



5GMOBIX

5G for cooperative & connected automated

MOBility on X-border corridors

D1.3

Innovation Management Plan

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Control sheet

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ABBREVIATIONS

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

EXECUTIVE SUMMARY

The present document is the deliverable D1.3 – Innovation Management Plan, 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 Cooperative, Connected and Automated Mobility (CCAM) trials along cross-border and urban corridors using 5G core technological innovations to qualify the 5G infrastructure and evaluate its benefits in the CCAM context as well as to define deployment scenarios and to identify and respond to standardisation and spectrum gaps.

Task 1.3 Innovation Management aims at efficiently monitoring market needs and technical evolutions throughout the project’s lifetime. It will also make sure that the project work plan is 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.

This deliverable includes the innovation management strategy and a detailed innovation management plan of action. Innovation management activities are managed by VICOM, Task 1.3 leader, in close collaboration with the Project Coordinator (ERTICO). The aim of this deliverable is to describe the innovation management approach to be followed during the 5G-MOBIX project’s development.

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** defines innovation in the context of the 5G-MOBIX project in general, and of this deliverable in particular.
- **Section 3 – Innovation Potential** presents the different areas and specific challenges that present major innovation potential of the 5G-MOBIX project.
- **Section 4 – Innovation Strategy** describes the overall framework with regards to innovation in 5G-MOBIX, as well as the specific methods for assessment, and several innovation management tools that will be considered during the project.
- **Section 5 – IPR Management** introduces the strategy that will be followed for results identification and management in 5G-MOBIX.
- **Section 6 – Innovation Management Schedule** describes the specific plan for the activities described both at a project level and at a partner level.
- **Section 7 – Conclusion** summarises the main outcomes of this deliverable.

1. INTRODUCTION

1.1. 5G-MOBIX concept and approach

5G-MOBIX will conduct trials to test and validate 5G technology for advanced CCAM along eight trial sites, which include cross-border and urban corridors. The Project Consortium includes 49 beneficiaries and an additional nine international partners from Korea and China. This large Consortium will share responsibilities of tasks divided into eight work packages (WPs) across 10 EU countries as well as in Turkey, China and Korea.

As a Horizon 2020 project, 5G-MOBIX is bound by a set of Ethics requirements that touch on various aspects of its work plan, specifically the use of human participants in trials, personal data processing, proper use of technology and the involvement of non-EU countries (NEC) in the project.

5G-MOBIX is determined to work towards its ultimate goal of the roll out of 5G networks to support CCAM in a societally acceptable and ethical manner consistent with the H2020 programme.

1.2. Purpose of the deliverable

The aim of this deliverable is to describe the innovation management approach to be followed during the 5G-MOBIX project's development. For this aim, the document provides supporting literature with regards to the concept of innovation and innovation management, in order to ensure the understanding of the report. In addition, some of the main innovation management tools will be described. Furthermore, it will serve as guidance for the consortium members. The 5G-MOBIX innovation management plan is dynamic and will be adapted during the project both according to the timeline and the achieved results.

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 D1.3. is public (PU) and not limited to members of the Consortium. This deliverable is intended to serve as an internal guideline for the appropriate innovation management of the 5G-MOBIX project. The main goal is for all project participants in the consortium to understand the procedures dealing with innovation management of the 5G-MOBIX action and the consortium. Additionally, it may serve as an informative report for those external parties interested on different aspects concerning the project's innovation potential and its development.

1.4. COVID Impact

No specific measures have been implemented from an innovation management perspective to reduce the negative impact of COVID-19 and related implications on this task, besides those taken from an overall project management perspective.

2. INNOVATION PROCESS

In the context of H2020, the Innovation Management Plan of 5G-MOBIX will be based on the European Commission’s [2] definition for innovation, which is the “*successful production, assimilation and exploitation of novelty in the economic and social spheres*”. From this perspective, innovation offers new solutions to problems and responds to the needs of both the individual and society.

5G-MOBIX has appointed an Innovation Manager, Esther Novo from VICOM, who will report to the Technical Management Team. A deputy Innovation Manager was nominated, Seán Gaines, to guarantee the role is fulfilled appropriately. The Innovation Manager will:

- Work with partners and stakeholders to keep track of end-user needs and of the state of the art of products and services available in the market (competition), and
- Work with partners to make sure that the planned work is adjusted as needed to adapt to the time moving target.

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

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

The stages of development and pre-development activities belong to technology management [3]. The field of R&D management is determined by adding upstream fundamental research, as well as product and process development. Finally, innovation management includes the final product and market introduction phase.

