

Preface by the Chairman of the UIC ERTMS Platform

The development of ERTMS under the patronage of the European Commission began in 1989 in the context of plans for a European high-speed railway network. This year we celebrate 20 years of work in this area, together with all the contributions of the people who have worked on the project to successfully overcome the problems of expanding and bringing to maturity the main ERTMS sub-systems ETCS and GSM-R. In terms of traffic management, the roll-out of the Europtirails concept is in full swing. Concerning signalling, a comprehensive European project entitled “Integrated European Signalling System” comprising 30 partners from railways, manufacturers and academia started in October 2008 in order to Europeanise the ERTMS project’s last frontier.

There is no longer any doubt as to the key role of ERTMS for the revitalisation of the European railways, and it is generally recognised that the point of no return on this road has been passed.

The International Union of Railways is extremely pleased to distribute this ERTMS compendium on the occasion of the ERTMS World Conference 2009 in Málaga, Spain, one of the EU Member State where ERTMS has most thoroughly and successfully been implemented, mainly on new high-speed lines.

The UIC ERTMS Platform, which I have the honour to chair, was established in 2006 to share experience on ERTMS implementation and determine strategies for a feasible migration. Its key task is to contribute to the promotion of a viable migration strategy for ERTMS which is compliant with the rail sector’s interests as a whole.

In this book, a team of authors actively involved in the ERTMS development process for many years provides an introduction to and overview of the current status achieved, including the consolidation to be brought about by the new formally approved baselines for the ETCS and GSM-R specifications.

I hope that this book will help improve understanding of the complex ERTMS concept and facilitate its further implementation, thus rendering the railways more attractive and competitive.

Thank you, Peter.



Chairman of the UIC ERTMS Platform
Michele Elia

Málaga, 31 March 2009

Preface by the main author

During the last 20 years, the second half of my career as a professional engineer in the rail sector, I have had the privilege of being actively involved in the development of ERTMS, an initiative jointly driven by the railways and manufacturers under the auspices of the European Commission. This broad Europeanising process will bring about profound reform of the rail system. The key driving factors are interoperability in the context of open-access infrastructure; safety and performance in rail operations; an open and competitive multi-vendor market for procurements; and cost efficiency over the system life-cycle as a whole. After a long history of national traditions in rail traffic management, a new harmonised European concept is becoming a reality, combining innovative approaches in technology, processes and the rules and regulations underpinning these.

In the course of ERTMS development, many difficult and conflicting issues have had to be faced by the numerous parties involved in the harmonisation of a multitude of completely different and incompatible points. Some of these controversial aspects are:

- National traditions versus European unification
- Integrated versus separated management of rail infrastructure and train operations
- Focus on high-speed versus universal application to all kinds of train services
- Users' interests versus suppliers' interests
- Infrastructure managers' interests versus operators' interests
- Signalling industry's interests versus GSM-R industry's interests
- Rolling stock suppliers' interests versus signalling suppliers' interests
- Short lifecycles in modern telematics versus long lifecycles in railway technology
- Technology versus rules and regulations
- Line side signalling versus cab-signalling
- Line side-based positioning versus train-based positioning
- Maximum safety integrity level across the board versus differentiated safety on existing lines achieving at least the same level as ensured by legacy systems
- Short-term benefit versus long-term benefit.

It has taken a long time to reach a common understanding on the scope of traffic management in the rail system, since traffic management goes far beyond traffic planning and dispatching, including as it does signalling, control-command and train communications, all of which have strongly rail-specific and highly safety-critical features.

This compendium is intended to introduce the reader to the complex ERTMS concept by giving an overview of all the relevant sub-projects. I hope it will help facilitate the work of all parties and players involved in the further generalised roll-out of ERTMS and thus benefit a safe, high-performance and sustainable rail transport system.

I would like to thank warmly all those who have contributed to the production of this book, especially the co-authors and the numerous proof-readers.

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