



Intelligent Urban Transport Systems



## New products, services and technologies at IT-TRANS 2018

### Part 5: Communications technologies

*Karlsruhe/Brussels, 08 February 2018.* Today's public transport passengers expect mobile and stable internet service. Free WiFi has become the norm in long distance bus and train travel and is also being increasingly introduced in local public transport. Flexible and reliable broadband connectivity and a good network infrastructure are the solid ground for implementing communications requirement such as passenger WiFi and infotainment, condition monitoring for vehicles or passenger information systems. Latest trends in communications technologies for public transport will be featured at **IT-TRANS 2018**. Around 250 exhibitors from more than 30 countries will present their products and solutions at the Karlsruhe Trade Fair Centre. The sixth edition of **IT-TRANS**, international conference and exhibition on intelligent urban transport, will take place from 6 to 8 March 2018.

### NetModule: Single-source supplier for connectivity in public transport

NetModule from Bern/Switzerland offers various powerful systems supporting wireless data and voice communication in mobile environments. They consist of certified wireless routers as core products, different interior and exterior antennas, certified cabling as well as additional WLAN access points if needed. The solutions enable various applications such as passenger WiFi, passenger infotainment, digital signage, electronic ticketing as well as condition monitoring, fleet management and comprehensive access control.

Particular attention is given to the possibilities to fulfill EU-mandated barrier-free accessibility to vehicles and stations, and to other requirements such as live-tracking of vehicles, autonomous passenger counting and interactive control by the passenger's smartphone (e.g. request to stop, boarding/exit aid).

NetModule's vehicle router series are designed for mobile communication in buses, trams and in lite rails. These routers comply with the industry standard 72/245/EWG (e1) which is typically required for those appliances. The routers support the latest WAN/LAN technologies (such as LTE Advanced, WiFi IEEE802.11ac) and integrate special memory for data logging and multimedia content. In addition they offer highly-available connectivity with seamless handover between the broadband links making use of the Mobile IP protocol.

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- The robust NB1800 routers are designed for stationary systems such as ticket machines, passenger WiFi and digital signage at stations, and sophisticated security applications such as access control. Customers can perform their own specific applications on the device, too.
- The powerful NB2800 routers are designed for the use in buses, where they enable data-intensive applications such as passenger WiFi, passenger infotainment or driver communication, condition monitoring, vehicle live-tracking. To provide these applications the devices integrate numerous interfaces for on-board electronics. The NB3800 series enable the same applications but in lite rails and trams.
- In addition NetModule offers routers for price-sensitive applications: the NB2701 router, as an 'economy' version of the NB2800, offers wireless access to Internet in buses, and also allows applications such as remote access, data collection and passenger information.
- The NB800-E series with e1-certification enable simple connectivity applications such as e-ticketing or access point for the websites of the local provider of public passenger transport services. All systems integrate a 3G/4G to Ethernet gateway and a powerful VPN protocol suite for two channels.

### **WLAN-Partner: Open routers for reliable connectivity**

WLAN-Partner, the Swiss specialist for local and mobile wifi solutions, is now offering its own WLP2800 and WLP3800 open routers for trains, trams, buses and vessels. These can be combined with the WLAN-Partner fleet management system (FCM) to provide transport companies with a comprehensive solution for stable, real-time vehicle-to-land connections. Up to four mobile radio networks can be used simultaneously in order to achieve the highest possible performance and stability. Thanks to the large range of functions on offer, all communications requirements are covered, from condition monitoring for vehicles to passenger information systems and wifi. It is no longer necessary to operate multiple proprietary systems in parallel.

The vehicle routers are configured, managed and controlled conveniently via the cloud using software solutions. A particular highlight is the possibility of dynamic crosslinking, which can be used, for example, for the formation of new train compositions. Depending on the device type, the routers feature up to four modems, which use and aggregate all available capacities on the mobile radio networks. Thanks to LTE Advanced modems, speeds of up to



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several hundred megabits per second can be achieved. These stable, high-performance connections are a must for safety-related applications such as driver communications and video monitoring, as well as for passenger wifi.

### **IPmotion with latest version of router series CAR-A-WAN**

At **IT-TRANS** IPmotion will showcase the latest version of its high end router series CAR-A-WAN available since 2003. The new versions' CPUs will be provided by AMD (G-Series platform). Thus production and support can be guaranteed until 2024. Another advantage concerning this new generation of core units will be the separation of main and auxiliary circuit boards hence adaptations to customer requirements will be easier than ever before. Starting with version 6, IPmotion supports public WiFi solutions for up to 250 users per device, i.e. CAT 6-LTE. With the extensive introduction of CAT 11-LTE this number will eventually increase up to 500 users per device. This capacity is achieved with the aid of IPmotion's patented multipath-multiprovider technology. Industrial storage media, e.g. SSD technology and such like, can be integrated if necessary. The basic version is already equipped with one terabyte in storage space and weights less than one kilogram in the coach-variant.

The new modular system design allows the provisioning of additional interfaces even at small-scale production, paving the way to a disentanglement from conventional legacy systems. Special sensors as well as backwards compatible interfaces may be integrated in customers' projects. This simplifies migration and integration of existing systems towards leaner and more modern system designs.

As of the introduction of version 6 of its CAR-A-WAN series IPmotion has a device at its disposal that combines both the advantages of an industrial router and traditional WiFi access points combined with a TPM crypto chip for the secure generation, utilisation and storing of VPN and system access certificates. The administration of large router fleets is being greatly simplified and also standardised by means of the additional integration of CAP-WAP.

