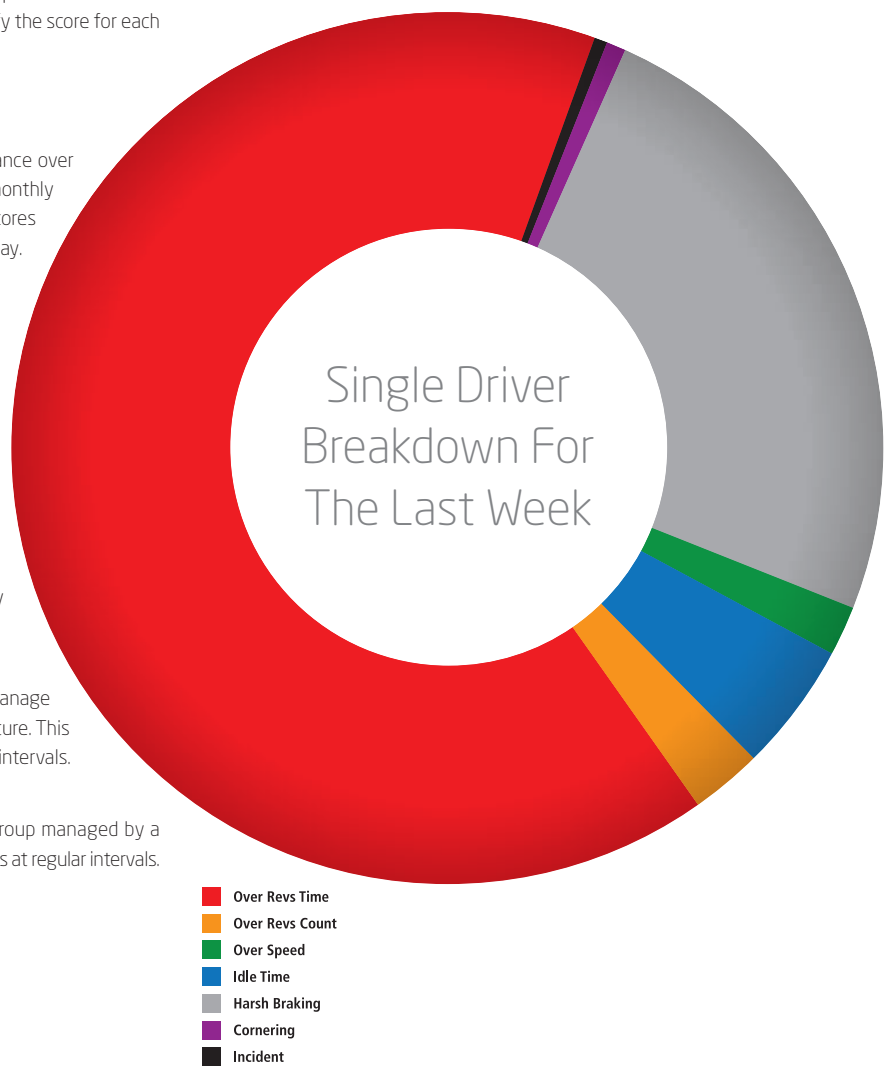
WEEKLY MILEAGE


WEEKLY SCORES

DAILY MILEAGE

DAILY SCORE

Weekly Driver Report

This report is for a single driver starting 24/05/2016

This week the score was	**145.6**
Distance driven this week was	**404.1 miles**
Average score for all drivers this week was	**170**

Your driving is better than average but could still be improved - have a look at the hints below:

Your **OVER REVS** time is **high** - consider changing into a higher gear.

Weekly Driver Report
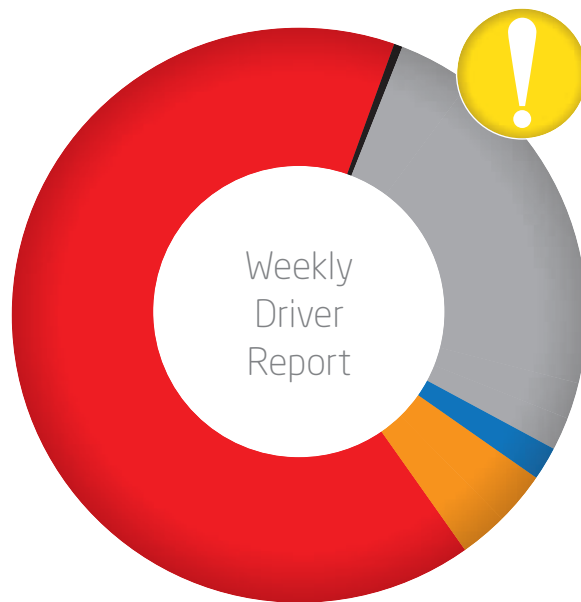
Monthly Driver Report

This report is for a single driver starting 01/05/2016

This month the score was	**140.1**
Distance driven this month was	**1855.2 miles**
Average score for all drivers this month was	**205**

Your driving is better than average but could still be improved - have a look at the hints below:

Your **OVER REVS** time is **high** - consider changing into a higher gear.

