



## Reliable and Cost-efficient Wireless Broadband Connectivity for Rolling Stock Applications

Trains, subways, and other rolling stock applications require reliable data connections for uninterrupted vehicle-to-land communications. Previously, it has been pretty much impossible to achieve this with satisfactory results, and the attempts have been time-consuming and expensive. Now Goodmill Systems Ltd. has made remarkable connectivity and cost-efficient implementation possible by introducing their revolutionary Goodmill w24e-R multi-channel router solution.

### Difficult conditions and slow switching between networks made uninterrupted connectivity impossible

All rolling stock installations need a reliable train-to-land data connection. Up until now, uninterrupted data flow has been impossible to achieve due to difficult terrain, slow switching between networks, and complicated cabling conditions. And since usually wide coverage is required for these applications, expansion and maintenance have been costly and time-consuming. Therefore a better solution was needed.

### Goodmill w24e-R changed the paradigm of broadband connectivity

Goodmill w24e-R was designed for rolling stock installations where uninterrupted connectivity is an absolute necessity. By taking this solution into use, various rolling stock organizations can have reliable, fast, cost-efficient, and secure broadband connection for their train-to-land communications. This is achieved by utilizing several existing mobile broadband data networks and combining them into one extremely reliable networking system.

### Amazing possibilities with the revolutionary broadband concept

With Goodmill w24e-R, rolling stock organizations can improve their security, passenger safety, and services as well as save implementation costs. Furthermore, it offers a new, innovative way to make money through a controlled advertising medium unhindered by outside advertising. Goodmill w24e-R brings many practical uses:

- Enable passengers to use reliable internet for work, studying or fun
- Promote your own services and special offers to passengers using an on-board Web portal

- Improve customer service and satisfaction with real-time e-ticketing and payments
- Increase safety on board with Live-View Video Surveillance
- Keep passenger information up to date with the Online PIS Systems
- Increase efficiency with Train Diagnostics
- Ensure better asset usage and lower costs with efficient fleet management

### Main benefits for the rolling stock organization

- Saves time, money, and the environment by eliminating the need to build dedicated networks for large coverage
- Ensures extremely wide coverage, even in remote areas, thanks to the versatile broadband capability
- Improves fleet management
- Increases passenger safety with better security and surveillance
- Improves customer satisfaction by offering better and more reliable services for passengers, such as passenger WiFi and Infotainment
- Brings additional revenue from more efficient location-based advertising

### Easy to take into use

Since Goodmill w24e-R is a plug-and-play system, it is very easy to take into use. Scaling up is also very easy. When a new device is about to be installed in the field, its identity is first created in the system database. Devices are then configured and an encrypted installation key is created for each new device.

When an installation key is assigned to a new device, it establishes a secure management channel to the server and downloads the rest of the configuration. If a device needs to be replaced, the correct configuration can easily be downloaded from the database. All faults and events are always sent back to the management system and stored for further use. After the registration, the device reports all status and fault events with a time stamp to the server database for further use.

All devices are remotely managed using the Goodmill Network Manager software. The Management platform is Linux-based, and one server can handle several thousands of devices.

### Main features

- True broadband data connection using several commercial networks
- Reduces data cabling between cars
- Fast switching between networks due to the pre-validated alternative route
- VPN for data security, interoperable with central site Cisco/Juniper
- Easy and fast to deploy widely with the remote management system
- Separate firewalls for all WAN links for maximum data integrity



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