



# 5G LOGINNOV

## D5.3

### Dissemination and Communication Report

[www.5g-loginnov.eu](http://www.5g-loginnov.eu)



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## List of abbreviations and acronyms

| Abbreviation        | Meaning  |
|---------------------|--|
| <b>3G</b>           | Third Generation Wireless System   |
| <b>3G PP</b>        | 3G Infrastructure Partnership Project  |
| <b>5G</b>           | Fifth Generation Wireless System   |
| <b>5G MOBIX</b>     | 5G for cooperative & connected automated MOBility on X-border corridors                |
| <b>5G-PPP</b>       | 5G Infrastructure Public Private Partnership   |
| <b>AKKA</b>         | AKKA High Tech   |
| <b>AOELIX</b>       | Architecture for EurOpean Logistics Information eXchange                               |
| <b>API</b>          | Application Programming Interface  |
| <b>ARCADE</b>       | Aligning Research & Innovation for Connected and Automated Driving in Europe           |
| <b>AUTOPILOT</b>    | AUTOmated driving Progressed by Internet Of Things                                     |
| <b>CAD</b>          | Connected and Automated Driving  |
| <b>CAM</b>          | Connected and Automated Mobility   |
| <b>CCAM</b>         | Cooperative, Connected and Automated Mobility  |
| <b>CEN</b>          | European Committee for Standardization   |
| <b>CENELEC</b>      | European Committee for Electrotechnical Standardization                                |
| <b>CIRCLE</b>       | Circle SpA   |
| <b>CLUSTERS 2.0</b> | Open network of hyper connected logistics clusters towards Physical Internet           |
| <b>CONCORDA</b>     | Connected Corridor for Driving Automation  |
| <b>CONTI</b>        | Continental Automotive Romania SRL   |
| <b>COREALIS</b>     | Capacity with a pOsitive enviRonmEntal and societAL footprint: portS in the future era |
| <b>DG</b>           | Directorate General  |
| <b>DM</b>           | Dissemination Manager  |
| <b>EC</b>           | European Commission  |
| <b>EMTEL</b>        | Special Committee on Emergency Telecommunications                                      |
| <b>ERT</b>          | European Road Transport Telematics Implementation Coordination Organisation S.C.R.L.   |
| <b>ERTICO</b>       | European Road Transport Telematics Implementation Co-ordination                        |

|                 |  |
|-----------------|--|
|                 | Organisation.  |
| <b>ETPs</b>     | European Technology Platforms  |
| <b>ETSI</b>     | European Telecommunications Standards Institute  |
| <b>EU</b>       | European Union   |
| <b>FENIX</b>    | Future business models for the Efficient recovery of Natural and Industrial secondary resources in eXtended supply chains contexts                       |
| <b>GA</b>       | Grant Agreement  |
| <b>ICCS</b>     | Institute of Communication and Computer Systems  |
| <b>ICOOR</b>    | Consorzio Interuniversitario per l'Ottimizzazione e la Ricerca Operativa   |
| <b>ICT</b>      | Information and Communications Technology  |
| <b>ICT4CART</b> | ICT infrastructure to enable the transition towards road transport automation  |
| <b>ININ</b>     | Internet Institute, Communications Solutions and Consulting LTD  |
| <b>IoT</b>      | Internet of Things   |
| <b>IT</b>       | Information Technology   |
| <b>ITS</b>      | Intelligent Transport Systems  |
| <b>KPI</b>      | Key Performance Indicator  |
| <b>LK</b>       | Luka Koper, Port and Logistic System, D.D.   |
| <b>LL</b>       | Living Laboratories  |
| <b>MS</b>       | Milestone  |
| <b>NEMO</b>     | Near-zero-waste recycling of low-grade sulphidic mining waste for critical-metal, mineral and construction raw-material production in a circular economy |
| <b>PCT</b>      | Stathmos Emporevmatokivotion Peiraia AE  |
| <b>PO</b>       | Project officer  |
| <b>PR</b>       | Public Relations   |
| <b>QMR</b>      | Quarterly Management Report  |
| <b>R&amp;I</b>  | Research and Innovation  |
| <b>SELIS</b>    | Towards a Shared European Logistics Intelligent Information Space  |
| <b>SME</b>      | Small and Medium Enterprises   |
| <b>SWARCO</b>   | SWARCO Traffic Systems GmbH  |
| <b>TEC4U</b>    | tec4U Ingenieurgesellschaft mbH  |
| <b>TSLO</b>     | Telekom Slovenije DD   |

|          |   |
|----------|---|
| TSYS     | T-Systems International GMBH  |
| VICOM    | Fundación Centro de Tecnologías de Interacción Visual y Comunicaciones Vicomtech                  |
| VODAFONE | Vodafone Innovus Anonimi Etaireia Systimatou Epikoininias Aytomatismou kai Efarmagis Pliroforikis |
| WP       | Work Package  |





## EXECUTIVE SUMMARY

This deliverable's goal is to offer an account of the 5G LOGINNOV project's communication and dissemination activities during the course of the entire project. Deliverable 5.3 Dissemination and Communication Report, sets out the impact of communication and dissemination actions on the main 5G LOGINNOV strategic areas such as development of new markets and actors, 5G enabled innovations, sustainable business growth and collaboration and networking.

As part of WP5 Dissemination and Exploitation, the document analyses the specific engagement strategies on the project target audiences (i.e., transport and logistics industry players, SMEs, Academics, Policy makers) with the objective to create understanding, foster involvement, and generate commitment.

The main content of this report is a detailed analysis of the initiatives carried out according to the Communication and Dissemination Plan developed at the beginning of the project, ranging from digital presence (i.e., web site, social media, digital flyers, video) to scientific publications, from participation to 5G and port & transport events to the organisation of 5G LOGINNOV branded workshops (i.e., Living Lab Local Stakeholders Workshops, Ideathons). Overall, the project has developed a constant commitment to the dissemination of results and the promotion of key achievements, in line with the Living Lab technical progresses and key findings on 5G (and beyond).

The carried-out actions were strategic, pertinent, in line with the project objectives, and proficiently deployed. In the implementation of the Communication and Dissemination Plan the consortium was able to adequately adapt to the life cycle of the project, but also to contextual circumstances, some unforeseen, as the COVID-19 pandemic, and to deploy the key actions addressed to:

- (1) the promotion of the visibility of the project, its developments and results to relevant stakeholders (in the classic definition of project dissemination of knowledge),
- (2) the creation of base knowledge sharing conditions towards uptake of the innovations, paving the way for the future exploitation of project's results.



# 1 INTRODUCTION

## 1.1 Purpose of the deliverable

5G technology holds a relevant role for the port and transport sector due to its transformative capabilities that can revolutionize various aspects of these industries, facilitating real-time monitoring, tracking, and management of cargo, vehicles, and infrastructure within ports and transportation networks. This enhanced connectivity empowers smart port operations, optimizing logistics, and supply chain processes through increased automation and efficiency, paving the way to safer, more reliable, and sustainable transportation solutions.

Within this frame, the Communication and Dissemination Report aims to comprehensively outline the project's strategy and efforts in effectively communicating its objectives, progress, and outcomes to the relevant stakeholders and wider audience. Through the detailed analysis of events, publications, web and social media presence, and engagement initiatives, the report aims to demonstrate the project's impact in fostering collaboration and facilitating the uptake of innovative 5G technologies and solutions within the ports and logistics sectors.

## 1.2 Structure of the Deliverable

This report will firstly elaborate on how the Communication and Dissemination initiatives taken along the whole duration of the project have addressed the strategic objectives detailed in the D.5.1 Communication Channels and Plan and in the D.5.2 Dissemination Plan, developed at the beginning of the project.

The communication and dissemination initiatives are detailed in the comprehensive overview of the chapter *Implemented communication and dissemination actions*. This section is divided into subchapters, each of which is devoted to a particular online and offline channel through which the communication and dissemination strategy has been developed. Each subchapter includes a list of initiatives and descriptive highlights, as well as information on the quantitative consistency of those initiatives and their qualitative relevance in relation to the communication strategy for the project.

In the conclusions are explored the lessons learned, with specific evidence of the key success factors of the communication and dissemination strategy developed.

## 1.3 Relation to other Tasks and Deliverables

This deliverable, being a report of the Communication and Dissemination activities, has a strong link with the planned actions at the beginning of the project, namely D.5.1 Communication Channels and Plan and in the D.5.2 Dissemination Plan. Specifically, this connection has been kept active throughout the entire project duration through annual monitoring activities regarding the KPIs for communication and dissemination defined in the GA and included in the deliverables themselves, resulting in plan updates.

Furthermore, another relevant link is with the D.5.7 Clustering and Networking results, related to the joint initiatives with other relevant RDI projects and with well-established, European-wide associations and trans-national initiatives: the joint initiatives often result in papers, events or workshops that are included in this communication and dissemination report, giving evidence to the figures and achievements.

Within WP5 connections to be mentioned are with D.5.6 Standardisation and spectrum policy report and D 5.5 Exploitation Report, with specific reference to the impacted target audience that belongs to the stakeholder community of reference for each Living Lab.

Finally, Communication and Dissemination have a specific link with WP4 – Marketplace and New Actors, being one of the strategic objectives of the project to pave the way to new players in the market: D4.3 – Achievements with new actors and opportunities and D4.4 – Lessons learned and recommendations for stakeholder include activities supported by Task 5.1 Communication, Task 5.2 Dissemination and Task 5.5 Clustering and Networking.



## 2 IMPACT OF COMMUNICATION AND DISSEMINATION ON 5G LOGINNOV OBJECTIVES

The logistics sector has experienced revolutionary shifts in technologies, business modes, policies, and legislations, driven by globalization, digital technologies, fast growing e-commerce, increasing concerns on negative impacts on the environment, government policy to reduce pollution and emissions, etc. Such revolutionary shifts have not only improved the efficiency of the sector while reducing environmental pollution but also boosted development of the sector, thus strengthening the role of the sector in the overall economy.

This deliverable appears to outline the strategy and plan for engaging stakeholders, disseminating information, and communicating with the project's target audience to build understanding, encourage involvement, and secure commitment.

This also represents the raise awareness outcomes and an advanced implementation of project outcomes that have been a key facilitator to enable the revolutionary shifts by developing and piloting innovative technologies, solutions and services, demonstrating new business models, supporting policy development, and facilitating cross-sector cooperation.

The strategic impact envisioned by 5G LOGINNOV is multifaceted and aimed at fostering the emergence of new markets while benefiting both existing and new stakeholders. The primary focus is on leveraging 5G technology to enhance port and freight operations as well as maintenance activities at logistics hubs. Here's a closer look at the strategic impact areas of the project.

**New Markets and Actors:** 5G LOGINNOV seeks to create opportunities for new markets to develop around the implementation of 5G-enabled solutions in the logistics and transportation sectors involving the emergence of innovative startups and the expansion of existing companies into these new market segments. New actors, including technology providers, logistics companies, and service providers, entered and are expected to enter these markets and have the opportunity to access emerging markets created by the deployment of 5G-enabled logistics and transportation solutions. In 5G LOGINNOV, therefore, particular attention was paid to new players (i.e., ERTICO Start Ups Network, SMEs in LL communities, 5GPPP SME Working Group, Networld Europe, 6GIA) keeping them continuously updated via newsletters and dedicated workshops (i.e., EU Funding Opportunities).

**5G-Enabled Improvements:** the project aims to utilize 5G technology to drive improvements in port and freight operations (i.e., 5G and IoT Assisted Port Control and Logistics Process Operations, 5G Mission Critical Communications, Floating Truck and Emission Data, 5G GLOSA and AutomatedTruck Platooning, 5G connected Yard Trucks, 5G and IoT (far-edge) Video Analytics). By leveraging high-speed, low-latency connectivity, real-time data analytics, and IoT devices, it becomes possible to optimize the efficiency and reliability of logistics and transportation processes. In this perspective, the innovations developed in the Living Labs were presented at various trade fairs and events focused on port and logistics industries as well as in more restricted meetings (i.e., Docks the Future Network of Excellence, Living Labs Stakeholders Workshops).

**Boost for sustainable business growth:** The rollout and adoption of 5G technology have the potential to significantly create positive ecosystem impacts, anticipating positive effects on the broader ecosystem. This can include reduced carbon emissions due to more efficient operations, improved safety through advanced traffic management, and enhanced supply chain visibility and traceability. The promotion of the 5G technologies and innovative practices also enhanced the competitiveness of companies operating within logistics and transportation and improved the performance of logistics and transportation operations with a broader economic growth and impact.

**Collaboration and Networking:** collaboration with larger organizations, shippers, logistics service providers (LSPs), and other actors in the 5G LOGINNOV ecosystem allows SMEs and start-ups to build valuable partnerships and networks. These connections can lead to new business opportunities and collaborations on innovative projects. The participation in a high-profile initiative like 5G LOGINNOV increased the visibility and recognition of SMEs and start-ups in their respective industries. This recognition can attract new potential customers, investors, and partners. This means: to showcase the level of participation and engagement also from various stakeholders, including port operators, logistics companies, technology providers, and government authorities; to highlight their active involvement in project activities, such as Living Labs, workshops, and trials. In this respect, focused workshops have been organized by the project, to foster visibility and networking opportunities with targeted entities (i.e., 5G LOGINNOV workshop in collaboration with HUAWEI and Collaborative Innovation Day in cooperation with ALICE).

## 2.1 Specific impacts of the project

The 5G LOGINNOV project created a considerable network effect by connecting industrial actors at two levels, both between start-ups (to get engaged with each other) and between several “5G players” (including established companies). The horizontal project’s results had an impact at the economic level, thanks to enhanced approaches for business making, at policy level, in terms of recommendations for policy making and also at research level identifying scientific and technological trajectories.

**Industrial:** with the adoption of a comprehensive and adaptive strategic approach, the project effectively addressed the specific needs and challenges of the hub logistics sector while harnessing the potential of 5G and IoT technologies to drive innovation, efficiency, and sustainability in this industry. Stakeholders from the industry (i.e., Volvo, LogisticsWallonia, Itainnova, Duisport, ValenciaPort, Codognotto, LogiFruit, Arkas, Inlecom, PalmasPort,) were provided with market and business models and strategies and with standardization recommendations, allowing 5G core technologies for logistics to enter in the market in the short counting on an innovative data exchange and processing platforms based on open industrial standards and a valid technology to be used for infrastructure-vehicle communications and a strategic approach for addressing vertical industries.

**SMEs:** the project foresaw a strong SME participation gaining scientific and research knowledge in the design and implementation of novel 5G, IoT technologies in virtualized and cloud-based 5G environments and validating specific industrial protocols. SME participants (Hellenic Drones, Libra AI, eShuttle, uze! Mobility Europe, Roads.AI) leveraged the Living Lab to enhance and diversify their 5G portfolios. They had access to the latest high-tech solutions and technologies, allowing them to offer more comprehensive and advanced services to their clients. The start-up solutions proposed deepened in particular: port operations with autonomous drones; local Intelligent Traffic Guidance System (ITGS) to be deployed at congestion hot-spots, bottlenecks and merging lanes; automated Truck Platooning tests deploying new types of Internet-of-Things (IoT) devices and Artificial Intelligence (AI) with Machine Learning (ML) analytics to optimize port operations and guarantee public safety; platooning and autonomous driving tests. This expansion of the SME ecosystem can contribute to the overall growth and competitiveness of the European 5G sector.

As SMEs benefited from the activities and resources provided by the Living Lab, there is a potential increase in the number of high-tech EU SMEs actively participating in the 5G domain. This expansion of the SME ecosystem can contribute to the overall growth and competitiveness of the European 5G sector. In this respect 5G LOGINNOV project kept active a constant dialogue with the 5G-related ecosystem of startups, through recurrent informative newsletters and workshops (i.e., informative workshop to Networld Europe reaching out to more than 45 start-ups; ERTICO Start Ups Network and Hamburg local ecosystem of innovative start-ups via Logistics Initiative Hamburg).

Regarding the SMEs involved in the consortium, ININ improved his knowledge on private 5G mobile system and quality assurance services for 5G network, cloud-infrastructure designed for ports and industry 4.0 environment; TEC4U, updated FTED model and industrial 5G IoT System.

**Academic impact:** Academic institutions had a crucial role in advancing expertise and know-how in the project. The acquisition of expertise and know-how in 5G, IoT, and related technologies in the logistics and ports domain not only benefits academic institutions but also has a direct positive impact on the industry. It promotes innovation, efficiency, and sustainability in logistics and port operations, contributing to economic growth and competitiveness in the global trade landscape. The research organization involved in the project represented and added value in:

- establishing a partnership with key industry stakeholders;
- acquiring a further expertise and know-how in the field of 5G, IoT and relevant ecosystem technologies in logistics and ports domain;
- Computer Vision Analytics Services, Research and Development;
- developing a specific know-how in the design and implementation of the 5G-IoT platform including software and hardware components, and relevant ecosystem technologies.

In particular:

- ICOOR Customized the GUEST Methodology;
- ICCS established a mutual partnership with key industry stakeholders for the implementation and sustainability of solutions and further collaboration in future research/technical initiatives in Greece and beyond;
- VICOM extended their expertise in computer vision and sensor fusion with leading edge technology and scientific developments, and to also strengthen the competitiveness of their customers (SMEs) in the global market as research institute and academia.

**Policy impact:** 5G LOGINNOV networking and advocacy activities leveraged lessons learned and recommendations identified during the project provided by the stakeholder organizations. The project's policy position papers on 5G involved outlined a clear stance on various aspects of 5G technology and its implementation as guidelines for regulatory bodies, and industry stakeholders.

5G LOGINNOV actively contributed to the development of ALICE position paper on the "Fit for 55" climate package that aims at addressing the freight and logistics aspects of the "FIT for 55" package with a focus on the intra-European flows transition.

Furthermore, two 5G LOGINNOV policy papers have been produced. In one, it is suggested that public authorities and politicians promote the development of a European offer for new 5G core technologies that will improve ports and logistics hubs of the future, both within Europe and outside of it. The paper entitled "[Actions to ensure the priority roll out of 5G networks on EU hinterland and port area](#)" has been disseminated via Webinar "Policy recommendations for 5G core technologies in logistics" held on 27 October 2023 and through the project official channels (website and social media). Furthermore, dedicated news pieces were distributed in ERTICO Newsletter and Connecting EU Weekly Bulletin.

