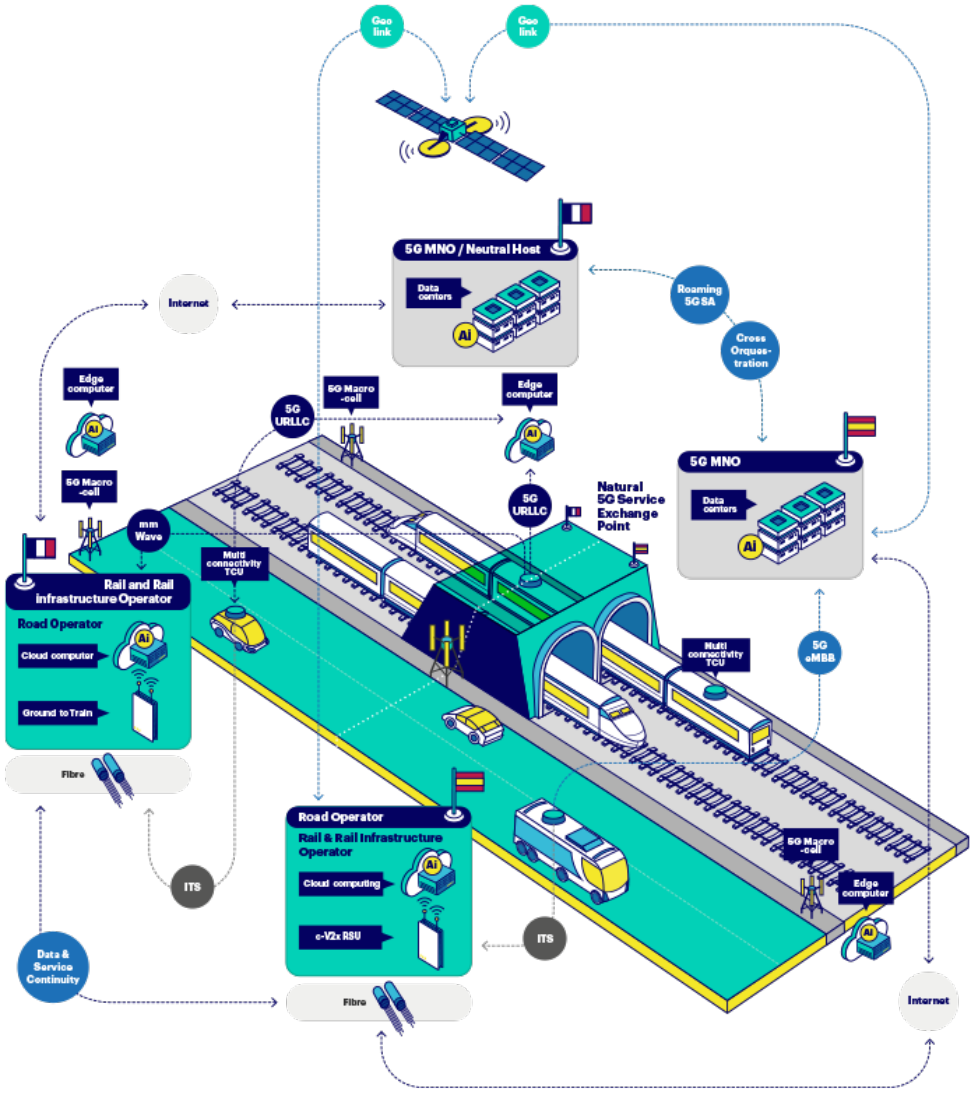
Cross-Border Corridors: 5G for Connected and Autom. Mobility 2

GloTS

June 21st, 2022

5GMed.

5GMed in a nutshell



UNLOCKING roadways/railways synergies to understand how to address cross-border large-scale 5G deployments.

5GMed project's objective is to **design a roads/railways 5G infrastructure architecture in the cross border** with **proven sustainable business models, investment viability** and **scalability potential**.

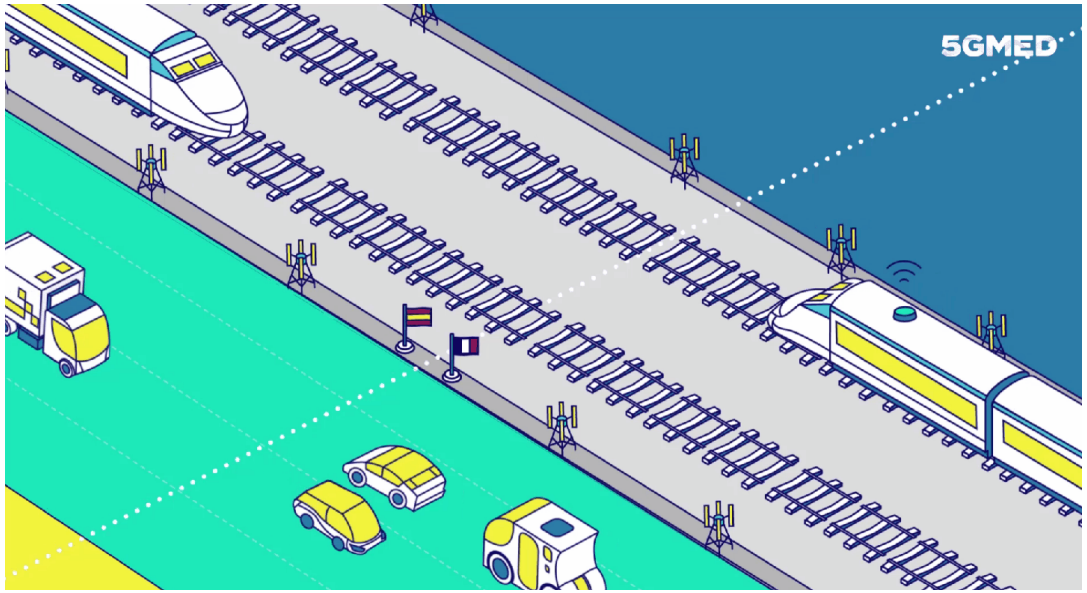
The network architecture aims to respond to **CCAM and FRMCS (non-critical services) functional requirements in the cross-border** to secure **services' availability and continuity**.

