

Signal

the European Rail Traffic Management System

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Also included in this issue:

- ERTMS: a timeline p3
- ERTMS in Spain p4
- Upcoming events p4



The ERTMS technical specifications continue to evolve: this latest issue of Signal focuses on the introduction of an updated version 2.3.0 of the system requirements designed to iron out any glitches that could hamper interoperability. This 'de-bugged' spec will also smooth the way for the development of a version 3.0.0 – make sure you see Signal next time around too for more on that version and the European deployment plan...

The Signal team

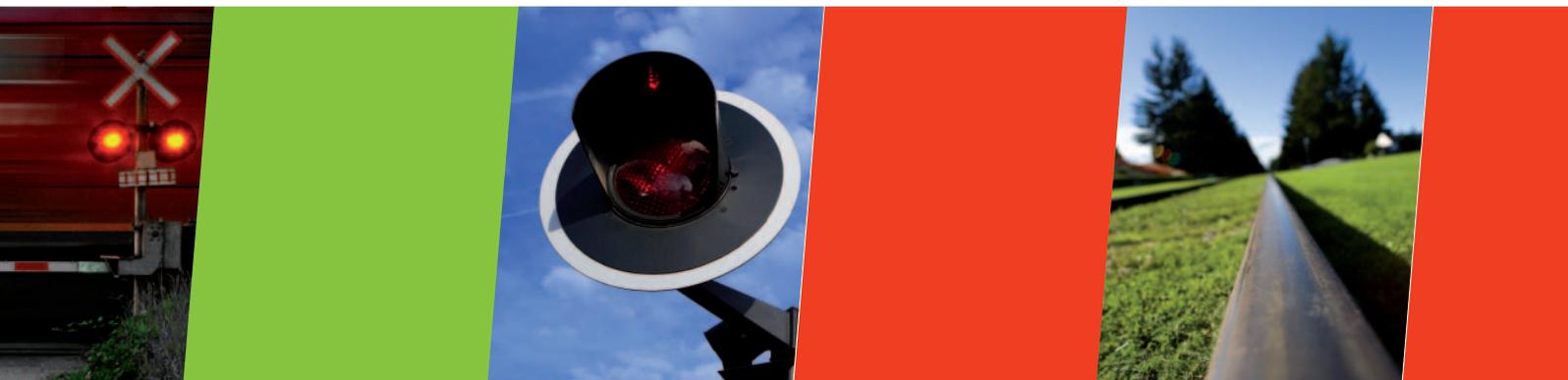
ERTMS 'de-bugged' – the green light for an unambiguous set of system specifications

February 13th, 2008, was an important date for the European Railway Traffic Management System (ERTMS). The European Union's Committee on Interoperability* gave its positive opinion by qualified majority vote to a European Commission proposal to amend the ERTMS system requirement specifications – paving the way for a legally stable and interoperable ERTMS future. With a positive vote in the Committee, the Commission will adopt in April or May 2008 a Decision modifying Annex A of the control, command and signalling (CCS) technical specifications for interoperability (TSI).

The need for an amendment to the TSI came after a study, carried out by manufacturers in early 2007, revealed that certain ambiguities in the specifications had not been interpreted in exactly the same manner for certain projects already in operation as well as for projects about to be put into operation. These ambiguities meant that, in certain cases, trains equipped by different manufacturers could potentially behave differently in the same situation.

Without an amendment to the specifications, manufacturers would have had to develop slightly different products for each project. This would have resulted in the emergence of different 'zones' in Europe (Spain, Italy, the North European high-speed network etc) with European Train Control System (ETCS) systems which were incompatible as a result of differing interpretations of the specifications. The longer the errors remained uncorrected, the greater the number of trains and lines that would have been affected by the problem.

* The Committee on the Interoperability and Safety of the European Railway System (or 'Article 21 Committee'), chaired by the European Commission and in which each EU Member State is represented.



The amendment resolves the ambiguities and ensures that all new ERTMS projects will be interoperable. It also allows all existing lines and rolling stock to be adapted without waiting for a problem to be discovered later when lines are joined up.

The European Railway Agency laid the groundwork for the amendment voted on by the Committee. In reaching a broad consensus on technical solutions to the ambiguities, the Agency worked on the basis of 'Change Requests' (CRs) drawn up by the rail sector, in particular by the manufacturers. The Agency systematically sought the agreement of the sector with regard to technical solutions and with a view to minimising the impact on existing lines and projects of an 'unambiguous and correct interpretation' of the specifications.

For a very large majority (49 out of 53) of these CRs, a unanimous interpretation already existed in the sector. However, for four CRs it proved impossible to find a solution which enjoyed the unanimous agreement of all the stakeholders involved, so the Agency made a choice on the basis of a qualitative cost-benefit analysis that took into account the impact on the different projects.