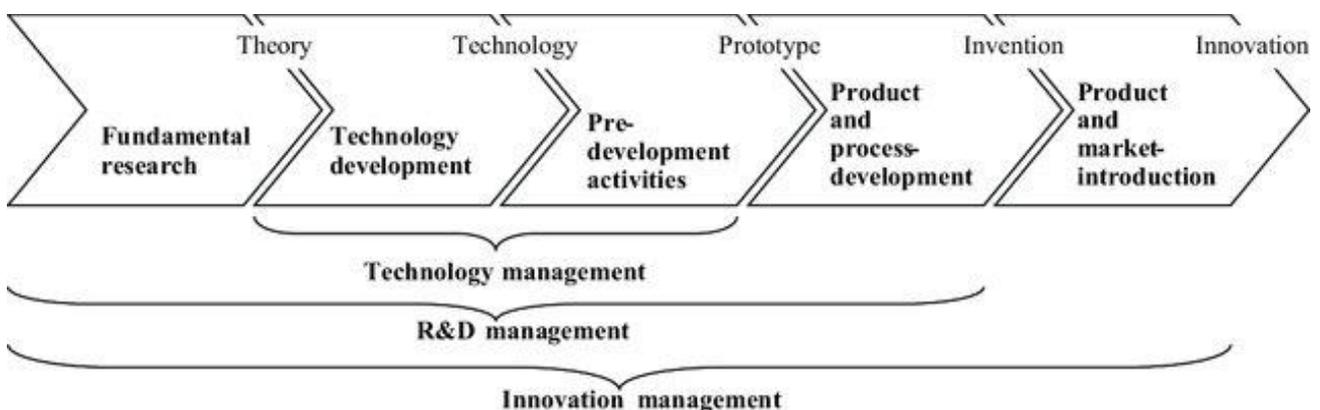


Figure 1: Classification of management phases [3]

3. INNOVATION POTENTIAL DIMENSIONS

According to the 5G-MOBIX vision, and as described in D2.1, different components meet at the cross-border areas when operating CCAM applications. Each of these components has its own issues or challenges to solve including technological and business aspects. 5G-MOBIX will show the impact and innovation potential of the proposed use cases when evaluated at specific 5G corridors to the identified issues. Each 5G corridor, deployed in a cross-border evaluation site or a trial evaluation site will have a complementary focus on specific issues present at cross-border areas. Specifically, the considered issues pivot around four main orthogonal dimensions for all the use cases at the cross-border corridors, which correspond to the different areas where potential innovations in the project will be developed:

1. **Telecommunications** including 5G infrastructures operating 5G technologies to process or connect AD functions from the use cases enabled by core technological innovation from 5G, such as new frequency bands, Cloud Radio Access Network (C-RAN), Mobile Edge Computing and network virtualisation infrastructures.
2. **Application** executing the CCAM service on a vehicle or a set of them along a cross border context which may include several operator's domains and business model.
3. **Security and data privacy** spanning the communication and application threats at cross border kind of roads, mainly highways.
4. **Regulation** encompassing communications, application and security and privacy concerns.

The identified issues related to each innovation potential category are listed in D2.1. A more detailed analysis per issue, as well as the potential solutions to address these challenges are discussed in D2.2. As has also been described in those WP2 deliverables, D2.1 and D2.2 focus on 5G radio technology and specify service requirements to enhance 3GPP support for V2X scenarios in the following areas:

1. **Advanced Driving:** According to 3GPP TS 22.186 R16, Advanced Driving “enables semi-automated or fully-automated driving. Longer inter-vehicle distance is assumed. Each vehicle and/or Road Side Unit (RSU) shares data obtained from its local sensors with vehicles in proximity, thus allowing vehicles to coordinate their trajectories or manoeuvres. In addition, each vehicle shares its driving intention with vehicles in proximity. The benefits of this use case group are safer traveling, collision avoidance, and improved traffic efficiency”.
2. **Vehicles Platooning:** According to 3GPP TS 22.186 R16, Vehicles Platooning “enables the vehicles to dynamically form a group travelling together. All the vehicles in the platoon receive periodic data

from the leading vehicle, in order to carry on platoon operations. This information allows the distance between vehicles to become extremely small, i.e., the gap distance translated to time can be very low (sub second). Platooning applications may allow the vehicles following to be autonomously driven”.

3. **Extended Sensors:** According to 3GPP TS 22.186 R16, Extended Sensors “enable the exchange of raw or processed data gathered through local sensors or live video data among vehicles, RSUs, devices of pedestrians and V2X application servers. The vehicles can enhance the perception of their environment beyond what their own sensors can detect and have a more holistic view of the local situation”.
4. **Remote Driving:** According to 3GPP TS 22.186 R16, Remote Driving “enables a remote driver or a V2X application to operate a remote vehicle for those passengers who cannot drive themselves or a remote vehicle located in dangerous environments. For a case where variation is limited, and routes are predictable, such as public transportation, driving based on cloud computing can be used. In addition, access to cloud-based back-end service platform can be considered for this use case group”.
5. **Vehicle quality of service support:** According to 3GPP TS 22.186 R16, Vehicle quality of service support “enables a V2X application to be timely notified of expected or estimated change of quality of service before actual change occurs and to enable the 3GPP System to modify the quality of service in line with V2X application’s quality of service needs. Based on the quality of service information, the V2X application can adapt behaviour to 3GPP System’s conditions. The benefits of this use case group are offerings of smoother user experience of service”.