In the second policy paper developed in cooperation with 5G-META and titled « Actions to enhance research, development and deployment of AI applications" the objective aimed to prompt action in addressing identified gaps that hinder the optimal deployment of AI applications in both 5G projects.

The policy impact of the project has been also leveraged via active participation in high level global conferences and working groups on macro-economic impacts of 5G and beyond (i.e., 5G LOGINNOV led the new ISO/TC 204 sub-working group (SWG) 17.2 to develop a series of international standards for the definition of energy based green ITS services, Global Commercialization Conference and CCAM Workshop, Global IEE IoT Summit).

## 2.2 Stakeholders joined and involved

The project's dissemination strategy aimed to reach a broad spectrum of stakeholders, ranging from those directly involved in port operations to policymakers, research institutions, and industry players. This approach ensured that the project's findings had the widest possible impact and contributed to the advancement of the field.

These target groups represent various stakeholders who directly benefited or may benefit in the future of the project results and have an interest in the project's outcomes.

Here's a breakdown of each target group:

**Port Operators:** this group includes organizations and individuals involved in the operation and management of ports. They benefited from the project's results in terms of improving port efficiency, safety, or sustainability; planning of the activities (synchronization of the terminal operations), visibility of the logistics chain, optimisation of the resource usage, real-time detection of potential sources of non-compliance. The Living Labs Local Stakeholders Workshops represented a reliable tool to engage the local LL community: several port operators such as HHLA, FEPORT, PCT, Association of Port Logistics Providers Slovenia were addressed with presentations and demonstrations to make the 5G innovation concrete (ITS Conference and 5G LOGINNOV Workshop with Huawei for Hamburg, Collaborative Innovation Day and IPIC for Athens, Mediterranean Ports & Shipping and 5G LOGINNOV Final event for Koper).

**Port Authorities:** port authorities are responsible for overseeing the functioning of ports and ensuring compliance with regulations. They benefited from the project's findings to enhance port governance and decision-making. Their involvement allowed to analyse the optimisation of the infrastructures' usage; the optimisation of the activities and processes in the port area; increasing the capacity management ; analysis of compliance with net-zero carbon policies; the predictive maintenance for yard machineries (reduction of maintenance costs and spare parts warehouses, reduction of downtimes, increase of the vehicles' lifetime); the increasing safety and security in the port areas, the integration between different port functions (e.g., operations, custom, HR management, fleet management, etc.).

5G LOGINNOV presentations and booths at port-industry related events ensured an adequate coverage of this target audience (i.e. Mediterranean Ports and Shipping 2022, Smart Ports 2021, Transport Innovation Forum 2022, Connecting EU Insights 2021, ITS European and World Congresses 2021, 2022, 2023, Collaborative Innovation Day 2022); furthermore, periodic news pieces about 5G LOGINNOV were distributed to specific Ports Networks reaching out to more than 500 port industry related contacts (i.e., Connecting EU Weekly Bulletin; Docks the Future Network of Excellence). Among the others, Bulgarian Ports, IMDO – Irish Ports, Kvarken Ports – Vaasa and Umea, Malta Freeport Corporation Ltd, Port of Aveiro, Port of Bar, Port of Barcelona, Port of Civitavecchia, Hamburg Port Authority, Port of Gijon, Port of Malaga, Port of Taranto, Port of Valencia, Port of Venice, Port of Ystad, Port System Authority of the Eastern Adriatic Sea, Puerto de Huelva, Port of Palermo.

**Other Authorities:** this category encompasses various governmental and administrative bodies, such as city authorities, customs agencies, and coastal management organizations. They may have an

increasing interest in aspects like urban planning, trade facilitation, and coastal protection, which could be influenced by the project. They could analyse several aspects such as quality of life and working conditions in the urban area, safety in the road network, sustainable traffic management topics (reduction of congestion and emissions), and compliance with national and European sustainability goals. Industry events and Living Lab Local workshops were the main opportunities to engage directly with the local government bodies and authorities, reaching out to – among the others – Stadt Hamburg, LSBG- Landesbetrieb Straßen, Brücken und Gewässer Hamburg, Hamburg Behörde für Verkehr- und Mobilitätswende, Hamburg Verkehrsanlagen.

**Traffic Management Service/Solution Providers:** companies or organisations offering traffic management solutions learned from the project's findings to improve traffic flow and logistics within port areas. Due to their specific characteristics, the three living labs have identified an audience of target ITS and solution providers that were deepened in D 5.5.

- In **Hamburg**, ITS providers were identified as an interesting potential target of the innovative solutions for the traffic flow optimization in the urban area, thus reducing negative externalities, improving the quality of life for citizens, and meeting local, national, and European sustainable goals.
- **Athens** provides an innovative and low-cost system for the detection of the drowsiness of the drivers and were targeted ITS providers with positive impacts on the safety and security conditions in the port area.
- In **Koper**, security control companies, warehouse and logistics operators, and public authorities interested in monitoring specific areas were identified as target ITS and solution providers.

**Industry:** the industrial sector comprises shippers, logistics companies, IT solution service providers, freight forwarders, local businesses in the region, start-ups, and new industry players. In close connection with the point above they benefited from the project by gaining insights into optimising supply chain operations, adopting new technologies, quality systems of collected data and exploring business opportunities.

**Policy Makers:** this group includes EU research and innovation officials, members of DG CONNECT, EU Regional Policy, EU mobility and transport, Members of the European Parliament, and National Ministries of Transport. They are responsible for shaping policies related to transportation, research, and regional development. The project's results informed their policy making decisions. Business events and conferences also at local level represented relevant opportunities to raise awareness about 5G potential for port and logistics industries, with the engagement among others of Ministry of Digital Transformation for Slovenia, Federal Ministry of Transport, DTLF. furthermore, the 5G LOGINNOV released and took part to 2 position papers, contributing to outlining a clear stance on various aspects of 5G technology and its implementation as guidelines for regulatory bodies.

**Standard Setting Bodies:** organisations responsible for setting industry standards can use the project's outcomes to inform the development of new standards or regulations related to port operations and logistics (i.e., ISO, NBN, ETSI).

**Networking Bodies:** these organisations and associations play a role in connecting stakeholders and facilitating collaboration within the industry. They may use the project's findings to foster discussions and initiatives among their members. Among the others the project engaged with 5GPPP, 5GIA, ALICE, 5GAA, CCAM with participation in joint events and workshops (i.e., Collaborative Innovation Day, Policy & Recommendations Workshops, 5GPPP workshops).

**Scientific and Research Community:** research centers and universities are essential for advancing knowledge in the field. They gave an important contribution to the project as described in the specific



section to the project's research and can contribute to further developments in port management and logistics. In this respect participation in scientific conferences as EUCNC&6G Summit 2021 and 2023 and IPIC 2021 and 2023 contributed to feed the 5G R&I debate as well as the 17 scientific publications produced during the project lifetime (add the final number). Furthermore, the organisation of 3 Ideathons (Hackatons of ideas – one for each Living Lab) fostered the active participation of students in the 5G applications for future market opportunities, transferring the challenges of a project to future generations.

**Research, Development, and Innovation Projects (M11):** other research, development, and innovation projects may benefit from the project's results by incorporating them into their own work or collaborating on complementary efforts. Mainly through joint sessions in events, technical workshops and publications, more than 17 EU projects liaised with 5G LOGINNOV, with focus on 5G disruptive technology, efficiency, innovative concepts, IoT applications and devices, data analytics, Next generation traffic management, CCAM, 5G logistics corridors, and port and transport vertical (i.e., FOR-FREIGHT, BOOTSLOG, 5G BLUEPRINT, INGENIOUS, 5G META, FEDERATED, SHOW).



## 3 IMPLEMENTED COMMUNICATION AND DISSEMINATION ACTIONS

### 3.1 Project identity

The name of the project is **5G LOGINNOV**.

The logo has been created in Month 2 of the project and must appear on every project-related item (documents, banners, videos, giveaways, etc.). The possible uses of the logo, the pantone and font, and guidelines on how to use them are illustrated in the previous version of the Dissemination and Communication Plan D5.1. 5G LOGINNOV templates for Word and PowerPoint presentation have been developed with the project logo and they have been made available to partners on the 5G LOGINNOV SharePoint at documents/dissemination/templates.

In Year 2, a short promotional video was produced to present in general the project and the work carried out by the Living Labs. The video is visible on the website, in the About page, and it has been added on the ERTICO YouTube channel. In addition to the generic video, three shorter videos have been created to describe more in detail the activities of each living lab.

### 3.2 Website

The 5G LOGINNOV website was launched in April 2021 and was published on behalf of the 5G LOGINNOV consortium. The online platform serves to disseminate the project activities and to provide project's relevant data and information. The website presents the work of the 5G LOGINNOV project partners and stakeholders, as well as latest news and events. The project website can be found here: [https://5G\\_LOGINNOV.eu/](https://5G_LOGINNOV.eu/)

The 5G LOGINNOV website has maintained the structure identified in the deliverable D5.2, the most updated version of the Dissemination and Communication plan.

These are the active pages:

- Home page
- About
- Living labs dedicated sub-webpages
- News
- Events
- Open Call
- Library
- Contact Us

From the launch of the project in September 2020 until October 2023, Month 38, the website has registered a total of 1.519 users who engaged in 1.912 session in total and 14.835 total views mostly detected from Belgium (5.086), Italy (2.576) and South Africa (1.044). In the past two years, the website registered a steady growth with regards to users visits and page views. In Year 1 (Sep. 2020 - Aug. 2021), the users were 347 and the page views were 1.974, with an average of 165 views per month. Year 2 (Sep. 2021 – Aug. 2022) registered 502 users, the total views were 6.318, 527 of views on average per month. In Year 3 (Sep. 2022 – Oct. 2023), the website registered 698 users, 6.543 pages views over 14 months, with an average of 468 per month.

Throughout the life of the project, the most visited pages are on average, homepage, library, about and news pages. The website also collects a total of 89 news items and 31 events, counting specifically 27 news items published only in Year 3.

### 3.3 Marketing materials

#### Living Lab Factsheets

The factsheets with a detailed description of the features of Athens, Hamburg and Koper ports have been made available, as dissemination materials, on the [project website's library](#).

#### Living Lab Leaflets

In Year 3, the full targeted value of leaflets (1000 copies) showcasing the activities and goals has been distributed to stakeholders and participants of the several national and international events where the project was showcased. The actual remaining availability is of 18 leaflets for Hamburg living lab, 16 for Koper living lab and 6 for Athens living lab. The remaining leaflets will be used to promote the project's pilot sites during the final event.

#### Roll-up

A first roll-up banner has been created and can be requested to be shipped to partners interested in showcasing the project at national and international events. Please send an email to Anna Zanetti, Communication Manager, [a.zanetti@mail.ertico.com](mailto:a.zanetti@mail.ertico.com).

#### Video

During Year 2, the Consortium members had the opportunity to take part in a digital communications project. To effectively showcase the continuous progress within each of the three living labs (Koper, Hamburg, and Athens), our partners actively collaborated in producing short videos. These videos were crafted to highlight the diverse range of activities carried out in each location. To ensure widespread dissemination and accessibility, these video capsules have been featured on 5G LOGINNOV's LinkedIn account and uploaded to the ERTICO-ITS Europe channel on YouTube and made available at ITS Congresses at 5GLOGINNOV booth for the visitors.

The three video pills are available clicking below:

[Hamburg](#)

[Koper](#)

[Athens](#)

The resulting materials have been also combined to produce a project video, offering a comprehensive perspective of 5G LOGINNOV's living labs.

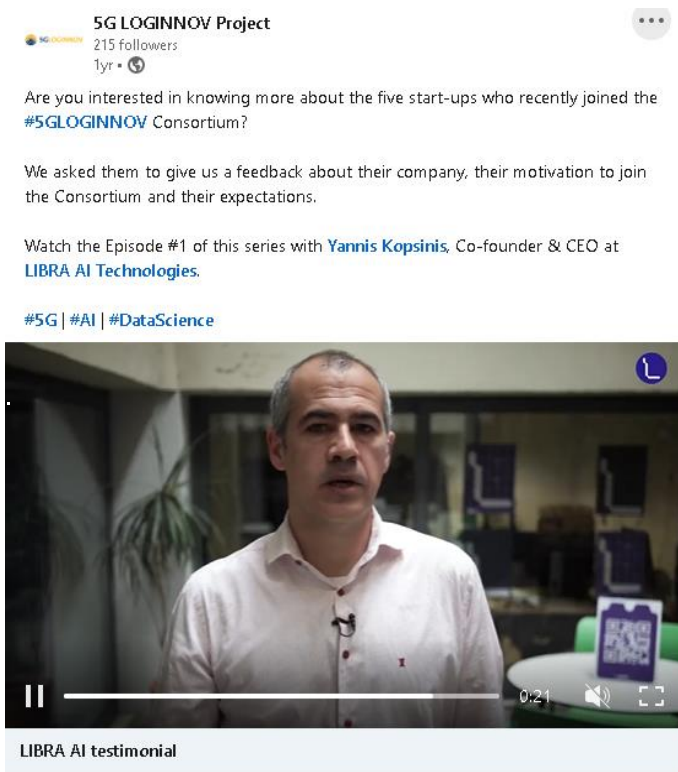
In Year 3, to highlight the accomplishments of each living lab and the dedicated partners within the project, we planned the creation of a final video. This video has been produced, incorporating footage from the project's final event to showcase the culmination of partners' efforts. The aim is to present the outcomes that have emerged from the collaboration between the three living labs and all the stakeholders involved in this project. It will provide a comprehensive overview of the project's impact and the remarkable achievements realised with the support of every partner. The final video is widely accessible to the audience. It has been shared across the project's social media channels, reaching a diverse community of stakeholders.

## 3.4 Social Media

### LinkedIn

The LinkedIn page of the 5G LOGINNOV project, allows to share with the community events and interesting news connected to the domain of 5G technologies. The 5G LOGINNOV LinkedIn page is accessible via this link: <https://bit.ly/3V7DTZR>.

The page currently has 253 followers, surpassing the KPI set for Year 3. Between April 2022-April 2023, the LinkedIn page registered 570 views and 552 reactions. From May 2023-October 2023 the new data showcase 203 views and 420 reactions. Project's partners are quite reactive and participative to digital communications activities, between October 2022 and October 2023, the registered reposts were 37. In the last month, the mentions to 5G LOGINNOV project by the followers of the LinkedIn page were 17.



Worth to mention is that the LinkedIn page was the selected platform for the testimonial campaign involving the five innovative start-ups selected after the Open Call launched in 2021. Between April 2022-April 2023, the post with the highest number of impressions was the one presenting LIBRA AI Technologies, one of the Open Call winners. The [post](#) collected 2.586 impression, was viewed 1.223 times and obtained 67 reactions.

The second post with most impressions was dedicated to the TRA event held in November 2022 in Portugal. The [post](#) obtained 625 impressions and 27 reactions.

Figure 1: 5GLOGINNOV LinkedIn Page



Figure 2: LinkedIn post on TRA event (November 2022)

### X (ex-Twitter)

X has been used as a channel to promote “live” news, especially related to project events and results. In addition, this channel has been used as reflector of the website’s news and news/information by project partners, as shown in the following figures. The project doesn’t have a project’s account on Twitter, so it leverages the networks of the rest of the 5G LOGINNOV’s partners, such as the ERTICO account with around 8,079 followers, using the hashtag #5GLOGINNOV. The hashtag has performed well during M1-18 reaching 113 mentions and therefore surpassing the targeted value of 100 for that year. From M18 to M39 the #5GLOGINNOV hashtag appeared 72 times, out of which 24 where mentions from partners.

## 3.5 Scientific and Technical Papers

By investigating the unique capabilities of 5G networks and applications, 5G LOGINNOV’s publications provide readers with a comprehensive overview of insights and implications for researchers, practitioners, policymakers, and stakeholders involved in logistics, transportation, and the broader field of 5G technology.

Therefore, the project aimed to create synergies with the operational technologies players, communicating with the research community through scientific publications and presentations at scientific conferences and workshops, and communicating with the regulators and standardization bodies in order to raise awareness of the research project results successfully implemented.

The project publications included sector magazines and scientific publications; results of technical working groups at international level, project results presented at international conferences, policy and position papers.

In identifying the themes and channels for disseminating the publications, were followed the procedures indicated in D 5.2, par. 2.3.2 with particular attention to the open access mode use and publication to the project web site.

The vision of 5G LOGINNOV is to revolutionise and enhance freight and traffic operations at ports and logistics hubs by leveraging innovative concepts, applications, and devices, all powered by cutting-edge 5G technologies.

In this respect, the key research components of the project are:

- **Integration of CAD/CAM Technologies:** CAD/CAM technologies (Connected Automated Driving/Mobility) play a crucial role in design processes and incorporating them into Industry 4.0 and port operations can lead to improved efficiency and productivity.
- **Industry 4.0:** which involves the integration of digital technologies, automation, data analytics, and the Internet of Things (IoT). Integrating CAD/CAM technologies within the context of Industry 4.0 suggests a focus on modernizing and optimizing logistics processes.
- **Ports Domains:** optimising port operations can have a significant impact on the efficiency of the entire logistics value chain. In this sense, the project likely aims to apply the innovative framework to port operations to enhance their efficiency and effectiveness.
- **Logistics Value Chain Innovation:** the overarching goal of the project is to drive innovation within the logistics value chain. This involves creating new solutions, processes, or technologies that can positively impact logistics, from manufacturing to distribution and delivery.

### Technological Development Topics

In relation to the key research components listed above, 5G-LOGINNOV identified some main technological development topics to be explored via scientific and technical publications, in order to position the project as a leading innovator in the field of 5G-enabled logistics.

In detail the topics identified are the following:

- **Efficiency**
- **Innovative Concepts**
- **Disruptive 5G Technologies**
- **Internet of Things (IoT)-Applications and Devices**
- **Data Analytics**
- **Next Generation Traffic Management**
- **CCAM (Cooperative, Connected, and Automated Mobility)**
- **5G Logistics Corridor**

Below, for each area, the details of the publications that disseminate the project's findings on the topic.

