



5GLOGINNOV

D6.1

Project management Plan



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 957400

Work Package	WP6- Project management
Task 6.1	Project management plan
Author	Eusebiu Catana
Dissemination Level	Public
Status	Final
Due date	31/10/2020
Document Date	16/10/2020
Version Number	1.0

Quality Control

	Name	Organisation	Date
Editor	All WP leaders	Consortium	16/10/2020
Peer review 1	Marco Gorini	CIRCLE	19/10/2020
Peer review 2	Ralf Willenbrock	T-SYSTEMS	22/10/2020
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LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation	Meaning
CCAM	Cooperative, Connected and Automated Mobility
CAD	Connected and Automated Driving
DoA	Description of Action
EC	European Commission
FMEA	Failure Mode and Effect Analysis
GA	General Assembly
LL	Living Lab
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
SME	Small and Medium-Sized Enterprises
PMT	Project management team
TS	Trial Site
TSL	Trial Site Leader
WP	Work Package
WPL	Work Package Leader

EXECUTIVE SUMMARY

5G-LOGINNOV main aim is to design and innovative framework addressing integration and validation of CAD/CAM technologies related to the industry 4.0 and ports domains by creating new opportunities for LOGistics value chain INNOVation. 5G-LOGINNOV will focus on seven 5G-PPP Thematics and support to the emergence of a European offer for new 5G core technologies in 11 families of use cases.

5G-LOGINNOV is supported by 5G technological blocks, including new generation of 5G terminals notably for future Connected and Automated Mobility, new types of Internet of Things 5G devices, data analytics, next generation traffic management and emerging 5G networks, for city ports to handle upcoming and future capacity, traffic, efficiency and environmental challenges. 5G-LOGINNOV will deploy and trail 11 families of Use cases beyond TRL7 including a GREEN TRUCK INITIATIVE using CAD/CAM & automatic trucks platooning based on 5G technological blocks. Thanks to the new advanced capabilities of 5G relating to wireless connectivity and Core Network agility, 5G-LOGINNOV ports will not only significantly optimize their operations but also minimize their environmental footprint to the city and the disturbance to the local population.

5G-LOGINNOV will be a catalyst for market opportunities build on 5G Core Technologies in the Logistics domains, thus being a pillar of economic development and business innovation and promoting local innovative high-tech SME and Start-Ups. 5G-LOGINNOV will open SMEs' and Start-Ups' door to these new markets using its three Living Labs as facilitators and ambassadors for innovation on ports. 5G-LOGINNOV promising innovations are key for the major deep sea European ports in view of the mega-vessel era (Hamburg, Athens), and are also relevant for medium sized ports with limited investment funds (Koper) for 5G.

The Project's ambitious work plan includes cyclic iterations of specifications, development, trials and evaluation activities. Testing and validation of the 5G technology will be carried out along three trial sites related to three ports & ports-cities areas. 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 15 beneficiaries. This large Consortium will share responsibilities of tasks divided into eight work packages (WPs) across 8 EU countries.

In working towards its ultimate goal of the roll out of 5G networks to support new types of use cases related to ports businesses, 5G-LOGINNOV is determined to realise its objective in a societally acceptable and ethical manner consistent with the H2o20 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 D6.1 – *Project Management Plan* – of 5G-LOGINNOV within WP6. Deliverable D6.1 lays out the organisational structure and the management procedures and processes that 5G-LOGINNOV 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 T6.1 – *Administrative and financial coordination* and Task T6.2 – *Technical coordination*.

Deliverable D6.1 is structured as follows:

Chapter 1 – *Introduction* – outlines the concept and approach of 5G-LOGINNOV. 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 overview* – outlines the Project concept and approach, and describes consortium mix, the Project work plan, including work packages and tasks as well as the main deliverables and milestones.

Chapter 3 – *Project management* – describes the management structure covering both operational and strategic management. The responsibilities of the different bodies and their role in the Project Management Team, which is the leading operational body of the project, are described. The chapter also details the management processes and

procedures. The overall project management processes relate to progress reporting and evaluation of results, planning and implementation of changes, project administration and contract management, project meeting procedures and project management tools and services. The management procedures described have to do with conflict resolution, resource use and payment rules. Finally, the chapter describes the technical management procedures with details of risk management.

Chapter 4 is the *Conclusion*.

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

1 INTRODUCTION

1.1 Purpose of the deliverable

Deliverable D6.1 – *Project Management Plan* – outlines the management strategy and tools that will ensure the effective execution of Task T6.1 – *Administrative and Financial Coordination* – and Task T6.2 – *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 D6.1 will be complemented by D6.2 – *Innovation Management Plan*, D6.3 -*Innovation Management Report*, D6.4-*Data Management Plan*, D6.5-*Open Data Publication* and D6.6 *Quality and Risk Management Plan* to provide an overall strategy for organisation and execution of core tasks to achieve the objectives of the Project Coordination work package (WP6) in terms of, both, operational and technical coordination.

1.2 Status of the deliverable

The information used in the deliverable and the situation description of the project management procedures is based on the consortium and project plan situation.

1.3 Intended audience

The dissemination level of D6.1 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-LOGINNOV beneficiaries, especially the governance bodies such as the General Assembly, the Project management team, and the external Advisory Board.

2 PROJECT OVERVIEW

2.1 5G-LOGINNOV concept and approach

5G-LOGINNOV project is positioned to deploy, evaluate and showcase the added value of 5G technology for Logistics and port operation in three (3) Living Labs: Athens (GR), Hamburg (GE) and Luka Koper (SV). The participation of port operator (PCT, Hamburg, Luka Koper) and major telecom industry stakeholders (MNOs, vendors, technology integrators) as well as the complementarity of the rest of the 5G-LOGINNOV consortium guarantee the technological significance as well as the business impact and market penetration of the 5G-LOGINNOV results and the developed solutions. 5G-LOGINNOV comprises also a palette of port-driven technological and societal innovations, tailored to realise the project objectives. The innovations will be implemented and tested in real operating conditions in three Living Lab environments, associated with the 3 5G-LOGINNOV ports, namely Athens, Hamburg and Luka Koper Living Labs (LLs) respectively.

5G-LOGINNOV will define critical scenarios needing advanced connectivity provided by 5G, and the required features to enable some advanced use cases. The matching of these advanced use cases and the expected benefits of 5G will be tested during trials on 5G corridors in different three EU countries.

The trials will also allow 5G-LOGINNOV 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-LOGINNOV will identify new business opportunities for the 5G enabled technologies for logistics & port operation and propose recommendations and options for its deployment.

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

2.2 Consortium

The 5G-LOGINNOV Consortium is specifically built around the ICT-42 call requirements to pre-deploy and evaluate 5G technologies related to port & logistics operations, to address standardisation needs, and to provide recommendations and options for 5G deployment scenarios for ports & port-city areas. The roll out of 5G networks to support project use cases requires effective harmonisation of the deployment agendas at EU level and beyond. For this reason, 5G-LOGINNOV has opted to include a large set of partners from 8 EU Member States representing stakeholders from major research organisations actively involved in national and EU 5G projects, telecom operators, telecom and IT manufacturers, automotive suppliers, OEMs, port operators, public authorities responsible for traffic management, transport industries as well as city councils and SMEs. This rich consortium allows 5G-LOGINNOV 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.

In the table 1 are presented the 5G-LOGINNOV beneficiaries.

ID #	Short name	Beneficiary name	Country
1	ERT	EUROPEAN ROAD TRANSPORT TELEMATICS IMPLEMENTATION COORDINATION ORGANISATION S.C.R.L.	BE
2	AKKA	AKKA High Tech	FR
3	CIRCLE	Circle SpA	IT
4	CONTI	CONTINENTAL AUTOMOTIVE ROMANIA SRL	RO

ID #	Short name	Beneficiary name	Country
5	ICCS	INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS	GR
6	ICOOR	CONSORZIO INTERUNIVERSITARIO PER L'OTTIMIZZAZIONE E LA RICERCA OPERATIVA	IT
7	ININ	INTERNET INSTITUTE, COMMUNICATIONS SOLUTIONS AND CONSULTING LTD	SI
8	LK	LUKA KOPER, PORT AND LOGISTIC SYSTEM, D.D.	SI
9	PCT	STATHMOS EMPOREVMATOKIVOTION PEIRAIA AE	GR
10	SWARCO	SWARCO Traffic Systems GmbH	DE
11	TEC4U	tec4U Ingenieurgesellschaft mbH	DE
12	TSLO	TELEKOM SLOVENIJE DD	SI
13	TSYS	T-SYSTEMS INTERNATIONAL GMBH	DE
14	VICOM	FUNDACIÓN CENTRO DE TECNOLOGÍAS DE INTERACCIÓN VISUAL Y COMUNICACIONES Vicomtech	ES
15	VODAFONE	VODAFONE INNOVUS ANONIMI ETAIREIA SYSTIMATON EPIKOININIAS AYTOMATISMONKAI EFARMAGIS PLIROFORIKIS	GR

Table 1: 5G-LOGINNOV beneficiaries

2.3 Project work plan

Work on the 5G-LOGINNOV project will be carried out over a three-year period (36 months) starting on 1 September 2020 (M1) and ending 31 August 2023 (M36) by the eight WPs as described in Table 2.

WP	Work package name	Leader	Start	End
WP1	Living Labs requirements and specifications	VICOM	1	12
WP2	Living Labs development and deployment	ERTICO	4	22
WP3	Living Labs trials and evaluation	TSYS	6	32
WP4	Marketplace and new actors	ICOOR	1	36
WP5	Dissemination and exploitation	CIRCLE	1	36
WP6	Project management	ERTICO	1	36
WP7	Ethics requirements	ERTICO	1	36

Table 2: 5G-LOGINNOV work packages

WP1-WP4 are dedicated to development, testing and innovation activities, while WP5 and WP6-WP7 are overarching support activities. Figure 1 shows a flow chart based on the Project's planned workflow and the expected interaction and interdependencies of the work packages.

