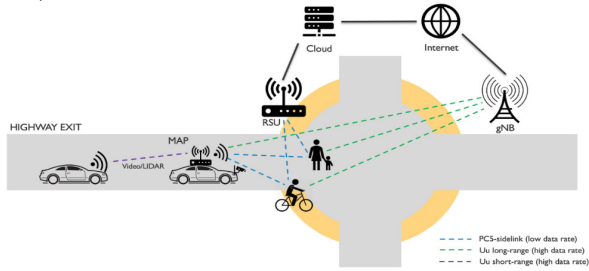




Dynamic coverage Extension and Distributed Intelligence for human Centric Applications with assured security, privacy, and Trust: from 5G to 6G Smart Highway

Smart Highway is a use case that benefits from beyond 5G connectivity for connected and autonomous mobility. In this use case, the smallest possible delay and ultra-reliability in communications between road users are expected to allow safety on the roads. This use case will leverage the use of cars and roadside infrastructures as edges. In addition, cars that are by nature mobile, will also be exploited as Mobile Access Points (MAPs).



Safety at the intersection

Provide necessary network mechanisms for the well-performing of road services

Need for B5G/6G

- 1 Imperceptible end-to-end latency and response time
- 2 Minimal energy and resource consumption
- 3 Smart distribution of road services in a multi-level edge infrastructure
- 4 Expansion of the communication environment in an ultra-real time

Main Actors



Driver

The driver will be driving the car having an On-Board Unit (OBU) equipped with Lidar and a camera, as well as being capable of transmitting long range and short-range communication.

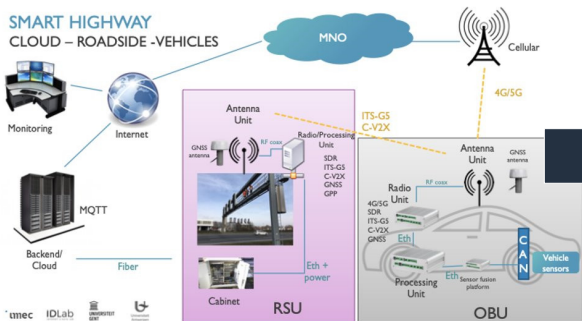


Vulnerable Road Users (VRUs)

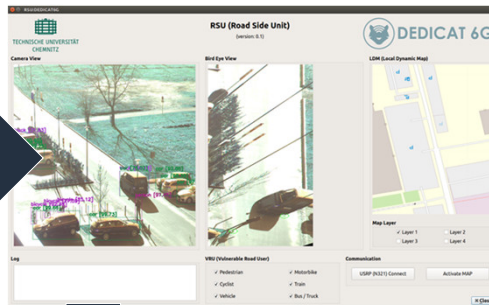
Pedestrians and cyclists are classified as VRUs. The pedestrian and cyclists are present at the intersection possessing a device that provides the awareness and the situation condition of the environment.

Technical aspects

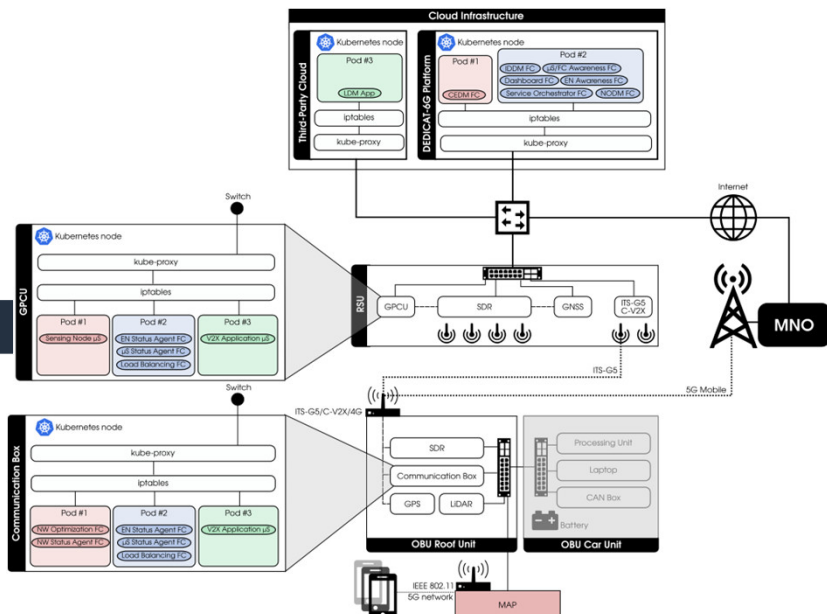
Infrastructure



Showcasing the novel interaction between humans and digital systems



Use Case Architecture



Key Performance Indicators

Description	Target value
5G Vehicular-Based MAP Downlink/Uplink Throughput	>= 16 Mbps
5G Vehicular-Based MAP Latency	<= 20 ms
LDM Response time from identifying dangerous situation until emitting warning message	<= 100 ms
LDM network throughput downlink/uplink usage	>= 16 Mbps