5GMOBIX

5G for cooperative & connected automated MOBIlity on X-border corridors

Innovation Management Report

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Control sheet

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Legal disclaimer

Table of contents

List of figures

List of tables

ABBREVIATIONS

Abbreviation	Definition
CBC	Cross Border Corridor
CAM	Connected and Automated Mobility
CDF	Common Data Format
CPM	Converged IP Messaging
DoA	Description of Action
E2E	End to End
EC	European Commission
GA	General Assembly
HRP	Horizon Result Platform
MCPI	Market Creating Potential Indicator
MEC	Multi-access Edge Computing
OBU	On Board Unit
PLMN	Public Land Mobile Network
RSU	Road-Side Unit
RWW	Real-Win-Worth
SAE	Society of Automotive Engineers
TS	Trial Site
TSL	Trial Site Leader
V2X	Vehicle-to-Everything
WP	Work Package
WPL	Work Package Leader
X-border	Cross-border

EXECUTIVE SUMMARY

The present document is the deliverable D1.5 – Innovation Management Report, which is prepared under the Task 1.3 – Innovation Management within Work Package 1 – Project Coordination.

Funded under the European Union's Horizon 2020 Framework Programme, the aim of 5G-MOBIX is to execute Connected and Automated Mobility (CAM) trials along cross-border and urban corridors using 5G core technological innovations to qualify the 5G infrastructure and evaluate its benefits in the CAM context as well as to define deployment scenarios and to identify and respond to standardisation and spectrum gaps. In the duration of the project, 5G-MOBIX demonstrated the potential of different 5G features on real European roads and highways and created and used sustainable business models to develop 5G corridors. 5G-MOBIX also utilized and upgraded existing key assets (infrastructure, vehicles, components) and the smooth operation and co-existence of 5G within a heterogeneous environment comprised of multiple incumbent technologies such as ITS-G5 and C-V2X.

Task 1.3 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 D1.3 Innovation Management plan, the consortium has been able to identify 23 innovations. Among these 23 innovations, 15 have been uploaded in the Innovation Radar Portal[1] and 6 have been highlighted due to their market potential:

- 5G Platooning, Infrastructure Based Truck Routing.
- 5G based retrofitting of legacy non-connected vehicles.
- Public transport with 5G based HD media services and provision of HD-map as traffic sensor.
- Intelligent Remote Monitoring and Inspection for Logistics & Customs Operations.
- 3D see through functionality to neighbour vehicles.
- Tools and methodologies for the validation of seamless cross-border connectivity.

Section 3.3 of this document provides details of these innovations (i.e., the innovation title, the owners of the innovation and the related Key Exploitable Results associated to the innovations) and the subsections expands the information of the 6 most notable innovations achieved within 5G MOBIX Additionally,

[1] Accessible at https://www.innoradar.eu/resultbykeyword/5g-mobix

deliverables *D7.5 Report on Exploitation Results* and *D5.3 Report on impact assessment and cost-benefit analysis* expands the information about innovation and market potential of 5G-MOBIX solutions. While D5.3 analyses the innovation ecosystem, aiming to assess ecosystem perspectives, contributing to innovation activities and advances towards future business in 5G for CAM, D7.5 reports on the exploitation results of the project and provides insights about the market potential of the following innovations.

Moreover, Section 3 also provides an overview on how these innovations are aligned with different strategies and roadmaps regarding 5G and CAM, such as the EU Mobility Strategy, the 5G Action Plan and the 6G-IA 5G for CAM Working Group White Paper, From 5G to 6G Vision, among others. 5G-MOBIX has supported the establishment of a pan-EU network of 5G cross-border corridors with the deployment of 2 CBCs and 4 European trials sites. In this infrastructure, the consortium has performed a large number of trials at the CBCs and trial sites testing the effectiveness of different technological solutions and demonstrating the benefit of 5G for CAM applications. In addition, thanks to all these trials it has been possible to compile a series of recommendations providing very valuable information to advance in the standardisation process (this is one of the key actions of the 5G Action Plan).

Not only this, but 5G-MOBIX contributes extensively to overcoming the major challenges that exist to deploy CAM applications enabled by 5G technology, as presented in the 5GPPP White Paper "5G Trials for Cooperative, Connected and Automated Mobility along European 5G Cross-Border Corridors - Challenges and Opportunities". The high number of innovations that resulted from the work conducted in this project demonstrates the innovation capacity of the project and the consortium's commitment to advancing CAM research. This deliverable includes the innovation management strategy, the obtained results and contributions to different CAM strategies and roadmaps. Innovation management activities are managed by VICOM, Task 1.3 leader, in close collaboration with the Project Coordinator (ERTICO).

1. INTRODUCTION

1.1. 5G-MOBIX concept and approach

5G-MOBIX aimed to showcase the added value of 5G technology for advanced Connected and Automated Mobility (CAM) use cases and validate the viability of the technology to bring automated driving to the next level of vehicle automation (SAE L4 and above). To do this, 5G-MOBIX demonstrated the potential of different 5G features on real European roads and highways and created and used sustainable business models to develop 5G corridors. 5G-MOBIX also utilized and upgraded existing key assets (infrastructure, vehicles, components) and the smooth operation and co-existence of 5G within a heterogeneous environment comprised of multiple incumbent technologies such as ITS-G5 and C-V2X.

5G-MOBIX has executed CAM trials along cross-border (x-border) and urban corridors using 5G core technological innovations to qualify the 5G infrastructure and evaluate its benefits in the CAM context. The Project has also defined deployment scenarios and identified and responded to standardisation and spectrum gaps.

5G-MOBIX first defined critical scenarios needing advanced connectivity provided by 5G, and the required features to enable some advanced CAM use cases. The matching of these advanced CAM use cases and the expected benefits of 5G were tested during trials on 5G corridors in different EU countries as well as in Turkey, China and Korea.

The trials also allowed 5G-MOBIX to conduct evaluations and impact assessments and to define business impacts and cost/benefit analysis. As a result of these evaluations and international consultations with the public and industry stakeholders, 5G-MOBIX identified new business opportunities for the 5G enabled CAM and proposed recommendations and options for its deployment.

Through its findings on technical requirements and operational conditions 5G-MOBIX is expected to actively contribute to standardisation and spectrum allocation activities.

1.2. Purpose of the deliverable

The aim of this deliverable is to present the progress on innovation made by the 5G-MOBIX consortium in terms of the initial plan. For this aim, the document is organised as follows:

- **Section 1 – Introduction** briefly presents 5G-MOBIX and describes the purpose of the document and its intended audience.
- **Section 2 – Innovation process** presents the main activities of innovation in the context of 5G-MOBIX project.

- **Section 3 – Innovation Management in 5G-MOBIX** describes the overall framework with regards to innovation in 5G-MOBIX. It also presents the 20 main innovations that have been identified and how these innovations contribute to several CAM strategies and roadmaps.
- **Section 4 – IPR Management** presents the identified IPR results, both background and foreground.
- **Section 5 – Conclusion** summarises the main outcomes of this deliverable.

1.3. Intended audience

This deliverable is disseminated both internally within the project consortium and externally to any interested parties outside the project. The dissemination level of D1.5. is public (PU) and not limited to members of the Consortium. The deliverable will be uploaded in the project website, making it available for anyone interested in its content.

2. INNOVATION PROCESS

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

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

The innovation process is further described in *D1.3 Innovation Management Plan*.

3. INNOVATION MANAGEMENT IN 5G-MOBIX

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 which also generate requirements for the further development of technology. Some of the activities will be done in liaison with the Exploitation Management tasks, due to the synergies between the two. As part of the 5G-MOBIX management structure, the Innovation Manager reports to the TMT and also provides guidance to the Consortium 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-MOBIX. Therefore, D7.4 Initial exploitation Strategy and Plan (M14 – VICOM) and D7.5 Report on the exploitation results (M46 – VICOM) are directly related and represent an output of the innovation management plan introduced in deliverable D1.3.

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-MOBIX 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-MOBIX Innovation Management Plan: it was initially submitted in month 6 of the project and has been 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-MOBIX consortium.

- Each partner has been responsible to update the rest of the consortium when they were aware of events affecting the Innovation Management of the Project,
- A slot of the General Assemblies and TMT meetings has been dedicated to the analysis of the Innovation Management Plan throughout the running of the project,
- Given the context of a non-identified and unexpected threat emerges, the Innovation Manager was mandated to call for a meeting with the Consortium Members in order to jointly determine the next steps. This was not needed.

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 D1.3.

Moreover, with the objective of better analysing innovations, the areas of innovation presented in *D1.3 Innovation Management Plan* (that are defined in 3GPP TS 22.186 R16) have been used to classify innovations. The areas of innovation are as follows: Advanced Driving; Vehicles Platooning; Extended Sensors; Remote Driving; and Vehicle Quality of Service support. The innovations identified and assessed in 5G-MOBIX intend to demonstrate how 5G technology can improve V2X scenarios, especially in cross-border environments. Hence, even if the innovation areas do not mention 5G as such, all areas are related to it as 5G communication technology is the backbone that enables advancing and deploying all the use cases identified within 5G MOBIX.

3.3. Results

5G-MOBIX consortium identified 23 innovations throughout the life of the project. Among the 23 innovations, 15 have been uploaded in the innovation radar portal and 6 have been highlighted due to their market potential. The following table summarizes the most relevant innovations. The full list of innovations can be found in Annex 1 and Annex 2 collects the Innovation Radar Questionnaire responses.

The following table summarizes the key details of the most relevant innovations, i.e. the innovation title, the owners of the innovation and the related Key Exploitable Results associated to the innovations. More information on KERs can be found in *D7.5 Report on Exploitation Results*.

Table 1: Main innovations in 5G-MOBIX

Innovation title	Innovators	Related KERs
5G Platooning, Infrastructure Based Truck Routing	FORD OTOMAN ERICSSON TURKEY TURKCELL COSMOTE TUBITAK IMEC	FORD1 ERICSTR1 TUBITAK1 IMEC1 IMEC2
5G based retrofitting of legacy non-connected vehicles	IT ATOBE	IT1 IT2 ATOBE1
Public transport with 5G based HD media services and provision of HD-map as traffic sensor	CTAG ALSA	CTAG2 CTAG4 ALSA1
Intelligent Remote Monitoring and Inspection for Logistics & Customs Operations	WINGS	WINGS1
3D see through functionality to neighbour vehicles	VICOM VALEODE	VALEO1 VICOM2 VICOM3
Tools and methodologies for the validation of seamless cross-border connectivity	UMU WP3 WP5	KER1 KER2 UMU1

As mentioned, 15 innovations have been submitted to the Innovation Radar Portal. The Innovation Radar (IR)[2] is a European Commission initiative to collect structured data about the innovation profile of our EU funded projects and their outputs. The goal of this is to identify high-potential innovators and innovations and their specific 'go to market' needs ultimately encourage and support innovators in getting their innovations 'out of the lab' and into (or at least closer to) the market. It also aims at making information about EU-funded innovations from high-quality projects visible and accessible to the public via the Innovation Radar platform. To achieve this objectives, the IR classifies different dimensions of each innovation. These dimensions are as follows:

- Maturity: to capture the different maturity levels of innovations towards commercialisation, four innovation categories have been created (Market ready, Tech ready, Business ready and Exploring).

[2] More information about 5G-MOBIX innovations at https://www.innoradar.eu/resultbykeyword/5g-mobix

- Market needs: present the needs that, if addressed, can increase the chances this innovation gets to (or closer to) the market.
- Market creating potential indicator (MCPI): this is an indicator system that automatically categorizes innovations in terms of disruptive potential (from 'low' to 'very high')
- Women-led: this indicates if a woman had a leadership role in developing the innovation in at least one of the involved organisations.

Following these classifications, the following table presents the overview of the 15 innovations that have been registered.

Table 2: Classification of 5G-MOBIX innovations

Category		Number of innovations in 5G-MOBIX
Maturity	Market ready	1
	Tech ready	8
	Exploring	6
Market needs	Prepared for Market entry	13
	Need to secure capital	8
	Need to scale-up market opportunities	8
(MCPI)	Noteworthy	1
Women-led	Women-led innovations	3

These innovations have also been classified on the basis of the areas of innovation presented in *D1.3 Innovation Management Plan*, which in turn are defined in 3GPP TS 22.186 R16. As presented in the following figures, the 23 innovations identified in 5G-MOBIX are classified as follows: 50% of innovations are related to the area of Extended Sensors; 15% are related to Vehicle quality of service support area; 10% fall behind the area of Advance Driving; 5% are related to Remote Driving; and 5% are related to Vehicles Platooning. There is also a 15% of the innovations that are specifically related to 5G-MOBIX and have been classified as Other.

The following figures show the maturity and areas of innovations in 5G-MOBIX:

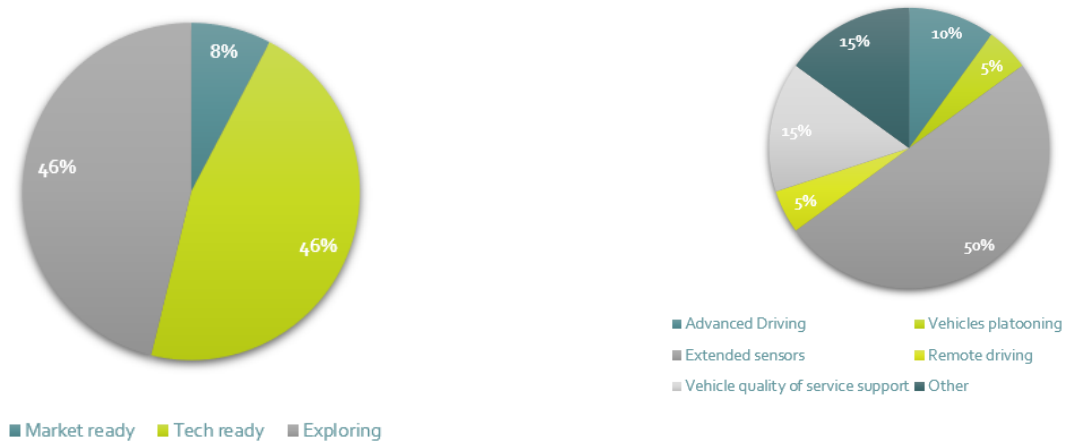

Figure 1: Maturity of Innovations in 5G-MOBIX; Area of Innovations in 5G-MOBIX

The sections below provide further information of the 6 most notable innovations achieved within 5G MOBIX. Some categories are dependent on questionnaires being submitted to the Innovation Radar Portal (e.g., market maturity and market creation potential), so those innovations that have not yet been uploaded do not present details on these categories. The Innovation Radar Questionnaire has been sent to the whole consortium after each reporting period and a total of 23 responses have been gathered from more than 26 partners. The complete answers to the Innovation Radar Questionnaire can be found in Annex 1 of this document.

The sections below provide further information of the most relevant innovations identified in 5G-MOBIX. Additionally, deliverables *D7.5 Report on Exploitation Results* and *D5.3 Report on impact assessment and cost-benefit analysis* expands the information about innovation and market potential of 5G-MOBIX solutions. While D5.3 analyses the innovation ecosystem, aiming to assess ecosystem perspectives, contributing to innovation activities and advances towards future business in 5G for CAM, D7.5 reports on the exploitation results of the project and provides insights about the market potential of the following innovations.

3.3.1. 5G Platooning, Infrastructure Based Truck Routing

- Owners: FORD OTOMAN, ERICSSON TURKEY, TURKCEL, COSMOTE, TUBITAK and IMEC
- Description: All platooning studies today, accomplished with short range communications, such as DSRC. Within this project, we studied also 5G based Platooning. Additionally, in customs area, a truck was routed by the cloud computer instead of moving by itself. Perception of vehicle and route decision mechanism were located in cloud. Perception was created with the help of the sensors that are located on the field infrastructure.
- Market maturity: Tech ready
- Market creation potential: N/A
- Go to market needs: prepare for market entry
- Registration in the Innovation Radar Portal: yes

3.3.2. 5G based retrofitting of legacy non-connected vehicles

- Owners: IT and A-TO-BE
- Description: The 5G RSU integrates a camera and a traffic radar for legacy vehicle and VRU detection, being used to forward traffic data to 5G connected vehicles. The role of this 5G RSU is particularly important in safety-critical scenarios and low-visibility areas.

