The newsletter of ERTMS

signal

the European Rail Traffic Management System

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Also included in this issue:

2009 looks like it will be an exciting year for ERTMS. Funding has been adopted for ERTMS projects and continued progress is being made on rail safety and communication. This edition of *Signal* looks at these issues as well as a recent ERTMS success story in Italy.

The Signal team

Italy – technology leader

Despite the rain and fog, it was with flair that Ferrovie dello Stato inaugurated the high-speed Milan-Bologna line on 13 December 2008, in the presence of Vice President Antonio Tajani, Commissioner for Transport, and Karel Vinck, the European Coordinator for ERTMS.

The newly completed Milan-Bologna stretch is located along the line that, in the future, will link Milan to Rome in 3 hours without intermediate stops and to Naples in 4 hours and 10 minutes (compared to 5 hours and 40 minutes before). The Milan-Bologna trip has now been reduced to 65 minutes as opposed to more than 2 hours before, with a commercial speed of about 300 km/hr.

The last section of this important rail axis for Italy between Bologna and Florence will be inaugurated in December 2009. Consisting of almost 90 % tunnels, it is a challenge for aerodynamics experts.

Manufactured by Ansaldo, the Frecciarossa locomotives are designed to travel on a track already equipped with ERTMS Level 2, putting Italy in a position of technical leadership.

The LGV Milan-Bologna cost € 6.9 billion and was cofinanced by the EU under the trans-European Transport Networks programme.

Directorate-General for Energy and Transport

EUROPEAN COMMISSION

GSM-R – Digital communication – paving the way for safer railway traffic

History

The decision in Europe to standardise digital train communication follows the idea of the European Railway Traffic Management System (ERTMS). GSM-R (Global System for Mobile Communications – Railway) is one component of ERTMS and is a train communication system based on the public GSM. ETCS (the European Train Control System) uses GSM-R as a carrier system in Level 2 and above.

Low quality communication or even lack of communication between train drivers and rail infrastructure controllers often cause late arrivals and bad connections. The analysis of critical rail situations indicates poor communication as one major reason for dangerous situations.

Seamless cross-border rail services are needed for the growth of international railway traffic. The EU seeks to increase railway interoperability within Europe and to move the liberalisation of railway traffic one step further.

To minimise dangerous situations and increase the already high level of safety of the international railway system, communication needs to be:

- functionally improved;
- coordinated;
- interoperable;
- reduced in complexity, but enhanced in application possibilities;
- applied on systems for improved interoperability.

GSM-R in Europe and the world

Europe has finally decided to guarantee interoperability by establishing standardised digital train communication as its main building block. In this context, the European railways have agreed on GSM-R as the new railway radio digital communication system; its functionality has already been proven in technical tests as well as in commercial operation. Implementation will be stepwise and with a main focus on the trans-European network and the ERTMS corridors.

Implementation does not stop at the Europe's borders; neighbour states and other countries are following deployment in the same way. GSM-R has already been installed in several countries such as India, China, Saudi Arabia, and implementation is just starting in Australia, Algeria, Tunisia, and decisions have been taken to install the system in Russia, Turkey, Libya and Israel.

Implementation in Europe

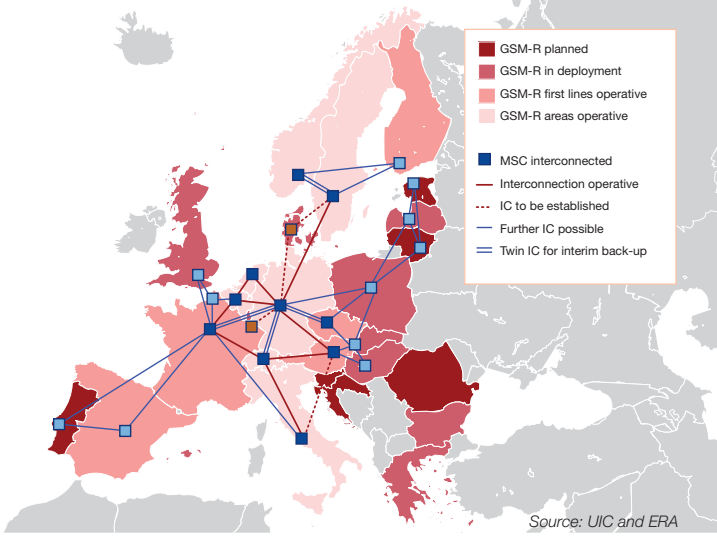
One of the pre-conditions for cross border traffic is the interconnection of neighbouring GSM-R networks. Interconnection between several countries has been successfully set up. Currently, as shown in the first map, the following interconnections are in place:

- Germany – Netherlands
- Germany – Switzerland
- Germany – Sweden
- Germany – Belgium
- Germany – France
- Sweden – Norway
- Italy – Switzerland
- France – Belgium
- Belgium – Netherlands
- Germany – Austria
- Germany – Czech Republic

Other interconnections are in preparation and will become functional soon. The result in the future will be a new digital backbone network for the railways, which will be the basis of growing European railway applications; costs can be reduced, while capacities and transmission reliability will be increased.

