



Migration strategy of radio communication systems in the railway sector

Problem description

The migration to a new radio communication system in railway networks is a complex process with many challenges. The current GSM-R (GSM for Railways) system must be replaced by FRMCS (Future Railway Mobile Communication System) within 5 years after the final specifications have been approved, which is expected in 2027. During this period also the equipment must be produced. FRMCS is based on 5G and will provide reliable, low-latency, mission-critical communications for routine and emergency requirements. The systems involved in this migration are onboard and trackside devices, but also interactions with ETCS (European Train Control System) and several communication links, such as CCTV (Closed Circuit Television) and Passenger Information systems. Moreover, this is a European-wide challenge and the railway operations must continue 24/7 during the entire migration.

Objectives and Assignment

The aim of this project is to develop a migration strategy that can be used for infrastructure managers and railway undertakings. The tasks include:

- Literature review on migration strategies and interviews about previous migrations of radio networks and systems
- Analysing the challenges of the railway sector for migration from GSM-R to FRMCS in Europe and abroad (e.g., Australia), including stakeholder analysis, risk analysis, EU-policy, and migration to ETCS per country
- Developing a migration methodology for radio communication systems
- Proposing a migration strategy that could be used in the railway industry.

Information

The research will partially be carried out at Arcadis Netherlands. The location can be Amersfoort or Rotterdam which will be determined in consultation.

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