

Tracking and Tracing application



Harras Network CVBA, Antwerpen, Belgium



Light bridge Kft, Budapest Hungary (for Hungary)

Koen Vangrinsven, Managing Director

Gergely Zayzon, Lead Programmer, system administrator.

<i>General description of the software and usability.</i>	3
<i>Dataflow:</i>	5
General overview:	5
<i>Main features and benefits of our application</i>	6
End user experience	6
Connectivity and underlying technology advantages	6
<i>Pricing model.</i>	7
Tracking and tracing application.	7
You want a complete solution?	7
<i>Contact</i>	8
<i>Dataflow</i>	9
Technical overview.....	9
<i>Some benefits from our Intersystems Caché based approach</i>	10

General description of the software and usability.

Telematics in a broad sense is a technology that involves the automatic measurement and transmission of data from remote sources. The process of measuring data at the source and transmitting it automatically is called *telemetry*. The two terms, *telemetry* and *telematics*, are often used interchangeably. We mainly use wireless transmission of data by GPRS or G3 connections.

Our application is a telematics application as we gather data from all kinds of vehicles. Every individual or company that owns or operates a vehicle park, small or large, is a potential user.

While running a large amount of vehicles requires a constant need for knowing where these vehicles are, as well as the condition they are in, having a real time overview from a central application is a very valuable asset. This is the monitoring aspect.

Additionally it can be important to know if and even prohibit vehicles to cross some predefined geographical borders (so called geo-fencing). Further, based on the measurements, a central system can send out warnings that a certain kind of maintenance on the parts of the vehicle is needed.

Keeping track of these parameters with paperwork and classic ways of communication is cumbersome, time consuming and often even unreliable. With our Tracking & Tracing application it is easy and straightforward.

Data is centralized on servers accessible over the internet from all over the world. Internet access and a web browser is all our customers need to get access to their fleet data..

As an example we can see the webpage of a company that rents different types of vehicles. When an employee logs into the website he sees at a glance the main parameters of all monitored vehicles:



Type	PlateNr	Name	Enginehours / Mileage	Last check-in	Location
[?]	69-VZ-FR	A. Lagarde	57,252 km	15/08/2008	NL-6004, Weert; Risseweg 6
[?]	92-BB-DF	Beelen	68,428 km	15/08/2008	NL-6004, Weert; Risseweg 6
[?]	68-VZ-FR	Cortooms	52,602 km	15/08/2008	NL-6031, Nederweert; St Luciastraat
[?]	85-VN-JD	De Graef	99,965 km	15/08/2008	NL-6004, Weert; Florisstraat 4

Just two clicks away is a report that tells him – for off road vehicles- how much time a chosen vehicle has been used at a certain location. (engine hour calculation). Many other reports are at his disposal in an equally easy way.

Location	From	To	Enginehours
N/A	01/07/2008 01:59:00	01/07/2008 05:57:52	0.02
51.31936347/5.73877458	01/07/2008 05:58:52	04/07/2008 07:43:59	4.00
51.31936347/5.64738771	04/07/2008 08:09:04	04/07/2008 15:55:42	3.92
51.31936347/5.73877458	05/07/2008 01:59:00	15/07/2008 07:48:10	1.78
NL-5981, Panningen; Rootsdijk	15/07/2008 08:27:51	15/07/2008 09:52:41	0.70
NL-6015, Neeritter; Breede Rijn	15/07/2008 10:34:41	15/07/2008 10:52:43	0.25
NL-6011, Ell; Busstraat	15/07/2008 11:08:50	15/07/2008 11:24:16	0.18
51.31936347/5.73877458	15/07/2008 12:30:02	18/07/2008 13:15:22	2.62
NL-5768, Meijel; Witdonk 20	18/07/2008 13:39:11	18/07/2008 13:58:12	0.32
NL-5986, Beringe; Haambergweg 16	18/07/2008 13:59:12	18/07/2008 14:17:31	0.27
NL-5768, Meijel; Witdonk 20	18/07/2008 14:18:31	18/07/2008 14:39:20	0.28
51.31936347/5.73877458	18/07/2008 15:06:35	21/07/2008 08:20:48	0.73
NL-5712, Someren; Molenbrugweg	21/07/2008 08:21:48	21/07/2008 08:23:48	0.03
NL-6026, Maarheeze; Hugten 20	21/07/2008 08:24:48	21/07/2008 08:28:48	0.07
51.31936347/5.64738771	21/07/2008 08:29:48	05/08/2008 15:29:30	57.58
51.31936347/5.73877458	05/08/2008 16:06:48	11/08/2008 08:19:28	12.87
NL-5712, Someren; Molenbrugweg	11/08/2008 08:20:28	11/08/2008 08:22:28	0.03
NL-6026, Maarheeze; Hugten 20	11/08/2008 08:23:28	11/08/2008 08:28:28	0.08

