

5G-LOGINNOV Project

Innovation & Deployment
ERTICO-ITS EUROPE



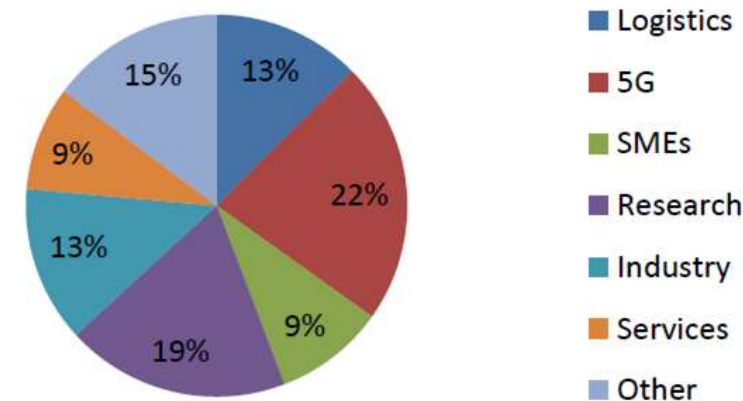
5GLOGINNOV



Project Fact Sheet

- The H2020 Innovation Action 5G-LOGINNOV has a **project duration of 36 months** with project start 1st of September 2020
- The 5G-LOGINNOV **consortium has 15 members from 8 European countries** (BE, ES, FR, IT, RO, GR, SI, DE)
- Members represent stakeholders from: Logistics, Automotive and Telecom Industry working closely with Infrastructure operators and Research Institutes – SMEs and Start-Ups will be integrated for future 5G market uptake across Europe.
- **Total budget:** 7,926,474.29 euro
- **EC Contribution:** 5,999,702.00 euro

Per type of partner



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 957400



Why 5G-LOGINNOV



- Ports are essential for the European economy and for economic growth: 74% of goods exported or imported to the EU are transported via its seaports.
- **Cargo volumes** are increasingly **higher**: with an expected 57% rise by 2030 – while they are also **arriving in a shrinking number of vessels**.
- Cargo port operators need to comply with **increasingly stricter environmental regulations** and societal views for sustainable operations.
- 5G is the convergence technology for the new generation of mobile networks, expected to be massively deployed starting from 2020.

Why 5G-LOGINNOV



- **5G promises also to address the diverse and rather demanding performance requirements of a wide range of use cases.**
- **5G-LOGINNOV is supported by 5G technological blocks: new generation of 5G terminals for future Connected and Automated Mobility (CAM).**
- **New types of Internet of Things-5G devices, data analytics, next generation traffic management and emerging subsets of 5G networks functions.**
- **Through 5G-LOGINNOV, ports will minimize their environmental footprint to the city, they will decrease disturbance to the local population through a significant reduction in the congestion around the port.**

Overview



- 5G-LOGINNOV aims to support 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** (e.g. slicing, eMBB, uRLLC, mMTC, MEC, 5G-NR) with global market footprints.
- The project will have a strong impact in the **logistics industry**, as the innovative use cases deployed in the three Living Labs will test and evaluate **5G-enabled services during the project**.

Overview



- The project has a strong interest in the emergence of new market players, such as SMEs and start-ups, taking advantage of the growing adoption of distributed cloud computing technologies in 5G networks and making possible open innovation at service level in the logistics and Industry 4.0 sectors.
- 5G-LOGINNOV 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 5G standards (Rel. 16/17)**.
- Being part of the third 5G PPP phase implies supporting the development of a "lead" market involving cooperation models with key vertical sectors contributing to the wider policy objectives of industry digitisation in the Digital Single Market.

Objectives:



OBJECTIVE 1 (O1): Develop and Deploy Next Generation ports & logistics hubs operation system architecture integrated in 5G networks at three main ports in Europe: Athens (GR), Hamburg (DE) and Koper (SL) utilising new types of 5G IoT sensors and devices. *WP1-3*

OBJECTIVE 2 (O2): Optimise ports & logistics hubs operation and maintenance, for reducing their operational costs with innovative concepts and use cases.

