



5G LOGINNOV

D6.3

Innovation Management Report

www.5g-loginnov.eu



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Authors	Monica Diaz de Mendivil (VICOM)
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Editor	Monica Diaz de Mendivil	VICOM	22/11/2022
Peer review 1	Peter Schmitting	ERTICO	27/10/2023
Peer review 2	Mandimby RANAIVO R.	AKKODIS	27/10/2023
Authorised by (Technical Coordinator)	Eusebiu Catana	ERTICO	28/11/2023
Authorised by (Quality Manager)	Mandimby RANAIVO R.	AKKODIS	29/11/2023
Submitted by (Project Coordinator)	Eusebiu Catana	ERTICO	30/11/2023

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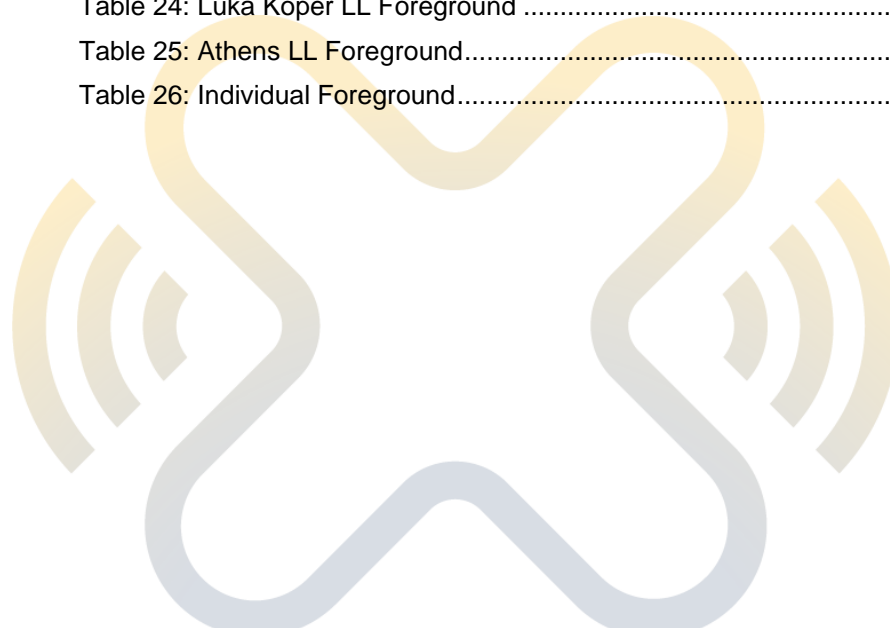
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List of abbreviations and acronyms

Abbreviation	Meaning
3GPP	3rd Generation Partnership Project
5G	5th Generation Wireless System
CCAM	Cooperative, Connected and Automated Mobility
CEN	European Committee for Standardisation
C-RAN	Cloud Radio Access Network
CIP	Competitiveness and Innovation Framework Programme
EC	European Commission
EU	European Union
F	Final
FP7	Framework Programme 7
H2020	Horizon 2020
ICT	Information and Communication Technologies
IP	Intellectual Property
IPR	Intellectual Property Rights
IT	Information Technologies
MARL	Market Adoption Readiness Level
NEC	Non-European Country
PU	Public
R&D	Research and Development
R-W-W	Real-Win-Worth
RSS	Really Simple Syndication
TMT	Technical Management Team
TRL	Technology Readiness Level
TS	Technical Specifications
V2X	Vehicle to Everything
WP	Work Package

EXECUTIVE SUMMARY

The present deliverable D6.3 – Innovation Management Report is prepared under the Task 6.2 – Innovation Management within Work Package 6 – Project Coordination.

Task 6.2 Innovation Management aimed at efficiently monitoring market needs and technical evolutions throughout the project's lifetime. It also made sure that the project work plan has been adjusted as needed in order to implement the project's results in such a way that they best meet the needs of the market with the technologies available at the time.

Using the tools and procedures that were presented in D6.2 Innovation Management plan, the consortium has been able to identify 13 innovations:

- INNO1 Improved Industrial IoT System for specific needs of the ports and logistics domain
- INNO2 Improved private 5G mobile system for use cases in port and logistics domain
- INNO3 5G and IoT Platform in Port Operations
- INNO4 5G&AI enabled container seal detection for supporting logistics process
- INNO5 5G&AI enabled human presence detection to support safety/security operations
- INNO6 5G Truck Fleet Management Platform
- INNO7 5G enabled Floating Truck Emission Data (FTED)
- INNO8 5G enabled GLOSA for Intelligent Transport Systems (I.T.S.)
- INNO9 5G enabled Collision Warning
- INNO10 5G enabled Carbon Emission Trading
- INNO11 5G and IoT technologies for supporting security and logistics process in port environment
- INNO12 Mechanism to enable cities' traffic management to work with emission data originating from vehicles
- INNO13 SeaFront – Synthetic Dataset For Visual Container Inspection

These innovations are aligned with different strategies and roadmaps regarding 5G and port logistics, such as the EU Green Deal, EU Transport Strategy and EU Digital Strategy, among others.

In addition to the identification of innovations, task T6.2 has also monitored IPR issues, supporting the creation of agreements in the event of ownership conflicts. However, no IPR conflicts have been identified throughout the project and no licensing agreements have been required for the future exploitation of the generated results. As explained in section 4, in case of commercial exploitation of a joint result, the parties should follow the terms and conditions of the agreements already in place (Grant Agreement and Consortium Agreement).



1 INTRODUCTION

1.1 Project intro

5G-LOGINNOV will focus on seven 5G-PPP Thematics and support to the emergence of a European offer for new 5G core technologies in 11 families of use cases.

5G-LOGINNOV's main aim is to design an innovative framework addressing integration and validation of Connected Automated Driving/Mobility (CAD/CAM) technologies related to the industry 4.0 and ports domains by creating new opportunities for LOGistics value chain INNOVation.

5G-LOGINNOV is supported by 5G technological blocks, including new generation of 5G terminals notably for future Connected and Automated Mobility, new types of Industrial Internet of Things 5G devices, data analytics, next generation traffic management and emerging 5G network architectures, for city ports to handle upcoming and future capacity, traffic, efficiency and environmental challenges.

5G-LOGINNOV will deploy and trail 11 families of Use cases targeting beyond TRL7 including a GREEN TRUCK INITIATIVE using CAD/CAM & automatic trucks platooning based on 5G technological blocks.

Thanks to the new advanced capabilities of 5G relating to wireless connectivity and Core Network agility, 5G-LOGINNOV ports will not only significantly optimize their operations but also minimize their environmental footprint to the city and the disturbance to the local population.

5G-LOGINNOV will be a catalyst for market opportunities build on 5G Core Technologies in the Logistics and Port operations domains, thus being a pillar of economic development and business innovation and promoting local innovative high-tech SMEs and Start-Ups. 5G-LOGINNOV will open SMEs' and Start-Ups' door to these new markets using its three Living Labs as facilitators and ambassadors for innovation in future European ports.

5G-LOGINNOV's promising innovations are key for the major deep-sea European ports in view of the mega-vessel era (Hamburg, Athens), and are also relevant for medium sized ports with limited investment funds (Koper) for 5G.

1.2 Purpose of the deliverable

The aim of this deliverable is to present the progress on innovation made by the 5G-LOGINNOV consortium in terms of the initial plan and to report on the final list of innovations identified by the consortium.

1.3 Intended audience

This deliverable is PUBLIC intended for the following audiences:

- 5G-LOGINNOV partners must use the deliverable as recorded agreement, reference and guideline throughout development and deployment of the innovations.
- The European Commission, Agency and related reviewers can use the deliverable to gain insight in how the development and deployment work result in the delivery of the 5G-LOGINNOV innovations.
- Any reader can use the deliverable to gain insight in how these kinds of innovations are tracked and realised in 5G-LOGINNOV.

1.4 Structure of the deliverable and its relation with other work packages/deliverables

The current deliverable is organised as follows:

- **Section 1 – Introduction** briefly presents 5G-LOGINNOV and describes the purpose of the deliverable and its intended audience.
- **Section 2 – Innovation Process** presents the main activities of innovation in the context of 5G-LOGINNOV project.
- **Section 3 – Innovation Management in 5G-LOGINNOV** describes the overall framework with regards to innovation in 5G-LOGINNOV. It also presents the 16 main innovations that have been identified and how these innovations contribute to several port strategies.
- **Section 4 – IPR Management** presents the identified IPR results, both background and foreground
- **Section 5 – Conclusion** summarises the main outcomes of this deliverable.

This deliverable has relation with WP5 Dissemination and exploitation, since some of the activities carried out in Task 6.3 Innovation Management have been done in liaison with the task T5.3 Exploitation due to the synergies between them.



2 INNOVATION PROCESS

In the context of the H2020 programme, the Innovation Management Plan of 5G-LOGINNOV has been based on the European Commission's¹ definition for innovation, which is the "successful production, assimilation and exploitation of novelty in the economic and social spheres". From this perspective, innovation offers new solutions to problems and responds to the needs of both the individual and the society.

The innovation processes in 5G-LOGINNOV had some common basic activities that support the generation of ideas for new product and process development and the management of the entire innovation process. These fundamental activities are as follows:

- Generation of ideas which potentially could become new products or processes after implementation,
- Acquisition of knowledge on the generated ideas, and
- Implementation and market monitoring to verify customer satisfaction and after sales.

The stages of development and pre-development activities belong to technology management. The field of R&D management is determined by adding upstream fundamental research, as well as product and process development. Finally, innovation management includes the final product and market introduction phase.

¹ European Commission (1995). "Green Paper on Innovation", December 1995

3 INNOVATION MANAGEMENT IN 5G-LOGINNOV

3.1 Innovation strategy

Innovation management within European projects is a process that requires an understanding of both market and technical problems, with a goal of successfully implementing appropriate creative ideas. Corresponding business models and process innovations are hence an integral part of creating, adapting, and maintaining a product or service to market maturity. These new business models and process innovations are very often triggered through technological innovations, which act as enablers, but also generate requirements for the development of technology. Some of the activities will be done in liaison with the task T5.3 Exploitation due to the synergies between the two.

As part of the 5G-LOGINNOV management structure, guidance will be provided with regard to best practices on innovation management, such as:

- Planning for innovation success, understanding and using innovation management techniques and processes during the lifetime of the project,
- Identifying and fostering innovation enablers/driving factors,
- Evaluating and improving the performance of the innovation management system,
- Identifying the “go to market” needs of high potential innovations,
- Systematically capturing structured data on project innovations, related to innovation readiness, innovation management, and market potential (both TRL – Technology Readiness Level, and MARL – Market Adoption Readiness Level), and
- Identification and exploitation of positive spill-overs.

Some of the activities carried out in these lines are very related both to innovation management and to the exploitation strategy for 5G-LOGINNOV. Therefore, D5.3 Exploitation Plan (M18 – ICOOR) and D5.4 Exploitation Report (M46 – ICOOR) are directly related to the current deliverable.

The aim of this section is to let the reader know about the processes or steps that the Innovation Manager have followed to make sure that the 5G-LOGINNOV results are adapted to trend on the market. In order to achieve this, trends in the field of R&D as well as market breakthroughs had to be closely and regularly monitored. Some of the tasks for the overall assessment have been:

- The 5G-LOGINNOV Innovation Management Plan: initially submitted in month 12 of the project and regularly updated throughout its development,
- The Innovation Management Report (the current document): it refers to this deliverable and it is planned to be published at the end of the project, providing information on the progress made on innovation by the 5G-LOGINNOV consortium.
- Each partner will be responsible of updating the rest of the consortium in case they are aware of events affecting the Innovation Management of the Project,
- A slot of the General Assemblies and management meetings will be dedicated to the analysis of the Innovation Management Plan.

3.2 Tools and procedures

For an efficient innovation management during the project, a number of specific tools have been used in order to respond to the innovation management requirements of the project, namely, risk matrix, R-W-W Screen and Innovation Radar, as described in D6.2 Innovation Management Plan.

The innovation tools and procedures are further described in D6.2 Innovation Management Plan.

3.3 Key Innovations

In this chapter the Key Innovations of 5G-LOGINNOV are presented. These innovations have been identified in collaboration with T5.4 Exploitation and have been further analysed using the Innovation Radar questionnaire.

The table below contains an overview of the identified innovations in the three Living Labs, and Annex 1 contains the full responses to the Innovation Radar Questionnaire.

Table 1: Overview of Key Innovations of 5G-LOGINNOV

ID	TITLE	DESCRIPTION
INNO1	Improved Industrial IoT System for specific needs of the ports and logistics domain	This technology will ensure secure, resilient and QoS guaranteed 5G connectivity for non-5G IoT devices, e.g., various sensors, cameras, etc., will be improved by several technical innovations. Based on an upgraded HW platform, 5G NSA and SA mode of operation will be supported, cloud-native approach will be introduced for the Industrial IoT System's software components which will allow for automated deployment (either on far-edge, edge or core IaaS, depending on specific requirements), onboarding, scaling, self-healing, etc. cloud-native approach will also result in IaaS's readiness for the orchestration within the 5G ecosystem.
INNO2	Improved private 5G mobile system for use cases in port and logistics domain	Design and development of a 5G-IoT platform for enhancing Port operations. It is a technology suite that combines the power of 5G networks along with extreme-edge and cloud computing services and Port infrastructure elements, for efficient delivery of AI services to support logistics and safety applications. It leverages the high-speed, low-latency, and reliable connectivity provided by 5G networks to enable seamless communication and data transfer between 5G enabled devices (5G-Trucks, 5G-Cranes, 5G-IoT nodes) deployed within a Port environment.
INNO3	5G and IoT Platform in Port Operations	While general solutions usually miss certain specific requirements needed to correctly address business processes, this solution will incorporate specific network and services customizations and adaptations to meet business KPIs required by ports/logistics domain which will be studied and examined throughout the 5G-LOGINNOV project in cooperation of technology and business domain experts.
INNO4	5G&AI enabled container detection supporting process for seal detection for logistics	Container seal detection service at the loading/unloading phase of vessels. This service exploits the 5G-IoT platform that is explained in INNO3.
INNO5	5G&AI enabled human presence detection to support safety/security operations	Human presence detection service at specified areas within the port premises. This service exploits the 5G-IoT platform that is explained in INNO3.
INNO6	5G Truck Fleet Management Platform	Design and implementation of the 5G-IoT platform including software and hardware components