The second map shows the status of the implementation plans, and gives an overview on the implementation stages across Europe. Five administrations have already fully completed the first major step of GSM-R implementation: Germany (24 000 km), Italy (8 500 km), Netherlands (3 000 km), Norway (3 000 km) and Sweden (8 500 km).

National implementation plans show that 147 813 km are foreseen to be covered with GSM-R in Europe, of which 53 279 km (36 %) are already operational. Today, 120 889 GSM-R mobiles are activated, of which 25 889 are cab radios. According to the National Implementation Plans, by the end of 2010, 60 % of the foreseen network will be ready for operation (figures for October 2008).

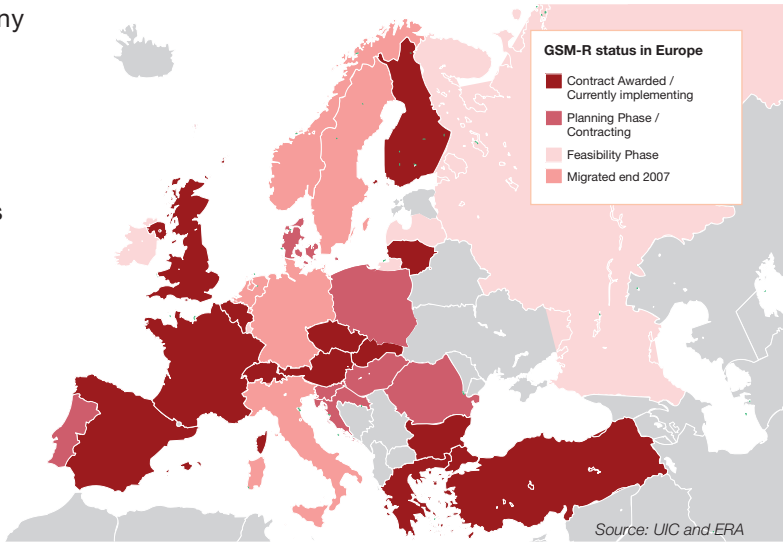


System maintenance

GSM-R is a great success story in Europe and is gaining acceptance throughout the world. The system is 'living' and needs to be maintained for many reasons:

- introduction of new features;
- error corrections;
- improvement of functionalities.

This technology allows exploitation of new business opportunities, operational improvements and efficiency streamlining. The need to ensure interoperability establishes the obligation to protect investments. To achieve this, the European Railway Agency, in its role as System Authority has installed a transparent process managing system changes, with the contribution of sector representatives, CER and EIM. The process and key actors have been defined together with the UIC.



The process itself is fully in line with the existing ERTMS-ETCS change management process and is based on the same assumptions. UIC, together with the GSM-R industry, has taken over the role of preparing possible solutions for problems and proposals for the introduction of new functionalities. A group of experts form ERA, CER, EIM and UIC determines which issues should be studied.

In the following stages, under the responsibility of the ERA and in collaboration with the UIC, a more in depth analysis of the impact on interoperability and investment will be carried out. Finally, after passing the Control Group, a qualified opinion will be given to the European Commission. Close cooperation between ERA and UIC avoids duplication of work by maintaining full independence.

Funding for 17 ERTMS projects adopted

In December 2008 the European Commission adopted funding decisions for the co-financing of ERTMS projects within the framework of the trans-European transport network (TEN-T) multi-annual programme (2007-2013). In total, € 259.98 million of EU funding has been allocated to these projects at a co-financing rate of 50 %. The projects include eight track-side projects, six on-board projects as well as three projects related to project management, testing activities and pilot lines/prototypes.

The funding is divided between corridors as follows:

Corridor A	7 projects	€ 84.58 million of funding	~33 % of total funding
Corridor B	1 project	€ 12 million of funding	~5 % of total funding
Corridor C	1 project	€ 88.98 million of funding	~34 % of total funding
Corridor D	1 project	€ 21.04 million of funding	~8 % of total funding
Corridor E	2 projects	€ 21.78 million of funding	~8 % of total funding
Corridor F	1 project	€ 9 million of funding	~4 % of total funding
Multi-corridor	3 projects	€ 17.8 million of funding	~6.5 % of total funding
THALYS	1 project	€ 4.8 million of funding	~2 % of total funding

These projects will be managed by the Trans-European Transport Network Executive Agency (TEN-TEA) which was created in 2006 and is based in Brussels. The TEN-TEA is entrusted with the management of the Community funds available for the promotion of the trans-European transport network.

In December 2008, the Commission also signed framework contracts with five contractors in order to strengthen its technical capacity in order to follow up on these projects. External experts will closely monitor the implementation of specifications and provide the Commission and the TEN-TEA with targeted technical assistance.

ERTMS diary

- 18 February, 2009: Prague
  Czech Presidency Conference on Freight Corridors
- 19 February, 2009: Prague
  ERTMS Corridor Group
- 4-5 March, 2009: Brussels
  Committee on the Interoperability and Safety of the European Railway System
- 9 March, 2009: Brussels
  ERTMS MoU Steering Committee
- 31 March / 2 April 2009: Málaga
  UIC ERTMS World Conference

Please send us your dates!

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

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

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