5GMOBIX

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

Project Management Plan

Dissemination level	Public (PU)
Work package	WP1: Project Coordination
Deliverable number	D1.1
Version	V1.1
Submission date	31/12/2018
Resubmission date	28/01/2019

This project has received funding from the European Union's Horizon 2020 research and Innovation Programme under Grant Agreement No. 825496.

Authors

Authors in alphabetical order		
Name	**Organisation**	**Email**
Rita Bhandari	ERTICO	r.bhandari@mail.ertico.com
François Fischer	ERTICO	f.fischer@mail.ertico.com

Control sheet

Version history			
Version	**Date**	**Modified by**	**Summary of changes**
V0.1	21/12/2018	François Fischer, Rita Bhandari (ERTICO)	Draft for peer review
V0.2	26/12/2018	Rita Bhandari (ERTICO)	Update of Gantt chart, TMT roles, legal disclaimer
V1.0	31/12/2018	Rita Bhandari (ERTICO)	Submitted version
V1.1	28/01/2019	Rita Bhandari (ERTICO)	Submitted version with correct header and Gantt chart

Peer review		
	Reviewer name	**Date**
Reviewer 1	Kostas Trichias (WINGS)	25/12/2018

LIST OF FIGURES 4
LIST OF TABLES 5
ABBREVIATIONS 6
EXECUTIVE SUMMARY 7
1. INTRODUCTION 9
1.1. 5G-MOBIX concept and approach 9
1.2. Purpose of the deliverable 9
1.3. Intended audience 10
2. PROJECT MANAGEMENT 11
2.1. Technical organisation 11
2.2. Consortium 15
2.3. Management structure and functions 17
2.3.1. Operational bodies 19
2.3.1.1 Project Coordinator (PC) 19
2.3.1.2 Technical Management Team (TMT) 19
2.3.2. Strategic and decision making bodies 22
2.3.2.1 General Assembly (GA) 22
2.3.2.2 Steering Committee (SC) 22
2.3.2.3 Advisory Board (AB) 23
2.4. Management processes and procedures 23
2.4.1. 5G-MOBIX management processes 23
2.4.1.1 Progress reporting and evaluation of results 23
2.4.1.2 Planning and implementation of changes 26
2.4.1.3 Project administration and contract management 27
2.4.1.4 Project management tools and services 27
2.4.2. 5G-MOBIX management procedures 29
2.4.2.1 Conflict resolution 29
2.4.2.2 Management of resources and payment rules on performed work 29
2.4.2.3 Management of risks and quality assurance 29
2.4.2.4 Project meetings procedures 31
3. CONCLUSION 34

LIST OF FIGURES

Figure 1: 5G-MOBIX workflow 12

Figure 2: 5G-MOBIX Gantt chart.....14

Figure 3: 5G-MOBIX organisational and management structure 18

LIST OF TABLES

Table 1: 5G-MOBIX work packages 11
Table 2: 5G-MOBIX trial sites and cross-border corridors 12
Table 3: 5G-MOBIX beneficiaries 15
Table 4: 5G-MOBIX technical management team 21
Table 5: 5G-MOBIX critical Implementation risks and mitigation actions 30
Table 6: 5G-MOBIX management meetings 32
Table 7: 5G-MOBIX notification of management meetings 32
Table 8: 5G-MOBIX agenda availability for management meetings 33
Table 9: 5G-MOBIX agenda modifications for management meetings 33

ABBREVIATIONS

Abbreviation	Definition
CBC	Cross Border Corridor
CCAM	Cooperative, Connected and Automated Mobility
DoA	Description of Action
EC	European Commission
GA	General Assembly
NDA	Non-Disclosure Agreement
OEM	Original Equipment Manufacturer
ORDP	Open Research Data Pilot
PERT	Programme Evaluation Review Technique
PM	Person Month
PO	Project Officer
SAE	System Architecture Evolution
SC	Steering Committee
SME	Small and Medium-Sized Enterprises
TMT	Technical Management Team
TS	Trial Site
TSL	Trial Site Leader
WP	Work Package
WPL	Work Package Leader
X-border	Cross-border

EXECUTIVE SUMMARY

The aim of 5G-MOBIX (the Project) is to match the benefits of 5G technology with advanced Cooperative, Connected and Automated Mobility (CCAM) use cases in order to validate the viability of the technology to bring automated driving to the next level of vehicle automation (SAE L4 and above). 5G-MOBIX's vision is to enable innovative, previously unfeasible, automated driving applications, both from a technical as well as from a business perspective.

The Project's ambitious work plan includes cyclic iterations of specifications, development, trials and evaluation activities. Testing and validation of the 5G technology for advanced CCAM will be carried out along eight trial sites, which include cross-border and urban corridors. There are also cross-cutting activities to maximise impact related to deployment enablers and communication and dissemination of the Project's results. The Project Consortium includes 47 beneficiaries and an additional nine international partners from Korea and China bringing the total partners involved to 56. This large Consortium will share responsibilities of tasks divided into eight work packages (WPs) across 11 EU countries as well as in Turkey, China and Korea.

In working towards its ultimate goal of the roll out of 5G networks to support CCAM, 5G-MOBIX is determined to realise its objective in a societally acceptable and ethical manner consistent with the H2020 programme. The scale and complexity of the Project, both in terms of innovation and the partners involved, call for a carefully designed management plan for the Project.

The present document fulfils the requirement of deliverable D1.1 – *Project Management Plan* – of 5G-MOBIX within WP1. Deliverable D1.1 lays out the organisational structure and the management procedures and processes that 5G-MOBIX will employ in order to ensure that that workflow is smooth and a good system of internal communication exists to ensure the efficient running of the Project. The plan described in this document has a direct bearing on the performance of Task T1.1 – *Administrative and financial coordination* and Task T1.2 – *Technical coordination*.

Deliverable D1.1 is structured as follows:

Chapter 1 – *Introduction* – outlines the concept and approach of 5G-MOBIX. It elaborates the purpose of this deliverable as a plan for coordinating the Project, intended for Consortium members and the European Commission.

Chapter 2 – *Project management* – is subdivided into four sections. Section 2.1 describes the structure of the Project in terms of its technical organisation into WPs and tasks and their representation in the Gantt chart. Section 2.2 describes the Consortium. Section 2.3 breaks down the management structure into 'operational bodies' (Project Coordinator and Technical Management Team) and 'strategic and decision making bodies' (General Assembly, Steering Committee, Advisory Board). Section 2.4 details the

management processes and procedures. The management processes relate to progress reporting and evaluation of results, planning and implementation of changes, project administration and contract management, and project management tools and services. The management procedures described have to do with conflict resolution, resource use and payment rules, risk and quality assurance (to be complemented by D1.2 – *Quality Management Plan* – in M03), and the organisation of project meetings.

Chapter 3 is the *Conclusion.*

This deliverable draws substantially from the 5G-MOBIX Grant and Consortium Agreements and together with these documents will serve as a central reference for all project coordination matters.

1. INTRODUCTION

1.1. 5G-MOBIX concept and approach

5G-MOBIX aims to showcase the added value of 5G technology for advanced Cooperative, Connected and Automated Mobility (CCAM) 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 will demonstrate the potential of different 5G features on real European roads and highways and create and use sustainable business models to develop 5G corridors. 5G-MOBIX will also utilize and upgrade 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 will execute CCAM 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 CCAM context. The Project will also define deployment scenarios and identify and respond to standardisation and spectrum gaps.