INNO7	5G enabled Floating Truck Emission Data (FTED)	<p>FTED consists of collecting speed profiles, linking them to the driving reference cycle (WLTP) and measuring the %-deviation relative to the cycle. The methodology is described in detail in the ISO-23795 standard. The fleets are collecting data about carbon emissions as well as information about stop-and-go, acceleration and energy demand of the vehicle.</p> <p>Based on the speed profiles per vehicle, a classification of the trip, congestion and driving behaviour is reported as well as the quantity of additional carbon emissions relative to the standard. Together with the traffic volume known and published by the City of Hamburg, this allows to quantify the emissions of carbon dioxide in each area and road network.</p>
INNO8	5G enabled GLOSA for Intelligent Transport Systems (I.T.S.)	<p>This result is targeting Green Light Optimum Speed Advisory (GLOSA) using cellular V2X communication exchange transferring “traffic light forecast” to vehicles in motion, once the vehicle and its SIM-ID is registered in the 5G Mobile Edge Infrastructure. The technology gives drivers some advice for best speed choices when crossing intersections using timeframes of “green, yellow and red”. Additionally, GLOSA allows the vehicle to choose speed ranges which help to avoid collisions caused by crossroads, a challenge for any automated vehicle moving in an urban and complex road network.</p>
INNO9	5G enabled Collision Warning	<p>This technology, developed and deployed by Continental and T-Systems in the two projects (NPM + 5G-LOGINNOV) in the context of the 27th ITS Congress in Hamburg, is applied for collision alerts for vulnerable road users approaching the intersection as well as for collision alerts for vehicles platooning. In combination with GLOSA a direct message is sent to the 5G smartphone App via Mobile Edge Computing ensuring ultra-reliable low latencies possible only in the 5G network</p>
INNO10	5G enabled Carbon Emission Trading	<p>The exact measurement of fuel consumption and carbon emissions for net zero airport and port strategies. The base for this is a voluntary commitment for net zero emission strategies by airports and ports which is related to the key challenge of measuring the scope 3 (indirect emissions that occur in a company’s value chain) emitting parties involved in the operation of ports and seaports. Here it is reasonable to equip vehicles using the port and hub road infrastructure with the Continental IOT Gateway using the 5G infrastructure for communication and the database. The database allows to exactly determine the amount of carbon emissions caused by the logistics fleets working on the supply chain in the maritime and transport sector.</p>
INNO11	5G and IoT technologies for supporting security and logistics process in port environment	<p>This innovation presents a comprehensive basic kit system for introducing and/or upgrading digitalization in ports and logistics to a higher level, i.e., by 5G technology support. In fact, it combines two other innovations (INNO1 and INNO2), giving them additional value, especially in relation to ports security and logistics processes. The technical innovation will in general allow for digitalization and customization of existing services, as well as for the introduction of new services. This may further allow for marketing the innovation/solution as an off-the-shelf product for the target domain.</p>

-
- INNO12 Mechanism to enable cities' traffic management to work with emission data originating from vehicles
- Dynamics of vehicle movement (acceleration, deceleration, stops, progressing speed) are a significant base data to determine transportation-based emissions of all kinds (Energy consumption, CO₂, NO_x, PM_x, etc.). Today cities do not know the non-measurable share of transportation related contribution to emissions sufficiently to decide for environmental sensitive control actions. When dynamics of vehicle movement are collected via 5G, and when they get augmented with further data (fleet composition / power train type, weather, etc.), information on mobility-based emission becomes available and can be used. In return, travellers can be included in cooperative traffic management (e.g., the GLOSA service, adaptive control due to 5G based vehicle approaching information in a CCAM CAM message) to optimize traffic control.
-
- INNO13 SeaFront - Synthetic Dataset For Visual Container Inspection
- In the context of shipping containers analysis there are several visual appearances that are necessary to reproduce. This dataset tackles the possible damages that the container might have during the shipment, the detection of IMDG labels, text recognition and a door/no door classification. In order to tackle these issues an automatic synthetic image generation system has been created. As a result, a database with automatically labelled images is obtained. The objective of this tagged database is to help research train models that are able to learn the location and typology of the different damages that may be in a container. We provide publicly a dataset generated with almost 10000 images for training and validation and another 2480 for testing, in order to provide open and free data that is scarce in this field.
-



Among these 13 innovations, nearly half of them represent a new service (46%), 38% are significantly improved products, 8% significantly improved processes and 8% significantly improved services.

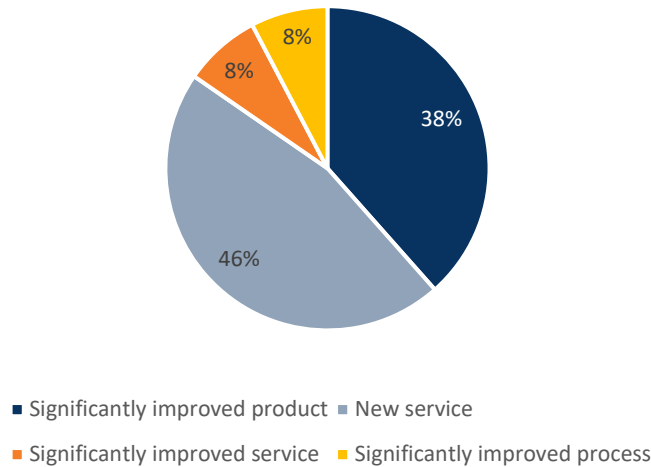


Figure 1: Innovations in 5G-LOGINNOV

3.4 Contributing to port logistics strategies

The innovations developed by the 5G-LOGINNOV consortium are aligned with port logistics strategies and roadmaps in several ways, contributing to European political and technological priorities such as economic growth, sustainability, and digitalization.

Five main areas of impact have been identified:

- Efficiency and Capacity Enhancement:** Many of the innovations, such as INNO1 Improved Industrial IoT system, INNO2 Private 5G mobile system, and INNO3 5G and IoT platform for port operations, focus on enhancing the efficiency of port operations. This aligns with port logistics strategies aimed at optimizing throughput and capacity utilization.
- Safety and Security:** Innovations like INNO9 5G-enabled collision warning systems and INNO5 AI-enabled video analytics for human presence detection contribute to safety and security in port environments. These align with strategies to minimize accidents and security breaches, ensuring smooth logistics operations.
- Environmental Sustainability:** The 5G-LOGINNOV project places a strong emphasis on sustainability through innovations like INNO7 5G-enabled emissions data collection and INNO10 Carbon emission trading for smart cities. These align with port logistics strategies aiming to reduce the carbon footprint of port operations and promote sustainable transportation.
- Digitalization:** The project's focus on 5G and AI technologies aligns with the digitalization of port logistics. By collecting and analysing real-time data, ports can make informed decisions, optimize processes, and enhance overall competitiveness.
- Transportation Optimization:** Innovations like INNO8 5G-enabled GLOSA system for intelligent transport systems contribute to reducing traffic congestion, which is a common challenge in port cities. This aligns with strategies to improve the flow of goods and reduce urban congestion.

Table 2: Impact areas of 5G-LOGINNOV innovations

Impact area	INNO 1	INNO 2	INNO 3	INNO 4	INNO 5	INNO 6	INNO 7	INNO 8	INNO 9	INNO 10	INNO 11	INNO 12	INNO 13
Efficiency and Capacity Enhancement	X	X	X	X	X	X					X		X
Safety and Security				X	X				X				
Environmental Sustainability							X			X		X	
Digitalization	X	X	X	X	X						X		X
Transportation Optimization			X	X		X	X	X			X	X	

Additionally, 5G-LOGINNOV directly contributes to several European policies:

- It supports the **European Green Deal** by focusing on emissions reduction and sustainable transportation.
- It aligns with the **European Digital Strategy** by promoting the use of 5G and AI technologies for digitalization.
- It contributes to the **European Transport Strategy** by improving the efficiency and safety of transportation networks.
- It aligns with the European Union's goal of becoming **climate-neutral** by 2050 by addressing environmental challenges in port operations.

Overall, 5G-LOGINNOV's innovations are closely aligned with the strategic objectives of improving port logistics, promoting sustainability, enhancing safety, and embracing digitalization. These efforts contribute to achieving European political priorities by fostering economic growth, environmental responsibility, and technological advancement in the logistics sector.

Furthermore, 5G technology plays a crucial role in enabling and enhancing various aspects of port and logistics operations.

- **High-Speed Connectivity:** 5G networks provide ultra-fast and reliable connectivity. This is crucial for real-time data transmission, which is essential for monitoring and managing various aspects of port operations, including cargo tracking, security, and resource allocation.
- **Low Latency:** 5G networks offer extremely low latency, meaning there is minimal delay in data transmission. In a port environment, where split-second decisions can be critical for safety and efficiency, low latency is essential. For example, in collision warning systems (INNO9) or autonomous vehicle control, low latency is crucial.
- **Capacity and Scalability:** 5G networks are designed to handle a massive number of connected devices simultaneously. In a bustling port environment with a multitude of sensors, vehicles, and equipment, the ability to support a high device density is vital.
- **Edge Computing:** 5G enables edge computing, allowing data processing to occur closer to the data source. This is particularly valuable for applications like AI-enabled video analytics (INNO4 and INNO5), where data can be processed locally at the edge, reducing the need to transmit large volumes of data to central servers.

- **Network Slicing:** 5G allows for network slicing, which means that different virtual networks can be created within the same physical infrastructure. This enables the isolation of critical applications, ensuring they receive dedicated resources and bandwidth, enhancing security and reliability.
- **Enhanced Security:** 5G networks include advanced security features, such as encryption and authentication protocols, which are crucial for protecting sensitive data in port and logistics operations.
- **Support for IoT:** The Internet of Things (IoT) is a fundamental component of modern logistics. 5G provides the necessary connectivity and bandwidth to support a vast ecosystem of IoT devices (like INNO3), from sensors on cargo containers to autonomous vehicles.
- **Enhanced Decision-Making:** The real-time data capabilities of 5G enable ports to make data-driven decisions swiftly. This is invaluable for optimizing processes, managing traffic, and responding to changing conditions in a dynamic port environment.
- **Environmental Impact:** By enabling more efficient operations and optimizing routes, 5G can contribute to reducing emissions and the environmental impact of port and logistics activities, aligning with sustainability goals.

In brief, 5G technology had been crucial for 5G-LOGINNOV because it provided the essential infrastructure for real-time data exchange, low-latency communication, and efficient management of port and logistics operations. It enabled safer, more efficient, and environmentally sustainable logistics, making it a key enabler for achieving the project's goals and addressing the challenges faced by smart ports.

4 IPR MANAGEMENT

An online tool has been provided to conduct IPR audits and support the identification of Background and Foreground IP, as defined in D6.2. The tool has been available for the entire duration of the project, and it was integrated in the SharePoint platform used for general management of 5G-LOGINNOV.

The following subsections presents the IPR that has been used and developed throughout the project.

4.1 Background IPR

The following tables describe the Background IP provided by partners into the project:

Table 3: BACK1. CTS

Organisation	AKKODIS
Description	<p>CTS: A Web-based application based on a 3-tier architecture including PostgreSQL, Java Springboot, Angular, Nginx technologies: for management of test data records (Centralised Testdata System – CTS) as developed in the AUTOPILOT project featuring:</p> <ol style="list-style-type: none"> 1) Parsing, filtering and quality-based selection functions piloted by a task manager module 2) Data enrichment functions leaning on standardised metadata 3) Data storage modules 4) Data query components providing various web interfaces supporting user&roles management and access
Specific limitations and/or conditions for implementation	Access Rights to AKKODIS's Background is only granted to the extent that is Needed for implementation of the action (5G-LOGINNOV project) being agreed that limited Access Rights to source code or object code will be granted by AKKODIS.

	All Background IP rights included is subject to the terms described in this Consortium Agreement and cannot be used for commercial purposes or any other economic purposes without the prior authorization of AKKODIS.
Specific limitations and/or conditions for exploitation	<p>AKKODIS's Background is not Needed by the other Parties for Exploitation of their own Results thus no Access Rights will be granted by AKKODIS for Exploitation, unless otherwise agreed between the Parties concerned.</p> <p>Considering this, the specific limitations (including third party rights) are not listed in this Attachment.</p> <p>Access Rights to Background is only granted to the extent that said Background is not subject to terms and conditions in existing third-party agreements that may prohibit grant of Access Rights in the Project.</p> <p>AKKODIS's listed Background may be used for Exploitation of another Party's Results, subject to the conclusion of a separate license agreement.</p>

Table 4: BACK2. Know-how

Organisation	AKKODIS
Description	<p>- Know-how on the design, development and deployment of data collection services based on scalable message broker RabbitMQ deployed in cloud environment (public, hybrid, private). Such system contains following components</p> <ol style="list-style-type: none"> 1. A message collection Module based on RabbitMQ for connection of several tier systems that produce data. 2. Interoperability interfaces for connection to a OneM2M compatible system 3. A data staging module based on Apache Nifi capable of coping with various data sources (incl. from Message Collection Module) and ensuring data transformation and generation of standard meta-data descriptions. <p>- Know-how on the design, development and deployment of a MEC (Multi-Access Edge Computing) module that implements ETSI-MEC specifications and recommendations, based on OpenShift Container Platform."</p>
Specific limitations and/or conditions for implementation	<p>Access Rights to AKKODIS's Background is only granted to the extent that is Needed for implementation of the action (5G-LOGINNOV project) being agreed that limited Access Rights to source code or object code will be granted by AKKODIS.</p> <p>All Background IP rights included is subject to the terms described in this Consortium Agreement and cannot be used for commercial purposes or any other economic purposes without the prior authorization of AKKODIS.</p>
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Table 5: BACK3. On the MoS Way

Organisation	CIRCLE
Description	“On the MoS Way” is the web portal dedicated to Motorways of the Sea, daily updated with news concerning Shipping, Ports and Transport. The web portal has additional communication channels able to define a comprehensive digital hub: Newsletter, Facebook, Twitter, LinkedIn and You Tube channels.
Specific limitations and/or conditions for implementation	The web portal and the related channels are already online and managed by Circle, both for technical and content sides. Use Rights to Background is only granted to the extent that is needed for the implementation of the action. The management of “On the MoS Way” channels will be only done by Circle staff. No access to the backend features is allowed to project partners.
Specific limitations and/or conditions for exploitation	This background cannot be used for commercial purposes or any other economic purposes without the prior authorisation of Circle.

Table 6: BACK4. Docks the Future

Organisation	CIRCLE
Description	“Docks the Future” web site is the web portal dedicated to the project that aims at defining the port of the future – financed in the framework of Horizon 2020 programme. It has some additional communication channels (Facebook, Twitter, LinkedIn) and within the project was developed a Network of Excellence that gathers the most innovative ports willing to team up and take actions to support the maritime community achieving its sustainable targets
Specific limitations and/or conditions for implementation	The web portal and the related channels are already online and managed by Circle, both for technical and content sides. Use Rights to Background is only granted to the extent that is needed for implementation of the action. The management of “Docks the Future” channels, as the involvement of the Network of Excellence, will be only managed by Circle staff. No access to the backend features is allowed to project partners.
Specific limitations and/or conditions for exploitation	This background cannot be used for commercial purposes or any other economic purposes without the prior authorisation of Circle.

Table 7: BACK5. Stakeholder database

Organisation	CIRCLE
Description	Stakeholder database of about 4,000 contacts divided into Associations, Consulting Agencies, Institutions, EU Commission, IT Suppliers, Media, Ministries, MoS project coordinators, ports, Rail and MTO, Shipping, Shipping Lines, Transport, Logistic, Universities.
Specific limitations and/or conditions for implementation	The database is already existing and managed by Circle, both for data processing and for communication management. Use Rights to Background is only granted to the extent that is needed for implementation of the action. The management of the database, both in terms of

	data processing and communication, will be only managed by Circle staff. No access to the backend features is allowed to project partners.
Specific limitations and/or conditions for exploitation	This background cannot be used for commercial purposes or any other economic purposes without the prior authorisation of Circle.

