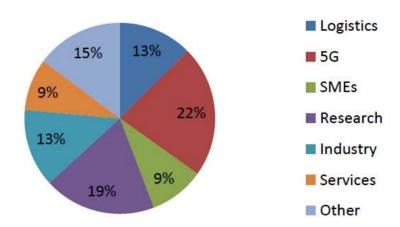
5G-LOGINNOVProject

Innovation & Deployment ERTICO-ITS EUROPE



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.
 Per type of partner
- **Total budget:** 7,926,474.29 euro
- **EC Contribution:** 5,999,702.00 euro





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 <u>logistics and</u> <u>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 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.

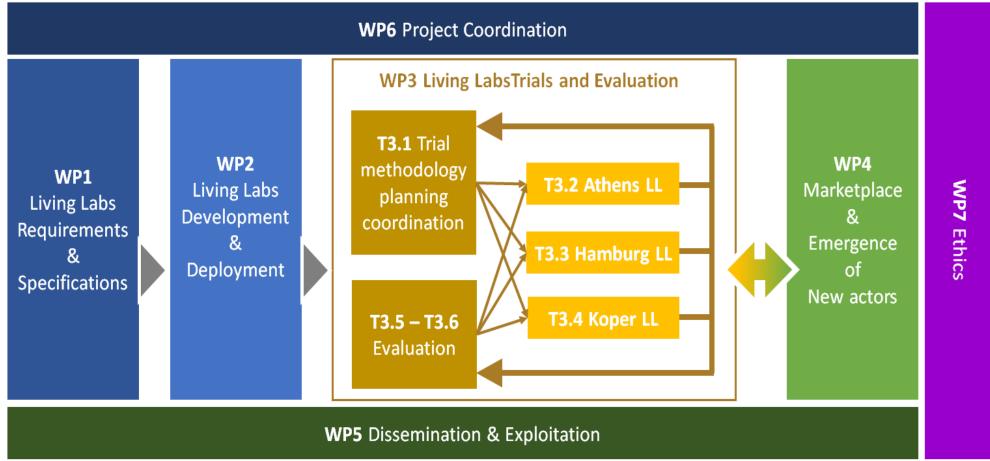
OBJECTIVE 6 (O6): Support standardisation of 5G enabled Next Generation ports & logistics hubs operation system to ensure interoperability, platform openness and operation harmonisation around future 5G Logistics x-border corridors.

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.

Al/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.





