

## German Premiere:

# Globalmatix Telematics Solution for xTCU Telematics Interface – the New Dimension for the Fleet Management of the Future

- Car to Cloud to Company data transmission and analysis with artificial intelligence
- New perspectives and potential for non-brand-specific fleet management
- Maximum data security thanks to proprietary 4G/5G wireless network and encryption technology
- Detects minor damage and provides a damage report incl. the amount and cost of damage
- Can be used wherever data has to be transmitted and analyzed

Shared mobility is one of the major trends of future mobility, particularly in urban regions. Large fleet operators, such as rental car and car sharing companies, also see enormous growth potential in this area. However, an essential prerequisite for this is continual, precise knowledge not only of the location of every individual vehicle, but also of that vehicle's overall technical condition. The medium-term goal of stationless and contactless fleet management needs new real-time diagnostics and reporting technologies for each vehicle in use. With around 255,000 rental and car sharing vehicles in Germany, "Car to Cloud to Company" will be a critical technology when it comes to efficient and inexpensive fleet deployment. This is why Globalmatix AG, a subsidiary of Softing AG, Munich/Haar, has developed an innovative telematics solution, which, with the help of artificial intelligence, offers the greatest amount of available data and transfer security on the market. Alongside standards such as location information and journey approval via app, the outstanding range of services includes continuous technical diagnosis of the entire vehicle, early detection of impending defects, as well as the detection of minor damage and – with the help of artificial intelligence – the reporting thereof in a damage report including a calculation of the cost of the damage. Thanks to individual data acquisition and reporting tailored to the needs of every particular fleet operator, the system can even be used for commercial vehicles, public transport systems, and in autonomous driving. Globalmatix CEO, Alois Widmann: "The very high volume of detailed vehicle data for all brands with high resolution enables digital analysis and use cases that, in the past, simply weren't possible."

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The xTCU Gateway is a 4G/LTE/5G CAN data logger and GPS telematics interface specially developed for Car to Cloud to Company use cases. It is smaller than a smartphone and can be installed in any vehicle in just a few minutes, thus enabling the acquisition of OBD data or diagnostic data from the ECUs. The telematics box certified according to CE, eMark and RED in the EU enables access to a wide range of vehicle data in rich quality – regardless of the vehicle brand. With it, Globalmatix offers a previously unreached level of security against unauthorized access by third parties with its innovative encryption technology and proprietary 4G/LTE/5G wireless network.

In other words, Globalmatix xTCU can acquire and analyze virtually all data measured by the vehicle's ECUs, supplemented by state-of-the-art GPS tracking, and transmit the information to the vehicle operator "over the air" almost in real time. With the help of artificial intelligence in the Big Data Cloud, a qualified analysis of vehicle data, events and changes to the ideal state is now possible for the first time and can be sent to the vehicle management system – in as detailed a form as the fleet operator desires.

## **Areas of Implementation (Selection):**

**Fleet operators, such as rental car, subscription and car sharing companies,** receive information on the following, almost in real time:

- the technical condition of the vehicle (vehicle diagnostics),
- the functional and performance capability of the battery incl. advance warning in the case of diminishing performance,
- the tire pressure (if the air pressure is too low, this significantly increases tire wear),
- the current tank content or battery charge level in the case of e-vehicles,
- the detection and analysis of minor damage (see explanation below),
- necessary maintenance measures (predictive maintenance) to avoid later damage,
- location of the vehicle as well as route and distance covered by the last user (electronic logbook),
- theft detection and vehicle location,
- current vehicle usage data (e.g. mileage, technical vehicle condition and service requirements),
- provision of an electronic vehicle résumé for optimal fleet management with usage and maintenance analyses as well as a digital valuation report for resale,
- the time in calendar days and mileage until the next maintenance and inspection.

**The xTCU also offers "over the air" bidirectional data transmission for:**

- Keyless2Go vehicle access for the designated user (smartphone app),
- remote vehicle maintenance and upkeep,
- automatic disposition and data link with the booked user.

Globalmatix creates a digital vehicle résumé (CarCV), which can be used when it comes to reselling the vehicle as it provides a comprehensive overview for valuation as well as buyer information.

## **Detecting Minor Damage**

Up to 90% of all minor accidents are not discovered when rental cars are returned as the car bumper has sprung back into its original state and position. This is prob-

lematic as this area can be subject to quite considerable damage. The xTCU interface detects this damage and, using the software developed by Globalmatix partner Spearhead AG, Zurich, provides an individual damage report based on the vehicle model incl. an estimate of the costs of the damage within seconds. Millions of pieces of historic and recent accident and assessor data from the Stuttgart-based expert organization DEKRA SE provide the basis for this.