Monthly Driver Report

- Over Revs Time
- Over Revs Count
- Over Speed
- Idle Time
- Harsh Braking
- Cornering
- Incident
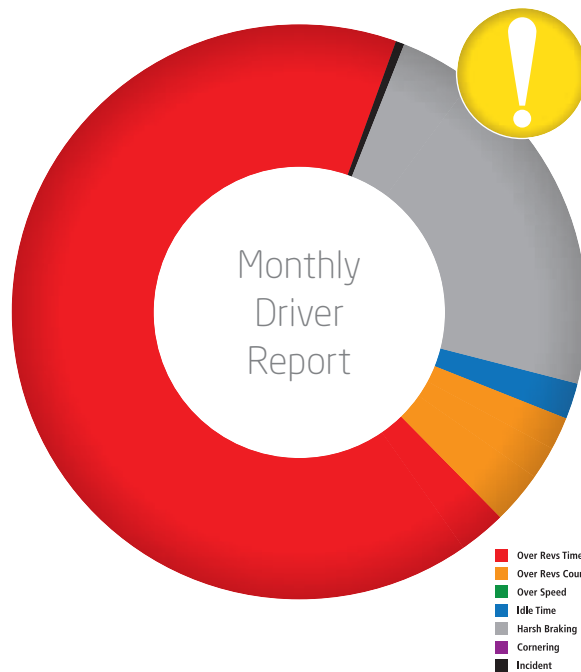
Typical Management/Administration Web User Interface - continued

Monitoring Driver Behaviour

The solution allows managers to view the performance of the drivers whom they manage using a variety of reports. The system can be configured to email the reports on a regular basis or the manager can log-in to the web based system and generate a 'live' report at any time over any date range that they choose.

The system has a fully flexible approach to staff structure. So, drivers can be allocated to multiple groups based, for example, on geographic region, driver qualification, driver role etc. This allows the driver hierarchy to reflect the organisational structure.

There are a variety of reports available to managers. These allow managers to compare the performance of drivers they manage with drivers in areas at the same level of the management hierarchy. This allows the drivers in one region could be compared with drivers in another.

A manager can also access league tables of drivers within areas that they manage. They can only see the individual performances of drivers who are sited below them in the staff hierarchy. The report shows which performance metrics have contributed to the overall driver score which allows managers to focus modifying driver behaviour in defined areas.
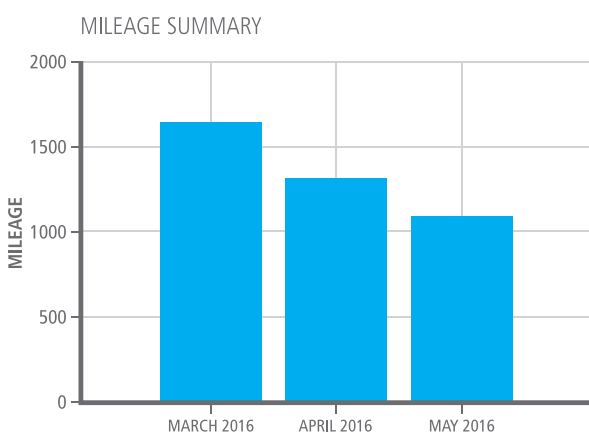
Single Driver Score Summary

