ENVELOPE

Evaluation and validation of connected mobility in real open systems beyond 5GS

Project deliverable D1.1

Project Management Plan

HORIZON JU Innovation Actions | 101139048 |
ENVELOPE - HORIZON-JU-SNS-2023

Co-funded by the European Union

6GSNS

Deliverable administrative information

Dissemination level	**PU - Public**
Type of deliverable	R — Document, report
Work package	WP1
Title of the deliverable	D1.1 – Project management plan
Status – version, date	Final – V1, 29/03/2024
Deliverable leader	ICCS
Contractual date of delivery	31/03/2024
Submission date	29/03/2024
Keywords	Governance bodies; management tools; risk management

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	Name	Organisation	Date
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Version History

Version	Date	Author	Summary of changes
0.1	31-01-2024	Lazaros Gkatzikis (ICCS)	First draft of document structure and ToC discussed in Kick-off meeting

0.8	12-03-2024	Pavlos Basaras (ICCS)	Complete draft shared for internal review
0.9	18-03-2024	Lazaros Gkatzikis (ICCS)	Review and minor corrections throughout
1.0	29-03-2024	Pavlos Basaras (ICCS)	Included comments from peer reviewers

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- exposing network capabilities to verticals;
- providing vertical-information to the network; and
- enabling verticals to dynamically request and modify key network aspects;

all performed in an open, transparent and easy-to-use, semi-automated way.

ENVELOPE will build APIs that act as an intermediate abstraction layer that translate the complicated 5GS interfaces and services into easy to consume services accessible by the vertical domain. The experimentation framework and the main innovations developed in the project are: MEC with service continuity support, zero-touch management, multi-connectivity and predictive QoS.

It will deliver 3 large scale Beyond 5G (B5G) trial sites in Italy, Netherlands and Greece supporting novel vertical services, with advanced exposure capabilities and new functionalities tailored to the services' needs. Although focused on the Connected and Automation Mobility (CAM) vertical, the developments resulting from the use cases (UC) will be reusable by any vertical. The ENVELOPE architecture will serve as an envelope that can cover, accommodate and support any type of vertical services. The applicability of ENVELOPE will be demonstrated and validated via the project CAM UCs and via several 3rd parties that will have the opportunity to conduct funded research and test their innovative solutions over ENVELOPE.

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Deliverable executive summary

This document serves as the Project Management Plan (deliverable D1.1) of the ENVELOPE project within WP1. Deliverable D1.1 lays out the organisational structure and the management procedures and processes that ENVELOPE will employ in order to ensure that the workflow is smooth and a good system of internal communication exists to ensure the efficient execution of the project. The plan described in this document has a direct bearing on the performance of Task1.1 (Administrative and financial coordination) and part of Task1.2 (Technical coordination and innovation management).

Deliverable D1.1 is structured in the following Chapters:

- **Introduction** – describes the concept and approach of ENVELOPE. It elaborates the purpose of this deliverable as a plan for coordinating the project, intended for consortium members and the European Commission.
- **Project overview** – outlines the project's concept and approach, and describes the consortium composition, the project work plan, including work packages as well as the main deliverables and milestones.
- **Project management** – describes the management structure covering both operational and strategic management. The responsibilities of the different bodies and the role of the Technical Management Team 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, and project meeting procedures. The management procedures described have to do with conflict resolution, resource use and payment rules. Finally, this chapter describes the technical management procedures regarding risk management.
- **Project coordination and communication tools** – describes the various tools that are used for organising, monitoring, and controlling the whole project as well as for communication purposes among the consortium members.
- **Conclusion** – remarks and highlights of the document.

This deliverable draws substantially from the ENVELOPE Grant and Consortium Agreements and together with these documents will serve as a central reference for all project coordination issues.

This project has used a standard methodology already developed in the PoDIUM project (Grant Agreement number: 101069547), following EU recommendations. Ad hoc modifications have been added to comply with the Grant Agreement conditions for ENVELOPE (Grant Agreement number: 101139048).