4. INNOVATION STRATEGY

4.1. Overall framework

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

4.2. Framework for assessment

The aim of this section is to let the reader know about the processes or steps that the Innovation Manager will follow 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 must be closely and regularly monitored, as well as market breakthroughs. Some of the tasks for the overall assessment are:

- The 5G-MOBIX Innovation Management Plan: was initially submitted in month 6 of the project and is regularly updated throughout its development,
- The Innovation Management Report: will be published at the end of the project, providing information on the progress made on innovation by the 5G-MOBIX consortium.
- Each partner will be responsible of updating the rest of the consortium in case they are aware of events affecting the Innovation Management of the Project,
- A slot of the General Assemblies and TMT meetings will be dedicated to the analysis of the Innovation Management Plan,
- Possible risks will be identified and classified according to the likelihood of occurrence,
- Given the context of a non-identified and unexpected threat emerges, the Innovation Manager will call for a meeting with the Consortium Members in order to jointly determine the next steps.

4.3. Innovation management tools

For an efficient innovation management during the project, a number of specific tools have been analysed in order to respond to the innovation management requirements of the project: S-curve framework, Stage Gate model, Funnel model, Schrello screen, etc. The Innovation Manager and TMT are held responsible for these tools and procedures that have to be implemented by all Consortium members. The innovation management tools that are used in 5G-MOBIX are described in the sub-sections below.

4.3.1. Risk Matrix for innovation

To balance 5G-MOBIX's innovation portfolio, the consortium needs a clear picture of how its activities fall on the spectrum of risk. The risk matrix employs a unique scoring system and calibration of risk to help estimate the probability of success or failure for each project based on how big a stretch is: the less familiar the intended market (x axis) and the product or technology (y axis), the higher the risk. See Figure 2: Risk Matrix for innovations

A position on the matrix is determined by its score on a range of factors, such as how closely the behaviour of targeted customers will match that of the 5G-MOBIX's partners' current customers, how relevant their brands are to the intended market, and how applicable the technology capabilities are to the new product. The Innovation Manager together with the TMT will conduct the evaluation, with the support of the WP Leaders and the development teams. Team members will rate each activity independently and then explain their rationale. They will discuss reasons for any difference of opinion and seek consensus. The resulting scores serve as the project's coordinates on the risk matrix.

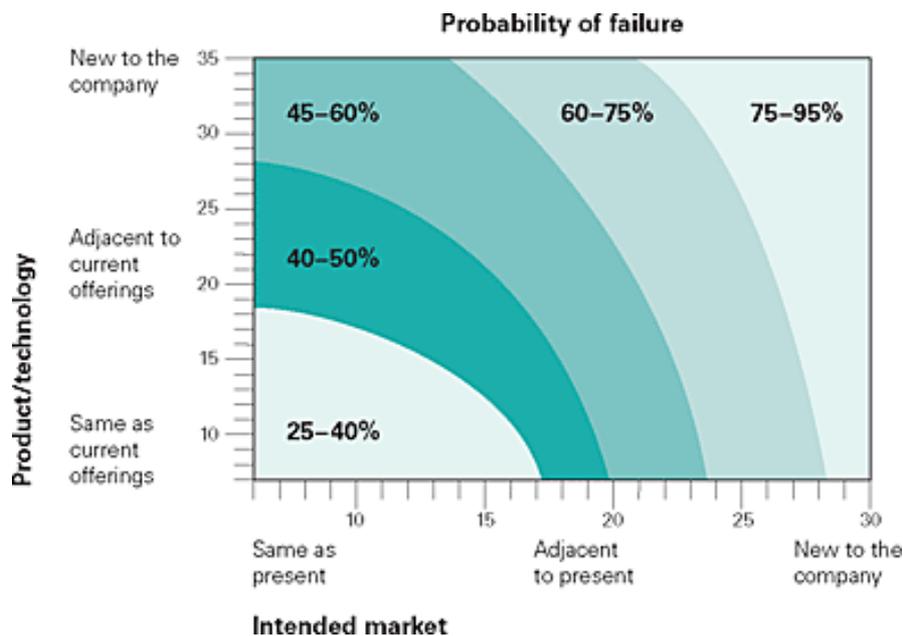


Figure 2: Risk Matrix for innovations

4.3.2. R-W-W Screen

The Real-Win-Worth-It screen, sometimes known as the Schrello screen, is a tool built on a series of questions about the innovation concept or product, its potential market, and the consortium's capabilities and competition. It is not an algorithm for making go/no-go decisions, but a disciplined process that can be employed at multiple stages of product development to expose faulty assumptions, gaps in knowledge, potential sources of risk, and to ensure that every avenue for improvement has been explored. The R-W-W screen can be used to identify and help fix problems that are miring a project, to contain risk, and to expose problems that might lead to termination of an activity.

The R-W-W screen can be used to evaluate individual activities, concepts, or ideas by answering questions in three broad topic areas: "Is it real?" explores the nature of the potential market and looks at the feasibility of building the product. "Can we win?" considers whether the innovation and the company can be competitive. "Is it worth doing?" examines the profit potential and whether developing the innovation makes strategic sense (Annex 1 – R-W-W Questionnaire).

