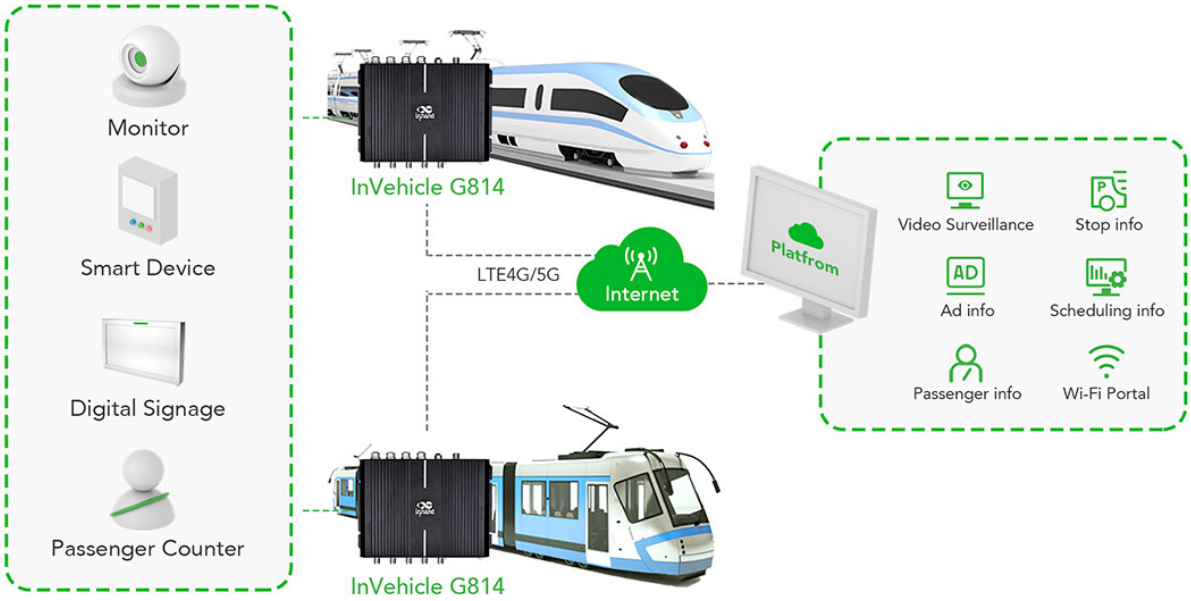
# Connectivity of Rail Transport

**To address the demand for high-speed, real-time communications for rail transit, InHand Networks launches the VG810 vehicle gateway for public transport, delivering fast and reliable on-board communications.**

## Background

Most countries worldwide have built developed urban rail transit facilities. By the end of 2020, a total mileage of over 33 thousand kilometers had been put to use in 538 cities across 77 countries
and regions. While expanding railway networks have eased travel, they are also expected to offer better experience. In an era where everything is connected, you don't want to lose
track of anything even on the road.InHand Networks offers a connectivity solution for railway transportation featuring the VG810 vehicle LTE gateway, delivering fast and reliable on-board communications.

## InHand's Connectivity Solution for Rail Transport




Devices on board, including monitors, smart terminals, digital signage, etc. are connected to the VG810 through extensive interfaces. Data from within the vehicles are collected
and then sent out over high-speed 4G/5G networks. The VG814 can be easily integrated to 3rd party clouds, where data can be viewed and analyzed.

High-precision GNSS and inertial navigation help quickly acquire the vehicle location data. The VG810 sends the data to the command center so that vehicles can be better
tracked and managed. Dual CAN bus help collect vehicle diagnostic data and ensure safe and reliable working status of everything within the vehicle.

## Advantages

1. **Multi-network Connectivity**
   Available with high-speed 5G or 4G cellular connectivity, Gigabit Ethernet, Wi-Fi 5, Bluetooth, RS485, etc., the VG814 vehicle gateway offers various means of Internet access.
   The QoS feature prioritizes and allocates bandwidth regarding business demands so that network resources are made best use of.

2. **Extension to Peripherals**
   Extensive interfaces on the VG814 gateway connect to different devices on board. With uniform communication standards managing and controlling everything in the vehicle area network,
   different devices can be better interconnected and communicate with each other.

3. **Passenger Wi-Fi**
   The Wi-Fi portal which is specially designed for buses delivers passengers quality experience despite long hours on the road. The Wi-Fi portal which is specially designed
   for buses delivers passengers quality experience despite long hours on the road.

4. **Developer features**
   With support for Python and Docker, the VG814 offers a flexible

development environment, which allows custom applications to be installed and operated.

5. **Real-time Monitoring**
   The VG814 gateway is specially built for vehicles. Integrating FMS connector, it monitors the operation status of the vehicle and battery in real time, uploads data
   to the management platform for diagnostics. With statistical analysis, the VG814 helps identify abnormalities and conduct preventive maintenance, which reduces faults during service.

6. **Driving Behavior Monitoring**
   Driving behavior is constantly monitored. Dangerous behaviors such as acceleration, hard brake and sharp turns, as well as collision are detected and warned in case of traffic accidents.
   With high-precision and sensitive GNSS, the VG814 keeps track of vehicle location, helps navigate and plan for the best route.

7. **Easy Integration to Clouds**
   With simple configuration, the VG814 can be integrated to 3rd party clouds such as Azure IoT Edge, AWS IoT, MQTT and TCP server. The built-in app automatically sends
   information of gateways, interfaces, GNSS, etc. to the cloud, so that on-board devices can be better managed for value-added business.

8. **Designed for the IoV Market**
   CE certified and compliant with railway standards such as EN 50155 and EN 45545, the VG814 is built for the IoV market.