Table 8: BACK6. Design and implementation of a 5G-IoT Platform

Organisation	ICCS
Description	Design and implementation of a 5G-IoT Platform (know how).
Specific limitations and/or conditions for implementation	The described background software, technologies and toolboxes may be used by the consortium strictly for the 5G-LOGINNOV project purposes. No further commercial or other use is allowed without previous written consent by ICCS
Specific limitations and/or conditions for exploitation	No further exploitation is allowed without previous written consent by ICCS

Table 9: BACK7. Design and development of 5G&AI-assisted video analytics services

Organisation	ICCS
Description	Design and development of 5G&AI-assisted video analytics services (know how).
Specific limitations and/or conditions for implementation	The described background software, technologies and toolboxes may be used by the consortium strictly for the 5G-LOGINNOV project purposes. No further commercial or other use is allowed without previous written consent by ICCS
Specific limitations and/or conditions for exploitation	No further exploitation is allowed without previous written consent by ICCS

Table 10: BACK8 CityBox and Control Room software

Organisation	UNIMORE
Description	Background of related Third Party: UNIMORE (specifically & solely, the Research Group of Prof. Marko Bertogna – HiPeRT Lab) includes the CityBox device and the Control Room software related to the MASA testing sites. The aforementioned devices/hardware/software are needed to implement the project and to obtain the agreed results. The in-house source code software developed by the research group of Prof. Marko Bertogna is excluded from the background.
Specific limitations and/or conditions for implementation	The related TP UNIMORE ensures that the research teams involved in 5G-LOGINNOV will have, on a royalty-free basis, access rights to the Background owned by the research group of Prof. Marko Bertogna and strictly needed for carrying out the project activities.
Specific limitations and/or conditions for exploitation	UNIMORE ensures that all its partners do have access — under fair and reasonable conditions — to the background owned by the research group of Prof. Marko Bertogna and needed for exploiting their own results.

Table 11: BACK9. VCD

Organisation	VICOM
Description	VCD (Video Content Description) library v4.1.0 Copyright (C) 2020 Vicomtech, (Spain) all rights reserved. VCD is a Python library to create and manage VCD content version 4.1.0. VCD is distributed under MIT License.
Specific limitations and/or conditions for implementation	Access Rights to Background is only granted to the extent that is needed for implementation of the action. All Background IP rights included is subject to the terms described in this Consortium Agreement and cannot be used for commercial purposes or any other economic purposes without the prior authorisation from VICOM.
Specific limitations and/or conditions for exploitation	Access Rights to Background is only granted to the extent that is needed for exploitation and is not subject to terms and conditions in other agreements that may prohibit the desired Access Right.

Table 12: BACK10. Viulib

Organisation	VICOM
Description	Viulib® software library http://www.viulib.org/index.html REG No.ES.1873. Register: Francisco Javier Oñate Cuadros
Specific limitations and/or conditions for implementation	Access Rights to Background is only granted to the extent that is needed for implementation of the action. All Background IP rights included are subject to the terms described in this Consortium Agreement and cannot be used for commercial purposes or any other economic purposes without the prior authorisation from VICOM.
Specific limitations and/or conditions for exploitation	Access Rights to Background is only granted to the extent that is needed for exploitation and is not subject to terms and conditions in other agreements that may prohibit the desired Access Right.

Table 13: BACK11. Low Carbon Mobility Management (LCMM)

Organisation	TSYS
Description	Low Carbon Mobility Management (LCMM)
Specific limitations and/or conditions for implementation	Access Rights to Background is only granted to the extent that is needed for implementation of the action. All Background IP rights included are subject to the terms described in this Consortium Agreement and cannot be used for commercial purposes or any other economic purposes without the prior authorisation from T-SYS.
Specific limitations and/or conditions for exploitation	Access Rights to Background is only granted to the extent that is needed for exploitation and is not subject to terms and conditions in other agreements that may prohibit the desired Access Right.

Table 14: BACK12. IoT Platform

Organisation	VODAFONE
Description	Vodafone Innovus IoT Platform (Includes fleet management platform) Partner's background knowledge related to design, implementation, and integration of IoT products and services, including products and services developed by partner.
Specific limitations and/or conditions for implementation	The background may be used by the consortium strictly for the 5G-LOGINNOV project purposes. No further commercial or other use is allowed without previous written consent by Vodafone Innovus
Specific limitations and/or conditions for exploitation	No further exploitation is allowed without previous written consent by Vodafone Innovus.

Table 15: BACK13. 5G mobile system

Organisation	ININ
Description	Designing and implementing 5G mobile system
Specific limitations and/or conditions for implementation	The background may be used by the consortium strictly for the 5G-LOGINNOV project purposes. No further commercial or other use is allowed without previous written consent by ININ.
Specific limitations and/or conditions for exploitation	No further exploitation is allowed without previous written consent by ININ.

Table 16: BACK14. 5G IoT services and product design

Organisation	ININ
Description	5G IoT services and product design and implementation
Specific limitations and/or conditions for implementation	The background may be used by the consortium strictly for the 5G-LOGINNOV project purposes. No further commercial or other use is allowed without previous written consent by ININ.
Specific limitations and/or conditions for exploitation	No further exploitation is allowed without previous written consent by ININ.

Table 17: BACK15. Quality assurance services and products

Organisation	ININ
Description	Quality assurance services and products
Specific limitations and/or conditions for implementation	The background may be used by the consortium strictly for the 5G-LOGINNOV project purposes. No further commercial or other use is allowed without previous written consent by ININ.

Specific limitations and/or conditions for exploitation	No further exploitation is allowed without previous written consent by ININ.
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Table 18: BACK16. rMON solution for automation of remote IoT measurements

Organisation	ININ
Description	rMON solution for automation of remote IoT measurements
Specific limitations and/or conditions for implementation	The background may be used by the consortium strictly for the 5G-LOGINNOV project purposes. No further commercial or other use is allowed without previous written consent by ININ.
Specific limitations and/or conditions for exploitation	No further exploitation is allowed without previous written consent by ININ.

Table 19: BACK17. Computation of a traffic light forecast

Organisation	SWARCO
Description	Computation of a traffic light forecast based on process data of local traffic light control logic.
Specific limitations and/or conditions for implementation	Access to traffic light process data not possible due to missing or slow interfaces. Data owner (e.g. City) might not be interested in sharing.
Specific limitations and/or conditions for exploitation	The dissemination of the data could either be local via IEEE 802.11p, which needs special roadside units locally, or via 5G, where someone else needs to provide a smartphone app. Therefore, standardised data exchange formats are needed.

Table 20: BACK18. Traffic management software

Organisation	SWARCO
Description	To react on high vehicle emission data, the definition and implementation of traffic management strategies inside the traffic management centre is needed and include into existing traffic management software.
Specific limitations and/or conditions for implementation	Emission data of a representing fraction of vehicles is accessible.
Specific limitations and/or conditions for exploitation	Local partners delivering emission data must be present. In addition, the local traffic authority must be interested and has a compatible traffic management system installed or is willing to upgrade.

Table 21: BACK19. ENTRUCK

Organisation	TEC4U
Description	ENTRUCK

Specific limitations and/or conditions for implementation	Access Rights to Background is only granted to the extent that is needed for implementation of the action. All Background IP rights included are subject to the terms described in this Consortium Agreement and cannot be used for commercial purposes or any other economic purposes without the prior authorisation from TEC4U.
Specific limitations and/or conditions for exploitation	Access Rights to Background is only granted to the extent that is needed for exploitation and is not subject to terms and conditions in other agreements that may prohibit the desired Access Right.

Table 22: BACK20. Know-how of 5G mobile network

Organisation	TSLO
Description	Know-how of 5G mobile network
Specific limitations and/or conditions for implementation	Access Rights to Background is only granted to the extent that is needed for implementation of the action. All Background IP rights included are subject to the terms described in this Consortium Agreement and cannot be used for commercial purposes or any other economic purposes without the prior authorisation from TSLO.
Specific limitations and/or conditions for exploitation	Access Rights to Background is only granted to the extent that is needed for exploitation and is not subject to terms and conditions in other agreements that may prohibit the desired Access Right.

Organisation	TSLO
Description	Business models Know-how
Specific limitations and/or conditions for implementation	Access Rights to Background is only granted to the extent that is needed for implementation of the action. All Background IP rights included are subject to the terms described in this Consortium Agreement and cannot be used for commercial purposes or any other economic purposes without the prior authorisation from TSLO.
Specific limitations and/or conditions for exploitation	Access Rights to Background is only granted to the extent that is needed for exploitation and is not subject to terms and conditions in other agreements that may prohibit the desired Access Right.

4.2 Foreground IPR

The following tables presents the Foreground IP (Results) generated by the project. In Annex 2 (Living Lab Results) and 3 (Individual results) of this document more details are provided and a further analysis of results' pathways for exploitation can be found.

5G-LOGINNOV results are divided into two main groups: Living Lab results, coming from the work done in the scope of the three Living Labs; and individual results, coming from each of the consortium partners.

The legend of the table is as follows:

- Classification
 - S: Software
 - H: Hardware
 - F: Firmware
 - O: Other, please specify
- Exploitations
 - (1) Further Research
 - (2) Developing, creating and marketing a product / process
 - (3) Creating and providing a service
 - (4) In Standardisation activities
 - (5) Others (as example: Joint Venture, Spin-off, licensing)

4.2.1 Living Labs Foreground

Hamburg Living Lab

Table 23: Hamburg LL Foreground

IDENTIFICATION FOREGROUND	CLASSIFICATION				EXPLOITATIONS					OWNER PARTY	
	S	H	F	O (SPECIFY)	(1)	(2)	(3)	(4)	(5) SPECIFY	OP	JO
5G enabled Floating Truck Emission Data (FTED)				Methodology	X	X		X	Licensing		T-SYS, CONTI, SWARCO, TEC4U
5G enabled GLOSA				Methodology	X	X		X			T-SYS, CONTI, SWARCO, TEC4U
5G enabled Collision Warning				Service	X						T-SYS, CONTI
5G enabled Carbon Emission Trading				Service		X			Cooperation agreement		T-SYS, CONTI, SWARCO, TEC4U

Table 24: Luka Koper LL Foreground

IDENTIFICATION FOREGROUND	CLASSIFICATION				EXPLOITATIONS					OWNER PARTY	
	S	H	F	O (SPECIFY)	(1)	(2)	(3)	(4)	(5) SPECIFY	OP	JO
Improved private 5G mobile system for use cases in port and logistics domain	X	X		Service	X	X			Cooperation Agreement		ININ, CONTI, LK, VICO M, TSLO
Improved Industrial IoT System for specific needs of the ports and logistics domain	X	X		Service	X	X			Cooperation Agreement		ININ, CONTI, LK, VICO M, TSLO

Athens Living Lab

Table 25: Athens LL Foreground

IDENTIFICATION FOREGROUND	CLASSIFICATION				EXPLOITATIONS					OWNER PARTY	
	S	H	F	O (SPECIFY)	(1)	(2)	(3)	(4)	(5) SPECIFY	OP	JO
5G IoT Platform in Port operations	X				X	X	X				ICCS, PCT
5G&AI enabled container seal detection for supporting logistics process	X			Service	X	X	X				ICCS, PCT
5G&AI enabled human presence detection to support safety/security operations	X			Service	X	X	X				ICCS, PCT
5G Truck Fleet Management Platform	X				X	X			Cooperation Agreement	VFI	

4.2.2 Individual Foreground

Table 26: Individual Foreground

IDENTIFICATION FOREGROUND	CLASSIFICATION				EXPLOITATIONS					OWNER PARTY	
	S	H	F	O (SPECIFY)	(1)	(2)	(3)	(4)	(5) SPECIFY	OP	JO
Strengthening of the ERTICO Start-ups Initiative				Knowledge	X						ERTICO
Updates of AKKODIS data collection tools				Method	X	X		X			AKKODIS
Expansion of the Docks the Future Network of Excellence				Service		X	X		Cooperation agreement/		CIRCLE

IDENTIFICATION FOREGROUND	CLASSIFICATION				EXPLOITATIONS					OWNER PARTY	
	S	H	F	O (SPECIFY)	(1)	(2)	(3)	(4)	(5) SPECIFY	OP	JO
									Joint Ventures Affiliation		
Use of 5G telematics products in logistics sector				Testing / Validating	X	X	X			CO NTI	
Understanding of the outcome of the application of 5G Telematics products in various network conditions				Knowledge	X	X	X			CO NTI	
Acquisition of further expertise and know-how in the field of 5G, IoT and relevant ecosystem technologies in logistics and ports domain				Knowledge	X	X	X			ICC S	
Research and Development on Computer Vision Analytics Services				Service	X	X	X			ICC S	
Customised GUEST Methodology				Methodology	X				Cooperation agreement/ Joint Ventures	IC OO R	
Improvements of Private 5G mobile system	X	X		Service	X	X	X		Cooperation agreement/ Joint Ventures Affiliation	INI N	
Improvements of Industrial 5G IoT System	X	X		Service	X	X			Cooperation Agreement	INI N	
Improvements of Quality assurance services for 5G networks and cloud-infrastructure designed for ports and industry 4.0 environment	X			Service	X	X	X		Cooperation agreement/ Joint Ventures Affiliation	INI N	
Collaboration Model for implementing 5G-enabled technologies				Knowledge	X					LK	
Computer Vision Service for Daily Port Operations	X			Service	X	X			Cooperation Agreement	PC T	
Standardised version of data format for traffic light forecast				Knowledge		X				SW AR CO	
Mechanism to enable cities' traffic management to work with emission data originating from vehicles				Service		X			Cooperation agreement		SWAR CO, TSYS

IDENTIFICATION FOREGROUND	CLASSIFICATION				EXPLOITATIONS					OWNER PARTY	
	S	H	F	O (SPECIFY)	(1)	(2)	(3)	(4)	(5) SPECIFY	OP	JO
Extension of the Entruck model	X	X							Cooperation agreement	TEC4U	
Improvements of Public 5G mobile network	X	X		Service	X	X	X		Cooperation agreement/ Joint Ventures Affiliation		TSLO, ININ
New business models for campus 5G networks				Knowledge	X					TSLO	
Gaining further expertise in the field of 5G networks, logistics and transport industrial vertical				Knowledge	X	X				TSLO	
Upgraded version of the Low Carbon Mobility Management (LCMM)	X			Service	X			X	Licensing IP rights (out-licensing)		TSYS, CONTI, TEC4U
5G Cloud based IOT Gateway for Logistics Corridor Management and CO2 reduction	X	X		Service	X			X	Licensing IP rights (out-licensing)		TSYS, CONTI, TEC4U
5G enabled City-Logistics and eXtended BRT for C-I.T.S. Emission Trading (CDM)	X			Service		X			Cooperation agreement	TSYS	
Knowledge gain in AI/ML applied to logistics				Knowledge	X				Developing own SDKs Licensing IP rights (out-licensing)	VICOM	
SeaFront – Synthetic Dataset For Visual Container Inspection	X			Dataset	X	X			Licensing/Open source	VICOM	
Upgrade of the Vodafone Innovus IoT Platform with ML capabilities on 5G enabled edge devices	X				X				Cooperation agreement/ Joint Ventures	VFI	

4.3 Joint ownership

The co-ownership of results and their exploitation is governed by both the Grant Agreement and the Consortium Agreement. As stipulated in the Grant Agreement, "The co-owners must agree (in writing) on the allocation and terms of exercise of their co-ownership ("co-ownership agreement"), to ensure the performance of their obligations under the Grant Agreement."

At the time of writing this deliverable, no agreements have been made between the co-owners. However, in case of exploitation of results the parties will continue to fulfil their obligations under both agreements.

In case of use of jointly owned results for non-commercial research activities, no prior consent of the parties is required. However, if the results are to be used for commercial purposes, an agreement between the parties involved is required. For this purpose, the terms and conditions of the Consortium Agreement, signed by all partners of this consortium, must be followed.



5 CONCLUSION

This document presents the results accomplished during the project following the internal guidelines for the appropriate innovation management in the 5G-LOGINNOV project.

Throughout the project, the consortium identified 13 innovations, of which 46% represent a new service, 38% are significantly improved products, 8% are significantly improved processes and 8% are significantly improved services.

These innovations are aligned with different policies and strategies of the European Commission, such as the Green Deal or the European Digital strategy. Furthermore, they impact 5 areas: Efficiency and capacity improvement, Safety and security, Environmental sustainability, Digitalisation, and Transport optimisation

The overall innovation management plan of the project described in this deliverable is aligned with the information already provided in the Description of Action for 5G-LOGINNOV (as per Grant Agreement number 957400).