  The 5G OBU plays a key role in retrofitting exiting vehicles with a 5G network connection, to receive important traffic information from the connected vehicles and the road-side infrastructure. It is connected to a smartphone mobile app, providing relevant data to the driver and passengers.
- Market maturity: Exploring
- Market creation potential: N/A
- Go to market needs: Prepare for Market entry and Scale-up market opportunities
- Registration in the Innovation Radar Portal: yes

3.3.3. Public transport with 5G based HD media services and provision of HD-map as traffic sensor

- Owners: CTAG and ALSA
- Description: Taking advantage of 5G for ensuring high quality of bus services, a vehicle with a periodic route is also used as a sensor capturing data from the roads to update HD Maps.
- Market maturity: Exploring
- Market creation potential: N/A
- Go to market needs: Prepare for Market entry, Secure capital and Scale-up market opportunities
- Registration in the Innovation Radar Portal: yes

3.3.4. Intelligent Remote Monitoring and Inspection for Logistics & Customs Operations

- Owner: WINGS
- Description: By utilizing the detailed data provided by the CAM enabled trucks and data from surrounding heterogeneous information sources, increased intelligence can be created based on a cooperative awareness of the borders' environment. The transmission of these data over reliable, ultra-fast and ultra-low latency 5G network connection combined with modern AI and predictive analytics techniques allows for the creation of a virtual environment of the driver enabling various added-value functionalities
- Market maturity: Tech ready
- Market creation potential: Noteworthy
- Go to market needs: secure capital and prepare for market entry
- Registration in the Innovation Radar Portal: yes

3.3.5. 3D see through functionality to neighbour vehicles

- Owners: VICOM and VALEO

- Description: A system composed of four fish-eye cameras located at the front, rear, and side mirrors generates a 3D surround view of the vehicles environment. The surround view can be made available to nearby vehicles via a 5G service, providing see-through functionality for following cars and the possibility to inspect occluded area along the road.
- Market maturity: Tech ready
- Market creation potential: N/A
- Go to market needs: prepare for market entry
- Registration in the Innovation Radar Portal: yes

3.3.6. Tools and methodologies for the validation of seamless cross-border connectivity

- Owners: UMU, partners in WP3 and WP5
- Description: This innovation includes software modules to assure quality of results experiments and compute KPIs, a Common Data Format (CDF) and an evaluation methodology. All together, it allows to know if the cross-border handover has been done properly, which could be very valuable for future tests.
- Market maturity
- Market creating potential
- Go to market needs

3.4. Contributing to CAM strategies

The section above presents the 6 most notable innovations that 5G-MOBIX has identified and evaluated. However, we can find 15 innovations uploaded in the innovation radar portal. Together with the other projects funded under the same topic (ICT-18-2018) we can find a total of 28 innovations related to 5G for cooperative, connected and automated mobility (CCAM)[3]. The number of innovations per project under the ICT-18-2018 can be seen in the following table.

Table 3: Innovations from ICT-18-2018 projects

Topic	Project	EU contribution	Number of innovations
ICT-18-2018	5G-MOBIX	€ 21,410,205.15	15
ICT-18-2018	5GCroCo	€ 12,874,676	8
ICT-18-2018	5G-CARMEN	€ 14,960,887.26	5

The high number of innovations demonstrated that 5G-MOBIX has succeeded in exploiting its high innovation potential. Furthermore, the innovations developed by the consortium are aligned with different

[3] The number of innovations per project is public information and it has been extracted from the Innovation Radar Platform available at https://www.innoradar.eu/

strategies and roadmaps regarding 5G and CAM, such as the EU Mobility Strategy[4], the 5G Action Plan[5] and the 6G-IA 5G for CAM Working Group White Paper, From 5G to 6G Vision[6], among others.

The EU Mobility Strategy sets out a roadmap for putting European transport firmly on the right track for a sustainable and smart future. By 2030, the aim is the deployment of automated mobility at large scale, and by 2050 the multimodal Trans-European Transport Network (TEN-T) equipped for sustainable and smart transport with high-speed connectivity will be operational for the comprehensive network. The Commission has acknowledged the key role played by 5G cross-border corridors in EU Mobility Strategy. Not only this, but 5G corridors also constitute one of the multi-country projects (MCPs) identified in the Digital Decade Strategy and thus represent one of the main strategic investment areas of the Recovery and Resilience Facility[7]. Moreover, in 2017, following a letter of intent signed on the occasion of the Digital Day in Rome and a round table on Connected and Automated Driving (CAD) in Frankfurt, Member States and industry agreed to establish a pan-EU network of 5G cross-border corridors. In this regard, 5G-MOBIX has deployed infrastructure (2 CBCs and 4 European trials sites) that support achieving these objectives. In addition, to make these goals a reality, the strategy identifies a total of 82 initiatives in 10 key areas for action ("flagships"), each with concrete measures.

According to Flagship #7 (Innovation, data and Artificial Intelligence for smarter mobility) the EU needs to ensure the highest level and performance of digital infrastructure, notably through 5G, and further efforts are needed to achieve the objective of uninterrupted coverage across the major transport corridors across Europe with 5G connectivity infrastructure. In this sense, 5G-MOBIX developed a series of innovations (e.g., INNO.9) that support achieving this objective, particularly in cross-border environments. This goes also in line with the 5G Action Plan of the European Commission, that "aims to build momentum for investment in 5G networks and to create new innovative ecosystems".

According to the Action Plan, the EU needs to coordinate and plan on a cross-border basis and avoid incompatible 5G standards emerging in different regions because it would create a significant risk of fragmentation in terms of spectrum availability, service continuity across borders (e.g., connected vehicles) and implementation of standards, delaying the creation of a critical mass for 5G-based innovation in the Digital Single Market. This is specifically addressed in Action 5 of the Action Plan. 5G-MOBIX not only supports this action, but also supports Action 6, which seeks to foster the emergence of digital ecosystems based on 5G connectivity. To this end, the Commission calls for key technology experiments to be planned, including the testing of new terminals and applications through the 5G-PPP, demonstrating the benefit of 5G connectivity for important industrial sectors. The project is fully in line with these two actions because, on the one hand, it has performed a large number of trials at the CBCs and trial sites testing the effectiveness of different technological solutions and demonstrating the benefit of 5G for CAM applications (Action 6),

[4] Available at https://transport.ec.europa.eu/transport-themes/mobility-strategy_en
[5] Available at https://digital-strategy.ec.europa.eu/en/policies/5g-action-plan
[6] Available at https://5g-ppp.eu/white-paper-from-the-6g-ia-5g-for-cam-wg-working-group-from-5g-to-6g_vision/
[7] https://digital-strategy.ec.europa.eu/en/policies/cross-border-corridors

and, on the other hand, thanks to all these trials it has been possible to compile a series of recommendations providing very valuable information to advance in the standardisation process.

Furthermore, 5G-MOBIX addresses the 5 key challenges that needs to be addressed in order to guarantee uninterrupted CAM service provisioning presented in the 5GPPP White Paper "5G Trials for Cooperative, Connected and Automated Mobility along European 5G Cross-Border Corridors - Challenges and Opportunities"[8]. For example, INNO1 and INNO18 address *Challenge 1 Cellular coverage and radio access aspects*; INNO12 and INNO14 address *Challenge 2 Service and Session continuity aspects*; and INNO11 address *Challenge 4 Data management & protection*. Besides technical aspects, there is a number of non-functional, business and regulatory challenges that will also have to be resolved. 5G-MOBIX deals with these issues through the identification of standards and regulations gaps and recommendations. Moreover, *Challenge 4 MNO collaboration & Data Plane routing* is also addressed as different MNOs in the consortium (NOKIASP, NOKIPT and NOS) has collaborated to develop a joint work to deliver an interoperable network solution from a single vendor on both sides of the cross border (this joint result is explained in *D7.5 Report on Exploitation Results*).

In conclusion, 5G-MOBIX contributes extensively to overcoming the major challenges that exist to deploy CAM applications enabled by 5G technology. The high number of innovations demonstrates the innovation capacity of the project and the consortium's commitment to advancing CAM research.

[8] Available at https://5g-ppp.eu/white-paper-5g-trials-for-cooperative-connected-and-automated-mobility-ccam-along-european-cross-border-corridors/

4. IPR MANAGEMENT AND INPUTS TO EXPLOITATION MANAGEMENT

An online tool has been provided to support the identification of Background and Foreground IP, as defined in D1.3. 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-MOBIX.

4.1. Background IPR

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

Table 4: BACK1. 5G UDN implementation executable

Title	5G UDN implementation executable
Organisation	AALTO
Classification	Software
Description	The executable version of Aalto's 5G UDN implementation developed in the Take-5 project.
Conditions and limitations for implementation and exploitation	No

Table 5: BACK2. Container based fog computing platform

Title	Container based fog computing platform
Organisation	AALTO
Classification	Software
Description	The executable version of Aalto's container-based fog computing platform
Conditions and limitations for implementation and exploitation	No

Table 6: BACK3. Orchestration and E2E slicing

Title	Orchestration and E2E slicing
Organisation	AALTO
Classification	Software
Description	The executable version of Aalto's orchestration and E2E slicing

Conditions and limitations for implementation and exploitation	No

Table 7: BACK4. Autonomous Driving Vehicle

Title	Autonomous Driving Vehicle Background IP
Organisation	AI in Motion
Classification	Other (if Other, please specify): ○ Know-How
Description	Connectivity interfaces to/from in-vehicle ECUs, automated driving control functions, sensor hardware and data fusion platform design and architecture, communication hardware design and architecture, all existing software modules enabling perception and localization for autonomous driving functions.
Conditions and limitations for implementation	Royalty-free access right to Background which is only granted to the extent that it is needed for implementation of the Action. Access rights to the Background is limited to the API's.
Conditions and limitations for exploitation	No access rights to background for exploitation granted under the CA. Access rights subject to separate written license agreement.

Table 8: BACK5. Know-how, scalable message brokers, data lakes

Title	Know-how, scalable message brokers, data lakes
Organisation	AKKA
Classification	Other (if Other, please specify): ○ Know-How
Description	• Know-how on industrial software development, quality, usability, scalability and reliability of software architectures • 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: ○ A message collection Module based on RabbitMQ for connection of several tier systems that produce data ○ Interoperability interfaces for connection to a OneM2M compatible system ○ 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.

	• Know-how on the design, development and deployment of a Hadoop Monitoring System (HMS): A data collection system that generates a data lake in order to perform advance queries on Hadoop clusters' Logs (Hadoop, Flume, MongoDb, HDFS). Such HMS contains the following components:
	  ○ A data collection component, based on Flume, that collects server's Logs of a hadoop cluster and converts the data in JSON format before data transfer and storage in HDFS and MongoDB.
	  ○ A data visualization web component that enables logs search and visualization, developed on JavaEE, Spring MVC, Spring Data and Bootstrap technologies.
	• Know-how on the modelling design, development and deployment of platooning functions (cooperative ACC (CACC) system) for automated and connected vehicles in an urban environment including Command laws for various scenarios ensuring stability and safety of the system (e.g. security stop, urgency stop, defining reference trajectory and deviations for follow-up vehicles,..), models for predictive control, string stability, longitudinal and lateral control modelled through simuling and Matlab applications and developed on reference OBUs in C and C++ technologies.
	• Know-how on the design, development and deployment of large tests data management platform based on Java2EE, springboot postgresql and angulat technologies including
	  ○ Parsing, filtering and quality-based selection functions piloted by a task manager module
	  ○ Data enrichment functions leaning on standardised metadata,
	  ○ Data storage modules
	  ○ Data query components providing various web interfaces supporting user & roles management and access
	• Know-how on the design, development and deployment of autonomous electrical vehicles (cars, mobile robots) that include
	  ○ Simultaneous Localisation and Mapping incorporating obstacles tracking, Landmark SLAM, Semantic and Collaborative SLAM with share of data and HD Maps through the Cloud,
	  ○ 3D reconstruction and segmentation (lane reconstruction, Road shape detection, environment objects,
	  ○ Multimodal trajectography and Control (static and dynamic obstacle avoidance)
	  ○ Multimodal control (fleets of cars/robots/drones)
	  ○ Machine Learning and scene understanding

Conditions and limitations for implementation	Access Rights to AKKA's Background is only granted to the extent that is needed for implementation of the action being agreed that limited Access Rights to source code or object code will be granted by AKKA. 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 AKKA.
Conditions and limitations for exploitation	AKKA's Background is not needed by the other Parties for Exploitation of their own Results thus no Access Rights will be granted by AKKA for Exploitation, unless otherwise agreed between the Parties concerned. Considering this, the specific limitations (including third party rights) are not listed in this Attachment. 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. AKKA's listed Background may be used for Exploitation of another Party's Results, subject to the conclusion of a separate license agreement.

Table 9: BACK6. A-to-Be V2X App

Title	A-to-Be V2X App
Organisation	A-TO-BE
Classification	Software
Description	The A-to-Be V2X App is a mobile Application used for HMI interaction with drivers.
Conditions and limitations for implementation	The V2X App shall be evolved and used in the project, but the IPR shall remain with A-to-Be.
Conditions and limitations for exploitation	The V2X App can be explored by A-to-Be after the project and no other partner unless specific permission is expressly granted.

Table 10: BACK7. A-to-Be MOBICS C-ITS Center

Title	A-to-Be MOBICS C-ITS Center
Organisation	A-TO-BE
Classification	Software
Description	MOBICS is A-to-Be's C-ITS Center produced prior to 5G-MOBIX which is receiving some new features to be usable in this project.
Conditions and limitations for implementation	A-to-Be MOBICS will be used by A-to-Be in this project but will not be made available to other partners as it is not necessary.

Conditions and limitations for exploitation	A-to-Be MOBICS can only be exploited by A-to-Be.

Table 11: BACK8. 4G/5G EPC testbed and cloud infrastructure

Title	4G/5G EPC testbed and cloud infrastructure
Organisation	COSMOTE
Classification	Hardware
Description	Available R&D testbed resources to be used if necessary.
Conditions and limitations for implementation	Utilization solely in the context of the 5G-MOBIX project
Conditions and limitations for exploitation	Fully excluded and no Access Rights are granted.

Table 12: BACK9. 4G/5G Spectrum in Greece for experimentation purposes

Title	4G/5G Spectrum in Greece for experimentation purposes
Organisation	COSMOTE
Classification	Other (if Other, please specify): • Spectrum
Description	4G/5G Spectrum in Greece for experimentation purposes
Conditions and limitations for implementation	Utilization solely in the context of the 5G-MOBIX project
Conditions and limitations for exploitation	Fully excluded and no Access Rights are granted.

Table 13: BACK10. All background generated by employees, agents, or representatives of COSMOTE

Title	All background generated by employees, agents, or representatives of COSMOTE
Organisation	COSMOTE
Classification	Other (if Other, please specify): ○ Other non 5G-MOBIX related background
Description	All background generated by employees, agents or representatives of COSMOTE: other than those directly involved in 5G-MOBIX; that are directly involved in 5G-MOBIX, but it is unrelated to the work plan, aims and objectives of 5G-MOBIX; that has been, and/or will be derived outside the

	project, which is covered under specific research agreements and confidentiality agreements and therefore subject to third party rights.
Conditions and limitations for implementation and exploitation	Fully excluded and no Access Rights are granted.

Table 14: BACK11. Commercial and third-party software

Title	Commercial and third-party software
Organisation	COSMOTE
Classification	Software
Description	All commercial and third-party software.
Conditions and limitations for implementation and exploitation	Fully excluded and no Access Rights are granted.

Table 15: BACK12. COSMOTE Commercial Network Subscribers and Employees Personal Data

Title	COSMOTE Commercial Network Subscribers and Employees Personal Data
Organisation	COSMOTE
Classification	Other (if Other, please specify): ○ Dataset (Text / Images/ Sounds/ Voices) - Database Content
Description	Information related to users' personal info, preferences and their generated traffic.
Conditions and limitations for implementation and exploitation	Fully excluded and no Access Rights are granted.

Table 16: BACK13. Materials, results, data, tests and deliverables resulting from other projects of COSMOTE

Title	Materials, results, data, tests, and deliverables resulting from other projects of COSMOTE
Organisation	COSMOTE
Classification	Other (if Other, please specify): ○ Dataset (Text / Images/ Sounds/ Voices) - Database Content
Description	All materials, results, data, tests, and deliverables resulting from other projects of COSMOTE.

Conditions and limitations for implementation and exploitation	Fully excluded and no Access Rights are granted.

Table 17: BACK14. Materials, software, results, data and tests from departments and laboratories of COSMOTE other than the R&D Dept

Title	Materials, software, results, data and tests from departments and laboratories of COSMOTE other than the R&D Dept.
Organisation	COSMOTE
Classification	Other (if Other, please specify): ○ Dataset (Text / Images/ Sounds/ Voices) - Database Content
Description	All materials, software, results, data and tests from departments and laboratories of COSMOTE other than the R&D Dept.
Conditions and limitations for implementation and exploitation	Fully excluded and no Access Rights are granted.