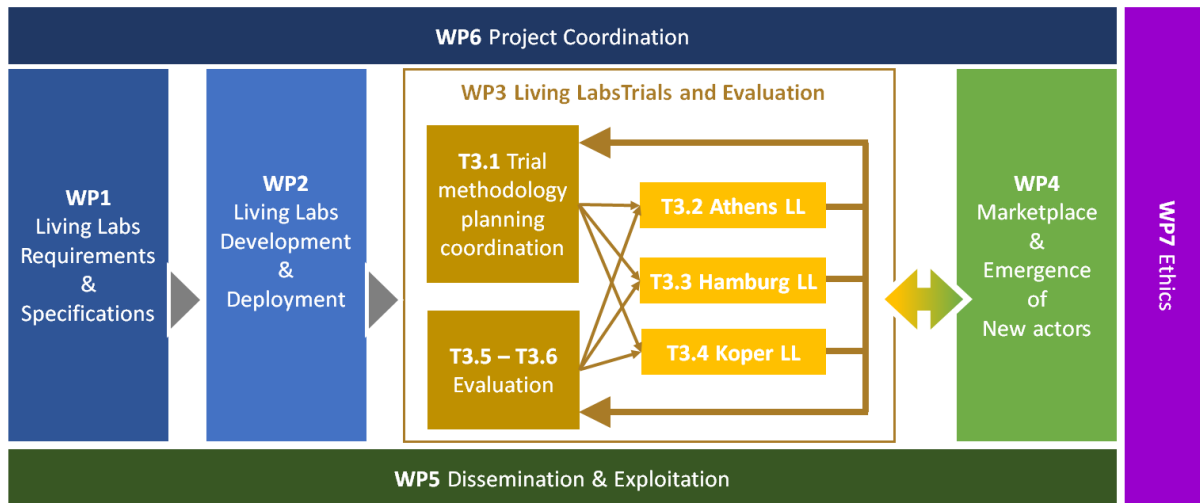


Figure 1: 5G-LOGINNOV workflow

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 and Risk Management Plan – D6.6* for more details).

The trials in WP3 will take place at three Trial Sites (TS) across Europe. Each TS represents a Task within WP3 as shown in Table 3

#	Task	Country	Type	Leader
1	T3.2	Greece	TS/Greek LL	ICCS
2	T3.3	Germany	TS/German LL	T-SYSTEMS
3	T3.4	Slovenia	TS/Slovenian LL	ININ

Table 3: 5G-LOGINNOV trial sites

2.4 Gantt chart

5G-LOGINNOV'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 according to its specific situation and needs. The Gantt chart in Figure 2 reflects the iteration cycles showing the overlap between WP1-WP4.

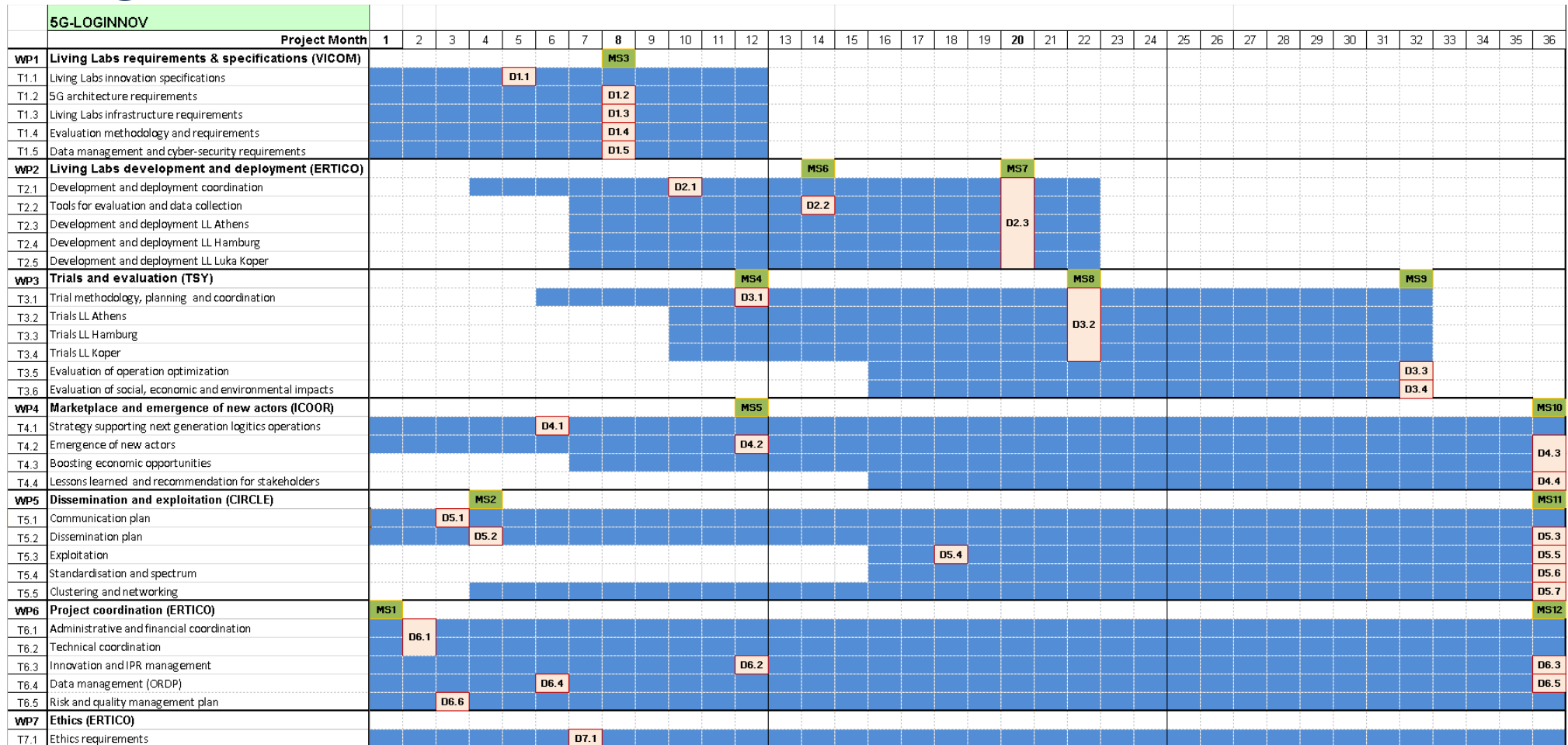


Figure 2: 5G-LOGINNOV Gantt chart

2.5 Project deliverables

DeL. No.	Delivery Name	WP	Lead	Diss. level	Type	Delivery date
D1.1	5G-enabled logistics use cases	WP1	CIRCLE	PU	R	M05
D1.2	5G architecture and technologies for logistics use cases	WP1	TSLO	PU	R	M08
D1.3	5G-enabled Living Labs infrastructure	WP1	SWARCO	PU	R	M08
D1.4	Initial specification of evaluation and KPIs	WP1	AKKA	PU	R	M08
D1.5	Data and cyber-protection policies	WP1	AKKA	CO	R	M08
D2.1	Development and deployment plan	WP2	ICCS	PU	R	M12
D2.2	Data collection and evaluation procedures	WP2	AKKA	PU	R	M14
D2.3	Development and deployment final report	WP2	ICCS	PU	R	M20
D3.1	Trial methodology, planning and coordination	WP3	TSYS	PU	R	M12
D3.2	Living Labs trials preparation report	WP3	TSYS	PU	R	M22
D3.3	Evaluation of operation optimization	WP3	ICCS	PU	R	M32
D3.4	Evaluation of social and economic impacts	WP3	ICOOR	PU	R	M32
D4.1	Plan for boosting marketplace and emergence of new actors	WP4	ICCOR	PU	R	M06
D4.2	Start-ups integration report	WP4	CIRCLE	PU	R	M12
D4.3	Achievements with new actors and opportunities	WP4	ICOOR	PU	R	M36
D5.4	Lessons learned and recommendations for stakeholders	WP4	ERTICO	PU	R	M36
D5.1	Communication plan	WP5	ERTICO	PU	R	M03
D5.2	Dissemination plan	WP5	CIRCLE	PU	R	M04
D5.3	Dissemination and communication report	WP5	CIRCLE	PU	R	M36
D5.4	Exploitation plan	WP5	ICOOR	PU	R	M18
D5.5	Exploitation report	WP5	ICOOR	PU	R	M36
D5.6	Standardisation and spectrum policy report	WP5	TSYS	PU	R	M36
D5.7	Clustering and networking results	WP5	CIRCLE	PU	R	M36
D6.1	Project management plan	WP6	ERTICO	PU	R	M02
D6.2	Innovation management plan	WP6	VICOM	PU	R	M12
D6.3	Innovation management report	WP6	VICOM	PU	R	M36
D6.4	Data management plan	WP6	AKKA	PU	ORDP	M06
D6.5	Open data publication	WP6	AKKA	PU	ORDP	M36
D6.6	Quality and risk management plan	WP6	ERTICO	PU	R	M03
D7.1	Ethics requirements	WP7	ERTICO	CO	R	M07
D7.2	Ethics requirements Ethics- POPD	WP7	ERTICO	CO	R	M06
D7.3	Ethics requirements – Ethics- GEN – Requirement	WP7	ERTICO	CO	R	M06

