

5G based tunnel assistance

Objective: Connected mobility proof of concept offering driving assistance to vehicles driving along Cereixal tunnel (Galicia, Spain), both at the tunnel entrance, exit, and during their journey through the tunnel.

Description: Connected mobility requires that both the vehicle and the road infrastructure are connected and able to communicate with each other. This project is the first step towards the road of the future, an intelligent, sensorized road that can communicate with its environment.

To achieve this, Telefónica has:

- Deployed 5G coverage in Cereixal tunnel along with an Edge Computing server.
- Deployed sensors in the tunnel, specifically: 9 AID (Automatic Incidence Detection) cameras, 2 thermal cameras, 1 OCR camera that identifies electric vehicles, 1 OCR camera that detects dangerous goods, 1 opacimeter and 1 weather station at the tunnel exit.
- Deployed a C-ITS hub on the MEC server covering the tunnel area containing the necessary intelligence to detect abnormal situations occurring in the tunnel and then inform the vehicles travelling through it, thus providing safer cooperative driving.
- Provided C-V2X connectivity (cellular network-based vehicle connectivity technology) to vehicles both natively through an on-board unit (OBU) and through an App running on smartphones, thus expanding the number of connected vehicles.

5G technology is essential in this proof of concept because of the inherent ultra-low latencies it brings, essential when it comes to critical vehicular communications. Another 5G capability used in this pilot is the uplink bandwidth that enables use cases such as real-time concurrent upload of multiple video streams.

[Additional references](#)