Table 18: BACK15. Raw network data

Title	Raw network data
Organisation	COSMOTE
Classification	Other (if Other, please specify): Dataset (Text / Images/ Sounds/ Voices) - Database Content
Description	COSMOTE raw network data, upon request.
Conditions and limitations for implementation	Data shall be provided in accordance with GDPR regulations for utilization solely in the context of the 5G-MOBIX project. Prior to the provisioning the involved partners shall justify the potential use of the data (e.g. in the form of expected results) while a NDA will follow.
Conditions and limitations for exploitation	Fully excluded and no Access Rights are granted.

Table 19: BACK16. SISCOGA 4D CORRIDOR

Title	SISCOGA 4D CORRIDOR
Organisation	CTAG
Classification	Other (if Other, please specify): ○ Other non 5G-MOBIX related background
Description	SISCOGA4 CCAM is a permanent living-lab for early-stage research and development testing of future autonomous and connected mobility. It

	consists of virtual environments, laboratories, test tracks, and a real road corridor equipped with different communication technologies covering more than 250km of interurban and urban environments. All this makes it one of Europe's leading living-labs for testing autonomous and connected prototypes. Additionally, and connected to the ITS corridor in northern Portugal, the Vigo-Porto corridor is one of the pioneering 5G corridors selected by the European Commission for autonomous and connected driving tests. • Permanent Living-Lab ITS of more than 250km of urban (Vigo, Porriño, Coruña) and interurban (AP9, A52, A55, A6, A8, AP53) roads. • 121 ITS-G5 RSUs in Urban • 41 ITS-G5 RSUs in the interurban corridor • PC5 and 5G coverage • MEC (Mobile Edge Computing) Nodes • Spanish PKI Centre • Connected to the Portuguese C-ITS corridor • Led by CTAG and with the participation of automotive, telecommunications and road infrastructure companies, as well as the Spanish and Galician administrations • 12 Cooperative services and Apps. It is being used in many different prototype validation tasks. Thanks to the technology deployed and connected to vehicles, network, infrastructure and cloud, flexible development and integration of the most advanced V2X solutions and testing with both autonomous and connected vehicles on the real road is possible.
Conditions and limitations for implementation and exploitation	No Access Rights to Background granted.

Table 20: BACK17. Autonomous driving shuttle

Title	Autonomous driving shuttle
Organisation	CTAG
Classification	Other (if Other, please specify): ○ Autonomous vehicle
Description	Autonomous driving vehicle (SW, devices and equipment) for 1 Autonomous shuttle for urban scenarios. Deployment of connectivity interfaces to automated driving functions, hardware development and integration, data fusion, communication protocols and architecture, software, synchronization and positioning.

	HMCU (OBU CTAG) and DGPS development, integration and updated to adjustments and improvements into established developments and protocols for latency reduction (5G). Vehicle sensors equipment: • Objects: Fusion vision + lidar classification • Lines: Fusion vision + lidar classification • Signals: Fusion vision + lidar classification Testing, Verification, validation and evaluation on tracks and real road of cooperative systems and automated driving systems.
Conditions and limitations for implementation and exploitation	No Access Rights to Background granted.

Table 21: BACK18. Autonomous driving vehicle

Title	Autonomous driving vehicle
Organisation	CTAG
Classification	Other (if Other, please specify): ○ Autonomous vehicle
Description	Autonomous driving vehicle (SW, devices and equipment) for 1 Autonomous shuttle for urban scenarios. Deployment of connectivity interfaces to automated driving functions, hardware development and integration, data fusion, communication protocols and architecture, software, synchronization and positioning. HMCU (OBU CTAG) and DGPS development, integration and updated to adjustments and improvements into established developments and protocols for latency reduction (5G). Vehicle sensors equipment: • Objects: Fusion vision + lidar classification • Lines: Fusion vision + lidar classification • Signals: Fusion vision + lidar classification Testing, Verification, validation and evaluation on tracks and real road of cooperative systems and automated driving systems.
Conditions and limitations for implementation and exploitation	No Access Rights to Background granted.

Table 22: BACK19. Cooperative Automated driving functions (vehicles and shuttle)

Title	Cooperative Automated driving functions (vehicles and shuttle)
Organisation	CTAG
Classification	Other (if Other, please specify): ○ Other non 5G-MOBIX related background
Description	Deployment of the main cooperative functions for the autonomous vehicle for the execution of the use cases: • Cooperative Collision Avoidance • Cooperative Automated Emergency braking • Cooperative Adaptive Cruise Control • Adaptive automated driving for C-ITS services at intersection • Road Hazard detection • In-vehicle trajectory prediction integration. Testing, Verification, validation and evaluation on tracks and real road of cooperative systems and automated driving systems.
Conditions and limitations for implementation and exploitation	No Access Rights to Background granted.

Table 23: BACK20. ITS-G5 communication interface between Road-Side Units (RSU) and On-Board Units (OBU)

Title	ITS-G5 communication interface between Road-Side Units (RSU) and On-Board Units (OBU)
Organisation	CTAG
Classification	Other (if Other, please specify): ○ Other non 5G-MOBIX related background
Description	ITS-G5 communication interface between Road-Side Units (RSU) and On-Board Units (OBU, HMCU from CTAG). This interface takes care of the transport of the messages and provides the communication path parallel to the network interface to the vehicle interface. The processing and interpretation of the message contents are included in the HMCU to HMI interface. These units enable the development of intelligent real road tests, SISCOGA 4D corridor, and provide a real scenario where different developments can be deployed and validated to allow connectivity between vehicles, infrastructure and environment (V2V, V2I, V2X), information in the cloud, synchronisation between different devices and precise positioning.

	Both devices are equipped with SW capable of recording and logging information for further processing and HW that enables synchronisation between the different elements and the network (MEC, Core…). Interoperability objectives are ensured by verifying that RSUs and HMCUs can exchange all C-ITS messages for the deployed services.
Conditions and limitations for implementation and exploitation	No Access Rights to Background granted.

Table 24: BACK21. Know-how

Title	Know-how
Organisation	CTAG
Classification	Other (if Other, please specify): ○ Know-How
Description	The following equipment and materials, results, data, tests and products (Software design and architecture) resulting from other CTAG projects are included as CTAG's own know-how and intellectual property within the 5GM life cycle, as well as products resulting from other CTAG projects: Test and Validation: • Software architecture for AD functions in testbench, vehicle, tracks and real road. • Test design (tracks and real road). • Software, scripts and automations for data collection and data processing. • Different associated data base management ○ Parsing, filtering and quality. ○ Data enrichment functions leaning on standard metadata. ○ Data storage modules and data server storage. ○ Data query components providing web interfaces supporting user management and access. • Software to Network test and agnostics test. Vehicle integration: • Design, development, integration and deployment of CAM functions for different autonomous (including a shuttle) and connected vehicles in an urban and interurban environment. • Specific Software to autonomous driving functions and validation. • Specific Hardware integrated into the different vehicles and devices. • Sensors and Software to integrated into the vehicles (LiDAR, Scala, camara, Antenna 5G, DGPS, 2D Laser).

	• Vehicle trajectory corrections. • Models for predictive control, chain stability, longitudinal and lateral control, braking, user warning and safety assurance. • Development and deployment on Remote control and data visualization for Autonomous Shuttle in urban scenarios. Scenario characterization: • Specific Hardware integrated into road and devices. • Software to mapping and environmental characterization. • RSU and HMCUs (OBUs). • Radar to vehicle and pedestrian detection. • 3D segmentation, road shape detection, environmental objects identification, filtering. • Static and dynamic obstacle avoidance. • Vehicle trajectory corrections. • Multimodal control. • Machine learning. User Acceptance: • Expertise in the design, development and deployment of user acceptance evaluation. • Expertise in the design, development and deployment of questionnaires and data analysis. Servers and Cloud: • Servers development and implementation (Cloud servers included as CITS -C). • Visualization CITS services tool. • Secured connection to vehicle with multiple networks, VPN and authentication and token protocol.
Conditions and limitations for implementation and exploitation	CTAG will only grant rights of use exclusively for developments within 5GM and upon prior formal written agreement to those partners who demonstrate that they require CTAG's Background for the advancement of the project.

Table 25: BACK22. Raw vehicle, network and test data and cloud infrastructure

Title	Raw vehicle, network and test data and cloud infrastructure
Organisation	CTAG
Classification	Other (if Other, please specify): ○ Database (aesthetic) Design / Web Design / Model Design
Description	Raw vehicle, network and test data and cloud infrastructure. Test track design, test real road design, test scenarios, network test, test methods, test cases design and execution, software and interfaces.

Conditions and limitations for implementation and exploitation	Access only available by formal written agreement, access is not granted. Use only in the context of the 5G-MOBIX project.

Table 26: BACK23. CTAG C-ITS Center

Title	CTAG C-ITS Center
Organisation	CTAG
Classification	Software
Description	CTAG's C-ITS Center produced prior to 5G-MOBIX which is receiving some new features to be usable in this project. Also used as support during trials to check the message interchange between partner´s vehicles and road devices and to ensure interoperability.
Conditions and limitations for implementation	It will not be made available to other partners as it is not necessary.
Conditions and limitations for exploitation	CTAG´s C-ITS can only be exploited by CTAG.

Table 27: BACK24. TACS4 tool and/or platform

Title	TACS4 tool and/or platform
Organisation	DEKRA
Classification	Other (if Other, please specify): • Other non 5G-MOBIX related background
Description	• Test track design, test scenarios, test methods, test cases related to ITS; • All software, test methods, interfaces, related to any TACS4 tool or platform; • Which result from other projects, prior, during and after the Project; • Generated by individuals that are directly involved in the project, but which is unrelated to the work plan, aims and objectives of the Project; • In all know-how in patents and current patent applications; • In any unpublished work DEKRA wants to publish before disclosure to the Consortium; and • Which DEKRA, due to existing or future third-party rights, is unable to grant access rights to.
Conditions and limitations for implementation and exploitation	Excluded and/or only available under limited access rights.

Table 28: BACK25. 5G Turkey Cross Border Sites

Title	5G Turkey Cross Border Sites
Organisation	ERICSTR
Classification	Software
Description	The 5G trial software mentioned under Description of Action Document will be subject to Ericsson license terms and are solely licensed for the following functions and use cases: Voice and Data, Commercial Application, Truck platooning with «see-what-I-see» function, Assisted "zero-touch" truck border-crossing & increased driver awareness ("Use Cases") . Any use other than defined hereunder as "Use Cases" will be construed as license violation.
Conditions and limitations for implementation	Operators shall obtain and maintain all permits, licenses and consents necessary (including access to facilities) as may be required to conduct the trail. Upon completion of the project based on the concept Ericsson will deliver as identified limitedly herein above, Ericsson shall remove the 5G trial software in its sole discretion and take it back. The trial system, and any information provided or disclosed in connection with the trial is being provided "AS IS" and solely for testing and demonstration purposes as described herein. Ericsson does not make any representation or warranty of any nature whatsoever.
Conditions and limitations for exploitation	N/A

Table 29: BACK26. CAMINO framework

Title	CAMINO framework
Organisation	IMEC
Classification	Software
Description	CAMINO is a novel vehicular communication management framework, which incorporates flexible support for both short-range direct and long-range cellular technologies and offers built-in Cooperative Intelligent Transport Systems' (C-ITS) services for experimental validation in real-life settings. Moreover, integration with vehicle and infrastructure sensors/actuators and external services is enabled using a Distributed Uniform Streaming (DUST) framework. CAMINO enables dynamic and flexible management of the different available V2X technologies and the services running on top of them. In addition, it allows integration with different vehicle/infrastructure sensors,

	actuators, Human-Machine Interfaces (HMIs) and external third-party service providers. Furthermore, CAMINO allows monitoring and logging of valuable information like transmitted and received messages, Global Navigation Satellite System (GNSS) data, triggering of events, etc. This information can be used for real-time or offline analysis of various Key Performance Indicators (KPIs).
Conditions and limitations for implementation and exploitation	N/A

Table 30: BACK27. DUST

Title	DUST
Organisation	IMEC
Classification	Software
Description	IMEC's Distributed Uniform STreaming framework (DUST) platform: Software platform that (1) allows flexible, hardware- and platform-independent distribution of processing tasks for streaming applications and distributed Artificial Intelligence and (2) provides uniform sensor interfaces, facilitating interoperability and interchangeability between hardware from various vendors.
Conditions and limitations for implementation and exploitation	N/A

Table 31: BACK28. Smart Highway

Title	Smart Highway
Organisation	IMEC
Classification	Hardware
Description	IMEC's Smart Highway Road-Side Units (RSUs) and onboard units (OBUs): they are the central engine of IMEC's Smart Highway testbed and offer a platform for (1) vehicle-to-everything (V2X) connectivity, (2) distributed computing & (3) precise positioning. For connectivity purposes, IMEC 's RSUs & OBUs enable a flexible integration of the newest V2X solutions in order to (1) compare the performance of competing V2X technologies like ITS-G5 (based on IEEE 802.11p standard) and C-V2X (LTE side link based on 3GPP Release 12 and 14) and (2) test and propose new, upcoming V2X

	technologies including 5G. Further, the RSUs & OBUs are equipped with processing hardware for enabling distributed computing and advanced, future AI-driven use cases, and with dedicated hardware for precise positioning.
Conditions and limitations for implementation and exploitation	N/A

Table 32: BACK29. C-ITS Protocol Stack and Sensors, Communications Networks and Embedded Systems for CAM Applications Knowledge

Title	C-ITS Protocol Stack and Sensors, Communications Networks and Embedded Systems for CAM Applications Knowledge
Organisation	Instituto de Telecomunicaçoes
Classification	Other (if Other, please specify): ○ Know-How
Description	Knowledge and experience in the design, development and integration of sensors, communications networks and embedded systems for CAM applications, as well as operation with the C-ITS protocol stack.
Conditions and limitations for implementation and exploitation	N/A

Table 33: BACK30. Autonomous driving vehicle

Title	Autonomous driving vehicle
Organisation	LIST
Classification	Hardware
Description	An autonomous driving vehicle should be acquired during the project and it will be made available for experimental purposes (if needed).
Conditions and limitations for implementation and exploitation	All access to and use of LIST's Background identified above whether for implementation, exploitation, or any other purpose, is subject to concluding a separate license agreement with LIST's. Such access and use may contain restrictions and limitations. The pricing and other terms and conditions shall be determined by LIST at its sole discretion. Unauthorised use of the above-mentioned LIST's Background is forbidden and protected as stipulated in the 5G-MOBIX Consortium Agreement.

Table 34: BACK31. CLAIRVOYANT

Title	CLAIRVOYANT. Context-aware Personalised Mobile Services in Self-organised Hybrid Networks (FNR CORE)
Organisation	LIST
Classification	Other (if Other, please specify): ○ Know-How – Project
Description	Expertise: development of a multi-agent architecture; content-centric network for MANETs; contextualized control strategies.
Conditions and limitations for implementation and exploitation	All access to and use of LIST's Background identified above whether for implementation, exploitation, or any other purpose, is subject to concluding a separate license agreement with LIST's. Such access and use may contain restrictions and limitations. The pricing and other terms and conditions shall be determined by LIST at its sole discretion. Unauthorised use of the above-mentioned LIST's Background is forbidden and protected as stipulated in the 5G-MOBIX Consortium Agreement.

Table 35: BACK32. COMOSEF

Title	COMOSEF. Cooperative Mobility Services of the Future (Eureka funding). (based on WiSafeCar and CarLink projects)
Organisation	LIST
Classification	Other (if Other, please specify): ○ Know-How – Project
Description	Expertise: through these projects LIST has contributed to the evaluation of distributed communication technologies between vehicles (V2X, IEEE 802.11p). Project results could be used to evaluate the performance of several communication technologies, in particular to study the coexistence of 5G with other technologies, as well as their advantages and disadvantages in different contexts.
Conditions and limitations for implementation and exploitation	All access to and use of LIST's Background identified above whether for implementation, exploitation, or any other purpose, is subject to concluding a separate license agreement with LIST's. Such access and use may contain restrictions and limitations. The pricing and other terms and conditions shall be determined by LIST at its sole discretion. Unauthorised use of the above-mentioned LIST's Background is forbidden and protected as stipulated in the 5G-MOBIX Consortium Agreement.