Driver	Mar 2016	Apr 2106	May 2016
Arthur Thomas	204.4	164.7	140.1

SINGLE DRIVER SCORES ANALYSIS
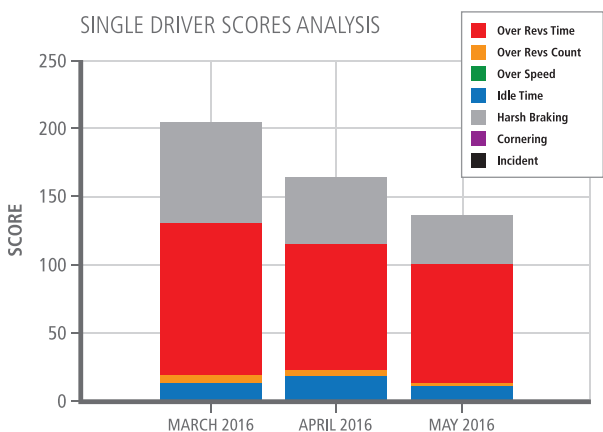
Single Driver Mileage Summary

| Driver	Mar 2016	Apr 2106	May 2016
Arthur Thomas	20.2 miles	1471.6 miles	1855.2 miles

MILEAGE SUMMARY

Driver Scores Analysis by Area

The table and graph below show the scores from drivers in each area by week number/year.

Area	Mar 2016	Apr 2106	May 2016
East	295.5	149.3	161.2
West	411.0	207.7	174.6

AREA SCORES ANALYSIS
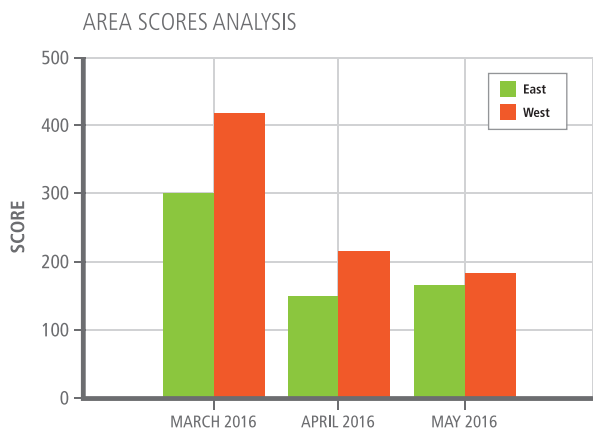
The table and graph below show the miles driven from drivers in each area by week number/year.

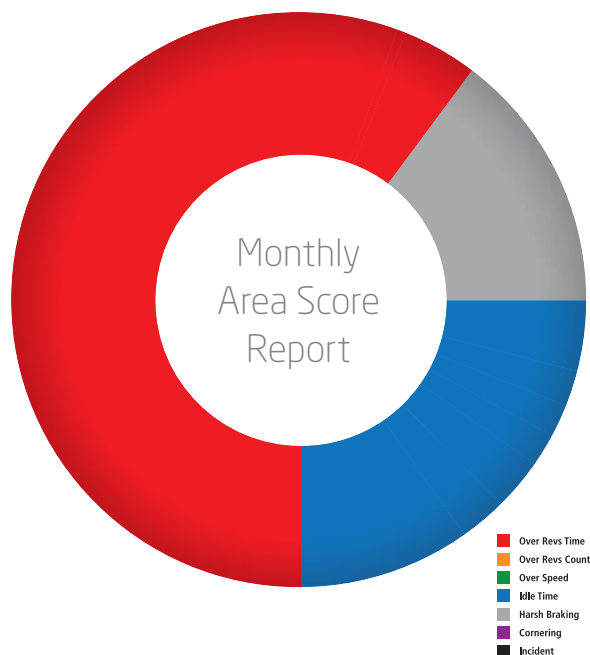| Area	Mar 2016	Apr 2106	May 2016
East	698.1	4957.2	4515.3
West	822.1	6461.8	4785.4

AREA MILEAGE ANALYSIS
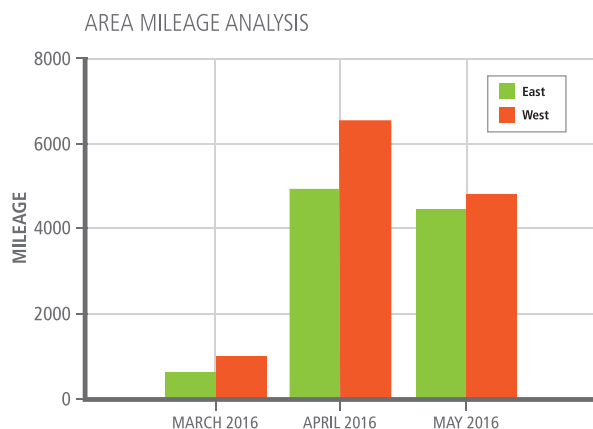
Driver League Table by Area

The table below shows the scores for each driver over the period from 01/04/2016 to 31/05/2016. Lower scores represent better driving.