4.3.3. Innovation Radar

The Innovation Radar is an initiative of the European Commission focused on the identification of high potential innovations in FP7, CIP and Horizon 2020 projects. It supports innovators by suggesting a range of targeted actions to assist them in fulfilling their potential in the market. This initiative involves: assessing the maturity of innovations developed within the projects and identifying high potential innovators and innovations; providing guidance during the project duration in terms of the most appropriate steps to reach the market; and supporting innovators through entrepreneurship initiatives to cover specific needs concerning networking, access to finance, Intellectual Property Rights, etc.

According to De Prato, Nepelski, and Piroli [1] the market potential and innovation readiness are among the strongest dimensions of the ICT innovations developed in the projects analysed in the report, while innovation management has the most room for improvement. In the context of 5G-MOBIX, the structured questionnaire that is used to review projects with respect to their innovative output by the innovation radar can be used to perform an internal qualitative evaluation of the potential innovations developed within the project (see Annex 2 – Innovation Radar Questionnaire).

5. IPR MANAGEMENT

In order for the results of 5G-MOBIX to become innovations in the market, appropriate IPR Management is paramount. Therefore, 5G-MOBIX will continually and actively monitor the creation of IPR during the lifetime of the project within WP1. As part of this process, results which are both jointly and individually owned will be identified. Proposals for the division of share of such results and the base conditions for their exploitation were made by the project team, in particular those generating the results, the project coordinator, the innovation and exploitation managers.

These proposals will be made in line with the conditions first set out in the Consortium Agreement and in function of the IPR audits to be conducted. IPR audits will be executed every 6 months, when partners will be able to identify different aspects related to the 5G-MOBIX results produced, such as:

- Control of access rights needed for the implementation of the project,
- Control of third owners' software used in the implementation of the project,
- Control of commercial hardware used in the implementation of the project,
- Control of third owner intellectual property rights used in the implementation of the project,
- Control of party background used in the implementation of the project,
- Control of party foreground generated in the project.

In order to facilitate this process, an online tool has been provided to support partners in the identification of the IP Foreground and the pre-existing knowledge to be protected, according to the project evolution. This tool will be available for editing and viewing during the entire duration of the project and after its end. Nevertheless, each partner is responsible to apply the knowledge protection measures.

The different sections of the online tool for IPR auditing are depicted in the figures below, including background and results registration. This online tool has been integrated in the SharePoint platform used for general project management in 5G-MOBIX.

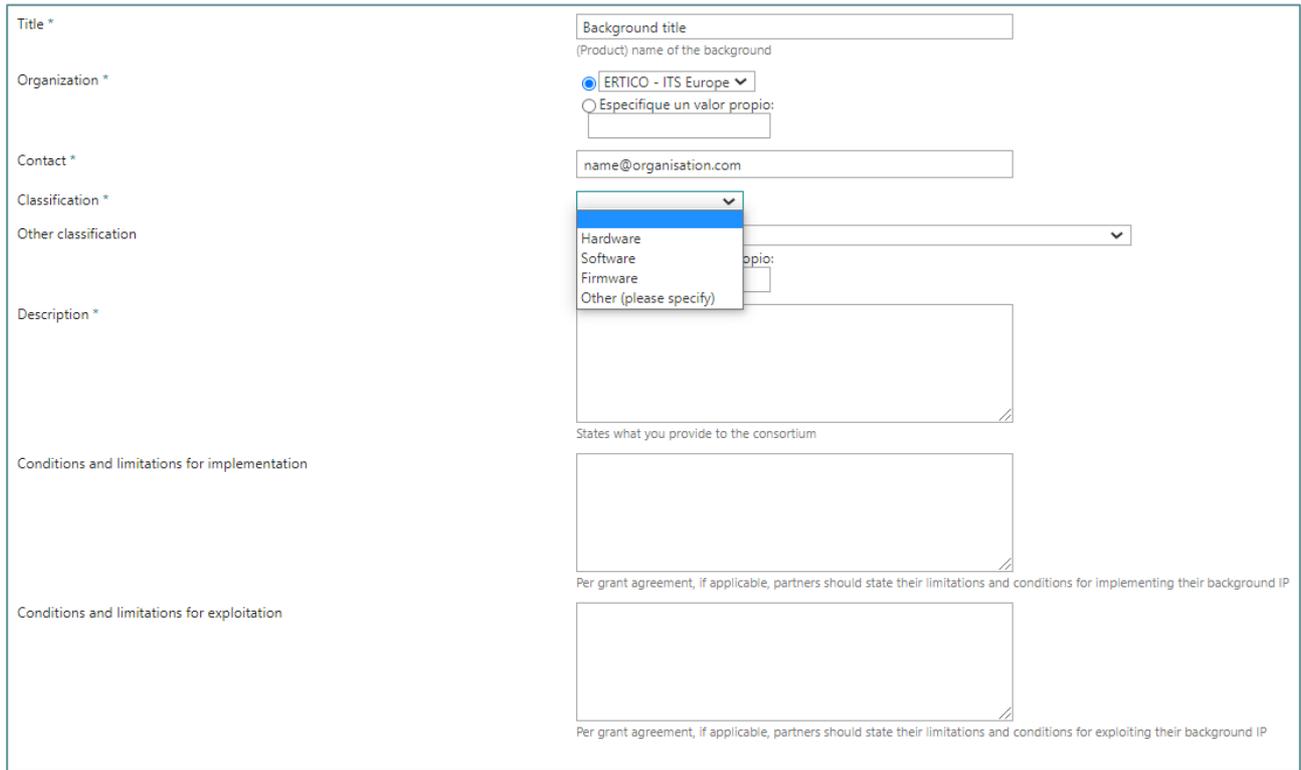
IPR Registry

This page and subpages contain the 5G-MOBIX IPR Registry and is composed of 2 sections:

- **Background IPR** means any and all data, know-how and/or information whatever their form (tangible or intangible), as well as any rights such as Intellectual Property Rights, which are owned or controlled by a Party prior to its accession to the Project and which is needed for carrying out the Project by another Party
- **Foreground IPR** (or Results), means any tangible or intangible output of the Project, such as data, knowledge and information whatever their form or nature, whether or not they can be protected, which are generated in the Action as well as any rights attached to them, including Intellectual Property Rights.

Both sections can be found below and in subfolders.

Figure 3: IPR Management tool on SharePoint



The screenshot shows a web form for background registration. The fields are as follows:

- Title ***: Text input field labeled "Background title" with a subtext "(Product) name of the background".
- Organization ***: Radio button selected for "ERTICO - ITS Europe" and an option "Especifique un valor propio:" with a text input field.
- Contact ***: Text input field containing "name@organisation.com".
- Classification ***: A dropdown menu is open, showing options: "Hardware", "Software", "Firmware", and "Other (please specify)".
- Other classification**: A text input field.
- Description ***: A large text area with a subtext "States what you provide to the consortium".
- Conditions and limitations for implementation**: A text area with a subtext "Per grant agreement, if applicable, partners should state their limitations and conditions for implementing their background IP".
- Conditions and limitations for exploitation**: A text area with a subtext "Per grant agreement, if applicable, partners should state their limitations and conditions for exploiting their background IP".

Figure 4: Background registration on the tool

Table 1: Information to be included per Background IPR item

Title	Name of Background IPR
Organisation	Owner of background IPR
Classification	<ul style="list-style-type: none"> • Software • Hardware • Firmware • Other (if Other, please specify: <ul style="list-style-type: none"> ○ Dataset (Text / Images/ Sounds/ Voices) - Database Content ○ Model Database (S.S.O)/ Model Web (S.S.O) ○ Database (aesthetic) Design / Web Design / Model Design ○ Scientific / Technical Information; ○ Inference engine / Knowledge base - Expert system (Artificial Intelligence) ○ Algorithm ○ Etc.)
Description	
Conditions and limitations for implementation	
Conditions and limitations for exploitation	

Background IPR

[+ New](#) [Share](#) [Export to Excel](#)
[Consortium Agreement Appendix](#)

Title	Description	Conditions and limitations for implementation	Conditions and limitations for exploitati...
> Organization : AALTO (3)			
> Organization : AKKA (1)			
> Organization : COSMOTE (8)			
> Organization : DEKRA (1)			
> Organization : ERICSTR (1)			
> Organization : IMEC (2)			
> Organization : LIST (9)			
> Organization : Sensible4 (1)			
> Organization : TNO (8)			
> Organization : VEDECOM (1)			
> Organization : VTT (1)			

Foreground IPR

[+ New](#) [Edit in grid view](#) [Share](#) [Export to Excel](#)
[All Items](#)

Title	Owner	Registration date	Modified By	Version	Approval Status
 <p>Welcome to your new list Select the New button to get started.</p>					

Figure 5: IPR Registry (Background and Foreground IPR Lists)

Title *

Title of IPR Foreground item

Enter a one-line product description

Owner *

ERTICO - ITS Europe

Specify the owner of the IPR

Jointly developed IPR

No

Specify if this IPR has been jointly developed

Classification *

Hardware

Specify the type of result

Other classification

Specify other classification

Related background

Seleccionar opciones

Select related background if applicable

Required commercial software

If any

Please specify what commercial licenses are required from what licensor

Figure 6: New IPR Registry Entry (I)

 **Required Open Source software**

If any

Please specify what Open Source licenses are required from what licensor

 **Required commercial hardware**

As appropriate

Please specify what hardware is required from what licensor

 **Required other third party IPR**

As appropriate

Please specify what other IPR licenses are required from what licensor

 **Description ***

Please describe your IPR in detail

 **Exploitation potential ***

-

Please describe the exploitation potential of your IPR

 **Access rights ***

-

Please describe the rights, conditions and limitations potential users have to allow access to the IPR

 **Granted Access Rights**

-

List the dates and partners who have received Access Rights at what date

 **Available support ***

Please specify the support that is available to users of the IPR

 **Registration date ***

2/25/2021

The date the IPR has been registered

Figure 7: New IPR Registry Entry (II)

These IPR audits will identify the Foreground IP generated by the project, its dependencies on and External IP, Sideground or Background knowledge. For each Foreground IPR item, the following information will be collected and validated by the Innovation Manager and/or Project Coordinator.