Table 36: BACK33. DISCO

Title	DISCO
Organisation	LIST

Classification	Software – Mobile App
Description	Mobile app development. Expertise: contextualizing a user's situation and mobility.
Conditions and limitations for implementation and exploitation	All access to and use of LIST's Background identified above whether for implementation, exploitation or any other purpose, is subject to concluding a separate license agreement with LIST's. Such access and use may contain restrictions and limitations. The pricing and other terms and conditions shall be determined by LIST at its sole discretion. Unauthorised use of the above mentioned LIST's Background is forbidden and protected as stipulated in the 5G-MOBIX Consortium Agreement.

Table 37: BACK34. ECOBUS

Title	ECOBUS. Electrified Cooperative Bus System (FNR funding).
Organisation	LIST
Classification	Other (if Other, please specify): ○ Scientific / Technical Information;
Description	Simulation scenario representing the entire city of Luxembourg and allowing vehicle nodes to cooperate using short-range communication technologies. This has been developed using SUMO, OMNeT++ and Veins. Expertise: road and network simulation, allowing to cover the specific aspects of 5G, and simulate scenarios that would be impossible to reproduce in reality (e.g., introducing a large number of vehicles, several cases of deployment of cellular antennas, etc.).
Conditions and limitations for implementation and exploitation	All access to and use of LIST's Background identified above whether for implementation, exploitation or any other purpose, is subject to concluding a separate license agreement with LIST's. Such access and use may contain restrictions and limitations. The pricing and other terms and conditions shall be determined by LIST at its sole discretion. Unauthorised use of the above-mentioned LIST's Background is forbidden and protected as stipulated in the 5G-MOBIX Consortium Agreement.

Table 38: BACK35. MobiTraff

Title	MobiTraff. Cooperative Way to Mobility and Traffic Efficiency (FNR funding).
Organisation	LIST
Classification	Other (if Other, please specify): ○ Know-How – Project
Description	Expertise: road traffic simulation scenarios using SUMO; study of V2V and V2I connectivity using NS3.

Conditions and limitations for implementation	All access to and use of LIST's Background identified above whether for implementation, exploitation or any other purpose, is subject to concluding a separate license agreement with LIST's. Such access and use may contain restrictions and limitations. The pricing and other terms and conditions shall be determined by LIST at its sole discretion. Unauthorised use of the above-mentioned LIST's Background is forbidden and protected as stipulated in the 5G-MOBIX Consortium Agreement.
Conditions and limitations for exploitation	N/A

Table 39: BACK36. MOBNET and HETNET

Title	MOBNET and HETNET
Organisation	LIST
Classification	Other (if Other, please specify): ○ Patents
Description	These two patents can be applied in a car-sharing context, allowing users or places to be connected using heterogeneous wireless communications. References: • S. Faye. Method for Determining the Relative Proximity of Wireless Networked Devices (LU100598). Filed to: Office of Intellectual Property, Luxembourg. 2017. • S. Faye. Method for Subjectively Mapping a Wireless Network Environment (LU100599). Filed to: Office of Intellectual Property, Luxembourg. 2017.
Conditions and limitations for implementation and exploitation	All access to and use of LIST's Background identified above whether for implementation, exploitation or any other purpose, is subject to concluding a separate license agreement with LIST's. Such access and use may contain restrictions and limitations. The pricing and other terms and conditions shall be determined by LIST at its sole discretion. Unauthorised use of the above-mentioned LIST's Background is forbidden and protected as stipulated in the 5G-MOBIX Consortium Agreement.

Table 40: BACK37. SENSA

Title	SENSA. Sustainable, Environmental & Safe tourism in protected areas (ESA funding).
Organisation	LIST
Classification	Software
Description	Smart Exchange Module (SEM), implementing: • Control strategies to choose between different communication technologies (going from cellular connection to satellite) based on

	perceived coverage. Development of local and collaborative control strategies (between several devices). • Message optimization with respect to the channel requirement.
Conditions and limitations for implementation and exploitation	All access to and use of LIST's Background identified above whether for implementation, exploitation or any other purpose, is subject to concluding a separate license agreement with LIST's. Such access and use may contain restrictions and limitations. The pricing and other terms and conditions shall be determined by LIST at its sole discretion. Unauthorised use of the above-mentioned LIST's Background is forbidden and protected as stipulated in the 5G-MOBIX Consortium Agreement.

Table 41: BACK38. Service-oriented HPC

Title	Service-oriented HPC
Organisation	LIST
Classification	Hardware
Description	LIST has a service oriented HPC. It is composed of a cognitive part, allowing to solve big data-oriented problems, and of a visualisation part, which allows to answer graphical calculation problems.
Conditions and limitations for implementation and exploitation	All access to and use of LIST's Background identified above whether for implementation, exploitation, or any other purpose, is subject to concluding a separate license agreement with LIST's. Such access and use may contain restrictions and limitations. The pricing and other terms and conditions shall be determined by LIST at its sole discretion. Unauthorised use of the above-mentioned LIST's Background is forbidden and protected as stipulated in the 5G-MOBIX Consortium Agreement.

Table 42: BACK39. Know-how

Title	Know-how
Organisation	Sensible4
Classification	• Other (if Other, please specify): ○ Know-How
Description	Know-how on the design, development and deployment on Model Predictive Control-based Autonomous Vehicle High-Level Motion Controller for harsh weather conditions and varying friction situations. Such system contains following components: • Integration to Sensible 4 in-vehicle localization and perception modules. • Model Predictive Controller (MPC) with constraint- based features to provide smooth control tracking action in varying conditions.

	• A MPC trajectory software module to provide improved tracking performance of motion in different road conditions. • A collision mitigation module yielding control actions to MPC control based on perception module input. Know-how on the design, development and deployment on Remote control and data visualization for Autonomous Vehicle fleet management in low confidence situations Such system contains following components: • Integration to Sensible 4 in-vehicle localization and perception modules for data visualization remotely. • Integration to Sensible 4 low-level control ECU for direct control access to autonomous vehicle. • Secured connection to vehicle with multiple networks, VPN and authentication. • Diagnostics module observing the network current and statistical capabilities for safe remote-control action and providing recommendations to control strategy and methods for the remote operator.
Conditions and limitations for implementation	Access Rights to Sensible 4's Background is only granted to the extent that is needed for implementation of the action being agreed that limited Access Rights to source code or object code will be granted by Sensible 4. 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 authorization of Sensible 4.
Conditions and limitations for exploitation	Sensible 4's Background is not needed by the other Parties for Exploitation of their own Results thus no Access Rights will be granted by Sensible 4 for Exploitation, unless otherwise agreed between all the Parties concerned. Considering this, the specific limitations (including third party rights) are not listed in this Attachment. Access Rights to Background are 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. Sensible 4's listed Background may be used for Exploitation of another Party's Results, subject to the conclusion of a separate license agreement.

Table 43: BACK40. Adaptive automated driving for C-ITS services at intersection

Title	Adaptive automated driving for C-ITS services at intersection
Organisation	TNO
Classification	Software

Description	Adaptive automated driving for C-ITS services at intersection
Conditions and limitations for implementation	Royalty-free Access Right to Background which is only granted to the extent that it is needed for implementation of the Action.
Conditions and limitations for exploitation	No Access Rights to Background for exploitation granted under the CA.

Table 44: BACK41. Algorithms for Testing, Verification, validation and evaluation of cooperative systems and automated driving systems

Title	Algorithms for Testing, Verification, validation and evaluation of cooperative systems and automated driving systems
Organisation	TNO
Classification	• Other (if Other, please specify): ○ Scientific / Technical Information;
Description	Algorithms for Testing, Verification, validation and evaluation of cooperative systems and automated driving systems.
Conditions and limitations for implementation	Royalty-free Access Right to Background which is only granted to the extent that it is needed for implementation of the Action. Access Rights to the Background is limited to the API's.
Conditions and limitations for exploitation	No Access Rights to Background for exploitation granted under the CA. Access Rights subject to separate written license Agreement.

Table 45: BACK42. Automated driving functions for low-speed manoeuvring, cooperative driving and platooning

Title	Automated driving functions for low-speed manoeuvring, cooperative driving and platooning
Organisation	TNO
Classification	Software
Description	Automated driving functions for low-speed manoeuvring, cooperative driving and platooning.
Conditions and limitations for implementation	Royalty-free Access Right to Background which is only granted to the extent that it is needed for implementation of the Action
Conditions and limitations for exploitation	No Access Rights to Background for exploitation granted under the CA.

Table 46: BACK43. Cooperative Automated Emergency braking and (cooperative) collision avoidance strategies

Title	Cooperative Automated Emergency braking and (cooperative) collision avoidance strategies
Organisation	TNO
Classification	Software
Description	Cooperative Automated Emergency braking and (cooperative) collision avoidance strategies.
Conditions and limitations for implementation	Royalty-free Access Right to Background which is only granted to the extent that it is needed for implementation of the Action.
Conditions and limitations for exploitation	No Access Rights to Background for exploitation granted under the CA.

Table 47: BACK44. Methods for assessment of the driving context from vehicle mounted sensors and through communication

Title	Methods for assessment of the driving context from vehicle mounted sensors and through communication
Organisation	TNO
Classification	Other (if Other, please specify): ○ Know-How
Description	Methods for assessment of the driving context from vehicle mounted sensors and through communication.
Conditions and limitations for implementation	Royalty-free Access Right to Background which is only granted to the extent that it is needed for implementation of the Action.
Conditions and limitations for exploitation	No Access Rights to Background for exploitation granted under the CA.

Table 48: BACK45. Proprietary adjustments in 4G protocol stack (user and control plane) aimed at RAN-EPC latency reduction for the sake of mobile edge computing

Title	Proprietary adjustments in 4G protocol stack (user and control plane) aimed at RAN-EPC latency reduction for the sake of mobile edge computing
Organisation	TNO
Classification	Software

Description	Proprietary adjustments in 4G protocol stack (user and control plane) aimed at RAN-EPC latency reduction for the sake of mobile edge computing.
Conditions and limitations for implementation	Royalty-free Access Right to Background which is only granted to the extent that it is needed for implementation of the Action.
Conditions and limitations for exploitation	No Access Rights to Background for exploitation granted under the CA.

Table 49: BACK46. Proprietary implementations of Cooperative Collision Avoidance application

Title	Proprietary implementations of Cooperative Collision Avoidance application
Organisation	TNO
Classification	Software
Description	Proprietary implementations of Cooperative Collision Avoidance application
Conditions and limitations for implementation	Royalty-free Access Right to Background which is only granted to the extent that it is needed for implementation of the Action.
Conditions and limitations for exploitation	No Access Rights to Background for exploitation granted under the CA.

Table 50: BACK47. Proprietary SDN and NFV concepts which are relevant in 5G-MOBIX in the context of Slicing

Title	Proprietary SDN and NFV concepts which are relevant in 5G-MOBIX in the context of Slicing
Organisation	TNO
Classification	Software
Description	Proprietary SDN and NFV concepts which are relevant in 5G-MOBIX in the context of Slicing.
Conditions and limitations for implementation	Royalty-free Access Right to Background which is only granted to the extent that it is needed for implementation of the Action.
Conditions and limitations for exploitation	No Access Rights to Background for exploitation granted under the CA.

Table 51: BACK48. Proprietary implementations of millimetre wave localization application

Title	Proprietary implementations of millimetre wave localization application
Organisation	TUE
Classification	Hardware
Description	Radio Frequency Front-End components (antenna systems and blueSPACE unit)
Conditions and limitations for implementation	Royalty-free Access Right to Background which is only granted to the extent that it is needed for implementation of the Action.
Conditions and limitations for exploitation	No Access Rights to Background for exploitation granted under the CA.

Table 52: BACK49. OBU and their integrated software

Title	OBU and their integrated software
Organisation	VEDECOM
Classification	Hardware
Description	INSTITUT VEDECOM on-board-unit and its integrated software, allowing communication between a connected vehicle and infrastructure
Conditions and limitations for implementation	Access Rights to INSTITUT VEDECOM's Background is only granted to the extent that the Background is Needed for implementation of the Project, being agreed that Access Rights to source code or object code of implemented software will not be granted by INSTITUT VEDECOM. INSTITUT VEDECOM's Background may be subject to third parties' rights that may prohibit grant of Access Rights. Access Rights to INSTITUT VEDECOM's Background will be subjected to the conclusion of a separate license agreement.
Conditions and limitations for exploitation	INSTITUT VEDECOM's Background is not Needed for Exploitation of another Party's Results, thus no Access Rights for Exploitation shall be granted by INSTITUT VEDECOM.

Table 53: BACK50. CAM interfaces, functions, equipment

Title	CAM interfaces, functions, equipment
Organisation	VTT
Classification	• Other (if Other, please specify): ○ Scientific / Technical Information;
Description	It consists of:

	• Connectivity interface to from in-vehicle ECUs • Automated driving control functions • Environment perception sub-systems • Sensor hardware and data fusion platform • Communication hardware • All existing software modules for connected and automated driving functions
Conditions and limitations for implementation and exploitation	All access to and use of VTT's Background identified above, whether for implementation, exploitation or any other purpose, is subject to concluding a separate license agreement with VTT. Such access and use may contain restrictions and limitations. The pricing and other terms and conditions shall be determined by VTT at its sole discretion. Unauthorised use of the above mentioned VTT's Background is forbidden and protected as stipulated in the 5G-MOBIX Consortium agreement.

4.2. Foreground IPR

The following tables describe the Foreground IP (Results) generated by the project. In *D7.5 Report on exploitation results* more details are provided and a further analysis of results' pathways for exploitation can be found. In addition, results and their exploitation route are classified according to the types of result from the Horizon Result Platform (HRP)[9], and the exploitation interest categories presented in *D7.4 Initial exploitation strategy and plan*.

Table 54: FORE1. IPR Registry SharePoint Add-in

Title of IPR	IPR Registry SharePoint Add-in	
IPR Owner	ERTICO	
Jointly developed	Yes (VICOMTECH)	
Classification	Software	
Related Background	N/A	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None

[9] The Horizon Result Platform is a repository of KERs of EU-funded research and innovation projects. It is available at: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-results-platform

	Third Owner Intellectual Property Rights:	None
Description	The IPR consists of the online SharePoint IPR section on the 5G-MOBIX site and a Word Add-In. The section on the website for 5G-MOBIX can be found here: https://erticobe.sharepoint.com/sites/5G-MOBIX/SitePages/IPR-Registry.aspx For distribution of the content of the registry, a series of XSL sheets are available to generate Microsoft Word content. These XSL sheets are used in INCLUDETEXT fields. In the attachments, a manual can be found containing instructions on how to generate Word content. Also, a Word document styled to 5G-MOBIX is available for a quick start. This IPR has been jointly developed with VICOMTECH for the SharePoint part. The Word Generator is an ERTICO-only development.	
Exploitation Potential	The exploitation potential is in re-using the tooling for other projects, making innovation management easier. When combining the information of multiple projects, the progression of the ERTICO partnership can be made visible.	
Access Rights	Access Rights are limited to usage within the context of ERTICO projects. Access Rights to the site and the Add-In executable are granted to the project partners of 5G-MOBIX. Access Rights to re-use of the IPR Registry on SharePoint is granted to VICOMTECH	
Available Support (email, website, info)	Support is not available as usage of the Add-In and site are limited to projects with ERTICO. Please note that refreshing the Word Add-In can take quite some time. The initial load is faster. This is a Word internal issue.	