Dataflow:

General overview:

1. Data gathering. A tracking and tracing device is connected to electrical contacts in the vehicle. The electrical information comes from measuring devices covering a range as diverse as speed, temperature, hydraulic pressure of various parts of the vehicle, fluid levels, running hours, tachometer data, on/off switches...

As one special measuring device, a GPS is also built in. Geographical data is a very important piece of the information sent to the servers. .

2. Communication. The communication layer consists of the wireless data transport, mostly GPRS or G3. The telecom provider delivers the data over internet to one of our connectors.
3. Data collection and data storage. Our central server based application relies on our own connector software, it does the first manipulations on the incoming data and stores it in a very fast and reliable database.
4. The Tracking & Tracing application, made with an intuitive, easy to use interface, visualizes the gathered data in many different ways. Moreover, it also has an administrative part where the user can administer and organize his 'vehicles'. For example he can label his vehicles with the names they are known by in his company.

A more technical description is available at the end of the leaflet.

Main features and benefits of our application

End user experience

- Completely web based, only a browser is required to use it, no client software updates needed. The application is browser independent and as a consequence also fully operating system independent.
- Limited but adequate customizable layout for each client.
- Fast and very easy to use tool, based on user experiences from people in the field
- Very well suited for the off road industrial vehicle follow up
- At one glance: Real-time information on the utilization of their fleet.
- Permanent knowledge of the whereabouts of the vehicles, now and in the past (default up to six months or more, but adjustable to clients needs)
- Easy reporting on all aspects of the usage and values of parameters of the vehicles
- Timely maintenance schedules for all measured parts
- The possibility to implement employees itineraries and calculations of working hours and timesheets
- Driver identification
- Geofencing with alarms
- Various output possibilities
- Bi-directional communication over gprs with the unit (if unit supports it)
- Administration interface for user to handle his own units
- Email warnings or sms based warning system
- Multilingual: Dutch, Hungarian, English, French, Spanish and Russian are available, adding languages is very easy

Connectivity and underlying technology advantages

- XML and CSP deliver an easy customizable look and feel. Several output formats are there to choose from to fulfill everyone's need. We can show the data on all kinds of devices, from desktop and portable PC's, over PDA's and Mobile phones, to communicators. If it has a browser we can show data. Moreover, customizing output for display on all kinds of devices is simple.
- Integration with the customers' applications and business processes is made easy through the connectivity capabilities like ODBC/JDBC/SOAP.
- Secured environment: our servers are placed in state of the art datacenters in Belgium (Cegeka) and Hungary (Datanet) and provided with the necessary failover and backup solutions to make sure your data is safe and maximum available
- Totally own development: we know our software and are able to adapt it to your needs
- Based on one of the very best database technologies today: Caché from intersystem's

Pricing model.

Tracking and tracing application.

Harras Network puts itself in the market as an **independent solution provider** delivering in the first place a **robust, flexible, easy to use Tracking & Tracing application**. This application is mainly sold to end users on an **ASP** model, where we charge our customer with a small one-time connection fee, and from then on a fixed price per month per unit.

The 'end user' can be the client who owns the vehicles or any intermediary company. You are a technical installation company and looking for a tracking application to deliver to your customers? You are active in the transport industry selling services, electronics ... and want to deliver your customers with a tracking application? You hire/rent equipment and want to know how much and where the equipment is used?