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

The trials will also allow 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 will identify new business opportunities for the 5G enabled CCAM and propose 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

Deliverable D1.1 – *Project Management Plan* – outlines the management strategy and tools that will ensure the effective execution of Task T1.1 – *Administrative and Financial Coordination* – and Task T1.2 – *Technical Coordination*. It describes the governance bodies, relevant meetings, and the internal rules and procedures relating to or complementing the Grant Agreement and the Consortium Agreement, and includes the Risk Management Procedures.

Deliverable D1.1 will be complemented by D1.2 – *Quality Management Plan*, D1.3 – *Innovation Management Plan,* and D1.4 – *Data Management Plan* to provide an overall strategy for organisation and execution of core tasks to achieve the objectives of the Project Coordination work package (WP1) in terms of, both, operational and technical coordination.

1.3. Intended audience

The dissemination level of D1.1 is 'public' (PU) and available to members of the consortium, the Commission Services and those external to the project. This document is primarily intended to serve as an internal guideline and reference for all 5G-MOBIX beneficiaries, especially the governance bodies such as the General Assembly, the Steering Committee, the Technical Management Team, and the Advisory Board.

2. PROJECT MANAGEMENT

Coordination of the 5G-MOBIX project involves managing its partner beneficiaries, resources and tasks so that the workflow is smooth and the results achieved are of high quality. 5G-MOBIX requires a number of tasks to be performed by a large consortium of highly skilled partners in 14 different countries. To make certain that the work carried out is to the highest standards, is well coordinated and meets the project objectives, the work plan has been structured into eight work packages (WPs) with tasks divided amongst partners based on their expertise. Furthermore, a cohesive management structure and well-defined procedures have been put in place to ensure effective and efficient management of the project.

2.1. Technical organisation

Work on the 5G-MOBIX project will be carried out over a three-year period (36 months) starting on 1 November 2018 (M1) and ending 31 October 2021 (M36) by the eight WPs in Table 1.

Table 1: 5G-MOBIX work packages

WP	Work package name	Leader	Start	End
WP1	Project coordination	ERTICO	M1	M36
WP2	Specifications	AALTO	M1	M30
WP3	Development, integration and roll-out	WINGS	M4	M30
WP4	Trials	VEDECOM	M1	M30
WP5	Evaluation	ICCS	M1	M34
WP6	Deployment enablers	INTRA	M12	M36
WP7	Dissemination and exploitation	ERTICO	M1	M36
WP8	Ethics requirements	ERTICO	M1	M36

WP2-WP5 are dedicated to development, testing and innovation activities, while WP1 and WP6-WP8 are overarching support activities. Figure 1 shows a PERT chart based on the Project's planned workflow and the expected interaction and interdependencies of the work packages.

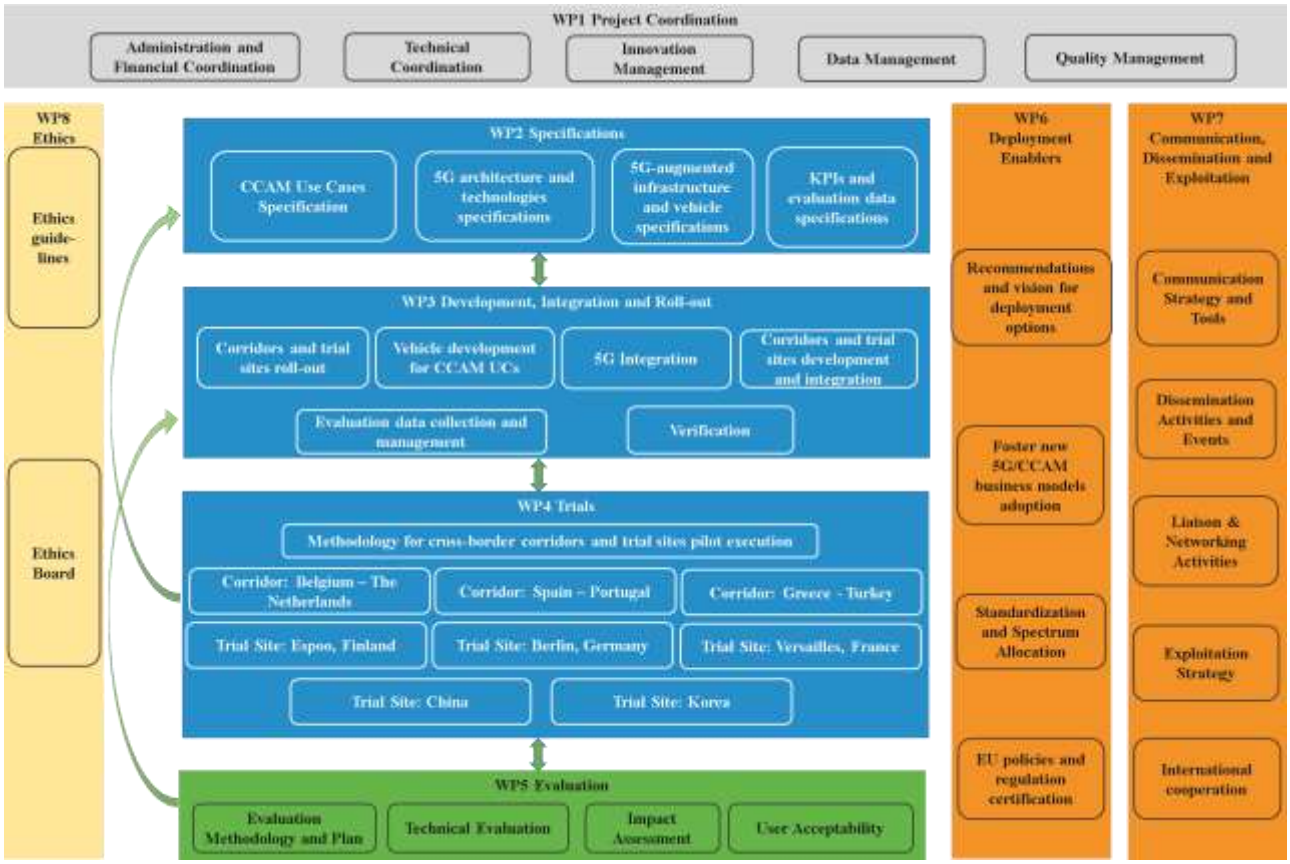

Figure 1: 5G-MOBIX workflow

All WPs are divided into Tasks, with each being responsible for delivering one or more deliverables referenced in the Description of Action (DoA) of the Grant Agreement. Each Task has a leader in charge of the overall coordination and completion of the Task, and will work in close coordination with the Work Package Leader. Task Leaders will conduct the first level of quality control before the deliverables are submitted for internal Work Package review (see the *Quality Management Plan* – D1.2 for more details).

The trials in WP4 will take place at six Trial Sites (TS) as well as at two cross-border corridors (CBC) across Europe and Asia. Each TS and CBC represents a Task within WP4 as shown in Table 2.

