Rail professional experts share what is needed to roll out the successful implementation of ERTMS

Ahead of the ERTMS & ETCS: The Future of Railway Signalling conference on 27th and 28th March in London, five senior rail professionals share their thoughts on the challenges facing the introduction of ERTMS in the UK and the lessons that can be learnt from places it’s already in operation.

Peter Geens

Advisor - Head of Unit

Federal Public Service for Mobility and Transport

What are the main challenges facing the introduction of ERTMS and what changes will need to be made to help with the introduction of ERTMS?

Firstly, there is a big challenge in coordination between infrastructure managers and railway operators, not only on the planning of the deployment but also on a technical level as both need information on the behaviour of each-others equipment. Secondly, the railway industry not only has to possess the technical solution, but be able to deliver this to the field within a set time frame. Last, but not least, the financing of the system as a whole and its different actors separately remains a challenge due to the high costs associated with the change of a signalling system. Changes that may help to overcome these challenges are a high degree of coordination starting at regulation and specification level down to deployment and further standardisation of the products in all their aspects.

What lessons can be learnt from where ERTMS is already in operation?

ERTMS is a highly performing system that enhances safety and driver ergonomics, but care must be taken of the transitions between different signalling systems and different ETCS modes.

What needs to be done to train staff and make sure they are prepared for the transition?

Start early. Introducing ERTMS goes beyond the mere adaptation of the drivers to a new interface. Skills, procedures and processes for all railway staff are impacted. On the operation side simulation for both signallers and drivers should play an important role and if possible an integrated simulation were both interact should prove beneficial. Maintenance planners and workers also need to be made aware of the changes and sensibilities of an ETCS deployment.

(Continued overleaf)

“ERTMS is a highly performing system that enhances safety and driver ergonomics, but care must be taken.”

- Peter Geens, FPSMT

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Paul Callaghan

Technical Director – Comms and Information Systems

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What are the main challenges facing the introduction of ERTMS and what changes will need to be made to help with the introduction of ERTMS?

The main challenge supporting the introduction of ETCS in the near future, from a radio bearer perspective, relates to balancing the potentially hefty investment in GSM-R enhancements against the remaining life of the system due to the deployment of the GSM-R successor i.e. Future Railway Mobile Communications System (FRMCS). Whilst there is a programme for when FRMCS should be available for deployment, the full solution is not yet clear making it difficult for IMs and RUs to plan accordingly i.e. future proofing or making new deployments “FRMCS-Ready”. Similarly, the absence of an FRMCS deployment and migration plan from Network Rail makes it difficult to plan e.g. do NR intend rolling out FRMCS early or later, do they intend deploying ETCS using FRMCS or continue with GSM-R and migrate afterwards, etc.

What lessons can be learnt from where ERTMS is already in operation?

ETCS deployments in the UK are limited. The Cambrian Coast deployment doesn’t provide much opportunity to learn lessons in terms of deployment as this was a green-field solution deployed to support voice and ETCS from the beginning using Circuit Switched data comms. Future deployments will require the existing GSM-R deployments to be uplifted which introduces a degree of complexity. The Thameslink deployment and previous work on Great Western and East Coast led to the development of three GSM-R Guidance notes, relating to Coverage, Capacity and Availability so it will be interesting to see whether application of these results in the performance expected.

What needs to be done to train staff and make sure they are prepared for the transition?

GSM-R will ultimately need to be upgraded to support Packet Switching functionality to deliver the capacity requirement of ETCS whilst working with the limited frequency and spectrum allocated to the system. There will be a huge learning curve in designing a GSM-R solution based upon the use of Packet Switching as opposed to Circuit Switching. Design personnel should be competent to undertake this and design rules need to be defined.

The Operation and Maintenance of the GSM-R network, when it is used to support ETCS as opposed to only Voice, becomes more critical. Operational readiness work should be undertaken to ensure staff and organisations are prepared and are aware of their obligations / responsibilities including, but not limited to, the following:

• Faulting and maintenance capabilities
• Faulting repair times / SLAs
• Routine performance monitoring
• Maintenance procedures

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Steve Denniss  
*Technical Director*  
**WSP**

**What are the main challenges facing the introduction of ERTMS and what changes will need to be made to help with the introduction of ERTMS?**

The key challenges to the roll out of ERTMS are operational. This includes having a workable operational concept, properly implemented and integrated business and data management processes and people, a migration plan which encompasses dual operation of fitted and unfitted trains. A people centred design for the production of data to both staff and passengers.

**What lessons can be learnt from where ERTMS is already in operation?**

Green field segregated long distance lines present a predominantly technical challenge. All other implementations require a focus on the people issues.

**What needs to be done to train staff and make sure they are prepared for the transition?**

The development of facilities such as a Digital Twin and AR/VR are necessary to support the immersive training and ongoing real time support which is required to deliver the optimised performance of the Digital Railway.

Michel Ruesen  
*Managing Director*  
**ERTMS Users Group**

**What are the main challenges facing the introduction of ERTMS and what changes will need to be made to help with the introduction of ERTMS?**

From a political point of view, the main challenge is to decide and insist on a program which will take decades to be completed. From a system point of view, the main challenges are to adapt the engineering rules and operational procedures. From a managerial point of view, the main challenge is to enter into a good contractual relationship with suppliers in order to deliver in time and within agreed budget.

**What lessons can be learnt from where ERTMS is already in operation?**

Even though ERTMS is meant to be a standard system, its implementation is always challenging because of the heritage systems in the nowadays networks and trains. The main lesson to be learnt from this is that further standardization is necessary in order to reduce migration issues (and related costs) in the future. The market size of railway applications is too small to allow for national solutions.

(Continued overleaf)
Stephen Allison

Senior Project Manager

DB ESG Rail

What are the main challenges facing the introduction of ERTMS and what changes will need to be made to help with the introduction of ERTMS?

Variation between classes and within classes, achieving an acceptable Cab design, that is as consistent across Classes and Variants as possible, within the confines of existing Cab layouts. It’s also important to note that the full benefit cannot be realised until line side equipment is in place.

What lessons can be learnt from where ERTMS is already in operation?

The Trainguard 200 System is proven and in-service fit, however, the UK freight fleet is unique to each class and there are differences within fleet e.g. Class 66. There are lessons learned being shared between the Design Houses that are working for Siemens on the Freight contract.

Hear from these experts and many more...

...including Department for Transport, Office of Rail and Road, Comtest Wireless, Mott Macdonald and more at the ERTMS & ETCS: The Future of Railway Signalling conference taking place in London at Addleshaw Goddard on Wednesday 27th and Thursday 28th March.

Tickets start from £329 + VAT (additional group booking discounts available). For full details of the programme and how to secure your place visit http://bit.ly/2tUbcnj.