OBJECTIVE 3 (O3): Reduce significantly ports & logistics hubs operation emissions (CO2/NOX) and regulate the resulting freight traffic on the future 5G logistics corridor in EU including CAM truck platooning management.

Objectives:



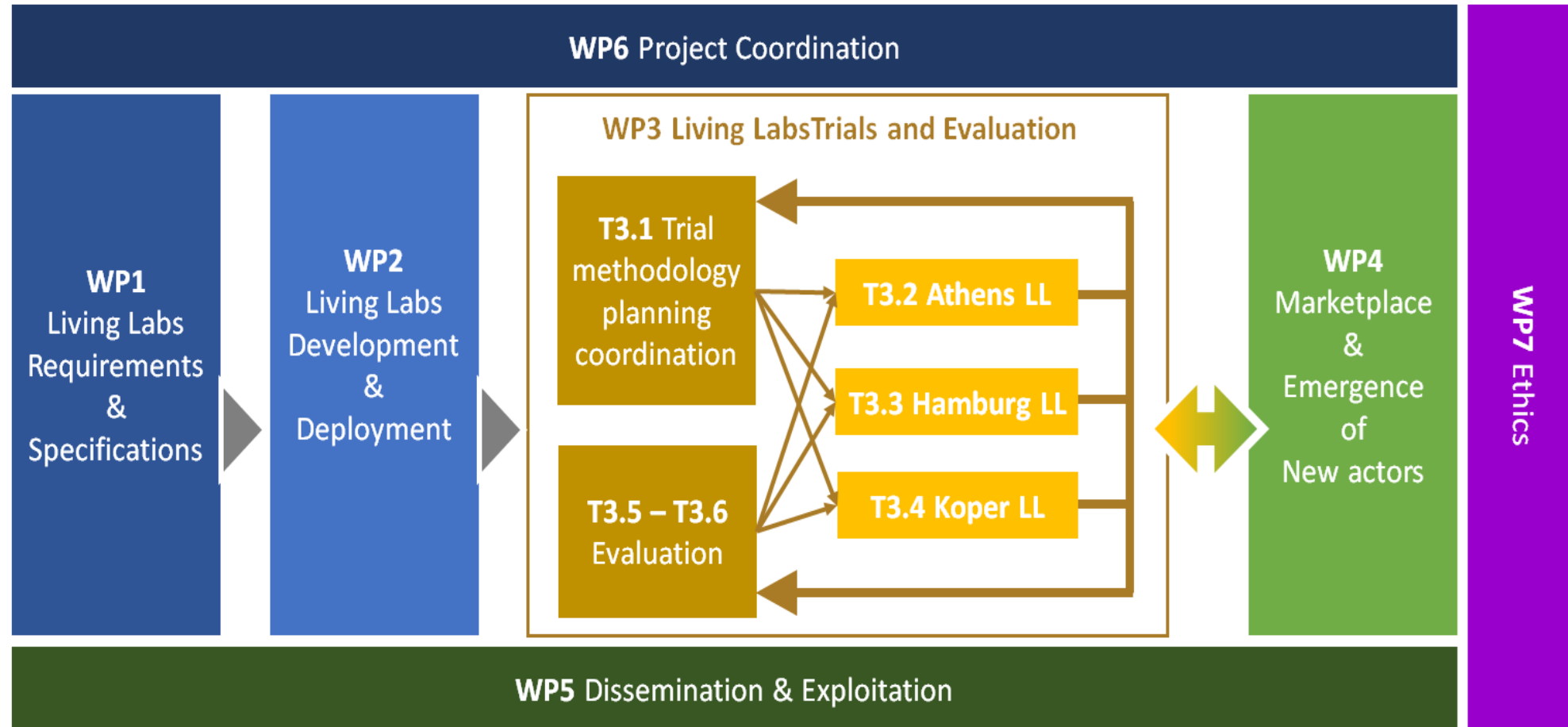
OBJECTIVE 4 (O4): Regulate the freight traffic generated by ports & logistics hubs on the future **5G logistics corridors** in EU and integration of future **Connected and Automated truck platoons**-as 5G-LOGINNOV GREEN TRUCK INITIATIVE according to the EU GREEN DEAL program (December 2019).