## **Efficiency**

One of the primary goals is to significantly improve the efficiency of operations in ports and logistics hubs. This involves streamlining processes, reducing delays, and optimising the movement of goods and vehicles.

In this domain the published insights regard the designing of an innovative framework in the industry 4.0 and ports domain piloting 11 families of use cases based on new 5G core technologies, the AHP methodology to improve the competitiveness of the ports, and the AI/IoT application to identify innovative business models in ports and the opportunity for the supply chain innovation.

- **Enhancing port's competitiveness thanks to 5G enabled applications and services**

The port's competitiveness thanks to 5G enabled applications and services focusing on the designing of an innovative framework in the industry 4.0 and ports domain analysed 11 families of use cases based on new 5G core technologies. The work evaluated a set of Critical Success Factors (CSF) that are important for port operations optimization, and a set of 5G enabled applications based on their importance for two typologies of companies located in the port of Hamburg, Athens and Luka Koper.

- **Discovering the most urgent 5G services for the competitiveness of the port using an updated Analytic Hierarchy Process in the 5G LOGINNOV project**

A new methodology was analysed to enable performing AHP (Analytic Hierarchic Process) using data collected for other purposes. Following the footsteps of the AHP, this paper identified through a new methodology the most important 5G services for the competitiveness of the port.

- **Innovative Business Models in Ports' Logistics**

The adoption of innovative technologies allows the creation and development of new products and services, able to optimise the existing logistics processes and create value. In particular, one of the most promising technologies for logistics applications is the 5G communication network that allows, together with companion technologies such as the Internet of Things, Artificial Intelligence, and the Cloud, the collection, integration, and sharing of a large amount of data from different sources. However, to ensure the market adoption of innovative products and services, the different actors and stakeholders of the logistics chain must be involved from the early stages of the development. This paper analysed the process of development of collaborative business models in the context of 5G LOGINNOV.

- **Analytic Hierarchical Process (AHP) in the 5G LOGINNOV project**

This paper identified the 5G services proposed in 5G LOGINNOV that are particularly important for the competitiveness of the port, understanding which use cases best meet the real needs of the users. The AHP proposed can be re-used in European projects to rank the use cases, understanding which are more in line with the defined objectives.

## **Innovative Concepts**

The project aimed to introduce new groundbreaking concepts and approaches to logistics and port operations. These concepts likely involve integrating the latest technological advancements and best practices to reduce operation times, challenge the end-to-end operations in ports, the value chain innovation opportunity, and applications, experiment the private cloud computing benefits low-latency.

- **Pipeline for Visual Container Inspection Application using Deep Learning**

The paper focused on the optimised processes calls for new vision systems based on the latest technologies to reduce operation times. It was proposed a pipeline and a complete study of each of its parts in order to provide an end-to-end system that solves and automatise the process of inspection of a loading or unloading freight container from and to the vessel.

The optimisation of the challenging end-to-end operations in ports can be highly reinforced via the adoption of 5G enabling technology, which can at the same time accelerate innovation. Both the infrastructure optimisation aspects, alongside the various involved sites' performance, are equally important for the successful implementation of 5G technologies for any Transport & Logistics (T&L) sector. The paper offered the unique perspectives of 5 EU-funded projects, namely 5G-BLUEPRINT, VITAL-5G, FOR-FREIGHT, FENIX and 5G LOGINNOV, and how they combine their consortia's expertise in both providing a complete 5G-based system for seamless connectivity between the various projects' trial sites as well as how the use cases/developed infrastructure can empower innovation in the T&L sector.

- **5G – LOGistics value chain INNOVation-IEEE 5G Summit**

The paper described the Living Labs and the corresponding Use Cases that have been demonstrated in the context of 5G LOGINNOV. After a brief introduction to the 5G LOGINNOV, there are analyses of the three Living Labs, the innovations that have been introduced by the project and how the project will contribute to the future European Commission policy in the transport and logistics domain.

- **5G and Companion Technologies as a Boost in New Business Models for Logistics and Supply Chain**

Since the global request for freight transportation is continuously increasing to face the requirements of the modern economy, 5G infrastructures and companion technologies are becoming essential to support the digital transformation in logistics and transportation, in particular for their capability to allow data collection through a multitude of different sources across the supply chain, improving the connectivity and making more effective the secure and reliable data sharing. The objective of this work is to assess the penetration and implementation levels of innovative technologies to optimise port operations, by interviewing a set of actors and stakeholders directly involved in the logistics chain of ports.

- **5G-enabled innovation in ports' logistics: expectations from the 5G LOGINNOV Project and relevance for the Physical Internet**

The Project will support the generation of new 5G enabled technologies for logistics operations in three Living Labs (LLs): Athens, Hamburg, and Koper and will ensure relevant advancements for Physical Internet, pushing for supply chain synchronisation and "5Gintelligent" approaches for the management, routing, and optimisation of operations in ports areas. This study presented in the paper aims to present the methodology to assess stakeholders' expectations on the potential benefits of 5G-enabled technologies on business models and operation. While preliminary results of the assessment have been presented, the analysis will continue until the end of the demonstration period by assessing if stakeholders' expectations have been met.

- **Experimentally Assessing Deployment Tradeoffs for AI-enabled Video Analytics Services in the 5G Compute Continuum**

The study investigates the performance of video analytics services in a real industrial scenario, namely, a Port, using commercial grade cellular networks (5G, LTE-A, LTE) and a private cloud infrastructure. ICCS created a virtual platform incorporating cloud and extreme/far-edge devices to host the workload of AI services (e.g., object detection), and experimentally investigated the



deployment trade-offs in the 5G compute continuum, based on the criteria of service latency and bandwidth usage, inference accuracy, inference time and power consumption. The experimental results demonstrate that private cloud computing benefits low-latency, high-performance apps, whereas far-edge processing (local offloading) can be used for bandwidth/power efficiency.

### **Disruptive 5G Technologies**

5G technologies are considered disruptive due to their high-speed, low-latency connectivity, which opens up new possibilities for real-time data exchange and control. Leveraging 5G allows for the rapid deployment of advanced solutions in logistics and port management. The project has deepened the data sources of workload distribution towards the network core.

- **On the Distribution of ML Workloads to the Network Edge and Beyond**

In the work, a FL (Federated Learning – CL) scheme and two EL (Edge Learning) variants were considered, representing varying proximity to the end users (data sources) and corresponding levels of workload distribution across the network; namely Access Edge Learning (AEL), where edge nodes are essentially co-located with the base stations and Regional Edge Learning (REL), where they lie towards the network core.

- **Internet of Things (IoT)-Applications and Devices**

These technologies are crucial for implementing the envisioned improvements. Application and devices could include smart sensors, connected vehicles, automated machinery, and other tools designed to enhance logistics and transportation processes. IoT devices also play a pivotal role in collecting data from various sources, enabling real-time monitoring and control. IoT sensors and devices can be used to gather data on cargo, vehicles, and infrastructure. The studies analysed edge computer services applied to EG connected devices.

- **5G Enabled Video Analytics for Detecting Container Seals in Port Operations**

This article focused on port control, logistics and remote automation, and aims at detecting the presence/absence of seals at cargo containers. The proposed use case is realised by developing a novel computer vision algorithm for the task at hand, enabled as far-edge computing services on board 5G connected Internet of Things (IoT) devices.

### **Data Analytics**

Data analytics is crucial for making sense of the vast amounts of data generated by IoT devices and other sensors. It enables insights, predictions, and data-driven decision-making, which are essential for optimising operations. The project designed and implemented a central data collection system, a methodology to generate a dataset for visual inspection containers in dock environments and a study for the indirect measurement of pollutants starting from ISO-23795-1 application.

- **5G and Logistics Data Collection**

5G and Logistics Data Collection were implemented in 5G LOGINNOV first by designing the metadata according to the requirements from the evaluation tasks and the trials description, then by proposing harmonised interfaces for project-level data sharing between the LLs, finally by designing and developing a central data collection tool for data ingestion, indexing, visualisation, and publication.

- **Methodology for generating synthetic labelled datasets for visual container inspection**

The paper defined an innovative methodology to generate a realistic, varied, balanced, and labelled dataset for visual inspection tasks of containers in a dock environment. Containerised freight transport

is one of the most important transportation systems that is undergoing an automation process due to the Deep Learning success. However, it suffers from a lack of annotated data to incorporate state-of-the-art neural network models to its systems. This paper also validated the methodology with multiple visual tasks recurrently found in the state of the art, proving that the generated synthetic labelled dataset allows to train a deep neural network that can be used in a real-world scenario. On the other side, using this methodology was provided the first open synthetic labelled dataset called SeaFront.

## **Next Generation Traffic Management**

Advanced traffic management systems are essential for coordinating the movement of vehicles and cargo within ports and logistics hubs. These systems can help reduce congestion, improve safety, and enhance overall traffic flow. This area has deep new business models based on innovative technologies to optimise port operations.

- **ISO-23795-1: Nomadic Devices for Low Emission Zones and Green Navigation**

In 2022, the ISO 23795-1:2022 standard (Intelligent transport systems — Extracting trip data using nomadic and mobile devices for estimating CO<sub>2</sub> emissions) was approved. The application of Newtonian Physics using speed profiles per second relative to the speed profiles of WLTP leads to reliable and quantifying results with regards to fuel consumption and CO<sub>2</sub>-Emissions caused by any vehicle in motion driving on road networks. In 5G LOGINNOV it was found that such indirect %-WLTP measurements also allow quantification of other pollutants such as NO<sub>x</sub> and PM<sub>10</sub> / PM<sub>2.5</sub>.

- **CCAM (Cooperative, Connected, and Automated Mobility)**

CCAM refers to the integration of cooperative, connected, and automated technologies in mobility solutions. This includes connected vehicles that communicate with each other and the infrastructure, as well as automated driving features. CCAM can greatly improve safety and efficiency in transportation.

5G LOGINNOV contributed to the Connected, Cooperative and Automated Mobility Roadmap (CCAM) that aims at providing a joint stakeholder view on the long-term development of Connected, Cooperative and Automated Mobility in Europe. The Vision for 2050 is what we aim to achieve for society. This long-term Vision calls for the necessary short-term actions, the Agenda 2030, which will then allow an Outlook to 2040.

The ERTRAC Working Group discussed in particular topics like the automation domains, transport modes, vehicles industrial production and how Cooperation and Connectivity enables improved management, and reduced inefficiency – thereby contributing to lowering pollution- and supporting the smart and green goals of CCAM. The technology powered innovations will lead to a breakthrough of CCAM services achieving innovation through new business models representing a significant challenge to reach the 2050 vision. The Working Group was the opportunity to discuss the benefit of co-creating the business models and how they must be explored, piloted, validated and applied to market and the importance of the Standardisation and Connectivity Interfaces for 5G technology in this process. In the CCAM roadmap a crucial importance has the European projects on 5G corridors and to the C-ROADS Platform in the implementation of hybrid communication capabilities, consisting of a smart mix of short- and long-range communication technologies, and in meeting specific traffic needs for enhanced safety and efficiency improvements for better network utilization.

## 5G Logistics Corridor

The project likely envisions the creation of a dedicated logistics corridor powered by 5G technology. This corridor would serve as a testing ground for innovative logistics solutions and technologies. The project studied specific 5G infrastructure and application and 5G enabled GLOSA for Truck Platoons.

- **5G Experimentation for Public Safety: Technologies, Facilities and Use Cases**

This paper studies 5G PPDR (Public Protection and Disaster Relief) experimentation associated with novel virtualised and cloud-native 5G technologies, architectures, and deployment options, as well as feasibility studies and field performance and verifications trials involving vertical-specific 5G infrastructures and applications.

- **5G enabled logistics using GLOSA for Truck Platoons.**

This paper identified four use cases for the port of Hamburg. In the port the efficient corridor management of nearby hinterland logistics, including warehouses and hubs as well as their connection to the port's terminals, especially with regards to an efficient intermodal hand over of the container flow, will be implemented in four use cases including Floating Truck Emission Data (FTED) analysis, 5G enabled GLOSA (Green Light Optimal Speed Advisory) for Truck Platoons and Dynamic Control Loop for Environment Sensitive Traffic Management Actions (DCET).

In the table below the comprehensive list of publications developed by the project along the whole project duration:

| ARTICLE TITLE   | PUBLICATION DATE | PARTNER IN CHARGE                   | PERSON IN CHARGE   | CONFERENCE / JOURNAL  |
|---|------------------|-------------------------------------|--|---|
| <a href="#">On the distribution of ML workloads to the network edge and beyond</a>              | Mar 2021         | ICCS                                | G. Drainakis (ICCS), K.V. Katsaros (ICCS), V. Sourlas (ICCS), A. Amditis (ICCS)  | The First IEEE INFOCOM Workshop on Distributed Machine Learning and Fog Networks (FOGML 21) |
| <a href="#">5G Enabled Video Analytics for Detecting Container Seals in Port Operations</a>     | Jun 2021         | ICCS                                | P. Basaras (ICCS), K.V. Katsaros (ICCS), G. Kanellopoulos (ICCS), S. Tsagalas (Piraeus Container Terminal S.A), A. J. Amditis (ICCS)   | 8th International Physical Internet Conference  |
| <a href="#">5G - LOGistics value chain INNOVation</a>   | Jul 2021         | T-SYSTEM, ICCS, ININ, ICOOR, ERTICO | R. Willenbrock (T-System), P. Basaras (ICCS), J. Sterle (INTERNET INSTITUTE), S. Hadjidimitriou (ICOOR), E. Catana (ERTICO-ITS Europe) | IEEE 5G Summit  |
| <a href="#">Enhancing port's competitiveness thanks to 5G enabled applications and services</a> | Jul 2021         | ICOOR                               | A. Porelli (ICOOR), S. Hadjidimitriou (ICOOR), M. Rosano (ICOOR), S. Musso (ICOOR)   | COMPSAC 2021  |

|   |             |               |   |   |
|---|-------------|---------------|---|---|
| <a href="#">"5G Experimentation for Public Safety: Technologies, Facilities and Use Cases"</a>  | Jul 2021    | ININ          | M. Volk (University of Ljubljana), J. Sterle (INTERNET INSTITUTE)   | IEEE Access   |
| <a href="#">5G enabled logistics using GLOSA for Truck Platoons</a>   | Aug 2021    | T-Systems     | Ralf Willenbrock, Ralf Grigutsch, Peer Siegemund  | ITS World Congress 2021   |
| <a href="#">ALICE POSITION PAPER ON THE "FIT FOR 55" CLIMATE PACKAGE</a>  | Feb 22      | ALICE         | 5GLOGINNOV Consortium   |   |
| <a href="#">Analytic Hierarchic Process in the 5G LOGINNOV project</a>  | May 2022    | ICOOR         | Giulia Renzi (ICOOR), Natalia Selini Hadjidimitriou (ICOOR), A. Porelli (ICOOR)   | 14th ITS European Congress  |
| <a href="#">Pipeline for Visual Container Inspection Application using Deep Learning</a>  | Oct 2022    | Vicomtech     | Andoni Cortés (Vicomtech), Guillem Delgado (Vicomtech), Estibaliz Loyo (Vicomtech)  | 14th International Joint Conference on Computational Intelligence           |
| <a href="#">Innovative Business Models in Ports' Logistics</a>  | 26 Aug 2022 | ICCOR         | Stefano Musso (ICOOR), Guido Perboli (ICOOR), Michela Apruzzese (ICOOR), Giulia Renzi (ICOOR), Natalia Selini Hadjidimitriou (ICOOR)  | 46th Annual Computers, Software, and Applications Conference (COMPSAC 2022) |
| <a href="#">Discovering the most urgent 5G services for the competitiveness of the port using an updated Analytic Hierarchic Process in the 5G LOGINNOV project</a> | Oct 2022    | ICOOR         | Giulia Renzi  | Future Networks World Forum 2022  |
| <a href="#">KPIs Measurement Tools - From KPI definition to KPI validation enablement – 5G PPP White paper</a>  | Mar 2023    | AKKODIS, ININ | Valcarengi, Luca; Amadou Kountché, Djibrilla; Dieudonne, Michael; Gavras, Anastasius; Gramaglia, Marco; Kosmatos, Evangelos; Nielsen, Lars; Patsouras, Ioannis; Sgambelluri, Andrea; Sterle, Janez; Verrios, Panayiotis | 5GPPP   |

|  |               |                       |  |  |
|--|---------------|-----------------------|--|--|
| <a href="#">ISO-23795-1: Nomadic Devices for Low Emission Zones and Green Navigation</a>   | May 2023      | T-SYSTEMS             | Ralf Willenbrock   | ITS European Congress 2023   |
| <a href="#">Methodology for Generating Synthetic Labeled Datasets for Visual Container Inspection</a>  | May 2023      | Vicomtech             | Guillem Delgado  | Elsevier - Science Direct  |
| <a href="#">5G-enabled innovation in ports' logistics: expectations from the 5G - LOGINNOV Project and relevance for the Physical Internet</a> | June 2023     | ICOOR                 | Piergiuseppe Di Gregorio and Michela Apruzzese   | IPIC 2023  |
| <a href="#">Enabling innovation in Transport &amp; Logistics A 5G approach</a>   | June 2023     | ICCS ININ             | Pavlos Basaras<br>Janez Sterle   | EUCNC & 6G summit 2023   |
| <a href="#">5G and companion technologies as a boost in new business models for logistics and supply chain</a>                                 | August 2023   | ICOOR                 | Michela Apruzzese,<br>Maria Elena Bruni,<br>Stefano Musso, Guido Perboli   | Sustainability 2023  |
| <a href="#">Experimentally Assessing Deployment Tradeoffs for AI-enabled Video Analytics Services in the 5G Compute Continuum</a>              | Oct 2023      | ICCS                  | Pavlos Basaras,<br>Emmanuel Vasilopoulos, Stratos Magklaris,<br>Konstantinos V. Katsaros, and Angelos J. Amditis | IEEE Conference on Network Function Virtualization and Software Defined Networks |
| <a href="#">5G and logistics data collection: the 5G LOGINNOV approach</a>   | Nov 2023      | Akkodis               | Amadou Kountche<br>Djibrilla   | TRA Conference   |
| <a href="#">Actions to ensure the priority roll out of 5G networks on EU hinterland and port area</a>  | October 2023  | 5GLOGINNOV Consortium | Lidia Buenavista<br>Pena, Frank Daems  | Webinar on Policy Recommendations for 5G deployment                              |
| Enhance research, development and deployment of AI applications to support most optimal Logistic supply chain and port operation               | November 2023 | ERTICO                | Frank Daems, Lidia Buena-vida Peña,<br>Giuseppe Sirignano  | 5G-LOGINNOV Position Paper   |

### 3.6 Featured articles

The 5G LOGINNOV project has positioned itself as a vanguard in the landscape of 5G innovation technologies. The impact of any project lies not only in its own accomplishments but also in the acknowledgment and recognition it receives from the stakeholders within the field. This chapter is dedicated to highlighting the invaluable importance of non-scientific featured communication activities having 5G LOGINNOV as a focus, including articles, publications by industry associations and newsletters.