LIST OF ABBREVIATIONS AND ACRONYMS

Acronym	Meaning
5GS	5G System
ATSSS	Access Traffic Steering, Switching and Splitting
B5G	Beyond 5G
B5GS	Beyond 5G System
CA	Consortium Agreement
CAM	Connected Automated Mobility
CCAM	Connected, Cooperative and Automated Mobility
CM	Communication Manager
DL	Deliverable Leaders
DoA	Description of Action
EC	European Commission
EAB	External Advisory Board
FMEA	Failure Mode and Effects Analysis
GA	General Assembly
IA	Innovation Action
JU	Joint Undertaking
KPI	Key Performance Indicator
KoM	Kick-off Meeting
LL	Living Lab
OCM	Open Calls Manager
ODP	Open Call Documentation Package
OSC	Open Call Selection Committee
ORDP	Open Research Data Pilot

PU	Public
PDI	Physical and digital infrastructure
PC	Project Coordinator
pQoS	Predictive Quality of Service
RIA	Research and Innovation Action
SC	Steering Committee
SGA	Sub Grant Agreement
SNS	Smart Networks and Services
TC	Technical Coordinator
TM	Technical Manager
TMT	Technical Management Team
ToC	Table of Contents
UC	Use Cases
UCL	Use Case Leader
WP	Work Package
WPL	Work Package Leader

1 INTRODUCTION

1.1 Purpose of the deliverable

Deliverable D1.1 (Project Management Plan) describes the management strategy and tools that will ensure the effective rollout of the administrative activities outlined in Task 1.1 (Administrative and financial coordination) and Task 1.2 (Technical coordination and innovation management). The Technical coordination activities of Task 1.2 are part of D1.1, whereas as the innovation management sub-tasks will be presented in D1.3 and D1.6.

D1.1 provides a brief overview of the ENVELOPE project, outlines the governance bodies, relevant meetings, and the internal rules and procedures relating to or complementing the Grant Agreement and the Consortium Agreement, and specifies the risk management procedures.

D1.1 is complemented by D1.2 (Quality management plan), D1.3 (Innovation management plan), D1.4 – D1.5 (Data management plans), and D1.6 (Innovation management report) to provide the overall strategy for the organisation and execution of core tasks to achieve the objectives of the project management work package (WP1), in terms of both operational and technical coordination.

The current document and the corresponding methodology are based on our work and previous experience gained from the PoDIUM[1] project that is also focused on CCAM. By adopting this proven framework, and adapting it wherever necessary, we aim to streamline our project management processes in ENVELOPE.

1.2 Intended audience

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

[1] https://podium-project.eu/

2 PROJECT OVERVIEW

2.1 ENVELOPE concept and approach

ENVELOPE aims to advance and open up a reference 5G-advanced architecture and transform it into a vertical-oriented one. It will deliver 3 large-scale Beyond 5G (B5G) trials in Italy, the Netherlands and Greece supporting novel Connected Automated Mobility (CAM) services and beyond, implementing functionalities tailored to the CAM services and advanced exposure capabilities. Although focused on the CAM vertical, the developments resulting from the Use Cases (UC) will be reusable by any vertical. The ENVELOPE architecture will serve as an envelope that can cover, accommodate and support any type of vertical services. The applicability of ENVELOPE capabilities will be demonstrated and validated via the project CAM UCs and via at least nine open call winners that will have the opportunity to receive funding and test their innovative solutions by employing ENVELOPE's toolkit.

In this direction, ENVELOPE proposes a novel open and easy-to-use 5G-advanced architecture to enable a tighter integration of the network and the service information domains by

- exposing network capabilities to verticals,
- providing vertical-information to the network; and
- enabling verticals to dynamically request and modify key network aspects

all performed in an open, transparent and easy-to-use, semi-automated way.

2.2 Consortium

The ENVELOPE consortium consists of 23 partners from 10 countries. The selection of partners of complementary, multi-disciplinary scientific and operational expertise sets the base for successfully addressing all aspects of the project objectives. Particularly, the consortium counts on major research organisations actively involved in national and EU 5G-PPP, SNS JU and CCAM partnership (and beyond) projects (ICCS, LINKS, NCSRD, UDE, TNO, ISI and VICOM), network operators with deployed 5G SA (OTE, KPN and TIM), OEMs/Vehicle providers (TEO and ISFM), ICT and CAM industrial suppliers (SISW and LNVO), highly expertized SMEs (ATH, NXW, FOGUS, CMS, IQU, EBOS and INC), a city council (COTO), and a CAM-related stakeholders' partnership (ERT). The consortium contains also enterprises (LNVO) and individuals that have hundreds of contributions each to the relevant standardization bodies like 3GPP and lead as rapporteurs of related work items.

The ENVELOPE partners have not only the expertise to deal with advanced technologies in 5G systems and CCAM services, but also the mandates for leading local and regional research and business development on this EU priority topic. The project beneficiaries are presented at Table 1.