Table 4: 5G-LOGINNOV deliverables

2.6 Key Milestones

MS#	Milestone name	WP	Due date	Means of verification
MS1	Project kick-off	WP6	M01	Kick-off minutes
MS2	Communications tool ready website online	WP5	M04	D5.2
MS3	Living Labs' specification ready	WP1	M08	D1.1 to D1.5
MS4	Living Labs' trials and evaluation Plans ready	WP3	M12	D3.1
MS5	Marketplace & new actor support strategy ready – Open Call start-ups selected	WP4	M12	D4.1 and D4.2
MS6	Evaluation data management tools ready	WP2	M14	D2.2
MS7	Living Labs' deployment completed	WP2	M20	D2.3
MS8	Living Labs' trial preparation completed – trials ready to start	WP3	M22	D3.2
MS9	Living Labs trials and evaluations completed	WP3	M32	D3.3 and D3.4
MS10	Evaluation and vision for take up of 5G enabled and	WP4	M36	D4.3 and D4.4

MS#	Milestone name	WP	Due date	Means of verification
	innovative Next Generation Logistics' Operation ready			
MS11	Congresses, all Living Labs events, contribution to Standardisation, Networking and Clustering successfully completed	WP5	M36	D5.3, D5.5, D5.6, D5.7
MS12	ORDP data ready and innovation results	WP6	M36	D6.3 and D6.5

Table 5: 5G-LOGINNOV milestones

3 PROJECT MANAGEMENT

3.1 Management structure and functions

3.1.1 Project Management overview

Within a large project such as 5G-LOGINNOV, 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-LOGINNOV has put in place a 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. 5G-LOGINNOV's 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 **Project management team**
- 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-LOGINNOV organisational and management structure, which will be detailed in the sections that follow

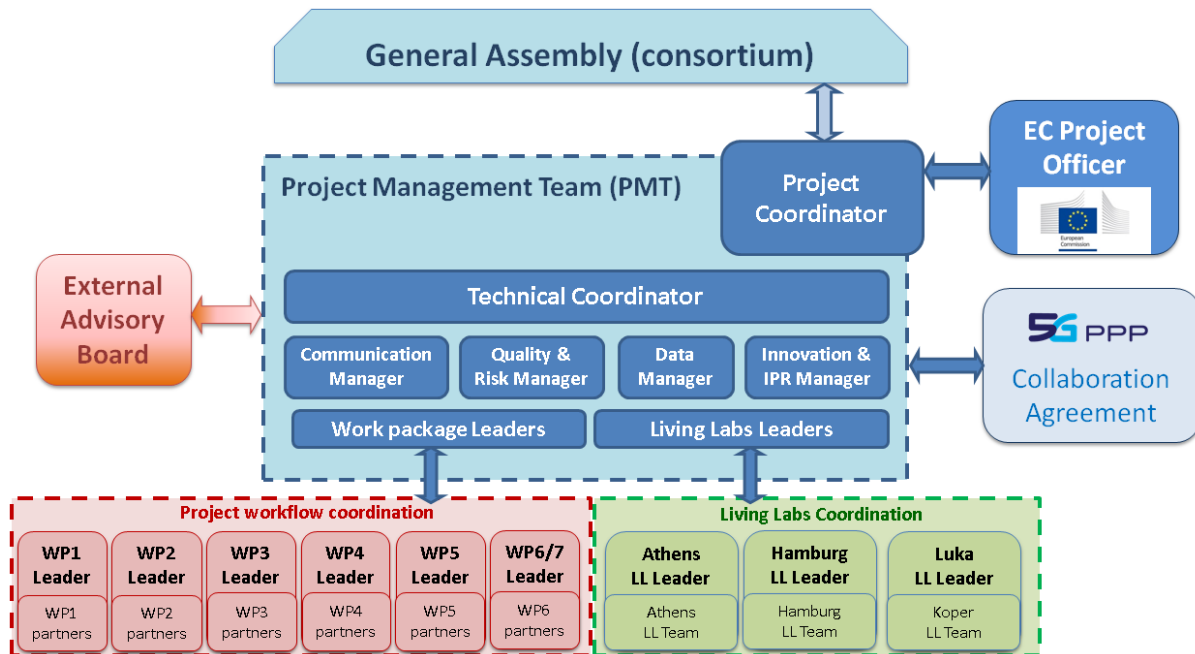


Figure 3: 5G-LOGINNOV organisational and management structure

The management structure described in the Figure 3 above shows that the Project Management Team is the central body steering 5G-LOGINNOV. The foundations of the project management team are the two middle coordination layers of the project:

- The Work package leaders
- The Trial site leaders

Four managers are responsible for the cross work package and cross trial site coordination of horizontal issues being: Dissemination management, Quality management, Data Management and Innovation management.

At the top level of the Project Management Team are the Project Coordination and the Technical coordination teams, both monitoring the progress of all WPs, Trial Sites and Managers and leading the PMT meeting agendas and discussions as well as deciding about the solution to solve issues.

Around the Project Management Team, entities are supporting the success of the 5G-LOGINNOV project coordination:

- The external Advisory Board, supporting the alignment of the project with the current research, societal and industry needs, this body has representatives from different stakeholder categories
- 5G-LOGINNOV liaise with 5G-PPP (<https://5g-ppp.eu/5G-LOGINNOV>) to exchange information and coordinate the impact of all ongoing 5G projects (<https://5g-ppp.eu/5g-ppp-phase-3-5-projects>).

The General Assembly is the unique body where all project beneficiaries are represented and thus can vote all decisions either relating to changes in the project plans or decision submitted by the PMT, in case of a lack of consensus.

The Project Coordinator is chairing the Project management Team and the General Assembly and is the unique point of contact with the European Commission (or Funding Authority).

The management functions within 5G-LOGINNOV will be performed at two levels:

1. The **operational level**: The Project Coordinator, the Technical Coordinator and the Project 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 General Assembly approves the Project Coordinator and Project Management Team 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.

The following sections present in details the different bodies.

3.1.2 Operational bodies

3.1.2.1 Project Coordinator (PC)

The Project Coordinator for 5G-LOGINNOV is ERTICO, which is represented by the primary Coordinator Contact, Dr. Eusebiu Catana, Senior Manager for Innovation and Deployment. 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-LOGINNOV 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 to:

- 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-LOGINNOV partner beneficiaries and other contact persons updated and available. He shall organise and chair all meetings of the strategic management bodies described in section 3.1.3, 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 Project management team with organizational, administrative, financial and legal issues.

3.1.2.2 Technical Coordinator (TC)

Given the scale and importance of the Project, 5G-LOGINNOV has designated the leader of Task T6.2 – *Technical Coordination* – as the Technical Coordinator (TC) of the Project. This role has been assigned to Mr. Peter Schmitting of ERTICO. In keeping with T6.2 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. The Technical Coordinator carries out the technical coordination with the support of the Technical Coordination task partners, which includes the Project Coordinator. Beyond the Project Coordinator and the Technical Coordinator, the six following experts were nominated to join the task T6.2, with a corresponding domain of expertise:

- Dejan Šošter, Telecom Slovenia- 5G Networks & Chipsets
- Alexandru Budisan, CONTINENTAL-IT – Vehicles OBU
- Andreas Schmid, SWARCO-Infrastructure RSU
- Ralf Willenbrock, T-SYSTEMS - Application and User stories
- Mandimby Nirina Ranaivo Rakotondravelona, AKKA - Security and Privacy
- Mauro Dellamico, ICOOR -Ethics

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
- Especially monitor the deployment plans at the local sites, raised issues during the PMT calls and proposes solution to solve the issues
- Monitor the Local Test Site plans to ensure they contribute timely to the project objectives
- Generate close working cooperation between the WP and Corridor & Trial Sites Leaders – refine and refocus any activity as necessary
- In collaboration with the Task T6.1, organise and convene regular PMT meetings for productive interaction between all the leaders
- Monitor and control the production of the deliverables in collaboration with the Task T6.6 – Quality Management
- Monitor the risk register and propose updates and mitigations to the PMT

3.2.1.3 Project management team (PMT)

The PMT is the unique operational and central steering body of the project.

The PMT is collectively 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 PMT will identify problems and delays early and proactively prevent conflict situations and anticipate deviations from the Project plan. In addition to the bi-weekly online meetings, the PMT will also meet physically at least once every six months.

Beyond the Project Coordinator team and the Technical Coordinator team, the following bodies are part of the PMT:

- The Work Package Leaders (WPLs), who 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 PMT. For progress reporting and the periodic reports, the WPL reports directly to the Coordinator.
- The Trial Site Leaders, who are the interface between the Project and the local-site teams. They are responsible for the close linkage of 5G-LOGINNOV activities to the local 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 WP3.
- The Innovation Manager (VICOMTECH), who leads the innovation management Task (T6.2 and T6.3) 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-LOGINNOV.
- The Data Manager (AKKA), who leads the data management plan Task (T6.4) 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). It will raise potential issues and propose solutions for dealing adequately with data privacy and data protection regulations.
- The Quality Manager (ERTICO), who leads the quality management plan Task (T6.6) 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 (CIRCLE), who leads the dissemination and communication Task (T5.2 & T5.3) to ensure that the project is well coordinated for achieving excellent outreach with public events, scientific publications and presentations.

The current Members of the PMT are as described in the following Table 6.