Table 2: 5G-MOBIX trial sites and cross-border corridors

#	Task	Country	Type	Leader
1	T4.2	Netherlands	TS	TNO
2	T4.3	Spain-Portugal	CBC	CTAG
3	T4.4	Greece-Turkey	CBC	TURKCELL
4	T4.5	Finland	TS	AALTO
5	T4.6	Germany	TS	TU BERLIN

#	Task	Country	Type	Leader
6	T4.7	France	TS	VEDECOM
7	T4.8	China	TS	DALIAN
8	T4.9	Korea	TS	KATECH

5G-MOBIX's work plan is structured in multiple iteration cycles covering the specifications, development, trials and evaluation phases. This is to ensure that, at each stage of the Project, results are oriented towards the end-users, and that the maturity of the technological solutions and their adaptation to the market increases progressively. The choice of these cycles will be defined by each TS and CBC according to its specific situation and needs.

The Gantt chart in Figure 2 reflects the iteration cycles showing the overlap between WP2-WP5.

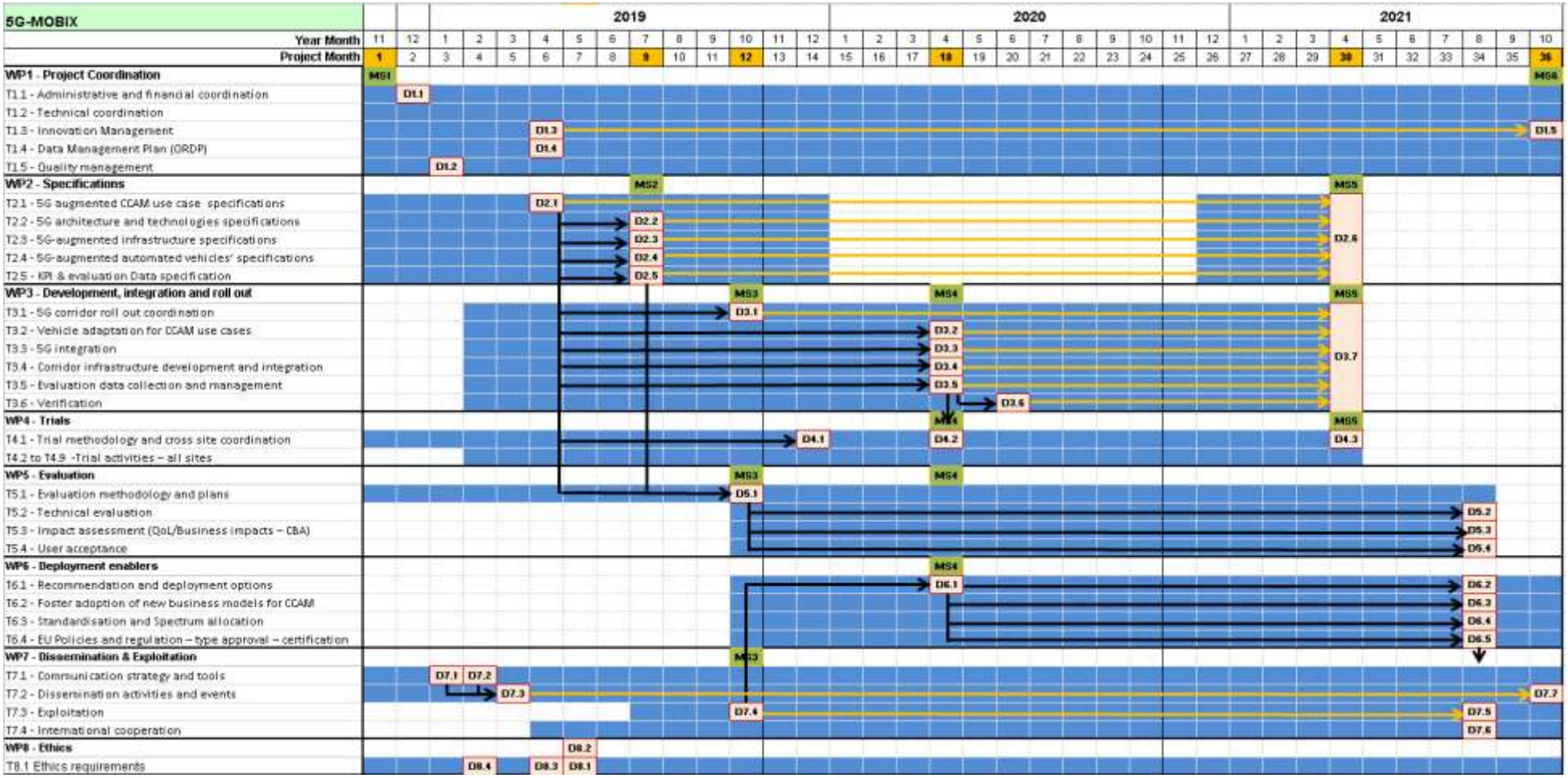

Figure 2: 5G-MOBIX Gantt chart

This project has received funding from the European Union's Horizon 2020 research and Innovation Programme under Grant Agreement No. 825496.

2.2. Consortium

The 5G-MOBIX Consortium is specifically built around the ICT-18 call requirements to evaluate 5G technologies for automated mobility, to address standardisation needs, and to provide recommendations and options for 5G deployment scenarios for automated mobility. The roll out of 5G networks to support CCAM requires effective harmonisation of the deployment agendas at EU level and beyond. For this reason 5G-MOBIX has opted to include a large set of partners from 11 EU Member States as well as Turkey, China and South Korea representing stakeholders from major research organisations actively involved in national and EU 5G projects, telecom operators, telecom and IT manufacturers, automotive suppliers, OEMs, road operators, public authorities responsible for traffic management, transport industries as well as city councils and SMEs. This rich consortium allows 5G-MOBIX to mobilise a high number of complementary participants, which is necessary to provide the expected deployment scenarios and business models matching EU and international needs.

Table 3: 5G-MOBIX beneficiaries

#	ID #	Short name	Beneficiary name	Country
1	1	ERT	EUROPEAN ROAD TRANSPORT TELEMATICS IMPLEMENTATION COORDINATION ORGANISATION S.C.R.L.	BE
2	2	AALTO	Aalto-korkeakoulusäätiö	FI
3	3	AEVAC	Asociación española vehículo autónomo y conectado	ES
4	4	AKKA	AKKA Informatique et Systèmes	FR
5	5	ALSA	ALSA GRUPO S.L. UNIPERSONAL	ES
6	7	ATOBE	BRISA INOVACAO E TECNOLOGIA SA	PT
7	8	CATAPULT	Satellite Applications Catapult	GB
8	9	CCG	Centro de Computação Gráfica	PT
9	10	COSM	COSMOTE	GR
10	11	CTAG	FUNDACION PARA LA PROMOCION DE LA INNOVACION, INVESTIGACION Y DESARROLLO TECNOLOGICO EN LA INDUSTRIA DE AUTOMOCION DE GALICIA	ES
11	12	DAIMLER	Daimler AG, Research & Technology	DE
12	13	DEKRA	DEKRA Testing and Certification S.A.U.	ES
13	14	DGT	DIRECCION GENERAL DE TRAFICO	ES
14	15	ERICSGR	Ericsson Hellas	GR
15	16	FORD	Ford Otosan	TR

This project has received funding from the European Union's Horizon 2020 research and Innovation Programme under Grant Agreement No. 825496.