Table 55: FORE2. An implementation of an ETSI MEC using open-source solutions

Title of IPR	An implementation of an ETSI MEC using open-source solutions
IPR Owner	AKKA
Jointly developed	No
Classification	Software – PaaS solution for MEC
Related Background	BACK5. Know-how, scalable message brokers, data lakes

Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	OpenShift Container Platform (OCP)
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	5G-MOBIX aims to bring cross-border autonomous driving closer to reality. First, a CAM open-source MEC platform compliant with the ETSI MEC ISG standard requirements has been implemented. ETSI has also standardized the different APIs which should be proposed by the MEC platform and laid down a guideline for developing MEC applications which can use these APIs. We provide operational implementation of these APIs while improving the existing MEC Platform. The AKKA ETSI MEC Implementation uses OpenShift Container Platform (OCP), an open-source project designed by Red Hat. OpenShift acts as a Platform as a service (PaaS). One essential use case for OpenShift is Multi-access Edge Computing deployment, mainly due to its architecture. The OpenShift layer involves a master node in charge of Management and Orchestration (e.g., scaling, authentication, scheduling), and the worker nodes, on which the containerized applications run, and which are responsible for executing the master's orders. This makes it compatible with the architectural and other MEC platform requirements proposed by the ETSI.	
Exploitation Potential	AKKA proposes consultancy and engineering / design / development / test / integration services to all stakeholders that are looking for a standardized, open-source solution for MEC as a PaaS.	
Access Rights	Depending on the Open-Source licence chosen by AKKA; most likely EUPLv1.2	
Granted Access Rights	All 5G-MOBIX partners	
Available Support (email, website, info)	AKKA proposes consultancy and engineering / design / development / test / integration services	

Table 56: FORE3. CTS -Centralized Testdata Server

Title of IPR	CTS -Centralized Testdata Server	
IPR Owner	AKKA	
Jointly developed	No	
Classification	Software – Scientific / Technical information	
Related Background	N/A	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	Various Open Source Licences in the tech bricks employed (AGPL, Apache 2.0…)
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	A Web-based application based on a 3-tier architecture including PostgresSQL, Java Springboot, Angular, Nginx technologies: for management of test data records The CTS features: • Parsing, filtering, and quality-based selection functions piloted by a task manager module • Data enrichment functions leaning on standardized metadata • Data storage modules • Data query components providing various web interfaces supporting user&roles management and access	
Exploitation Potential	Consulting and Engineering services	
Access Rights	For the moment, only project member can access the software, but we are open for its publication as open source. Open Source licences put in the different assets (AGPL or EUPLv1.1 for code- Yet to be defined + Creative Commons for other materials)	
Granted Access Rights	Development team of the data uploading tool and CTS, including AKKA, CTAG and UMU, for the moment.	

Available Support (email, website, info)	Support from AKKA Team, similarly to what is being done in the project lifetime.

Table 57: FORE4. Presentation of HD Maps updates and CPM data to humans

Title of IPR	Presentation of HD Maps updates and CPM data to humans	
IPR Owner	A-TO-BE	
Jointly developed	No	
Classification	Software	
Related Background	BACK6. A-to-Be V2X App	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	Enhancement of A-to-Be's V2X App to display HD Maps information and CPM data to drivers.	
Exploitation Potential	Can be used as part of other projects to support the human-machine interface component. Will not be pursued as an end-user solution.	
Access Rights	Limited to 5G-MOBIX partners	
Granted Access Rights	N/A	
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime	

Table 58: FORE5. Road Obstacle identifier from LIDAR and GPS vehicle sensor data

Title of IPR	Road Obstacle identifier from LIDAR and GPS vehicle sensor data
IPR Owner	A-TO-BE
Jointly developed	No

Classification	Other – Artificial Intelligence algorithms related to automated driving	
Related Background	N/A	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	This AI algorithm uses LIDAR and GPS data collected by a vehicle from the road to identify road obstacles like new-jersey delineators around roadworks, large debris, or fallen trees.	
Exploitation Potential	Usage as is for obstacle detection in road safety scenarios, namely by deploying sensors o road assistance vehicles, but also future development using this same data for other road safety use cases.	
Access Rights	Limited to 5G-MOBIX partners	
Granted Access Rights	N/A	
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime	

Table 59: FORE6. Road signs identified from in-vehicle frontal Video and GPS

Title of IPR	Road signs identified from in-vehicle frontal Video and GPS	
IPR Owner	A-TO-BE	
Jointly developed	No	
Classification	Other – Artificial Intelligence algorithms related to automated driving	
Related Background	N/A	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None

	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	This AI algorithm uses video and GPS data collected by a vehicle from the road to identify road signs and geo-locate them.	
Exploitation Potential	Usage as is for road sign detection, e.g., to make sure road signs are properly deployed and maintained, etc. Usage in other road-safety scenarios which may require adaptation / evolution.	
Access Rights	Limited to 5G-MOBIX partners	
Granted Access Rights	N/A	
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime	

Table 60: FORE7. 5G Roadside Infrastructure for CAM Applications (RSU, Camera & Radar)

Title of IPR	5G Roadside Infrastructure for CAM Applications (RSU, Camera & Radar)	
IPR Owner	CTAG	
Jointly developed	No	
Classification	Other – Communications Platform with Traffic Sensors	
Related Background	BACK16. SISCOGA 4D CORRIDOR	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	The installation of RSUs along the corridor enable the exchange of information between vehicles, infrastructure and 5G C-ITS stations. A camera and a traffic radar have been integrated for the detection of non-connected vehicles and VRUs. Both are used to send traffic data to 5G connected vehicles.	

Exploitation Potential	The role of these 5G-enabled devices is of great importance in improving safety on the roads and for all road users, especially in low visibility areas. It could be used by pedestrians, drivers, road operators, road managers and third parties in urban and interurban scenarios.
Access Rights	Access is only available for CTAG`s members.
Granted Access Rights	N/A
Available Support (email, website, info)	The devices, application and tools are always available and operational and are compatible with different applications from other project partners and from outside the project. No commercial support is available but the equipment and devices are constantly maintained.

Table 61: FORE8. Application development on MEC and servers

Title of IPR	Application development on MEC and servers	
IPR Owner	CTAG	
Jointly developed	No	
Classification	Other – Artificial Intelligence algorithms related to automated driving	
Related Background	BACK23. CTAG C-ITS Centre	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	MEC/Server Application Development. Implementation of CITS on ES and PT SCMs and creation of Virtual Machine.	
Exploitation Potential	Interoperability and data access for road and traffic users and managers.	
Access Rights	Limited to 5G-MOBIX partners	

Granted Access Rights	N/A
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime

Table 62: FORE9. Camera, Radar, and GPS infrastructure sensor data

Title of IPR	Camera, Radar and GPS infrastructure sensor data	
IPR Owner	CTAG	
Jointly developed	No	
Classification	Other – Artificial Intelligence algorithms related to automated driving	
Related Background	BACK18. Autonomous driving vehicle	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	Development of different algorithms for perception of different objects and elements that may obstruct or pose a danger on the road. The road obstacles are identifier from camera, radar and GPS directly from road infrastructure and the data are sent to each road user and road operator.	
Exploitation Potential	For road obstacles and events to bring the capacity to adaptation / evolution and improve safety road conditions and traffic efficiency.	
Access Rights	Limited to 5G-MOBIX partners	
Granted Access Rights	N/A	
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime	

Table 63: FORE10. Data Quality Tools and SW

Title of IPR	Data Quality Tools and SW	
IPR Owner	CTAG	
Jointly developed	No	
Classification	Software – Model Database (S.S.O. / Model Web / etc.)	
Related Background	N/A	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	Tools and development of SW by CTAG for quality control of data obtained from vehicles. Allows the filtering and management of the high volume of data obtained both from vehicles and radio in an efficient way and ensuring the quality and compliance with the established standards of the data to be analysed.	
Exploitation Potential	It allows a safe and optimised treatment with a high-quality standard. For the time being it is only for use by CTAG employees.	
Access Rights	Limited to 5G-MOBIX partners	
Granted Access Rights	N/A	
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime	

Table 64: FORE11. Development of autonomous and connected vehicle functions

Title of IPR	Development of autonomous and connected vehicle functions
IPR Owner	CTAG
Jointly developed	No

Classification	Other – Artificial Intelligence algorithms related to automated driving	
Related Background	N/A	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	Development of autonomous and connected vehicle functions for various B-segment and shuttle vehicle models. Development of the different functions based on a pre-designed architecture by CTAG, implementation of the SW and AI algorithm, integration of sensors, camera and equipment, for the complete equipping of the different prototypes and their correct behaviour in the execution of each selected use case.	
Exploitation Potential	They directly enable autonomous driving and full functionality execution in prototypes designed and equipped in real-world environments.	
Access Rights	Limited to 5G-MOBIX partners	
Granted Access Rights	N/A	
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime	

Table 65: FORE12. In-vehicle frontal Video and GPS to identified road signs and panels

Title of IPR	In-vehicle frontal Video and GPS to identified road signs and panels
IPR Owner	CTAG
Jointly developed	No
Classification	Other – Artificial Intelligence algorithms related to automated driving
Related Background	BACK18. Autonomous driving vehicle

Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	Development of different algorithms for perception of different objects and elements that may obstruct or pose a danger on the road. AI algorithms use video from a camera integrated in the vehicle and GPS data collected from both vehicle and infrastructure to identify obstacles, signs and possible elements on the road with geolocation.	
Exploitation Potential	For road panel and sign detection and other vehicles detection to bring the capacity to adaptation / evolution.	
Access Rights	Limited to 5G-MOBIX partners	
Granted Access Rights	N/A	
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime	

Table 66: FORE13. Road Obstacle and VRU identifier from SCALA, VELODYNE, LIDAR and GPS vehicle sensor data

Title of IPR	Road Obstacle and VRU identifier from SCALA, VELODYNE, LIDAR and GPS vehicle sensor data	
IPR Owner	CTAG	
Jointly developed	No	
Classification	Other – Artificial Intelligence algorithms related to automated driving	
Related Background	BACK18. Autonomous driving vehicle	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None

	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	Development of different algorithms for perception and fusion of different objects and elements that may obstruct or pose a danger on the road. AI algorithms use sensor and GPS data collected from both vehicle and infrastructure to identify obstacles, signs and possible elements on the road.	
Exploitation Potential	Obstacle detection in road safety scenarios and improved traffic efficiency.	
Access Rights	Limited to 5G-MOBIX partners	
Granted Access Rights	N/A	
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime	

Table 67: FORE14. Script for data conversion to CDF

Title of IPR	Script for data conversion to CDF	
IPR Owner	CTAG	
Jointly developed	No	
Classification	Software	
Related Background	N/A	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None

Description	Development of a script that allows the conversion of different data formats obtained from vehicle and infrastructure systems to the CDF established by the project. Allows customisation to adapt to other formats that may occur in other projects.
Exploitation Potential	Interest in streamlining data processing and analysis for evaluation.
Access Rights	Only CTAG´s employees
Granted Access Rights	N/A
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime

Table 68: FORE15. IMEC OBU

Title of IPR	IMEC OBU	
IPR Owner	IMEC	
Jointly developed	No	
Classification	Hardware – Vehicle's Communications Platform	
Related Background	BACK28. Smart Highway	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	Linux OS
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	The IMEC OBUs that have been built in the context of 5G-MOBIX enable the communication between the FORD trucks and the different (cloud) application/services developed to support the targeted use-cases of the GR-TR corridor. The OBUs allow wireless communication via different	

	technologies such as 5G long-range and C-V2X PC5 and offer the possibility for remote management and configuration via 4G.
Exploitation Potential	Future 5G studies / R&D projects; Future 5G projects; Future CAM projects; Evaluation; Scientific publications; Participation at conferences and fairs;
Access Rights	Limited to 5G-MOBIX partners
Granted Access Rights	N/A
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime

Table 69: FORE16. IMEC RSU

Title of IPR	IMEC RSU	
IPR Owner	IMEC	
Jointly developed	No	
Classification	Hardware	
Related Background	BACK28. Smart Highway	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	The IMEC RSUs that have been built in the context of 5G-MOBIX include the LiDARs required by the truck routing use-case of the GR-TR corridor. The RSUs allow wireless transmission of the LiDAR data to the cloud via 5G long-range technology, and offer the possibility for remote management and configuration via 4G.	

Exploitation Potential	Future 5G studies / R&D projects; Future 5G projects; Future CAM projects; Evaluation; Scientific publications; Participation at conferences and fairs.
Access Rights	Limited to 5G-MOBIX partners
Granted Access Rights	N/A
Available Support (email, website, info)	Limited to 5G-MOBIX project lifetime

Table 70: FORE17. 5G C-ITS Station for Cooperative and Connected Vehicles

Title of IPR	5G C-ITS Station for Cooperative and Connected Vehicles	
IPR Owner	Instituto de Telecomunicaçoes	
Jointly developed	No	
Classification	Other – Vehicle's Communications Platform	
Related Background	BACK29. C-ITS Protocol Stack and Sensors, Communications Networks and Embedded Systems for CAM Applications Knowledge	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	The 5G C-ITS Station plays a key role in retrofitting exiting vehicles with a 5G network connection, in order to receive important traffic information from the connected vehicles and the road-side infrastructure. It could be connected to a smartphone mobile app, providing relevant data to the driver and passengers.	
Exploitation Potential	This IPR could be exploited by companies interested in increasing the level of connectivity on the roads, such as motorway operators, insurance companies, mobile network operators or other third party like a startup that could start providing this service.	

Access Rights	The IPR belongs to the research institute which charges royalties for its commercial exploitation.
Granted Access Rights	N/A
Available Support (email, website, info)	Limited support due to the low number of human resources allocated to the project.

Table 71: FORE18. 5G Connected Roadside Infrastructure for CAM Applications

Title of IPR	5G Connected Roadside Infrastructure for CAM Applications	
IPR Owner	Instituto de Telecomunicaçoes	
Jointly developed	No	
Classification	Other – Communications Platform with Traffic Sensors	
Related Background	BACK29. C-ITS Protocol Stack and Sensors, Communications Networks and Embedded Systems for CAM Applications Knowledge	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	None
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	The 5G C-ITS Station or Road-Side Unit (RSU) integrates a camera and a traffic radar for legacy vehicle and VRU detection, being used to forward traffic data to 5G connected vehicles. The role of this 5G RSU is particularly important in safety-critical scenarios and low-visibility areas.	
Exploitation Potential	This IPR could be exploited in the context of connected infrastructure deployment on the roadside of highways by motorway operators or third parties.	
Access Rights	The IPR belongs to the research institute which charges royalties for its commercial exploitation.	
Granted Access Rights	N/A	
Available Support (email, website, info)	Limited support due to the low number of human resources allocated to the project.	

Table 72: FORE19. Data Quality Check Tool

Title of IPR	Data Quality Check Tool	
IPR Owner	University of Murcia	
Jointly developed	No	
Classification	Software	
Related Background	BACK41. Algorithms for Testing, Verification, validation and evaluation of cooperative systems and automated driving systems	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	Java Runtime Environment
	Identification of commercial hardware:	Common computer with JRE available
	Third Owner Intellectual Property Rights:	None
Description	Data quality check tool embedded in the AKKA tool used to upload logs from tests. It is capable to detecting syntactic errors due to the compliance with the Common Data Format, and it is in charge of checking valid values expected for each field.	
Exploitation Potential	Future evaluations in other projects or deployment scenarios.	
Access Rights	Only project members can access the software, but UMU is open for its publication as open source. Granted Access: Development team of the data uploading tool and CTS, including AKKA, CTAG and UMU, for the moment.	
Available Support (email, website, info)	Open to correct and upgrade the software	

Table 73: FORE20. MOBIX ESPT UMU Access CDF log generator

Title of IPR	MOBIX ESPT UMU Access CDF log generator
IPR Owner	University of Murcia
Jointly developed	No
Classification	Software

Related Background	N/A	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	Qualcomm QMDL software for chipset log extraction and export into CSV
	Identification of Open Source Software and Licensor:	Python 3.8
	Identification of commercial hardware:	None
	Third Owner Intellectual Property Rights:	None
Description	This software ingests CSV files generated from Qualcomm's QMDL chipset logs and output a Common Data Format log for the access and handover formats.	
Exploitation Potential	This software is used to generate the CDF format from common chipset logs and can be used in future trials	
Access Rights	GNU GPL3	
Granted Access Rights	Shared git repository with CTAG and AKKA, hosted by UMU	
Available Support (email, website, info)	Open to correct and upgrade the software	

Table 74: FORE21. MOBIX ESPT UMU Applog CDF generator

Title of IPR	MOBIX ESPT UMU Applog CDF generator	
IPR Owner	University of Murcia	
Jointly developed	No	
Classification	Software	
Related Background	N/A	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	None
	Identification of Open Source Software and Licensor:	Python 3.8 and Scapy
	Identification of commercial hardware:	None

	Third Owner Intellectual Property Rights:	None
Description	This software is used with two pcap files, one from the OBU and one from the MEC and it outputs all the required statistics for the Applog Common Data Format log.	
Exploitation Potential	This software can be used to measure performance of mobile networks from traffic captures.	
Access Rights	GNU GPL v3	
Granted Access Rights	Shared git repository with CTAG and AKKA, hosted by UMU	
Available Support (email, website, info)	Open to correct and upgrade the software	

Table 75: FORE22. Raw data processing and statistics calculation at CTS

Title of IPR	Raw data processing and statistics calculation at CTS	
IPR Owner	University of Murcia	
Jointly developed	No	
Classification	Software	
Related Background	BACK41. Algorithms for Testing, Verification, validation and evaluation of cooperative systems and automated driving systems	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	Nothing commercial
	Identification of Open Source Software and Licensor:	Python environment
	Identification of commercial hardware:	Common computer
	Third Owner Intellectual Property Rights:	None
Description	The processing software is able to take data logs coming from tests in Common Data Format and feed a database to store all data in a sorted way. Moreover, this software module computes basic statistics, such as mean, maximum and minimum (among others) for particular fields of the data uploaded. These results are also stored in another database in the CTS.	