Table 2: Information to be included per Foreground IPR item

Title of IPR	<i>Name of the Foreground IPR item</i>	
IPR Owner	<i>Owner of the Results</i>	
Jointly developed	<i>No/Yes (add names)</i>	
Classification	<i>As per classification in Background IPR List</i>	
Related Background	<i>From listed Background IPR items</i>	
Control of Third Owners Software, Hardware or IPR	Identification of Commercial Software and Licensor:	
	Identification of Open Source Software and Licensor:	
	Identification of commercial hardware:	
	Third Owner Intellectual Property Rights:	
Description		
Exploitation Potential	<i>Further Research</i> <i>Developing, creating and marketing a product/process</i> <i>Creating and providing a service</i> <i>In Standardisation activities</i> <i>Others (Joint Venture, Spin-off, ...)</i>	
Access Rights	<i>According to the GA and Section the CA, "access rights" means licenses and users rights to Background or Foreground given to beneficiaries of the project (Party or Parties) if it is Needed to enable those Parties to carry out their own work under the Project.</i>	
Available Support (email, website, info)		
Registration date		
Modified by		
Version		
Approval status		

D1.5 Innovation Management Report will summarise the foreground generated by each partner for the entire duration of the project. Moreover, the exploitable foreground of the project generated during this period will be identified, as it is key for the innovation management process, and the definition of an exploitation plan.

Finally, links will be established between the identified Potential Innovations at a project level, and the comprehensive list of 5G-MOBIX results gathered following this IPR Management activities, as illustrated in the figure below.

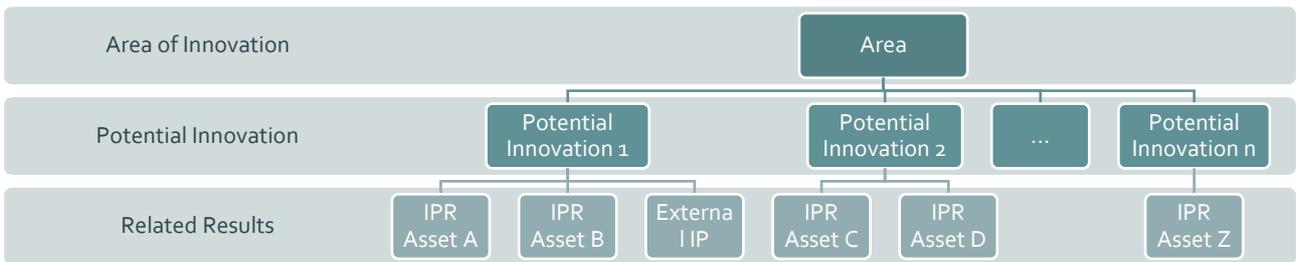


Figure 8: Links between Potential Innovations and 5G-MOBIX Results

6. INNOVATION MANAGEMENT ACTION PLAN

In this section a high-level plan of the activities scheduled to manage innovation throughout the project is described. It is important to note that the plan could be revised in relation to changes that may occur during the development of the 5G-MOBIX project.

The 5G-MOBIX project will adapt and implement the innovation management processes defined in CEN/TS 16 cen-1:2013:

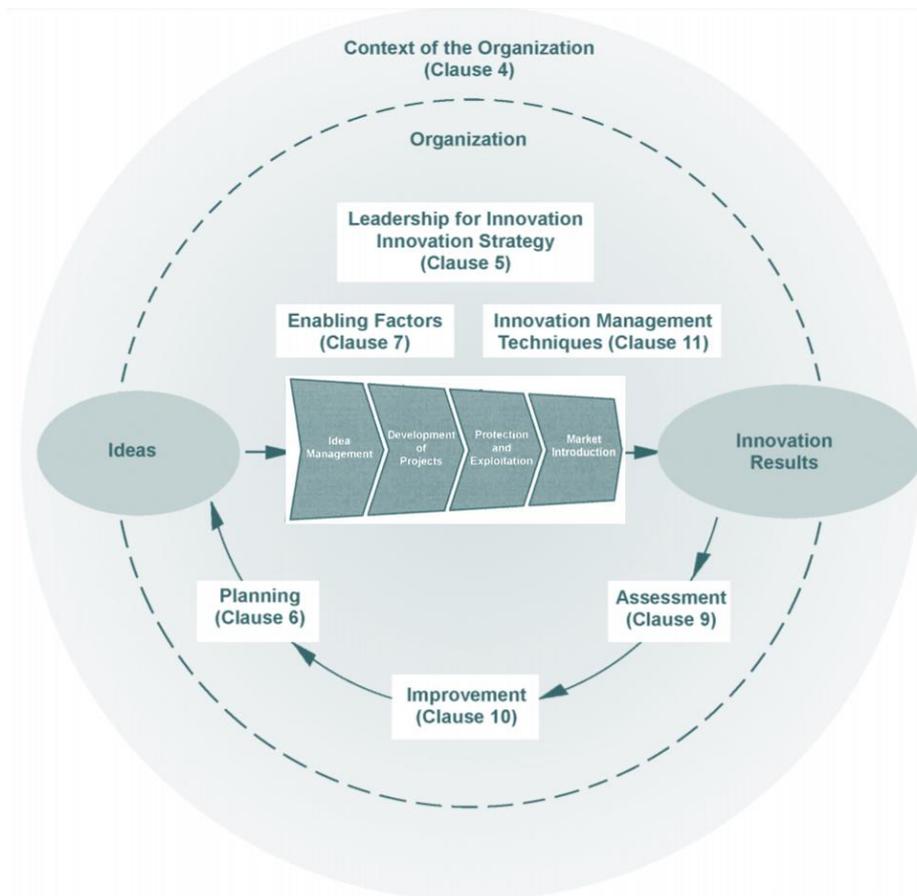


Figure 9: Key elements of the innovation system [4]