OBJECTIVE 5 (O5): Boost ports & logistics hubs operation & maintenance innovation with involvement of **new market actors including SMEs and Start-ups**.

OBJECTIVE 6 (O6): Support standardisation of 5G enabled Next Generation ports & logistics hubs operation system to ensure interoperability, platform openness and operation harmonisation around future 5G Logistics x-border corridors.

OBJECTIVE 7 (O7): Support adoption and take up of 5G enabled Next Generation ports & logistics hubs operation system in Europe and beyond.

Work Packages



AT GLANCE: Living Labs



Piraeus-Athens

UC3: Optimal selection of yard trucks

Installation of a 5G access point on yard trucks e.g., 5G latency, precise localization services, etc.

UC4: Optimal surveillance cameras and video analytics

Installation of connected 4K surveillance cameras.

AI/ML solution for, e.g., container seal presence, human presence detection, social distancing.

UC7: Predictive Maintenance

5G access point installed on yard vehicles.

AP will collect and forward in real time with low latency telemetry data over the 5G network.



AT GLANCE: Living Labs

Hamburg

UC8/9: 5G-LOGINNOV Floating Truck & Emission Data (FTED).

UC10: 5G-LOGINNOV 5G GLOSA & Automated Truck Platooning (GTP)-under 5G-LOGINNOV Green initiative.

UC11: 5G-LOGINNOV dynamic control loop for environment sensitive traffic management actions (DCET).



AT GLANCE: Living Labs

Luka Koper



UC1: port control, logistics and remote automation.

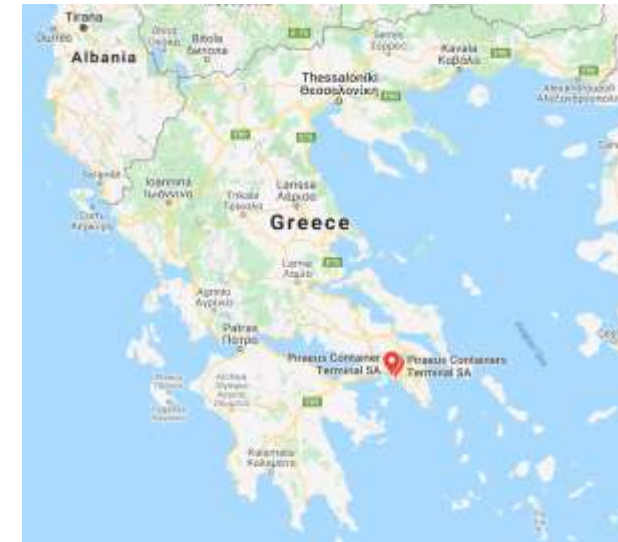
UC2: business critical and mission critical communications.





Piraeus-Athens LL Overview

- Athens Port, Greece (Partners involved: ICCS, PCT, VODAFONE)