The chart opposite shows how the different categories have contributed to the total score over the period. This indicates the areas of driving that could be improved.

| Driver	Score ⬍
Richard Broad	114
Arthur Thomas	130
Morgan Smith	160
Andrew Jones	173
Frances Turner	347
George English	364
Kate Phillips	382
Roger Cooper	484

Monthly Area Score Report

- Over Revs Time
- Over Revs Count
- Over Speed
- Idle Time
- Harsh Braking
- Cornering
- Incident

Monitoring Vehicle Utilisation

The system also includes the capability for users with appropriate permissions to view reports based on vehicles. There is a vehicle dashboard which shows metrics such as the number of vehicles in workshop, idle time per vehicle per day together with number of incidents per vehicle. It also shows histograms for progression of weekly mileage, idle time and number of incidents.

A manager is also permitted to generate reports on individual drivers whom they manage which allows them to identify key areas of improvement for individual drivers. If a manager controls several groups, then they can generate reports to compare one of these groups with the equivalent groups in the organisation structure.
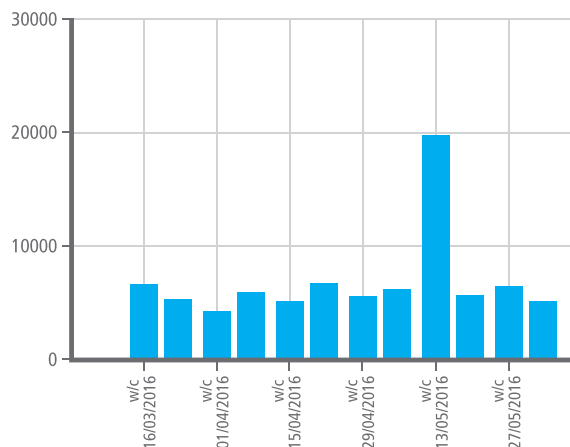
VEHICLES IN WORKSHOPS	IDLE TIME PER VEHICLE	INCIDENTS PER VEHICLE
0	00:24	2.7

FLEET WEEKLY INCIDENTS
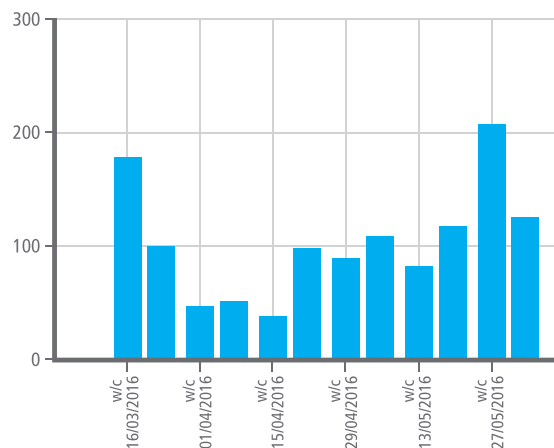
FLEET WEEKLY IDLE TIME
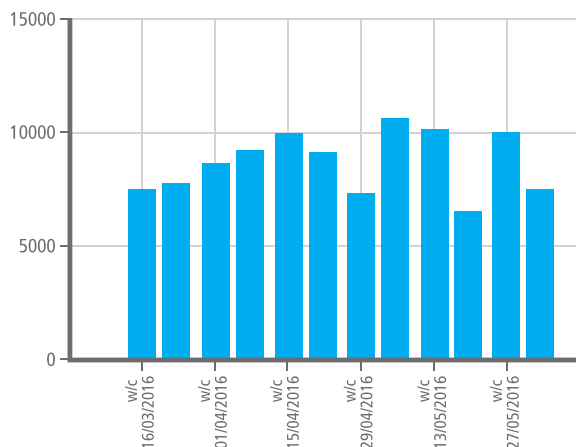
FLEET WEEKLY MILEAGE

Typical Management/Administration Web User Interface - continued

Vehicle Utilisation Reports

The system supports several types of report including:

- Journey Summary Report
- Exception Report
- Daily Summary report
- Mileage Report
- Heat Map showing routes most frequently travelled by vehicles

The journey summary report provides links to allow the user to see a graph of speed/rpm etc during the journey. It also includes a link to see a map with the route of the journey. Graphs can be zoomed and the user can add/remove digital signals.

The Heat map (a heat map is a graphical representation of data where the individual values contained in a matrix are represented as colours) can be generated using a user specified date range and selected vehicles to identify roads/areas that are visited frequently by vehicles or conversely those that are not visited frequently.