Our price model is simple, very clear and has no surprises.

As an independent solution provider for a tracking application we can handle various types of units which are available in the market today out of the box. Focusing on some of the best units in the market today, we have extensive knowledge and perfect connecting software and business logic for X8/X1 units from Systech, FM4100 from Teltonika, Easytrac units from Orion. We do also connect easily to Securysat from bfengineering and some more brands. Thus making it possible for you to choose the right device for the right working environment, and the right tracking and tracing provider for your units!

But you have a unit which is not in our list yet? With our experience and our application which is from the start built with the aim to be as flexible as possible towards the data streams we need to handle, we can connect almost any existing unit available in the market.

You want a complete solution?

Our knowledge is built up over the last 5 years, mainly in the Benelux and Hungary. This makes that we have partnerships with highly skilled professional companies that can take care for connecting the units in your vehicles, in the Benelux. Be it cars, vans, bulldozers, cranes, boats... name it, they can do it.

After all, every piece of the chain is equally important for a good result, starting with the quality of the tracking unit, then having it correctly connected to the electronics from the vehicle, over the telecom provider and finally ending up at our tracking application.

Contact

General contact:

Koen Vangrinsven, Wetstraat 32, 2060 Antwerpen, Belgium. koen@harras.be
+32479599276

Technical contact and Hungary:

Gergely Zayzon, Szilaj Street 4, 1162 Budapest, Hungary. gergoe@harras.be
+36303903740

About Harras Network CVBA

Harras network was founded in April 1999. It's activities are mainly IT related with a strong focus on database centered and web based applications. Since 2003 we are active in the remote monitoring and tracking and tracing industry.

We developed our own tracking and tracing application to meet the specific demands from our first customers. We are specialized in the industrial vehicle market, but not limited to this. Our software application is available independent under an ASP model, and has become our core business. We master the whole process in house, starting from setting up the servers and maintaining them, putting us totally under control and fast to respond.

We work together with various value added providers:

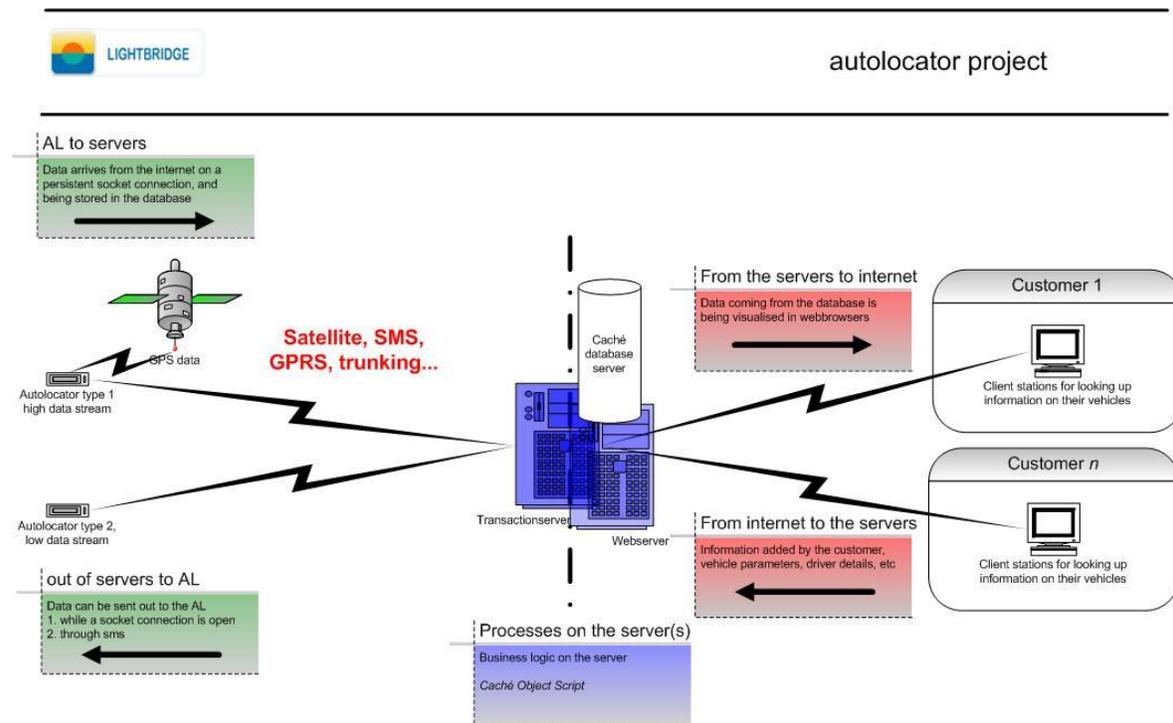
- technical installation companies,
- time management software suppliers,
- wholesale companies
- resellers
- ...

