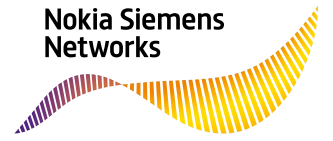


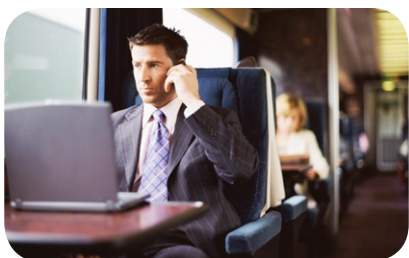
Nokia Siemens
Networks



Onboard broadband
for more profitable
train journeys

Onboard broadband for more profitable train journeys

Nokia Siemens Networks WLAN on Trains brings broadband on board, making train travel more enjoyable and productive for passengers, and offering additional revenue and better train management opportunities for the train operator.



A key technology pillar of the Nokia Siemens Networks Railway Communications Solution, WLAN on Trains brings the mobile broadband experience onto trains. Train operators can now offer their passengers a wide range of Internet-based entertainment services, from online gaming to video streaming, as well as broadband access to the Internet, which is a powerful draw for high-value business customers.

WLAN on Trains makes traveling more enjoyable and more productive, raising rail's competitiveness against road and air travel. For rail operators this means more passengers and more revenue, from the possibility of passengers upgrading to first class to get the service, and by providing the entertainment services themselves.

Even better, WLAN on Trains can also be used to boost the efficiency of train operations. Real-time transmission of data from train systems, such as air-conditioning, video surveillance and door systems, help to improve train management. And staff on the train can use the system to access useful and up-to-date company and public information via the Internet. All of which helps to reduce operational costs, improve security and increase safety.

How the system works

The WLAN broadband experience will already be familiar to many passengers that have used public WLAN hotspots in hotels, cafes and at railway stations. The Nokia Siemens Networks WLAN on Trains solution extends the technology to high-speed train travel.

The solution comprises three main elements – an onboard infrastructure of server and communication network, a ground-to-train connection and an on-land management center.

Managing onboard data traffic

Passengers access services through the Internet Onboard Server, which also handles all incoming and outgoing data traffic between train and ground. The 19-inch rack-mounted server protects components against unauthorized access and comes with shielding to guard against electro-magnetic interference.

All other carriages are connected to the server through a wireless distribution system (WDS) or via a wired Ethernet system.

From ground to train

The second essential element of the solution is the ground-to-train communications system, or backhaul. Different backhauls are often used to guarantee the best connection. An antenna appropriate for each backhaul is placed on the roof of each train-set to connect to the Internet Onboard Server inside the train.

Nokia Siemens Networks will find the right connection for each train operator's project, taking account of factors such as the need to cover several countries, the length of track and the number of passengers.

Several different backhaul networks are typically connected at the same time, with preferences set when more than one route is available. For example, railway station WLAN hotspots may offer preferred connectivity when available, while satellite connectivity is used when traveling through the countryside, with UMTS or GPRS as a fallback when there is no satellite connection.

Management Center

The onboard equipment is connected to the on-land Management Center. The Management Center handles authentication and enables remote operation of the service across the entire train fleet. The Center includes performance tools to generate real-time usage and operating statistics. System upgrades or fault corrections that do not involve hardware replacements can also be carried out remotely.

Your partner in rail communications

Nokia Siemens Networks is a world leader in communications systems and serves fixed and mobile operators, as well as specific segments such as transportation.

Nokia Siemens Networks is a pioneer of GSM-R technology, complemented by on-board WLAN to bring all the benefits of broadband communications to both train operators and their customers.

Our comprehensive Railway Communications Solution incorporates a growing range of applications focused on both train and infrastructure operations. The focus throughout is always to help railway companies achieve their business aims for track network coverage, rail traffic safety and growth in passenger and cargo traffic.