#	ID #	Short name	Beneficiary name	Country
16	17	FRAUN	Fraunhofer IAO	DE
17	18	GTARC	GT-ARC gemeinützige GmbH	DE
18	19	HELM	Gemeente Helmond	NL
19	20	ICCS	INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS	GR
20	21	IMT	Instituto da Mobilidade e dos Transportes, I.P.	PT
21	22	INFRAPT	Infraestruturas de Portugal	PT
22	23	INTRA	Intrasoft International S.A.	LU
23	24	ISEL	Instituto Superior de Engenharia de Lisboa	PT
24	25	IT	Instituto de Telecomunicações	PT
25	26	KPN	Koninklijke KPN NV	NL
26	27	LIST	Luxembourg Insititute of Science and Technology	LU
27	28	NOKIAPT	NOKIA SOLUTIONS AND NETWORKS PORTUGAL, S.A.	PT
28	29	NOKIASP	NOKIA BELL LABS	ES
29	30	NORTE	AUTO - ESTRADAS NORTE LITORAL SOCIEDADE CONCESSIONARIA - AENL SA	PT
30	31	SENSIBLE4	Sensible 4 Oy	FI
31	32	SIEMENS	Siemens Portugal	PT
32	33	TELEFONICA	Telefónica Investigación y desarrollo SAU	ES
33	34	TIS	Tis.pt, Consultores em Transportes, Inovação e Sistemas, SA	PT
34	35	TNO	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK TNO	NL
35	36	TUB	(DAI Labor) Technische Universität Berlin	DE
36	37	TUE	Technische Universiteit Eindhoven	NL
37	38	TURKCELL	Turkcell Technology	TR
38	39	UL	University of Luxembourg	LU
39	40	UMU	Universidad de Murcia	ES
40	41	VALEO	VALEO Schalter und Sensoren	DE
41	42	VED	VEDECOM FONDATION PARTENARIALE MOV'EOTEC	FR

#	ID #	Short name	Beneficiary name	Country
42	43	VICOM	FUNDACIÓN CENTRO DE TECNOLOGÍAS DE INTERACCIÓN VISUAL Y COMUNICACIONES Vicomtech	ES
43	44	VIGO	CONCELLO DE VIGO	ES
44	45	VTT	Teknologian tutkimuskeskus VTT Oy	FI
45	46	WINGS	WINGS ICT solutions	GR
46	47	ERICSTR	ERICSSON ARASTIRMA GELISTIRME VE BILISIM HIZMETLERI A.S.	TR
47	48	SISSBV	SIEMENS INDUSTRY SOFTWARE AND SERVICES BV	NL
International Partners				
48	1	CATT	China Academy of Telecommunications Technology	CN
49	1	CNHTC	Intelligent and Connected Vehicles Group,China National Heavy Duty Truck	CN
50	1	DALIAN	Dalian University of Technology	CN
51	1	DDET	DALIAN DAZZLEE TECNOLOGY CO. LTD.	CN
52	1	ETRI	ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE	KR
53	1	KATECH	KOREA AUTOMOTIVE TECHNOLOGY INSTITUTE	KR
54	1	QILUTIG	Qilu Transportation Information Group Co., Ltd.	CN
55	1	SHANDONG	Institute of Automation, Shandong Academy of Sciences	CN
56	1	SNET	S.NET ICT INC	KR

2.3. Management structure and functions

Within a large project such as 5G-MOBIX, the distribution of responsibilities and the flow of information are of particular importance for creating the control, transparency and trust necessary for close collaboration between all partners. 5G-MOBIX will put in place a strong and cohesive management structure to address the challenge of coordinating a project of this size with partners working in many different locations to deliver and evaluate global results representing a diversity of countries. The 5G-MOBIX management structure has been defined to:

- Ensure seamless and straightforward coordination of the consortium while fulfilling the EC contractual obligations by means of an experienced and talented coordination team supporting the daily tasks of the ***Project Coordinator***

- Ease communication and coordination at the thematic and regional levels by combining work package and trial site coordination in the ***Technical Management Team***
- Enable efficient and fair decisions about project resources and objectives by the ***Steering Committee***
- Secure the alignment of the project activities with the industry and the EU political agenda with the help of an external ***Advisory Board***

The illustration in Figure 3 represents the 5G-MOBIX organisational and management structure, which will be detailed the sections that follow.

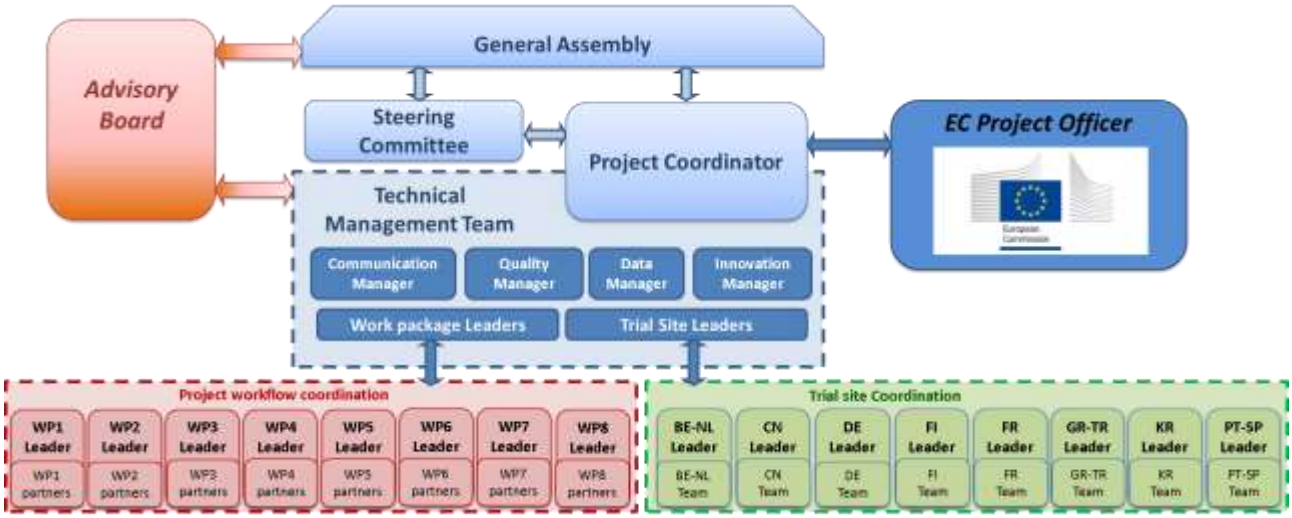

Figure 3: 5G-MOBIX organisational and management structure

The management functions within 5G-MOBIX will be performed by highly experienced persons at two levels:

1. The **operational level**: The Project Coordinator, the Technical Coordinator and the Technical Management Team carry out the day-to-day project management responsibilities – the planning, steering and controlling of the work progress from work packages and trial sites, as well as the overall quality of results.
2. The **strategic level**: The Project Coordinator, the General Assembly, and the Steering Committee, in consultation, decide about the strategic decisions and, if necessary, changes of project plans or consortium. The external Advisory Board provides non-binding recommendations and counsel on project functions and activities.

2.3.1. Operational bodies

2.3.1.1 Project Coordinator (PC)

The Project Coordinator for 5G-MOBIX is ERTICO, which is represented by Mr. François Fischer, Senior Manager for Innovation and Deployment in the field of Connected and Automated Driving. The PC is responsible for the successful and smooth running of the entire project and shall coordinate the project according to EC rules and the terms of the Grant Agreement and the Consortium Agreement of the H2020 Programme.