ANNEXES

ANNEX 1: INNOVATION RADAR RESPONSES

INNOVATION RADAR QUESTIONNAIRE

Innovation 1

INNOVATION 1	
1. Title of the innovation	
Improved Industrial IoT System for specific needs of the ports and logistics domain	
2. Description of the innovation	
<p>Industrial IoT System, an appliance which assures secure, resilient and QoS guaranteed 5G connectivity for non-5G IoT devices, e.g., various sensors, cameras, etc., will be improved by several technical innovations: based on upgraded HW platform, 5G NSA and SA mode of operation will be supported,</p> <p>cloud-native approach will be introduced for the Industrial IoT System's software components which will allow for automated deployment (either on far-edge, edge or core IaaS, depending on specific requirements), onboarding, scaling, self-healing, etc.</p> <p>cloud-native approach will also result in IaaS's readiness for the orchestration within the 5G ecosystem.</p> <p>The above technical innovations will further allow for the customization of the Industrial IoT System for specific requirements of the ports and logistics domain. This innovation may allow for marketing the solution as an off-the-shelf product for ports/logistics domain.</p>	
3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	
4. Characterise the type of innovation	
Significantly improved product	X
Significantly improved service (except consulting services)	
Significantly improved process	
Significantly improved marketing method	
Significantly improved organisational method	
Consulting services	
New product	
New service (except consulting services)	
New process	

New marketing method				
New organisational method				
Other				
5. Level of Innovation: What is the level of innovation?				
Some distinct, probably minor, improvements over existing products				
Innovative but could be difficult to convert customers				
Obviously innovative and easily appreciated advantages to customer	X			
Very innovative				
6. How will the innovation be exploited?				
Introduced as new to the market (commercial exploitation)	X			
Only deployed as new to the organisation/company (new internal processes implemented, etc.)				
No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study			X	
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards	X			
Contribution to standards				X

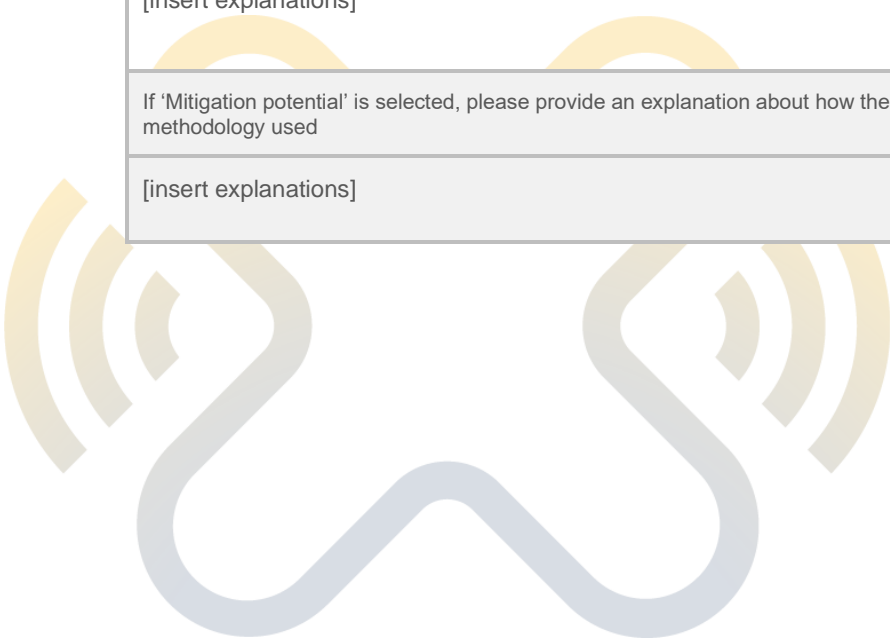
Raise capital			X	
Raise funding from public sources			X	
Business Plan		X		
Other (please specify)				
If 'Other' is selected, please specify what other steps have been done or planned for this innovation:				
[insert explanations]				
8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?				
<i>Only for multi-beneficiary projects</i>				
One clear owner				X
Multiple owners				
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.				
Organization 1. INTERNET INSTITUTE				
10. Indicate these organisations' needs to fulfil their market potential				
	Organisation 1	Organisation 2	Organisation 3	
Investor readiness training	X			
Investor introductions	X			
Biz plan development	X			
Expanding to more markets	X			
Legal advice (IPR or other)	X			
Mentoring or Coaching	X			
Partnership with other SME(s)				
Partnership with large corporates	X			
Incubation/Startup accelerator	X			
Executive Training	X			
Other				
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?				
Current customers				
New customers				X
12. Market maturity: The market targeted by this innovation is ...				

The market is not yet existing and it is not yet clear that the innovation has potential to create a new market	
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market	X
Emerging: There is a growing demand and few offerings are available	
Mature: The market is already supplied with many products of the type proposed	
13. Market dynamics: is the market ... ?	
<i>Answer this question only if the answer to the previous question is 'mature'.</i>	
In decline	
Holding steady	
Growing	
14. Are there other markets for this innovation that the innovators are not yet targeting?	
Yes	X
No	
15. Market competition: How strong is competition in the target market?	
Patchy, no major players	
Established competition but none with a proposition like the one under investigation	X
Several major players with strong competencies, infrastructure and offerings	
16. When do you expect that such innovation could be commercialised (from today)?	
Less than 1 year	
Between 1 and 3 years	
Between 3 and 5 years	X
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	X
Secure, clean and efficient energy	

Smart, green and integrated transport	X
Climate action, environment, resource efficiency and raw materials	X
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	X
Not relevant to any Societal Challenge	
If 'not relevant to any SC is selected' explain why?	
[insert explanations]	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	



SDG 11 – Sustainable Cities and Communities	X
SDG 12 – Responsible Consumption and Production	X
SDG 13 – Climate Action	X
SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
[insert explanations]	
20. Does this innovation have a potential to address climate mitigation or climate adaptation?	
<i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i>	
<i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	
Not applicable for this innovation	
Adaptation potential	X
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	
[insert explanations]	



Innovation 2

INNOVATION 2	
1. Title of the innovation	
Improved private 5G mobile system for use cases in port and logistics domain	
2. Description of the innovation	
<p>The existing 5G private mobile system will be tailored to meet the requirements of ports and logistics domain. While general solutions usually miss certain specific requirements needed to correctly address business processes, the innovative solution will incorporate specific network and services customizations and adaptations to meet business KPIs required by ports/logistics domain which will be studied and examined throughout the 5G-LOGINNOV project in cooperation of technology and business domain experts. As such, the "Improved private 5G mobile system for use cases in port and logistics domain" solution can be in later stages marketed as an off-the-shelf product for business subjects operating in ports and logistics.</p>	
3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	
4. Characterise the type of innovation	
Significantly improved product	X
Significantly improved service (except consulting services)	
Significantly improved process	
Significantly improved marketing method	
Significantly improved organisational method	
Consulting services	
New product	
New service (except consulting services)	
New process	
New marketing method	
New organisational method	
Other	
5. Level of Innovation: What is the level of innovation?	
Some distinct, probably minor, improvements over existing products	
Innovative but could be difficult to convert customers	

Obviously innovative and easily appreciated advantages to customer	X			
Very innovative				
6. How will the innovation be exploited?				
Introduced as new to the market (commercial exploitation)	X			
Only deployed as new to the organisation/company (new internal processes implemented, etc.)				
No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study			X	
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards	X			
Contribution to standards				X
Raise capital			X	
Raise funding from public sources			X	
Business Plan		X		
Other (please specify)				
If 'Other' is selected, please specify what other steps have been done or planned for this innovation:				

[insert explanations]			
8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?			
<i>Only for multi-beneficiary projects</i>			
One clear owner			X
Multiple owners			
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.			
Organization 1. INTERNET INSTITUTE Ltd.			
10. Indicate these organisations' needs to fulfil their market potential			
	Organisation 1	Organisation 2	Organisation 3
Investor readiness training	X		
Investor introductions	X		
Biz plan development	X		
Expanding to more markets	X		
Legal advice (IPR or other)	X		
Mentoring or Coaching	X		
Partnership with other SME(s)			
Partnership with large corporates	X		
Incubation/Startup accelerator	X		
Executive Training	X		
Other			
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?			
Current customers			
New customers			X
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market			X
Emerging: There is a growing demand and few offerings are available			
Mature: The market is already supplied with many products of the type proposed			

13. Market dynamics: is the market ... ?	
<i>Answer this question only if the answer to the previous question is 'mature'.</i>	
In decline	
Holding steady	
Growing	
14. Are there other markets for this innovation that the innovators are not yet targeting?	
Yes	X
No	
15. Market competition: How strong is competition in the target market?	
Patchy, no major players	
Established competition but none with a proposition like the one under investigation	X
Several major players with strong competencies, infrastructure and offerings	
16. When do you expect that such innovation could be commercialised (from today)?	
Less than 1 year	
Between 1 and 3 years	
Between 3 and 5 years	X
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	X
Secure, clean and efficient energy	X
Smart, green and integrated transport	X
Climate action, environment, resource efficiency and raw materials	
Europe in a changing world - inclusive, innovative and reflective societies	X
Secure societies - protecting freedom and security of Europe and its citizens	X
Not relevant to any Societal Challenge	

If 'not relevant to any SC is selected' explain why?	
[insert explanations]	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	X
SDG 12 – Responsible Consumption and Production	X
SDG 13 – Climate Action	X

SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
[insert explanations]	
20. Does this innovation have a potential to address climate mitigation or climate adaptation? <i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i> <i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	
Not applicable for this innovation	
Adaptation potential	X
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	
[insert explanations]	



Innovation 3

INNOVATION 3	
1. Title of the innovation	
5G and IoT Platform in Port Operations	
2. Description of the innovation	
<p>The innovation includes the deployment of a network management and service orchestration platform based on Opensource MANO (OSM), an ETSI-hosted software stack aligned with ETSI NFV, and Kubernetes orchestration engine for the lifecycle management of cloud native applications and virtualization technologies. The main focus of the 5G management platform is the automatic software deployment of AI/ML and computer vision applications (e.g., AI/ML aided cargo container seal detection and human presence detection) tailored to Port operations, enabling service control, monitoring and management at scale. The platform's objective is to improve the efficiency of port operations, personnel and asset safety, as well as the reduction of operational costs.</p>	
3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	
4. Characterise the type of innovation	
Significantly improved product	
Significantly improved service (except consulting services)	
Significantly improved process	
Significantly improved marketing method	
Significantly improved organisational method	
Consulting services	
New product	
New service (except consulting services)	X
New process	
New marketing method	
New organisational method	
Other	
5. Level of Innovation: What is the level of innovation?	
Some distinct, probably minor, improvements over existing products	
Innovative but could be difficult to convert customers	

Obviously innovative and easily appreciated advantages to customer	X			
Very innovative				
6. How will the innovation be exploited?				
Introduced as new to the market (commercial exploitation)				
Only deployed as new to the organisation/company (new internal processes implemented, etc.)	X			
No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study				X
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards	X			
Contribution to standards				X
Raise capital				X
Raise funding from public sources				X
Business Plan		X		
Other (please specify)				
If 'Other' is selected, please specify what other steps have been done or planned for this innovation:				

[insert explanations]			
8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?			
<i>Only for multi-beneficiary projects</i>			
One clear owner			
Multiple owners			X
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.			
Organization 1. <i>Institute of Communication and Computer Systems (ICCS)</i>			
Organization 2. <i>Piraeus Container Terminal (PCT)</i>			
10. Indicate these organisations' needs to fulfil their market potential			
	Organisation 1	Organisation 2	Organisation 3
Investor readiness training			
Investor introductions			
Biz plan development		X	
Expanding to more markets	X		
Legal advice (IPR or other)			
Mentoring or Coaching			
Partnership with other SME(s)			
Partnership with large corporates			
Incubation/Startup accelerator			
Executive Training			
Other			
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?			
Current customers			X
New customers			
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market			
Emerging: There is a growing demand and few offerings are available			X



Mature: The market is already supplied with many products of the type proposed	
13. Market dynamics: is the market ... ?	
<i>Answer this question only if the answer to the previous question is 'mature'.</i>	
In decline	
Holding steady	
Growing	
14. Are there other markets for this innovation that the innovators are not yet targeting?	
Yes	X
No	
15. Market competition: How strong is competition in the target market?	
Patchy, no major players	
Established competition but none with a proposition like the one under investigation	
Several major players with strong competencies, infrastructure and offerings	X
16. When do you expect that such innovation could be commercialised (from today)?	
Less than 1 year	
Between 1 and 3 years	X
Between 3 and 5 years	
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	
Secure, clean and efficient energy	
Smart, green and integrated transport	X
Climate action, environment, resource efficiency and raw materials	
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	



Not relevant to any Societal Challenge	
If 'not relevant to any SC is selected' explain why?	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	X
SDG 12 – Responsible Consumption and Production	
SDG 13 – Climate Action	



SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
[insert explanations]	
20. Does this innovation have a potential to address climate mitigation or climate adaptation? <i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i> <i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	
Not applicable for this innovation	X
Adaptation potential	
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	
[insert explanations]	

Innovation 4

INNOVATION 4
1. Title of the innovation
5G&AI enabled container seal detection for supporting logistics process
2. Description of the innovation

The innovation includes the development of a 5G&AI/ML-enabled video analytics service, exploiting high resolution cameras deployed at the quay side cranes of the port, in order to detect the presence/absence of cargo container seals, at the loading/unloading process of vessels. The proposed solution is based on two AI/ML models working sequentially; the former detects containers in 4K uplink video streams transmitted over 5G, whereas the latter detects the presence/absence of seals on the container's surface/door. The proposed solution (inference service engine for container seal detection) is packaged and deployed as cloud native network functions at the edge, with NFV-MANO support, to facilitate ease in monitoring and lifecycle management operations, at scale. The automated service of container seal detection is of paramount importance for a Port operator as it verifies the integrity of a container's content, and thus the Port's liability in case of violations.

3. This innovation is ...

Under development	X
Already developed but not yet being exploited	
Being exploited	

4. Characterise the type of innovation

Significantly improved product	
Significantly improved service (except consulting services)	
Significantly improved process	
Significantly improved marketing method	
Significantly improved organisational method	
Consulting services	
New product	
New service (except consulting services)	X
New process	
New marketing method	
New organisational method	
Other	

5. Level of Innovation: What is the level of innovation?

Some distinct, probably minor, improvements over existing products	
Innovative but could be difficult to convert customers	
Obviously innovative and easily appreciated advantages to customer	X
Very innovative	

6. How will the innovation be exploited?

Introduced as new to the market (commercial exploitation)	
Only deployed as new to the organisation/company (new internal processes implemented, etc.)	X



No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study				X
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards				X
Contribution to standards				X
Raise capital				X
Raise funding from public sources				X
Business Plan		X		
Other (please specify)				
If 'Other' is selected, please specify what other steps have been done or planned for this innovation:				
[insert explanations]				
8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?				
<i>Only for multi-beneficiary projects</i>				
One clear owner				
Multiple owners	X			
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.				

[insert organisation 1] <i>Institute of Communication and Computer Systems (ICCS)</i>			
[insert organisation 2] <i>Piraeus Container Terminal (PCT)</i>			
10. Indicate these organisations' needs to fulfil their market potential			
	Organisation 1	Organisation 2	Organisation 3
Investor readiness training			
Investor introductions			
Biz plan development		X	
Expanding to more markets			
Legal advice (IPR or other)			
Mentoring or Coaching			
Partnership with other SME(s)			
Partnership with large corporates			
Incubation/Startup accelerator			
Executive Training			
Other	X		
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?			
Current customers			X
New customers			
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market			X
Emerging: There is a growing demand and few offerings are available			
Mature: The market is already supplied with many products of the type proposed			
13. Market dynamics: is the market ...?			
<i>Answer this question only if the answer to the previous question is 'mature'.</i>			
In decline			
Holding steady			
Growing			
14. Are there other markets for this innovation that the innovators are not yet targeting?			

