



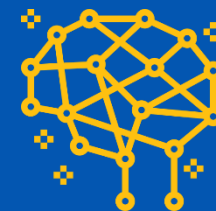
CEF2 : 5G coverage along transport corridors”

5G HSL Eurolink

19 March 2024



Co-funded by
the European Union



Study Project Summary



Overall Length of corridors :

- 468 km total, 380 km in France and 88 km in Belgium
- Paris (FR) - Brussels (BE) : Part of the International TENT-T corridor connecting the North Sea to the Mediterranean

Project duration: 6 months (January 2024 – June 2024)

Transportation mode: Rail

Spectrum bands: 700 MHz and 3,5 GHz (and others) were evaluated for public networks to realize 5G connectivity for train passengers, while the 1900 MHz and 900 MHz band was the focus for railway telecommunication networks.

Targeted QoS: Provision of high throughput (boosted by public 5G) for passengers and continuous availability of digital rail operations are targeted.

Service / Use cases:

- Train passenger connectivity through public mobile networks
- Digitalisation of rail operations through FRMCS for safety-critical use cases and cross-border implementation of European Train Control System level 2 (“ETCS”)

Technology deployed: FRMCS and 5G based on 3GPP standards were respected in the study. However, changes of upcoming standards were considered.

Total Costs : € 866 290

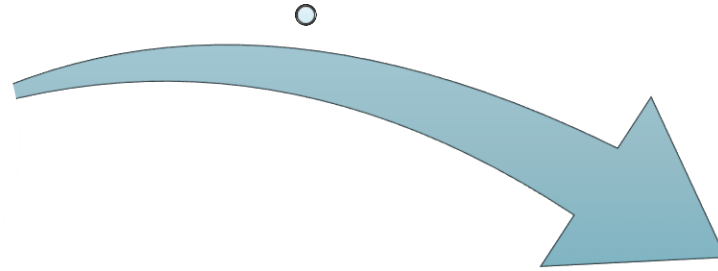
Total EU grant: € 433 145

Timeline of the project

CEF2 Call 2,
2023



Inception Study



Study Completion :
30 June 2024

Description of Study project : 5G HSL Eurolink

Objective : 5G Infrastructure along the High-Speed line rail

- Digitalization of rail operation through the development of the Future Railway Mobile Communication System (“FRMCS”) interoperable networks by rail Infrastructure Managers (“IM”) INFRABEL and SNCF Réseau that will:
 - Support a pioneer cross-border implementation of European Train Control System level 2 (“ETCS”) in Europe;
 - Replace and improve the current interoperable GSM-R used for train drivers voice communications, which will be obsolete in the 2030’s.
- High-end connectivity for passengers through development of 5G coverage by Public Mobile Network Operators (“MNO”) and Railway Companies.