The PC serves as the sole, legitimate intermediary between the 5G-MOBIX Consortium and the European Commission (EC). He is responsible for monitoring the Project's progress, providing periodic reports to the Commission, and organising technical reviews. Some specific activities that ERTICO will carry out in relation to the EC are:

- inform the Commission about events likely to significantly affect or delay the implementation of the action or the EU's financial interests, and inform the Commission of circumstances affecting the decision to award the Grant or the compliance with requirements under the Agreement
- submit deliverables and reports (periodic and final) to the Commission
- coordinate reviews of the European Commission to the project
- receive EU funding payments from the Commission and distribute them to the beneficiaries
- collect and review to verify consistency before submitting reports, other deliverables (including financial statements and related certifications) and specific requested documents to the EC

In compliance with the Consortium Agreement, the Project Coordinator is also responsible for keeping the address list of 5G-MOBIX partner beneficiaries and other contact persons updated and available. He shall organise and chair all meetings of the strategic management bodies described in section 2.3.2, and is responsible for the preparation, distribution and recording of the meeting documentation such as agendas and minutes.

The project coordination team will support the Technical Management Team with organizational, administrative, financial and legal issues.

2.3.1.2 Technical Management Team (TMT)

The TMT is chaired by the Project Coordinator and includes the following entities:

- **Technical Coordinator (WINGS):** Given the scale and importance of the Project, 5G-MOBIX has designated the leader of Task T1.2 – *Technical Coordination* – as the Technical Coordinator (TC) of the Project. This role has been assigned to Mr. Kostas Trichias of WINGS. In keeping with T1.2 responsibilities, the TC will play a crucial and active role in the overall coordination of the technical

activities, including monitoring of their compliance with the Grant Agreement, Project advancement and use of resources, quality control and overall risk management. Specifically, the TC will:

- monitor the activities of all WPs and Corridors & Trial Sites with regular teleconferences – identify technical risks or deviations and advise and consult the Coordinator to take corrective actions
- monitor and guarantee timely execution of all Project tasks against the Project Gantt chart
- generate close working cooperation between the WP and Corridor & Trial Sites Leaders – refine and refocus any activity as necessary
- in collaboration with the Task T1.1, organise and convene regular TMT meetings for productive interaction between all the leaders
- monitor and control the production of the deliverables in collaboration with the Task T1.5 – *Quality Management*

- **Work Package Leaders (WPLs)** are responsible for the executive management of the individual work packages. The WPL are supported by the Task Leaders who report to the WPL on a regular basis. For all technical coordination, the WPL reports to the Technical Coordinator and the rest of the TMT. For progress reporting and the periodic reports, the WPL reports directly to the Coordinator.
- **Corridor and Trial Site Leaders** are the interface between the Project and the local-site teams. They are responsible for the close linkage of 5G-MOBIX activities to the local Corridor and Trial Sites. The harmonization of time plans, test scenarios, data management and the continual information about evaluation methods and impact assessment are the major tasks of the team. The leaders are responsible for ensuring proper application of the Data Protection policies at the national level. The Corridor and Trial Site leaders are the corresponding task leaders in WP4 (see Table 2).
- The **Innovation Manager (VICOMTECH)** leads the innovation management Task (T1.3) to ensure that the project coordination develops favourable conditions for innovation and takes necessary actions to make certain that the innovations are effectively exploited after the end of 5G-MOBIX.
- The **Data Manager (AKKA)** leads the data management plan Task (T1.4) and will ensure project coordination in terms of the collection, storage and handling of evaluation data, as well as their publication as part of the Open Research Data Pilot (ORDP). He will raise potential issues and propose solutions for dealing adequately with data privacy and data protection regulations.
- The **Quality Manager (LIST)** leads the quality management plan Task (T1.5) thus ensuring high quality of deliverables and outcomes of the overall Project targets. He also supports project coordination in achieving the milestones.
- The **Communication Manager (ERTICO)** leads the dissemination and communication Task (T7.1) to ensure that the project is well coordinated for achieving excellent outreach with public events, scientific publications and presentations.

Table 4 lists the TMT members by virtue of their roles in the project.

Table 4: 5G-MOBIX technical management team

Role	Beneficiary	Leader
WP leaders		
WP1 - Project Coordination	ERTICO	François FISCHER ***(Project Coordinator)***
WP2 – Specifications	AALTO	Giancarlo PASTOR FIGUEROA
WP3 - Development - roll out	WINGS	Kostas TRICHIAS
WP4 – Trials	VEDECOM	Anne-Charlotte NICOUD
WP5 – Evaluation	ICCS	Katia PAGLE
WP6 - Deployment enablers	INTRASOFT	Georgios DIMITRAKOPOULOS
WP7 – Dissemination	ERTICO	Julie CASTERMANS
WP8 – Ethics	ERTICO	Rita BHANDARI
Managers		
Technical Manager	WINGS	Kostas TRICHIAS
Communication Manager	ERTICO	Cordelia WILSON
Innovation Manager	VICOMTECH	Seán GAINES
Data Manager	AKKA	Sadeq ZOUGARI
Quality Manager	LIST	Sébastien FAYE
Trial site leaders		
Netherlands	TNO	Sven JANSEN
Spain – Portugal	CTAG	Francisco SANCHEZ
Greece –Turkey	TURKCELL	Nazli GUNEY
Finland	AALTO	Giancarlo PASTOR FIGUEROA
Germany	TU BERLIN	Manzoor-Ahmed KHAN
France	VEDECOM	Anne-Charlotte NICOUD
China	DALIAN	Yanjun SHI
Korea	KATECH	You-Jun CHOI

The TMT is responsible for the operational management of the Project. It will act as the main consensus-building body on overall Project Coordination and as such provides a link between the WPLs and the General Assembly.

Through regular meetings and via bi-weekly management team teleconferences (telcos), the TMT will identify problems and delays early and proactively prevent conflict situations and anticipate deviations from the Project plan. Some of the specific tasks of the TMT are to:

- hold regular bi-weekly telcos and face-to-face meetings as needed
- monitor closely the progress in the Project WPs
- nominate and instruct task forces as needed
- prepare General Assembly and Steering Committee meetings
- discuss and decide on issues that affect multiple WPs or the Project as a whole
- act as intermediary in cases of conflicts that cannot be resolved at WP level

2.3.2. Strategic and decision making bodies

In addition to the TMT, 5G-MOBIX will rely on several dedicated management bodies that will perform a complementary role to guarantee transparency, accountability and expert topical knowledge.

2.3.2.1 General Assembly (GA)

The General Assembly is the highest decision-making body of 5G-MOBIX where all partners of the Consortium are represented. Upon recommendations from the Steering Committee and/or the Coordinator, the GA takes final decisions on the overall policy of the Consortium, on proposals for modifications or extensions of the Grant Agreement or of the objectives of the project. Decisions are reached by a GA vote of two-thirds of the membership voting in favour. The quorum for a legitimate vote is also set at two-thirds of the partners being present. The Project Coordinator chairs the GA, which meets at least once a year. Attendance at the GA is mandatory and requires at least one representative of each beneficiary to be present at the meetings.