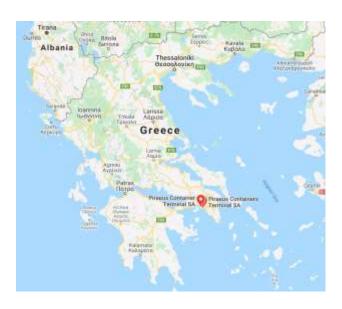


Piraeus-Athens LL Overview



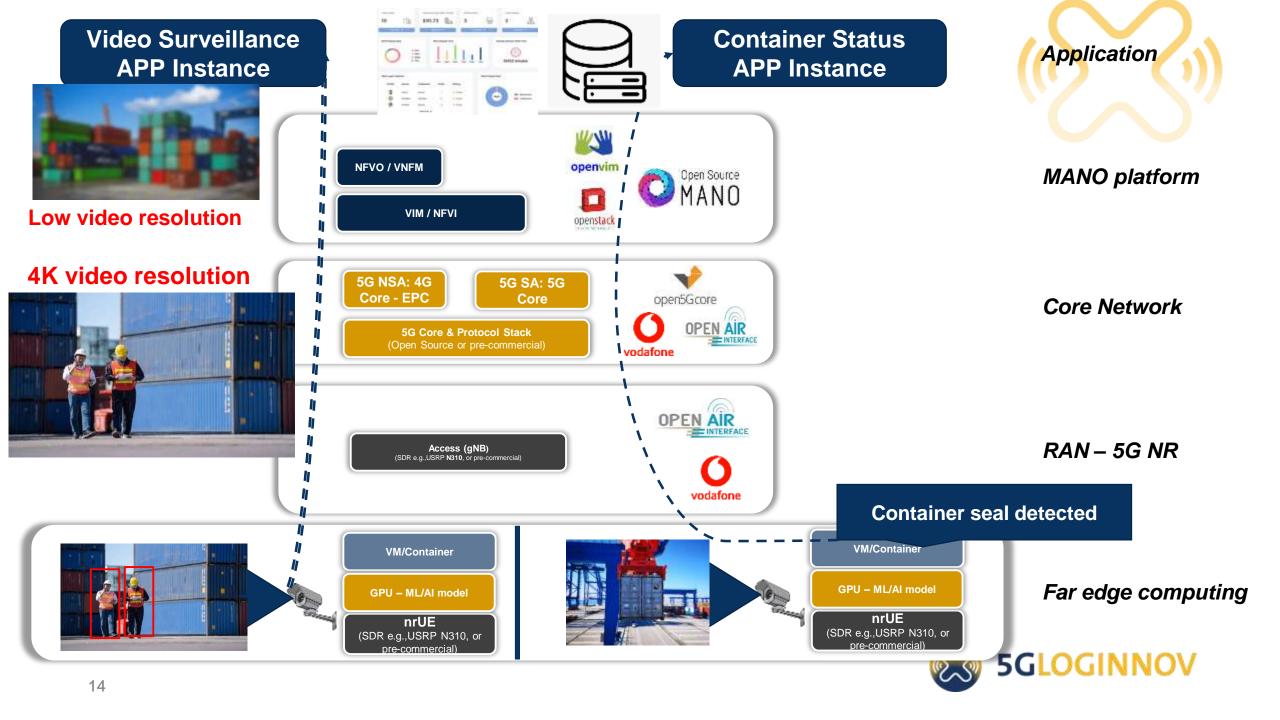
Athens Port, Greece (Partners involved: ICCS, PCT, VODAFONE)

l'otal ç	ontain	er thro	ughput in 1000 TEU	THE CASE	
Rank 2019	Rank 2018	Rank 2007	Port	2019	Growt 2019 vs.
	1.	1	Rotterdam (NL)	14,811	2.1%
2	2		Antwerp (BE)	11,860	. 6.8%
	3	2	Hamburg (DE)	4220	618
4	6	17	Piraeus (EL)	5,650	5.19
6	.5	8	Valencia (ES)	5,441	5.0%
6		6	Algeciras (ES)	5,120	7.3%
7	4	4	Bremerhaven (DE) (*)	4,871	-10.6
8	A	7.	Felixstowe (UK)	3,778	⇒ Figure
9	9	10	Barcelona (ES)	3,324	-2.99
10	11.	9	Le Havre (FR)	2,786	5 -2.99 3 -3.49 1 -17.8
11	10	-12	Marsaxlokk (MT)	2,720	ii iii -17.8
12	12	14	Genoa (IT) (*)	2,635	1.0%
13	13	5	Giola Tauro (IT)	2,523	8.4%
14	14	15	St Petersburg (RU)	2,222	4.3%
15	16	63	Gdansk (PL)	2,073	6.4%
			TOP 15	79,071	2.8%
			TOP 3	35,929	4.6%









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



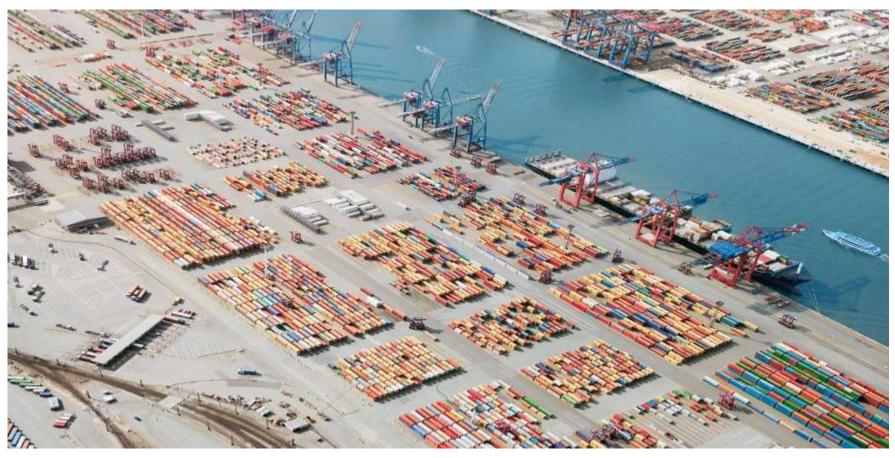
- Current implementation based on WiFi (driven from insights of INTE-TRANSIT 5187/2C-MED12-05 project)
 - Sub-optimal localization of trucks: suboptimal traffic management, increased operational costs, increased CO₂



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.



