

RealTime

Passenger Information Newsletter

June 2017



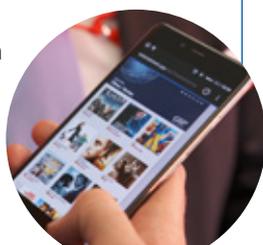
Stay wirelessly in touch with the times

The ability to be online anytime and anywhere is becoming increasingly important to many people. The desire amongst passengers on local transport, from the student to the commuter, to be able to use their smartphone or tablet at all times as a source of information, work tool or media centre, is also high. Following internet access in long-distance transport, attention is now being paid to Wi-Fi access onboard regional trains. More and more tenders stipulate the relevant equipment as a condition and the demand for appropriate technologies from train manufacturers and transport operators is growing rapidly.

The digitalisation of train travel is progressing full steam ahead, along with the race for the best technologies. GSP has decisively influenced this trend from the start, with complete systems that provide everything from one source, from the hardware equipment to the comprehensive entertainment portal. GSP offers the suitable solution in places where the essential LTE supply along the route is not available. The latest release of RealTime gives you information on the latest developments from our Berlin high-tech centre. Since we are also wirelessly kept in the loop!

Wi-Fi for all!

Find out about which solutions GSP offers for regional transport, on page **2**.



MKR & Co.

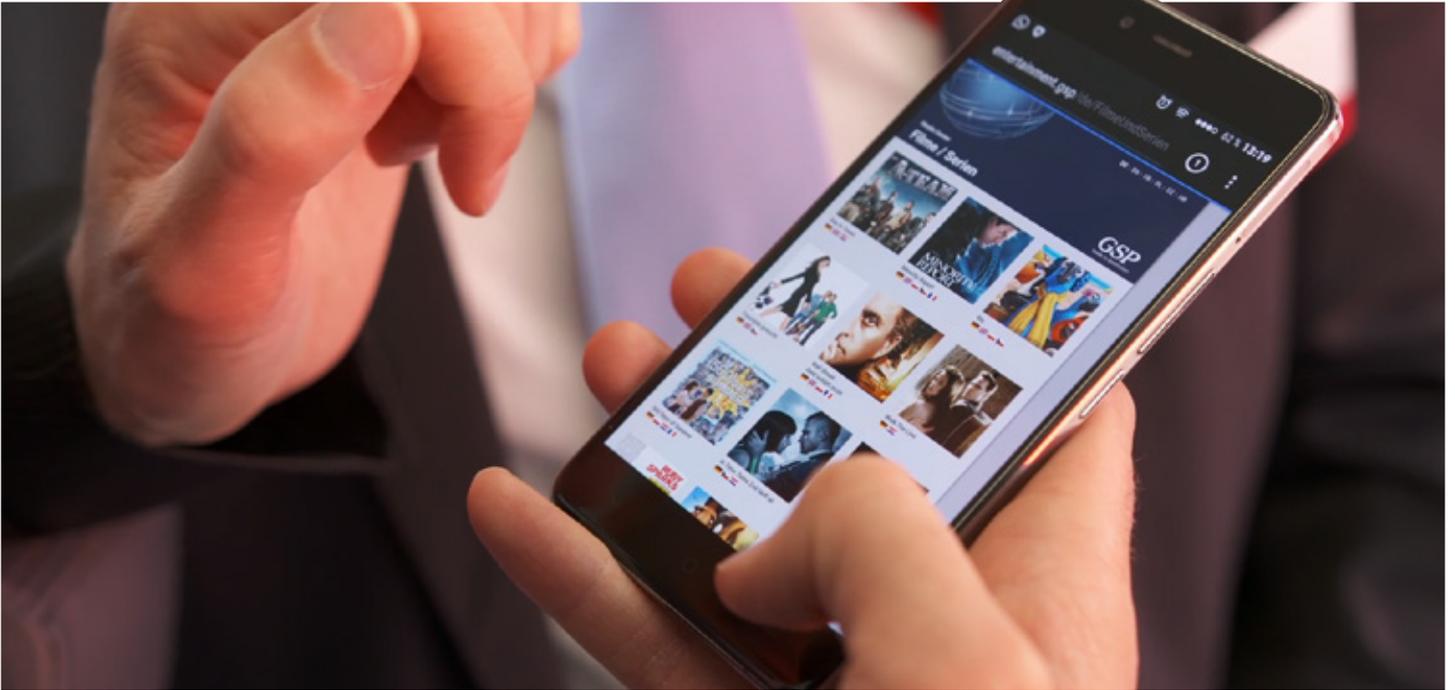
You can find an overview of our products for Wi-Fi in buses and trains on **page 3**.



Full-Service Package

Learn about which services GSP uses to advance your passenger Wi-Fi on **page 4**.





Wi-Fi for all!