Yes	
No	X
15. Market competition: How strong is competition in the target market?	
Patchy, no major players	
Established competition but none with a proposition like the one under investigation	X
Several major players with strong competencies, infrastructure and offerings	
16. When do you expect that such innovation could be commercialised (from today)?	
Less than 1 year	
Between 1 and 3 years	X
Between 3 and 5 years	
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	
Secure, clean and efficient energy	
Smart, green and integrated transport	
Climate action, environment, resource efficiency and raw materials	
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	
Not relevant to any Societal Challenge	X
If 'not relevant to any SC is selected' explain why?	
The discussed innovation is a service that targets logistics service for port operations optimization. Thus, the above list is not relevant.	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	

1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	
SDG 12 – Responsible Consumption and Production	
SDG 13 – Climate Action	
SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
[insert explanations]	
20. Does this innovation have a potential to address climate mitigation or climate adaptation?	
<i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i>	
<i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	

Not applicable for this innovation	X
Adaptation potential	
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	
[insert explanations]	

Innovation 5

INNOVATION 1	
1. Title of the innovation	
5G&AI enabled human presence detection to support safety/security operations.	
2. Description of the innovation	
<p>The innovation includes the development of AI/ML-based video analytics services, exploiting high resolution cameras deployed on 5G trucks, and on other stationary locations at the Port premises. The proposed innovation delivers a collision avoidance/alert system between trucks and personnel for cameras equipped on trucks, as well as, human presence detection service from stationary 5G cameras tailored to security/safety applications, e.g., for people entering restricted or high-risk areas. The proposed solutions (inference service engine for human presence detection and collision avoidance system) are packaged and deployed as cloud native network functions at the edge, with NFV-MANO support, to facilitate ease in monitoring and lifecycle management operations, at scale. The proposed service targets safety and security applications at the Port premises.</p>	
3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	
4. Characterise the type of innovation	
Significantly improved product	
Significantly improved service (except consulting services)	
Significantly improved process	
Significantly improved marketing method	

Significantly improved organisational method				
Consulting services				
New product				
New service (except consulting services)	X			
New process				
New marketing method				
New organisational method				
Other				
5. Level of Innovation: What is the level of innovation?				
Some distinct, probably minor, improvements over existing products				
Innovative but could be difficult to convert customers				
Obviously innovative and easily appreciated advantages to customer	X			
Very innovative				
6. How will the innovation be exploited?				
Introduced as new to the market (commercial exploitation)				
Only deployed as new to the organisation/company (new internal processes implemented, etc.)	X			
No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study				X
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			

Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards				X
Contribution to standards				X
Raise capital				X
Raise funding from public sources				X
Business Plan		X		
Other (please specify)				

If 'Other' is selected, please specify what other steps have been done or planned for this innovation:

[insert explanations]

8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?

Only for multi-beneficiary projects

One clear owner	
Multiple owners	X

9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.

[insert organisation 1] *Institute of Communication and Computer Systems (ICCS)*

[insert organisation 2] *Piraeus Container Terminal (PCT)*

[insert organisation 3]

10. Indicate these organisations' needs to fulfil their market potential

	Organisation 1	Organisation 2	Organisation 3
Investor readiness training			
Investor introductions			
Biz plan development		X	
Expanding to more markets			
Legal advice (IPR or other)			
Mentoring or Coaching			
Partnership with other SME(s)			
Partnership with large corporates			
Incubation/Startup accelerator			

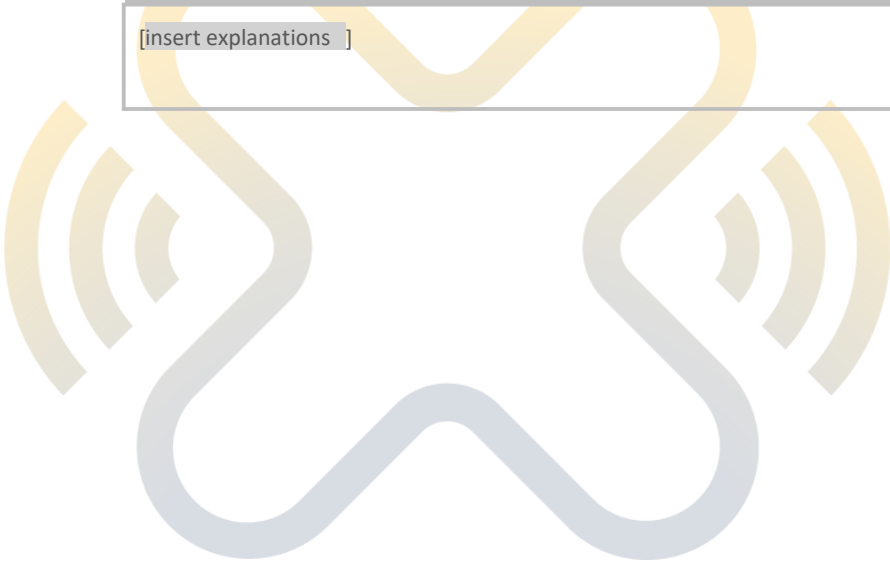
Executive Training			
Other	X		
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?			
Current customers		X	
New customers			
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market			
Emerging: There is a growing demand and few offerings are available			
Mature: The market is already supplied with many products of the type proposed		X	
13. Market dynamics: is the market ... ? <i>Answer this question only if the answer to the previous question is 'mature'.</i>			
In decline			
Holding steady			
Growing		X	
14. Are there other markets for this innovation that the innovators are not yet targeting?			
Yes			
No		X	
15. Market competition: How strong is competition in the target market?			
Patchy, no major players			
Established competition but none with a proposition like the one under investigation			
Several major players with strong competencies, infrastructure and offerings		X	
16. When do you expect that such innovation could be commercialised (from today)?			
Less than 1 year			
Between 1 and 3 years		X	
Between 3 and 5 years			
Between 5 and 10 years			
More than 10 years			
17. Has a trade mark been registered for this innovation?			



Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	
Secure, clean and efficient energy	
Smart, green and integrated transport	
Climate action, environment, resource efficiency and raw materials	
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	
Not relevant to any Societal Challenge	X
If 'not relevant to any SC is selected' explain why?	
The discussed innovation is a service that targets security and personnel safety applications at the Port premises. Thus, the above list is not relevant.	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	



SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	
SDG 12 – Responsible Consumption and Production	
SDG 13 – Climate Action	
SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
[insert explanations]	
20. Does this innovation have a potential to address climate mitigation or climate adaptation?	
<i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i>	
<i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	
Not applicable for this innovation	X
Adaptation potential	
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	
[insert explanations]	



Innovation 6

INNOVATION 1	
1. Title of the innovation	
5G Truck Fleet Management Platform	
2. Description of the innovation	
<p>The innovation takes the bird-eye-view parking concept of vehicles to a new level by leveraging a 5G video feed from other vehicles. The scenario uses the concept of video teleconference but implemented for truck drivers. Each truck is fitted with a 5G based mobile phone with the front camera facing the street. Then the camera feed is broadcasted, along with location info, real time to the adjacent truck (installed mobile phones). This gives an additional surrounding live video and the ability for a driver to view the truck while maneuvering during parking.</p>	
3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	
4. Characterise the type of innovation	
Significantly improved product	
Significantly improved service (except consulting services)	
Significantly improved process	
Significantly improved marketing method	
Significantly improved organisational method	
Consulting services	
New product	
New service (except consulting services)	X
New process	
New marketing method	
New organisational method	
Other	
5. Level of Innovation: What is the level of innovation?	
Some distinct, probably minor, improvements over existing products	



Innovative but could be difficult to convert customers				
Obviously innovative and easily appreciated advantages to customer	X			
Very innovative				
6. How will the innovation be exploited?				
Introduced as new to the market (commercial exploitation)				
Only deployed as new to the organisation/company (new internal processes implemented, etc.)	X			
No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study				X
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards				X
Contribution to standards				X
Raise capital				X
Raise funding from public sources				X
Business Plan		X		
Other (please specify)				
If 'Other' is selected, please specify what other steps have been done or planned for this innovation:				

[insert explanations]			
8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?			
<i>Only for multi-beneficiary projects</i>			
One clear owner			
Multiple owners			X
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.			
<i>[Organization 1] Vodafone Innovus (Vodafone)</i>			
<i>[Organization 2] Piraeus Container Terminal (PCT)</i>			
10. Indicate these organisations' needs to fulfil their market potential			
	Vodafone	PCT	
Investor readiness training			
Investor introductions			
Biz plan development		X	
Expanding to more markets	X		
Legal advice (IPR or other)			
Mentoring or Coaching			
Partnership with other SME(s)			
Partnership with large corporates			
Incubation/Startup accelerator			
Executive Training			
Other			
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?			
Current customers			X
New customers			
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market			
Emerging: There is a growing demand and few offerings are available			X



Mature: The market is already supplied with many products of the type proposed	
13. Market dynamics: is the market ... ?	
<i>Answer this question only if the answer to the previous question is 'mature'.</i>	
In decline	
Holding steady	
Growing	
14. Are there other markets for this innovation that the innovators are not yet targeting?	
Yes	X
No	
15. Market competition: How strong is competition in the target market?	
Patchy, no major players	
Established competition but none with a proposition like the one under investigation	
Several major players with strong competencies, infrastructure and offerings	X
16. When do you expect that such innovation could be commercialised (from today)?	
Less than 1 year	
Between 1 and 3 years	
Between 3 and 5 years	X
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	
Secure, clean and efficient energy	
Smart, green and integrated transport	X
Climate action, environment, resource efficiency and raw materials	
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	



Not relevant to any Societal Challenge	
If 'not relevant to any SC is selected' explain why?	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	X
SDG 12 – Responsible Consumption and Production	
SDG 13 – Climate Action	
SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	



If 'not relevant to any SDG is selected' explain why?	
[insert explanations]	
20. Does this innovation have a potential to address climate mitigation or climate adaptation?	
<i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i>	
<i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	
Not applicable for this innovation	X
Adaptation potential	
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	
[insert explanations]	

Innovation 7

INNOVATION 7	
1. Title of the innovation	
5G enabled Floating Truck Emission Data (FTED)	
2. Description of the innovation	
<p>FTED consists of collecting speed profiles, linking them to the driving reference cycle (WLTP) and measuring the %-deviation relative to the cycle. The methodology is described in detail in the ISO-23795 standard. The fleets are collecting data about carbon emissions as well as information about stop-and-go, acceleration and energy demand of the vehicle.</p> <p>Based on the speed profiles per vehicle, a classification of the trip, congestion and driving behaviour is reported as well as the quantity of additional carbon emissions relative to the standard. Together with the traffic volume known and published by the City of Hamburg, this allows to quantify the emissions of carbon dioxide in each area and road network.</p>	
3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	

4. Characterise the type of innovation				
Significantly improved product				X
Significantly improved service (except consulting services)				
Significantly improved process				
Significantly improved marketing method				
Significantly improved organisational method				
Consulting services				
New product				
New service (except consulting services)				
New process				
New marketing method				
New organisational method				
Other				
5. Level of Innovation: What is the level of innovation?				
Some distinct, probably minor, improvements over existing products				
Innovative but could be difficult to convert customers				
Obviously innovative and easily appreciated advantages to customer				X
Very innovative				
6. How will the innovation be exploited?				
Introduced as new to the market (commercial exploitation)				X
Only deployed as new to the organisation/company (new internal processes implemented, etc.)				
No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X

A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study			X	
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards	X			
Contribution to standards				X
Raise capital			X	
Raise funding from public sources			X	
Business Plan		X		
Other (please specify)				

If 'Other' is selected, please specify what other steps have been done or planned for this innovation:

[insert explanations]

8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?

Only for multi-beneficiary projects

One clear owner

Multiple owners

X

9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.

Continental

Tec4u

T-Systems

10. Indicate these organisations' needs to fulfil their market potential

	Continental	Tec4u	T-Systems
Investor readiness training	X	X	X
Investor introductions	X	X	X
Biz plan development	X	X	X

Expanding to more markets	X	X	X
Legal advice (IPR or other)	X	X	X
Mentoring or Coaching	X	X	X
Partnership with other SME(s)			
Partnership with large corporates	X	X	X
Incubation/Startup accelerator	X	X	X
Executive Training	X	X	X
Other			
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?			
Current customers			X
New customers			X
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market			X
Emerging: There is a growing demand and few offerings are available			
Mature: The market is already supplied with many products of the type proposed			
13. Market dynamics: is the market ... ? <i>Answer this question only if the answer to the previous question is 'mature'.</i>			
In decline			
Holding steady			
Growing			
14. Are there other markets for this innovation that the innovators are not yet targeting?			
Yes			X
No			
15. Market competition: How strong is competition in the target market?			
Patchy, no major players			
Established competition but none with a proposition like the one under investigation			X
Several major players with strong competencies, infrastructure and offerings			
16. When do you expect that such innovation could be commercialised (from today)?			

Less than 1 year	
Between 1 and 3 years	
Between 3 and 5 years	X
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	
Secure, clean and efficient energy	
Smart, green and integrated transport	X
Climate action, environment, resource efficiency and raw materials	X
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	
Not relevant to any Societal Challenge	
If 'not relevant to any SC is selected' explain why?	
[insert explanations]	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	



SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	X
SDG 12 – Responsible Consumption and Production	
SDG 13 – Climate Action	X
SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
20. Does this innovation have a potential to address climate mitigation or climate adaptation?	
<i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i>	
<i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	X
Not applicable for this innovation	
Adaptation potential	
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	

Innovation 8

INNOVATION 2	
1. Title of the innovation	
5G enabled GLOSA for Intelligent Transport Systems (I.T.S.)	
2. Description of the innovation	
<p>This result is targeting Green Light Optimum Speed Advisory (GLOSA) using cellular V2X communication exchange transferring “traffic light forecast” to vehicles in motion, once the vehicle and its SIM-ID is registered in the 5G Mobile Edge Infrastructure. The technology gives drivers some advice for best speed choices when crossing intersections using timeframes of “green, yellow and red”. Additionally, GLOSA allows the vehicle to choose speed ranges which help to avoid collisions caused by crossroads, a challenge for any automated vehicle moving in an urban and complex road network.</p>	
3. This innovation is ...	
Under development	<input checked="" type="checkbox"/>
Already developed but not yet being exploited	<input type="checkbox"/>
Being exploited	<input type="checkbox"/>
4. Characterise the type of innovation	
Significantly improved product	<input checked="" type="checkbox"/>
Significantly improved service (except consulting services)	<input type="checkbox"/>
Significantly improved process	<input type="checkbox"/>
Significantly improved marketing method	<input type="checkbox"/>
Significantly improved organisational method	<input type="checkbox"/>
Consulting services	<input type="checkbox"/>
New product	<input type="checkbox"/>
New service (except consulting services)	<input type="checkbox"/>
New process	<input type="checkbox"/>
New marketing method	<input type="checkbox"/>
New organisational method	<input type="checkbox"/>
Other	<input type="checkbox"/>
5. Level of Innovation: What is the level of innovation?	