Role	Beneficiary	Leader
WP leaders		
WP1 - Living Labs requirements and specifications	VICOMTECH	Estebaliz Loyo
WP2 – Living Labs development and deployment	ERTICO	Coen Bresser
WP3- Living Labs trials and evaluation	T-SYSTEMS	Ralf Willenbrock
WP4- Marketplace and new actors	ICOOR	Guido Perboli
WP5- Dissemination and exploitation	CIRCLE	Valeria Burlando
WP6 - Project Coordination	ERTICO	Eusebiu Catana (Project Coordinator)
WP7 – Ethics	ERTICO	Johanna Tzanidaki
Managers		
Technical Coordinator	ERTICO	Eusebiu Catana
Communication Manager	CIRCLE	Valeria Burlando
Innovation Manager	VICOMTECH	Estebaliz Loyo
Data Manager	AKKA	Mandimby Nirina Ranaivo Rakotondravelona
Quality Manager	ERTICO	Jana Habjan
Trial site leaders		
Germany	T-SYSTEMS	Ralf Willenbrock
Greece	ICCS	Pavlos Basaras
Slovenia	ININ	Janez Sterle

Table 6: 5G-LOGINNOV project management team

Then main roles of the Project Management Team are as follows:

- Communicate regularly with the WP and Trial Site leaders to monitor their progress and discuss potential issues
- Hold regular Teleconferences, at least every 2 weeks, as well as physical meetings, to:
 - Assess the status and progress of all the Project activities and results
 - Discuss issues and try to reach a consensus about the decisions for finding solutions and adapting the project plan as necessary
 - Assess the needs for changing the allocation of resources
 - Review and approve updates of the Risk table elaborated by the Technical coordination team
 - Discuss about the dates of General assembly and prepare the agenda and the presentations
 - Prepare the review meeting with the European Commission as well as the presentations
 - Prepare the meetings with the advisory board
 - Discuss feedback from the European commission or the advisory board and propose corrective actions
 - Support the dissemination activities and in particular the preparation of events and demonstration
- Members of the PMT will attend the important coordination meeting of the project particularly the official review meetings with the European Commission
- As necessary, the PMT may create and instruct task forces, particularly to efficiently solve cross work-package issues

- Act as intermediary in cases of conflicts that cannot be resolved at WP level
- Support the Project and Technical Coordinators with the necessary updates of the project plan and the GA amendment
- Assess and approve calls for extraordinary General Assembly meetings (beyond the required annual meetings)

3.1.3 Strategic bodies

In addition to the PMT, 5G-LOGINNOV will rely on two other strategic bodies that will perform a complementary role to guarantee transparency, accountability and expert topical knowledge.

3.1.3.1 General Assembly (GA)

The General Assembly is the highest decision-making body of 5G-LOGINNOV where all partners of the Consortium are represented. Upon recommendations from the Project Management Team 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.

3.1.3.2 External Advisory Board (EAB)

The Advisory Board will act as external reviewer and offer non-binding advice and recommendations to ensure that:

- The Project is aligned with market and stakeholder needs and is developing according to industry standards.
- The Living Labs issues identified in the Grant Agreement that 5G-LOGINNOV will address also align with the external Advisory Board's views on market deployment needs.
- The overall Project results contribute to 5G deployment for ports & logistics use cases and the 5G action plan.

The EAB will be open to other stakeholders from the global telecommunications and port & logistics community. Table 7 shows the 5G-LOGINNOV EAB, which includes public authorities and regulation authorities, vehicle manufacturers, telecom industry stakeholders and research organisations involved in the development of 5G deployment scenarios for port areas. The added value of the EAB will be to offer insights from different links of the value chain, especially to support WP6 with the development of the deployment scenarios.

The EAB will have access to the Project deliverables (with confidentiality agreements in place) and be available to answer specific questions from Consortium members on their specialty topics.

Domain	Organisation	Name
Port administration	Logistik Initiative Hamburg	Hans Stapelfeldt
International association	Alice (Alliance for Logistics Innovation through Cooperation in Europe)	Fernando Liesa
Government	Piraeus Consolidation and Distribution Center S.A. (PCDC)	George Petsis
Shipping industry	COSCO Shipping Lines Greece S.A.	Angelos Karakostas
Conference of European Directors of Roads	CEDR	Steve Phillips

Table 7: 5G-LOGINNOV External Advisory Board

All newly recruited EAB members must be approved by the GA 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 EAB and representatives of the 5G-LOGINNOV Consortium as well as one mid-term demo and the final event.

3.2 Management processes and procedures

5G-LOGINNOV'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.

3.2.1 5G-LOGINNOV administrative management processes

Three 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.

3.2.1.1 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 a General Assembly vote. It will then be forwarded by the Project Coordinator to the EC on behalf of the Consortium.

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

3.2.1.2 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.

3.2.1.3 Progress reporting and evaluation of results

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

1) Internal reports

These reports entitled *Project Coordination Internal Reports* (numbered IR6.1 – IR6.6) will be produced every six months (M08, M14, M20, M26, M32, M38) 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. No internal reports will be provided when the timing overlaps with the official periodic report.

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-LOGINNOV'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.

3.2.2 5G-LOGINNOV management procedures

5G-LOGINNOV has defined a set of procedures to support the coordination tasks and to ensure the above processes are run efficiently. These procedures relate primarily to conflict resolution, resource management, and quality and risk assurance.

3.2.2.1 Conflict resolution

Consensus will be pursued as the general principle in the decision-making processes of 5G-LOGINNOV. Decisions in the Project will generally be taken at the lowest organisational level possible, i.e. starting with the Task Leaders. The PMT will be the preferred entity to solve most of the issues in a consensus-based manner. If the conflict remains unresolved at the PMT level, the General Assembly will be consulted and will vote a decision for resolving the issue.

3.2.2.2 Procedure for resource reporting and management

Project resources are managed by the Coordinator based on the Grant Agreement. 5G-LOGINNOV 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 (IR6.1 to IR6.6) 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.

The internal reporting procedure will be based on the official periodic reporting requirements and include input from all Project beneficiaries. These reports will comprise two parts:

Part A will contain resource management reports for the period. Part B will describe the work done during that period.

- 1) Towards the end of the reporting period (M01-M06, M07-M12, etc.), the Coordinator, ERTICO, will send out a request to all partners to provide input in the dedicated templates.
- 2) For Part A, each beneficiary partner will report their resource use for the period based on a linear estimation of expected resource use; a summary of the activities performed will be provided along with justification for deviations
- 3) For Part B, WP Leaders will collect input from Task Leaders and other beneficiaries and report the progress made in the provided template. The contribution of all beneficiaries involved in the WP will be briefly summarised.
- 4) The Coordinator will use this report to ensure that Project activities are on course and all beneficiaries are contributing as expected.
- 5) Corrective action may include shifting resources (person months) from non-performing partners

3.2.2.3 Project meetings procedures

The procedures for organising meetings are part of section 6.2 – *General operational procedures for all Consortium Bodies* – of the 5G-LOGINNOV 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-LOGINNOV 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 8 lists the types of meetings and their frequency:

Body	Ordinary meeting	Extraordinary meeting
General Assembly	At least once a year	At any time upon written request of the Project Management Team or 1/3 of the Members of the General Assembly
Project management team	At least every three months	At any time upon written request of any Member of the Project management team

Table 8: 5G-LOGINNOV management meetings

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

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 9.

Body	Ordinary meeting	Extraordinary meeting
General Assembly	30 calendar days	15 calendar days
Project management team	14 calendar days	7 calendar days

Table 9: 5G-LOGINNOV notification of management meetings

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 10.

Body	Ordinary meeting	Extraordinary meeting
General Assembly	21 calendar days	10 calendar days
Project management team	7 calendar days	7 calendar days

Table 10: 5G-LOGINNOV agenda availability for management meetings

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 in Table 11.

Body	Ordinary meeting	Extraordinary meeting
General Assembly	14 calendar days	7 calendar days
Project management team	2 calendar days	2 calendar days

Table 11: 5G-LOGINNOV agenda modifications for management meetings

During any 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.

3.2.3 Technical coordination

The Technical Coordination (TC) or Technical management (TM) of the project is responsible for the technical aspects of the work performed in the project and needs to ensure that the solutions proposed and trials performed by 5G-LOGINNOV are technically sound, viable and in line with standardization activities. All Technical activities of the project under any TS should be organized under the leadership of the Technical Coordinator to make sure that the project follows a concise and coordinated technical approach. The technical coordination procedures are described below.

3.2.3.1 Technical coordination procedures

The project's technical coordination takes place mainly in two different levels, via the Project Management Team (PMT) and the Technical Coordination Team (TCT).

- **The PMT** is comprised of the project's management team, the TS leaders and the WP leaders and it meets (virtually) on a bi-weekly basis. In this forum, updates are exchanged among the leadership of the project and towards the PC and TC regarding progress achieved, issues and challenges on a per TS level and on per WP/Task level, as reported by the respective leaders. These regular updates are more targeted towards a higher management level and aim to ensure that all TS and WPs are following through with their technical tasks towards achieving their objectives on time. Based on the feedback received coordinated guidelines and the next steps are transmitted back to the TS and WPs, while when the need for a deeper technical session is identified the matter is passed on to the TCT
- **The TCT** is a team of experts tasked with assisting the Technical Coordinator to monitor and align all technical activities across the project irrespective of WP/Task and TS. As the main technical issues to be addressed transcend the typical project structure and are equally important for all participating TSs, the TCT offers a forum for technical discussions among the experts of the project. The TCT is comprised of five main technical expertise domains, led by five experts assigned by the TC, as detailed in the next sub-section. The TCT has more of an ad-hoc character as meetings among experts take place on a continuous basis throughout the project (led by the respective leader), while the domain leaders and the TC meet at least once a month (with additional ad-hoc meeting when needed). Through this process any technical issue in any TS and/or WP is quickly detected, discussed and addressed while as an outcome the respective tasks in ClickUp (see Section 0) and the Risk Registry is updated from the respective experts and domain leaders.