Online and offline services for regional transport

Users are ravenous for data and the capacities of the networks are limited: Until recently, a conflict stood in the way of the desire of millions of passengers for uninterrupted internet access in regional transport. However, the call for passenger Wi-Fi is becoming louder, not least from politicians. This is why transport operators are now encouraged to present a suitable solution for providing internet access to passengers for almost every new allocation of track. Thus, the tenders are also formulated to focus on the manufacturers and suppliers to the rail sector. However, what do you do if the LTE coverage in rural areas has many blank spots and the network is overloaded in congested areas because so many users share the bandwidth? If the data stream flows too slowly or constantly fails, the frustration of the passengers is predestined. And this affects many: 2.6 million journeys in German regional transport were recorded in 2016.

Flexible solutions

GSP analyses the specific framework conditions of its customers and proposes tailored solutions. Ralf Felkel, Product Manager for passenger Wi-Fi applications, points out the variety of services that GSP has at its disposal: "We provide a range of models; from the simple router solution for buses and trams to equipping several double-decker trains with internet access and integrated entertainment portal." Customers can also conclude

a service contract with GSP. "Maintaining the firewall and updating the virus protection package is included," said Ralf. "As a provider registered with the Federal Network Agency, we also ensure legal assurance."

Technically speaking, the systems are organised as follows: A multimedia communications computer (MKR-C) bundles the entire content in the GSP Media Center (content server). It also includes the LTE data transfer unit for access to the internet. The Media Centre comprises passenger information as well as entertainment programmes such as films, music, news and magazines, which are available offline on your smartphone or tablet.

The MKR is connected to access points (DFU-AP) via a gigabit network. They are the gateway for the Wi-Fi network that is transmitted through the adjoining carriages. Within the network, users are passed from their respective access point to the server. The advantage to the operator is that no cable routing is required over the couplings of the carriages or through the cladding of the trains. Plus, with this intelligent and cascable wireless network, vehicles made up of several parts can be equipped.

Retrofitting made easy

The issue becomes more complex if recently established tracks are expected to be served with older vehicles and the question

of retrofitting an existing fleet is raised. For those wishing to apply a system that can integrate flexibly into the fleet, they would be well advised to contact GSP: Since the primary focus is that the technology can not only be used to modernise the vehicles, but can also be retrofitted in vehicles purchased at a later date. This increases planning security for future investments.

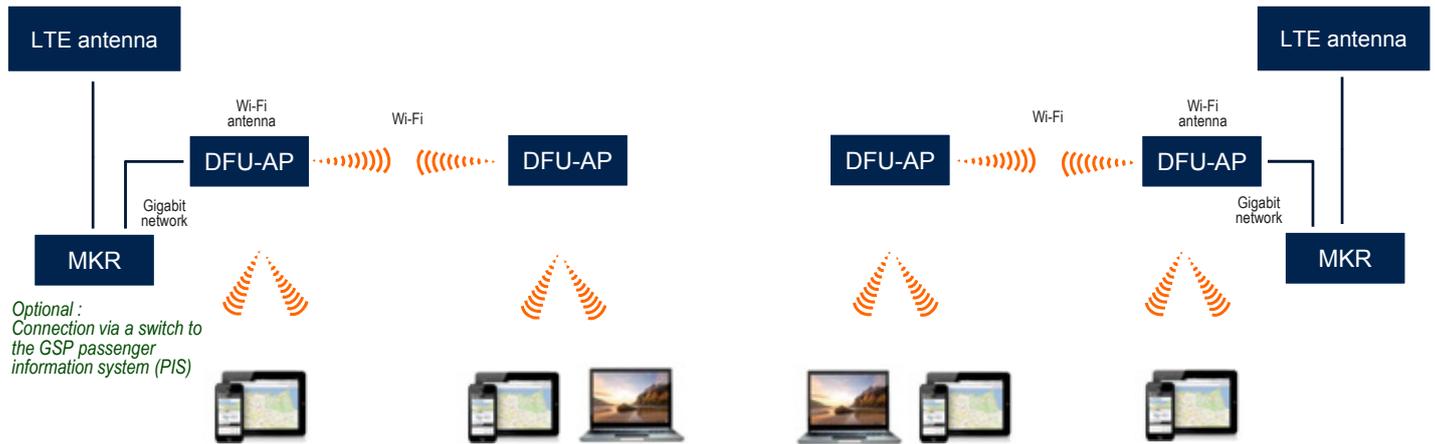
Increased comfort: GSP Media Center

The most advanced technology in the train counts for nothing if the networks along the train tracks are too weak. Particularly in less-populated areas with far-flung transmitter masts, this is still a problem. Until extensive coverage for the mobile internet for the 4G/LTE generation is achieved, GSP recommends combining Wi-Fi access with a content package available offline.



A single system, many options

Powerful GSP components for passenger Wi-Fi



System concept for a wireless network on a 4-part multiple unit as an example

Multimedia communication computer

The multimedia communication computer (MKR) is an on-board computer for applications regarding passenger Wi-Fi. Two variations are possible: The **MKR-R**, which only provides access to the internet, and the **MKR-C** with entertainment options.

GSP Media Centre, passengers can stream information and entertainment services such as films, music and daily media offline. Wireless internet access for passengers is also ensured via the MKR-C. The computer is available in three product variations with up to three integrated LTE modems that support load balancing.