#### ERTICO Newsletter

ERTICO is involved in substantial logistics projects which revolve around 5G technologies, optimising port ecosystems and enhancing port connections to the hinterland. By promoting the project's activities and outcomes, both within its partnership across eight sectors (vehicle manufacturers, users, traffic & transport industry, research sector, service providers, suppliers, public authorities, and connectivity industry) and to external stakeholders via platforms like City Moonshot and ERTICO Academy, the international visibility of the project was maximised. Hence, as the main organiser of the ITS European and World Congresses, ERTICO ensures that the project's results reach a wide audience, offering potential deployment opportunities for interested parties.

The 5G LOGINNOV project benefited from the wide network of 4026 subscribers of the ERTICO newsletter and it was consistently featured in it. In Year 2 of the project, the ERTICO newsletter has collected 8 articles dedicated to the project, surpassing the KPIs defined in the communication plan. In Year 3 of the project the ERTICO newsletter has collected 5 articles so far, updating the digital community on the most recent achievements of the project.

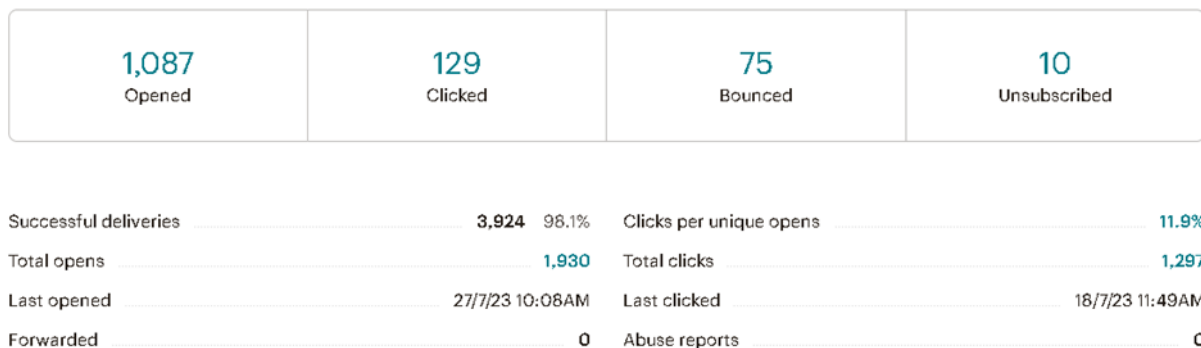


Figure 3 - ERTICO Newsletter 28/06/2023

#### Connecting EU Channels

Connecting EU is the specialised company in Circle focused on transport, mobility, environment, and circular economy: it has its own proprietary database of more than 4.500 qualified contacts, belonging to the following target groups Ports, Shipping, Transport & Logistics operators, University & Research Centers, IT Suppliers, LNG Energy & Sustainability, Rail & MTO, Media and Terminals, Consulting Companies.

5G LOGINNOV was often featured throughout these channels:

- Direct Email Marketing Campaigns

[Open Call for Innovative Startups](#) – 8 April 2021

[Open Call for Innovative Startups](#) – 27 May 2021

[Joint Workshop 5G META – 5G LOGINNOV](#) – 14 June 2021

[Collaborative Innovation Day](#) – 4th October 2022

[Workshop “5G goes 6G”](#) – 7 February 2023

[Transferability Survey](#) – 13 April 2023



View this email in your browser

**SAVE THE DATE**

**Collaborative Innovation Day**  
**OCTOBER 04, 2022**  
VIRTUAL EVENT - 09:00 - 13:00 CET

ORGANISED BY:  **5G LOGINNOV** |  **alice** |  **EUROPEAN UNION** |  **ERDF** |  **ERDF** |  **ERDF** |  **ERDF** |  **ERDF** |  **ERDF** |  **ERDF** |  **ERDF** |  **ERDF** |  **ERDF** |  **ERDF**

**Collaborative Innovation Day**  
**4th October | 09:00 - 13:00 CET**

**REGISTER NOW**

**Registrations will close on 30th September**

**JOIN US ON THE 4TH OF OCTOBER - DON'T MISS OUT!**

The Collaborative Innovation Day, organised by the H2020 project [5G-LOGINNOV](#) and [ALICE](#), on the 4th of October, is the perfect opportunity to enjoy plenty of expert speakers and activities honouring 5G innovations across the logistics sector.

Figure 4: Invitation to Collaborative Innovation Day

- **Weekly Bulletin**

Every Friday, to a specific selected audience of around 500 contacts from the lists above, Connecting EU sends a special Weekly Bulletin with funding opportunities, industry news and other transport-related insights. 5G LOGINNOV was often promoted through this channel:

[5G creating opportunities for LOGistics supply chain INNOVation](#) – 16 June 2023

[Transferability Survey](#) – 14 April 2023

[Transferability Survey](#) – 3 March 2023


[5g goes 6g: new opportunities of mobile communication for a better city & better life](#) – 17 February 2023

[5g goes 6g: new opportunities of mobile communication for a better city & better life](#) – 2 February 2023

[5g goes 6g: new opportunities of mobile communication for a better city & better life](#) – 27 January 2023



EVENTS



**SAVE THE DATE**

**WORKSHOP**  
"5G goes 6G": New Opportunities of Mobile Communication for a Better City & Better Life

**FEBRUARY 23, 2023**  
HAMBURG, GERMANY - 09:00 - 16:30 CET  
VENUE: AMERON HAMBURG HOTEL, SPEICHERSTADT | EVENT ROOM: BÖRSENSAAL

**5G GOES 6G: NEW OPPORTUNITIES OF MOBILE COMMUNICATION FOR A BETTER CITY & BETTER LIFE**  
23rd February | Hamburg, Germany | Hybrid event | 9:00am-4:30pm CET

The workshop organised by **ERTICO**, **5G-Loginnov Consortium** and **Huawei**, aims to provide startups, SMEs, and stakeholders' communities with new business opportunities for Smart Cities and innovative I.T.S. applications, including Ports and Logistics. In addition to **frontal sessions with expert speakers**, during the event **participants will be actively involved in interactive sessions** with the aim of solving challenges, cross-sharing experiences and knowledge and nurturing their networks.

[REGISTER NOW – Physical attendance](#)

[REGISTER NOW – Online attendance](#)

Figure 5: Invitation to '5G goes 6G' workshop

[Collaborative Innovation Day](#) – September 2022

[Collaborative Innovation Day](#) – September 2022

[5G LOGINNOV workshop](#) – June 2022

[Open Call for innovative Startups](#) – October 2021

[ITS World Congress Presentations](#) – October 2021

[ITS World Congress](#) – September 2021

[5G Meta & 5G LOGINNOV workshop](#) – June 2021

[Open Call](#) – May 2021



[Open Call](#) – April 2021

- **DocksTheFuture Network of Excellence (NOE)**

With a social media community of 1.500 Followers and several European Ports as Members (APDL Leixoes, Bulgarian Ports, IMDO - Irish Port, Kvarken Ports - Vaasa and Umea, Malta Freeport Corporation Ltd, Port of Aveiro, Port of Bar, Port of Barcelona, Port of Civitavecchia, Port of Gijon, Port of Malaga, Port of Taranto, Port of Valencia, Port of Venice, Port of Ystad, Port System Authority of the Eastern Adriatic Sea, Puerto de Huelva, Port of Palermo, Bilbao Port) the Network of Excellence is a voluntary cooperative network that brings together the most innovative ports, aiming to support the maritime community in achieving the UN 2030 Sustainable Development Goals (SDGs). The Network of Excellence aims to assist ports in developing innovative projects to reach their sustainability targets, featuring external presentations designed to showcase new business opportunities and industry trends to the ports industry. The 5G LOGINNOV project was presented during the meetings and featured on Network of Excellence website and social media:

[Open Call for Innovative Start Ups | 5G LOGINNOV](#) – 1 April 2021

[Connectivity and beyond: How 5G ecosystem empowers the port and logistics industry](#) – 9 April 2021

[5GLOGINNOV: Open call for innovative start ups](#) – 23 April 2021

[The European projects 5G LOGINNOV and 5GMETA will be presented at the EuCNC & 6G Summit 2021](#) – 27 May 2021



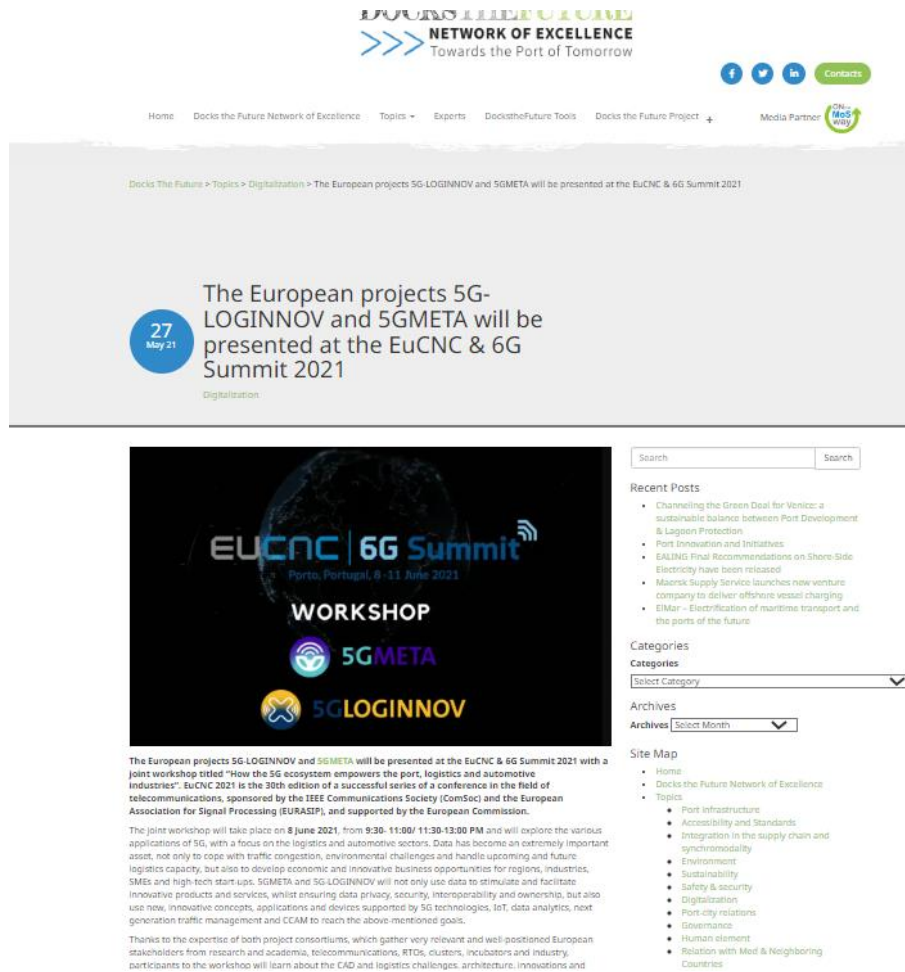


Figure 6: Article on Docks the Future Network of Excellence

[5G LOGINNOV at the ITS World Congress](#) – 8 October 2021

[Winners of 5G LOGINNOV open call for innovative start-ups](#) – 26 October 2021

[Open Call for Innovative Start Ups](#) – 6 April 2021

[ITS World Congress 2021](#) – 11 October 2021

## 5G PPP

The 5G Infrastructure Public Private Partnership (5G PPP) stands as a collaborative effort between the European Commission and the European ICT industry, encompassing ICT manufacturers, telecommunications operators, service providers, SMEs, and research institutions. Currently in its third phase with various new projects initiated in Brussels during June 2018, the 5G PPP is geared to deliver cutting-edge solutions, architectures, technologies, and standards, revolutionizing the communication infrastructures of the next decade.

For 5G LOGINNOV, active participation in the activities of the 5G PPP holds immense significance. The 5G PPP's primary challenge is to consolidate Europe's leadership in strategic domains where the continent exhibits strength, while also exploring untapped markets like smart cities, e-health, intelligent transport, education, and entertainment & media. By aligning with the 5G PPP, 5G LOGINNOV gains

a unique opportunity to contribute to shaping Europe's technological forefront and play an integral role in creating novel innovation prospects.

Through its involvement in the 5G PPP, 5G LOGINNOV stands to benefit from an inclusive platform that facilitates reinforcing the European industry's global competitiveness. Collaborating with diverse stakeholders, 5G LOGINNOV can leverage expertise, resources, and collective efforts to address the intricate challenges of the future. Such engagement empowers 5G LOGINNOV to position itself at the forefront of technological advancements and market development, capitalizing on the potential to maintain and strengthen Europe's global technological lead.

Specifically, 5G LOGINNOV has been involved several times in 5G PPP activities and publications, among them:

[The European 5G Annual Journal 2021](#)

[5G PPP Projects Brochure 2021](#)

[The European 5G Annual Journal 2023](#)

[5G PPP White Paper - KPIs Measurement Tools - From KPI definition to KPI validation enablement](#)

### **Baltic Transport Journal**

The 5G LOGINNOV Project was featured on Baltic Transport Journal 2 times, in 3-4/2021 issue and 3-4/23 issue.

As reported in this [news](#) the first article titled Federated States of Data focused on the transport and logistics market challenges towards digitalisation and green transition and on the 5G LOGINNOV presentation within this framework.

The second one, titled [Transforming logistics and smart ports in Europe](#), and drafted by Eusebiu Catana from ERTICO, the article highlights how the 5G LOGINNOV project is paving the way for innovation in the logistics value chain since it leverages the immense potential of 5G technology within the realm of ports. This remarkable achievement is made possible through an inventive framework designed to seamlessly integrate and validate connected and automated mobility (CAM) technologies associated with Industry 4.0. In its support for port applications, 5G LOGINNOV also deploys various 5G technological components. These include a new generation of 5G terminals tailored for CAM, novel Internet of Things (IoT) devices compatible with 5G, advanced data analytics, next-generation traffic management systems, and the emergence of 5G networks. By combining these elements, city ports are equipped to efficiently handle existing and future capacity and traffic demands, enhance overall operational efficiency, and effectively address environmental challenges.



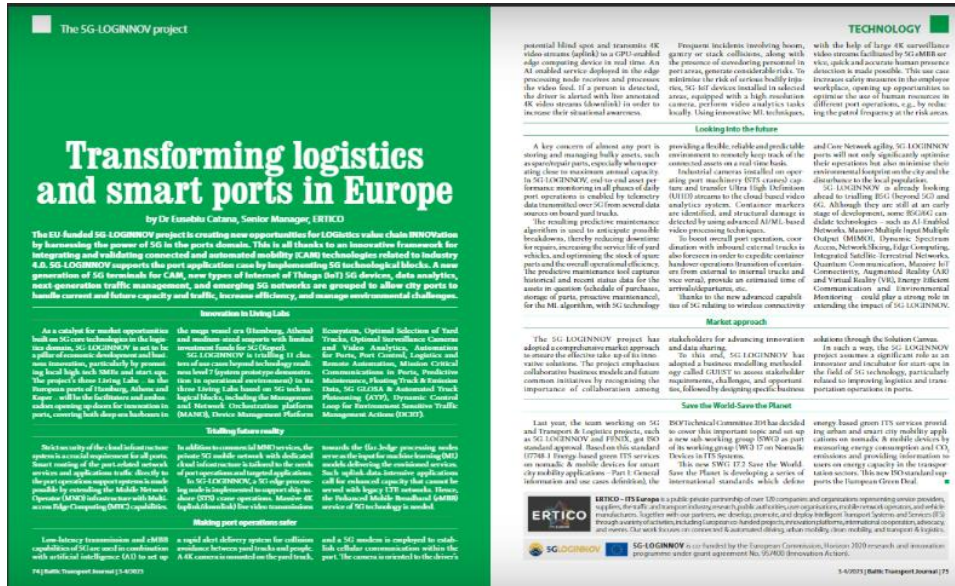


Figure 7: Article on Baltic Transport Journal

### IPIC 2023 website

5G LOGINNOV project was also featured in the IPIC 2023 : beyond the pure announcement of the session, the project had the opportunity to be featured on the event website with the article [5G LOGINNOV project is organizing a Special Session on 5G at IPIC 2023!](#), providing a presentation on the main impact areas for the achievements reached in terms of 5G&AI-enabled services with impact in personnel (and/or asset) safety and efficiency of logistics operations, teleoperation scenarios, mission-critical drone communications, real-time telemetry and digital twins fostering the transport digitalization, predictive maintenance and efficient data management schemes focusing on privacy.



## 3.7 Events and Demonstrations

In the ever-evolving landscape of 5G technology in transport and logistics, the power of project events and demonstrations cannot be underestimated. These immersive and collaborative platforms serve as catalysts for knowledge sharing, idea exchange, and community building. With the descriptions provided on the project websites, this chapter delves into some of the most important events organised by 5G LOGINNOV and the third parties' events in which the project took part.