Cees van Dijk, CEO of Spearhead AG, Zurich: "Globalmatix, with its highly sensitive telematics box, is the first company to be able to deliver the extensive volume of data we need for digital accident analysis to our cloud system in real time."

## **The benefits for rental car and car sharing companies are:**

- digital recording, classification and processing of the damage,
- digitalization of the damage report (previously several days were required, now in real time),
- correct assignment of the damage to the party responsible and transparent, fair settlement of recovery costs,
- millions of euros saved (depending on the size of the fleet) with clear, unambiguous identification of the party responsible,
- savings from assessor costs that are not necessary.

The Globalmatix telematics solution thus offers a reliable basis for the stationless and contactless use of rental and car sharing vehicles. The detailed recording of the current condition of a particular vehicle before it is next rented out saves the otherwise necessary inspection at a station, and thus additional personnel costs, without jeopardizing the level of quality that customers expect today. At the same time, this helps reduce the idle time of rental cars.

The companies see great potential for cost savings in the future, particularly in contactless lessor-lessee management, while at the same time improving customer service. The xTCU telematics interface is the key to achieving these goals.

## **Successful Premiere with Enterprise/Switzerland: Millions to be Saved**

Enterprise in Switzerland was the first rental car company to carry out an extensive test run with Globalmatix; in June 2021, they concluded a long-term contract on the use of the telematics interface. After an evaluation of the results, the outcome is convincing in several areas: "Our major digital challenge is detecting and settling minor damage," says Marco Venturini, CEO of Enterprise Switzerland. "Previous solutions based on expert opinions were simply too late, too time-consuming and too expensive. The Globalmatix telematics solution, in conjunction with the MSS Holding AG software customized to suit rental car management, is a great help in settling these cases of minor damage and at the same time implementing vehicle diagnostics for all our brands."

If you take a look at the statistics, you will see that a rental car has four incidences of minor damage a year on average, with repairs totaling around EUR 6,000. In comparison, the costs for the xTCU Gateway, the installation and the annual telematics costs constitute only around one tenth of the repair costs not chargeable by the company. In the case of the fleet sizes of rental and car sharing companies, this represents millions in saved costs every year.

To make these services possible, Globalmatix has not only engaged in a partnership with Spearhead AG, Zurich, for the diagnosis and assessment of minor damage. A further partner is MSS Holding AG, Zurich, a comprehensive mobility provider, as well

as the licensees Enterprise, National and Alamo in Switzerland. This is where an extensive “Digital Connected Car” concept was developed as a management platform for vehicle fleets.

There are currently four telematics applications in use which are of great significance for lessors and operators of passenger car and van fleets:

- remote vehicle diagnostics and predictive maintenance,
- accident detection and automatic claims handling,
- complete résumé file (CarCV) for vehicles,
- keyless door opening for rental vehicles.

Andreas Buhl, President of MSS Holding AG: “The multi-brand capability, the modular and tailor-made applications for all vehicles over the xTCU interface, the high data resolution as well as the extent of applications over only one box were decisive in our awarding the contract to Globalmatix. By using the Globalmatix telematics solution, we have established the basis for digitizing our Connected Car concept. This will enable us to simplify complex return processes in a customer-friendly way and make them more cost-effective. Creating a résumé increases the resale value of our vehicles and facilitates marketing before the vehicle is returned. Furthermore, keyless access to the vehicle allows us to put rental on the road.”

## **Use in Car Insurance Companies**

The individualization of policy offers does not stop at vehicle insurance. In the form of Vario tariffs, insurance companies already offer tariffs that take into account the individual driving style of the person insured. Here too, the xTCU Gateway is the appropriate interface between the driver, vehicle and insurance company. By combining GPS road data and information on the driver’s individual driving behavior, it is possible to create predictable driving profiles that can then be used in a scoring model to evaluate defensive, sporty or aggressive driving behavior. According to the scaling, car insurance companies will be able to create individual offers in the future that not only evaluate the vehicle, but also the driving style. On the one hand, knowing there is constant digital monitoring could well be an educational measure, particularly for new drivers, and, on the other, it could also mean more favorable rates if they drive in a traffic-friendly and considerate way.

## **Use in Fleet Management**

Alois Widmann, CEO Globalmatix: “We have developed a smart telematics box to be used for several brands in large fleets. It is not only easy and quick to install, but also records diagnostic signals at extremely high sampling rates and combines them with telematics data. From everywhere in the world, the data acquired is transferred to and analyzed in the Big Data Cloud of our partner Spearhead in real time via mobile radio. The fleet manager can act immediately on the basis of these results. This innovative telematics solution with just one box makes sure that the ongoing total costs for large fleets are significantly reduced.”