During the initial months of the project, the innovation management tools described in the previous section were presented and discussed at different levels in the consortium and in several project meetings. As a result of these discussions, and considering the feedback obtained, an innovation management plan for the project has been established in this document. This plan will be revised regularly and, if needed, adjusted at least once every six months during the lifetime of the project.

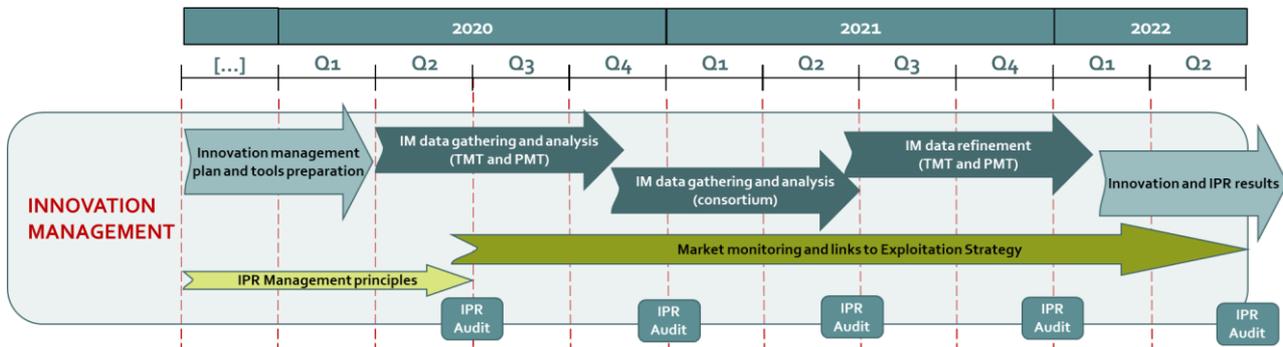


Figure 10: Innovation Management tentative work plan

Below we present a brief explanation of the work to be carried out in each of the innovation management work plan activities:

- **Innovation management plan and tools preparation:** During the initial stages of the 5G-MOBIX project, the set-up and launch of innovation management system and processes has taken place. Within this task, the 5G-MOBIX innovation management system and processes, based on CEN/TS 16 555 family of standards, has been presented to the whole Consortium members. This includes things such as:
 - Identification of the most relevant sources to conduct market and technological monitoring,
 - Setup of the market and monitoring tools (e.g., RSS feed aggregator) and processes,
 - Allocate project resources to conduct market and technological monitoring.
- **IPR Management principles:** also, during the initial stages of the 5G-MOBIX project, the IPR management mechanisms have been defined and an online registry has been prepared for partners to complete with their results' related information.
- **Innovation Management: data gathering, analysis and refinement:** innovation management is periodically gather results at two levels:
 - **Innovations related to the project itself.** The process described in Section 4 is followed. Results are gathered from the 5G-MOBIX project participants using as a preferred option the R-W-W Questionnaire, the Innovation Radar and the Risk Matrix, and any other of the identified tools when appropriate. The information is gathered initially at a TMT and PMT level, e.g., WP Leader responds from each WP perspective, requesting input from other task leaders or participants as necessary.
 - Information is compiled and analysed in parallel to the TMT meeting schedule for the project. In every cycle, previously collected information is checked and updated as required.
 - Information is gathered from all partners and compiled using the Innovation Radar questionnaire and methodology previous to every periodic review.

- **Innovations within each partner:** the process described in Section 5 is followed. The online tool was available by month 12 of the project and has initially been tested by the partners involved in Innovation Management. The tool has been re-designed and moved to SharePoint at the beginning of 2021.
 - All beneficiaries are requested to introduce and update their IPR information via the portal on a regular basis (i.e., internal IPR audits will be sent out in February 2021, June 2021, January 2022, and June 2022 to cover the entire duration of the projects and all the IP generated).
 - Reports on IPR are generated and analysed after each auditing cycle, and a final IPR Management Report will be provided by the end of the project.
- **Innovation and IPR results:** from 2021, identify, assess, and prioritise ideas, establishing links between potential innovations and identified results, as well as their route to market.
 - All project stakeholders will be able to identify and report new ideas (e.g., new activities, scope changes), which will be submitted to the Innovation Manager. Initially, the R-W-W, Innovation Radar and Risk Matrix tools will be used, although they can change and evolve during the project.
 - The Innovation Manager will work on the ideas so that they are assessed and presented to the appropriate governance bodies of the project for consideration and, if approved, so that they can be implemented.
- **Market monitoring and links to exploitation strategy:** within this task, and in liaison with the exploitation management task, 5G-MOBIX monitors market needs and technical evolutions. This activity includes the continued monitoring of the market and technological data sources in the innovation areas identified. It also includes the identification of new relevant data sources as well as the filtering and distribution of the relevant information within the project stakeholders. It is important to avoid distributing too much or irrelevant information, therefore special care has to be put on this matter.

