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Telematics services in road haulage

Using telematics services optimizes fleet management and increases profitability, safety, and schedule reliability in road haulage. There is a large selection of services based on digital communications technology. The problem: Transportation companies that want to exploit the advantages this technology offers have to navigate a market that is growing quickly and is unstructured and confusing. A variety of suppliers are developing very diverse telematics services. Most of them work with closed, so-called proprietary systems that are only designed for their own applications. The result: If a company wants to access different services or if it has vehicles from different manufacturers in its fleet, due to the lack of a uniform technical standard it has to invest in several separate telematics systems. Every time the existing telematics portfolio is expanded, investments in additional systems are necessary, a flaw that drives up the costs, the number of hardware components in the vehicles, and the number of software programs that need to be administered. What is needed is a vendor-independent telematics platform that makes both hardware and software available for any kind of telematics application.

A platform for all telematics applications
Openmatics offers a telematics platform that accomplishes that. The open and thus vendor-neutral system offered by this subsidiary of ZF Friedrichshafen AG consists of four core components: An onboard unit in the vehicle including a display interface, a web portal for displaying the data, a web shop in which telematics services from various vendors are offered in a uniform app architecture, and the apps, both our own and those of third-party developers.

While closed systems require installing multiple onboard units in the vehicle depending on the telematics applications desired, Openmatics'

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open system gets by with a single onboard unit. It is equipped with a Linux operating system based on the current available "Mozart" version on an Intel Atom processor, supports a great variety of communications protocols, and, thanks to its numerous interfaces, can gather vehicle data for a large number of telematics applications desired by the user. Converting and submitting the data gathered takes place on a central remote server.

The trucking company user, the dispatcher, or the maintenance personnel can access the data relevant for their work via a web portal on a computer, tablet, or smartphone and send such data to the vehicle, for instance, route or assignment changes. There the information is displayed on an Android display linked to the onboard unit, to which standard devices on the market can connect. The server and web portal are based on Oracle technology. Data is transferred in encrypted form via GSM (2G), UMTS (3G), or WLAN (WiFi), without a time delay, or at a time specified by the user.

The final, decisive advantage for telematics users in road haulage is the fact that open telematics platforms like Openmatics carry ideas from the world of table and smartphone apps over to telematics services. Since all applications can be offered as modular and freely combinable software applications, independent of the vendor, a transportation company can adapt its telematics portfolio to its own specific need, change it at any time, and expand it without having to interfere with the system. Besides flexibility, this also increases the security of the company's investment. With Openmatics, after the one-time purchase of the onboard unit, there is a basic monthly fee for system management and the so-called base apps. Further apps are subscribed to via the web shop and can be canceled on a monthly basis.

Telematics applications in app form

Openmatics' app concept, which has been developed by experts, is considered a benchmark in the telematics market. The apps have a clear basic structure. Their central components–boxlet, worklet, portlet, and displet–are versatile and variable and can be used for all kinds of telematics functions. The boxlet subscribes to the vehicle data in the onboard unit relevant for the application. The worklet processes the data and saves them on the server. The portlet determines how the data are displayed graphically on the web portal, and the displet determines how they are represented on the driver's display or on monitors in the vehicle.

Openmatics gives companies or application developers who want to provide their telematics ideas in app form access to a software development kit (SDK) that can be installed in the integrated development environments Eclipse and JDeveloper. It contains tools necessary to create an app and makes it possible to program all its functional domains. With its help, high-quality apps can be created in a short time—even by transportation companies themselves or their partners if so desired, according to company-specific telematics needs.

Apps are sold through a web shop that Openmatics developed together with IBM. It informs the user about all telematics applications available for the system. The apps are divided by service categories like "Fleet Management" or "Driveline and Diagnostics" and each described with their specific benefit. Transportation companies can subscribe to the telematics services they have selected through the shop and download them. The process is as follows: Once the subscription has been made in the shop, Openmatics puts the license on the user's web portal within a few minutes. From there it just has to be assigned to the relevant vehicle. The next time the vehicle's engine starts up, the download begins automatically, and the app is transferred digitally to the onboard unit in the vehicle.