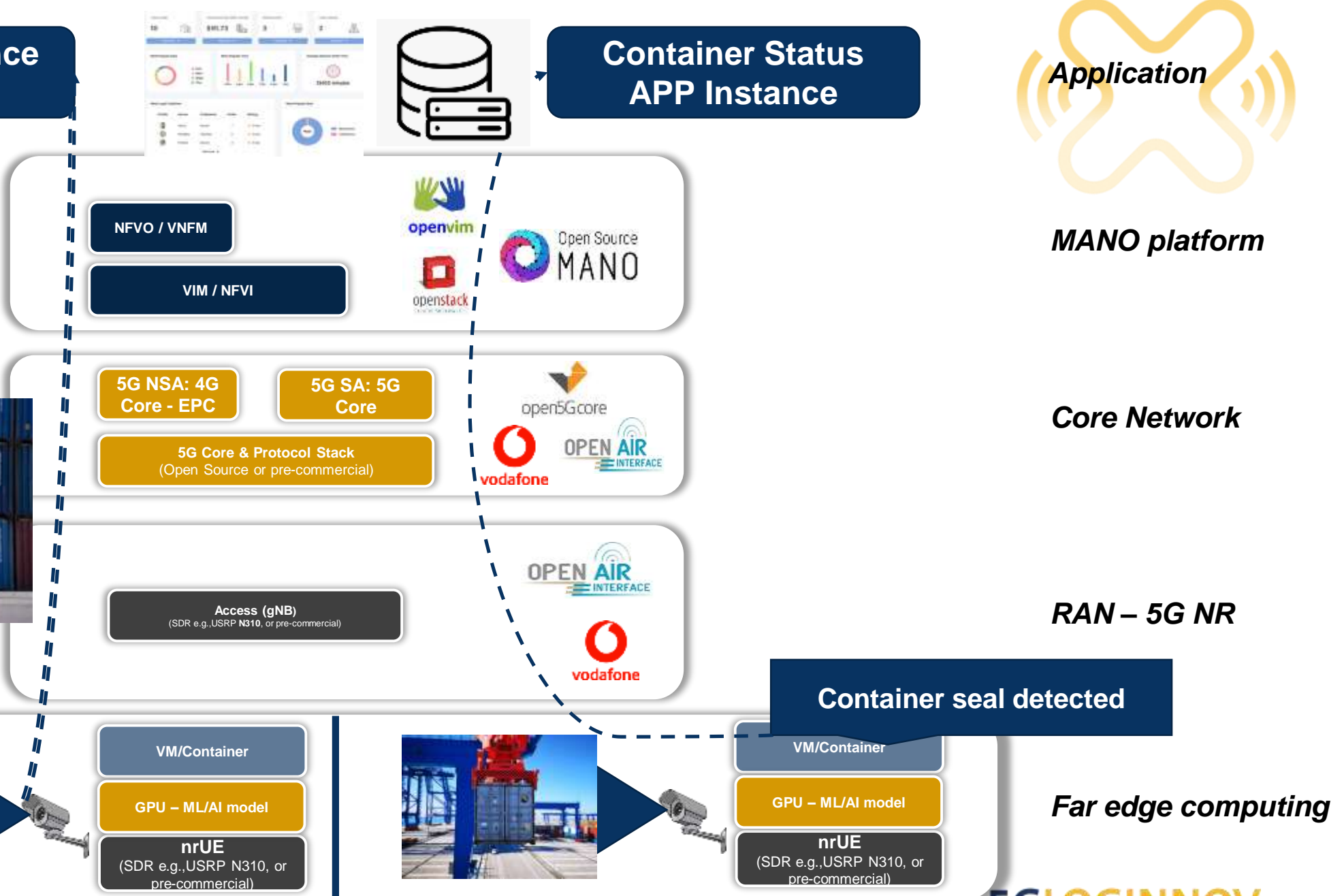


Video Surveillance APP Instance



Low video resolution

4K video resolution



Application

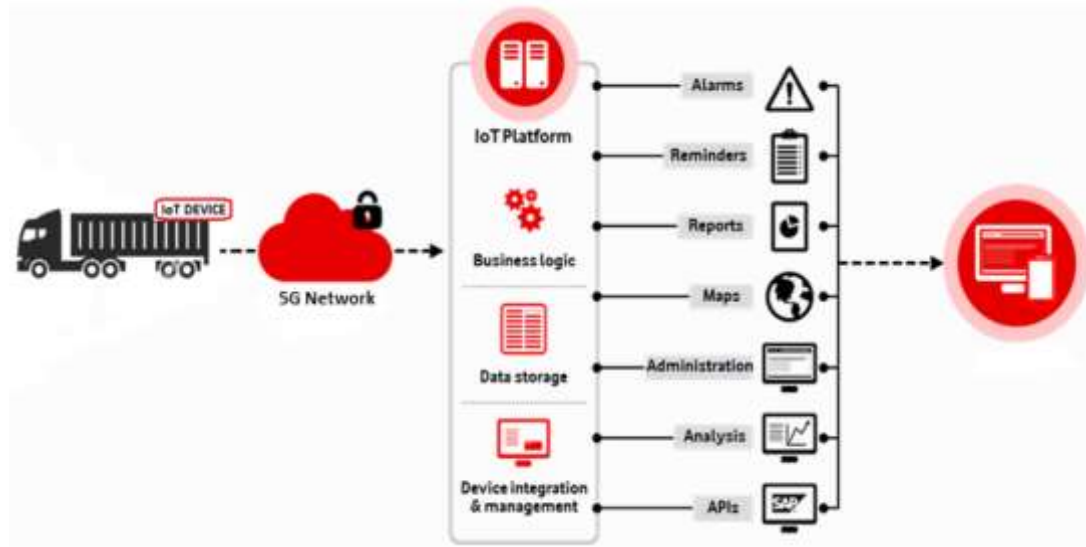
MANO platform

Core Network

RAN – 5G NR

Far edge computing

Predictive Maintenance



- **5G access point will be installed on trucks**
- Collect and forward in real-time with low latency telemetry data over the 5G network to the MANO platform
- PREDICTOR tool was developed through the COREALIS project (768994/MG-7.3-2017)

Optimal allocation of container jobs to trucks



- Current implementation based on WiFi (driven from insights of INTE-TRANSIT 5187/2C-MED12-05 project)
 - Sub-optimal localization of trucks: suboptimal traffic management, increased operational costs, increased CO₂