No.	Short name	Legal name	Country
01	ICCS	EREVNITIKO PANEPISTIMIAKO INSTITOUTO SYSTIMATON EPIKOINONION KAI YPOLOGISTON (-- Project Coordinator)	EL
02	HPE	HEWLETT PACKARD ITALIANA SRL	IT
03	TIM	TELECOM ITALIA SPA	IT

04	LINKS	FONDAZIONE LINKS - LEADING INNOVATION & KNOWLEDGE FOR SOCIETY	IT
05	NXW	NEXTWORKS	IT
06	TEO	TEORESI S.P.A.	IT
07	COTO	COMUNE DI TORINO	IT
08	OTE	ORGANISMOS TILEPIKOINONION TIS ELLADOS OTE AE - HELLENIC TELECOMMUNICATIONS ORGANIZATION SA	EL
09	NCSRD	NATIONAL CENTER FOR SCIENTIFIC RESEARCH "DEMOKRITOS"	EL
10	FOGUS	FOGUS INNOVATIONS & SERVICES P.C.	EL
11	ISFM	ISFM INTELLIGENT SYSTEMS FOR MOBILITY	FR
12	TNO	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK TNO	NL
13	KPN	KONINKLIJKE KPN NV	NL
14	SISW	SIEMENS INDUSTRY SOFTWARE NETHERLANDS BV	NL
15	CMS	COMMSIGNIA Korlatolt Felelossegu Tarsasag (-- Technical Coordinator)	HU
16	LNVO	LENOVO DEUTSCHLAND GMBH	DE
17	UDE	UNIVERSITAET DUISBURG-ESSEN	DE
18	ISI/ATH	ATHINA-EREVNITIKO KENTRO KAINOTOMIAS STIS TECHNOLOGIES TIS PLIROFORIAS, TON EPIKOINONION KAI TIS GNOSIS	EL
19	IQU	IQUADRAT INFORMATICA SL	ES
20	VICOM	FUNDACION CENTRO DE TECNOLOGIAS DE INTERACCION VISUAL Y COMUNICACIONES VICOMTECH	ES
21	ERT	EUROPEAN ROAD TRANSPORT TELEMATICS IMPLEMENTATION COORDINATION ORGANISATION - INTELLIGENT TRANSPORT SYSTEMS & SERVICES EUROPE	BE
22	EBOS	EBOS TECHNOLOGIES LIMITED	CY
23	INC	INCITES CONSULTING SA	LU

Table 1: ENVELOPE beneficiaries

2.3 Project work plan

The work for the ENVELOPE project will be carried out over a three-year period (36 months), starting on the 1st of January 2024 (M01) and ending on 31 December 2026 (M36). The work plan is broken down into 8 Work Packages (WPs), each of which is divided into specific tasks, and is described in Table 2.

WP No.	WP Title	Lead partner	Start month	End month
WP1	Project management	ICCS	M01	M36
WP2	Architecture, requirements and specifications	NCSRD	M01	M12
WP3	Technical innovations and development	LINKS	M04	M24
WP4	Large scale trial sites deployment, integration and verification	ICCS	M07	M30
WP5	Open calls management and support to 3rd parties	EBOS	M07	M34
WP6	Evaluation, demonstrations and impact assessment	VICOM	M13	M36
WP7	Business analysis and sustainability strategy	INC	M04	M36
WP8	Dissemination, exploitation and international cooperation	ERT	M01	M36

Table 2: ENVELOPE work packages

To achieve the objectives of the ENVELOPE project, a work plan that reflects the different components and phases of development has been developed. WP2-WP4 focus on the specifications of the advanced 5GS, the CAM service requirements and the relevant APIs to support their co-operation and bilateral interaction, across the 3 pilot sites of the project. WP5 is focused on the open calls that will be funded by the project including the preparations of the tender conditions, contracting the winning applications, onboarding them and further development activities. WP6 is focused on evaluation, demonstrations and impact assessment while WP1, WP7 and WP8 are overarching support activities for the project management, business analysis and dissemination activities. Figure 1 shows a flow chart based on the project's planned workflow, the breakdown of the ENVELOPE Tasks per WP, as well as the expected interaction and interdependencies of the WPs.