2.3.2.2 Steering Committee (SC)

The Steering Committee is the strategic body that monitors work progress, evaluates achievements with regard to the work programme and as necessary proposes decisions concerning the Project for approval by the GA. The Steering Committee is the escalation resolution level for conflicts that cannot be solved at the WP level or by the TMT. The decisions made will aim to achieve consensus. The SC shall consist of the Coordinator and the additional representatives appointed by the GA. Its members will be senior experts with management experience of EU-funded projects from the different partner organizations, representing the telecommunications industry, OEMs, suppliers, research institutes and SMEs. It will also include representatives of the Corridors and Trial Sites. The Project Coordinator will chair SC meetings,

which will be held at least every six months and as needed. Minutes of meetings, once accepted, shall be sent by the Coordinator to the GA for information.

2.3.2.3 Advisory Board (AB)

The Advisory Board has an external reviewer role to ensure the Project is aligned with the market and stakeholder needs and is developing according to the industry standards. The AB will be open for other stakeholders from the global telecommunications and mobility community. In the particular context of the ICT-18 call, it will include public authorities and regulation authorities involved in the development of 5G deployment scenarios for automated mobility. The Advisory Board will have a role in supporting WP6 with the development of the deployment scenarios.

All newly recruited AB members must be approved by the SC and may be asked to sign a non-disclosure agreement (NDA). A travel budget will be managed by ERTICO to cover the members' travel costs to participate in Advisory Board meetings. At least three meetings will be convened with AB and representatives of the 5G-MOBIX Consortium as well as one mid-term demo and the final event.

2.4. Management processes and procedures

5G-MOBIX's Project Management Plan puts in place certain project-management processes and procedures to ensure that the workflow is smooth and that the Project delivers high-quality output and an outcome within the defined scope and time. These processes and procedures are intended to facilitate risk and quality management and to ensure that the innovation and deployment objectives of the Project are attained.

2.4.1. 5G-MOBIX management processes

Four processes contribute to the efficient and dynamic management of the project: Progress reporting and evaluation of results; Planning and implementation of changes; Project administration and contract management; Project management tools and services.

2.4.1.1 Progress reporting and evaluation of results

5G-MOBIX is bound by the Grant Agreement to provide periodic reports on its progress towards the Project objectives. A Periodic Technical Report in M18 and a Final Report in M36 must be provided to the European Commission. To complement these reports, 5G-MOBIX will produce six Internal Reports.

1) **Internal reports**

These reports entitled *Project Coordination Internal Reports* (numbered IR1.1 - IR1.6) will be produced every six months (M07, M13, M19, M25, M31, M36) to provide the status of each WP in terms of:

- objectives of the period
- progress towards objectives in this period, including milestones and deliverables
- justification and impact of delays and objectives not achieved
- the situation regarding personnel and other costs
- any changes or deviations in the use of project resources or organisation

The Internal Reports will be used to detect any need for corrective action and will also be the basis for preparing the EC periodic reports. A risk register will be presented to the European Commission as part of the periodic reporting process. Recommendations arising from project periodic reviews will also be added as risks to be addressed in the following reporting period.

Work Package Leaders, will be responsible for compiling the reports on work done by collecting status reports from their Task Leaders.

2) Interim and final periodic reports for the EC

Article 20 of the Grant Agreement obliges the Coordinator to submit technical and financial reports to the EC. As with the Internal Reports, WP Leaders will work closely with Task Leaders to produce complete records of their activities and achievements towards objectives as well as the contribution of all the partners involved, as required by the Grant Agreement. These reports will also serve to justify person month (PM) costs reported by the beneficiaries. The reports will be sent to the Coordinator for submission to the EC.

The relevant text of Article 20 is reproduced below and will be the basis of 5G-MOBIX's reporting management plan.

ARTICLE 20 — REPORTING — PAYMENT REQUESTS

20.1 Obligation to submit reports

The coordinator must submit to the Commission (see Article 52) the technical and financial reports set out in this Article. These reports include requests for payment and must be drawn up using the forms and templates provided in the electronic exchange system (see Article 52).

20.2 Reporting periods

*The action is divided into the following '**reporting periods**':*

- RP1: from month 1 to month 18

- RP2: from month 19 to month 36

20.3 Periodic reports — Requests for interim payments

The coordinator must submit a periodic report within 60 days following the end of each reporting period.

*The **periodic report** must include the following:*

*(a) a '**periodic technical report**' containing:*

*(i) an **explanation of the work carried out** by the beneficiaries;*

*(ii) an **overview of the progress** towards the objectives of the action, including milestones and deliverables identified in Annex 1.*

This report must include explanations justifying the differences between work expected to be carried out in accordance with Annex 1 and that actually carried out.

*The report must detail the exploitation and dissemination of the results and — if required in Annex 1 — an updated '**plan for the exploitation and dissemination of the results**'.*

The report must indicate the communication activities;

*(iii) a **summary** for publication by the Commission;*

*(iv) the answers to the '**questionnaire**', covering issues related to the action implementation and the economic and societal impact, notably in the context of the Horizon 2020 key performance indicators and the Horizon 2020 monitoring requirements;*

*(b) a '**periodic financial report**' containing:*

*(i) an '**individual financial statement**' (see Annex 4) from each beneficiary and from each linked third party, for the reporting period concerned.*

The individual financial statement must detail the eligible costs (actual costs, unit costs and flat-rate costs; see Article 6) for each budget category (see Annex 2).

The beneficiaries and linked third parties must declare all eligible costs, even if — for actual costs, unit costs and flat-rate costs — they exceed the amounts indicated in the estimated budget (see Annex 2). Amounts which are not declared in the individual financial statement will not be taken into account by the Commission.

If an individual financial statement is not submitted for a reporting period, it may be included in the periodic financial report for the next reporting period.

*The individual financial statements of the last reporting period must also detail the **receipts of the action** (see Article 5.3.3).*

*Each beneficiary and each linked third party must **certify** that:*

- the information provided is full, reliable and true;

- the costs declared are eligible (see Article 6);

- the costs can be substantiated by adequate records and supporting documentation (see Article 18) that will be produced upon request (see Article 17) or in the context of checks, reviews, audits and investigations (see Article 22), and

- for the last reporting period: that all the receipts have been declared (see Article 5.3.3);

*(ii) an **explanation of the use of resources** and the information on subcontracting (see Article 13) and in-kind contributions provided by third parties (see Articles 11 and 12) from each beneficiary and from each linked third party, for the reporting period concerned;*

(iii) not applicable;

*(iv) a '**periodic summary financial statement**', created automatically by the electronic exchange system, consolidating the individual financial statements for the reporting period concerned and including — except for the last reporting period — the **request for interim payment**.*

20.4 Final report — Request for payment of the balance

In addition to the periodic report for the last reporting period, the coordinator must submit the final report within 60 days following the end of the last reporting period.

*The **final report** must include the following:*

*(a) a '**final technical report**' with a **summary** for publication containing:*

(i) an overview of the results and their exploitation and dissemination;

(ii) the conclusions on the action, and

(iii) the socio-economic impact of the action;

*(b) a '**final financial report**' containing:*

*(i) a '**final summary financial statement**', created automatically by the electronic exchange system, consolidating the individual financial statements for all reporting periods and including the **request for payment of the balance** and*

*(ii) a '**certificate on the financial statements**' (drawn up in accordance with Annex 5) for each beneficiary and for each linked third party, if it requests a total contribution of EUR 325 000 or more, as reimbursement of actual costs and unit costs calculated on the basis of its usual cost accounting practices (see Article 5.2 and Article 6.2).*

20.5 Information on cumulative expenditure incurred

Not applicable

20.6 Currency for financial statements and conversion into euro

Financial statements must be drafted in euro.