In the same field we operate remote monitoring applications based on sms (trailtrac application, personal trackers...) and non-gps based monitoring with extensive measurements of various parameters (fountain monitoring: water consumption, wind speeds, pump activity, light control, remote on/off of parts or whole system, mainly for the Brussels Regional Board)

Furthermore we deliver services to small scale companies for server installations, maintenance and development.

Dataflow

Technical overview



1. Data gathering. The Tracking Unit is an electronic component (with internal intelligence). The various sources of information are converted to electrical signals and digitized into a stream of alphanumeric values that are put in a CSV data stream. Several communication techniques are supported, GPRS and G3 are the most important ones.

2. The communication layer.

GPRS makes it possible to send rather big chunks of data in a continuous stream (typically we send the location information from a moving vehicle every minute). The data finally arrives on a TCP/IP connection at our server environments in Budapest (Hungary), or Hasselt (Belgium).



3. Receiving of the data is done by a Delphi program. We use permanent GPRS streams, which are turned into a message based communication, with a custom connection pooling technique to optimize the bandwidth usage and processing times.

All data is then **stored** in a Caché multidimensional database.

A CSP (Caché Server Pages) application manipulates the incoming data in many ways:



- Receiving, collecting and storing the data in the caché database
- Reporting and exporting resulting information (consulting the data)
- Integrating with the customer business processes (Through web services or ODBC, as per request of the customer)
- Monitoring and alerting functionality

Displaying and reporting of the data is done by a web application using **Caché Server Pages (CSP)**.

- Raw data. Shown in the history.

Movement type	Address	From		To	
		Address	Date/Time	Address	Date/Time
MOVEMENT	Unknown		18/01/2005 15:11	BE-9120, Melsele; Zwaluwbeek	18/01/2005 15:16
MOVEMENT	Unknown		18/01/2005 22:29	BE-9120, Melsele; Zwaluwbeek	18/01/2005 22:34
MOVEMENT	Unknown		19/01/2005 00:06	BE-9120, Melsele; Zwaluwbeek	19/01/2005 00:11
MOVEMENT	Unknown		19/01/2005 07:11	BE-9120, Melsele; Zwaluwbeek	19/01/2005 07:16
MOVEMENT	Unknown		19/01/2005 08:12	BE-9120, Melsele; Zwaluwbeek	19/01/2005 08:17

- Processed data is shown via html pages and reports. (business logic applied using explicit CSP code, and through classes)

The user interface can easily be personalized to the customers' or users' preferences (look and feel). The web application has built-in support for multiple languages (at the moment in Dutch, English, Hungarian, and partly in Spanish and Russian).

Some benefits from our Intersystem's Caché based approach.

- Integration with XML and XML style sheets takes care for a flexible data-interchange and graphical output possibilities – accustomed to the look and feel of the final showing of the data on a webpage, for every client.
- Multiple language output (necessary in every European company) is made easy, the browser language is automatically chosen as the preferred language.

| FR | EN | NL | HU | ES | RU |

- Caché's connectivity capabilities made it easy to connect to specialized software as Ozeki SMS server, or your own accountancy or timesheet software
- The object oriented approach from Caché has the advantage to reduce the redundancy of the data stored in the classes, and makes most of the programming tasks much easier, therefore the productivity is higher.