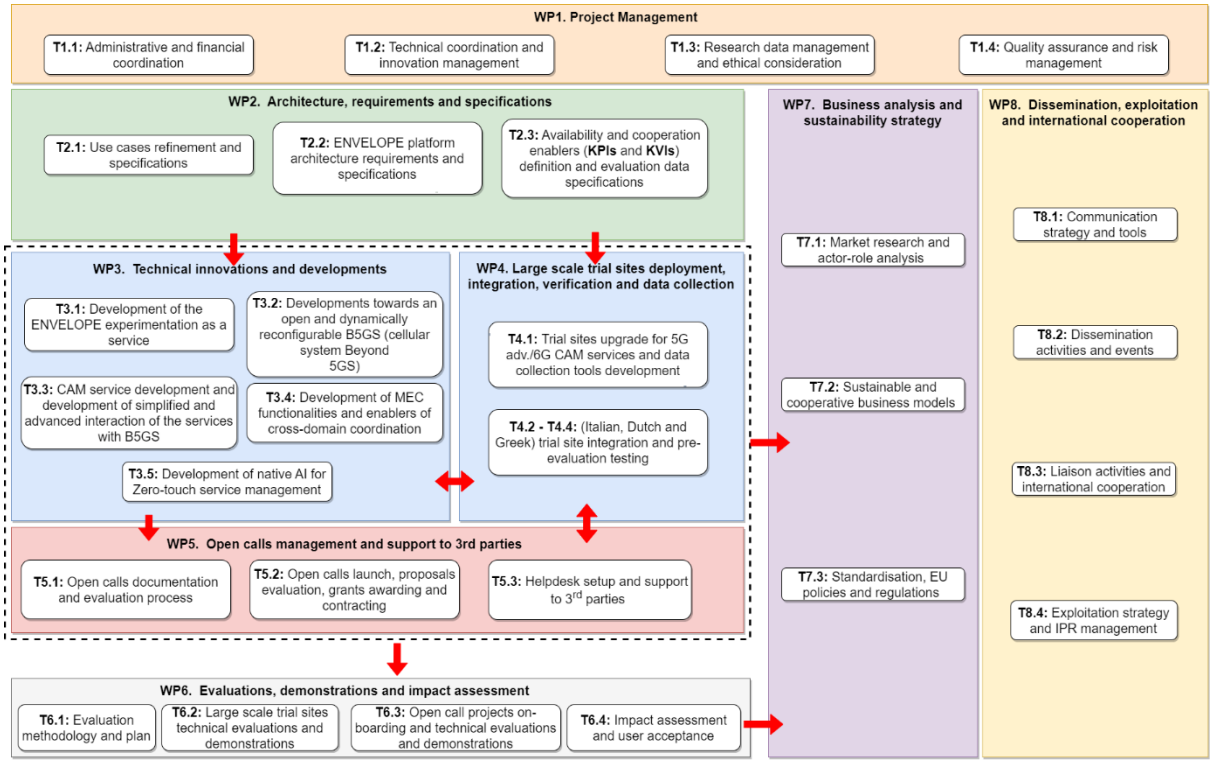

Figure 1: ENVELOPE project workflow

All WPs are divided into tasks (as shown in Figure 1), with each one 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, who will work in close coordination with the WP Leader (WPL).

2.4 Gantt chart

The project's work plan is divided into tasks and displayed against the project timeline in a Gantt chart as per the grant agreement (Figure 2). The horizontal coloured bars depict the duration of each task and show when the activity begins and ends. For each WP and task, milestones and deliverables are indicated in the month in which they are due by means of orange and yellow rectangles respectively.

ENVELOPE		PHASE 1									PHASE 2													PHASE 3												
		Year 1												Year 2																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
WP1	**Project management**	MS1		MS2															MS3																	MS4
T1.1	Administrative and financial coordination			D1.1																															
T1.2	Technical coordination and innovation management						D1.3																												D1.6
T1.3	Research data management and ethical considerations						D1.4																		D1.5										
T1.4	Quality assurance and risk management			D1.2																															
WP2	**Architecture, requirements and specifications**									MS5																										
T2.1	Use cases refinement and specifications						D2.1																												
T2.2	ENVELOPE platform architecture requirements and specifications									D2.2																										
T2.3	Availability and cooperation enablers (KPIs & KVIs) definition and evaluation data specifications									D2.3																										
WP3	**Technical innovations and developments**																					MS6														
T3.1	Development of the ENVELOPE experimentation as a service												D3.1																							
T3.2	Developments towards an open and dynamically reconfigurable B5GS (cellular system Beyond 5GS)																		D3.2																	
T3.3	CAM service development and development of simplified and advanced interaction of the services with B5GS																					D3.3														
T3.4	Development of MEC functionalities and enablers of cross-domain coordination																																			
T3.5	Development of native AI for Zero-touchs service management																																			
WP4	**Large scale trial sites deployment, integration and verification**																								MS7											
T4.1	Trial sites upgrade for 5G adv./6G CAM services and data collection tools development																					D4.1														
T4.2-T4.4	(Italian, Dutch and Greek) trial site integration and pre-evaluation testing																								D4.2											
WP5	**Open calls management and support to 3rd parties**																		MS8				MS9													
T5.1	Open calls documentation and evaluation process																		D5.1																	
T5.2	Open calls launch, proposals evaluation, grants awarding and contracting																								D5.2									D5.3		
T5.3	Helpdesk setup and support to 3rd parties																																			
WP6	**Evaluations, demonstrations and impact assessment**																					MS10												MS11		
T6.1	Evaluation methodology and plan																					D6.1														
T6.2	Large scale trial sites technical evaluations and demonstrations																																	D6.2		
T6.3	Open call projects technical evaluations and demonstrations																																	D6.3		
T6.4	Impact assessment and user acceptance																																			D6.4
WP7	**Businness analysis and sustainabilty strategy**																																			MS12
T7.1	Market research and actor-role analysis																		D7.1																	
T7.2	Sustainable and cooperative business models																													D7.2						D7.3
T7.3	Standardization, EU policies and regulations																																			D7.4
WP8	**Dissemination, exploitation and international cooperation**				MS13																															MS14
T8.1	Communication strategy and tools			D8.1	D8.2 D8.3														D8.4																	
T8.2	Dissemination activities and events																																			D8.6
T8.3	Liaison activities and international cooperation																																			D8.7
T8.4	Exploitation strategy and IPR management																		D8.5																	D8.8