What changes and when?

The amendment does not impose modifications on existing lines. It simply states the correct interpretation of certain points that were previously ambiguous. There is therefore no obligation for projects that are already operational to become compatible immediately. However, international projects that are about to be put into service will benefit from the availability of an unambiguous version of the specifications that will serve as a point of reference in the event of incompatibilities between the products supplied by different manufacturers.

Nor is a request being made for lines and trains already equipped with ETCS to be modified at this time. But, in order to develop a network compatible at a European level, existing lines equipped with ETCS must eventually be capable of allowing trains complying with the 'correct interpretation' of the ambiguities to run on them. This will be necessary

when the existing projects are joined up, as will be the case, for example, when the French and Spanish high-speed networks are connected.

Each project must therefore make any necessary modifications at the most appropriate time. For this reason, the Commission has requested that each EU Member State notifies it of the date from which trains compliant with the consolidated specifications will be able to run on lines already equipped with ETCS.





A limited cost impact

As a general rule, no, or very few, modifications will have to be made to trackside equipment. Costs could nonetheless be incurred as a result of the necessary revalidation of 'safe-software'. However, it is likely that, for the vast majority of projects affected – and especially those not yet in operation – software currently being developed and tested is not yet the final version. Irrespective of European specifications, it is invariably the case that errors and the need to make improvements will come to light during the test phase or during the first few years of service: simultaneously incorporating the updates necessary to ensure total compliance with the consolidated specifications does not necessarily impose a significant additional cost.

For on-board equipment, manufacturers already active in the market will no doubt want to make the few modifications necessary in order to have a product that complies fully with the specifications. If a manufacturer deems that costs must be charged to a railway undertaking that requests a software update, this cost would have to comply with the legal provisions in force, in particular those regarding abuse of a dominant position.

Towards v3.0.0

The consolidation of version 2.3.0 of the ERTMS specifications that will be brought about by the latest amendment is a crucial step needed before moving on to the planned version 3.0.0 of the system requirements: no errors and ambiguities corrected in 2.3.0 will exist in version 3. Without this consolidation, it would not have been possible to guarantee that 'version 3' trains could run on 'version 2.3.0' lines.

After the Committee's vote, the European ERTMS Coordinator, Mr Karel Vinck, said: 'The vote today marks an historic moment in the evolution of ERTMS in Europe: we have now secured the basics of an interoperable European railway system, and the European Commission, working in cooperation with all stakeholders, looks forward to moving ahead to deploy ERTMS across the network.'

The next issue of *Signal* will look at the migration plan towards version 3.0.0.

Three phases of ERTMS: a brief history from research to deployment

1990-2000: research and development phase – the bulk of the ERTMS components existing today are defined and the main functional choices are made: a common basis for the ERTMS specification is produced and endorsed by the rail sector in 2000.

2000-2004: validation phase – the first fully-fledged projects are now starting. Interoperability between different manufacturers is achieved by solving ambiguities in the specifications at the level of individual projects.

2005-: deployment phase – ERTMS-equipped lines open in different countries – with some 2 000km of lines in service in Europe by early 2008 – but feedback from projects prompts the need to fine-tune the specifications so as to move from 'local' to 'global' interoperability and to ensure interoperability between all projects in Europe.

ERTMS – the Spanish experience

The end of the year 2007 and the start of 2008 saw a number of new high-speed lines open in Spain: Cordoba-Malaga, Madrid-Segovia-Valladolid and Madrid-Barcelona (see map). The new lines are all equipped with the European Train Control System (ETCS), the control-command component of ERTMS.

The Cordoba-Malaga line forms part of a high-speed service that now runs all the way from Madrid to Malaga, using the existing high-speed line between Madrid and Seville that passes through Cordoba.

(This was built before the arrival of ERTMS, which explains why this section of the Madrid-Malaga route is not marked on the map).

From the very first days of entering into service the new lines have exceeded previous levels of performance, notably in terms of punctuality. The Spanish experience also shows that ETCS offers superior reliability compared to existing systems and facilitates interoperability. Six companies are equipping lines and trains with ERTMS in Spain.

ERTMS diary

- 21 April, 2008: Brussels ERTMS MoU Steering Committee
- 5-6 June, 2008: Brussels Trans-European Transport Networks (TEN-T) Days

Please send us your dates!



For further information on ERTMS, see: http://ec.europa.eu/transport/rail/interoperability/index_en.htm

To view previous editions of *Signal*, click: http://ec.europa.eu/transport/rail/ertms/index_en.htm

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