Railway Communications System (GSM-R)



NetworkRail



Background

Global System for Mobile Communications-Railway (GSM-R) ensures digital secure and dependable communications between drivers and signallers.

Delivering significant benefits across the industry and already helping to reduce delays, the GSM-R System is increasing safety, improving performance and providing better passenger experiences throughout Britain's rail network.

The GSM-R System is also enabling us to build the railway network of the future: modern, sustainable and digitally-enabled. We're making good progress towards delivering increased capacity and lower running costs.

The GSM-R System was phased into service across Britain's rail network between 2007 and 2014. It required the renewal of the entire lineside telecoms network that supports the railway network's daily telecom needs. It is already a major achievement however, the ongoing success of the GSM-R System depends on the continual commitment and collaboration of all users.

Future enhancements to the system include a software upgrade supporting the roll-out of ERTMS (European Rail Traffic Management System).

The Challenge

Deploying new systems onto existing infrastructure and trains in an efficient and effective way and doing this without adversely affecting live operational railway functionality and daily performance is a constant challenge facing rail infrastructure owners and train operators alike.

Network Rail has developed a strong track record in delivering new, industry wide systems under these circumstances and the delivery of the GSM-R digital mobile radio system is no exception.

How We Can Help

We can help you:

Increase your safety performance

As well as improving safety for drivers, maintenance teams and passengers, the GSM-R System is helping Routes and Train Operating Companies to deliver a safer network. We're now achieving faster responses to potential hazards and we've eliminated the need for drivers to exit the train in the event of a problem - plus, we're reducing trackside maintenance

Prepare for a digital future

The GSM-R System is enabling us to create a modern, digitally-enabled railway network. This will cut your operating costs and give stakeholders more value.

Improve performance

Increased reliability and punctuality includes a forecasted 30 per cent cut in delays due to poor railhead conditions. The GSM-R System's enhanced diagnostics are also improving our remedial actions that are designed to avoid incident repetition.

Consulting



Northern Rail leads the way in improving the GSM-R System

Quite often, due to the varying length of trains, drivers can't see the relevant signal and have been either relying on pocket reminders, memory or using the wildcard to register the GSM-R in-cab radios.

Northern Rail has made good progress in supporting drivers with the GSM-R radio registration process through the tactical placement of small blue and white signs on platforms, which means the signal number will now be much easier for drivers to read. These repeater signs have been implemented successfully at Carlisle, Sheffield, Hull and Bradford Interchange so far.

Northern Rail have been able to effectively prioritise the implementation of these new signs where they are most needed, thanks to feedback directly from drivers. Northern Rail has communicated the initiative on their employee Facebook page and are encouraging feedback via Driver Training Managers, meaning that everyone is working together for a better GSM-R System.

Merseyrail GSM-R registration problems at New Brighton station

The initial introduction of GSM-R in Merseyside highlighted an urgent requirement to identify and resolve the fundamental reason for frequent GSM-R related train delays at New Brighton station. GSM-R registrations were failing due to: in-cab radios attaching to a wrong cell, driver initiated GSM-R registration attempts occurring before the requisite signaller initiated TD interpose and in-cab radios were locking up.

Collaboration between Merseyrail, Network Rail Operations and NRT resolved GSM-R registration rejections through: a reduction of transmitted radio power by two interfering Public Mobile Network Operators, physical changes being made to the serving GSM-R mast antenna orientation, software configurable parameters being modified and signaller and driver briefings on GSM-R registration and implementation of Bulletin 21.

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Empowering Merseyrail to take the lead on this cross industry collaboration to improve GSM-R performance resulted in a very strong sense of 'we are in this together'. Trustworthiness allowed trusting relationships to develop, enabling participants to communicate openly and honestly without the fear of reprisals.

It was this specific development that enabled the team to rapidly identify, develop and deliver its action plans to improve GSM-R performance at New Brighton station. An initiative by Merseyrail drivers to recover the GSM-R network via their in-cab radio menu resulted in the national introduction of GSM-R Bulletin 38.