Exploitation Potential	Processing of data in other scenarios, such as research projects or real deployment analysis.
Access Rights	Nothing special detected.
Available Support (email, website, info)	Open to comments and upgrading.

Table 76: FORE23. Intelligent Remote Monitoring and Inspection for Logistics & Customs Operations

Title of IPR	Intelligent Remote Monitoring and Inspection for Logistics & Customs Operations	
IPR Owner	WINGS	
Jointly developed	No	
Classification	Software – Inference Engine / Knowledge Base / Expert System (Artificial Intelligence)	
Related Background	N/A	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	License plate recognition system based on video stream (by any available vendor)
	Identification of Open Source Software and Licensor:	Google maps
	Identification of commercial hardware:	Smartphone (any vendor) Quectel 5G chipset EM500Q
	Third Owner Intellectual Property Rights:	None
Description	By utilizing the detailed data provided by the CAM enabled truck's sensors (Lidar, proximity, CO_2 measurements, radar, GPS, etc.) as well as the data from surrounding heterogeneous information sources such as traffic cameras, road side sensors, smart phones, wearables and more, increased intelligence can be created based on a cooperative awareness of the borders' environment. The transmission of these data over reliable, ultra-fast and ultra-low latency 5G network connection combined with modern AI and predictive analytics techniques (at the edge) allows for the creation of a virtual environment of the driver enabling various added-value functionalities, such as: • Border inspection preparation based on predictive CAM truck routing • Secure CAM truck border crossing with increased inspection confidence	

	• Increased border cooperative environment awareness for incoming vehicles • Increased border personnel safety • Remote monitoring (and control) of the E2E logistics process Based on the above, a threat assessment and classification of each incoming truck will be made, enabling faster and more efficient customs operations.
Exploitation Potential	This platform is currently being upgraded to a commercial product offering remote monitoring and control of the E2E logistics process, driver monitoring and assistance and VRU protection. This product is targeted towards stakeholders of the logistics chain, with large fleets of trucks, which may facilitate their day-to-day business, offer E2E traceability and optimize current practices by minimizing costs and time for delivery.
Access Rights	Commercial agreement has to be reached with WINGS ICT SOLUTIONS. OBUs (with accompanying sensors) will have to be installed in each truck, to enable the service.
Granted Access Rights	This platform will be used during the 5G-MOBIX trials at the GR-TR CBC, and will be operated by WINGS ICT SOLUTIONS for the entirety of the trials. No other partner needs access. The possibility to interact with the platform will be given to all demo participants who desire it, during the project demonstrations, under the guidance and oversight of WINGS employees.
Available Support (email, website, info)	Full support may be provided by WINGS ICT SOLUTIONS, to install, configure and operate the OBUs and related platform.

5. CONCLUSION

This document presents the results accomplished during the project following the internal guidelines for the appropriate innovation management in the 5G-MOBIX project (introduced in D1.3 Innovation Management plan). Following the innovation strategy and using the tools and procedures explained in sections 3.1 and 3.2, the consortium has identified 20 innovations, of which 1 is market ready, 6 are tech ready and 6 are exploring, as explained in section 3.3 of this document.

The main objective of innovation management task was to efficiently monitor market needs and technical evolutions throughout the project's lifetime to ensure that the project best meets the needs of the market with the technologies available at the time. In this regard, the consortium, and particularly the Innovation Manager, have been following official publications, especially from the European Commission, identifying what the gaps are and what is needed to achieve 5G-enabled CAM deployment in cross-border areas. This has allowed the consortium to align the work plan activities to these guidelines and recommendations and, thus, to deliver innovative results that are fully aligned with market needs. The Innovation Management task is therefore considered to have achieved the objectives that were set at the beginning of the project in a positive way.

The results address the challenges identified in various strategies and roadmaps for the deployment of 5G-enabled CAM application, and thus represent a major step forward on the road to achieving autonomous driving, especially in cross-border areas. The high number of innovations submitted in comparison to peer-projects demonstrates the consortium's commitment to the identification and development of innovations.

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-MOBIX (as per Grant Agreement number 825496).

ANNEXES

Annex 1 – Full list of innovations

No.	Innovation title	Innovators
1	Improved 5G cross-border handover	TELEFONICA UMU
2	5G Platooning, Infrastructure Based Truck Routing	FORD OTOMAN ERICSSON TURKEY TURKCELL COSMOTE TUBITAK IMEC
3	5G based retrofitting of legacy non-connected vehicles	IT ATOBE
4	5G Infrastructure-assisted advanced driving	AKKA CATAPULT VEDECOM
5	5G C-ITS Station and Mobile App for Cooperative and Connected Vehicles	IT ATOBE
6	5G Connected Roadside Infrastructure for CCAM Applications	IT
7	Remote Driving using 5G positioning	TUE KPN SIEMENSPT
8	Public transport with 5G based HD media services and provision of HD-map as traffic sensor	CTAG ALSA
9	Intelligent Remote Monitoring and Inspection for Logistics & Customs Operations	WINGS
10	3D see through functionality to neighbour vehicles	VICOM VALEODE

11	Kafka-based Big Data Management platform	INTRASOFT
12	Extended vehicle sensors with CPM (Converged IP Messaging) messages	TNO
13	Seamless vehicle-network integration with mutual awareness of status	TELEFONICA KPN NOS
14	Cooperative mobile edge computing in x-border scenarios for CCAM applications	COSMOTE TURKCELL KPN
15	Dual-SIM and Dual-Stack Multi-Techno OBU	VEDECOM
16	User acceptance model for Automated driving (UAMAD)	CCG
17	Vulnerable Road Users Mobile Application for Interaction With Connected/Autonomous Vehicles	CCG
18	End-to-End 5G Integrated Testbed with Open Source Core, Real and Simulated RAN, and Edge Computing Components	GTARC TUB
19	Network Emulator for simulating 5G/4G/WIFI network using statistical models	SISSBV
20	Intelligent Misbehaviour Detection System for Detecting False Position Attacks in Vehicular Networks	UL
21	On-Board Unit for 5G for CAM research and software for manoeuvre coordination services	VTT

22	LEVIS vehicular video streaming platform	AALTO
23	Tools and methodologies for the validation of seamless cross-border connectivity	UMU WP3 WP5

Annex 2 – Innovation Radar Responses

Potential Innovation #1

For each innovation that the project will develop / has developed, please answer the questions below

Improved 5G cross-border handover

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

Improve the way cell phones perform handover when changing the country regarding speed.

Is the innovation developed within the project ...

- (•) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)

○ No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/desirable	Not planned and not needed
Technology transfer	○	○	○	○
A partner's research team and business units are both engaged in activities relating to this innovation	○	○	○	○
Market study	○	○	○	○
Prototyping in laboratory environment	○	○	○	○
Prototyping in real world environment	○	○	○	○
Pilot, Demonstration or Testing activities	○	○	○	○
Feasibility study	○	○	○	○
Launch a start-up or spin-off	○	○	○	○
Licensing the innovation to a 3rd party	○	○	○	○
Complying with existing standards	○	○	○	○
Contribution to standards	○	○	○	○
Raise capital	○	○	○	○
Raise funding from public sources	○	○	○	○
Business Plan	○	○	○	○
Other (please specify)	○	○	○	◉

Is there a clear "owner" of the innovation in the consortium or multiple owners?

○ One clear owner

◉ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 Universidad de Murcia

Organisation 2 Telefónica

Organisation 3 _____

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☐	☐
Investor introductions	☐	☐	☐
Biz plan development	☐	☑	☐
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

- ○ In decline
- ○ Holding steady
- ○ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

- ○ Yes

- (●) No

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

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
- ( ) Between 5 and 10 years
- ( ) More than 10 years

Has a Trade mark been registered for this innovation?

- ( ) Yes
- (●) No

Potential Innovation #2

For each innovation that the project will develop / has developed, please answer the questions below

5G Platooning, Infrastructure Based Truck Routing

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

All platooning studies today, accomplished with short range communications, such as DSRC. Within this project, we will study also 5G based Platooning. Additionally, in customs area, a truck will be routed by the cloud computer instead of moving by itself. Perception of vehicle and route decision mechanism will be located in cloud. Perception will be created with the help of the sensors that are located on the field infrastructure.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)
- ○ No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/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	○	○	○ 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)	○	○	○	○

Is there a clear "owner" of the innovation in the consortium or multiple owners?

- ○ One clear owner
- ◉ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 Ford Otosan

Organisation 2 Turkcell

Organisation 3 Ericsson

Organisation 4 Cosmote

Organisation 5 Ericsson

Organisation 6 IMEC

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☐	☐
Investor introductions	☐	☐	☐
Biz plan development	☑	☑	☑
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

○ In decline

- ○ Holding steady
- ○ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

- ◉ Yes
- ○ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #3

For each innovation that the project will develop / has developed, please answer the questions below

5G Connected Vehicle and 5G Connected Roadside Infrastructure

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

The 5G RSU integrates a camera and a traffic radar for legacy vehicle and VRU detection, being used to forward traffic data to 5G connected vehicles. The role of this 5G RSU is particularly important in safety-critical scenarios and low-visibility areas.

The 5G OBU plays a key role in retrofitting exiting vehicles with a 5G network connection, to receive important traffic information from the connected vehicles and the road-side infrastructure. It is connected to a smartphone mobile app, providing relevant data to the driver and passengers.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)
- ○ No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/desirable	Not planned and not needed
Technology transfer	○	○	○	○
A partner's research team and business units are both engaged in activities relating to this innovation	○	○	○	○
Market study	○	○	○	○
Prototyping in laboratory environment	○	○	○	○
Prototyping in real world environment	○	○	○	○
Pilot, Demonstration or Testing activities	○	○	○	○
Feasibility study	○	○	◉	○
Launch a start-up or spin-off	○	○	○	○
Licensing the innovation to a 3rd party	○	○	○	○
Complying with existing standards	○	○	○	○
Contribution to standards	○	○	○	○
Raise capital	○	○	○	○
Raise funding from public sources	○	○	○	○
Business Plan	○	○	○	○
Other (please specify)	○	○	○	○

Is there a clear "owner" of the innovation in the consortium or multiple owners?

- ○ One clear owner
- ◉ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 Instituto de Telecomunicações

Organisation 2 A-to-Be

Organisation 3 _____

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☐	☐
Investor introductions	☐	☑	☐
Biz plan development	☑	☑	☐
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

- ○ In decline
- ○ Holding steady
- ○ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

- ◉ Yes
- ○ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #4

For each innovation that the project will develop / has developed, please answer the questions below

5G Infrastructure-assisted advanced driving

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

Advanced vehicle manoeuvre: intelligence assisted by the network infrastructure, combining 5G and LEO satellite communications.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)
- ( ) No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/desirable	Not planned and not needed
Technology transfer	○	○	○	○
A partner's research team and business units are both engaged in activities relating to this innovation	○	○	○	○
Market study	○	○	○	○
Prototyping in laboratory environment	○	○	○	○
Prototyping in real world environment	○	○	○	○
Pilot, Demonstration or Testing activities	○	○	○	○
Feasibility study	○	○	◉	○
Launch a start-up or spin-off	○	○	○	○
Licensing the innovation to a 3rd party	○	○	○	○
Complying with existing standards	○	○	○	○
Contribution to standards	○	○	○	○
Raise capital	○	○	○	○
Raise funding from public sources	○	○	○	○
Business Plan	○	○	○	○
Other (please specify)	○	○	○	○

Is there a clear "owner" of the innovation in the consortium or multiple owners?

○ One clear owner

◉ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 VEDECOM

Organisation 2 CATAPULT

Organisation 3 AKKA

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☐	☐
Investor introductions	☑	☑	☑
Biz plan development	☑	☑	☑

	Organisation1	Organisation2	Organisation3
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

- ○ In decline
- ○ Holding steady
- ○ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

- ○ Yes
- ◉ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #5

Innovation Radar questionnaire
Questions and answer fields

For each innovation that the project will develop / has developed, please answer the questions below

5G C-ITS Station and Mobile App for Cooperative and Connected Vehicles

Title of the innovation (between 20 and 200 characters, spaces included)

Notes about the 'Innovation Title' field:

- This field will be revealed to the public on the Innovation Radar platform / mobile app.
- This field is key and needs to be strong and clear. Examples of poor and good titles are below. If meaningful please ensure there is a **for** clause in the Innovation title.

Poor innovation title	**Good innovation title**
Laser Design Platform	Improved semiconductor laser design platform **for** RWG (ridge waveguide) lasers
Novel Robot Arm	Dextrous robotic slave arm **for** high radiation environments
Biosensors for diagnosis	Biosensors capable of breath and saliva monitoring **for** heart failure diagnosis

1. **Describe the innovation** (in less than 300 characters, spaces included)

The 5G C-ITS Station or On-Board Unit (OBU) plays a key role in retrofitting exiting vehicles with a 5G network connection, in order to receive important traffic information from the connected vehicles and the road-side infrastructure. It is connected to a smartphone mobile app, providing relevant data to the driver and passengers.

- Text of 50 to 300 characters will be accepted.
- This field will **NOT** be revealed to the public on the Innovation Radar platform / mobile app

2. **Is the innovation developed within the project ...**

☐ Under development
☑ Already developed but not yet being exploited
☐ Being exploited

3. **Characterise the type of innovation (only to be answered if 2b or 2c is selected)**

☐ 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)
- ☐ New process
- ☐ New marketing method
- ☐ New organisational method
- ☐ Other

4. If other, please specify:

5. Characterise the macro type of innovation (only to be answered if "under development" is selected for Q2):

- ☐ Product
- ☐ Marketing method
- ☐ Organisational method
- ☐ Process
- ☐ Service (non-consulting)
- ☐ Consulting service
- ☐ Do not know yet

6. Will the innovation be introduced to the market or deployed within a partner:

- ☐ a) Introduced new to the market (commercial exploitation)
- ☑ b) Deployed within a partner (internal exploitation: Changes in organisation, new internal processes implemented, etc.)
- ☐ c) No exploitation planned

7. If no exploitation planned, please explain why no exploitation is planned (answer only if 6(c) is selected)

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

- ☐ One clear owner
- ☑ Multiple owners

9. Indicate who is the "owner" of the innovation

Instituto de Telecomunicações, A-to-Be

10. 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 customers
- ☐ Very innovative

11. 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.)
- ☐ No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

12. Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/desirable	Not planned and not needed
Technology transfer	☐	☐	☑	☐
A partner's research team and business units are both engaged in activities relating to this innovation	☐	☑	☐	☐
Pilot	☑	☐	☐	☐
Capital investment (VC, Angel, other)	☐	☐	☐	☑
Investment from public authority (national, regional)	☐	☐	☑	☐
Business plan	☐	☐	☑	☐
Prototyping	☑	☐	☐	☐
Market study	☐	☐	☑	☐
Demonstration or Testing activities	☑	☐	☐	☐
Feasibility study	☐	☐	☑	☐
Launch a start-up or spin-off	☐	☐	☐	☑
Other	☐	☐	☐	☑

13. If other, please specify

14. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 ____Instituto de Telecomunicações____

Organisation 2 ____A-to-Be_____

Organisation 3 _____

15. Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☐	☐
Investor introductions	☑	☑	☐
Biz plan development	☑	☑	☐
Expanding to more markets	☑	☑	☐
Legal advice (IPR or other)	☐	☐	☐
Mentoring or Coaching	☐	☐	☐
Partnership with other company (technology or other)	☐	☐	☐
Incubation	☐	☐	☐
Start-up accelerator	☐	☐	☐

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
- ☐ Between 5 and 10 years
- ☐ More than 10 years

17. Have any of the project partners… (only to be answered if "Done" or "Planned in Project" is chosen for 12.5 "Investment from public authority")

- ☐ Already applied for support from private investors
- ☐ Already applied for investment from public authorities
- ☐ Planning to start discussions with private or public investors

18. Which partners are in discussion with investors (or are planning such discussions)?

19. 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

20. 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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

21. Market dynamics: is the market ...

- ☐ In decline
- ☐ Holding steady
- ☑ Growing

22. Are there other markets for this innovation that the innovators are not yet targeting?

- ☑ Yes
- ☐ No

23. 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

24. Has a Trade mark been registered for this innovation?

- ☐ Yes
- ☑ No

25. Is this a women-led innovation? Did a woman had a leadership role in developing this innovation in at least one of the organisation?