Some distinct, probably minor, improvements over existing products				
Innovative but could be difficult to convert customers				
Obviously innovative and easily appreciated advantages to customer	X			
Very innovative				
6. How will the innovation be exploited?				
Introduced as new to the market (commercial exploitation)	X			
Only deployed as new to the organisation/company (new internal processes implemented, etc.)				
No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study			X	
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards	X			
Contribution to standards				X
Raise capital			X	
Raise funding from public sources			X	
Business Plan		X		
Other (please specify)				

If 'Other' is selected, please specify what other steps have been done or planned for this innovation:			
[insert explanations]			
8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?			
<i>Only for multi-beneficiary projects</i>			
One clear owner			
Multiple owners			X
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.			
Swarco			
Tec4u			
T-Systems			
10. Indicate these organisations' needs to fulfil their market potential			
	Swarco	Tec4u	T-Systems
Investor readiness training	X	X	X
Investor introductions	X	X	X
Biz plan development	X	X	X
Expanding to more markets	X	X	X
Legal advice (IPR or other)	X	X	X
Mentoring or Coaching	X	X	X
Partnership with other SME(s)			
Partnership with large corporates	X	X	X
Incubation/Startup accelerator	X	X	X
Executive Training	X	X	X
Other			
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation be used by mainly current or new customers?			
Current customers			X
New customers			X
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			

Market-creating: The market is not yet existing but the innovation has clear potential to create a new market	X
Emerging: There is a growing demand and few offerings are available	
Mature: The market is already supplied with many products of the type proposed	
13. Market dynamics: is the market ... ?	
<i>Answer this question only if the answer to the previous question is 'mature'.</i>	
In decline	
Holding steady	
Growing	
14. Are there other markets for this innovation that the innovators are not yet targeting?	
Yes	X
No	
15. Market competition: How strong is competition in the target market?	
Patchy, no major players	
Established competition but none with a proposition like the one under investigation	X
Several major players with strong competencies, infrastructure and offerings	
16. When do you expect that such innovation could be commercialised (from today)?	
Less than 1 year	
Between 1 and 3 years	
Between 3 and 5 years	X
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	
Secure, clean and efficient energy	
Smart, green and integrated transport	X
Climate action, environment, resource efficiency and raw materials	X

Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	
Not relevant to any Societal Challenge	
If 'not relevant to any SC is selected' explain why?	
[insert explanations]	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	X
SDG 12 – Responsible Consumption and Production	
SDG 13 – Climate Action	X
SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	



SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
20. Does this innovation have a potential to address climate mitigation or climate adaptation?	
<i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i>	
<i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	X
Not applicable for this innovation	
Adaptation potential	
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	
[insert explanations]	

Innovation 9

INNOVATION 3	
1. Title of the innovation	
5G enabled Collision Warning	
2. Description of the innovation	
This technology, developed and deployed by Continental and T-Systems in the two projects (NPM + 5G-LOGINNOV) in the context of the 27th ITS Congress in Hamburg, is applied for collision alerts for vulnerable road users approaching the intersection as well as for collision alerts for vehicles platooning. In combination with GLOSA a direct message is sent to the 5G smartphone App via MobileEdge computing ensuring ultra-reliable low latencies possible only in the 5G network	
3. This innovation is ...	
Under development	X

Already developed but not yet being exploited				
Being exploited				
4. Characterise the type of innovation				
Significantly improved product				
Significantly improved service (except consulting services)				
Significantly improved process				
Significantly improved marketing method				
Significantly improved organisational method				
Consulting services				
New product				
New service (except consulting services)	X			
New process				
New marketing method				
New organisational method				
Other				
5. Level of Innovation: What is the level of innovation?				
Some distinct, probably minor, improvements over existing products				
Innovative but could be difficult to convert customers				
Obviously innovative and easily appreciated advantages to customer	X			
Very innovative				
6. How will the innovation be exploited?				
Introduced as new to the market (commercial exploitation)	X			
Only deployed as new to the organisation/company (new internal processes implemented, etc.)				
No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed

Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study			X	
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards	X			
Contribution to standards				X
Raise capital			X	
Raise funding from public sources			X	
Business Plan		X		
Other (please specify)				
If 'Other' is selected, please specify what other steps have been done or planned for this innovation:				
[insert explanations]				
8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?				
<i>Only for multi-beneficiary projects</i>				
One clear owner				
Multiple owners				X
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.				
Continental				
T-Systems				
10. Indicate these organisations' needs to fulfil their market potential				
	Continental	T-Systems	Organisation 3	
Investor readiness training	X	X		
Investor introductions	X	X		

Biz plan development	X	X	
Expanding to more markets	X	X	
Legal advice (IPR or other)	X	X	
Mentoring or Coaching	X	X	
Partnership with other SME(s)			
Partnership with large corporates	X	X	
Incubation/Startup accelerator	X	X	
Executive Training	X	X	
Other			
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?			
Current customers			
New customers			X
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market			X
Emerging: There is a growing demand and few offerings are available			
Mature: The market is already supplied with many products of the type proposed			
13. Market dynamics: is the market ... ? <i>Answer this question only if the answer to the previous question is 'mature'.</i>			
In decline			
Holding steady			
Growing			X
14. Are there other markets for this innovation that the innovators are not yet targeting?			
Yes			X
No			
15. Market competition: How strong is competition in the target market?			
Patchy, no major players			
Established competition but none with a proposition like the one under investigation			X
Several major players with strong competencies, infrastructure and offerings			

16. When do you expect that such innovation could be commercialised (from today)?	
Less than 1 year	
Between 1 and 3 years	
Between 3 and 5 years	X
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	X
Food security, sustainable agriculture, marine and maritime, Bioeconomy	
Secure, clean and efficient energy	
Smart, green and integrated transport	X
Climate action, environment, resource efficiency and raw materials	
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	
Not relevant to any Societal Challenge	
If 'not relevant to any SC is selected' explain why?	
[insert explanations]	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	



1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	X
SDG 12 – Responsible Consumption and Production	
SDG 13 – Climate Action	
SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
20. Does this innovation have a potential to address climate mitigation or climate adaptation?	
<i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i>	
<i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	
Not applicable for this innovation	X
Adaptation potential	
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	

If 'Mitigation potential' is selected, please provide an explanation about how the MtCO₂ estimate was calculated/ the methodology used

[insert explanations]

Innovation 10

INNOVATION 4	
1. Title of the innovation	
5G enabled Carbon Emission Trading	
2. Description of the innovation	
<p>The exact measurement of fuel consumption and carbon emissions for net zero airport and port strategies. The base for this is a voluntary commitment for net zero emission strategies by airports and ports which is related to the key challenge of measuring the scope 3 (indirect emissions that occur in a company's value chain) emitting parties involved in the operation of ports and seaports. Here it is reasonable to equip vehicles using the port and hub road infrastructure with the Continental IOT Gateway using the 5G infrastructure for communication and the database. The database allows to exactly determine the amount of carbon emissions caused by the logistics fleets working on the supply chain in the maritime and transport sector.</p>	
3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	
4. Characterise the type of innovation	
Significantly improved product	
Significantly improved service (except consulting services)	
Significantly improved process	
Significantly improved marketing method	
Significantly improved organisational method	
Consulting services	
New product	
New service (except consulting services)	X
New process	
New marketing method	



New organisational method				
Other				
5. Level of Innovation: What is the level of innovation?				
Some distinct, probably minor, improvements over existing products				
Innovative but could be difficult to convert customers				
Obviously innovative and easily appreciated advantages to customer	X			
Very innovative				
6. How will the innovation be exploited?				
Introduced as new to the market (commercial exploitation)	X			
Only deployed as new to the organisation/company (new internal processes implemented, etc.)				
No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study			X	
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards	X			
Contribution to standards				X
Raise capital			X	

Raise funding from public sources			X	
Business Plan		X		
Other (please specify)				
If 'Other' is selected, please specify what other steps have been done or planned for this innovation:				
[insert explanations]				
8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?				
<i>Only for multi-beneficiary projects</i>				
One clear owner				
Multiple owners	X			
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.				
tec4U				
Continental				
T-Systems				
10. Indicate these organisations' needs to fulfil their market potential				
	tec4U	Continental	T-Systems	
Investor readiness training	X	X	X	
Investor introductions	X	X	X	
Biz plan development	X	X	X	
Expanding to more markets	X	X	X	
Legal advice (IPR or other)	X	X	X	
Mentoring or Coaching	X	X	X	
Partnership with other SME(s)				
Partnership with large corporates	X	X	X	
Incubation/Startup accelerator	X	X	X	
Executive Training	X	X	X	
Other				
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?				
Current customers				
New customers	X			

12. Market maturity: The market targeted by this innovation is ...	
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market	
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market	
Emerging: There is a growing demand and few offerings are available	X
Mature: The market is already supplied with many products of the type proposed	
13. Market dynamics: is the market ... ?	
<i>Answer this question only if the answer to the previous question is 'mature'.</i>	
In decline	
Holding steady	
Growing	X
14. Are there other markets for this innovation that the innovators are not yet targeting?	
Yes	X
No	
15. Market competition: How strong is competition in the target market?	
Patchy, no major players	
Established competition but none with a proposition like the one under investigation	X
Several major players with strong competencies, infrastructure and offerings	
16. When do you expect that such innovation could be commercialised (from today)?	
Less than 1 year	
Between 1 and 3 years	
Between 3 and 5 years	X
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	



Secure, clean and efficient energy	
Smart, green and integrated transport	X
Climate action, environment, resource efficiency and raw materials	X
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	
Not relevant to any Societal Challenge	
If 'not relevant to any SC is selected' explain why?	
[insert explanations]	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	X
SDG 12 – Responsible Consumption and Production	
SDG 13 – Climate Action	X



SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
20. Does this innovation have a potential to address climate mitigation or climate adaptation? <i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i> <i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	X
Not applicable for this innovation	
Adaptation potential	
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	
[insert explanations]	

Innovation 11

INNOVATION 1
1. Title of the innovation
5G and IoT technologies for supporting security and logistics process in port environment
2. Description of the innovation
This innovation presents a comprehensive basic kit system for introducing and/or upgrading digitalization in ports and logistics to a higher level, i.e., by 5G technology support. In fact, it combines two other innovations (Improved Industrial IoT System for specific needs of the ports and logistics domain and Improved private 5G mobile system for use cases in port and logistics domain), giving them additional value, especially in relation to ports security and logistics process. The technical innovation will in general

allow for digitalization and customization of existing services, as well as for the introduction of new services. This may further allow for marketing the innovation/solution as an off-the-shelf product for the target domain.

3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	
4. Characterise the type of innovation	
Significantly improved product	X
Significantly improved service (except consulting services)	
Significantly improved process	
Significantly improved marketing method	
Significantly improved organisational method	
Consulting services	
New product	
New service (except consulting services)	
New process	
New marketing method	
New organisational method	
Other	
5. Level of Innovation: What is the level of innovation?	
Some distinct, probably minor, improvements over existing products	
Innovative but could be difficult to convert customers	X
Obviously innovative and easily appreciated advantages to customer	
Very innovative	
6. How will the innovation be exploited?	
Introduced as new to the market (commercial exploitation)	X
Only deployed as new to the organisation/company (new internal processes implemented, etc.)	
No exploitation planned	
If 'no exploitation planned' is selected, explain why not:	
[insert explanations]	

7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study			X	
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards	X			
Contribution to standards				X
Raise capital			X	
Raise funding from public sources			X	
Business Plan		X		
Other (please specify)				
If 'Other' is selected, please specify what other steps have been done or planned for this innovation:				
[insert explanations]				
8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?				
<i>Only for multi-beneficiary projects</i>				
One clear owner				X
Multiple owners				
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.				
INTERNET INSTITUTE Ltd.				

10. Indicate these organisations' needs to fulfil their market potential			
	Organisation 1	Organisation 2	Organisation 3
Investor readiness training	X		
Investor introductions	X		
Biz plan development	X		
Expanding to more markets	X		
Legal advice (IPR or other)	X		
Mentoring or Coaching	X		
Partnership with other SME(s)			
Partnership with large corporates	X		
Incubation/Startup accelerator	X		
Executive Training	X		
Other			
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?			
Current customers			
New customers			X
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market			X
Emerging: There is a growing demand and few offerings are available			
Mature: The market is already supplied with many products of the type proposed			
13. Market dynamics: is the market ... ?			
<i>Answer this question only if the answer to the previous question is 'mature'.</i>			
In decline			
Holding steady			
Growing			
14. Are there other markets for this innovation that the innovators are not yet targeting?			
Yes			X
No			

15. Market competition: How strong is competition in the target market?	
Patchy, no major players	
Established competition but none with a proposition like the one under investigation	X
Several major players with strong competencies, infrastructure and offerings	
16. When do you expect that such innovation could be commercialised (from today)?	
Less than 1 year	
Between 1 and 3 years	
Between 3 and 5 years	X
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	X
Secure, clean and efficient energy	X
Smart, green and integrated transport	X
Climate action, environment, resource efficiency and raw materials	X
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	X
Not relevant to any Societal Challenge	
If 'not relevant to any SC is selected' explain why?	
[insert explanations]	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	

1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	X
SDG 12 – Responsible Consumption and Production	X
SDG 13 – Climate Action	X
SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
[insert explanations]	
20. Does this innovation have a potential to address climate mitigation or climate adaptation?	
<i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i>	
<i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	
Not applicable for this innovation	
Adaptation potential	X

<p>If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO₂? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.</p>
<p>[insert explanations]</p>
<p>If 'Mitigation potential' is selected, please provide an explanation about how the MtCO₂ estimate was calculated/ the methodology used</p>
<p>[insert explanations]</p>

Innovation 12

INNOVATION 1	
1. Title of the innovation	
Mechanism to enable cities' traffic management to work with emission data originating from vehicles	
2. Description of the innovation	
<p>Dynamics of vehicle movement (acceleration, deceleration, stops, progressing speed) is a significant base data to determine transportation based emissions of all kind (Energy consumption, CO₂, NO_x, PM_x,...).</p> <p>Today Cities cannot know the not measurable share of transportation related contribution to emissions well to decide for environmental sensitive control actions.</p> <p>When dynamics of vehicle movement are collected via 5G, and when they get augmented with further data (fleet composition / power train type, weather, ...), information on mobility based emission becomes available and can be used.</p> <p>In return, travelers can be included in cooperative traffic management (e.g. the GLOSA service, adaptive control due to 5G based vehicle approaching information in a CCAM CAM message) to optimize traffic control.</p>	
3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	
4. Characterise the type of innovation	
Significantly improved product	
Significantly improved service (except consulting services)	X
Significantly improved process	
Significantly improved marketing method	
Significantly improved organisational method	

Consulting services				
New product				
New service (except consulting services)				
New process				
New marketing method				
New organisational method				
Other				
5. Level of Innovation: What is the level of innovation?				
Some distinct, probably minor, improvements over existing products				
Innovative but could be difficult to convert customers	X			
Obviously innovative and easily appreciated advantages to customer				
Very innovative				
6. How will the innovation be exploited?				
Introduced as new to the market (commercial exploitation)				
Only deployed as new to the organisation/company (new internal processes implemented, etc.)	X			
No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
Besides company internal developments the co-operation between partners / stakeholders in the value chain is needed (vehicle data provider – cloud service – city traffic management)				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer			X	
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study			X	
Prototyping in laboratory environment	X			
Prototyping in real world environment		X		
Pilot, Demonstration or Testing activities		X		
Feasibility study				X

Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party				X
Complying with existing standards	X			
Contribution to standards			X	
Raise capital				X
Raise funding from public sources		X		
Business Plan		X		
Other (please specify)				

If 'Other' is selected, please specify what other steps have been done or planned for this innovation:

[insert explanations]

8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?

Only for multi-beneficiary projects

One clear owner	
Multiple owners	X

9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.

