Finnish rail transport takes express route to TETRA

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Finnish rail transport wants to switch from GSM-R to TETRA for its critical communications – we speak to Tapio Raaska from the Finnish Transport Agency to discover why

When something exceptional happens on the railways, a train driver's radio is their lifeline. With hundreds of passengers to protect, getting permission to proceed from traffic control is vital. The teams working in shunting yards and the teams maintaining the railway tracks also rely on their radio connection.

Yet in Finland, this lifeline has not always worked as it should. In their efforts to offer train passengers the best possible coverage, commercial mobile operator networks interfere with RAILI, the Finnish GSM-R communication system. In the worst interference areas, train drivers, shunting leaders, track maintenance leaders and traffic control have been completely cut off from each other.

To solve this, Finnish rail transport wants to move from GSM-R to the TETRA based VIRVE network and has asked the EU Commission for an exception to allow this. The exception is necessary because EU legislation currently recognises GSM-R as the only option for radio communications in rail transport.

Tapio Raaska from the Finnish Transport Authority tells us more.

Key Touch: What are the reasons for the change?

Tapio Raaska: There are at least three reasons. The first is a technical one. Over the last couple of years the commercial mobile networks have started to interfere with the GSM-R system due to increased usage of broadband radio technologies (3G, 4G). Mobile operators obviously want to offer a better service for train passengers and to some extent they

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have not been sticking to limits governing the provision of their services near railway track areas.

The result has been that in some areas, GSM-R traffic is totally disturbed by commercial frequencies, resulting in a situation where a train driver cannot be reached and he or she cannot call railway traffic control. This is a very serious safety risk.

The second major reason is that the current GSM-R network equipment is close to the end of its lifecycle. The radio network needs to be completely replanned and within two years almost all the equipment would need to be replaced with totally new software and hardware. This is obviously a major investment.

The third reason is that European railways have started a process to change their "technical specifications for interoperability" due to changes in technology. They are trying to define a successor to the current GSM-R radio system and the EU Commission directive that governs railway communications in Europe is expected to change accordingly. Finland follows and participates in the specification process closely and expects to adopt commonly agreed new system.

KT: What advantages will be gained from the change?

TR: The main advantage is the cost savings; the change will save taxpayers' money. By purchasing the radio access as a service from the existing VIRVE TETRA network, we can dismantle our GSM-R network and reduce communication system costs significantly. Interconnecting the railway traffic communication system with the TETRA network can meet the technical and functional requirements of railway communications.

KT: When will the change take place?

TR: As soon as possible. The necessary EU derogation and procurement process will take some time, as will the changing of radios for the whole fleet of trains. Optimistically, the change will be finalised by the end of 2016, but it needs to done by the end of 2017 at the latest.

"Joining the VIRVE TETRA network will reduce costs significantly, while also meeting the railway's technical requirements."

Photo: VR Group