The new platform will be available for both the coach and rail versions of the CAR-A-WAN router series. Each version can be supplied with either one, two (version "Plus") or three (version "Trio") LTE modems. The new CAR-A-WAN rail v6 continues the architecture of the CAR-A-WAN v4 series (solid aluminium housing). The coach variant features an entirely new architecture, though still compatible with previous connectors and fastening elements alike. The new design is still based on solid aluminium for heavy temperature



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deviations may occur in the CAR-AWAN's typical application area. All the aforementioned devices are available with either SMA, QLS or FAKRA connectors (built-to-order)

### **Antonics-ICP: Planar multi-band railway antenna technology**

Antonics-ICP based in Velten/Germany will present a wide range of its planar multi-band railway antenna technology for applications in public transport and BOS at **IT-TRANS** 2018. Special highlights include a railway approved dual-GSM-R-bandstop-filter and a multiband DC-Blocker.

The new dual-GSM-R-bandstop-filter features excellent technical parameters such as extremely high slew rate, return loss and low power losses. Because of the dual design, customers can save space, weight and costs.

The EN 45545-approved multiband DC-blocker ensures potential separation up to 2kV over a high bandwidth of 100 to 6000 MHz and can simultaneously disconnect up to 3 ports from the vehicle potential.

In addition to these novelties, Antonics-ICP will also showcase its latest generation of train and bus antennas as well as the WiFi MIMO 3x3 and 4x4 indoor railway antennas. The latest versions of rail and bus antennas have an integrated sealing lip, which eliminates the previously used sealing O-ring as a separate component. The EN50155 certified MIMO 3x3 and 4x4 indoor railway antennas of the TOP 200 RAIL Indoor series are characterised by an extremely flat design with a height of only 40mm. The main focus of this antenna series is on multi-band applications in conjunction with WLAN 2.4 and 5.8 applications.

### **TRONTEQ Electronic: Rugged ethernet switches for IP networks in vehicles**

For the first time Reutlingen-based TRONTEQ will be presenting its solutions at **IT-TRANS**. The focus is on IP networks for public transport vehicles. With the product family „ROQSTAR“ TRONTEQ offers rugged ethernet switches with M12 connectors that are suitable for shock and vibration requirements of buses and trams. The switches cover a wide range of applications for vehicle manufacturers, public transport operators and authorities. Customers can choose between unmanaged, lite managed, full managed and security managed switches. Additionally, TRONTEQ provides PoE/PoE+ switches in combination with fast or gigabit ethernet switches.



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TRONTEQ will showcase the concept of „expandable“ ethernet switches as a highlight at **IT-TRANS**. The concept is easy and effective: because of long product life cycles of public transport vehicles, authorities and operators are often unsure which new technological challenges they will face five to ten years in the future. To be prepared for future requirements they tend to buy high performance ethernet switches. But that comes with an expense: high acquiring costs. Although only a small portion of the features are used immediately, the high performance switch has to be paid right away. In contrast, the ROQSTAR expandable switch can be upgraded with a new software from unmanaged to lite or full managed according to the customer's needs. A change of hardware is not necessary. The upgrade is performed with a USB dongle or via network and the new features can be used immediately. That means that customers only pay for functions when they really need them. Thus, initial and total acquiring costs are cut and customers still have the flexibility to react to new requirements.

The robust M12 ethernet switch ROQSTAR Security is a multifunctional switch with integrated NAT and Firewall functions allowing the implementation of important network features like IBIS-IP traction on trams or modern e-ticketing solutions on buses. Thanks to the NAT/Firewall features services with sensitive data like public WiFi or cashless payments can be implemented quite easily. The NAT functionality makes it possible to hide certain IP devices from the rest of the network. Additionally, the firewall can be used to reject or drop all or certain incoming inquires making the network more secure.

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**IT-TRANS**, International Conference and Exhibition on Intelligent Urban Transport Systems, celebrated its debut in Karlsruhe in 2008. Within a short period, the biennial event was established as the most important platform for the industry. It is organised by the International Association of Public Transport (UITP) and Karlsruher Messe- und Kongress GmbH. **IT-TRANS** 2018 is under the patronage of Violeta Bulc, EU Commissioner for Traffic and Transport and is supported by the Association of German Transport Companies (VDV), the Italian Transport Association (ASSTRA), ITS Spain and the Polish Chamber of Railway. **IT-TRANS** is aimed at all players in the public transport sector, and in particular at decision-makers from transportation companies and representatives of the private sector, government and professional



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associations. At seminars, workshops and presentations held during the three-day conference, international speakers will discuss innovations and how to practically implement IT solutions for public transport. About 250 international companies and service providers will present their latest products at the exhibition.

The next **IT-TRANS** will take place at the Karlsruhe Trade Fair Centre from 6 to 8 March 2018.

**More information:** [www.it-trans.org](http://www.it-trans.org) and [www.twitter.com/IT\\_TRANS](https://www.twitter.com/IT_TRANS) and <https://www.facebook.com/ittrans.org/>

### Photos and captions:

#### Netmodule NB2800 router (Credit: Netmodule AG)

The powerful NB2800 routers from Netmodule are designed for the use in buses, where they enable data-intensive applications such as passenger WiFi, passenger infotainment or driver communication, condition monitoring, vehicle live-tracking.

#### Antonics-ICP indoor railway antennas (Credit: Antonics-ICP)

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