The system also allows live tracking on vehicles within the fleet and replay of vehicle movements during any chosen day. The built-in standard reports offer good coverage for most parameters of interest, but if required additional reports can be added.

JOURNEY SUMMARY
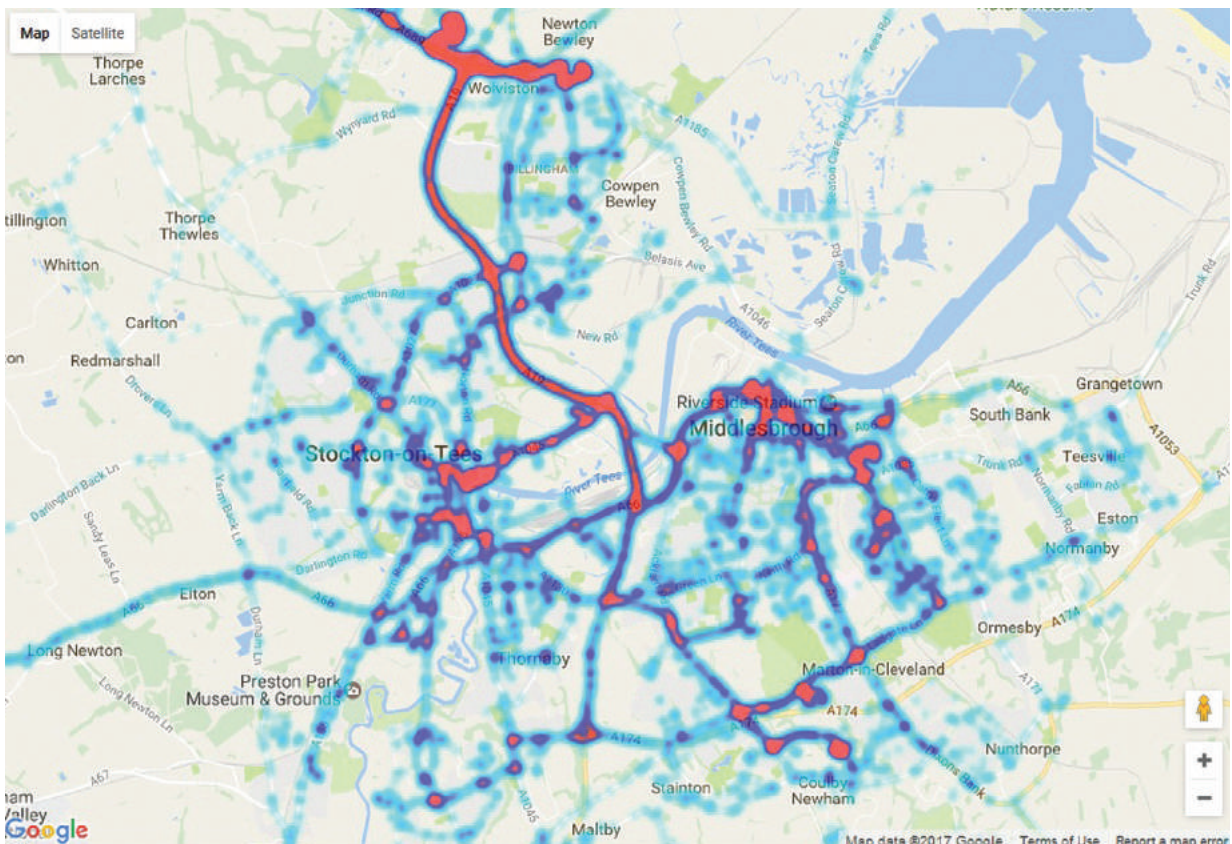
HEAT MAP

Automated Reports and Exception Alerts

The system can be set up to generate some reports automatically at regular intervals and email the reports to appropriate users.

The following driver reports can be scheduled:

• Weekly performance report sent to the individual driver
• Monthly performance report sent to the individual driver
• Group comparison report sent to the group manager
• Driver League Table report sent to the group manager

In addition to this a suitably authorised user can define geo-fence areas and apply these areas to vehicles so emails are generated automatically when a vehicle from a pre-defined list enters and/or leaves a geo-fence zone.

A user can define any number of geo-fences and apply each geo-fence to any number of vehicles.

GEO-FENCED AREA

| Zone Name	Email	Enabled			
Bedford	none@none.com	Disabled	✏️	🚙	❌

Intuitive System Usage

The user interfaces for vehicle and driver reports have been designed to be simple and easy to operate. Both the vehicles and driver sections include dashboards showing Key Performance Indicators (KPI) and their evolution over time.