### 3.7.1 Project events

#### 3.7.1.1 Hamburg Living Lab Local Stakeholder Workshop and Demo – October 2021

During the ITS World Congress that was held in Hamburg from 11 to 15 October 2021 the Hamburg LL Local Stakeholder Workshop and Demo was organised. Several stakeholders were invited to join a live demonstration tour around the TAVF (Testfield autonomous and connected driving Hamburg) and various bilateral discussions followed.

The project engaged with Port Operators, City authorities (i.e., LSBG- Landesbetrieb Straßen, Brücken und Gewässer Hamburg, Hamburg Behörde für Verkehr- und Mobilitätswende, Hamburg Verkehrsanlagen), industry players (i.e., Siemens, Swarco), policy makers (i.e., Hamburg Port Authority, Stadt Hamburg), Standard setting bodies (i.e., 3GPPP, 5GAA), Networking bodies (ITS Germany, ITS Hamburg). The full list of stakeholders and participants is reported in the dissemination report of the stakeholder event, available for the 5G LOGINNOV Consortium. The feedback of the stakeholders was very positive. The demo tour could be booked via the congress app, but several stakeholders were exclusively invited to join the tour.

The tour featured the main achievement for the LL HH, showcasing the mobile connection to the traffic lights, traffic light forecasts and low carbon mobility management. The achievement of the LL HH could be demonstrated, and Use Cases were explained to every participant of the demo tours. After the ride, stakeholders were invited to the T-Systems booth, with a dedicated 5G LOGINNOV stand, where they could watch the details of their tour (speed profiles, etc.).

- Number of overall attendees (registrants): 15.000
- Size of audience addressed by the performed activity (participants): ~ 200
- Number of participants at the podium sessions: ~ 150
- Number of attendees of the live demonstration: ~ 60

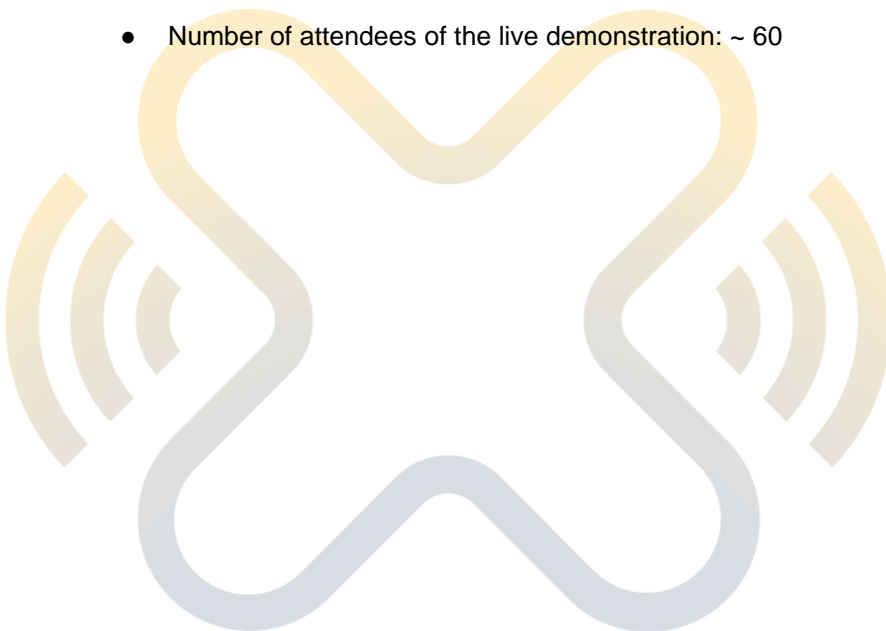




Figure 8: Hamburg Living Lab Local Stakeholder Workshop and Demo (October 2021)

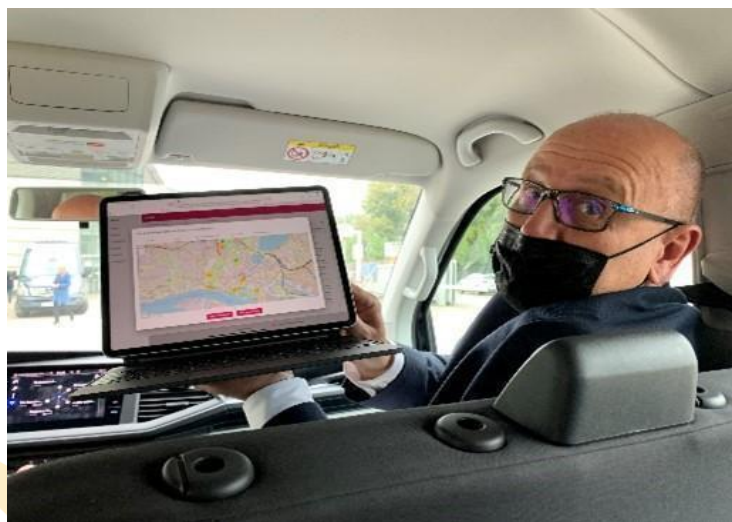


Figure 9: Hamburg Living Lab Demo

### 3.7.1.2 Koper Living Lab Local Stakeholders Workshop – May 2022

The Mediterranean Ports and Shipping exhibition and conference took place from the 24th to the 26th of May 2022, standing as the largest annual Container Ports, Shipping, and Transport Logistics Exhibition and Conference in the Mediterranean region. Amidst this prestigious gathering, the 5G LOGINNOV project seized the opportunity to showcase its innovations and advancements in the realm of port logistics, utilising the event's international reach and high-level networking experience to its advantage.

The event saw an impressive turnout, with over 120 guests in attendance, including esteemed individuals such as senior government officials (i.e., Slovenian Association of Port Logistics Providers), port authorities (i.e., Port of Barcelona, Port of Valencia), industry players (i.e., INTEREUROPA Global Logistics Service, Nafith Logistics, Siemens, T.P.G. Logistic, FEPORT), technological suppliers (i.e., Dutch Lanka Trailer Manufacturers, EAE Lighting, Konecranes, Novatech, NT Lifttec, Stinis Spreaders) and procurement decision-makers.

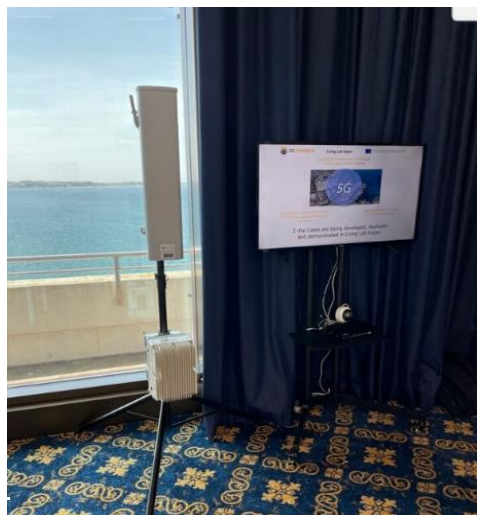


Figure 10: Koper Living Lab Local Stakeholders Workshop (May 2022)

A key highlight of the conference was Dr Janez Sterle's participation from Internet Institute Ltd. Slovenia, who played a pivotal role in session 5, which centered on “Enabling port logistics and security with 5G technologies”. His presentation shed light on the transformative potential of 5G technologies in revolutionizing port logistics and enhancing security measures, drawing significant attention and interest from the audience. Agenda is available [here](#).

The event's significance was further enhanced by the fact that it was hosted by Luka Koper and 5G LOGINNOV benefited immensely from the unique platform provided, enabling the project to showcase its cutting-edge innovations to a highly relevant and engaged audience. The event served as an ideal avenue to foster connections with local stakeholders and communities, opening new opportunities for collaboration and knowledge exchange. With its active presence and participation at this prestigious B2B event, the 5G LOGINNOV project reaffirmed its

commitment to pushing the boundaries of technology and driving positive change and progress for the maritime and transport sectors in the Mediterranean region.

### 3.7.1.3 Collaborative Innovation Day and Athens LL Stakeholders Workshop – October 2022

The aim of this event was to focus on 5G and more in general on the research and innovation ecosystems that are building blocks of our digital economy and society in the next decade, a key asset for Europe to compete in the Global market. The event, with more than 75 attendants, deepened several themes in a plenary session, involving high level international speakers both at institutional and industry level and also giving the chance to the 5 winners of the Open Call to present themselves and their applications, providing a business opportunity to liaise with 5G/6G players. During the first sessions, experts in the maritime, transport & logistics and 5G scopes fields deepened the state-of-the-art and future views of 5G; representatives of H2020 Projects at the forefront of 5G developments guided us through the concrete applications, challenges, and opportunities for 5G in ports and logistics operations. Furthermore, the event represented the opportunity to gather feedback from the 5G LOGINNOV stakeholder platform concerning the Business Models developed within WP4, including an “interactive session” in which each use case will be presented and validated by the direct dialogue with the players.

The event was also an essential occasion to interact with other EU projects involved in the field of 5G, exchanging findings and ideas, while also fostering networking among the various project representatives. Among them were:

- [VITAL 5G](#)
- [5G-BLUEPRINT](#)
- [INGENIOUS](#)

[Discover the Agenda](#)  
[Rewatch the Event](#)

A parallel session in the afternoon was dedicated to the **Athens Living Lab Local Stakeholder Workshop and Demo**, during which the audience was invited to hear about the Athens LL use cases, the 5G enablers and the related impacts for the port industry; a Live Virtual Demo was carried out, showcasing among others monitoring of port service components and object detection. The session was attended by University and Research (i.e., NTUA, University of Twente, Khune Logistics University), Industry players (i.e., Zulu Associates, Experion Global), Port Authorities (i.e., Port of Valencia, Palma Port) as well as Athens LL local operators (i.e., PCT and Vodafone Innovus).

### 3.7.1.4 Hamburg Living Lab Local Stakeholder Workshop – February 2023

The workshop titled “5G goes 6G: New Opportunities of Mobile Communication for Better City and Better Life” was planned to take place on the 23rd of February 2023, jointly organised by ERTICO, the 5G LOGINNOV Consortium, and Huawei. This highly anticipated event aimed to gather a diverse range of expert speakers from the Information and Communication Technology (ICT) domain, specialising in Smart Cities and Intelligent Transportation Systems (I.T.S.) applications, including those relevant to Ports and Logistics.

The workshop, with more than 100 attendees, was designed to explore the vast potential offered by Beyond 5G and 6G technologies, delving into technical intricacies and presenting alluring use cases with significance for both current and future projects. With the rapidly advancing technology landscape, the event served as a pivotal platform for discussions and deliberations on potential breakthroughs in the telecom industry, setting the course towards even more advanced generations of communication networks. The workshop also aimed to provide a comprehensive understanding of the technical achievements within the Project Living Labs, with a specific focus on the Hamburg ecosystem: besides the lessons learned during the 5G-LOGINNOV experience, a presentation of Hamburg innovative mobility services was delivered for the stakeholders community including, but not limited to, Universities and Research Centres (Universität Kassel, Hamburg University of Applied Sciences), industry players (Fujitsu Germany, German Aerospace Center (DLR), Nokia Germany, IMST GmbH, Deutsche Telekom), Networking bodies (ITS mobility GmbH, CHINA-LINK INVEST, Strategis - Maritime ICT Cluster, 5G AA).

Beyond the exploration of technical dimensions, the workshop also delved into potential business opportunities facilitated by 5G and 6G technologies, particularly in the context of Smart Cities, Intelligent Transportation Systems, and future Port Eco-Systems. This forward-thinking approach encouraged participants to envision a future where advanced communication technologies could revolutionise urban living and streamline logistics in the ever-evolving world of trade and transportation. The workshop was not merely a passive event; it adopted a highly interactive format, actively encouraging attendees' participation. Engaging and thought-provoking interactive sessions were conducted, with the aim of collectively addressing challenges, sharing experiences and knowledge, and fostering valuable connections within the community of experts and enthusiasts present at the event.

[Workshop Agenda](#)





Figure 11: Hamburg Living Lab Local Stakeholder Workshop (February 2023)

### 3.7.1.5 Athens Living Lab Local Stakeholders Workshop – June 2023

The 9th edition of the [International Physical Internet Conference \(IPIC\)](#) took place in Athens from 13-15 June. During this event, the achievements of the 5G LOGINNOV project were discussed and showcased through various activities, including a Local Stakeholder Event in the Port of Piraeus. Over 100 speakers, 200 attendees, and 15 exhibitors have participated in IPIC and the presence of the 5G LOGINNOV Project highlighted its significant role in the event, emphasising the transformative potential of 5G technology in the logistics industry.

One of the highlights was the session entitled “5G: revolutionising the logistics sector in Europe” co-organised by the project on 14<sup>th</sup> June. The session was coordinated by Konstantinos Katsaros Senior Researcher in ICCS, and the presentation entitled “5G LOGINNOV: 5G&AI-enabled services in Port operations tailored to logistics and safety applications” was also held by Pavlos Basaras from ICCS and Port of Piraeus’ pilot site leader. The panel explored the multifaceted impact of 5G in the Transport & Logistics (T&L) sector, addressing governance issues, potential solutions, and business aspects. Two representatives from Greek-based start-ups Vasileios Skliros (Director of Operations and Business Development Hellenic Drones S.A) and Yannis Kopsinis (Co-Founder and CEO of LIBRA AI Technologies), participated in the panel while Anna Tzanakaki (Associate Professor at the National and Kapodistrian University of Athens & Technical Coordinator of the H2020 5G PPP projects 5G-PICTURE and 5G-VICTORI) concluded the session with a video presentation. More information about the session and download Dr Basaras presentation are available [here](#).

Furthermore, at the 5G LOGINNOV booth promotional leaflets were distributed to the more than 50 visitors and a pre-recorded demo of the Athens Living Lab use cases was also showcased via video.

The virtual demonstration was complemented with an onsite demo of 5G-LOGINNOV’s applications in Piraeus Container Terminal (PCT), held during the visit at Piraeus Port, addressing representatives of research and industry (i.e., CERTH, INLECOM, WINGS), 5G sister projects (i.e., 5G-VICTORI, URBANE), port community, SMEs.



Figure 12: Athens Living Lab Local Stakeholders Workshop (June 2023)

### 3.7.1.6 Final Event & Koper Local Stakeholders Workshop

On November 7<sup>th</sup>, 2023, the Port of Koper in Slovenia hosted the final event of the 5G-LOGINNOV project, that represented the culmination of the action and provided attendees with valuable insights and demonstrations. The event featured keynote speeches by representatives of EU Commission and of Slovenian institutions in the transport and logistics fields (i.e., Ministry of Digital Transformation of the Republic of Slovenia, Government Information Security Office) as well as technical presentations of the achievements reached in each LL.

In addition, the heart of the event was the live demonstration of the use cases developed in the 5G LOGINNOV Living Labs, with the added value represented by the cross-implementation based on the Koper port infrastructure.

With 80 attendants the Final Event represented a valuable opportunity to showcase concrete 5G innovations applied in the port context; the demonstration not only showcased the results achieved in each living lab, but also went a step further by demonstrating the cross-cutting capabilities of the project. This opens up new possibilities for market adoption and transferability.





Figure 13: 5G LOGINNOV Final Event

### 3.7.2 Ideathons

In 2022 the three Living Labs partnered with local technology incubators and research institutes to organise local Ideathons – or hackathons of ideas – dedicated to young researchers for the proposal of new 5G-based services. This event strategy is in line with the goal of the 5G LOGINNOV project that entails the concrete implementation of project results to achieve industrial, scientific, economic, political and societal benefits. The Ideathons are an opportunity for 5G experts to gather and share lessons learnt and know-how, with the purpose of furthering the debate about the implementation of 5G-based services to boost the technological innovation in the freight, logistics and transportation sector. Ideathons were also very useful to exploit and strengthen the good existing relationship of Living Labs with local universities and networks, making 5G LOGINNOV contents well known in the research and academic community.

#### 3.7.2.1 Hamburg Ideathon – 13 July 2022

During the Hamburg Ideathon, held at the University of Applied Sciences, Economics, and Culture in Leipzig, the students were introduced to the main activities carried out in the port of Hamburg in the context of 5G LOGINNOV. These activities included the Floating Truck and Emission Data, the Automated Truck Platooning, and the Dynamic control loop for environment-sensitive traffic management actions. A particular focus was also dedicated to the TAVF: the test track for automated and connected driving in Hamburg. The lecture was conducted by Ralf Willenbrock (T-SYSTEMS), representative of the project, who showcased 5G LOGINNOV in the Mobile Communication course by Prof. Dr Ing. Michael Einhaus on Cellular and radio frequency technology, involving the students in a frontal lesson with a final interactive part.

#### 3.7.2.2 Athens Ideathon – 10 October 2022

The Institute of Communications and Computer Systems (ICCS) organised the Athens Living Lab Ideathon within the framework of the 5G LOGINNOV project. The event was hosted by the National Technical University of Athens (NTUA) including onsite and remote attendants. Participants including

students and young researchers, had the opportunity to attend a series of presentations related to 5G technology, applications and challenges in Machine Learning (ML), virtualisation techniques and tools tailored to cloud native applications and services, management and network orchestration (MANO) technologies and more. In the sequence direct applications of these technological blocks were further showcased based on the use cases of the 5G LOGINNOV project and their impact in the Port industry with the example of the Port of Piraeus, i.e., one of the three Living Labs of 5G LOGINNOV. Finally, the onsite attendants had the opportunity to experiment hands-on with 5G-IoT devices (like the devices exploited by the main use cases of the project) along with the kubernetes tool for AI-enabled video analytics service orchestration and lifecycle management of containerized services and service components.

