



Using 5G technologies
to innovate logistics
and ports for a sustainable
future

Vertical Innovations in Transport and Logistics over 5G experimentation facilities

Living Lab Hamburg

Living Lab Description

At the LL Hamburg, the partners SWARCO, tec4U, Continental and T-Systems will demonstrate the potential of leveraging positive environmental impact by applying the functionalities of 5G at V2X communication and traffic management, outside the port and the hinterland. For this, an innovative set of use cases has been developed to be tested in Hamburg's TAVF, including Floating Truck and Emission Data (FTED), 5G based Green Light Optimum Speed Advisory (GLOSA) and dynamic control loop for traffic management actions (DCET). By collecting extended floating truck data from relevant road segments along the Hamburg test-field for automated and connected driving (TAVF) generated by vehicle platoons with installed sensor sources (CAN-Bus, On-Board Units, IoT sensors, etc.) complemented with 5G smartphone technology, it becomes possible to enrich existing traffic detection systems, in especially those used in road networks of ports and hinterland logistics. The overall objective is to demonstrate that there 5G enables GLOSA for truck platoons has the potential for traffic managers and port authorities to cut CO₂ emissions and air pollution by 30% and more.

5G Innovation

The Living Lab Hamburg will demonstrate 5G innovations for logistics in the Hinterland of the harbour of Hamburg by using the public 5G network operated by the Deutsche Telekom. This public 5G network covers the designated test field for "connected and automated driving" (TAVF) of the city centre of Hamburg. Within this environment, the Living Lab Hamburg will illustrate how new functionalities of 5G such as Mobile Edge Computing (MEC), precise positioning and low latency communication (uRLLC) can improve the efficiency of logistic operations with regards to collision-free automated driving in a platoon or single-mode to connect hinterland corridors to container terminal. On the other hand, it will be demonstrated, that improved 5G network functionalities such as massive Machine Type Communication (mMTC) and enhanced Mobile Broadband (eMBB) are essential not only for any future mobile network applications but will also help city and port road managers to reduce peak time delays and congested multi-modal logistic operations making use of 5G in the context of goods' transport.



Automated Vehicle Platoon



Automated Vehicle Platoon



Use Case Highlights

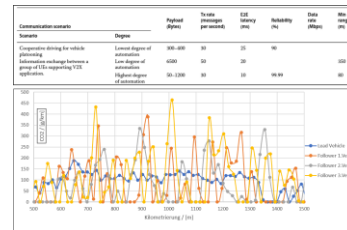
Floating Truck and Emission Data (FTED)

Emission data from floating vehicles/trucks will be made available in a cloud-based centre to enable situation monitoring on emissions.



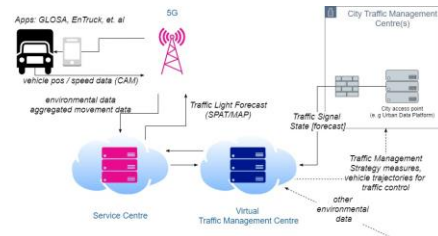
5G GLOSA and Automated Truck Platooning

For this use case, the current and predicted traffic light signalling will be made available from traffic centres to vehicles, in order to allow an optimised trajectory planning for automated vehicle manoeuvring across intersections, saving energy and emissions.



5G-LOGINNOV dynamic control loop

For UC11, data received in UC8/9 and other data typically used in environmental traffic management will be used to trigger traffic management measures (strategies) in traffic control (e.g. changing traffic light framework programs, setting speed limits or providing instructions and directives to vehicles). For this use case, data from vehicles and traffic light status/predictions are based on real data linkage, while traffic management measures (i.e. real changes in signal control or speed limits/advice to broad public) are demonstrated as a concept.



5G-LOGINNOV - Project Info

5G-LOGINNOV supports the new generation of 5G-CAD terminals, new type of IoT-5G connectivity devices through technical solutions, business models and priority scenarios by deploying new CAD and Logistics as a Service in real-life port-city areas. 5G-LOGINNOV's central innovation is to build a first-class European industrial supply side for 5G core technologies and new IoT-5G devices with global market footprints. The Project contributes to the emergence of global standards and globally harmonised frequency bands for 5G in the context of related developments at the level of global bodies like 3GPP, ITU and, being part of the third 5G PPP phase, it supports the development of a "lead" market involving cooperation models with key vertical sectors.

Project partners

- ERTICO (Coordinator)
- AKKA
- CIRCLE
- CONTINENTAL
- ICCS
- ICOOR
- INTERNET INSTITUTE
- LUKA KOPER
- PCT
- SWARCO
- TEC4U
- TELEKOM SLOVENIJE
- T-SYSTEMS
- VICOMTECH
- VODAFONE INNOVUS

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