Reports and other pages can be accessed using a drop-down menu system where additional information can be obtained by clicking on the relevant part of graphs or following the links on report pages.

DROP DOWN MENU SYSTEM

Standby Group

Standby Group employs around 200 people across Sweden, Germany, France, Finland and the UK. Meaning that we can offer our customers First class service and support wherever they are based in Europe.
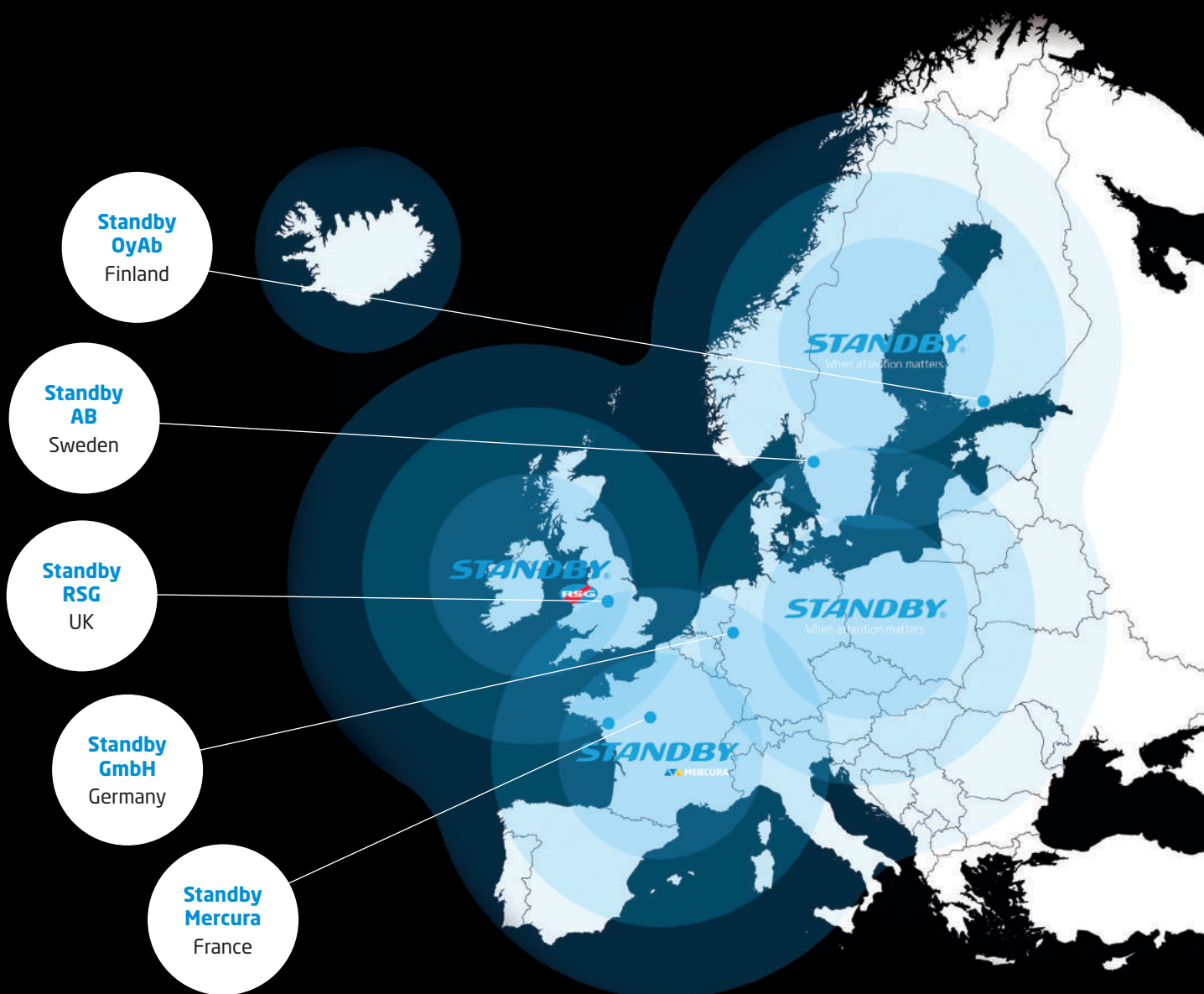
Standby OyAb
Finland

Standby AB
Sweden

Standby RSG
UK

Standby GmbH
Germany

Standby Mercura
France

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