As indicated in the [event agenda](#), during the Ideathon several experts presented their recent work developments to the students, facilitating the engagement and the exchange of information and knowledge:

- [“Machine Vision: Artificial Intelligence, Machine Learning & Computer Vision Challenges”](#) by Georgios Drainakis (ICCS)
- [“Edge Computing”](#) by Dr Konstantinos V. Katsaros (ICCS)
- [“Athens Living Lab Ideathon”](#) by Dr Pavlos Basaras (ICCS)
- [“Real time E drowSiness detectiON, AlerTing and rEporting \(RESONATE\)”](#) by Athanasios Balomenos, PhD (LIBRA AI)



Figure 14a: Athens Ideathon -Libra(10 October 2022)

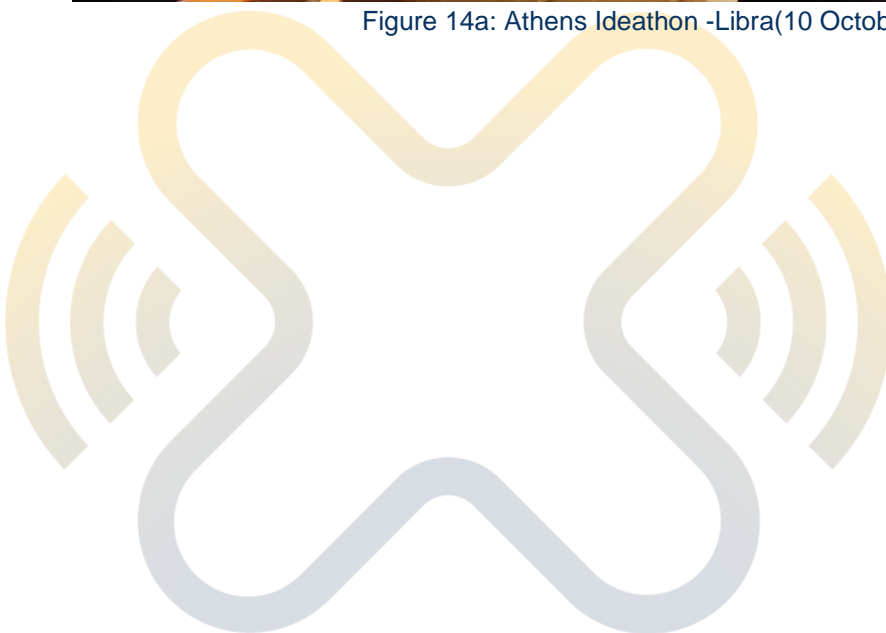




Figure 15b: Athens Ideathon (10 October 2022)

### 3.7.2.3 Koper Ideathon – 19 October 2022

The Koper Ideathon was a relevant chance to foster the dialogue on 5G opportunities with the local stakeholders' community, represented by the 30 participant students involved in several activities. With a pilot site visit by bus and three live demonstrations the more comprehensive context was outlined, including an excursus on the port of Koper and its correlated career opportunities. Then the supporting professors from the University of Ljubljana facilitated the exchanges with the students on the topic of 5G and the 5G LOGINNOV activities, including teams pitching and the distribution of the challenges. The event included the awarding of the winners, and it was a great opportunity for raising awareness and share knowledge about the 5G topic.

[event agenda](#)



Figure 16a: Koper Ideathon -Luka Koper port(19 October 2022)



Figure 17b: Koper Ideathon (19 October 2022)

### 3.7.3 Conferences and external events

The participation in conferences and external events, as well as technical workshops, offers an important space for the exchange of ideas and cutting-edge insights. This is especially true for 5G LOGINNOV, which needs to communicate and systematise its results by engaging with a diverse audience in terms of fields and geographical distribution, comprising experts, researchers, and industry leaders. Below is the list of key events in which 5G LOGINNOV partners took part during the project:

| EVENT   | DATE & TYPE                  | PARTNERS INVOLVED | NOTES  |
|---|------------------------------|-------------------|--|
| <a href="#">Virtual ITS European Congress</a>   | 9-10 November 2020 - Online  | ERTICO, T-SYSTEMS | 25 Factsheet download; 24 Presentations download; 623 participants for the whole event; 204 average visitor per booth; More than 200 attendants for the sessions |
| <a href="#">5G Techritory 2020</a>  | 11-12 November 2020 - Online | ERTICO            | 800 registrants to the event   |
| <a href="#">6th ITS Hellas Virtual Conference on Intelligent Transport Systems</a>      | 14-15 December 2020 - Online | ERTICO, ICCS      | <a href="#">7 project factsheet downloads</a> ; <a href="#">38 project general presentation download</a> ; <a href="#">1 article published</a>                   |
| <a href="#">WEBseries for Broadband Competence Offices - Season 4</a>                   | 9 March 2021 - Online        | T-SYSTEMS         | N/A  |
| <a href="#">3rd European Conference on Connected and Automated Driving – EUCAD 2021</a> | 20-22 April 2021             | T-SYSTEMS         | 2 one-to-one meeting   |

|   |                                     |  |  |
|---|-------------------------------------|--|--|
| <a href="#">IEEE INFOCOM 2021 (workshop FOGML 2021)</a> | 10-13 May 2021<br>- Online          | ICCS   | N/A  |
| <a href="#">IEEE 5G for CAM</a>                         | 13-14 May 2021<br>- Online          | ICOOR,<br>ERTICO   | N/A  |
| <a href="#">Joint EuCNC &amp; 6G Summit</a>             | 8-11 June 2021 -<br>Online          | LUKA<br>KOPER,<br>TELEKOM<br>SLOVENIJE<br>, ININ,<br>ICCS, T-<br>SYSTEMS,<br>VODAFONE<br>INNOVUS,<br>ICOOR | 124 visitors at the booth  |
| <a href="#">IPIC 2021</a>                               | 14-17 June 2021<br>- Online         | ICCS   | more than 400<br>participants to the overall<br>event  |
| <a href="#">COMPSAC 2021</a>                            | 12-16 July 2021<br>- Online         | ICOOR  | N/A  |
| <a href="#">ITS World Congress</a>                      | 11-15 October<br>2021 - Hamburg     | ERTICO- T-<br>SYSTEMS,<br>VICOMTEC<br>H, ININ,<br>ICCS   | More than 15,000<br>participants to the overall<br>congress  |
| <a href="#">Techritory 2021</a>                         | November 2021<br>- Online           | ERTICO   | 188 participants   |
| <a href="#">Connecting EU Insights</a>                  | December 2021<br>- Online           | ICCS   | 115 participants   |
| <a href="#">Seminar on radio communications</a>         | 2 February 2022<br>- Ljubljana      | ININ   | N/A  |
| <a href="#">Mediterranean Ports and Shipping</a>        | 24-26 May 2022<br>- Koper           | ININ, LUKA<br>KOPER  | 120  |
| <a href="#">Vitel</a>                                   | May 2022 - Brdo<br>pri Kranju (SLO) | ININ   | N/A  |
| <a href="#">ITS European Congress</a>                   | 30 May -1 June<br>2022 - Toulouse   | ERTICO   | 1936 participants; 2602<br>registrations; 62<br>individual exhibitors; 17<br>media partners; 51<br>countries; 102 sessions<br>8 demonstrations; 3806<br>contacts made; 2651<br>messages exchanged;<br>Top Countries: France,<br>Germany, Belgium |
| <a href="#">Globa IOT Summit</a>                        | 16 June 2022                        | ERTICO   | N/A  |
| <a href="#">Compsac 2022</a>                            | 27 June - July -<br>Turin           | ICOOR  | N/A  |

|   |                                    |  |  |
|---|------------------------------------|--|--|
| <a href="#">Webinar on Smart Ports</a>                    | 16 September 2022 - Online         | ERTICO, NETWORKLD EUROPE                   | 154 registered; 68 attended. The webinar video and slides have been published on NetworkEurope and CCSA website targeting outreach to more than 1800+ members from both sides. |
| <a href="#">ITS World Congress</a>                        | 18-22 September 2022 - Los Angeles | ERTICO                                     | Number of overall attendees: 20,000;<br>Size of audience addressed by the performed activity (participants): 100;<br>Number of visitors at the booth: 50                       |
| <a href="#">Transport Innovation Forum 2022</a>           | 20-21 October 2022                 | ERTICO                                     | More than 700 transport and logistics sector experts participated live and the broadcast   |
| <a href="#">ASM 21/22 conference</a>                      | November 2022 - Ljubljana          | ININ                                       | 100  |
| <a href="#">TRA2022</a>                                   | 14-17 November 2022 - Lisbon       | CIRCLE ICOOR                               | 100  |
| Slovenian Chamber of Commerce event                       | 17 February 2023                   | ININ                                       | N/A  |
| <a href="#">Focus on event: Mobility Standards</a>        | 22 March 2023                      | ERTICO (COMET, Pl. Stéphanie 20, Brussels) | 75-80 participants   |
| <a href="#">The International Logistics Congress 2023</a> | 5-7 April 2023 - Slovenia          | ERTICO                                     | 480 participants from 15 countries, covering all type of stakeholders: industry, ports, shippers, forwarder, research, IT provider, data provider, etc                         |
| <a href="#">ITS European Congress</a>                     | 22-24 May 2023 - Lisbon            | ERTICO, ICOOR, CIRCLE                      | 2568 participants from 59 countries  |
| <a href="#">IPIC 2023</a>                                 | 13-15 June 2023 - Athens           | ICCS, CIRCLE, ICOOR                        | Overall attendees (registrants): +250.<br><br>Size of audience addressed by the performed activity: 50<br><br>Number of distributed promotional materials: 30                  |



|  |                                     |  |  |
|--|-------------------------------------|--|--|
|  |                                     |  | Number of visitors at the booth: 50  |
| <a href="#">EU CNC &amp; 6G Summit 2023</a>  | 6-9 June 2023 - Gothenburg          | ICCS, ININ   | About 50 people participated in the special session where several 5G and logistics-oriented projects were presented.<br>Summit:<br>894 Registrations<br>251 papers in regular sessions were submitted. |
| <a href="#">COMPSAC 2023</a>   | 26-30 June 2023 -Turin              | ICOOR  |  |
| <a href="#">Global IoT Summit 2023: The 6th edition of the GloTS conference</a>            | 19-20 June 2023 - Berlin            | ERTICO   |  |
| <a href="#">5G impact in Maritime Connectivity</a>   | 29 June 2023 - Virtual              | ERTICO, Internet Institute                         |  |
| <a href="#">5G LOGINNOV to the 16th Global Commercialization Conference and Workshop</a>   | 18-20 September - Seoul South Korea | ICOOR  | Topic: Global Cooperation of EU Connected Automated Mobility, Dr Eusebiu Catana has presented "European Cases of Connected Automated Mobility", 5G LOGINNOV CCAM Use Cases included.                   |
| <a href="#">Agency for Communication Networks and Services of the Republic of Slovenia</a> | 26 September - Lubiana              | LUKA KOPER, TELEKOM SLOVENIJE , INTERNET INSTITUTE |  |
| <a href="#">IEEE 9th World Forum on Internet of Things World Forum</a>                     | 12-17 October 2023 - Hybrid         | ERTICO   | Session: 5G for Connected and Automated Mobility (CAM)   |
| <a href="#">IEEE 9th World Forum on Internet of Things World Forum</a>                     | 23rd October - Hybrid               | ERTICO   | Mobility vertical track of IEEE IoT World Forum 2023   |
| <a href="#">ITS World Congress</a>   | 16 —20 October 2023 Suzhou, China   | T-SYSTEMS  |  |

|                                  |                 |      |   |
|----------------------------------|-----------------|------|---|
| <a href="#">5G &amp; GOVTECH</a> | 25 October 2023 | ICCS | Presentation: 5G-Enabled Smart Ports: Experiences and Prospects |
|----------------------------------|-----------------|------|---|

5G LOGINNOV project partner were also involved in the following Workshops and coordination meetings:

| WORKSHOPS   | DATE & TYPE               | PARTNERS INVOLVED   | NOTES          |
|---|---------------------------|---|----------------|
| <a href="#">5G PPP Webinar: New 5G Core Technologies Innovation Projects</a>      | 16 February 2021 - Online | ERTICO  | N/A            |
| <a href="#">Space + Terrestrial and the IoT Connection</a>                        | 9 March 2021 - Online     | T-SYSTEMS   | N/A            |
| Technical Workshop (webinar) for EU CNC preparation with 5G-META                  | 1 April 2021              | ERTICO, LUKA KOPER, TELEKOM SLOVENIJE, ININ, ICCS, T-SYSTEMS, VODAFONE INNOVUS, ICOOR | 9              |
| <a href="#">Connecting EU Insights</a>  | 27 April 2021             | ERTICO, ININ, T-SYSTEMS, ICCS, TELEKOM SLOVENIJE, ICOOR                               | 73 registrants |
| Technical Workshop in preparation to 5G LOGINNOV - 5G META and SHOW joint webinar | May 2021 - Online         | ERTICO, VICOMTECH   | 4              |
| <a href="#">Joint Workshop 5G LOGINNOV, 5G-META, SHOW</a>                         | 23 June 2021 - Online     | ERTICO, VICOMTECH   | 79             |
| Technical Workshop with 5GMETA and SHOW in preparation to ITS World Congress      | October 2021 - Online     | ERTICO- T-SYSTEMS, VICOMTECH, ININ, ICCS  | 4              |

|   |                                 |  |  |
|---|---------------------------------|--|--|
| Technical Workshop with 5GMETA and 5G MOBIX in preparation to 5G-TECHRITORY   | October 2021 - Online           | ERTICO, ININ, T-SYSTEMS, VICOMTECH   | 4  |
| Technical meeting with sister project AFFORDABLE5G  | February 2022 - Online          | ERTICO, CIRCLE   | 4  |
| Technical meeting with sister project INGENIOUS   | February 2022 - Online          | ERTICO, CIRCLE   | 4  |
| <a href="#">Joint workshop 5G LOGINNOV, FUDGE5G-AFFORDABLE5G</a>  | June 2022                       | Joint workshop 5G LOGINNOV, FUDGE5G-AFFORDABLE5G   | 40   |
| <a href="#">Collaborative Innovation Day with Alice and Athens LL local stakeholder workshop</a>  | 4 October 2022 – Online         | ERTICO, CIRCLE, ICOOR, ICCS  | 144 registrants  |
| <a href="#">5G Loginnov at NoE</a>  | 13 December 2022 - Online       | SME  | 10   |
| <a href="#">Presentation SME's WG Networld Europe</a>   | 16 January 2023                 | Circle   | N/A  |
| <a href="#">FAME-CCAM Workshop</a>  | 8 March 2023                    | ERTICO   | N/A  |
| Workshop with 5G-PPP  | 29 March 2023 - Brussels Hybrid | ERTICO   | 30 registered participants                               |
| Technical Workshops for session coordination at ITS EU Congress 2023  | 06 April 2023                   | ICOOR, ERTICO, eBOS, INLECOM, ALICE, Ministerie van Infrastructuur en Waterstaat                   | 7  |
| Technical Workshops for EU CNC&6G summit 2023 Conference  | 28 March 2023                   | CERTH, ICCS, eBOS, MARTEL, IMEC, ININ, ERTICO, WINGSICT SOLUTIONS, ZSI                             | 15   |
| <a href="#">5G-LOGINNOV Consultation Workshop on policy recommendations for 5G Core technologies in logistics</a>                             | 31 May 2023 - Hybrid            | <a href="#">ERTICO</a>   | Representatives of the CCAM partnership, DTLF, ETP-ALICE |
| <a href="#">Technical workshop Future 6G Technologies for Cooperative ITS Standards and Vertical Implementation in Cities and Port Cities</a> | June 2023                       | <a href="#">ERTICO</a> , <a href="#">ISOWG17</a> , <a href="#">ETSI Technical Committee on ITS</a> |  |
| <a href="#">Webinar: 5G Impact in maritime connectivity</a>   | 29 June 2023                    | <a href="#">ERTICO</a> , <a href="#">ININ</a>  | N/A  |
| <a href="#">Joint webinar with 5G MOBIX and 5GMETA “Policy recommendations for 5G deployment”</a>   | 27 October 2023 - Online        | <a href="#">5G LOGINNOV</a> , <a href="#">5G META</a> , <a href="#">5G MOBIX</a>                   | 90   |

In the following paragraphs some key highlights from the external events, to concretely present the effort of the 5GLOGINNOV consortium in making the project visible and spread the word about the achievements reached:

### 3.7.3.1 FOCUS – EU CNC&6G SUMMIT 2021

The 2021 Joint EuCNC & 6G Summit took place from 08 to 11 June in a dedicated virtual platform. The European H2020 projects 5GMETA and 5G LOGINNOV, organised a joint workshop titled 'Connectivity and Beyond: How the 5G Ecosystem Empowers the Port, Logistics and Automotive Industries' on 08 June.

Jointly organised by the European H2020 projects 5GMETA and 5G LOGINNOV, this workshop explores the various applications of 5G, with a focus on the logistics and automotive sectors.

Thanks to the expertise of both project consortiums, which gather very relevant and well-positioned European stakeholders from research and academia, telecommunications, RTOs, clusters, incubators and industry, participants to the workshop learned about the CAD and logistics challenges, architecture, innovations and services enabled by 5G. Participants also had the opportunity to get involved in the projects' future SME and start-up activities. Both projects presented their concrete actions, activities and 5G roadmaps through their respective living labs and use cases, which include use cases on R&D Live Training Loop, Networking Parking and Driving Safety & Awareness, Traffic Management Applications, Video Surveillance, Precise positioning, Predictive Maintenance and Real Time Tracking.

Additionally, the 5G LOGINNOV project was presented in a demonstration in one of the virtual exhibition booths. The objective of the 5G LOGINNOV booth demonstration and participation in the EuCNC event was to showcase the 5G LOGINNOV Private 5G network capabilities supporting implementation of novel 5G technologies and cutting-edge prototypes tailored to be operated in port ecosystems. The EuCNC exhibition was used as an important European event where beyond state-of-the-art capabilities of 5G LOGINNOV were released and showcased to the technical and business-side and the public. The demonstration was used to promote 5G LOGINNOV's vision and to collect valuable feedback from several industrial vertical stakeholders.





EuCNC 2021 - Private 5G mobile system for future European ports

Figure 18: Video demo at EUCNC2021

### 3.7.3.2 FOCUS – 5GPPP Webinar 2021

This webinar presented the 8 new 5G Core Technologies projects joining the 5G-PPP to accelerate innovation in the development and take up of 5G. The projects started in the second half of 2020 and are already developing exciting advances in 5G. The webinar was held in two parts, where four projects will present in each part, with a short introduction from the European Commission and the 5G IA to start. These projects were selected for funding under the 5G-PPP ICT-42-2020 call: 5G-PPP 5G Core Technologies innovation.