Beneficiaries and linked third parties with accounting established in a currency other than the euro must convert the costs recorded in their accounts into euro, at the average of the daily exchange rates published in the C series of the Official Journal of the European Union, calculated over the corresponding reporting period.

If no daily euro exchange rate is published in the Official Journal of the European Union for the currency in question, they must be converted at the average of the monthly accounting rates published on the Commission's website, calculated over the corresponding reporting period.

Beneficiaries and linked third parties with accounting established in euro must convert costs incurred in another currency into euro according to their usual accounting practices.

20.7 Language of reports

All reports (technical and financial reports, including financial statements) must be submitted in the language of the Agreement.

2.4.1.2 Planning and implementation of changes

The Project Coordinator must be informed in writing of any request for change to the DoA of the Grant Agreement. The communication must include the following information:

- the proposed change
- whether status of the contract must be changed
- justifications for the change

- impact of the changes on the project plan

Minor changes such as slight adjustments or internal shift of resources will be dealt with in the periodic reporting and do not require a Grant Agreement amendment. Such changes, however, must always be indicated to the PC and have the approval of the WP Leader involved.

2.4.1.3 Project administration and contract management

The conditions and procedures for a Grant Agreement amendment are set in Article 55 of the Grant Agreement. Requests for amendments to the Grant Agreement and significant Project changes and deviations must be submitted in writing to the Project Coordinator. The Project beneficiary or Work Package Leader requesting the change must indicate to the Coordinator the reasons for the proposed amendment and its consequences in terms of budget, work programme, etc. The Coordinator must be informed as soon as a potential need for amendment to the Grant Agreement or a change to the Project plan is identified. Examples of subjects for contract amendment include (list not exhaustive):

- partners joining or leaving the Project
- re-allocation of budget
- incorporation of requirements from the EC
- extension of contract duration
- modification of Description of Action (Annex 1 to the Grant Agreement, Milestones, Deliverables submission date, Partner tasks, etc.)

The amendment request must be approved by the Steering Committee and a General Assembly vote. It will then be forwarded by the Project Coordinator to the EC on behalf of the Consortium.

The Project Coordinator as the chairperson of the GA is responsible for distributing the voting results among the beneficiaries by providing the meeting minutes for the beneficiaries to revise if needed.

The Coordinator is responsible for updating the amendments in the Participant Portal.

2.4.1.4 Project management tools and services

The successful execution and culmination of a project depend to a large extent on participants having good tools and services at their disposal to facilitate project-internal communication and streamline workflow. For a large project such as 5G-MOBIX such management tools are indispensable.

To ensure that the Consortium receives relevant information in a timely manner, without an excessive use of email, Project communication will reflect the structure of the Project and will target the smallest possible group of members. Targeted information sharing will be based on the classification of internal communication as 1) communication related to *project activity execution*, or 2) communication related to *administrative matters*.

1) Communication for project activity execution

The 5G-MOBIX Consortium will use ProjectPlace, a web-based project management and collaborative service, as the main portal for communication related to project activity execution. It will be the primary tool used for exchanging documents and general project management. Some advantages of using ProjectPlace are that it:

- allows targeted team communication
- allows centralised meeting information: agenda, minutes, etc.
- serves as a structured document repository
- permits multi-platform / multi-device access
- is flexible and customisable

5G-MOBIX will mainly use the following ProjectPlace tools:

- **Groups**: allows creating and managing custom groups of members to distribute targeted information
- **Documents**: allows managing and storing files in specific folders, as well as editing documents
- **Meetings**: allows organising meetings, including online meetings, through calendar invitations and agenda notifications

The Project Coordinator, ERTICO, has created a project workspace for 5G-MOBIX and invited members to join. In order to access a ProjectPlace workspace, each member must open a ProjectPlace account linked to their organization's email.

Communication via ProjectPlace Groups will be used to limit email exchanges for project activity execution so as to avoid loss of information and to keep track of communication. ERTICO has set up various Groups on the 5G-MOBIX ProjectPlace workspace to reflect the Consortium and Project bodies. These Groups will allow participants to keep communication as targeted and relevant as possible:

- All members (default group)
- Steering Committee
- Technical Management Team
- WP Leaders
- Trial Site Leaders
- WP1, WP2, WP3, WP4, WP5, WP6 and WP7
- One group for each Task according to the DoA

Participants must inform the coordination team at ERTICO of any members joining or leaving Project activities so that the contacts database can be kept up to date.

2) **Administrative communication**

Communication relating to administrative matters (financial statements, signature of contracts, payments, etc.) must be targeted to the administrative staff of each organization, which is not necessarily involved in the execution of project activities. To make sure that the information reaches all the staff involved in the administrative management of the project, the communication will be distributed to the contact persons identified as 5G-MOBIX contacts in the European Commission's participant portal (http://ec.europa.eu/research/participants/portal/desktop/en/home.html).

When the Coordinator needs to communication on administrative matters with the whole Consortium, he will address the list of contact persons downloaded from the EC participant portal. Therefore, in order not to miss any important administrative information, each partner has the responsibility to maintain this list up to date.

2.4.2. 5G-MOBIX management procedures

5G-MOBIX has defined a set of procedures to support the coordination tasks. These tasks refer primarily to conflict resolution, resource management, and quality and risk assurance.

2.4.2.1 Conflict resolution

Consensus will be pursued as the general principle in the decision-making processes of 5G-MOBIX. Decisions in the Project will generally be taken at the lowest organisational level possible, i.e. starting with the Task Leaders. However, conflicts can be escalated up to the GA depending on the nature of the decision to be taken and according to the rules stated in the Consortium Agreement. The TMT will be the preferred entity to solve most of the issues in a consensus-based manner.

2.4.2.2 Management of resources and payment rules on performed work

The control of the Project resources is managed by the Coordinator, based on the Grant Agreement. The Project will provide the periodic reports required by the European Commission and also generate an internal report every six months about the progress of the work, the achievements, the risks as well as an overview of the resources spent. These internal reports (IR1.1 to IR1.6) will help in monitoring and controlling the Project and will be the basis for the provision of the EC periodic reports. They will also help in mitigating performance issues from participants or anticipating the need for updating the Project Plan, including the reorganisation of resources.

2.4.2.3 Management of risks and quality assurance

Risk assessment with a thorough analysis of potential risks and close monitoring of the defined corrective actions is an important factor in the 5G-MOBIX Project Coordination Plan. This is not only important in

order to reach the objectives of 5G-MOBIX within the given time, budget and with high quality, but also to achieve a maximum of synergies with related projects and national 5G trial activities.

A 'risk' is defined as an event precluding the achievement of the objectives of a certain activity or task. Risk management involves a structured process aimed at estimating the probability of occurrence of a risk event and identifying and limiting its potential consequences through a series of mitigation strategies defined in advance. This management activity is aimed at achieving the Project's objectives on time and in budget. WP, Trial Site and Task Leaders will identify the risks relevant to their activities or tasks and properly and promptly document them through the TMT. The risks will then be assessed and mitigating actions proposed.