Hamburg LL Overview

Port of Hamburg, Germany's No. 1

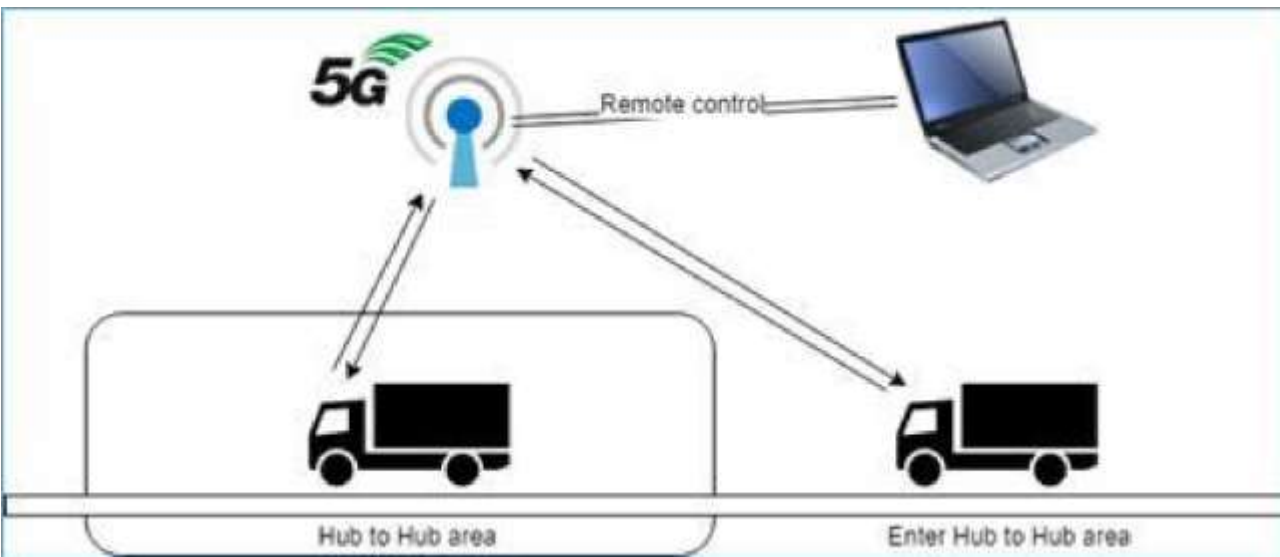


Use Cases



Use cases related to Floating Truck & Emission and Automated Truck Platooning

- **UC8/9:** 5G-LOGINNOV Floating Truck & Emission Data (FTED)
- **UC10:** 5G-LOGINNOV 5G GLOSA & Automated Truck Platooning (GTP)-under 5G-LOGINNOV Green initiative
- **UC11:** 5G-LOGINNOV dynamic control loop for environment sensitive traffic management actions (DCET)
- **Collaboration with** Local administration (I.T.S. Policy Committee)





Luka Koper LL Overview

Port of Koper, Koper municipality, Adriatic Sea, Slovenia





UC1: 5G-LOGINNOV Management and Network Orchestration platform (MANO)

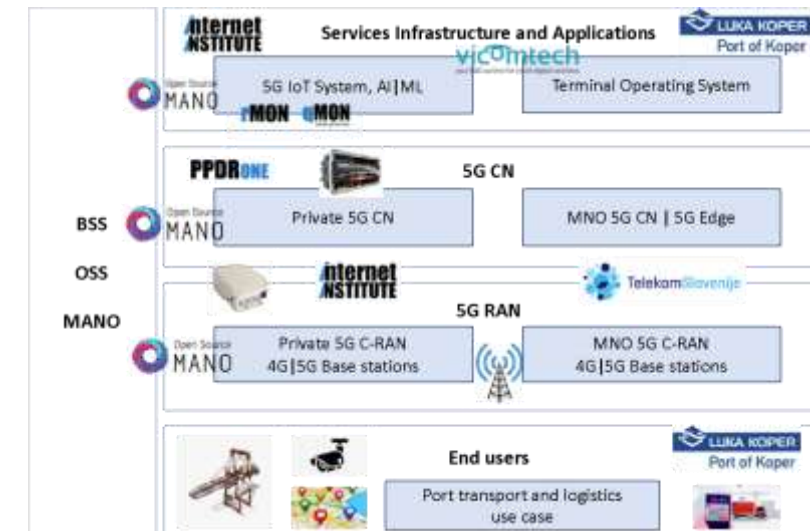
- **Target:** automated deployment and life cycle management (MANO) of network and services VNF (Virtual Network Functions) components for the addressed vertical scenarios – rMON 5G IoT Platform.





UC5: The 5G-LOGINNOV automation for ports: port control, logistics and remote automation

- **Target 1:** Port control, logistics and remote automation (*port machinery equipped with industrial cameras for transferring images to CNS system / exposure to TOS| identification of container markers | detection of structured damage*)
- **Target 2:** port infrastructure monitoring and remote metering with 5G IoT to SCADA (*operating machine monitoring and leak detection identification with water sensors*)
- **Target 3:** resilient 5G based network services (*supporting data transfer redundancy between operational port infrastructure and operations center*)





UC6: The 5G-LOGINNOV 5G mission critical communications in ports

- **Target 1:** A real-time video surveillance use case (*body-worn cameras | portable video surveillance cameras | drone-based surveillance*)
- **Target 2:** private security operations management and support (*personnel/team status monitoring | positioning and triage operations support with dedicated mobile applications*)
- **Target 3:** network reliability and resilience using public and standalone 5G networks



Working Plan:

RV1=M9

RV2=M21

RV3=M39



Technical review

Review

Final review



Thank You Very Much!



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