This means that the Globalmatix telematics solution can be used all over the world with a smartphone or web app for practically all fleet sizes in the areas passenger cars, commercial vehicles and public transport as a telematics gateway with GPS location detection, geofence, GPS odometer, theft detection, driver ID, driver profile, digital logbook separating private and business trips, and vehicle diagnostic data, incl. remote vehicle maintenance using OBD/UDS. The xTCU can deliver all data required by commercial fleet management today or process that data to suit customer requirements via the Big Data Cloud.

## **Areas of Application with Special Tasks and Objectives (Selection):**

Through the ability to program and query individual requirements, the xTCU interface has already proved itself in special test operations.

### **Predictive Maintenance**

A German city is using the xTCU in its public transport buses after having frequent problems with defective door openings and the failure of the air conditioning systems as an early warning system for predictive maintenance.

### **Prototype Tests**

An automotive company equips its prototypes with a xTCU box to obtain all relevant data from the vehicles and drivers in real time as part of the pre-series test series. Regardless of which part of the world cars are driving in, the engineers both on site and in the development center receive all the data they require. Thanks to the possibility of bidirectional communication, the latest technical developments can be transmitted "over the air" at any time from the engineering center to a test vehicle. This saves time and costs.

### **Motor Racing**

The xTCU interface is probably the most cost-effective solution for use in racing vehicles. As a telematics gateway and data logger, 50 standardized measured variables can be acquired and transmitted in real time thanks to high sampling rates. Even technical modifications that are not permitted, e.g. to the engine, can be quickly identified by the race organizers.

### **High-Resolution Pothole Detection**

Due to the high sensitivity in the detection of impacts, loads or stress on the chassis with a 6-axis inertial sensor, it is possible, in conjunction with artificial intelligence and self-improving (ML) analytics, to measure vibrations caused by potholes and record them in maps. In this way, authorities can make qualitative assessments about the condition of the roads simply by driving on them.

### **Setup and Operation of a Campus 5G Network for Autonomous Driving**

Globalmatix is a supplier in an industrial research project tasked with planning, extending and operating a partly public industrial area for the autonomous driving of electric buses in a non-public 5G mobile network. Here, the xTCU is used as a 5G CAN telematics and data logger gateway with GPS, geofencing and bus diagnostics in combination with the professional SMT measuring device from Softing. The project has been given public funding.

### **Monitoring of Electric Emergency Police Vehicles**

Globalmatix has been tasked with the remote maintenance and upkeep of a city's Opel Ampera-e emergency vehicles. As telematics gateway, the xTCU provides data on the logbook and vehicle diagnostics with "Status of Charge" (SoH) and "Status of Health" (StH).

### **Battery Tester**

The Globalmatix telematics solution monitors all vehicle starting sequences, records these with up to 500 Hz and analyzes them in the cloud with AI technology as diagnostic feedback or real-time failure analysis. This enables battery manufacturers, for example, to obtain a precise overview in practical use.

Alois Widmann: "Even this small selection of individualized digital solutions in data acquisition, transmission, analysis using artificial intelligence in a Big Data

# Press Release

Vaduz, Liechtenstein, October 7, 2021



Cloud and global real-time transmission to the customer shows that the xTCU would currently seem to be the most comprehensive telematics interface on the market. xTCU can be used virtually everywhere, not just in the mobility sector, where data needs to be collected and analyzed.”