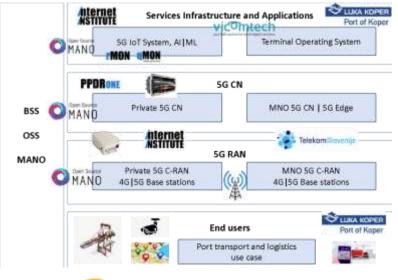


UC5: The 5G-LOGINNOV automation for ports: port control, logistics and remote automation

- 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

	5G-LOGINNOV	Sept		May								IM	av	20	22	26 27 28 29 30 31 32								Nov 2023								
	Project Month	1 2	3 4	5 6	7	8 9	10	11	12	13	14	15	16	17 1	8 1	9 20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
WP1	Living Labs requirements & specifications (VICOM)					MS3	j									- 1	. Jane	1		1		ne-mil	1,,,									115-07
T1.1	Living Labs innovation specifications			D1.1																												
T1.2	5G architecture requirements					D1.2																										
T1.3	Living Labs infrastructure requirements					D1.3																										
T1.4	Evaluation methodology and requirements					D1.4			112																							
	Data management and cyber-security requirements					D1.5										1																
WP2	Living Labs development and deployment (ERTICO)									3	MS6					MS	7															
T2.1	Development and deployment coordination								D2.1																							
T2.2	Tools for evaluation and data collection										D2.2																					
T2.3	Development and deployment LL Athens															D2.	3															
T2.4	Development and deployment LL Hamburg																															
T2.5	Development and deployment LL Luka Koper	1			100000									Section (Section	10 900																	
WP3	Trials and evaluation (TSY)	Land Indiana							MS4	- 1						- 1		MS8										MS9				
T3.1	Trial methodology, planning and coordination								D3.1																							
T3.2	Trials LL Athens																	D3.2														
T3.3	Trials LL Hamburg															300		D3.2	- III	1			West.									
T3.4	Trials LL Koper																															
T3.5	Evaluation of operation optimization	1																										D3.3				
T3.6	Evaluation of social, economic and environmental impacts																											D3.4				
WP4	Marketplace and emergence of new actors (ICOOR)								MS5								. i															MS10
T4.1	Strategy supporting next generation logitics operations			D4.1																												
T4.2	Emergence of new actors								D4.2																							D4.3
T4.3	Boosting economic opportunities	in the							12000																							
T4.4	Lessons learned and recommendation for stakeholders			-																												D4.4
WP5	Dissemination and exploitation (CIRCLE)		MS2								1																					MS11
T5.1	Communication plan		D5.1																													
T5.2	Dissemination plan		D5.2	an Barana																												D5.3
T5.3	Exploitation													D5	.4																	D5.5
T5.4	Standardisation and spectrum	0.0000000000000000000000000000000000000				TAXABLE PARTY		221222	11000000		Ma 2000			0.00		0.00							No.						e de la companya de l			D5.6
T5.5	Clustering and networking																															D5.7
WP6	Project coordination (ERTICO)	MS1		L. J.			11	l I							-16					ţ	111115									110	11/1	MS12
T6.1	Administrative and financial coordination	D6.1																														
T6.2	Technical coordination	56.1														9111				and the												
T6.3	Innovation and IPR management								D6.2																							D6.3
T6.4	Data management (ORDP)			D6.4																												D6.5
	Risk and quality management plan		D6.6																													
WP7	Ethics (ERTICO)																															
17.1	Ethics requirements				D7.1					III TO A STATE OF	tradition to		-110		1011		mi kunin			1000			and the same							-	The same	
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Thank You Very Much!



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