Highlights

- Powerful processor
- Content on SSD, size depending on customer preference up to 1 TB
- Use of different providers and higher bandwidth by load balancing up to three LTE modems
- Individually tailored portal interfaces

Options

- For concluding a service agreement: Data volumes, maintenance and security updates by GSP
- Transfer of real-time passenger information to passenger mobile devices in connection with GSP passenger information system
- Remote maintenance



Multimedia communication computer (MKR)

MKR-R (router)

The MKR-R is focused on direct access to the internet. With this selection, the customer is opting for a simple router solution: Via the integrated LTE modem, an internet connection is established and the passengers provided with Wi-Fi. The computer is available in two product versions with one or two integrated LTE modems for different GSM network operators and supports load balancing.

MKR-C (content)

The MKR-C manages the passenger entertainment offerings. Via a content server, the

Components

DFU-AP (access point)

Access points provide a seamless and quick data flow in the train. In this way, all passengers can enjoy multimedia content and even films at the same time and in high quality.

Advantages

- Set up of a cascading wireless network
- Cable routings across the couplings of the carriages are not required
- Powerful access point with up to 1 Gbit/s transfer speed
- Efficient even when subject to high levels of demand from up to 500 users

LTE antenna

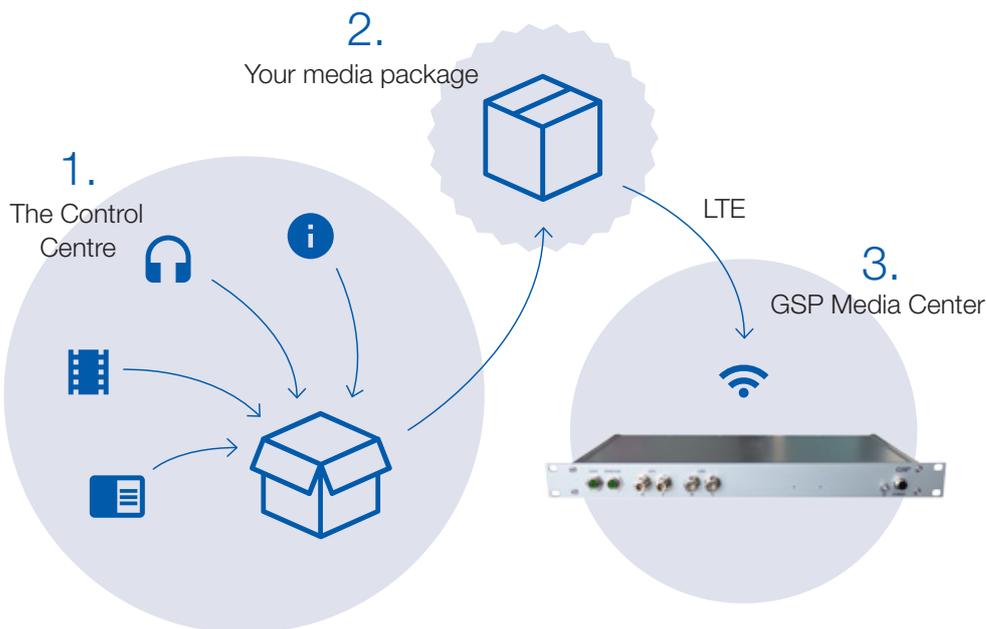
MIMO combi-vehicle antennas on the trains manage the connection across the country to the different LTE network providers.

Advantage

- Improved quality and data rate through MIMO (Multiple Input Multiple Output): Several signals for receiving data improve quality and data rate of wireless connections.

GSP Full-Service Package

Service for your passenger Wi-Fi



This is how the GSP Media Centre stays up to date

Would you like to offer your passengers increased levels of comfort and entertainment plus passenger Wi-Fi? In addition to our system, GSP provides a comprehensive, customised media package:

Together with our partners, we supply you with local and national newspapers and magazines on a daily basis. A mix of films, TV shows, music and audio books are also included depending on customer preferences and prepared digitally in a control centre as a package. This media package is transferred automatically every day to the MKR-C media server via LTE. This takes place at set times outside of your operating hours so that the full LTE bandwidth is always available to your passengers.

GSP provides the opportunity of adapting the user interfaces of the GSP Media Center to your requirements and corporate

design guidelines. In this way, you can implement your website or operator information as a feature of the main menu.

With GSP, you have a partner on your side that not only provides complete systems for operating your passenger Wi-Fi but also offers tailored services. These include regular statistical assessments and performing software and security updates. To add the final touches to this full-service package, GSP supplies the SIM cards required for the network operators for all MKR systems for your LTE data collections, including appropriate data volumes and their management.

Wherever you are bound, let us entertain you!

The basic media package includes the following:

- 10 films
- 9 TV show episodes
- 15 audio books
- 15 current music albums
- 2 daily newspapers, to be agreed with you on a regional basis

GSP Train

Take a look at our virtual GSP train: Scan the QR code or open the website in your browser: www.gsp-berlin.de/train-showroom-en



GSP

leads to destination

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Feedback on RealTime?

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