Technological enablers

- Dedicated 5G SA networks (France, Spain), 5G RAN and 5G Core.
- Roaming optimisation techniques, to reduce service interruption time and roaming latency when **crossing the border.**
- Service continuity in cross-border and between different operators.
- Network slicing to guarantee network service performance.
- Distributed edge computing (MEC) to improve latency and data-rate.
- Cross-operator service orchestrator to deploy services and coordinate the migration application functions between MECs on the two sides of the border (cross-MNO).
- AI functions for QoS prediction.
- Coexistence of 5G NR with other radio access technologies to cover 5G coverage holes.
    - On highway: RSUs for V2I based on C-V2X (5.9 GHz).
    - On railway: IEEE 802.11ad access points (70 GHz), very high data rate/low latency.
    - On railway isolated areas: satellite connectivity (delay-tolerant services only).
- Self-sustainable sites to provide connectivity in isolated areas, no access to power-grid, satellite-backhaul.

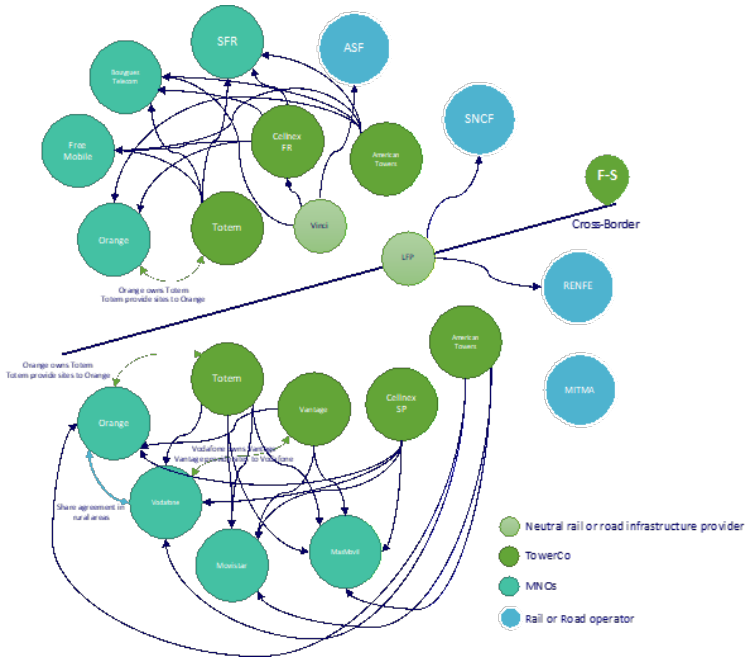
Opportunities: by unlocking synergies

Infrastructure coexistence



- **Global 5G cross-border architecture** with proven scalability and replication potential in Europe.
- **CCAM & FRMCS combined requirements** to create attractive application domains. The impact on CCAM and FRMCS (so far, disconnected environments) will be paradigmatic.
- Compact demand vs continuous demand.
- Need to increase **infrastructure density for CCAM services** in the upcoming years.
- A joint approach will engage key European industrial partners (ICT, automotive sectors, railways operators, train manufacturers), boosting **high advances in standardisation.**
- Neutral (shared) managed network infrastructures, **optimising investments**
- **New markets** (e.g., mobility, personal services and infotainment, IoT, health …) with **new players:** network-related cloud-implemented services and functionalities providers
- Distributed computation: EDGE-based computational capacities, **dynamically configurable.**

5GMed. Some lessons learned



Opportunities

- Importance of a complete universal 5G cross-border architecture.
- Deployments optimized to resolve cross-border challenges.
- Possibility to create a neutral cross-border infrastructure.
- Cross sector multiplier effect.
- Synergies between Rail and Road will increase according to the vehicle's driving automation.
- 5G and Side-link complementarity helps accelerating CCAM adoption.

Challenges

- Equipment delivery availability needs to be considered.
- 5GSA technologies have integration issues, especially on Slice and O-RAN.
- Different MNOs' 5G deployment obligations with their licences in each Member State. Different adoption and strategies.
- Neutral host model is not the preferred model for MNOs.
- Replicable and scalable business model.

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