The 5G-MOBIX risk management strategy entails maintaining a risk register, which will be reviewed by the WP leaders, the TMT and the SC. It will also be presented to the European Commission as part of the periodic reporting process. The Project's risk management process comprises these elements:

- identification of risks, and registration of the identified risks in a risk registry available to all members
- estimation of the probability of the occurrence of the risk event
- estimation of the impact (i.e. the consequences) of the risk event
- definition of the mitigation strategy and risk response plan
- frequent updating and review of the risk registry by the Consortium management bodies, in particular through the regular TMT meetings

As a first step towards the adoption of an adequate risk management strategy, the table in Part A of the DoA, reproduced in Table 5, summarises the critical risks identified during the proposal phase and Grant Agreement preparation.

Table 5: 5G-MOBIX critical Implementation risks and mitigation actions

No.	Description of risk	WP	Propose risk-mitigation measure
1	Discrepancies in the technical visions: Project delays, adjustment of contributions. *Severity: Medium* *Probability: Low*	WP2	Frequent communication within WP will solve issues that are raised.
2	Technical work diverges from project initial goals: Core technical items not adequately addressed to meet the project objectives *Severity: medium* *Probability: low*	WP3 WP4	WP2 will issue global specifications and thanks to the phase incremental work plan this risk will be minimised.
3	The objectives in terms of enhancement of CCAM functions are not reached *Severity: Medium*	WP2 WP3	WP2 will define how to handle performances enhancement provided by 5G.

No.	Description of risk	WP	Propose risk-mitigation measure
	Probability: Medium		
4	Evaluation trials are not successful; data cannot be used for evaluation *Severity: low* *Probability: low*	WP4 WP5	Multi-phase evaluation methodology: T2.5, T3.5, T4.1 and T5.1 iterative process, and verification (T3.6) as well as roll-out (WP3) is implemented to ensure the data collected is according to expectations.
5	Dissemination and exploitation has limited impact *Severity: high* *Probability: Low*	WP6 WP7	The consortium has a wide range of the required organisations to reach the target stakeholders – Events at local sites planned to reach local stakeholders, relevant organisations committed to join the advisory board.
6	Conflicts of interest between partners on commercial model *Severity: low* *Probability: medium*	WP6	All partners involved in 5G-MOBIX are complementary; bringing a specific expertise – little overlap in the core business activities of the consortium partners, reducing the risk of conflicts of interest.

Risk management will be led by the Coordinator as part of Tasks T1.1 (administrative and financial coordination) in conjunction with T1.2 (technical coordination), the relevant Task leaders and the TMT.

The risk management process will be monitored in parallel by the Quality Manager, who has full control of the production and submission of the deliverables. The complete list of quality management procedures will be documented in D1.2 – *Quality Management Plan* – in M03. By defining clear procedures and establishing deadlines for deliverable production, review and submission, the Quality Manager will ensure low exposure to risk and the highest possible quality of 5G-MOBIX outcomes.

Recommendations arising from project periodic reviews will also be added as risks to be addressed in the following reporting period.

2.4.2.4 *Project meetings procedures*

The procedures for organising meetings are part of section 6.2 – *General operational procedures for all Consortium Bodies* – of the 5G-MOBIX Consortium Agreement. It is essential to follow these procedures closely to ensure the validity of all decisions and actions of the Consortium.

1) **Convening meetings**

5G-MOBIX meetings will be convened at various representation levels from a GA to Task and WP level.

In order to create synergies, cooperate and organize activities, periodic meetings will be scheduled at the Tasks and Work Package levels. The frequency and timing of these meetings is set by the Task and WP Leaders as needed by their activities.

Management meetings will be held periodically to review the overall status of the Project. Such meetings are meant to ensure that the Project is on the right track and that the pace of work is on schedule. Table 6 lists the types of meetings and their frequency:

Table 6: 5G-MOBIX management meetings

Body	Ordinary meeting	Extraordinary meeting
General Assembly	At least once a year	At any time upon written request of the Steering committee or 1/3 of the Members of the General Assembly
Steering Committee	At least every six months	At any time upon written request of any Member of the Steering committee
Technical Management Team	At least every three months	At any time upon written request of any Member of the Technical Management Team

The chairperson of the Consortium shall convene its meetings. Unless otherwise agreed, the Coordinator shall chair all the Consortium bodies.

The ProjectPlace 'Meetings' tool will be the primary platform used, although other external programs may be used in some circumstances, such as malfunction of the platform or to meet other specific requirements of the participants. All scheduled meetings, however, must be booked in ProjectPlace in order to inform the Consortium.

2) **Notice of a meeting**

The chairperson of the Consortium shall give notice in writing of a meeting to each Consortium member as soon as possible and no later than the minimum number of days preceding the meeting as indicated in Table 7.

Table 7: 5G-MOBIX notification of management meetings

Body	Ordinary meeting	Extraordinary meeting
General Assembly	30 calendar days	15 calendar days
Steering Committee	14 calendar days	7 calendar days
Technical Management Team	14 calendar days	7 calendar days

3) Sending the agenda

The chairperson the Consortium shall prepare and send each Consortium member a written (original) agenda no later than the minimum number of days preceding the meeting as indicated in Table 8.

Table 8: 5G-MOBIX agenda availability for management meetings

Body	Ordinary meeting	Extraordinary meeting
General Assembly	21 calendar days	10 calendar days
Steering Committee	7 calendar days	7 calendar days
Technical Management Team	7 calendar days	7 calendar days

4) Adding agenda items

Any agenda item requiring a decision by the Consortium must be identified as such on the agenda. Any Consortium member may add an item to the original agenda by written notification to all of the other members up to the minimum number of days preceding the meeting as indicated below.

Table 9: 5G-MOBIX agenda modifications for management meetings

Body	Ordinary meeting	Extraordinary meeting
General Assembly	14 calendar days	7 calendar days
Steering Committee	2 calendar days	2 calendar days
Technical Management Team	2 calendar days	2 calendar days

During a meeting the Members of a Consortium Body present or represented can unanimously agree to add a new item to the original agenda.

5) Representation in meetings

All Consortium members should be present or represented at any meeting. They may appoint a substitute or a proxy to attend and vote at any meeting. Virtual representation, when possible, is permitted. Consortium meetings may also be held by teleconference or other telecommunication means.

6) Minutes of meetings

The Coordinator shall produce written minutes of each meeting which shall be the formal record of all decisions taken. He shall send the draft minutes to all members within ten (10) calendar days of the meeting.

The minutes shall be considered as accepted if, within fifteen (15) calendar days from sending, no member has sent an objection in writing to the chairperson with respect to the accuracy of the draft of the minutes.

3. CONCLUSION

This document, deliverable D1.1 – *Project management plan*, is closely aligned with and takes as its starting point the Grant and Consortium Agreements of 5G-MOBIX. It details the roles and responsibilities of governance bodies as well as all beneficiaries and members of the Project Consortium. It describes the structures, tools, processes, and procedures that WP1 (*Coordination*) has instituted to ensure that the project runs smoothly and effectively and in accordance with the Grant Agreement.

D1.1 is specifically relevant for the execution of Tasks T1.1 (*Administrative and financial coordination*) and T1.2 (*Technical coordination*). This deliverable will be complemented by the other deliverables in WP1, particularly D1.2 (*Quality management plan*) but also D1.3 (*Innovation management plan*) and D1.4 (*Data management plan*), as well as the communications plan of WP7.

Together with the Grant Agreement and the Consortium Agreement, this document is to be regarded as a reference for the overall project management of 5G-MOBIX, to ensure good organisation of work effort and high quality of Project results.