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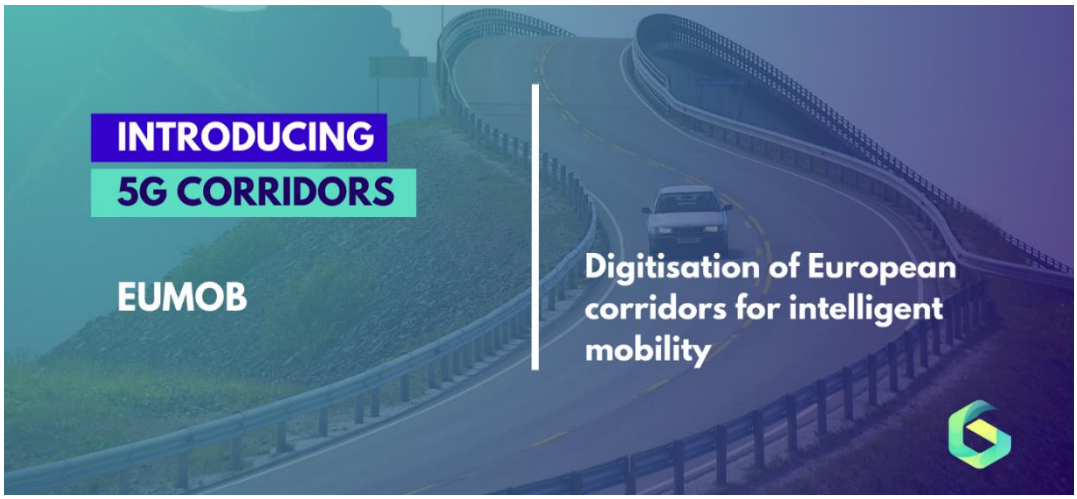
5G Corridors project fiche – EUMOB

EUMOB: Digitisation of European corridors for intelligent mobility



The project in a nutshell

EUMOB is a cross-border feasibility study between Spain and France. The project is a joint effort between Abertis Autopistas Espana, Cellnex France, SANEF, and Tradia Telecom that focuses on the digitalisation of European road infrastructure to support the harmonised deployment of C-ITS services and the subsequent development of service-driven business ecosystems in transport and mobility.

Key facts

Length: 9440 km, 5627 km of which in Spain and 3813 km in France

Corridor: FR-ES sections of the cross-border Atlantic and Mediterranean corridors

Total EU grant: €146,800

Project duration: 6 months

Transportation mode: Road

Spectrum bands:

- **v2x direct communications** (V2V/I/P), side link:
  - **Delivering day-1 use cases** via LTE-V2X to support basic safety ITS services requires up to 20 MHz spectrum at 5.9 GHz for V2V/I/P communications.
  - **Delivering advanced use cases** via 5G-V2X (NR-V2X in addition to LTE-V2X) to support advanced driving services will require an additional 40 MHz or more of the spectrum at 5.9 GHz for V2V/I/P communications.

- **c-v2x network-based (V2N) communications, 5G:**
  - At least 50 MHz of additional service-agnostic low-band (<1 GHz) spectrum would require mobile operators to provide advanced automotive V2N services in rural environments with affordable deployment costs.

- At least 500 MHz of additional service-agnostic mid-band (1 to 7 GHz) spectrum would require mobile operators to provide high-capacity, citywide advanced automotive V2N services.

Standards:

At the physical layer, it is almost stated that all products follow precisely the same protocols and profiles on the radio link (e.g., ETSI-ITS + C-Roads/Car2Car Communication Consortium in Europe and assoc. countries). Only the radio link is standardised, but RSUs must stxill be customised towards RTA ITS systems.

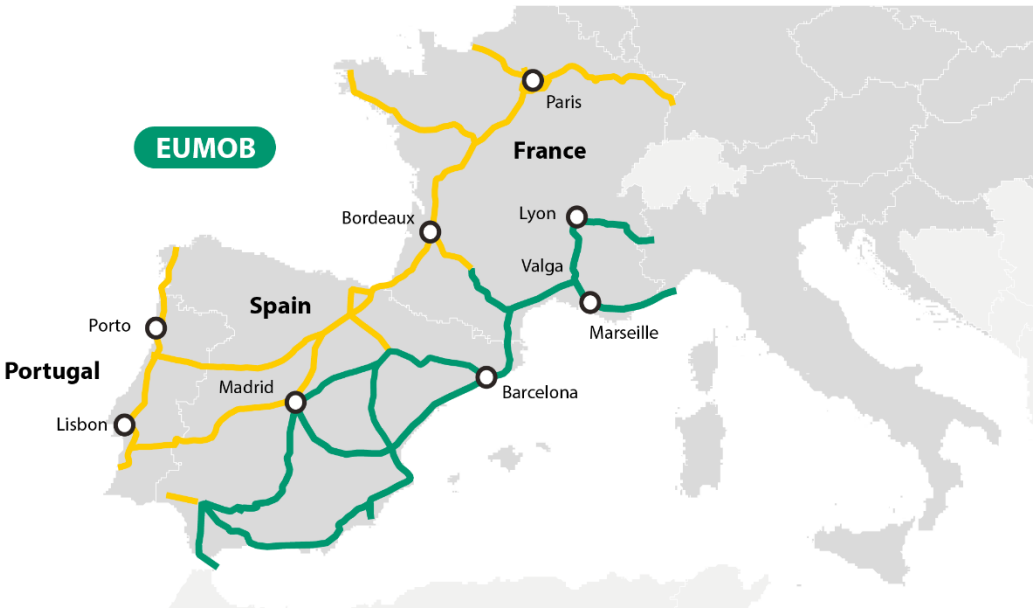
As stated in the 5GCroCo EU project that follows 5GAA, OEMs have their backends with individual interfaces, while RTAs aggregate information in National Data Access Points (NAPs). SP may operate Data Marketplaces with their interfaces but also integrate with OEMs and NAPs (publish/subscribe and request/reply). Finally, IP networks are the common ground, meaning MNO networks.

