The **European Union Agency for Railways Project** on the evolution of the **radio communication system** for railways

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GSM for railways (GSM-R) is a radio communication system offering a wide range of voice and data services needed for daily operation of railways, e.g. communication between train driver and traffic control centres, railway emergency calls, shunting communication, etcetera. GSM-R is also the data communication bearer for the European Train Control System (ETCS), in particular for the Level 2 and Level 3.

From 2000, GSM-R has been introduced all over Europe as a common standard for railway operations essential to interoperability, as well as in many other parts of the world. Expansion of the GSM-R implementation is still ongoing. GSM-R is part of the European Railway Traffic Management System (ERTMS), included in the European railway legislative framework (the Control, Command and Signalling Technical Specification for Interoperability, CCS TSI) as the only mandatory radio system.

GSM-R is fully defined in ETSI standards. It is expected that these standards will remain stable and used by the industry and the different sectors (public networks, railways) for many years, ensuring availability and support of products. However, driven by the increasing market for mobile communication applications in general, a continuous evolution of the communication systems takes place. Based upon the most recent information, it is expected that GSM-R will be available and supported by the industry until at least 2030. The Agency, in its task as System Authority for ERTMS, leads the essential activities to enable the timely introduction of new radio system(s) to mitigate the risk of GSM-R obsolescence. This will be done by introducing the necessary provisions in the Control, Command and Signalling Technical Specifications for Interoperability (CCS TSI) enabling migration of technologies that can be used by the trackside and on-board systems from GSM-R to a next generation system.

DETAILS ON THE PROJECT

The Agency Project scope is directly related to the functionalities included in the CCS TSI. This means that the main applications of the current radio system, as defined in the CCS TSI, are considered as reference and co-existence of any additional system with these applications is mandatory.

However, the system shall be capable to support future changes and extensions of the applications covered by the CCS TSI and other TSI's, as well as railway related applications outside TSI's. The provisioning of mobile communication services that are usually offered by public networks to passengers (e.g. internet access) is out of scope.

The European Union Agency for Railways is set up to help creating an integrated railway area by reinforcing safety and interoperability. The Agency also acts as the system authority for the European Rail Traffic Management System (ERTMS), ensuring, in close cooperation with the different stakeholders, the maintenance of the existing specifications (for ETCS and for GSM-R) and the development of the new baselines.

The Control Command and Signalling (CCS) TSI sets out the framework for the harmonisation of the train detection, communication and train control systems on the High Speed and conventional railway network in Europe.

According to the Agency's regulation, the Agency shall ensure that the TSI's are adapted to technical progress and market trends, and shall propose to the Commission the amendments to the TSI which it considers necessary.

The Agency Project covers the following activities:

- Performing studies on relevant subjects
- Identification of options for the future functionality, technology and spectrum, as well as migration scenarios
- Select the relevant option(s) and provide justification (including impact assessment)
- Conclude on Requirements and Specifications, to be referred to in the future CCS TSI
- Facilitate the involvement of railway stakeholders and report to the Commission

The current planning focuses on the period until end of 2018, where a report to the Commission has to be delivered describing the high level system definition. In close cooperation with external experts and standardisation bodies, the project will address and - where needed - coordinate the different activities, such as conducting studies, the drafting of requirements and the writing of specifications. The basis for this coordination is a common deliverable roadmap.

SHORT TERM MILESTONES

Several activities are ongoing or are already finished. In the recent past, an ex-post analysis of GSM-R and studies on network models, including ownership and control for radio networks, have been carried out by the Agency.

In the first half of 2016, the final reports will be delivered from two ongoing studies, one on migration scenarios and modelling of the economic impact, and the other one, focused on the capability of GSM-R radio spectrum to be used by GSM-R and other technologies in parallel.

By the end of 2016 the draft conclusions of an additional study (under supervision of the Agency and ESA) on the feasibility of satellite communication for voice and data communications for operational railway needs will be available.

The UIC FRMCS project has delivered a document describing the user requirements (URS) in the beginning of 2016. ETSI will provide the necessary document (SRDoc) to address the railway spectrum needs to ECC in the second half of 2016. ETSI will also take care of the coordination of the standardisation work (e.g. with 3GPP) providing input for additional needs in the existing specifications, such as support of the current railway spectrum.

With the Agency Project, the Agency will contribute to a long term, stable and interoperable communication system for Railways.

You are invited to follow the latest information on this subject in the Agency Web page, and to actively contribute to the Agency Project.

http://www.era.europa.eu/Core-Activities/ERTMS/Pages/The-Project-Evolution-of-Railway-Radio.aspx

You can send any contribution or suggestion to the Agency using the dedicated email address:
evolution-radio@era.europa.eu

This document was produced in June 2016.

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*Following the entry into force of the technical pillar of the 4th EU Railway Package (Reg. 2016/796), the European Union Agency for Railways replaces and succeeds the European Railway Agency. The change of name requires also a new corporate design. The "Agency" refers as from now to the European Union Agency for Railways. However depending on the context, some parts of this brochure still refer to the former European Railway Agency.

Making the railway system work better for society.

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