



5G Corridors project fiche – 5G MELUSINA

5G MELUSINA: 5G Metz - Luxembourg Sillon International



The project in a nutshell



This inception study, carried out by railway infrastructure managers SNCF Réseau and CFL in a consortium of six partners involving four public Mobile Network Operators (MNOs) from Luxembourg, prepared the deployment of 5G infrastructure for rail use cases.

These cover digital railway operation and passenger connectivity enhancement by densifying telecommunications infrastructure and pushing for a complete 5G coverage. To achieve this with optimal resources, cooperation and synergy are key between railway and public mobile network operators.

Key facts

Length: 67 km total, 50 of which in France and 17 in Luxembourg

Corridor: France: Metz (France) - Luxembourg City (Luxembourg): Part of the International TENT-T corridor connecting the North Sea to the Mediterranean via Brussels and Strasbourg

Total EU grant: €255,377

Project duration: 6 months (January 2023 – June 2023)

Transportation mode: Rail

Spectrum bands: 700 MHz and 3,5 GHz (and others) were evaluated for public networks, while the 1900 MHz band was the focus for railway telecommunication networks.

Standards: FRMCS and 5G based on 3GPP standards were respected in the study.

QoS: Provision of high throughput (boosted by public 5G) for passengers and continuous availability of digital rail operations are targeted. For rural and dense situations, different adapted capacities were elaborated and respected in the cell planning of the study.



Service / Use cases:

- Train passenger connectivity through public mobile networks
- Digitalisation of rail operations through GSM-R and FRMCS for safety-critical use cases and through public mobile networks for pure quality and optimisation use cases



What will it provide?

The study identified target communication service requirements for railway undertakings and passengers and designed implementation of 5G technology along the corridors, focusing on MNO/Railway infrastructure sharing models and service continuity at the border crossing. It defined the basis for a cooperation model between Railways and MNOs that maximizes deployment synergies and long-term cooperation and sustainability.

In addition, the study prepared an implementation plan using existing infrastructure assets. This allowed us to define necessary works and estimate the cost of building a 5G network to deliver expected service capabilities.

Finally, it evaluated business viability on the considered track section to assess potential market failure areas and develop a long-term perspective for large-scale deployment.

How will the project unfold?

Bringing together the Future Rail Mobile Communications System (FRMCS) and public 5G infrastructure and deployment required the creation of a consortium, bringing together various stakeholders to ensure productive and fruitful collaboration. From a legal perspective, this consortium is formed by a set of formal agreements outlining the terms of participation, including regulatory compliance for FRMCS and 5G deployment.



The ownership model involves shared responsibility between consortium members, who allocate ownership rights and obligations according to their contributions. Project funding in the study phase has been a collective effort, with members contributing funds and re-distributing co-funding based on a Grant Agreement with the European Health and Digital Agency HaDEA and ensuring a fair distribution of costs. The roles and responsibilities of each member are clearly defined, specifying their contributions to the study in terms of expertise, resources and implementation tasks.

During the potential deployment phase, the consortium could oversee the installation of the FRMCS and public 5G infrastructure defined in the study, partly using existing site locations and partially building new sites (pooling strategies to be determined). Rigorous testing and optimisation will be carried out to ensure the reliability and efficiency of the infrastructure deployed.

How is it financed?

The study was co-funded by the EU/CEF Digital programme (50% funding rate), and the participants carried the beneficiaries' remaining 50% cost. A potential Works phase could also be submitted for co-funding in this programme.

Total EU Contribution: €255,377

More information

[Funding and tenders project page](#)

<https://guide.5gcorridors.eu/wp-content/uploads/2023/10/melusina.pdf>

About

The ambition of the GUIDE project is to bring together the relevant stakeholders from the ecosystem of 5G Corridors across the European Union (EU) and to help them get the maximum value from the CEF Digital programme, ensuring that future CEF Digital work programmes progressively address the actual needs of the stakeholder communities.

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