factsheet # 28

ERTMS ADVANTAGES

ERTMS introduction in the European Union has provided the unique opportunity to create a seamless railway system where trains may traverse multiple country borders in a journey without facing delays and technical interface problems related to signalling i.e. compatibility throughout Europe - a truly safe and interoperable railway is rapidly expanding.

Interoperability, however, is far from being the only advantage brought by the deployment of ERTMS. Indeed, ERTMS has also been designed to be the highest performing train control system in the World. It facilitates and enables considerable benefits especially for the paying customer/traveller improving their travel experience and also supporting the long distance freight operators particularly as well as the infrastructure owners and train operators.

The various levels of ETCS that can be adopted in the rail network include Level 1, Level 2 and Level 3. In ETCS Level 1, the movement authority and the corresponding route information are transmitted to the train and displayed in the cab to the driver in a discontinuous way by means of balises, located on the trackside, that perform the train's localization and transmit to it the status of the line.

In ETCS Level 2, the movement authority is communicated directly from a Radio Block Centre (RBC) to the on-board unit using a radio channel (GSM-R), and not through the balises on the trackside, that are used only to transmit location, gradient, speed limit, etc.

ETCS Level 3 is still in the study stage. As a general rule, the system provides for the elimination of many trackside equipment by entrusting both the location and the integrity check of the trains to special on-board transmitting devices that maintain continuous dialogue with the control centre. ETCS Level 3 also overcomes the concept of fixed block section by enabling moving block, modelled, not on the predetermined physical space, but created according to the needs of the circulation and the possibilities offered by the radio transmitter system.

ADVANTAGES

Improved safety for the rail system

for the Passengers, Freight Operators, Train Operators, Infrastructure Managers and all rail sector personnel

Increased capacity

on existing lines and a greater ability to respond to growing transport demands: as a continuous communication-based signalling system, ERTMS reduces the headway between trains "enabling" up to 30% more capacity on currently existing infrastructure and if associated with other infrastructure improvement, up to 40%

Lower production costs

one proven, harmonised system is easier to install, maintain and manufacture making railway systems more competitive

Reduced contract lead times

due to the significant reduction of process engineering preparation

An open supply market

customers will be able to purchase compatible equipment for installation anywhere in Europe and all suppliers will be able to bid for any opportunity. Trackside and on-board equipment may be purchased by any of the UNISIG ERTMS suppliers thus making the supply market more competitive, more open

Reduce the life cycle costing of signalling assets

existing trackside infrastructure including coloured lineside light signals will no longer be required so signals and their infrastructure and any associated power cables or data cables and connections would not be required thus reducing the life cycle costs of signalling assets. ETCS marker boards will be located to support times of degraded modes of operations

Higher speeds

ERTMS allows for a maximum speed up to 500 km/h

Improved rates of reliability and availability

ERTMS may significantly increase reliability and punctuality, which are crucial for both passenger and freight transport

Improved Maintainability and Reduced maintenance costs

With ERTMS level 2, trackside signalling is no longer required, considerably reducing capital expenditure and thereby reducing maintenance costs

Improved rail system and network competitiveness

ERTMS introduction with acknowledged safety and increased capacity presents an inducement to the modal transfer behaviour of both passenger and freight operations onto the railway

Simplified approval process

in Europe greatly reduced certification costs traditionally associated with the introduction of new systems will be achieved

Reduction of and/or elimination of Class "B" systems

by the introduction of ETCS, existing or obsolescent Class "B" systems can be phased out and replaced by the harmonised ETCS solution and thus any associated cost to upgrade/maintain these Class B solutions will not be necessary as they become obsolescent and very difficult to support.

Harmonising of Business Change

the opportunity exists for a simplification of the designing of signalling systems, installation, testing and commissioning practices. The maintenance of systems and the version management of systems become very much simpler. Skills improvement and skills interchangeability/transferability across and between owners and operators etc. become very much simpler

Training and staff considerations

more harmonisation of training schemes and operational practices offering a faster development, availability and raising of skills for drivers, maintainers (on-board and trackside), operational and train managers and guards, etc. and those personnel involved with the timetable planning, servicing etc.

Environmental considerations and protection

A safe, increased capacity and more cost effective railway network enjoying the operation competitive benefits of ERTMS/ETCS will facilitate a significant modal shift to rail thereby addressing the environmental disadvantages of mass road transport (from congestion and pollution) and air transport (vast volumetric air pollution).

New functions and features

considerable effort is expended to maintain the integrity of the system related TSI's through the offices of ERA – the European Agency for Railways - thus ensuring interoperability is fully maintained and supported. This same careful and managed practice is adopted for the agreement and introduction of new features such as Level 3, ATO, C-DAS, satellite positioning, TMS interfacing (others) etc. This care and oversight by ERA guarantees the integrity of the ERTMS standards and supports introductory efforts in other new ETCS adopting countries and regions of the World beyond Europe to acquire and enjoy the derived ERTMS/ETCS benefits.

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Want to know more about ERTMS? Please check www.ertms.net or contact UNIFE at ertms@unife.org