3.2.3.2 Technical Coordination Team (TCT)

The role of the Technical Coordination Team (TCT), included in the Task T6.2 – Technical Coordination, is to assist the Technical Coordinator in keeping track of all the technical activities of the project, organize relevant tasks, identify risks and provide guidelines that will secure a solid outcome for the project. The goal is to have a much better oversight and be capable to offer assistance and guidance where needed.

3.2.3.3 Domain leaders

The Technical Coordination Team is composed of five people, each to lead and oversee the activities in five different domains / categories of technical activities. This TCT will be charged with communicating with the experts of each TS and get updates and help with issues irrespective of WP or Task or partner. They are also charged with being up to date with the current status of the project activities in their domain. The five domains and the people leading them are shown in Table 12.

Domain of Expertise	Domain Leader
5G Networks	T-SLO-Dejan Šošter
Vehicles, OBU & RSU	CONTI-Alexandru Budisan SWARCO-Andreas Schmid for RSU
Application / User stories	T-SYS-Ralf Willenbrock
Security / Privacy	AKKA-Mandimby Nirina Ranaivo Rakotondravelona

Table 12: Technical Coordination Team Domains & Domain Leaders

The domain leaders' general responsibilities are:

- Maintain overview of activities in their domain across different WPs/Tasks and ensure that:
 - i) there is no duplication of work,
 - ii) all activities make sense and contribute towards a common objective,
 - iii) all activities are documented in respective deliverables (no repetition, no omissions)
- Check-in periodically (e.g. on a bi-weekly basis) with the TS experts of their field (each TS to nominate one) keep track of the progress and make sure they adhere to the plan (to be assisted by the Click-Up tool). It is very important that each Domain leader is always aware of the delivery dates, potential delays, etc. (when will each TS be able to deliver what)
- Participate in the TM Experts Group periodic telco where the experts update each other on the status of activities and take common decisions together with the TM about how to proceed further, or any other decision needed (frequency?)
- Double-check deliveries from TS and Tasks to make sure to adhere to the plan and are not just "procedural". Need to make sure that our deliverables make sense and are useful and that no relevant info is left out.
- Monitor and update the Risk Matrix for their domain based on the feedback from the TS experts and the progress of work within the project.

3.2.3.4 Domain Experts

For each of the above-mentioned domains, the domain leaders have built a team comprised of one expert from each Trial Site, who will be responsible to discuss and report to the domain leader for the activities and status of their respective domain in their TS. These experts need to be the real experts working on this domain and not management personnel, as they need to be discussing the technical details.

Expert's names and contact details, issues to be addressed by the experts and experts' responsibilities are described in dedicated tabs of an excel table for the project participants, available on the project repository, while an overview is presented in Table 13.

Role	5G Networks	Vehicles, OBU & RSU	Application / User stories	Security / Privacy
Domain Leader	Dejan Šošter	Alexandru Budisan Andreas Schmid for RSU	Ralf Willenbrock	Mandimby Nirina Ranaivo Rakotondravelona
DE Expert 1	Ralf Unruh	J. Boes	J. Chatzis	Nicolae Gaidibadi
GR Expert 1	George Koutalieris	Kotras Michael	Pavlos Basaras	Kanellopoulos Giannis
SI Expert 1	Peter Zidar	Fiser Ziga	Janez Sterle	Koršič Luka

Table 13: Domains Leaders and TS Domains Experts

3.2.3.5 Control of local TS contribution

The collaboration within each TS and the integration of TS solutions are perhaps one of the most challenging activities within 5G-LOGINNOV. In order to guarantee that the envisioned contributions and integrations will go ahead as planned and that the TS experts will guarantee interoperable solutions, the TS collaboration activities are monitored on two levels:

- **From the TCT** the collaboration of TSs fall under the responsibility of the “Application / User stories” expertise domain as the collaboration results from the defined User Stories in D2.1. The domain leader is tasked with monitoring the progress and discussions among the TS experts on their solution integration, offer advice and directions where needed and report any potential issues (and the achieved progress) back to the TCT.
- **From the respective WP3 task (leaders)**, as most TS solutions to be integrated into the user story and infrastructures are very specific in nature (i.e. Vehicle, OBU, RSU, application contributions) their development and progress is monitored and guided by the respective WP3 task (and its respective leader), responsible for this development. All WP3 tasks have fixed bi-weekly calls where the experts of the TS report on their progress, including the activities around TS solution integration. As part of their WP3 task activities each TS expert is required (followed up by each Task leader) to update the respective ClickUp task regarding the TS integration with the progress achieved, potential challenges, changes in dates, etc. Through the ClickUp tool the progress of each individual TS integration is visible to the entire management team.

As the TS receives regular updates both from the WP3 task leaders (via the PMT) and the TCT domain leaders, while the ClickUp tool is regularly updated to reflect the current status of activities, there is a very strong monitoring and guidance structure in place to guarantee the progress in the TS solution integration activities.

3.2.3.6 Tools

As 5G-LOGINNOV is a project of considerable size, with multiple sub-teams of experts and TSs working in parallel and collaborating, management tools are employed to keep track of the progress achieved at each TS in specific fields, and for WP and Task leaders to be able to align, delegate and keep track of the work among the various partners. Additionally, the dependencies among the various activities of the different expertise groups and/or TSs have to be tracked and an estimation for the completion of certain tasks (affecting others) has to be tracked and their

progress monitored, to guarantee that 5G-LOGINNOV will deliver its output on time and with the correct technical specifications.

For these reasons the ClickUp¹ tool (project management & planning tool) has been employed within 5G-LOGINNOV to make sure that all required steps to reach our technical objectives have been thoroughly planned out and defined, their dependencies recorded and their progress monitored by the proper WP/Task leaders.

Within ClickUp, each TS breaks down their envisioned work per area of expertise (5G network, vehicles, OBU/RSU development, application development, Data monitoring & collection, etc.) into specific tasks and sub-tasks. Each (sub)task is defined with a start and due date, dependency with other tasks (if they exist), explanation of the implementation details of the task and they are assigned to a specific person within a 5G-LOGINNOV partner, who is responsible for making sure the task is completed on time and monitoring and updating its progress. The various interconnected tasks provide an end to end picture of all the activities that need to be performed within a TS in order to deliver the networks, vehicles, applications and infrastructure needed for the trials, which can be viewed in a Gantt chart mode. Under the leadership of the Technical Management team and the WP and Task leaders, templates of Tasks have been created to guide the various TSs and to guarantee the harmonization among the project's activities. Experts from each TS have declared when, how and by whom each task will be performed. Figure 4, Figure 5 and Figure 6 below provide some screenshots of the ClickUp tool and the various functionalities it supports.