## Technical Data on Globalmatix xTCU

### TECHNICAL SPECIFICATION

<b>Physical Specification</b>		Storage	-40 °C to +85 °C
Dimension	L 146, W 50, H 19 mm	Humidity	MSL Level 1: 85% RH@30 °C
Weight	90 g	<b>Internal Battery</b>	
Material	Polycarbonate UL-94 V0	Capacity	Li-Ion 800 mAh
Protection	IP30 sealed	Operation	voltage 3.7 V
<b>Electrical Specification</b>		<b>CPU Specification</b>	
Operation	12 VDC or 24 VDC (7-32 VDC)	MCU Module	STM32F4 32bit RISC
Full	500 mA at 12 V	Core	ARM Cortex-M4 with FPU
4G/standby/sleep	120/50/4 mA at 12 V	Operation	180 MHz, 225 DMIPS
<b>Environment Specification</b>		Flash/RAM	2 MB/8MB
Operation	-30 °C to +85 °C		
<b>4G/LTE Mobile GSM Network</b>		Auto-calibration	yes
4G/LTE Module	CAT-1, 10 Mbit/sec (downlink), 5 Mbit/sec (uplink), fallback 3G/2G	Sensitivity	acceleration full scale range of $\pm 2/\pm 4/\pm 8/\pm 16g$ , angular rate range of $\pm 125/\pm 250/\pm 500/\pm 1000/\pm 2000$ dps
4G Penta-Band	1, 3, 8, 20, 28 (700/800/900/1800/2100 MHz)	<b>Geofencing</b>	
3G Dual-Band	UMTS/HSPA+ Dual-Band 1, 8 (900/2100 MHz)	Geofence event	rectangular or circular objects, up to 50 objects, stored and handled on the device events, drive-in/-out
2G Dual-Band	GSM Dual-Band 900/1800 MHz, GPRS Class-12	<b>CAN</b>	
Embedded SIM	MMF2 SIM applet, release 8 LTE	CAN module	High-speed CAN transceiver, ISO 11898 and SAE J1939
Approvals	CE, R&TTE, GCF, FCC, PTCRB, UC, UL	CAN Speed	up to 500 kBit/sec, auto-sensing
Antenna	internal, penta-band, high gain	Protection	automotive fault protected, fail-safe
<b>Global Navigation Satellite System</b>		CAN transceiver	2
Coverage	GPS, Galileo, Glonass, BeiDou	<b>Diagnostic Communication</b>	
Channels	72, concurrent GNSS: 3	Protocols	OBD, KWP 2000 and UDS on K-Line and CAN (VW TP 2.0 or ISO TP)
Navigation	-167 dBm sensitivity	<b>NFC</b>	
TTFF	hot 1s, cold 26s	NFC module	13.56 MHz, 64 kB EEPROM
Multi-GNSS	yes, AssistNow	Indicator	LED, buzzer
Pre-configured	GPS event of 25° angle change, 120 sec time, current speed x 4	Antenna	internal, high gain
Antenna	internal, ceramic, high gain		
<b>Inertial forces</b>			
Inertia module	3D Accelerometer and 3-axis Gyroscope		
<b>Security and functional Safety</b>		<b>Automotive Specifications</b>	
CAN lock	lock to read/write to/from CAN, while vehicle is moving	Specifications	CAN (ISO 11898 and SAE J1939), K-Line (ISO 14230), TP 2.0 (SAE J2819), ISO TP (ISO 15765), CARB (ISO 9141-2), OBD (ISO 15031, SAE J1979), KWP 2000 (ISO 14230), UDS (ISO 14299), OBD Connector (SAE J1962)
Car2Cloud™	session based, double authentication from car to chip and chip to cloud, eSIMbased security anchor, patent pending	<b>IoT Transport Protocol</b>	
FOTA	digital-signed and verified firmware updates of xTCU®	Interconnection	Message Queuing Telemetry Transport (MQTT) protocol (ISO/IEC 20922) to connect platforms for data exchange
Config OTA	digital-signed and verified configuration/programming of xTCU®	<b>Installation</b>	
<b>Product Certifications</b>		Mounting	wall-mounting, adhesive or tie-wrap
Europe	E-Mark, CE, RED	Installation	under dashboard
America	FCC, PTCRB, CE	Easy install	by OBD-cable on OBD to 12-pin Molex
4G/LTE	3GPP compliance	Tamper-safe	by 12-wire cable behind OBD connector to 12-pin Molex
Embedded SIM	ETSI 102671		

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Globalmatix AG is a 100% subsidiary of Softing AG. In Globalmatix we are a mobile M2M/IoT operator and provide next gen telematics vehicle and machine data services. For exchanging digital data, we have developed a secured by design connected Car2Cloud™ Platform as a Service (PaaS). Our products and services enable our customers, OEM, Tier-1 and Telematics Solution Provider, to process telematic services into remote diagnostic and prognostic solutions. We deliver more, better, consistent and new data signals with Security by Design.



## **About Globalmatix AG**

Globalmatix AG, a subsidiary of the listed company Softing AG, Munich/Haar, is a Mobile Virtual Network Operator (MVNO) headquartered in Vaduz, Liechtenstein, which offers mobile data communication for vehicles and machines of all kinds in Europe and North America, as needed in the areas of (partially) autonomous driving as well as in other “Connected Car Services” of vehicles and machines. The company uses its mobile network license to operate its own telecommunications and telematics platform. Agreements with leading mobile network operators ensure that Globalmatix has access to the best networks worldwide. This mobile data communication is enabled with the company's own eSIM (embedded SIM chip). This is how CANbus-based diagnostic data from mixed-brand vehicles and machines is made available in real time to the vehicle and machine fleet manager over secure cloud systems.

Globalmatix is headquartered in Vaduz, Liechtenstein, and supplies vehicle manufacturers and telematics providers worldwide with an innovative 4G/LTE/5G CAN diagnostic logger and next-generation GPS telematics gateway for GPS positioning, tracking and remote vehicle diagnostics. This is needed for use in the areas “Connected Car”, (partially) autonomous driving, predictive vehicle diagnostics and the management of fleets of all sizes, makes and models. The smart Car to Cloud to Company service is safeguarded against unauthorized access with a patented security process by “Security by Design” and certified to the highest OEM requirements.

For further information go to [www.globalmatix.com](http://www.globalmatix.com)