SWARCO

T-Systems

10. Indicate these organisations' needs to fulfil their market potential

	Organisation 1	Organisation 2	Organisation 3
Investor readiness training			
Investor introductions			
Biz plan development	X	X	
Expanding to more markets	X	X	
Legal advice (IPR or other)			
Mentoring or Coaching			
Partnership with other SME(s)	X	X	
Partnership with large corporates	X	X	
Incubation/Startup accelerator			
Executive Training			

Other	X	X	
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?			
Current customers			X
New customers			X
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market			
Emerging: There is a growing demand and few offerings are available			X
Mature: The market is already supplied with many products of the type proposed			
13. Market dynamics: is the market ... ? <i>Answer this question only if the answer to the previous question is 'mature'.</i>			
In decline			
Holding steady			
Growing			X
14. Are there other markets for this innovation that the innovators are not yet targeting?			
Yes			
No			X
15. Market competition: How strong is competition in the target market?			
Patchy, no major players			
Established competition but none with a proposition like the one under investigation			X
Several major players with strong competencies, infrastructure and offerings			
16. When do you expect that such innovation could be commercialised (from today)?			
Less than 1 year			
Between 1 and 3 years			X
Between 3 and 5 years			
Between 5 and 10 years			
More than 10 years			
17. Has a trade mark been registered for this innovation?			
Yes			

No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	
Secure, clean and efficient energy	
Smart, green and integrated transport	X
Climate action, environment, resource efficiency and raw materials	X
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	
Not relevant to any Societal Challenge	
If 'not relevant to any SC is selected' explain why?	
[insert explanations]	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	
1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X



SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	X
SDG 12 – Responsible Consumption and Production	
SDG 13 – Climate Action	
SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
[insert explanations]	
20. Does this innovation have a potential to address climate mitigation or climate adaptation?	
<i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i>	
<i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i>	
Mitigation potential	X
Not applicable for this innovation	
Adaptation potential	
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
Cooperative systems alike services have shown that an almost two digits % savings in energy could be addressed. Another finding is that dynamics in vehicle movement has a factor 7 higher impact on pollution than the overall average volume or speed. Thus working with this information has a high potential.	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	
no such calculation was used; data taken from CCAM (EU C-ITS platform) services and internal / partner studies on pollution / emission impact from engines.	

Innovation 13

INNOVATION 1
1. Title of the innovation
SeaFront - Synthetic Dataset for Visual Container Inspection

2. Description of the innovation	
<p>In the context of shipping containers analysis there are several visual appearances that are necessary to reproduce. In this dataset we tackle the possible damages that the container might have during the shipment, the detection of IMDG labels, text recognition and a door/no door classification. In order to tackle these issues an automatic synthetic image generation system has been created. As a result, a database with automatically labeled images is obtained. The objective of this tagged database is to help research train models that are able to learn the location and typology of the different damages that may be in a container. We provide publicly a dataset generated with almost 10000 images for training and validation and another 2480 for testing, in order to provide open and free data that is scarce in this field.</p>	
3. This innovation is ...	
Under development	
Already developed but not yet being exploited	
Being exploited	X
4. Characterise the type of innovation	
Significantly improved product	
Significantly improved service (except consulting services)	
Significantly improved process	X
Significantly improved marketing method	
Significantly improved organisational method	
Consulting services	
New product	
New service (except consulting services)	
New process	
New marketing method	
New organisational method	
Other	
5. Level of Innovation: What is the level of innovation?	
Some distinct, probably minor, improvements over existing products	X
Innovative but could be difficult to convert customers	
Obviously innovative and easily appreciated advantages to customer	
Very innovative	
6. How will the innovation be exploited?	
Introduced as new to the market (commercial exploitation)	
Only deployed as new to the organisation/company (new internal processes implemented, etc.)	X



No exploitation planned				
If 'no exploitation planned' is selected, explain why not:				
[insert explanations]				
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market				
<i>Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.</i>				
	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				X
A partner's research team and business units are both engaged in activities relating to this innovation	X			
Market study			X	
Prototyping in laboratory environment	X			
Prototyping in real world environment	X			
Pilot, Demonstration or Testing activities	X			
Feasibility study				X
Launch a start-up or spin-off				X
Licensing the innovation to a 3rd party			X	
Complying with existing standards	X			
Contribution to standards			X	
Raise capital				X
Raise funding from public sources		X		
Business Plan				X
Other (please specify)				
If 'Other' is selected, please specify what other steps have been done or planned for this innovation:				
[insert explanations]				
8. Is there a clear 'owner' of the innovation in the consortium or multiple owners?				
<i>Only for multi-beneficiary projects</i>				
One clear owner				X
Multiple owners				
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.				

VICOMTECH			
[insert organisation 2]			
[insert organisation 3]			
10. Indicate these organisations' needs to fulfil their market potential			
	Organisation 1	Organisation 2	Organisation 3
Investor readiness training			
Investor introductions			
Biz plan development			
Expanding to more markets	X		
Legal advice (IPR or other)	X		
Mentoring or Coaching			
Partnership with other SME(s)	X		
Partnership with large corporates	X		
Incubation/Startup accelerator			
Executive Training			
Other			
11. For the private company/companies chosen as one of the 3 'key innovators', will this innovation will be used by mainly current or new customers?			
Current customers			X
New customers			
12. Market maturity: The market targeted by this innovation is ...			
The market is not yet existing and it is not yet clear that the innovation has potential to create a new market			
Market-creating: The market is not yet existing but the innovation has clear potential to create a new market			
Emerging: There is a growing demand and few offerings are available			
Mature: The market is already supplied with many products of the type proposed			X
13. Market dynamics: is the market ... ?			
<i>Answer this question only if the answer to the previous question is 'mature'.</i>			
In decline			
Holding steady			
Growing			X

14. Are there other markets for this innovation that the innovators are not yet targeting?	
Yes	
No	X
15. Market competition: How strong is competition in the target market?	
Patchy, no major players	
Established competition but none with a proposition like the one under investigation	
Several major players with strong competencies, infrastructure and offerings	X
16. When do you expect that such innovation could be commercialised (from today)?	
Less than 1 year	X
Between 1 and 3 years	
Between 3 and 5 years	
Between 5 and 10 years	
More than 10 years	
17. Has a trade mark been registered for this innovation?	
Yes	
No	X
18. Which of the Societal Challenge(s) is/are the innovation relevant to?	
Health, demographic change and wellbeing	
Food security, sustainable agriculture, marine and maritime, Bioeconomy	
Secure, clean and efficient energy	
Smart, green and integrated transport	
Climate action, environment, resource efficiency and raw materials	
Europe in a changing world - inclusive, innovative and reflective societies	
Secure societies - protecting freedom and security of Europe and its citizens	X
Not relevant to any Societal Challenge	
If 'not relevant to any SC is selected' explain why?	
[insert explanations]	
19. Which of the UN Sustainable Development Goals (SDGs) does this innovation contribute to?	
SDG 1 – No Poverty	

1.1 – By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	
1.2 – By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.3 – Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	
1.4 – By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinancing	
1.5 – By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme.	
SDG 2 – Zero Hunger	
SDG 3 – Good Health and Well-being	
SDG 4 – Quality Education	
SDG 5 – Gender Equality	
SDG 6 – Clean Water and Sanitation	
SDG 7 – Affordable and Clean Energy	
SDG 8 – Decent Work and Economic Growth	
SDG 9 – Industry, Innovation, and Infrastructure	X
SDG 10 – Reducing Inequity	
SDG 11 – Sustainable Cities and Communities	
SDG 12 – Responsible Consumption and Production	
SDG 13 – Climate Action	
SDG 14 – Life Below Water	
SDG 15 – Life On Land	
SDG 16 – Peace, Justice, and Strong Institutions	
SDG 17 – Partnerships for the Goals	
Not relevant to any SDG	
If 'not relevant to any SDG is selected' explain why?	
[insert explanations]	
<p>20. Does this innovation have a potential to address climate mitigation or climate adaptation?</p> <p><i>Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)</i></p> <p><i>Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change</i></p>	

Mitigation potential	
Not applicable for this innovation	X
Adaptation potential	
If 'Mitigation potential' is selected, what is the estimated climate mitigation impact on this innovation/outcome in MtCO ₂ ? The project should provide this estimate to the expert completing the IR questionnaire as well as details of the calculations / methodology behind it. This question is OPTIONAL.	
[insert explanations]	
If 'Mitigation potential' is selected, please provide an explanation about how the MtCO ₂ estimate was calculated/ the methodology used	
[insert explanations]	

ANNEX 2: LIVING LABS FOREGROUND

Title of IPR	5G enabled Floating Truck Emission Data (FTED)	
IPR Owner	TSYS	
Jointly developed	Yes: CONTI, SWARCO, TEC4U	
Classification	Methodology	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	<p>FTED consists of collecting speed profiles, linking them to the driving reference cycle (WLTP) and measuring the %-deviation relative to the cycle. The methodology is described in detail in the ISO-23795 standard. The fleets are collecting data about carbon emissions as well as information about stop-and-go, acceleration and energy demand of the vehicle.</p> <p>Based on the speed profiles per vehicle, a classification of the trip, congestion and driving behaviour is reported as well as the quantity of additional carbon emissions relative to the standard. Together with the traffic volume known and published by the City of Hamburg, this allows to quantify the emissions of carbon dioxide in each area and road network.</p>	

Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services • Licensing IP rights (out-licensing) • Standardisation activities (new standards/on-going procedures)
Protection plan	Copyright Confidential information
Access Rights	No access rights have been given
Available Support (email, website, info)	N/A

Title of IPR	5G enabled GLOSA	
IPR Owner	TSYS	
Jointly developed	Yes: CONTI, SWARCO, TEC4U	
Classification	Service	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	<p>This result is targeting Green Light Optimum Speed Advisory (GLOSA) using cellular V2X communication exchange transferring “traffic light forecast” to vehicles in motion, once the vehicle and its SIM-ID is registered in the 5G Mobile Edge Infrastructure. The technology gives drivers some advice for best speed choices when crossing intersections using timeframes of “green, yellow and red”. Additionally, GLOSA allows the vehicle to choose speed ranges which help to avoid collisions caused by crossroads, a challenge for any automated vehicle moving in an urban and complex road network.</p>	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services • Standardisation activities (new standards/on-going procedures) 	
Protection plan	Copyright Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	
Title of IPR	5G enabled Collision Warning	

IPR Owner	TSYS	
Jointly developed	Yes: CONTI	
Classification	Service	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	This technology, developed and deployed by Continental and T-Systems in the two projects (NPM + 5G-LOGINNOV) in the context of the 27th ITS Congress in Hamburg, is applied for collision alerts for vulnerable road users approaching the intersection as well as for collision alerts for vehicles platooning. In combination with GLOSA a direct message is sent to the 5G smartphone App via MobileEdge computing ensuring ultra-reliable low latencies possible only in the 5G network	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research 	
Protection plan	Copyright Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

Title of IPR	5G enabled Carbon Emission Trading	
IPR Owner	TSYS	
Jointly developed	Yes: CONTI, SWARCO, TEC4U	
Classification	Service	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A

	Third Owner Intellectual Property Rights:	N/A
Description	The exact measurement of fuel consumption and carbon emissions for net zero airport and port strategies. The base for this is a voluntary commitment for net zero emission strategies by airports and ports which is related to the key challenge of measuring the scope 3 (indirect emissions that occur in a company's value chain) emitting parties involved in the operation of ports and seaports. Here it is reasonable to equip vehicles using the port and hub road infrastructure with the Continental IOT Gateway using the 5G infrastructure for communication and the database. The database allows to exactly determine the amount of carbon emissions caused by the logistics fleets working on the supply chain in the maritime and transport sector.	
Exploitation Potential	<ul style="list-style-type: none"> • Developing and selling own products/services • Cooperation agreement 	
Protection plan	Copyright Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

Title of IPR	Improved private 5G mobile system for use cases in port and logistics domain	
IPR Owner	ININ	
Jointly developed	Yes: CONTI, LK, VICOM, TSLO	
Classification	Knowledge	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	While general solutions usually miss certain specific requirements needed to correctly address business processes, this solution will incorporate specific network and services customizations and adaptations to meet business KPIs required by ports/logistics domain which will be studied and examined throughout the 5G-LOGINNOV project in cooperation of technology and business domain experts.	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and further enhancing own products/services • Cooperation agreement/Joint Ventures 	

Protection plan	<ul style="list-style-type: none"> • Copyright • Confidential information
Access Rights	Access rights for exploitation purposes by 5G-LOGINNOV partners are given under consortium agreement and under fair and reasonable commercial conditions. For the commercial exploitation separate written agreement will be formalised.
Available Support (email, website, info)	<p>info@iinstitute.eu</p> <p>https://www.iinstitute.eu/#ppdrone</p>

Title of IPR	Improved Industrial IoT System for specific needs of the ports and logistics domain	
IPR Owner	ININ	
Jointly developed	Yes: CONTI, LK, VICOM, TSLO	
Classification	Knowledge	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	<p>This technology will ensure secure, resilient and QoS guaranteed 5G connectivity for non-5G IoT devices, e.g., various sensors, cameras, etc., will be improved by several technical innovations. Based on an upgraded HW platform, 5G NSA and SA mode of operation will be supported, cloud-native approach will be introduced for the Industrial IoT System's software components which will allow for automated deployment (either on far-edge, edge or core IaaS, depending on specific requirements), onboarding, scaling, self-healing, etc. cloud-native approach will also result in IaaS's readiness for the orchestration within the 5G ecosystem.</p>	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and further enhancing own products/services • Cooperation agreement/Joint Ventures 	
Protection plan	<ul style="list-style-type: none"> • Copyright • Confidential information 	
Access Rights	Access rights for exploitation purposes by 5G-LOGINNOV partners are given under consortium agreement and under fair and reasonable commercial conditions. For the commercial exploitation separate written agreement will be formalised.	
Available Support (email, website, info)	<p>info@iinstitute.eu</p> <p>https://www.iinstitute.eu/#ppdrone</p>	

Title of IPR	5G IoT Platform in Port operations	
IPR Owner	ICCS	
Jointly developed	Yes: PCT	
Classification	Software	
Related Background	BACK6	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	<p>Design and development of a 5G-IoT platform for enhancing Port operations. It is a technology suite that combines the power of 5G networks along with extreme-edge and cloud computing services and Port infrastructure elements, for efficient delivery of AI services to support logistics and safety and security applications. It leverages the high-speed, low-latency, and reliable connectivity provided by 5G networks to enable seamless communication and data transfer between 5G enabled devices (5G-Trucks, 5G-Cranes, 5G-IoT nodes) deployed within a Port environment.</p>	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and further enhancing own products/services • Cooperation agreement/Joint Ventures 	
Protection plan	<ul style="list-style-type: none"> • Confidential information 	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

Title of IPR	5G&AI enabled container seal detection for supporting logistics process	
IPR Owner	ICCS	
Jointly developed	Yes: PCT	
Classification	Service	
Related Background	BACK7	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A

	Third Owner Intellectual Property Rights: N/A
Description	Development of a 5G&AI-enabled video analytics service for detecting container seals at the loading/unloading phase of vessels. This service exploits the 5G-IoT platform that is explained in A1.
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and further enhancing own products/services • Cooperation agreement/Joint Ventures
Protection plan	<ul style="list-style-type: none"> • Confidential information
Access Rights	No access rights have been given
Available Support (email, website, info)	N/A

Title of IPR	5G&AI enabled human presence detection to support safety/security operations	
IPR Owner	ICCS	
Jointly developed	Yes: PCT	
Classification	Service	
Related Background	BACK7	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	Development of a 5G&AI-enabled human presence detection service at specified areas within the port premises (from mobile or fixed IoT devices.). This service exploits the 5G-IoT platform that is explained in A1.	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and further enhancing own products/services • Cooperation agreement/Joint Ventures 	
Protection plan	<ul style="list-style-type: none"> • Confidential information 	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	
Title of IPR	5G Truck Fleet Management Platform	
IPR Owner	VFI	