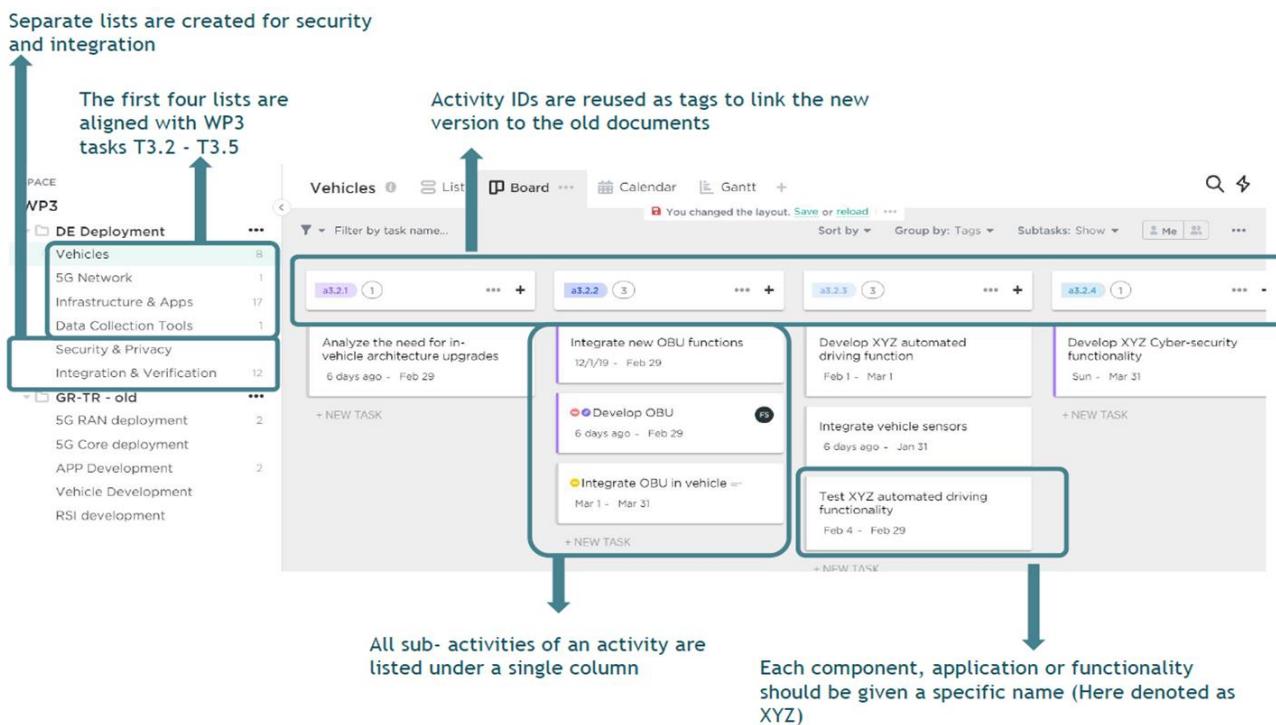


Figure 4: ClickUp tool – High-level activities example

¹ https://clickup.com/onboarding?fp_ref=48cb1

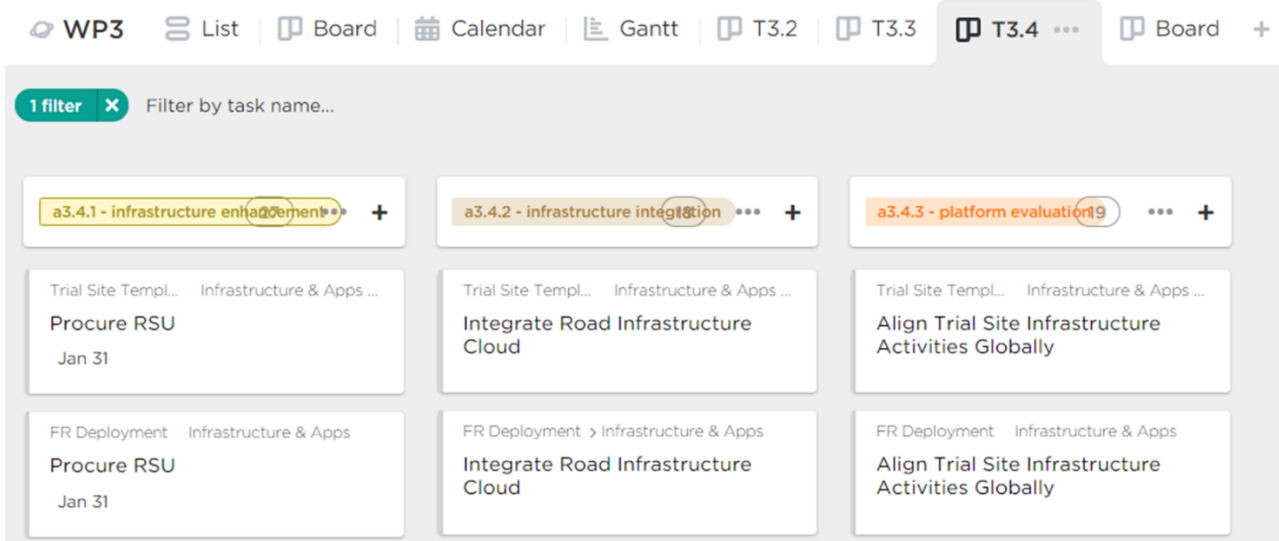


Figure 5: ClickUp tool – Task Overview of activities (Task Leader Board view)

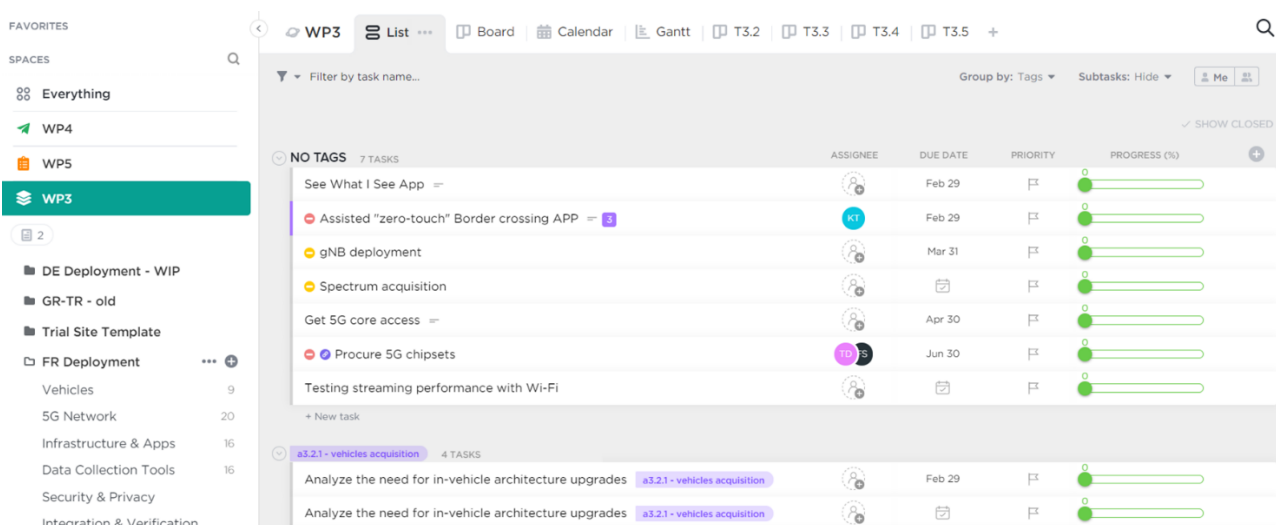


Figure 6: ClickUp tool – WP Overview of activities (WP Leader List view)

3.2.3.7 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-LOGINNOV Project Coordination Plan. This is not only important in order to reach the objectives of 5G-LOGINNOV 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.

The risks are materialised in a "Risk matrix", which is based on the FMEA (Failure Mode and Effects Analysis) as described in below in the next section.

This management activity is aimed at achieving the Project's objectives on time and within budget. The Technical coordination team will monitor the risks already defined in the risk register or identify new risk, in consultation with the WP leaders or trial site leaders, who can also raise new risk to the technical coordination team as well. Following this regular evaluation of the risk register, the technical coordination team will update the register, i.e. the risks will then be assessed and mitigating actions proposed. Then the technical coordinator will submit the updated register for review and approval to the PMT, at the occasion of its bi-weekly teleconferences or meetings.

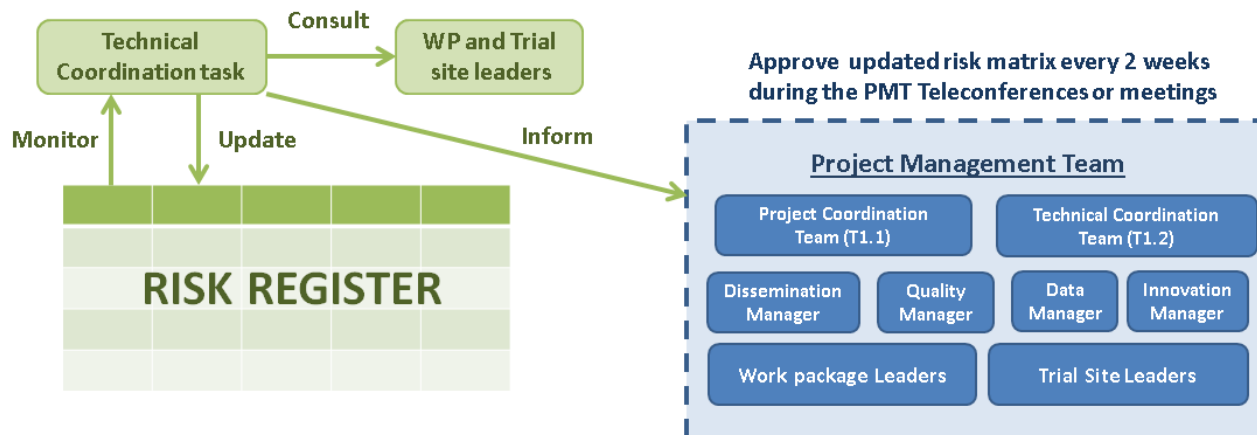


Figure 7: Risk matrix update

The risk management process will be monitored in parallel by the Quality Manager. The complete list of quality management procedures are documented in D6.6 – *Quality and Risk Management Plan*. 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-LOGINNOV outcomes.

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

3.2.3.8 Risk management by Failure Mode and Effects Analysis

5G-LOGINNOV will use the Failure Mode and Effects Analysis (FMEA)ⁱ for its risk-management. This structured approach will allow discovery of potential failures in the design and processes of the Project’s activities. By analysing the harmful effects of failures, the FMEA can identify, prioritise and ultimately mitigate the failure modes.

The risk assessment procedure by way of FMEA comprises four main steps with sub-steps:

- Step 1 – Identification and definition of the risks
- Step 2 – Risk validation
- Step 3 – Assignment of Risk Prioritisation Number
- Step 4 – Identification of risk mitigation strategy

1) Step 1 – Identification and definition of the risks

WP, Trial Site and Task Leaders will identify the risks relevant to their activities or tasks and subsequently properly and promptly document them in the risk register. In addition to technical and organisational issues, possible risks will pertain to behavioural and legal issues as well. For each solution the following indicators should be provided:

1. Risk identification □ What is the risk associated with the implementation of this solution?
2. Risk effect □ What effect will the occurrence of this risk have?
3. Risk cause □ What could be a possible trigger for this risk?
4. Risk detection and recognition □ How would this risk be detected when it occurs?

2) Step 2 - Risk validation

All risks will undergo a validation process to rank them and assess their priority. This step involves assessing each risk based on a severity, occurrence probability and detectability index.

- **Risk Severity (S)**

The severity levels for technical and organisational failures are presented in Table 14.

Rating	Occurrence Probability (O)	Technical / Organisational issue
9 – 10	Disastrous	The most serious effect of the failure mode would result in Project failure.
7 – 8	Severe	The failure mode would result in disruption of one or more of the items in terms of the Project's scope/time/resource definition and require serious reorganisation.
5 – 6	Moderate	Failure mode would result in considerable delays, reworking or reorganisation. Some changes to roles and responsibilities may be required.
3 – 4	Slight	Failure mode would cause some minor delays or reorganisation.
1 – 2	Irrelevant	There would be no discernible effect in terms of the Project's end goal.