Together with 5G LOGINNOV were presented also 5G-RECORDS (Irene Alepuz Benaches, Universitat Politecnica de Valencia), Affordable5G (Dr Panagiotis Trakadas, NKUA), 5GMETA (Oihana Otaegui, VICOMTECH). While in the following session several other projects were presented: COREnect (Gerhard Fettweis, TU Dresde), DRAGON (Vladimir Ermolov, VTT), FUDGE-5G (David Gomez-Barquero, Universitat Politecnica de Valencia), Int5Gent (Dr Dimitrios Klondis, Ubitech).

### 3.7.3.3 FOCUS - 5G LOGINNOV ITS WORLD CONGRESS 2021

During the ITS World Congress, 5G LOGINNOV was also present with a booth and involved in three Special Interest Sessions (SIS), also holding some clustering activities together with the CONCORDA Project.

SIS 91 Digital transformation in logistics, held on Monday, October 11, 2021, where Dr Eusebiu Catana, ERTICO – ITS Europe, moderated the panel composed by:

- Szymon Oscislowski, European Commission, DG MOVE, Belgium
- Roeland van Bockel, Ministry of Infrastructure and Water management, The Netherlands
- Fernando Liesa, ETP-Alice, Belgium
- Sergio Barbarino, P&G, Belgium
- André Perpey, NeoGLS, France
- Marcel Huschebeck, PTV Group, Germany-replaced Zoltan-Mondelez

SIS 96 CAD, Safe Platooning and 5G Eco-Systems for verticals held on October 13, 2021, where Dr Eusebiu Catana, ERTICO – ITS Europe, Belgium moderated the panel composed by:

- Emrah Kinav, Ford Otosan, Turkey
- Oihana Otaegui, VICOMTECH, Spain
- Ralf Willenbrock, T-Systems, Germany
- Pekka Eloranta, VTT, Finland
- Sterle Janez, ININ, Slovenia
- Basaras Pavlos, ICCS, Greece



Figure 19: 5G LOGINNOV session at ITS World Congress (2021)

The session was jointly organised with 5G-META and SHOW project, capitalising the Clustering activities developed in T5.5 with sister projects. Cooperative, connected and automated mobility (CCAM), next generation traffic management and emerging 5G networks for city ports to handle upcoming and future capacity, traffic, efficiency and environmental challenges were the pivotal topics deepened. A special focus on the Living Labs activities was done with presentation by Hamburg Living Lab, Athens Living Lab and Koper Living Lab available in the *Library* section of the web site.

Autonomous Vehicle & Platooning, what next!?! Held on October 15, 2021, where ERTICO speakers presented real results & lessons learnt from CONCORDA&ENSEMBLE done on testing grounds and in real life and can serve as an experience to any other similar project.

- Vogel Sebe, Program Manager, NL
- Dafonte Pablo, Program Manager, Spain
- Marika Hoedemaeker, Project Coordinator, NL
- Michael Menzel, Program manager, Germany
- Omar Alshabibi, Manager ETAS-SEC/PRM, Germany
- Jochen Hoidis, Senior Manager, Germany/USA

Furthermore during the ITS World Congress the Winners of the 5G LOGINNOV Open Call were announced during the ITS Future Champion Contest.

### 3.7.3.4 FOCUS – IPIC 2021

The International Physical Internet Conference 2021 provided an open forum for researchers, industry representatives, government officials, and citizens to explore, discuss, and introduce leading-edge

concepts, methodologies, recent projects, technological advancements, and start-up initiatives for current and future Physical Internet implementation.

Conference topics included Logistics Nodes, Logistics Networks, System of Logistic Networks, Access and Adoption, Governance. New business models, enabling technologies, and experimentations already underway were also presented. IPIC 2021 was held online from 14th to 17th June and had more than 400 participants overall.

Moderated by ICCS, the session in which 5G LOGINNOV was presented also involved other contributions in the fields of port digitalisation, IoT solutions, and 5G video solutions and applications in ports.

### 3.7.3.5 FOCUS – ITS WORLD CONGRESS 2022

5G LOGINNOV attended the 28th ITS World Congress in Los Angeles, CA. In September 18-22, experts explored the event theme “Transformation by Transportation”. ITS World Congress is the forum to make meaningful connections, experience inventive conference programs presented by industry experts, and see cutting-edge technology in the Exhibit Hall. Specifically, 5G LOGINNOV was presented on Sunday 18 September during the SIS3: “Innovation in Supply Chain for a Demand-Drive World”.

The event presented how a European Federated Network of Information exchange in Future Logistics (FENIX project) was developed and implemented by integrating different platforms such as AEOLIX, PTV, NeoGLS, etc. in one federation of platforms. This approach also provided insights into how the willingness of the logistics companies increased to take electronic data interchange into use, to accelerate information system development processes and to decrease costs of information system integration by creating a common international recommendation for exchanging information. One of the aims of this session was to speed up adoption of new ways to exchange information between logistics companies and to ensure and improve their competitiveness. In this field, Eusebiu Catana presented the 5G LOGINNOV project and its findings to an audience of industry and project stakeholders.

### 3.7.3.6 FOCUS – ITS EUROPEAN CONGRESS 2022

The ITS European Congress 2022, was held in Toulouse from 30th May to 1st June. Hosted at the Conference Centre MEETT, the event served as a remarkable platform for the 5G LOGINNOV project's dedicated booth at the ERTICO Stand. Here, visitors had the opportunity to freely explore and gain comprehensive knowledge about the project and its innovations.

The project's presentations proved to be particularly insightful and engaging for the attendees. On Monday, 30th May, an exclusive project presentation took place at the ERTICO stand, offering a comprehensive overview of the project's vision, milestones, and achievements. This session allowed the audience to delve deeper into the innovative solutions and advancements being pioneered by 5G LOGINNOV. Furthermore, the project's participation extended to the session titled "SIS 9 – 5G Technologies for Verticals," provided a platform to discuss the significant impact of 5G technologies on vertical industries, underlining the project's substantial contributions in this domain.

The ITS European Congress provided a stage for fruitful interactions, knowledge-sharing, and fostering valuable connections. Participants and industry stakeholders had the opportunity to gain firsthand insights into the project's potential and its implications for the future of Intelligent Transportation Systems.

### 3.7.3.7 ITS EUROPEAN CONGRESS 2023

5G LOGINNOV was featured at the [ITS European Congress](#), Lisbon, 22-24 May 2023. The project was showcased at the ERTICO Stand and its achievements and lessons learnt were also discussed during several special interest sessions:

#### Tuesday, 23 May

**TP 18** “Digital logistics platforms”

**SIS 33** “5G based logistics: business challenges and new opportunities”

**SIS 41** “Future priorities for research and innovation in freight and logistics”

#### Wednesday, 24 May

**SIS 51** “Electronic freight transport information (eFTI) regulation – will it impact you?”

**SIS 65** “Freight digitalisation, electrification and old-fashioned parking”

The redesigned [project booth](#) at the Congress captivated participants, inviting them to explore the project in greater detail. Visitors had access to videos showcasing the three Living Labs, a digital version of the project brochure, and a comprehensive project presentation. These resources enabled attendees to delve deeper into the accomplishments and activities carried out in Hamburg, Athens, and Koper.

During the Technical Paper 18 session titled “Digital logistics platforms,” moderated by Isabelle Dupraz from the [Coalition for Reimagined Mobility](#), several examples of digital logistics solutions were presented, featuring insights from various platforms and EU-funded projects, including 5G LOGINNOV, by Michela Apruzzese (ICOOR). The 5G LOGINNOV project received specific recognition in this context. Indeed, the project provides a testing ground for innovations and evaluation of their impact on a small scale.

Another session of notable significance was Session no. 33, which focused on the integration of data-sharing systems and the role of innovative technologies, particularly 5G, in advancing the logistics sector in Europe. The session emphasised the need for a common data exchange framework to connect existing transport and logistics data sources and platforms. The discussion centred on enablers for the effective implementation of innovative data-sharing solutions, their potential for replication, and the conditions required for widespread adoption. The pivotal role of 5G in this process was thoroughly examined. The panel comprised representatives such as Lidia Buenavida Peña from [ERTICO-ITS Europe](#), representing the 5G LOGINNOV project, Dr Eusebiu Catana from ERTICO-ITS Europe, representing the FENIX project, Andreas Gavrielides from [eBOS Technologies Ltd.](#), Eric Kenis from the [Flemish Ministry of Mobility and Public Works](#), Fernando Liesa from [etp-ALICE](#), and Giulia Renzi from [ICOOR & University of Modena and Reggio Emilia](#). They emphasized the significance of stakeholder collaboration in driving innovation and data sharing. The session highlighted the importance of fostering collaborative business models and future initiatives that promote a collective approach. Alongside 5G LOGINNOV, other prominent EU-funded projects such as [VITAL-5G](#), [5G-Blueprint](#), [FENIX](#), and [FEDeRATED](#) were cited as exemplifying experiences and achievements in the field.



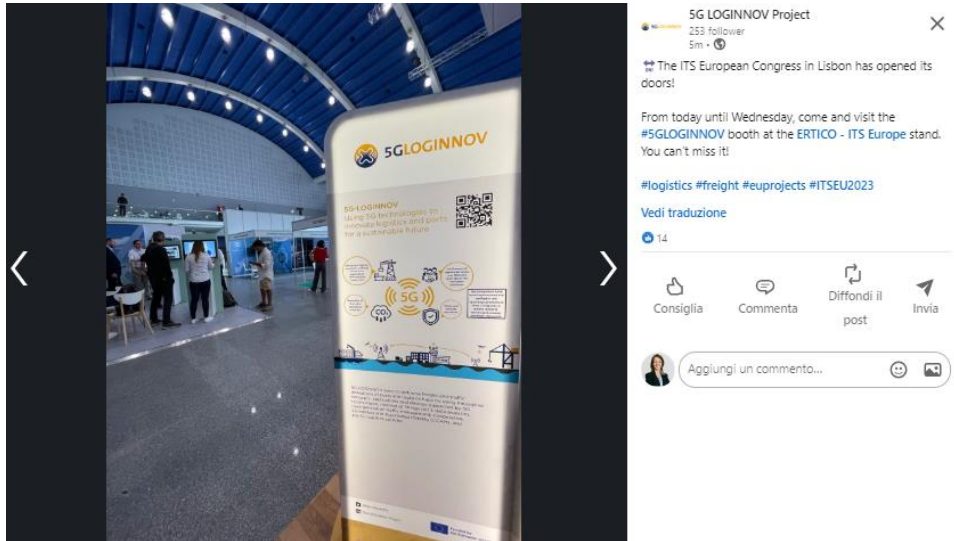


Figure 20: 5G LOGINNOV booth at ITS EU Congress

### 3.7.3.8 FOCUS – EU CNC&6G SUMMIT 2023

From 6 to 9 June, the 2023 edition of the EUCNC & 6G Summit took place in Gothenburg (Sweden). The 5G LOGINNOV case study was mentioned during the session “Enabling Innovation in Transport and Logistics Operations: a 5G approach”, aimed to shed light on the diverse effects of 5G connectivity on enhancing Transport and Logistics operations and end-to-end processing. Alongside this, the presentation of the [FENIX project](#) entailed a discussion on the design and validation of the federated-model infrastructure known. In parallel, other 5G-related projects like the [5G-Blueprint project](#), the [VITAL-5G project](#), [FOR-FREIGHT project](#) was showcased. During the session Dr Pavlos Basaras from ICCS presented the 5G LOGINNOV project and its recent results (agenda available [here](#)).

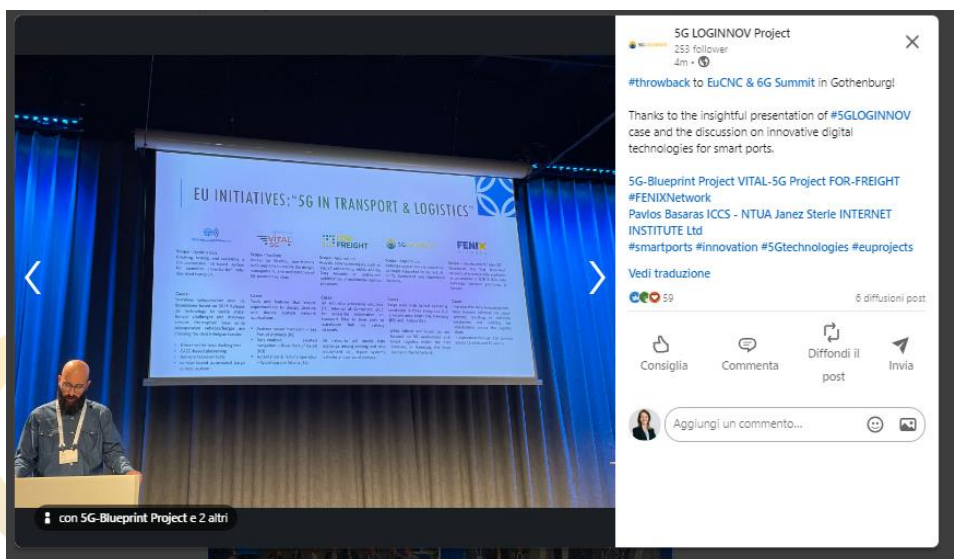


Figure 21: 5G LOGINNOV at EU CNC&6G Summit

## 3.8 Other initiatives

### 3.8.1 Dissemination of Open Call for SMEs

In March 2021 the project 5G LOGINNOV organised an Open Call for the selection of five innovative start-ups and SMEs aiming to develop 5G-based solutions in the framework of activities carried out at the three Living Labs of the project Athens (Greece), Hamburg (Germany) and Luka Koper (Slovenia).

During the preparation and implementation of the Open Call a dissemination strategy was carried out in collaboration with WP5. The event was advertised on the project website, on the ERTICO official site and through various communication channels (e.g., LinkedIn), as well as promoted by Living Lab leaders at local level.

## The 5G-LOGINNOV Open Call Tender Conditions are now available!

Apr 23, 2021 | News


**5G LOGINNOV**


This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 957400

### OPEN CALL FOR INNOVATIVE START UPS

PAVING THE WAY TO 5G-ENABLED  
TAILORED SERVICES FOR REAL-LIFE  
PORT-CITY AREAS OPTIMISATION



READY, STEADY, GO!

As of April 26th, 2021, interested start-ups in the form of SMEs will be able to submit their applications to the 5G-LOGINNOV Open Call for innovative start-ups. The detailed tender conditions are now available to be downloaded!

The 5G-LOGINNOV project is organizing an **Open Call** for the selection of five innovative start-ups and SMEs aiming to develop 5G-based solutions in the framework of activities carried out at the three Living Labs of the project Athens (Greece), Hamburg (Germany) and Luka Koper (Slovenia).

As of April 26th, 2021, interested start-ups in the form of SMEs legally established in an eligible country will be able to submit their applications to:

OpenCall\_applications@outlook.com

The full 5G-LOGINNOV **Open Call Tender Conditions** can be found on this [link](#).

The 5G-LOGINNOV **Open Call Application Form** can be downloaded [here](#).

Prior to applying interested start-ups should read the Open Call conditions thoroughly and make sure that, they are eligible to participate in the Open Call!

The selected applicants will be incorporated in 5G-LOGINNOV consortium through a **service contract providing a global price of max. € 50.000 (VAT included) each**. Important dates of the Open Call can be found below:

**Call Opening Date:** 26/04/2021 | **Call Closing Date:** 30/06/2021 | **Notification Email sent to Applicants:** 17/09/2021(planned date)

For further information on the 5G-LOGINNOV project, the Open Call and the conditions of participation, please have a look at the dedicated website/ the Open Call Tender Conditions or send an email to:

OpenCall\_helpdesk@outlook.com

Figure 22: 5G LOGINNOV Open Call for SMEs

The five winning SMEs have been announced during the ITS World Congress in Hamburg:

- auTonomous dRones for marITime OperatioNs (TRITON) – [Hellenic Drones](#)
- Real timE drowSiness detectiON, AlerTing and rEporting (RESONATE) – [Libra AI](#)
- 5G LOGINNOV-4-Amazon (5G4A)– [eShuttle](#)
- TAXi-AD Data (TAADD)– [uze! Mobility GmbH](#)
- Intelligent Traffic Guidance System (ITGS)– [Roads.AI](#)

After the public announcement at the ITS World Congress, the Open Call Marketing Campaign has started with articles on the project website, on the ERTICO – ITS EUROPE newsroom, and other channels. The 5G LOGINNOV project website collected 10 articles about and/or mentioning the activities carried out by the open call's start up. ERTICO's newsroom mentioned the project's start-ups in 4 articles.

The Open call winners were engaged more actively in collaboration with WP4, setting periodic meetings and involving them in project events to present themselves and the activities inside the project (i.e., Collaborative Innovation Day, ITS Congresses, TRA).



**5G-LOGINNOV Open Call Winners**  
 Oct 12, 2021 | Events, News

 **5G LOGINNOV** 

 **5G-LOGINNOV  
ITS FUTURE CHAMPION  
CONTEST AWARD**

The 5G-LOGINNOV project has organised an **Open Call** for the selection of five innovative start-ups and SMEs aiming to develop 5G-based solutions in the framework of activities carried out at the three Living Labs of the project **Athens** (Greece), **Hamburg** (Germany) and **Luka Koper** (Slovenia).

The selection process has taken place in September, with all applicants receiving a response by **17 September 2021**.

**5 winning startups** have been selected and will be announced on Thursday 14th at **ITS Future Champion Contest** at 4:00 PM in Hall B3 at the ITS Congress in Hamburg.

Join us there to discover who are the winners of the **5G-LOGINNOV ITS Future Champion Contest** award!

Figure 23: Press release on 5G LOGINNOV Open Call Winners

During the member gathering held on December 13th, 2022, in the context of the Docks the Future – Network of Excellence, the winning SMEs of the Open Calls had the chance to present their work to the member ports in the session titled: 5G enabled innovation for ports: 5G LOGINNOV SME's.