Jointly developed	No	
Classification	Software	
Related Background	BACK12	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	The platform is based on commercial products: Oracle Services (DB, DataGrid, Service BUS), Google Maps API, Live Kit, Microsoft Web Servers, AmCharts. The platform is a Software As Service.
	Identification of Open Source Software and Licensor:	For the development / trial of Athen LL we upgraded the platform with LiveKit Open Source version, mobile application built on Google Flutter.
	Identification of commercial hardware:	Mobile devices for tracking.
	Third Owner Intellectual Property Rights:	N/A
Description	Design and implementation of the 5G-IoT platform including software and hardware components	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and further enhancing own products/services • Cooperation agreement/Joint Ventures 	
Protection plan	<ul style="list-style-type: none"> • Trade mark 	
Access Rights	No access rights have been given	
Available Support (email, website, info)	info@vodafoneinnovus.com	

ANNEX 3: INDIVIDUAL FOREGROUND

ERTICO

Title of IPR	Strengthening of the ERTICO Start-ups Initiative	
IPR Owner	ERTICO	
Jointly developed	No	
Classification	Knowledge	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	Not applicable
	Identification of Open Source Software and Licensor:	Not applicable
	Identification of commercial hardware:	Not applicable

	Third Owner Intellectual Property Rights:	Not applicable
Description	The 5G-LOGINNOV start-ups and other new actors met during the project can potentially become part of the ERTICO start-up initiative. The Transport and Logistics roadmap will be impacted by project results.	
Exploitation Potential	<ul style="list-style-type: none"> • Use in other projects 	
Protection plan	<ul style="list-style-type: none"> • Confidential information 	
Access Rights	Access to this network has been given in the scope of 5G-LOGINNOV	
Available Support (email, website, info)	www.ertico.org	

AKKODIS

Title of IPR	Updates of AKKODIS data collection tools	
IPR Owner	AKKODIS	
Jointly developed	No	
Classification		
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	CTS: A Web-based application based on a 3-tier architecture for management of test data records (Centralised Testdata System – CTS) was developed in the AUTOPILOT project. In 5G-LOGINNOV this tool will be upgraded.	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services • Standardisation activities (new standards/on-going procedures) 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

Title of IPR	Expansion of the Docks the Future Network of Excellence	
IPR Owner	CIRCLE	
Jointly developed	Yes: ERTICO, OPNE CALLS, ICCS, ININ, TLSO, TSYS, VODAFONE	
Classification	Service	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	Not applicable
	Identification of Open Source Software and Licensor:	Not applicable
	Identification of commercial hardware:	Not applicable
	Third Owner Intellectual Property Rights:	Not applicable
Description	Development of a specific section of the Docks the Future Network of Excellence web site (www.docksthefuture.eu) dedicated to both the submission of company profiles and applications by innovative technological providers and the publication of the strategic needs for innovative services by Ports and Logistics players (members of the Docks the Future Network of Excellence).	
Exploitation Potential	<ul style="list-style-type: none"> • Developing and selling own products/services • Cooperation agreement/Joint Ventures • Affiliation 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

CONTI

Title of IPR	Use of 5G telematics products in logistics sector	
IPR Owner	CONTI	
Jointly developed	No	
Classification	Testing / Validating	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A

	Third Owner Intellectual Property Rights: N/A
Description	Use of 5G telematics products in logistics sector to optimise the driving patterns through the collection of real time data
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services
Protection plan	<ul style="list-style-type: none"> • Copyright • Confidential information
Access Rights	No access rights have been given
Available Support (email, website, info)	N/A

Title of IPR	Understanding of the outcome of the application of 5G Telematics products in various network conditions	
IPR Owner	CONTI	
Jointly developed	No	
Classification	Knowledge	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	Not applicable
	Identification of Open Source Software and Licensor:	Not applicable
	Identification of commercial hardware:	Not applicable
	Third Owner Intellectual Property Rights:	Not applicable
Description	Findings and lessons learnt from the usage of CONTINENTAL's telematics products in various network conditions	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services 	
Protection plan	<ul style="list-style-type: none"> • Copyright • Confidential information 	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

ICCS

Title of IPR	Acquisition of further expertise and know-how in the field of 5G, IoT and relevant ecosystem technologies in logistics and ports domain
IPR Owner	ICCS
Jointly developed	No
Classification	Knowledge

Related Background	BACK6	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	Not applicable
	Identification of Open Source Software and Licensor:	Not applicable
	Identification of commercial hardware:	Not applicable
	Third Owner Intellectual Property Rights:	Not applicable
Description	Increased know-how in the design and implementation of the 5G-IoT platform including software and hardware components, and relevant ecosystem technologies	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and further enhancing own products/services 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

Title of IPR	Research and Development on Computer Vision Analytics Services	
IPR Owner	ICCS	
Jointly developed	No	
Classification	Service	
Related Background	BACK6, BACK7	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	Software: ultralytics/yolov5, License: GNU Affero General Public License v3.0 (link)
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	Know how in computer vision analytics/ML applications tailored (but not limited) to ports and logistics.	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and further enhancing own products/services 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

ICOOR

Title of IPR	Customised GUEST Methodology	
IPR Owner	ICOOR	
Jointly developed	No	
Classification	Method / Methodology	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	Not applicable
	Identification of Open Source Software and Licensor:	Not applicable
	Identification of commercial hardware:	Not applicable
	Third Owner Intellectual Property Rights:	Not applicable
Description	The GUEST methodology has been customised according to the development of innovative solutions, products, and services in the project LLs.	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Cooperation agreement/Joint Ventures 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

ININ

Title of IPR	Improvements of Private 5G mobile system	
IPR Owner	ININ	
Jointly developed	No	
Classification	Service	
Related Background	BACK13	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	Yes, but confidential
	Identification of Open Source Software and Licensor:	- Opensource MANO, License: Apache License, Version 2.0

		- Kubernetes, License: Apache License 2.0 - Docker, License: Apache License 2.0 - Helm, License: Apache License 2.0"
	Identification of commercial hardware:	Yes, but confidential
	Third Owner Intellectual Property Rights:	ININ owns the licence, exploitable under certain conditions
Description	Improved private 5G mobile system set up to suit specific needs of the ports/logistics domain	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services • Cooperation agreement/Joint Ventures 	
Protection plan	<ul style="list-style-type: none"> • Copyright • Confidential information 	
Access Rights	Yes: to LK LL partners in the scope of 5G-LOGINNOV	
Available Support (email, website, info)	info@iinstitute.eu	

Title of IPR	Improvements of Industrial 5G IoT System	
IPR Owner	ININ	
Jointly developed	No	
Classification	Service	
Related Background	BACK14	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	- Opensource MANO, License: Apache License, Version 2.0 - Kubernetes, License: Apache License 2.0 - Docker, License: Apache License 2.0 - Helm, License: Apache License 2.0"
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	Industrial grade 5G IoT System product improvements to suit specific needs of the ports/logistics domain	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services • Cooperation agreement/Joint Ventures 	

Protection plan	<ul style="list-style-type: none"> • Copyright • Confidential information
Access Rights	Yes: to LK LL partners in the scope of 5G-LOGINNOV
Available Support (email, website, info)	info@iinstitute.eu

Title of IPR	Improvements of Quality assurance services for 5G networks and cloud-infrastructure designed for ports and industry 4.0 environment	
IPR Owner	ININ	
Jointly developed	No	
Classification	Service	
Related Background	BACK15	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	<ul style="list-style-type: none"> - Opensource MANO, License: Apache License, Version 2.0 - Kubernetes, License: Apache License 2.0 - Docker, License: Apache License 2.0 - Helm, License: Apache License 2.0"
	Identification of commercial hardware:	Yes, but confidential
	Third Owner Intellectual Property Rights:	N/A
Description	Quality assurance services improvements to better suit specific needs of the ports/logistics domain	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services • Cooperation agreement/Joint Ventures 	
Protection plan	<ul style="list-style-type: none"> • Copyright • Confidential information 	
Access Rights	Yes: to LK LL partners in the scope of 5G-LOGINNOV	
Available Support (email, website, info)	info@iinstitute.eu	

LUKA KOPER

Title of IPR	Collaboration Model for implementing 5G-enabled technologies.
IPR Owner	LK
Jointly developed	No
Classification	Knowledge
Related Background	No

Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	Not applicable
	Identification of Open Source Software and Licensor:	Not applicable
	Identification of commercial hardware:	Not applicable
	Third Owner Intellectual Property Rights:	Not applicable
Description	Partnership establishment with key industry stakeholders for the implementation and sustainability of solutions and further collaboration in future research/technical initiatives in Greece and beyond	
Exploitation Potential	<ul style="list-style-type: none"> • Use for future projects 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

PCT

Title of IPR	Computer Vision Service for Daily Port Operations	
IPR Owner	PCT	
Jointly developed	No	
Classification	Service	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	Implementation of a new service in the port area, based on Computer Vision	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing own products/services • Cooperation agreement/Joint Ventures 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

SWARCO

Title of IPR	Standardised version of data format for traffic light forecast	
IPR Owner	SWARCO	
Jointly developed	No	
Classification	Inference Engine / Knowledge Base / Expert system (AI)	
Related Background	BACK17	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	The status of the traffic light and the prediction is made accessible to external applications thanks to this standardised data format.	
Exploitation Potential	<ul style="list-style-type: none"> Developing and selling own products/services 	
Protection plan	Sold an installed as compiled software	
Access Rights	On premise installation at paying customer, e.g various cities	
Available Support (email, website, info)	Email, personal	

Title of IPR	Mechanism to enable cities' traffic management to work with emission data originating from vehicles	
IPR Owner	SWARCO	
Jointly developed	Yes: TSYS	
Classification	Service	
Related Background	BACK18	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	Method to receive emission data from probe vehicles and combine it with other sensor data to derive a traffic management strategy	

Exploitation Potential	<ul style="list-style-type: none"> Developing and selling own products/services Cooperation agreement
Protection plan	Sold an installed as compiled software
Access Rights	No access rights have been given
Available Support (email, website, info)	Email, personal

TEC4U

Title of IPR	Extension of the Entruck model	
IPR Owner	TEC4U	
Jointly developed	No	
Classification	Hardware	
Related Background	BACK19	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	The Entruck model is enriched with FTED and LCMM functions, and it is aligned with ISO-23795 standards	
Exploitation Potential	<ul style="list-style-type: none"> Cooperation agreement / Joiny Venture with T-SYS 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

TSLO

Title of IPR	Improvements of Public 5G mobile network
IPR Owner	TSLO
Jointly developed	Yes: ININ
Classification	Service

Related Background	BACK20
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:
	Identification of Open Source Software and Licensor:
	Identification of commercial hardware:
	Third Owner Intellectual Property Rights:
Description	Improved and tailored public 5G mobile network to address specific needs of the ports and logistic industry vertical.
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services • Cooperation agreement/Joint Ventures
Protection plan	<ul style="list-style-type: none"> • Copyright
Access Rights	No access rights have been given
Available Support (email, website, info)	N/A

Title of IPR	New business models for campus 5G networks
IPR Owner	TSLO
Jointly developed	No
Classification	Knowledge
Related Background	No
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:
	Identification of Open Source Software and Licensor:
	Identification of commercial hardware:
	Third Owner Intellectual Property Rights:
Description	The Koper Living Labs will serve as reference business model to investigate and shape the future of the vertical with 5G network technologies.
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services • Cooperation agreement/Joint Ventures
Protection plan	<ul style="list-style-type: none"> • Copyright

Access Rights	No access rights have been given
Available Support (email, website, info)	N/A

Title of IPR	Gaining further expertise in the field of 5G networks, logistics and transport industrial vertical	
IPR Owner	TSLO	
Jointly developed	No	
Classification	Knowledge	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	Know-how in designing and implementation of the 5G network and IoT with edge (MEC) capabilities for campus networks, such as ports and logistics.	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing and selling own products/services • Cooperation agreement/Joint Ventures 	
Protection plan	<ul style="list-style-type: none"> • Copyright • Confidential information 	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

TSYS

Title of IPR	Upgraded version of the Low Carbon Mobility Management (LCMM)
IPR Owner	TSYS
Jointly developed	Yes: CONTI, TEC4U
Classification	Service
Related Background	BACK11

Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	
	Identification of Open Source Software and Licensor:	
	Identification of commercial hardware:	
	Third Owner Intellectual Property Rights:	
Description	The LCMM is enriched with FTED and GLOSA functionalities and it is aligned with ISO-23795 standards	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Licensing IP rights (out-licensing) • Standardisation activities (new standards/on-going procedures) 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

Title of IPR	5G Cloud based IOT Gateway for Logistics Corridor Management and CO2 reduction	
IPR Owner	TSYS	
Jointly developed	Yes: CONTI, TEC4U	
Classification	Service	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	The Continental IOT Gateway uses 5G for communicating commercial vehicle telematics on Big Data level	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Licensing IP rights (out-licensing) • Standardisation activities (new standards/on-going procedures) 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

Title of IPR	5G enabled City-Logistics and eXtended BRT for C-I.T.S. Emission Trading (CDM)	
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IPR Owner	TSYS	
Jointly developed	No	
Classification	Service	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	CDM project development based on UNFCCC project implementation regulation for transportation projects in the area of extended BRT und taxi-fleets	
Exploitation Potential	<ul style="list-style-type: none"> • Developing and selling own products/services • Cooperation agreement 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

VICOM

Title of IPR	Knowledge gain in AI/ML applied to logistics	
IPR Owner	VICOM	
Jointly developed	No	
Classification	Knowledge	
Related Background	BACK10	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	Not applicable
	Identification of Open Source Software and Licensor:	Not applicable
	Identification of commercial hardware:	Not applicable
	Third Owner Intellectual Property Rights:	Not applicable
Description	Know-how in computer vision analytics/ML applications tailored (but not limited) to ports and logistics	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Developing own SDKs • Licensing IP rights (out-licensing) 	

Protection plan	Include in the existing SKD (Viulib)
Access Rights	No access rights have been given
Available Support (email, website, info)	N/A

Title of IPR	SeaFront – Synthetic Dataset For Visual Container Inspection	
IPR Owner	VICOM	
Jointly developed	No	
Classification	Dataset	
Related Background	No	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	Blender, OpenCV
	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	Synthetic datasets tailored for training deep-learning models designed for cargo-container inspection processes	
Exploitation Potential	<ul style="list-style-type: none"> • Use for further research • Licensing/Open source 	
Protection plan	<ul style="list-style-type: none"> • Copyright 	
Access Rights	SeaFront has been already published and available for the scientific community, not for commercial purposes	
Available Support (email, website, info)	https://datasets.vicomtech.org/di21-seafront/readme.txt	

VFI

Title of IPR	Upgrade of the Vodafone Innovus IoT Platform with ML capabilities on 5G enabled edge devices,	
IPR Owner	VFI	
Jointly developed	No	
Classification	Software	
Related Background	BACK12	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	N/A
	Identification of Open Source Software and Licensor:	N/A

	Identification of commercial hardware:	N/A
	Third Owner Intellectual Property Rights:	N/A
Description	Upgrade and implementation of the 5G-IoT platform including software and hardware components	
Exploitation Potential	<ul style="list-style-type: none"> • Developing products and services • Cooperation agreement/Joint Ventures 	
Protection plan	Confidential information	
Access Rights	No access rights have been given	
Available Support (email, website, info)	N/A	