Table 14: Unmitigated severity levels for risks

- **Risk Occurrence Probability (O)**

The occurrence probability index, presented in Table 15 provides a ranking based on the probability that all the risk causes related to the risk modes described in the analysis can occur.

Rating	Occurrence Probability (O)	Technical / Organisational issue
9 – 10	High	This failure mode is almost certain to occur.
7 – 8	Moderate	There is a moderate possibility for the failure mode to occur.
5 – 6	Occasional	There is a possibility of occasional occurrence of the failure mode.
3 – 4	Remote	There is a slight probability that the failure mode will occur.
1 – 2	Improbable	It is unlikely that a failure mode will occur.

Table 15: Risk occurrence indicator scale

- **Risk Detectability (D)**

Finally, the detectability index (Table 16) describes the probability of detecting the occurrence of a risk mode identified in Step 1 of the methodology. Detection of a developing risk is crucial for overall risk management and early detection is a prerequisite for the effective application of mitigation strategies. Using additional sensors and processing along with monitoring and feedback throughout the Project are important tools for risk detection.

Rating	Detectability (D)	Technical / Organisational issue
9 – 10	Low	It is impossible or improbable that the technical/organisational failure will be detected.
7 – 8	Fair	The issue is detected only in particular cases.
5 – 6	Moderate	It is probable that the technical/organisational issue will be detected.
3 – 4	Good	It is highly likely that the technical/organisational issue will be detected.
1 – 2	High	It is certain that the risk outcome will be detected.

Table 16: Risk detectability indicator scale

3) Step 3- Risk Prioritisation Number assignment

After each risk is classified based on the Severity (S), Occurrence Probability (O) and Detectability (D) indices, a Risk Priority Number (RPN) is assigned to it based on a straightforward formula:

$$\text{RPN} = \text{S} \times \text{O} \times \text{D}$$

Based on this equation, the RPN of each risk will vary from 0 to 1000 and fall into one of five categories: disastrous, severe, moderate, slight, or insignificant as shown in Table 17.

Risk category	Risk Priority Number	Mitigation possibility
Disastrous	513 - 1000	Very High
Severe	217 - 512	High
Moderate	65 - 216	Medium
Slight	64 - 9	Low
Insignificant	0 - 8	Improbable

Table 17 : RPN and risk categorisation

4) Step 4- Mitigation strategies identification

The risk register will indicate the Work Packages or Trial Sites implicated by the risk and assign a caretaker for each risk, who will follow its analysis and mitigation. Mitigation of the risks adverse effects will rely on a risk reduction strategy by way of an iterative process. Some ways to do this will include:

- Reducing the probability of the hazard occurring
- Increasing failure detection speed and probability
- Reducing the magnitude (severity) of the consequences of the potential hazard
- Protecting against the risk-mitigating strategies to compensate for a failure (e.g. back-ups)

As a first step towards the adoption of this robust risk management strategy, critical risks identified in section 1.3.5 of the DoA during the proposal phase and Grant Agreement preparation have been added to the risk register.

Table 18: 5G-LOGINNOV critical risks and mitigation actions

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
Organisational	Discrepancies in the technical visions	Incompatibility at integration level; Project delays	Lack of common understanding of Project objectives	During WP & Technical Management Team meetings (Telcos); throughout the development phase of the Project	9	8	4	288	Frequent communication within WPs (through meetings, Telcos, etc.) and at the TMT level to resolve issues. Good cooperation between Project Coordinator, Technical Manager, the Technical Management Team and the Consortium.	WP6, WP2, WP3	Project Coordinator (ERT)
Organisational / Technical	Technical work diverges from the Project's initial goals	Core technical items not adequately addressed to meet Project objectives	Ineffective technical management / lack of coordination in deliverable development	Through key project milestones / deliverables	10	5	2	100	All development activities will be closely monitored at various levels (Task, WP, TMT) to ensure that the Use Cases are delivered according to the precise specifications outlined in WP2 & WP3. EC review feedback will be adhered to as closely as possible at all stages. An "Experts Group" has been assembled to assist the TM and closely monitor developments.	WP1, WP2, WP3	Technical Coordinator (ERT)

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
Organisational (Dissemination & Exploitation)	Limited dissemination & exploitation impact: Low interest or engagement of 5G-LOGINNOV target stakeholders	Low or no user/stakeholder acceptance. Low awareness of the Project and the Project results.	Lack of Project beneficiaries' commitment to dissemination and exploitation activities. Delay in planning of dissemination and exploitation activities (e.g. workshop, demonstration event) due to delays in e.g. pilots readiness, etc.	Low response rate / participation in the Project's dissemination channels & activities (newsletters downloads, webinars, social media followers, workshops), low interest of stakeholders especially towards the end of the project.	8	7	3	168	KPIs are clearly defined and monitored. The Dissemination & Exploitation plan includes a sound selection of channels and planned activities to keep all stakeholders in the value chain informed, involved, on a regular basis. The plan will be re-evaluated periodically and updated as needed.	WP1, WP6, WP7	WP7 leader (ERT)
Organisational (Dissemination & exploitation)	Limited number of 5G-LOGINNOV-related publications in scientific journals	Low awareness and low uptake of projects results in scientific & research community.	Low number or quality of candidate papers suitable for peer-reviewed journals	Low number of scientific journal publications reported	8	7	5	280	KPIs are clearly defined and monitored. Monitoring of academia partners. Encourage the submission of papers around specific targeted events. Identify relevant deliverables that could be candidate topics. Use TMT meetings as internal information channel (and WP Leaders as relay) for reminders	WP7	WP7 Leader (ERTICO), Task 7.2 Leader (ICCS)

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
Organisational (Dissemination & exploitation)	Limited number of dissemination results published on the 5G-LOGINNOV website	Perceived low level of dissemination activities and thus of project's visibility and impact achieved	Dissemination activities performed by partners not systematically reported to WP7 and Task 7.2 Leader	Low number of dissemination activities reported. Low number of entries published in related 5G-LOGINNOV website sections	6	7	2	84	KPIs are clearly defined and monitored. Clear procedures set in place to monitor dissemination activities as recorded in D7.3 and regularly reminded to partners. Use TMT meetings as internal information channel (and WP Leaders as relay) for reminders	WP7	WP7 Leader (ERTICO), Task 7.2 Leader (ICCS)
Organisational (Evaluation)	Evaluation trials are not successful	Insufficient impact assessment.	Inadequate evaluation framework and experimental plans or wrong application of them across the sites. Failure in logging mechanisms.	While processing the collected data during field trials execution.	9	7	1	63	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. Clear and comprehensive data management plan.	WP2, WP3, WP4, WP5	WP5 leader (ICCS)
Organisational (Exploitation)	Conflicts of interest between partners on commercial model	Delay in delivery of results and / or partners' withdrawal from the project.	No common understanding of project goals; lack / change of commitment.	Contribution to deliverables stops; technical / research work does not progress.	7	3	2	42	The Project Consortium was built with a variety of complementing stakeholders. All Project beneficiaries will have the possibility to contribute towards the development of the exploitation plan and list their interests. An IPR registry will be maintained	WP1, WP6, WP7	Innovation manager (VICOM)

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
									to clearly list ownership and rights.		
Technical	The existence of little cooperation between a trial site (or several)	TS trials not so complete and TS role in the project may be jeopardized	Lack of coordination between the TS	The lack of communication between parts or the development of isolated activities.	9	7	4	252	The User Stories have been defined in WP2 with the clear objective to highlight the added value of the trial sites. Specific TS contributions have been defined as Tasks in the ClickUp tool and assigned to specific people with given deadlines and dependencies. Much easier to track progress and guarantee significant contributions from TSs. The creation of a technical coordination team that monitors these and other aspects will mitigate this risk.	WP2, WP3, WP4, WP5	Technical Coordinator (ERT) and UserStory/ Applications technical coordinator
Technical	The implementation and integration plan is not followed due to the size of the project and the number of partners in each TS.	The technical solutions are only partially implemented.	Lack of clarity in technical steps	Via breakdown of activities, analysis of dependencies among activities and critical path analysis	9	5	4	180	The ClickUp project management tool has been employed in the project. Each TS has broken down their implementation path in concrete steps with a start and end date. Each task has been assigned to a responsible expert and dependencies between tasks have been created indicating the critical	ALL	Technical Coordinator (ERT), TM Experts Group, TS leaders

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
	Coordination of technical tasks fails								path and providing detailed Gantt charts to the completion of the solution. The ClickUp tasks are regularly updated by the responsible of each task.		
Organisational	Non-attendance at consortium meetings	Project delays	Delays in decision-making	Delays in deliverables and milestones	6	7	5	210	Less project follow-up meetings. Offline monitoring.	ALL	Project Coordinator (ERT)
Technical	Possibility of not having the 5G SA	Non-compliance with 5G SA objectives	Technology not available	Technical follow-up	8	8	2	128	Highest technical monitoring to evaluate the technological progress. Test certain KPIs on the other side with 5GSA.	TSs	TS leaders
Regulatory	No roadblocks accepted for testing	Non-compliance with open road testing	PO Requirements	Regulatory and legal compliance	7	3	2	42	Collaboration with the authorities to carry out the tests in an open environment.	WP4	T-SYS
Technical	Delays in the acquisition of equipment/devices	Delays in tests execution	Low availability in the global market	Continuous follow-up with suppliers	8	9	2	144	There are significant delays for the commercial availability of 5G chipsets from almost all chipset vendors. The consortium has approached several (Qualcomm, Quectel, etc.) and has nominated Quectel as the most appropriate vendors. Their	ALL	ININ / T-SYS / ICCS