Incorporating trailer telematics
Besides management of vehicle fleets, trailer telematics is an important topic for transportation services. Sensor-based applications make it possible to monitor the load conditions, temperature, humidity, etc. in trailers and, if need be, to control them remotely. These kinds of trailer systems can be connected to Openmatics' open platform independent of the hardware they use. Using this, shipping companies no longer need to continually switch between several software programs; instead they can keep an eye on both the vehicle and the freight via a single web portal.

The Openmatics Platform is a flexible system that is constantly growing with the number of apps. An extensive selection of telematics applications is already available today which help transportation companies optimize processes and increase their efficiency:

Example: Fuel Consumption
The costs of a commercial vehicle fleet correlate with fuel consumption and vehicle wear. Targeted improvement of vehicle behavior offers possibilities for savings. A prerequisite for that is an evaluation of personal driving style, i.e. objective knowledge about which drivers drive

in a cost-conscious way, what training needs exist, and where. The Gentle Driver Truck app, available from Openmatics, collects data such as anticipatory driving, engine speed range used, engine idle time, etc., adapted to each vehicle's usage type, and uses this as the basis for ranking drivers. The operator receives the results on the portal in both tabular and graphical form. Saving 2 liters of fuel per 100km by optimizing driving style can lead to annual fuel savings of €2,240.00 per vehicle, given a fuel price of €1.40 per liter and annual mileage of 80,000 km. Subtracting the monthly app fees of €5.99 from this, annual savings of €2,168.12 per vehicle remain. Low-wear driving also reduces maintenance costs.

Companies that want to lower their fuel costs have to follow vehicle consumption meticulously, a job that creates its own costs: In one Italian transportation company, one employee needs 3 minutes per vehicle per day to manually record tank levels. In 30 working days, this time amounts to a total of 1 hour and 30 minutes per vehicle per month. With an hourly wage of €10.00, the monthly costs are €15.00 per vehicle. Extrapolating to a fleet of 40 vehicles as currently equipped, they come to €600.00 per month and €7,200 per year. This process can be carried out more efficiently using continual digital monitoring of fuel consumption: By using Openmatics' Fuel Consumption service which costs a monthly fee of €2.99 per vehicle, the costs have been significantly reduced; they have fallen by €5,764.80 to €1,435.20 per year, the cost of the app.

Examples: Documenting and archiving digital tachograph data
Trucking companies are required by law to document and archive the data from the digital tachographs in their vehicles regularly. But the trucks don't always make it back to the company grounds in the expected time frame, or someone forgets to read off the data. The result is significant penalties. Manually downloading the data from the mass storage and the digital tachograph's driver card is also time-consuming and costly. It usually takes 30 minutes; estimating an hourly wage of €15.00 for the necessary on-site employee yields a monthly cost of €7.50 per vehicle. For a fleet of 100 vehicles this adds up to €750.00 per month. Using the DigiTacho Download app which can be subscribed from Openmatics, these costs can be optimized and penalties avoided. The app culls the data completely automatically and independent of the vehicle's current location according to the legally prescribed cycles and makes them available on the portal for further archiving. The app costs are €5.99 per month. That saves €1.51 per vehicle per month, meaning €1,812.00 per year with 100 vehicles, plus the savings on penalties.

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ZF is a world-leader automotive supplier for driveline and chassis technology with 121 production companies in 27 countries. With its workforce of approximately 72,000 employees, the ZF Group generated sales of EUR 15.5 billion in 2011. In order to continue its success with innovative products into the future, ZF invests about five percent of its annual revenue (2011: 754 million euros) in research and development.

Openmatics is a subsidiary of ZF registered in Pilsen in the Czech Republic. The company develops and operates a flexible, extensible, open, and independent platform through which services are offered in the form of apps–both Openmatics' own apps and third-party apps.

For further information visit: **www.openmatics.com**