QoS:

Use case	Potential to be deployed with existing cellular connectivity	Requirement of short-range V2X communication / 5G with low latency Quality of Service
A1 **Digitalisation of traffic orchestration processes, including detection and notification of road hazards and anomalies**	For the **"Inform" category** (risk avoidance), **LTE** would allow **non-real-time**(>2 seconds)**traffic management** and **in-road hazard detection.** **Notification to drivers** would be performed via VMS, DATEX II, APIs to OEM back-ends, etc., with **some latency.**	**Real-time traffic management** and **in-road hazard detection** would require low-latency technologies for the **"Warn"** (risk mitigation) **and "Alert"** (collision avoidance) **categories.** **Notification to drivers** would be performed via **V2X**, with low-latency responses from vehicles (e.g., speed reduction for AVs) and actionable road infrastructure (e.g., road barriers) for the "Alert" category. Potential to **leverage vehicles as sensors,** reducing the need of physical and fixed road sensors.
B1 B2 **Mgmt. and decision support for auxiliary roadside infra.: truck parking slots, EV charging stations, retail**	**Information, booking and management of auxiliary road services** would be enabled by LTE connectivity.	Service provisioning would be potentially enhanced by **real-time short-range communications** to **prioritise** usage of auxiliary road services **based on need**(e.g., prioritized EV charging to vehicles with low battery levels).
C1 **Road user collections**	**Identification and collection of toll payments** would be enabled by LTE, allowing free-flow and dynamic pricing (with some latency) and removing traditional plazas.	Service provisioning would be potentially enhanced by **short-range communications** to enable real-time dynamic pricing based on congestion, emissions, etc.
D1 **Asset deterioration monitoring and CapEx avoidance** (road digitalisation)	For the **"Inform" category** (risk avoidance), **LTE** would allow **non-real-time**(>2 seconds) **maintenance / inspection need** assessment based on road data (e.g., asset sensorisation, 3rdparty data). **Notification to traffic authorities/road operators** would be performed via, for instance, APIs to traffic control centre back-ends with **some latency.**	**Real-time identification of maintenance / inspection needs** would require low-latency technologies for the **"Warn"** (risk mitigation) **and "Alert"** (collision avoidance) **categories.** **Notification to traffic authorities/road operators** would be performed via **V2X**, with low-latency responses from actionable road infrastructure (e.g., road barriers) for the "Alert" category. Potential to **leverage vehicles as sensors,** reducing need of physical and fixed road sensors

Service / Use cases: The study identified 26 relevant use cases, 5 of which are to be studied in depth due to their high economic impact and short time-to-impact:

- Digitalisation of traffic orchestration processes, including detection and notification of road hazards and anomalies
- Management and decision support for auxiliary roadside infrastructure: truck parking slots
- Management and decision support for auxiliary roadside infrastructure: EV charging stations
- Road user collections
- Asset deterioration monitoring and CapEx avoidance



What will it provide?

The project will provide a comprehensive deployment and cost analysis for the prioritised use cases, facilitated by the development of a dedicated calculator tool based on the layout and existing infrastructure and an analysis of economic, social and environmental impact.

The expected outcomes of EUMOB include

- a solution model that describes the technical implementation of the infrastructure digitalisation,
- a return-on-investment model, and
- a business plan that determines how the components of the digitalised infrastructure are sustained and exploited.

This will provide the necessary plans and background for a follow-up work project to deploy the solution model in the designated corridors.

How will the project unfold?

Short-term: Deploy an end-to-end reference traffic-safety use case: Deploy an end-to-end connectivity and data traffic-safety related use case on a selected highway.

Mid / long-term: Complement deployment at scale with other cost-efficient business model archetypes.

How is it financed?

The project is funded by EU/CEF Digital programme.

Total EU Contribution: €146,800

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More information

Funding and tenders project page
Project website: https://www.eu-mob.eu/en/

About

The ambition of the GUIDE project is to bring together the relevant stakeholders from the ecosystem of l 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.

Follow us on X.com and LinkedIn for the latest updates on the CEF Digital programmes.