Specifically, the interventions were carried out:

- Christos Skliros, Head of Engineering, [Hellenic Drones](#)
- Yannis Kopsinis, Co-Founder and CEO, [Libra AI](#)
- Bastian Pschunder, Project Manager, eShuttle
- Alexander Jablovski, CEO, [uze! Mobility Europe](#)
- Tamir Epstein, RoadsAI CTO, [Roads.AI](#)



## 4 COVID-19 IMPACT ON THE C&D PLAN

Communication and dissemination have been crucial elements to increase visibility and the impact of the project. With the outbreak of the COVID-19 pandemic, severe adjustments had to be made to the original plans, therefore a multi-level, evolving strategy was also essential to allow the project's development, which required a different and innovative approach to adjust the messages to be communicated.

The quickly changing situation of decreasing possibilities to publicise the projects results through the usual channels such as conferences, trial open days, training activities, etc. during the pandemic outbreak, required a fast reaction of the project on finding alternative ways and creative solutions to continue to show the impact and benefits of the project boosting global communications activities during this period.

COVID-19 impacted several activities that have been traditionally carried out in face-to-face activities (starting with the project meetings themselves, but also dissemination activities such as conference presentations, panels, workshops, etc.). For this reason, the consortium managed to plan and invest the required efforts and resources to achieve remarkable communication and dissemination performance indicators (see *Conclusions*).

In fact, despite the COVID-19 pandemic, the project overcame all its targets. To compensate for the pandemic situation, other forms of communications for which target values were not foreseen have had a significant impact, such as video communication presentations and online meetings, events and demos. Particular attention was paid to the contact information collection in order to keep the stakeholders community updated via newsletter and include them in the invitations to all project events.

## 5 CONCLUSIONS

The overall aim of this document has been to provide information on the 5G LOGINNOV project's dissemination and communication activities implemented during the project lifetime.

This report reflects that the project successfully conveys the message to the target industry stakeholders, policy makers, research community and SME's and Start-ups environment. The tasks of communication and dissemination have been considered of outmost importance as it is recognized that they are crucial elements to increase the impact of the project.

Regarding the communication activities, the main target audience and initiatives have been identified, while the qualitative communication objectives have been presented in this report: as it is visible from the results of the project, most of the activities (i.e., workshops, presentations) as well as the outputs (i.e., white papers, publications) were properly executed reaching the fixed targets. The project KPIs were successfully reached and in some cases surpassed, with more than 300 attendants in project events (KPI  $\geq$  210), more than 30 external events with an active participation via presentations and papers (KPI  $\geq$  25) and 7 booths presenting the project (KPI  $\geq$  6); furthermore, the project took part in more than 20 policy and technical papers and organised 6 LL Stakeholders Workshops and Demo along the project lifetime.

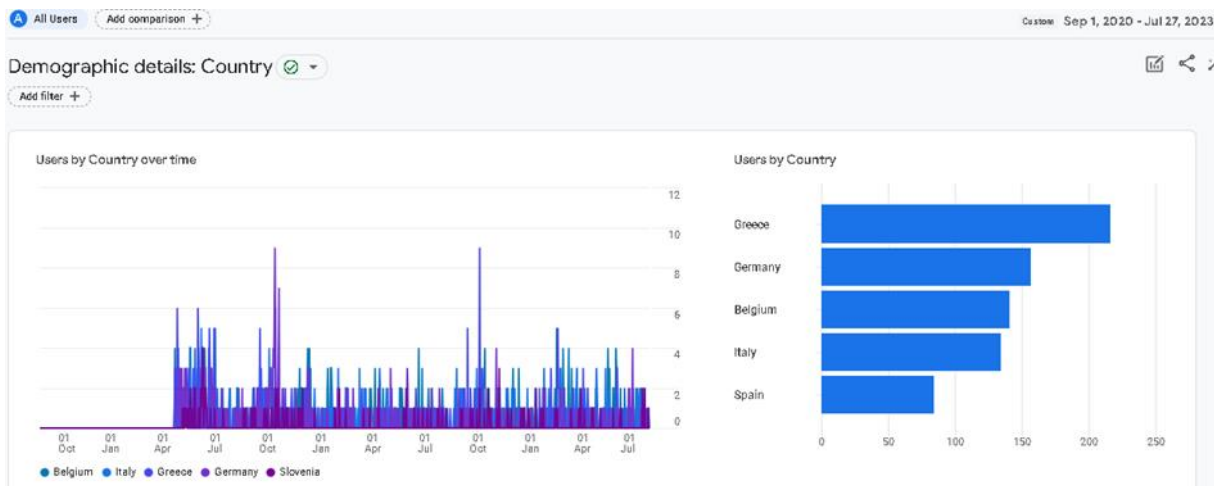
Therefore, the aim to create synergies with the operational technologies players, communicating with the research community through scientific publications and presentations at scientific conferences and workshops, and communicating with the regulators and standardization bodies in order to raise awareness of the project results were successfully implemented.

# ANNEX 1: 5G LOGINNOV STAKEHOLDERS COMMUNITY

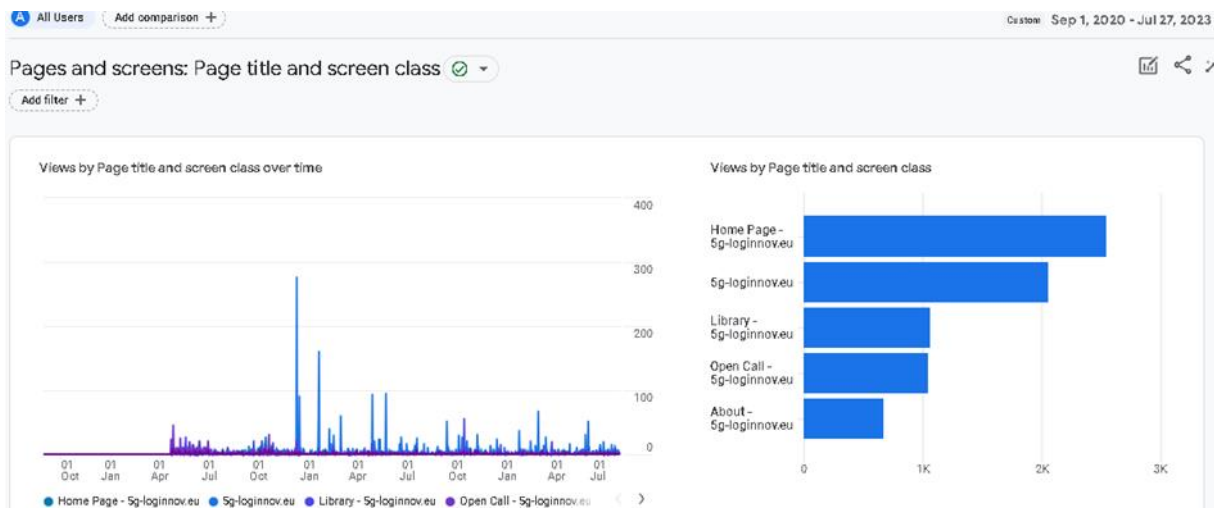
## Website

September 2020 - November 2023

Demographic details by country (example in the picture)



Views engagement (example in the picture)



## COMMUNITY

LINKEDIN 5G LOGINNOV

CONNECTING EU

DTF

C EU DATABASE

**ERTICO newsletter**
Newsletter 11/01

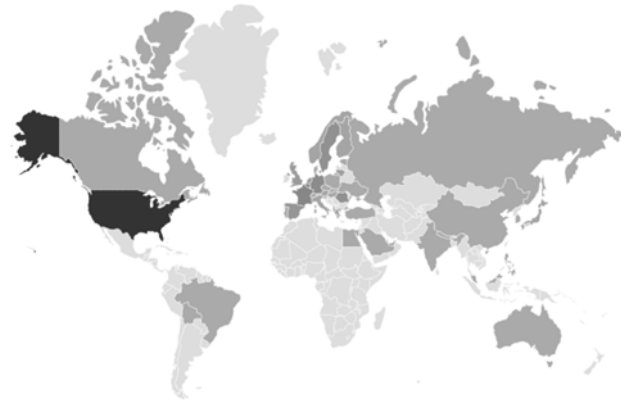
Recipients: 3659

|                        |                       |                      |                           |
|------------------------|-----------------------|----------------------|---------------------------|
| <b>1,114</b><br>Opened | <b>131</b><br>Clicked | <b>61</b><br>Bounced | <b>14</b><br>Unsubscribed |
|------------------------|-----------------------|----------------------|---------------------------|

|                       |                    |                         |                |
|-----------------------|--------------------|-------------------------|----------------|
| Successful deliveries | <b>3,598</b> 98.3% | Clicks per unique opens | <b>11.8%</b>   |
| Total opens           | <b>2,782</b>       | Total clicks            | <b>959</b>     |
| Last opened           | 25/7/23 2:12PM     | Last clicked            | 11/7/23 3:39PM |
| Forwarded             | <b>0</b>           | Abuse reports           | <b>0</b>       |

**Top locations by opens**

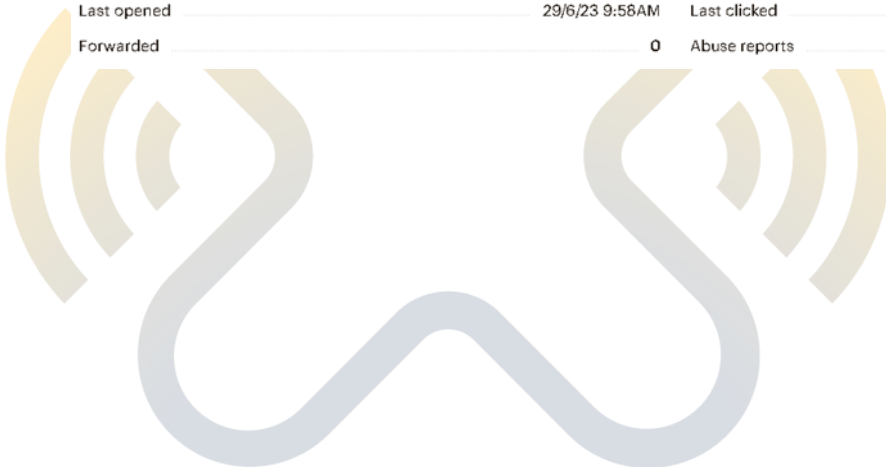
|   |     |       |
|---|-----|-------|
|  USA       | 648 | 28.5% |
|  Belgium   | 205 | 9.0%  |
|  France    | 200 | 8.8%  |
|  Germany | 175 | 7.7%  |
|  Romania | 147 | 6.5%  |


**Newsletter 08/02**






Recipients: 3658

|                      |                       |                      |                          |
|----------------------|-----------------------|----------------------|--------------------------|
| <b>952</b><br>Opened | <b>126</b><br>Clicked | <b>60</b><br>Bounced | <b>8</b><br>Unsubscribed |
|----------------------|-----------------------|----------------------|--------------------------|

|                       |                    |                         |                |
|-----------------------|--------------------|-------------------------|----------------|
| Successful deliveries | <b>3,598</b> 98.4% | Clicks per unique opens | <b>13.2%</b>   |
| Total opens           | <b>1,899</b>       | Total clicks            | <b>1,023</b>   |
| Last opened           | 29/6/23 9:58AM     | Last clicked            | 16/6/23 4:02PM |
| Forwarded             | <b>0</b>           | Abuse reports           | <b>1</b>       |



### Top locations by opens

|  |     |       |
|--|-----|-------|
|  USA            | 367 | 25.1% |
|  Belgium        | 209 | 14.3% |
|  Germany        | 180 | 12.3% |
|  Netherlands    | 90  | 6.2%  |
|  United Kingdom | 84  | 5.7%  |








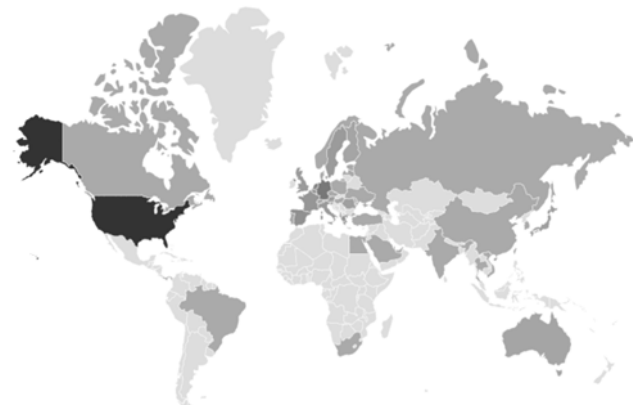
Newsletter 26/03  
Recipients: 3704

|                      |                       |                      |                          |
|----------------------|-----------------------|----------------------|--------------------------|
| <b>967</b><br>Opened | <b>118</b><br>Clicked | <b>76</b><br>Bounced | <b>6</b><br>Unsubscribed |
|----------------------|-----------------------|----------------------|--------------------------|

|                       |              |        |                         |              |        |
|-----------------------|--------------|--------|-------------------------|--------------|--------|
| Successful deliveries | <b>3,628</b> | 97.9%  | Clicks per unique opens | <b>12.2%</b> |        |
| Total opens           | <b>1,798</b> |        | Total clicks            | <b>1,616</b> |        |
| Last opened           | 19/7/23      | 3:38PM | Last clicked            | 16/6/23      | 4:12PM |
| Forwarded             | <b>0</b>     |        | Abuse reports           | <b>0</b>     |        |

### Top locations by opens

|   |     |       |
|---|-----|-------|
|  USA         | 344 | 26.1% |
|  Germany     | 140 | 10.6% |
|  Netherlands | 97  | 7.4%  |
|  Spain       | 76  | 5.8%  |
|  Belgium     | 74  | 5.6%  |










Newsletter 07/06  
Recipients: 3929

|                      |                      |                      |                          |
|----------------------|----------------------|----------------------|--------------------------|
| <b>855</b><br>Opened | <b>92</b><br>Clicked | <b>61</b><br>Bounced | <b>5</b><br>Unsubscribed |
|----------------------|----------------------|----------------------|--------------------------|

|                       |                    |                         |                |
|-----------------------|--------------------|-------------------------|----------------|
| Successful deliveries | <b>3,868</b> 98.4% | Clicks per unique opens | <b>10.8%</b>   |
| Total opens           | <b>1,541</b>       | Total clicks            | <b>1,406</b>   |
| Last opened           | 27/7/23 7:51AM     | Last clicked            | 19/7/23 6:00PM |
| Forwarded             | <b>0</b>           | Abuse reports           | <b>0</b>       |

Top locations by opens

|  |     |       |
|--|-----|-------|
|  USA            | 332 | 30.1% |
|  Germany        | 88  | 8.0%  |
|  United Kingdom | 78  | 7.1%  |
|  Italy         | 65  | 5.9%  |
|  France       | 59  | 5.3%  |




Newsletter 28/06  
Recipients: 3999

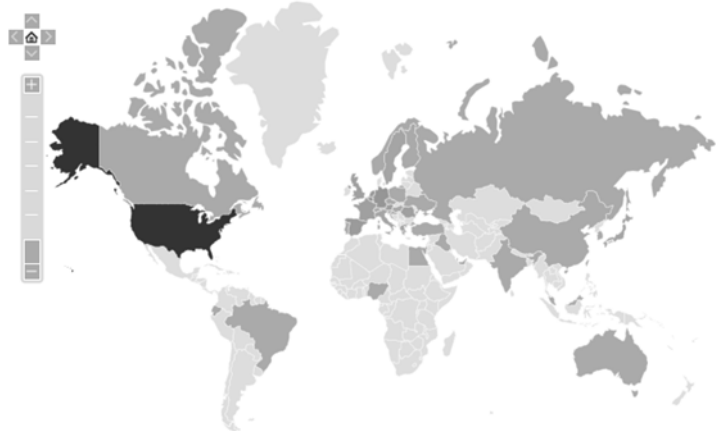
|                        |                       |                      |                           |
|------------------------|-----------------------|----------------------|---------------------------|
| <b>1,087</b><br>Opened | <b>129</b><br>Clicked | <b>75</b><br>Bounced | <b>10</b><br>Unsubscribed |
|------------------------|-----------------------|----------------------|---------------------------|

|                       |                    |                         |                 |
|-----------------------|--------------------|-------------------------|-----------------|
| Successful deliveries | <b>3,924</b> 98.1% | Clicks per unique opens | <b>11.9%</b>    |
| Total opens           | <b>1,930</b>       | Total clicks            | <b>1,297</b>    |
| Last opened           | 27/7/23 10:08AM    | Last clicked            | 18/7/23 11:49AM |
| Forwarded             | <b>0</b>           | Abuse reports           | <b>0</b>        |








### Top locations by opens

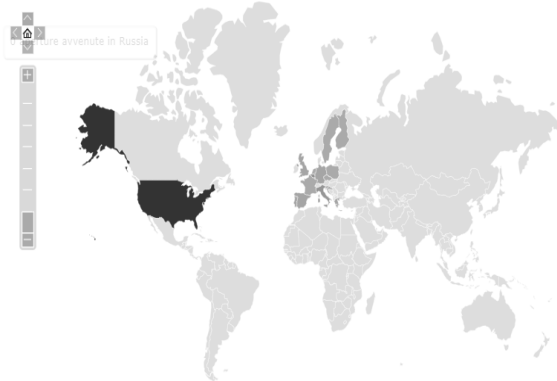
|   |     |       |
|---|-----|-------|
|  USA         | 569 | 38.1% |
|  Germany     | 104 | 7.0%  |
|  Belgium     | 96  | 6.4%  |
|  Netherlands | 82  | 5.5%  |
|  Spain       | 79  | 5.3%  |








### Weekly Bulletin Database

Audience: Entities, Associations, Ministries & Consulting Agencies (based on single clicks for campaign)

|   |    |       |
|---|----|-------|
|  USA      | 89 | 53.6% |
|  Belgium | 19 | 11.4% |
|  Italy   | 17 | 10.2% |
|  Greece  | 7  | 4.2%  |
|  Spain   | 6  | 3.6%  |



Audience: Stakeholders (based on single clicks for campaign)

|  |    |       |
|--|----|-------|
|  USA    | 83 | 65.9% |
|  Italy  | 10 | 7.9%  |
|  Spain  | 7  | 5.6%  |
|  Greece | 5  | 4.0%  |
|  Sweden | 5  | 4.0%  |