- ☑ Yes
- ☐ No

26. Have you developed any innovative activities with any consortium partners outside the project, but which have been generated through your participation in 5G-MOBIX? (e.g., joint initiatives, joint developments)

- ☐ Yes. Which one? _____
- ☑ No

27. If you wish, you can fill in the Innovation Note. You can find it here

Potential Innovation #6

Innovation Radar questionnaire
Questions and answer fields

For each innovation that the project will develop / has developed, please answer the questions below

5G Connected Roadside Infrastructure for CCAM Applications

Title of the innovation (between 20 and 200 characters, spaces included)

Notes about the 'Innovation Title' field:

- This field will be revealed to the public on the Innovation Radar platform / mobile app.
- This field is key and needs to be strong and clear. Examples of poor and good titles are below. If meaningful please ensure there is a **for** clause in the Innovation title.

Poor innovation title	**Good innovation title**
Laser Design Platform	Improved semiconductor laser design platform **for** RWG (ridge waveguide) lasers
Novel Robot Arm	Dextrous robotic slave arm **for** high radiation environments
Biosensors for diagnosis	Biosensors capable of breath and saliva monitoring **for** heart failure diagnosis

1. **Describe the innovation** (in less than 300 characters, spaces included)

The 5G C-ITS Station or Road-Side Unit (RSU) integrates a camera and a traffic radar for legacy vehicle and VRU detection, being used to forward traffic data to 5G connected vehicles. The role of this 5G RSU is particularly important in safety-critical scenarios and low-visibility areas.

- Text of 50 to 300 characters will be accepted.
- This field will **NOT** be revealed to the public on the Innovation Radar platform / mobile app

2. **Is the innovation developed within the project ...**

☐ Under development
☑ Already developed but not yet being exploited
☐ Being exploited

3. **Characterise the type of innovation (only to be answered if 2b or 2c is selected)**

☐ 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)
- ☐ New process
- ☐ New marketing method
- ☐ New organisational method
- ☐ Other

4. If other, please specify:

5. Characterise the macro type of innovation (only to be answered if "under development" is selected for Q2):

- ☐ Product
- ☐ Marketing method
- ☐ Organisational method
- ☐ Process
- ☐ Service (non-consulting)
- ☐ Consulting service
- ☐ Do not know yet

6. Will the innovation be introduced to the market or deployed within a partner:

- ☐ a) Introduced new to the market (commercial exploitation)
- ☑ b) Deployed within a partner (internal exploitation: Changes in organisation, new internal processes implemented, etc.)
- ☐ c) No exploitation planned

7. If no exploitation planned, please explain why no exploitation is planned (answer only if 6(c) is selected)

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

- ☑ One clear owner
- ☐ Multiple owners

9. Indicate who is the "owner" of the innovation

Instituto de Telecomunicações

10. 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 customers
- ☐ Very innovative

11. 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.)
- ☐ No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

12. Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/desirable	Not planned and not needed
Technology transfer	☐	☐	☑	☐
A partner's research team and business units are both engaged in activities relating to this innovation	☐	☐	☑	☐
Pilot	☑	☐	☐	☐
Capital investment (VC, Angel, other)	☐	☐	☑	☐
Investment from public authority (national, regional)	☐	☐	☑	☐
Business plan	☐	☐	☑	☐
Prototyping	☑	☐	☐	☐
Market study	☐	☐	☑	☐
Demonstration or Testing activities	☑	☐	☐	☐
Feasibility study	☐	☐	☑	☐
Launch a start-up or spin-off	☐	☐	☑	☐
Other	☐	☐	☐	☑

13. If other, please specify

14. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 ____Instituto de Telecomunicações____

Organisation 2 _____

Organisation 3 _____

15. Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☐	☐
Investor introductions	☑	☐	☐
Biz plan development	☑	☐	☐
Expanding to more markets	☑	☐	☐
Legal advice (IPR or other)	☐	☐	☐
Mentoring or Coaching	☐	☐	☐
Partnership with other company (technology or other)	☑	☐	☐
Incubation	☑	☐	☐
Start-up accelerator	☑	☐	☐

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
- ☐ Between 5 and 10 years
- ☐ More than 10 years

17. Have any of the project partners… (only to be answered if "Done" or "Planned in Project" is chosen for 12.5 "Investment from public authority")

- ☐ Already applied for support from private investors
- ☐ Already applied for investment from public authorities
- ☐ Planning to start discussions with private or public investors

18. Which partners are in discussion with investors (or are planning such discussions)?

19. 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

20. 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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

21. Market dynamics: is the market ...

- ☐ In decline
- ☐ Holding steady
- ☑ Growing

22. Are there other markets for this innovation that the innovators are not yet targeting?

- ☑ Yes
- ☐ No

23. 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

24. Has a Trade mark been registered for this innovation?

- ☐ Yes
- ☑ No

25. Is this a women-led innovation? Did a woman had a leadership role in developing this innovation in at least one of the organisation?

- ☐ Yes
- ☑ No

26. Have you developed any innovative activities with any consortium partners outside the project, but which have been generated through your participation in 5G-MOBIX? (e.g., joint initiatives, joint developments)

- ☐ Yes. Which one? _____
- ☑ No

27. If you wish, you can fill in the Innovation Note. You can find it here

Potential Innovation #7

For each innovation that the project will develop / has developed, please answer the questions below

Remote Driving using 5G positioning

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

Remote Driving using 5G slicing to isolate video streaming, control of the vehicle etc. and mmWave for accurate positioning.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- (●) Very innovative

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.)
- ( ) No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/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)	○	○	○	○

Is there a clear "owner" of the innovation in the consortium or multiple owners?

○ One clear owner

◉ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 SIEMENS

Organisation 2 KPN

Organisation 3 TUE

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☑	☑	☐

	Organisation1	Organisation2	Organisation3
Investor introductions	☑	☑	☑
Biz plan development	☑	☑	☐
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

- ○ In decline
- ○ Holding steady
- ○ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

- ◉ Yes
- ○ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #8

For each innovation that the project will develop / has developed, please answer the questions below

Public transport with HD media services and video surveillance

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

Taking advantage of 5G for ensuring high quality of bus services, a vehicle with a periodic route is also used as a sensor capturing data from the roads to update HD Maps.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)
- ( ) No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/desirable	Not planned and not needed
Technology transfer	○	○	○	○
A partner's research team and business units are both engaged in activities relating to this innovation	○	○	○	○
Market study	○	○	○	○
Prototyping in laboratory environment	○	○	○	○
Prototyping in real world environment	○	○	○	○
Pilot, Demonstration or Testing activities	○	○	○	○
Feasibility study	○	○	◉	○
Launch a start-up or spin-off	○	○	○	○
Licensing the innovation to a 3rd party	○	○	○	○
Complying with existing standards	○	○	○	○
Contribution to standards	○	○	○	○
Raise capital	○	○	○	○
Raise funding from public sources	○	○	○	○
Business Plan	○	○	○	○
Other (please specify)	○	○	○	○

Is there a clear "owner" of the innovation in the consortium or multiple owners?

○ One clear owner

◉ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 ALSA

Organisation 2 CTAG

Organisation 3 _____

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☑	☐	☐
Investor introductions	☑	☑	☐
Biz plan development	☑	☑	☐

	Organisation1	Organisation2	Organisation3
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

- ○ In decline
- ○ Holding steady
- ◉ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

- ○ Yes
- ◉ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #9

For each innovation that the project will develop / has developed, please answer the questions below

Intelligent Remote Monitoring and Inspection for Logistics & Customs Operations

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

By utilizing the detailed data provided by the CCAM enabled truck's and data from surrounding heterogeneous information sources, increased intelligence can be created based on a cooperative awareness of the borders' environment. The transmission of these data over reliable, ultra-fast and ultra-low latency 5G network connection combined with modern AI and predictive analytics techniques allows for the creation of a virtual environment of the driver enabling various added-value functionalities.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)
- ○ No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/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)	○	○	○	○

Is there a clear "owner" of the innovation in the consortium or multiple owners?

- ◉ One clear owner
- ○ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 WINGS ICT SOLUTIONS

Organisation 2 _____

Organisation 3 _____

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☑	☐	☐
Investor introductions	☐	☐	☐
Biz plan development	☐	☐	☐
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

- ○ In decline
- ○ Holding steady
- ◉ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

- ◉ Yes
- ○ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #10

For each innovation that the project will develop / has developed, please answer the questions below

Shared in-vehicle 3D surround view

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

A system composed of four fish-eye cameras located at the front, rear, and side mirrors generates a 3D surround view of the vehicles environment.

The surround view can be made available to nearby vehicles via a 5G service, providing see-through functionality for following cars and the possibility to inspect occluded area along the road.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)
- ○ No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/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)	○	○	○	○

Is there a clear "owner" of the innovation in the consortium or multiple owners?

- ○ One clear owner
- ◉ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 Valeo Schalter und Sensoren GmbH

Organisation 2 Fundación Centro de Tecnologías de Interacción Visual y Comunicaciones VICOMTECH

Organisation 3 _____

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☐	☐
Investor introductions	☐	☐	☐
Biz plan development	☑	☑	☐
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

- ○ In decline
- ○ Holding steady
- ◉ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

- ◉ Yes
- ○ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #11

For each innovation that the project will develop / has developed, please answer the questions below

Kafka-based Big Data Management platform

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

Streamhandler is a Kafka-based Big Data Management platform with multiple security features such as encryption, authorisation and authentication. It replicates data adding fault-tolerance and orchestrates data consumers' access to specific streams of information.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)
- ( ) No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/desirable	Not planned and not needed
Technology transfer	○	○	○	○
A partner's research team and business units are both engaged in activities relating to this innovation	○	○	○	○
Market study	○	○	○	○
Prototyping in laboratory environment	○	○	○	○
Prototyping in real world environment	○	○	○	○
Pilot, Demonstration or Testing activities	○	○	○	○
Feasibility study	○	○	○	○
Launch a start-up or spin-off	○	○	○	○
Licensing the innovation to a 3rd party	○	○	○	○
Complying with existing standards	○	○	○	○
Contribution to standards	○	○	○	○
Raise capital	○	○	○	○
Raise funding from public sources	○	○	○	○
Business Plan	○	○	○	○
Other (please specify)	○	○	○	◉

Is there a clear "owner" of the innovation in the consortium or multiple owners?

◉ One clear owner

○ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 INTRASOFT

Organisation 2 _____

Organisation 3 _____

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☐	☐
Investor introductions	☑	☐	☐
Biz plan development	☑	☐	☐
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

- ○ In decline
- ○ Holding steady
- ○ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

- ◉ Yes
- ○ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #12

For each innovation that the project will develop / has developed, please answer the questions below

Extended vehicle sensors with CPM messages

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

Tests of messages exchange between different edges for optimizing volume of messages based on actual requests; test performance continuity with handover between PLMNs and assessment of the impact V2X discontinuity in safety assessment.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)
- ( ) No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/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)	○	○	○	◉

Is there a clear "owner" of the innovation in the consortium or multiple owners?

◉ One clear owner

○ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 TNO

Organisation 2 _____

Organisation 3 _____

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☐	☐
Investor introductions	☐	☐	☐
Biz plan development	☑	☐	☐
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

○ In decline

○ Holding steady

◉ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

○ Yes

◉ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #13

For each innovation that the project will develop / has developed, please answer the questions below

Seamless vehicle-network integration

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

Integration of the telecom and automotive domains were the vehicle is aware of the network and the other way around.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)
- ( ) No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/desirable	Not planned and not needed
Technology transfer	○	○	○	○
A partner's research team and business units are both engaged in activities relating to this innovation	○	○	○	○
Market study	○	○	○	○
Prototyping in laboratory environment	○	○	○	○
Prototyping in real world environment	○	○	○	○
Pilot, Demonstration or Testing activities	○	○	○	○
Feasibility study	○	○	○	○
Launch a start-up or spin-off	○	○	○	○
Licensing the innovation to a 3rd party	○	○	○	○
Complying with existing standards	○	○	○	○
Contribution to standards	○	○	○	○
Raise capital	○	○	○	○
Raise funding from public sources	○	○	○	○
Business Plan	○	○	○	○
Other (please specify)	○	○	○	◉

Is there a clear "owner" of the innovation in the consortium or multiple owners?

○ One clear owner

◉ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 KPN

Organisation 2 NOS

Organisation 3 Telefónica

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☐	☐
Investor introductions	☐	☐	☐
Biz plan development	☑	☑	☑

	Organisation1	Organisation2	Organisation3
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

- ○ In decline
- ○ Holding steady
- ○ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

- ◉ Yes
- ○ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #14

For each innovation that the project will develop / has developed, please answer the questions below

Edge solutions for CCAM applications

Title of the innovation (between 20 and 200 characters, spaces included)

Describe the innovation (in less than 500 characters, spaces included)

In the different TS and CBC, Edge Computing capable Network are being tested, including developments over Edge MEC and cloud MEC, and the exchange of messages between different edges for optimizing volume of messages based on actual requests.

Is the innovation developed within the project ...

- (●) a) Under development
- ( ) b) Already developed but not yet being exploited
- ( ) c) being exploited

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)
- ( ) New process
- ( ) New marketing method
- ( ) New organisational method
- ( ) Other

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
- ( ) Very innovative

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.)
- ( ) No exploitation planned

Note: the following grid only needs to be completed if the answer to the previous question is "Introduced as new to the market".

Indicate the step(s) in order to bring the innovation to (or closer to) the market

	Done or ongoing	Planned	Not planned but needed/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)	○	○	○	◉

Is there a clear "owner" of the innovation in the consortium or multiple owners?

○ One clear owner

◉ Multiple owners

(note this question does not appear for single-beneficiary projects, such as SME Instrument)

Indicate (up to a maximum of 3) key organisation(s) delivering this innovation. For each of these identify under the next question their needs to fulfil their market potential

Organisation 1 FI TS

Organisation 2 GR-TR CBC

Organisation 3 NL TS

Indicate their needs to fulfil their market potential

	Organisation1	Organisation2	Organisation3
Investor readiness training	☐	☑	☑
Investor introductions	☑	☐	☑
Biz plan development	☐	☐	☐
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	☐	☐	☐

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

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

Note: the next question is only to be answered if "mature" is selected as the answer to the previous question

Market dynamics: is the market ...

○ In decline

○ Holding steady

○ Growing

Are there other markets for this innovation that the innovators are not yet targeting?

◉ Yes

○ No

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

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
- ○ Between 5 and 10 years
- ○ More than 10 years

Has a Trade mark been registered for this innovation?

- ○ Yes
- ◉ No

Potential Innovation #15

INNOVATION 1
1. Title of the innovation
Dual-SIM and Dual-Stack Multi-Techno OBU
2. Description of the innovation
Dual-SIM and Dual-Stack Multi-Techno OBU enable vehicles to communicate using - Heterogenous communications technology (4G/5G, ITS G5, C-V2X) - Dual-SIM in multi-PLMN environment - Standardised C-ITS protocol stack - Over both Geonetworking and IP networks Dual-SIM, associated with an intelligent router of top of the modem and with an OTT (Over the Top) Gateway at the MEC, will allow vehicles to maintain correctly their connectivity when changing from one network to another in the national country as when roaming or changing networks at cross-borders.

3. This innovation is ...	
Under development	
Already developed but not yet being exploited	X
Being exploited	
4. Characterise the type of innovation (select just one)	
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)	
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 *Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.*	

	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				
A partner's research team and business units are both engaged in activities relating to this innovation				
Market study				
Prototyping in laboratory environment				
Prototyping in real world environment				
Pilot, Demonstration or Testing activities				
Feasibility study				
Launch a start-up or spin-off				
Licensing the innovation to a 3rd party				
Complying with existing standards				
Contribution to standards				
Raise capital				
Raise funding from public sources				
Business Plan				
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	X
Multiple owners	

9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.
VEDECOM
[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	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	X		
Executive Training			
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? (select just one)	
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 ...? *Answer this question only if the answer to the previous question is 'mature'.*	
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	X
Established competition but none with a proposition like the one under investigation	
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	
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	
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? *Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)* *Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change*	
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	

Potential Innovation #16

INNOVATION 1
1. Title of the innovation *Please enter a meaningful innovation title (between 20 and 200 characters, spaces included). This field will be revealed to the public on the Innovation Radar platform / mobile app.* ***Tip**: This field is key and needs to be strong and clear. If possible, use a 'for' clause.* *Examples of poor versus good innovation titles:* *'Laser Design Platform' 👎 vs 'Improved semiconductor laser design platform for RWG (ridge waveguide) laser' 👍* *'Novel Robot Arm' 👎 vs 'Dextrous robotic slave arm for high radiation environments' 👍* *'Biosensors for diagnosis' 👎 vs 'Biosensors capable of breath and saliva monitoring for heart failure diagnosis' 👍*
UAAD – User Acceptance for Automated Driving Questionnaire
2. Description of the innovation *Please describe the innovation. Use less than 500 characters, spaces included.* *This field will NOT be revealed to the public on the Innovation Radar platform / mobile app*
This UAAD is a 24-item Likert scale designed to evaluate the acceptability of use-cases of automated driving technologies. This includes, for instance, automated vehicles for individual use, public mobility services or platooning proposals. It evaluates constructs generally considered relevant for technology acceptance, such as perceived ease-of-use and perceived usefulness, but also a few additional ones that are important in the context of automated mobility such as trust and reliability.

