5G goes 6G": New Opportunities of **Mobile Communication for Better City** and Better Life -5G LOGINNOV -23rd February 2023 Hamburg

AMERON HAMBURG HOTEL SPEICHERSTADT

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The "5G goes 6G" workshop aims to provide startups, SMEs, and stakeholders' communities with new business opportunities for Smart Cities and innovative I.T.S. applications

Part 1: Expert speakers in the fields of Information and Communication Technology (ICT) for Smart Cities, CCAM and innovative I.T.S. applications including Ports and Logistics

Following this trend, emphasis will be placed on technical achievements and startup integration for the three 5G-LOGINNOV Living Labs (Athens, Hamburg, Koper)

Part 2:"Beyond 5G and 6G opportunities" highlighting technical aspects and attractive use cases including user requirements for existing and future projects will be addressed 5G/6G enabled business opportunities for CCAM





WHY 5G-LOGINNOV?



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



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

Per type of partner





- 15 partners + open call: new 5 SMEs
- 8 European Countries
- 3 pilot sites (Hamburg, Athens, Koper)
- Duration: September 2020 August 2023
- Budget: 7,926,474.29 M€
- <u>https://5g-loginnov.eu/</u>



Vertical: logistics industry



AN OPEN PROBLEM

- Supply chain efficiency largely depends upon data and information how it is collected, processed, stored, updated, interpreted, understood, and exploited.
- On operational level, actors need real- time information, to be able to make effective decisions.
- On tactical and strategic levels, transportation systems need increased connectivity.
- Existing systems are currently not linked to each other, thus missing the opportunity to optimize the performance of their cooperation.
- There is the need of new solutions for connecting logistics information systems with different characteristics, intra- and cross-company, for immediate (real-time) exchange of information.





"Show me the Money" from Digitalisation in Logistics





Delivery Capabilities
 Shared Logistics Capabilities
 Logistics Services
 Information Services

How are deployed new CAD & Logistics

- 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 (Hamburg, Athens, Luka-Koper=intelligent hubs & network optimisation-multi/ synchromodal transport & optimise the logistics network).
- 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**.
- The project has a strong interest in the emergence of new market players, such as SMEs and startups, taking advantage of the growing adoption of distributed cloud computing technologies in 5G networks and making possible open innovation at service level in the <u>logistics and Industry 4.0</u> sectors.
- 5G-LOGINNNOV 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 <u>vertical sectors</u> contributing to the wider policy piectives of industry digitisation in the Digital Single Market.

AT GLANCE: LLs

Piraeus-Athens



Optimal selection of yard trucks

Installation of a 5G access point on yard trucks
e.g., 5G latency, precise localization services, etc.
Optimal surveillance cameras and video analytics
Installation of connected 4K surveillance cameras
Al/ML solution for, e.g., container seal presence,

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

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

Hamburg



5G-LOGINNOV Floating Truck & Emission Data (FTED) 5G-LOGINNOV 5G GLOSA & Automated Truck Platooning (GTP)under 5G-LOGINNOV Green initiative 5G-LOGINNOV dynamic control loop for environment sensitive

traffic management actions (DCET)

Luka Koper



- Port control, logistics and remote automation
 Management and Network
- & Business critical and mission critical communications



Piraeus-Athens Living Lab

5G-connected Yard/External-trucks in port operations

- Yard-truck as a 5G-IoT telematics device
 - Data sources: CAN-Bus, localization, other on-truck sensors (e.g., container presence)
 - Applications/use cases
 - Horizontal movement of containers in port operations (between stacking areas and loading/unloading areas for vessels and rail)
 - Al/ML approach for predictive maintenance service
- External truck as a 5G-IoT device
 - Real-time tracking of external assets (tracking, expected arrival, traffic, etc.)



Luka Koper Living Lab 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 | identification of container markers | detection of structured damage)
- **Target 2:** Port infrastructure monitoring and remote metering with 5G IoT (operating machine monitoring by means of capturing and transfer of the key information | positions, usage and other telematics metrics from operating terminal vehicles)
- Target 3: resilient 5G based network services (alternative 5G connectivity capabilities to the established operational WLAN network, supporting data transfer redundancy between the operational port infrastructure and the operations centre)







Hamburg Living Lab

5G-LOGINNOV – use cases of Living Lab Hamburg

- 1) Truck & Emission Data for Sustainable Traffic Management based on 5G V2X in Hamburg
- Automated Truck Platooning using 5G based GLOSA in the logistics corridor of Hamburg to achieve low emission targets for ports and hub-logistics
- 3) Data exchange with SWARCO traffic management center. Dynamic control loop for the reduction of CO2/NOx emissions from trucks by avoiding Start-Stop events by using GLOSA technology

With 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.





5G ASPECTS COVERED IN 5G-LOGINNOV





5G-LOGINNOV impact



Network and telecom operators	Business- Logistics hub management / operators	SME & Start-ups	5G-PPP	EU policy
identify and assess new relationships between the stakeholders	opportunity to enhance the value of third- party services	customise 5G portfolio of products and services for port logistics and security market niches	work with the relevant 5G- PPP bodies	cross-sectorial nature of the 5G core technologies and innovative services
new partnerships and innovative ecosystems	new solutions for port operations and logistics	Identify real market opportunities especially in target niches	exploit the results from different projects of the 5G-PPP Phases	leverage lessons learned and recommendations



5G-LOGINNOV→Future



- TRUST: Trust is the basis of the 5G-LOGINNOV. To use the data, the data consumer must fully accept the data owner's usage policy.
- NEW BUSINESS ECOSYSTEM: new innovative solutions for port operations and logistics, Identify real market opportunities especially in target niches for SMEs
- STANDARDIZED INTEROPERABILITY: is implemented in different variants and can be acquired from different vendors.
- VALUE ADDING APPS: includes also services for data processing, data format alignment, and data exchange protocols.
- **DATA MARKETS:** 5G-LOGINNOV enables the creation of novel, datadriven services that make use of data apps, cross-sectorial nature of the 5G core technologies and innovative services.
- PI: 5G-LOGINNOV enables the creation of new ICT infrastructure to support operations in future PI logistics networks





SGLOGINNOV Thank you for your attention!

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