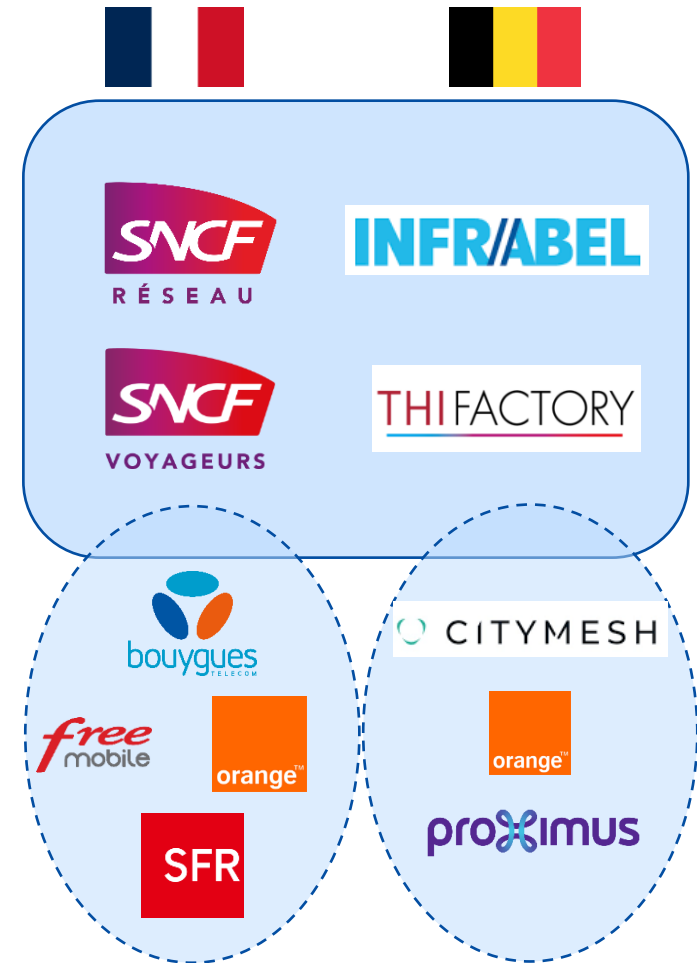
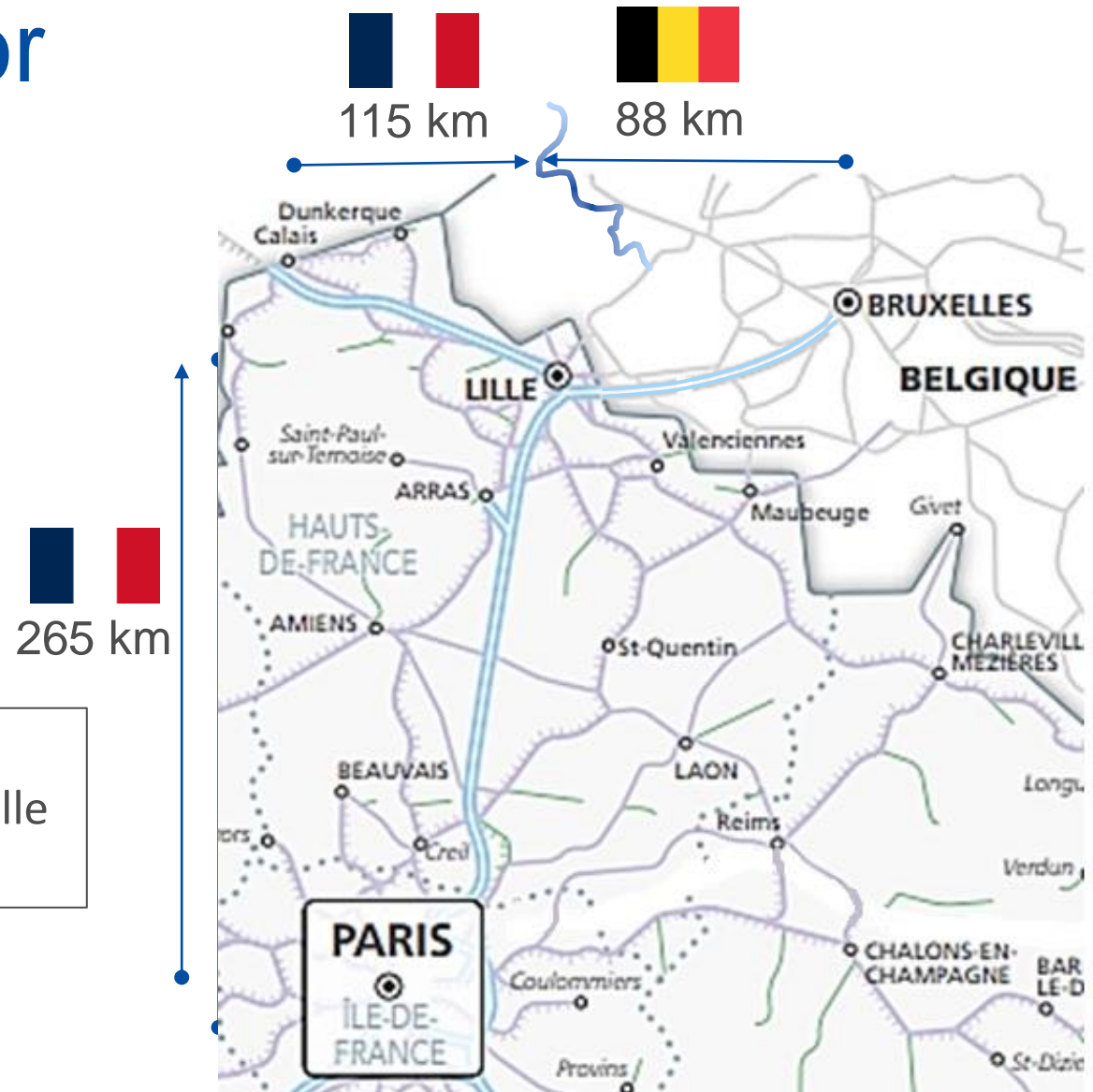


Image of the Corridor

5G HSL Eurolink

The Study targets, a part of the European Corridor connecting Brussels to Paris and Lille to Calais (Connexion to Eurotunnel)



Work Package

Work Package 1:
Requirements &
Radio planning

Work Package 2:
Technical Model for
implementation

Work Package 3:
Cooperation &
Business model for
implementation

Work Package 4:
Project Management,
Coordination &
Communication

Goal of the project



Cross-Border Corridors

- 5G infrastructure along a rail cross-border section of High-Speed Line Between Paris – Brussels.



Connectivity

- Improve the connectivity in train by 5G Coverage

Environmental impact

- Target EU Climate Goals
- Shifting transportation onto rails, reduces carbon footprint.
- Mutualise infrastructure reduces carbon footprint



Rail Operations

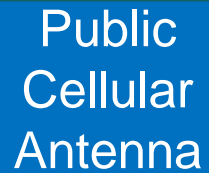
- Migration from GSM-R to FRMCS until 2035
- FRMCS will support ETCS Level 2



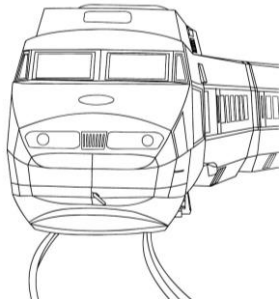
Synergies and Impact - Mutualisation



FRMCS
Antenna



Public
Cellular
Antenna



- **Technical Synergies (Asset Sharing)**
- **Financial Synergies**
- **Sustainability and Environmental Impact**
- **Socio-Economic Impact**

Partnership Key Advantage



Sharing of Infrastructure

FRMCS for digital rail and high throughput connectivity mobile coverage is only feasible with sharing of infrastructure. This study will explore novel ways of sharing, building cooperation models, and deploying alongside railway tracks whilst leveraging existing infrastructure.

Contribution of Expertise

With partners from the telecommunications sector in France and Belgium, the skills will be brought together. The lessons and results of this study can contribute to future national and European initiatives.

EU Funding as a Catalyst

The funding and visibility provided by the EU facilitate and accelerate the project, enabling a rapid start-up and strengthening the commitment of all parties involved. The European Commission enables discussions with other European partners through their project.



Thank You

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