7. CONCLUSION

5G-MOBIX will have a significant impact in innovative, previously unfeasible, automated driving applications with high automation levels, both from a technical and a business perspective. To this end, an innovation management plan and strategy has been defined from the early beginning of the project.

This report provides the required literature and enables the reader to fully understand the chosen innovation management approach for the 5G-MOBIX project. This deliverable will also serve as guidance for consortium members and will be updated throughout the development of the project, in order to adjust to the innovation activity requirements.

The Innovation Management Plan is considered as an adaptive living document and it will be further updated according to different project phases.

REFERENCES

- [1] De Prato, G., Nepelski, D., & Piroli, G. (2015). "Innovation Radar: Identifying Innovations and Innovators with High Potential in ICT FP7, CIP & H2020 Projects". Seville: *JRC Scientific and Policy Reports*.
- [2] European Commission (1995). "Green Paper on Innovation", December 1995.
- [3] Specht, G. (2002). "F&E Management: Kompetenz im Innovationsmanagement". Stuttgart: *Schaffer-Poeschel*.
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ANNEXES

1 Annex 1 – R-W-W Questionnaire



2 Annex 2 – Innovation Radar Questionnaire

Innovation Radar Questionnaire by EC DG CONNECT

Note: the first 16 questions below are to be answered for each innovation the project develops (up to a maximum of 3 innovations).

- 1) Describe the innovation (in less than 300 characters, spaces included):**
- 2) Is the innovation developed within the project...:**
 - a) Under development
 - b) Already developed but not yet being exploited
 - c) being exploited
- 3) Characterise the type of innovation (only to be answered if 2b or 2c is selected)**
 - Significantly improved product
 - New product
 - Significantly improved service (except consulting ones)
 - New service (except consulting ones)
 - Significantly improved process
 - New process
 - Significantly improved marketing method
 - New marketing method
 - Significantly improved organisational method
 - New organisational method
 - Consulting services
 - 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?**
 - A clear owner
 - Multiple owners

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

10) Indicate the step(s) already done (or are foreseen) in the project in order to bring the innovation to (or closer to) the market (answer only if 6(a) is selected)

	Done	Planned in project	Not Planned	Desirable
1. Technology transfer				
2. Engagement by Industrial research team of one of their company's business units in project activities				
3. Pilot				
4. Capital investment (VC, Angel, other)				
5. Investment from public authority (national, regional)				
6. Business plan				
7. Prototyping				
8. Market study				
9. Demonstration or Testing activities				
10. Feasibility study				
11. Launch a start-up or spin-off				
12. Other				

11) If other, please specify

12) Indicate which participant(s) (up to a maximum of 3) is/are the key organisation(s) in the project **delivering** this innovation. For each of these identify under the next question their needs to fulfil their market potential.

Org1:

Org2:

Org3:

13) Indicate their needs to fulfil their market potential

	Investor readiness training	Investor introductions	Biz plan development	Expanding to more markets	Legal advice (IPR or other)	Mentoring	Partnership with other company (technology or other)	Incubation	Startup accelerator
Org 1									
Org 2									
Org 3									

14) When do you expect that such innovation could be commercialised? (answer only if 6(a) is selected)

- Less than 1 year
- Between 1 and 2 years
- Between 3 and 5 years
- More than 5 years

15) Have any of the project partners...

(only to be answered if "Done" or "Planned in Project" is chosen for 10.5 "Investment from public authority")

- a) already applied for support from private investors

- b) already applied for investment from public authorities
- c) Planning to start discussions with private or public investors

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

(the above questions are to be answered for each innovation developed by the project, up to a maximum of 3 innovations)

General Questions

(questions below are to be answered once in the project review, not for each innovation)

1) How does the consortium engage end-users?

- End user organisation in the consortium
- An end user organisation outside of the consortium is consulted
- No end user organisation in the consortium or consulted

2) Are there in the consortium internal IPR issues that could compromise the ability of a project partner to exploit new products/solutions/services, internally or in the market place?

- yes
- no

3) Please provide specifics of the IPR issues:

4) Which are the external bottlenecks that compromise the ability of project partners to exploit new products, solutions or services, internally or in the market place?

- IPR
- Standards
- Regulation
- Financing
- Workforce's skills
- Trade issues (between MS, globally)
- Others

5) Indicate how many patents have been applied for by the project: _____

6) Does the review panel consider the project performance in terms of innovation?

- Exceeding expectations
- Meeting expectations
- Performing below expectations

7) General observations of innovation expert on this project's innovation performance:

8) How would you rate the level of commitment of relevant partners to exploit the innovation?

- Very low
- Low
- Average
- High
- Very High
- None