Radio spectrum management and **Railways**

EUROPEAN UNION AGENCY FOR RAILWAYS

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The construction of a safe, modern integrated railway area is one of the EU's major priorities.

The European Union Agency for Railways was set up to help creating this 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.

GSM-R and other radio systems are essential for daily railway operation, offering a wide set of voice and data communication services. Railway specific examples are: voice communication between train driver and traffic control, alerting and group communication in case of railway safety related emergencies, group communication for train staff & maintenance staff (trackside, rolling stock), communication for shunting, train preparation, platform staff, etcetera. Several applications are using data communication services: e.g. ETCS Level 2 and 3, trackside maintenance warning systems, train departure support applications, passenger information systems, status monitoring of trackside and rolling stock, train positioning, etcetera.

Wireless systems use radio frequencies. In order to manage the use of radio frequencies by the different radio applications, systems and users, strict regulation of radio spectrum is in place. This regulation ensures availability of spectrum and appropriate capacity, co-existence of radio systems (e.g. avoiding interferences) and it sets the grounds to accommodate innovation and future demands. Spectrum is a scarce resource and it has to be efficiently used. Different solutions to improve spectrum efficiency are under investigation, such as spectrum sharing, improvement of receivers, usage of higher frequencies, more intelligent and spectrum-efficient technologies and, of course, improvement of existing systems.

Radio spectrum management has become a major factor of interest to the railway sector and the Agency due to two main subjects: interferences between GSM-R and public networks, and the potential need for additional radio spectrum for the successors of GSM-R. In both cases the apparently separated worlds of Railways and Radio Regulators need to be linked. Although there are a lot of similarities, the way both worlds are organised is very different.

In order to address the mentioned items in an optimal and correct way, the Agency had to gain familiarity with the processes, actors, decision makers and regulation.

Spectrum management is done on different levels: worldwide, regional and national. On worldwide level, ITU (International Telecommunication Union) allocates global spectrum and publishes the Radio Regulations, which are adopted during WRCs (World Radio Conferences), held every 3-4 years. The next WRC will be held in 2019.

Europe is part of Region 1, with a.o. Middle East, Africa and the former Soviet Union, and is represented by the CEPT (Conférence Européenne des Administrations des Postes et des Telecommunications). CEPT is composed of three business committees, of which ECC (Electronic Communications Committee) is dealing with radio spectrum. General support is delivered by ECO (European Communications Office), working together with national frequency management authorities.

On national level, the NRA's (National Regulatory Authorities) are the ones who finally assign frequencies to users/owners of radio systems (e.g. GSM-R frequencies to Railway Infrastructure managers) and manage the coexistence of different systems, based upon the CEPT recommendations. The European Commission doesn't have direct responsibility in assigning radio frequency spectrum, however, the Commission has created the RSPG (Radio Spectrum Policy Group) to develop a common EU spectrum policy. Member States coordinate the use of radio spectrum in their territory implementing Commission Decisions at national level. The Agency has been invited by the Intelligent Transport System Working Group of RSPG to provide its point of view on railway matters.

In Europe, ETSI (European Telecommunications Standard Institute) provides all technical harmonised standards for (a.o.) radio equipment, in close cooperation with ECC. These standards are part of the European Directives for the use of radio spectrum.

The Agency, UIC (Union International de Chemins de Fer) and ETSI are directly involved in the railway related discussions at CEPT level. One of the most important working groups is ETSI TC RT (Technical Committee Railway Telecommunications), who produces the railway related standards. In addition, ECC FM 54 is dealing with interferences and future spectrum needs in the railway environment.

With this approach, the Agency supports the European Commission to ensure the long term availability of radio spectrum needed for railway radio communication.

This document was produced in June 2016.

Further information on the Agency work can be found in the the Agency WEB page:
http://www.era.europa.eu/Core-Activities/ERTMS/Pages/home.aspx

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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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Publications Office

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Luxembourg: Publications Office of the European Union, 2016

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TR-04-16-708-EN-N • ISBN 978-92-9205-229-4 • doi:10.2821/06846