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
									latest roadmap promises the 5G chipset availability for end of December/Q1 2021. This is closely monitored by the 5G Expert team leader		
Regulatory	No or partial testing permissions	Non-compliance with open road testing	PO Requirements	Regulatory and legal compliance	7	8	2	112	Early contacts with authorities. Engagement from multiple sides. Constant effort to acquire the licenses.	TS	All Telecom beneficiaries
Technical	Delays in the integration of TS solutions	Delays in tests execution	incompatibility of solution and need for custom integration	Continuous follow ups and collaboration among TS experts	6	6	3	108	Clear contribution planning, which is documented n ClickUp. Exchange of architectural designs and agreement among experts. Specific experts from the TSs have been brought into contact with specific experts from 5G telecom. Solution design already discussed.	TSs	T-SLO

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
Technical	Actual implementation deployment and roll-out of TSs diverges from deployment planning	Delays in trial executions	Equipment availability, roadmap updates, delays in development process	Regular updates of planning / actualization map	6	6	4	144	T3.1 performs a regular update of the actualization of the infrastructure deployment at the TSs and compares to the planning. Constant communication among TS leaders. Updates in trial planning may allow for later trials (available time until the end of the project)	WP3 (T3.1)	T-SYS
Technical	Data collection & management tools are incompatible with TS deployments	Inability to take proper measurements and for global storage	Different implementations of infrastructure and unclear design guidelines	Availability of a clear early design of the data collection requirements and agreement among TS leaders regarding tools	8	3	5	120	Participation of TS experts in the data collection and management tool design. Testing of compatibility during the various development phases.	WP1& WP2	AKKA
Technical	Verification process indicates that a TS is not suitable for proper evaluation of the undertaken use case categories	Inability to perform value adding evaluations	In proper design of architecture and lack of understanding of the UCC requirements	Gradual verification process as part of WP3 activities, following infrastructure deployment	8	4	6	192	Multiple experts from all TS verify the suitability of each TS design for the proper evaluation of the undertaken UCCs, as part of Assignment of specific local stakeholders to assist a TS in case of such an issue.	WP3	T-SYS

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
Technical	Initially proposed use cases changed dramatically and overlap each other; lack of complementarity of evaluations and contributions among local sites and corridors	Inability to proceed in next tasks and WPs	Lack of communications between local sites and corridors	Mainly D1.1	8	2	1	16	A clear commitment exists from TSs to contribute with specific solutions.	WP1, T1.1	VICOMTECH /CIRCLE as D1.1 leader; also WP1, WP2 and WP3 leaders
Technical	The network infrastructures are not openly described revealing integration opportunities and limitations	Inability to properly proceed in the next phases (WP3 and WP4)	Lack of communications at local level (among local partners of a site) and external partners	Mainly D1.2	5	4	4	80	More detailed designs are available as we get closer to deployment (High level design) Partners from TSs are actively involved, hence are involved in the planning process to identify and missing info.	WP1& WP2	VICOMTECH , CIRCLE also WP2, WP3 and WP4 leaders

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
Technical	The road infrastructures are not openly described revealing integration opportunities and limitations	Inability to properly proceed in the next phases (WP3 and WP4)	Lack of communications at local level (among local partners of a site) and external partners	Mainly D1.3 and recent negotiations between local sites and corridors	4	2	4	32	Continuous monitoring of local sites and corridors activities.	WP1, T1.3	SWARCO as D1.3 leader; also WP2, WP3 and WP4 leaders
Technical	The vehicles and OBUs are not openly described revealing integration opportunities and limitations	Inability to properly proceed in the next phases (WP1 and WP2)	Lack of communications at local level (among local partners of a site) and external partners	Mainly D1.2 and recent negotiations between local sites and corridors	4	2	4	32	Continuous monitoring of local sites activities	WP1, T1.2	T-SLO as D1.2 leader; also WP2, WP3 and WP4 leaders
Technical	Due to initial KPIs proposed during the proposal, some kPIs may not be relevant to the project	Inability to properly proceed in the next phases (WP1 and WP2). Consumption of resources to measure less valuable KPIs	Lack of communications at local level (among local partners of a site) and external partners	Mainly D1.4 and recent negotiations between local sites and corridors	6	6	4	144	Continuous monitoring of local sites	WP1, T1.4	AKKA as D1.4 leader; also WP2, WP3 and WP4 leaders
Technical	Delay in OBU delivery	Delay of local activities	External provider (QUALCOMM)	Local meetings and discussions DE	6	8	4	192	OBUs and 5G modems for initial experiments	DE	T-SYS leader (CONTI)

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
Technical	Due to limited scale of trials, technical measurement data is not sufficient to build statistical confidence in results	Inability to produce meaningful results and overall conclusions regarding technical performance	Limited scale of project trials (number of vehicles, number of drivers)	Mainly WP3 and meetings and discussions with trial sites and use case leaders.	5	6	4	120	Continuous monitoring of evaluation scenario and plan developments, as well as of conformance of trials to evaluation plans. Evaluation scenario planning shall focus on ensuring statistical confidence through appropriate scenario repetition.	WP3, T3.1, 3.2, 3.3, 3.4, WP4	T-SYS, TS leaders; also WP4 leader
Technical	Due to limited scale of trials, impact assessment and user acceptance evaluations may not yield sufficient (statistically) quantitative data	Inability to produce meaningful results and overall conclusions regarding impact and user acceptance	Limited scale of project trials (number of vehicles, number of drivers, number of passengers)	Mainly T5.3 and T5.4, WP4 and meetings and discussions with trial sites and use case leaders.	6	8	3	144	Continuous monitoring of evaluation plan developments; early communications with trial site owners for enlarging the sample/subject size as much as feasible; reaching out other ICT-18 project communities of users; creating on-line questionnaires	T3.5 and T3.6, WP4	ICCS & ICOOR as T3.5/T3.6 Leaders, also WP4 leader
Organizational	Coronavirus Outbreak in Europe and its impact on the project's timeline	Delays on the deployment and roll-out of the solutions. Delay of deliverables and milestones.	The travel ban issued even for internal travels and the general restrictive measures in place.	Regular updates from the TS regarding measures in their country and updated estimates of roll-out	7	9	2	126	Tight Coordination with the PO and the TS leaders.	ALL	Project Coordinator (ERT)

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
Organizational I	Lack of participation of Stakeholders (OEMs, Public Authorities, etc.) in questionnaires or any inquiry about their view over use cases using 5G.	WP4 definitions not being adjusted to real scenarios or future demands.	Lack of availability, fear of sharing privileged information, not wanting to commit with any option at this point.	Not having any input from them after two consecutive deadlines provided; Getting a negative response from them.	5	7	3	105	Informing stakeholders about the advantages to them in participating in this early stage of definition. Involving them in the project (considering the limits of privileged information).	WP4	WP4 leader (ICOOR) and all its interfaces with stakeholders

Requirement	Potential failure mode (risk)	Potential effect of FM	Risk cause	Risk detection	Risk severity	Risk occurrence probability	Risk detectability	Risk priority number (RPN)	Risk mitigation measures	Relevant WPs	Risk caretaker
Technical	TS implementation limited due to logistic difficulties or lack of interoperability .	Not benefiting from the TS contribution, different complementary approaches, exploring different roaming options, not testing interoperability .	Difficulties dealing with the distance between TSs (mobilizing technical teams, transporting vehicles and infrastructure, etc.); to get the timeslots of closed roads; lack of interoperability related with compatibility of radio equipment, different standards or application issues.	To keep communication channels frequent between TSs and local stakeholders to detect eventual situations in time to avoid them.	6	5	6	180	To prepare TS activities far in advance (logistics, detailed planning, etc.); To estimate the duration of TS activities accurately so that no logistic limitations occur (available time in public roads, for instance); to ensure between technical teams the proper compatibility of equipment and applications.	WP3, WP4 and WP5	Project Coordination and TS leaders

3.3 Project communication 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-LOGINNOV such management tools are indispensable and the Project has chosen a combination of tools for various purposes. The main among ones are:

- **SharePoint**: for sharing and archiving public deliverables, minutes and agendas.
- **Sympa**: a listserv for targeted group-based internal communication
- **EURESTOOL**: a reporter tool to collect input for internal and periodic reports
- **Website**: for newsletter-based internal communication and dissemination activities

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 (via email or listserv). 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*.

Communication relating to administrative matters (financial statements, signature of contracts, payments, etc.) will 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-LOGINNOV contacts in the European Commission's participant portal

(<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>).

When the Coordinator needs to communicate 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.

4 CONCLUSIONS

This document, deliverable D6.1 – *Project management plan*, is closely aligned with and takes as its starting point the Grant and Consortium Agreements of 5G-LOGINNOV. 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 WP6 (*Coordination*) has instituted to ensure that the project runs smoothly and effectively and in accordance with the Grant Agreement.

An integral part of the *Project management plan* is 5G-LOGINNOV's risk management strategy based on the Failure Mode and Effects Analysis. It 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 PMT meetings

D6.1 is specifically relevant for the execution of Tasks T6.1 (*Administrative and financial coordination*) and T6.2 (*Technical coordination*). This deliverable will be complemented by the other deliverables in WP6, particularly D6.6 (*Quality and risk management plan*) but also D6.2 (*Innovation management plan*), D6.3 (*Innovation management report*), D6.4 (*Data management plan*) and D6.5 (*Open Data Publication*), as well as the dissemination and exploitation of WP5.

D6.3 (*Innovation management report*),

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-LOGINNOV, to ensure good organisation of work effort and high quality of Project results.

5 REFERENCES

¹ Raymond J. Mikulak, Raymond J. et al. 2017. The basics of FMEA (2nd ed.), Taylor and Francis; ISBN: 9781439809617.