3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	
4. Characterise the type of innovation (select just one)	
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)	
New process	X
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.)	
No exploitation planned	X
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 *Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.*	

	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.				
CCG				
CTAG				
[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			
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 be used by mainly current or new customers? (select just one)			
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 ...? *Answer this question only if the answer to the previous question is 'mature'.*			
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			

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	
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?	
[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]	
20. Does this innovation have a potential to address climate mitigation or climate adaptation? *Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)* *Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change*	
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	

Potential Innovation #17

INNOVATION 1
1. Title of the innovation *Please enter a meaningful innovation title (between 20 and 200 characters, spaces included). This field will be revealed to the public on the Innovation Radar platform / mobile app.* *Tip: This field is key and needs to be strong and clear. If possible, use a 'for' clause.* *Examples of poor versus good innovation titles:* *'Laser Design Platform' vs 'Improved semiconductor laser design platform for RWG (ridge waveguide) laser'* *'Novel Robot Arm' vs 'Dextrous robotic slave arm for high radiation environments'* *'Biosensors for diagnosis' vs 'Biosensors capable of breath and saliva monitoring for heart failure diagnosis'*
Vulnerable Road Users Mobile Application for Interaction With Connected/Autonomous Vehicles
2. Description of the innovation *Please describe the innovation. Use less than 500 characters, spaces included.* *This field will NOT be revealed to the public on the Innovation Radar platform / mobile app*
The Vulnerable Road User (VRU) Application uses European Telecommunications Standards Institute (ETSI) to advertise the position of the VRU to all connected vehicles subscribed to a broker. The application is also prepared to receive notifications, again using ETSI standards, and alert the user through sound and haptic alerts.

3. This innovation is ...	
Under development	
Already developed but not yet being exploited	X
Being exploited	
4. Characterise the type of innovation (select just one)	
Significantly improved product	
Significantly improved service (except consulting services)	
Significantly improved process	
Significantly improved marketing method	
Significantly improved organisational method	
Consulting services	
New product	X
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.)	
No exploitation planned	X
If 'no exploitation planned' is selected, explain why not:	
The application developed was a proof of concept developed to work with the 5G-MOBIX infrastructure. It requires a working a infrastructure to be further exploited.	
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market *Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.*	

	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)				X
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				X
Multiple owners				
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.				
CCG				
[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			
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 be used by mainly current or new customers? (select just one)			
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			X
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			
13. Market dynamics: is the market ...? *Answer this question only if the answer to the previous question is 'mature'.*			
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			X
Established competition but none with a proposition like the one under investigation			
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	
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? *Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)* *Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change*	
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	

Potential Innovation #18

INNOVATION 1

1. Title of the innovation

Please enter a meaningful innovation title (between 20 and 200 characters, spaces included). This field will be revealed to the public on the Innovation Radar platform / mobile app.

Tip: This field is key and needs to be strong and clear. If possible, use a 'for' clause.

Examples of poor versus good innovation titles:

'Laser Design Platform' vs 'Improved semiconductor laser design platform for RWG (ridge waveguide) laser'

'Novel Robot Arm' vs 'Dextrous robotic slave arm for high radiation environments'

'Biosensors for diagnosis' vs 'Biosensors capable of breath and saliva monitoring for heart failure diagnosis'

End-to-End 5G Integrated Testbed with Open Source Core, Real and Simulated RAN, and Edge Computing Components

2. Description of the innovation

Please describe the innovation. Use less than 500 characters, spaces included.

This field will NOT be revealed to the public on the Innovation Radar platform / mobile app

5G and beyond testbed based on open source components and open interfaces. Programmable Radio Access Network (RAN) in line with OpenRAN paradigm, including the ability to enhance/modify the gNB functionality with dynamic / data-driven procedures over commodity hardware. This facilitates AI driven approaches at the UE/Edge, RAN, and core network layers, implementing the 3GPP standardized network component Network Data Analytics Function (NWDAF) and the associated data analytics applications. The development and testing of AI approaches on the testbed is supported and enhanced by the integration of both real and simulated components.

3. This innovation is ...	
Under development	X
Already developed but not yet being exploited	
Being exploited	
4. Characterise the type of innovation (select just one)	
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	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 *Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.*	

	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				
A partner's research team and business units are both engaged in activities relating to this innovation				
Market study				
Prototyping in laboratory environment				
Prototyping in real world environment				
Pilot, Demonstration or Testing activities				
Feasibility study				
Launch a start-up or spin-off				
Licensing the innovation to a 3rd party				
Complying with existing standards				
Contribution to standards				
Raise capital				
Raise funding from public sources				
Business Plan				
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.
Technische Universität Berlin
GT-ARC gemeinnützige GmbH

10. Indicate these organisations' needs to fulfil their market potential			
	TU Berlin	GT-ARC	
Investor readiness training			

Investor introductions			
Biz plan development			
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 be used by mainly current or new customers? (select just one)			
Current customers			N/A
New customers			N/A
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 ___? *Answer this question only if the answer to the previous question is 'mature'.*			
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			
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?	
[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? *Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)* *Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change*	
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	

Potential Innovation #19

INNOVATION 1
1. Title of the innovation *Please enter a meaningful innovation title (between 20 and 200 characters, spaces included). This field will be revealed to the public on the Innovation Radar platform / mobile app.* ***Tip:** This field is key and needs to be strong and clear. If possible, use a 'for' clause.* *Examples of poor versus good innovation titles:* *'Laser Design Platform' vs 'Improved semiconductor laser design platform for RWG (ridge waveguide) laser'* *'Novel Robot Arm' vs 'Dextrous robotic slave arm for high radiation environments'* *'Biosensors for diagnosis' vs 'Biosensors capable of breath and saliva monitoring for heart failure diagnosis'*
Network Emulator for simulating 5G/4G/WIFI network using statistical models
2. Description of the innovation *Please describe the innovation. Use less than 500 characters, spaces included.* *This field will NOT be revealed to the public on the Innovation Radar platform / mobile app*
As one of the use-case of Remote Driving, emulated network remote driving setup has been developed to measure the driving performance of a remote operator in a HIL setup with simulated vehicle, real remote station. In these tests, to simulate the network behavior of 5G connection as accurately as possible, a network emulator device has been developed, which has its own dedicated statistical 5G/4G/WIFI network models based on actual measurements of the specific network. It is situated between simulation computer and remote driving station. Accordingly, the network emulator helps us emulate time delay on the network and test remote driver reaction time in simulation environment, providing cost-effective and risk-free alternative for physical testing.

3. This innovation is ...	
Under development	
Already developed but not yet being exploited	X
Being exploited	
4. Characterise the type of innovation (select just one)	
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)	
New process	X
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.)	
No exploitation planned	X
If 'no exploitation planned' is selected, explain why not:	
Our department today is mainly focused on virtual simulations for ADAS systems. We are less active on hardware solutions for network nowadays. The Network emulator was developed for the project and was successfully used, but at this moment there is no exploitation planned.	
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market *Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.*	

	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				
A partner's research team and business units are both engaged in activities relating to this innovation				
Market study				
Prototyping in laboratory environment				
Prototyping in real world environment				
Pilot, Demonstration or Testing activities				
Feasibility study				
Launch a start-up or spin-off				
Licensing the innovation to a 3rd party				
Complying with existing standards				
Contribution to standards				
Raise capital				
Raise funding from public sources				
Business Plan				
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	X
Multiple owners	

9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.
Siemens Industry Software Netherlands B.V. [SISSBV]
[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			
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 be used by mainly current or new customers? (select just one)	
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	
Mature: The market is already supplied with many products of the type proposed	X
13. Market dynamics: is the market ...? *Answer this question only if the answer to the previous question is 'mature'.*	
In decline	
Holding steady	X
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	
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	
Not relevant to any Societal Challenge	X
If 'not relevant to any SC is selected' explain why?	
The innovation does not directly correlate with any societal challenges	
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	
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	X
If 'not relevant to any SDG is selected' explain why?	
The innovation does not have significant impact on the society	
20. Does this innovation have a potential to address climate mitigation or climate adaptation? *Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)* *Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change*	
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	

Potential Innovation #20

INNOVATION 1
1. Title of the innovation *Please enter a meaningful innovation title (**between 20 and 200 characters, spaces included**). This field will be revealed to the public on the Innovation Radar platform / mobile app.* ***Tip:** This field is key and needs to be strong and clear. If possible, use a 'for' clause.* *Examples of poor versus good innovation titles:* *'Laser Design Platform' 👎 vs 'Improved semiconductor laser design platform for RWG (ridge waveguide) laser' 👍* *'Novel Robot Arm' 👎 vs 'Dextrous robotic slave arm for high radiation environments' 👍* *'Biosensors for diagnosis' 👎 vs 'Biosensors capable of breath and saliva monitoring for heart failure diagnosis' 👍*
Intelligent Misbehaviour Detection System for Detecting False Position Attacks in Vehicular Networks
2. Description of the innovation *Please describe the innovation. **Use less than 500 characters, spaces included.*** *This field will **NOT** be revealed to the public on the Innovation Radar platform / mobile app*
This innovation proposes an intelligent misbehavior detection system for vehicular networks. This novel system leverages machine learning to detect false position attacks based on Cooperative Awareness Messages (CAMs) broadcast by connected and automated vehicles. Specifically, this innovation exploits the patterns of position variations in a sequence of CAMs to early detect and accurately predict position falsification attacks.

3. This innovation is ...	
Under development	
Already developed but not yet being exploited	X
Being exploited	
4. Characterise the type of innovation (select just one)	
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.)	
No exploitation planned	X
If 'no exploitation planned' is selected, explain why not:	
The market is not mature to introduce our innovation	
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market *Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.*	

	Done or ongoing	Planned	Not planned but needed or desirable	Not planned and not needed
Technology transfer				
A partner's research team and business units are both engaged in activities relating to this innovation				
Market study				
Prototyping in laboratory environment				
Prototyping in real world environment				
Pilot, Demonstration or Testing activities				
Feasibility study				
Launch a start-up or spin-off				
Licensing the innovation to a 3rd party				
Complying with existing standards				
Contribution to standards				
Raise capital				
Raise funding from public sources				
Business Plan				
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	X
Multiple owners	

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

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			
Legal advice (IPR or other)			
Mentoring or Coaching	X		
Partnership with other SME(s)	X		
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 be used by mainly current or new customers? (select just one)	
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	X
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	
13. Market dynamics: is the market ...? *Answer this question only if the answer to the previous question is 'mature'.*	
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	X
Established competition but none with a proposition like the one under investigation	
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	
Between 5 and 10 years	X
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?	
[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]	
20. Does this innovation have a potential to address climate mitigation or climate adaptation? *Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)* *Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change*	
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	

Potential Innovation #21

INNOVATION 1
1. Title of the innovation *Please enter a meaningful innovation title (between 20 and 200 characters, spaces included). This field will be revealed to the public on the Innovation Radar platform / mobile app.* ***Tip:** This field is key and needs to be strong and clear. If possible, use a 'for' clause.* *Examples of poor versus good innovation titles:* *'Laser Design Platform' vs 'Improved semiconductor laser design platform for RWG (ridge waveguide) laser'* *'Novel Robot Arm' vs 'Dextrous robotic slave arm for high radiation environments'* *'Biosensors for diagnosis' vs 'Biosensors capable of breath and saliva monitoring for heart failure diagnosis'*
On-Board Unit for 5G for CAM research and software for maneuver coordination services
2. Description of the innovation *Please describe the innovation. Use less than 500 characters, spaces included.* *This field will NOT be revealed to the public on the Innovation Radar platform / mobile app*
During the 5G-MOBIX project VTT has developed different tools for demonstration and evaluation of 5G for CAM services in cross-border situations. The first tool is an OBU, consisting of laptop, 5G modem, GNSS receiver and CAM software for both the operation of CAM services and the logging of data. The main purpose of the OBU is to be able to place it easily in vehicles at remote test sites. The OBUs have been used in the ES-PT CBC and the NL TS. For the CoCA (cooperative collision avoidance) user story, VTT has developed a MCS (Maneuver Coordination Service) application for MECs. The MEC MCS-application provides guidance to automated and connected vehicles in order to avoid collisions. The application works together with a MCS application in the vehicles, in which the vehicle informs their manoeuvre intent to other vehicles and to the infrastructure (MEC). The MEC application allows to control the traffic of automated vehicles, and can form the basis of local traffic management, e.g., for controlling traffic of automated and connected vehicles at an intersection in the absence of traffic lights. The application is hence useful for road operators. The MCS application in the vehicle is able to work both with the MEC MCS application, taking guidance from the MEC, as well as without, with vehicle negotiation

3. This innovation is ...	
Under development	
Already developed but not yet being exploited	X
Being exploited	
4. Characterise the type of innovation (select just one)	
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	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:	
The tools (OBU and software) are used in other research projects related to 5G for CAM	
7. Indicate the step(s) in order to bring the innovation to (or closer to) the market *Answer the following grid only if the answer to the previous question is 'Introduced as new to the market'.*	

	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)				X
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				X
Multiple owners				
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.				
VTT Technical Research Centre of Finland Ltd				
[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	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			

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? (select just one)	
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	X
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	
13. Market dynamics: is the market ...? *Answer this question only if the answer to the previous question is 'mature'.*	
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	
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?	
[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	
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? *Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)* *Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change*	
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	

Potential Innovation #22

INNOVATION 1
1. Title of the innovation *Please enter a meaningful innovation title (between 20 and 200 characters, spaces included). This field will be revealed to the public on the Innovation Radar platform / mobile app.* *Tip: This field is key and needs to be strong and clear. If possible, use a 'for' clause.* *Examples of poor versus good innovation titles:* *'Laser Design Platform' 👎 vs 'Improved semiconductor laser design platform for RWG (ridge waveguide) laser' 👍* *'Novel Robot Arm' 👎 vs 'Dextrous robotic slave arm for high radiation environments' 👍* *'Biosensors for diagnosis' 👎 vs 'Biosensors capable of breath and saliva monitoring for heart failure diagnosis' 👍*
LEVIS vehicular video streaming platform
2. Description of the innovation *Please describe the innovation. Use less than 500 characters, spaces included.* *This field will NOT be revealed to the public on the Innovation Radar platform / mobile app*
LEVIS platform that enables low latency cloud-based video streaming in a vehicular environment. The design goals of the developed platform are two-folds: i) ensure a very low end-to-end (E2E) latency between the stream sender and receiver, ii) ensure a smooth and short streaming outage (i.e., close to the connectivity outage time) during handover/roaming operation. In 5G-MOBIX project, the LEVIS platform was utilized for the implementation of the See-What-I-See use case in GR-TR CBC and remote driving use case in FI-TS.

	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				X
Multiple owners				
9. Indicate (up to a maximum of 3) key organisation(s) delivering this innovation.				
AALTO				
[insert organisation 2]				
[insert organisation 3]				
10. Indicate these organisations' needs to fulfil their market potential				
	AALTO	Organisation 2	Organisation 3	
Investor readiness training				

Investor introductions			
Biz plan development			
Expanding to more markets			
Legal advice (IPR or other)			
Mentoring or Coaching			
Partnership with other SME(s)	X		
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 be used by mainly current or new customers? (select just one)			
Current customers			
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 ...? *Answer this question only if the answer to the previous question is 'mature'.*			
In decline			
Holding steady			X
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	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	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	
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? *Climate mitigation potential: The innovation addresses the causes of climate change (i.e. it can reduce and curb greenhouse gas emissions)* *Climate adaptation potential: The innovation can reduce vulnerability to the harmful effects of climate change*	
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	