Figure 2: ENVELOPE Gantt chart

2.5 Project deliverables

ENVELOPE has scheduled an extensive set of deliverables, in order to capture all project activities and technical progress. The list of deliverables along with their dissemination level are depicted in Table 3.

Del No.	Deliverable name	WP	Lead	Type	Diss. lvl	Delivery date
D1.1	Project management plan	WP1	ICCS	R	PU	M03
D1.2	Quality management plan	WP1	ICCS	R	PU	M03
D1.3	Innovation management plan	WP1	CMS	R	PU	M06
D1.4	Data management plan	WP1	ISI/ATH	DMP	PU	M06
D1.5	Updated data management plan	WP1	ISI/ATH	DMP	PU	M24
D1.6	Innovation management report	WP1	CMS	R	PU	M36
D2.1	ENVELOPE use cases description and specifications	WP2	ISI/ATH	R	PU	M09
D2.2	ENVELOPE platform architecture requirements and specification	WP2	NCSRD	R	PU	M12
D2.3	ENVELOPE availability and cooperation enablers definition	WP2	VICOM	R	PU	M12
D3.1	ENVELOPE experimentation as a service development description	WP3	LINKS	R	PU	M18
D3.2	ENVELOPE open and dynamically reconfigurable B5GS description	WP3	NCSRD	R	PU	M21
D3.3	ENVELOPE innovation developments report	WP3	UDE	R	PU	M24
D4.1	Deployment of ENVELOPE architecture to the sites and development of data collection tools and internet service repository	WP4	ICCS	R	PU	M27
D4.2	ENVELOPE trial sites integration and preevaluation testing report	WP4	TNO	R	SEN	M30
D5.1	Open calls documentation package	WP5	EBOS	R	PU	M18
D5.2	Initial report on the Open calls proposal evaluation and contracting	WP5	EBOS	R	PU	M24
D5.3	Final report on the Open calls proposal evaluation and contracting	WP5	EBOS	R	PU	M34
D6.1	ENVELOPE evaluation methodology	WP6	VICOM	R	PU	M27

D6.2	Technical evaluation and demonstration of the ENVELOPE UCs	WP6	ISI/ATH	DEM	PU	M34
D6.3	Technical evaluation and demonstration of the ENVELOPE open call projects	WP6	IQU	DEM	PU	M34
D6.4	Impact assessment and user acceptance report	WP6	EBOS	R	PU	M36
D7.1	Market and actor-role analysis	WP7	INC	R	PU	M18
D7.2	Business models for sustainable 5G adv./6G CAM service provisioning	WP7	INC	R	SEN	M30
D7.3	Techno-economic analysis and sustainability of ENVELOPE business models	WP7	INC	R	SEN	M36
D7.4	Standardization activities, EU policies and regulations recommendations	WP7	LNVO	R	PU	M36
D8.1	Brand identity and guidelines	WP8	ERT	DEC	PU	M03
D8.2	Initial comm. and dissemination strategy and plan	WP8	ERT	R	PU	M04
D8.3	Communication tools	WP8	ERT	DEC	PU	M04
D8.4	Updated comm. and dissemination strategy and plan	WP8	ERT	R	PU	M18
D8.5	Exploitation plan	WP8	EBOS	R	SEN	M18
D8.6	Report on the dissemination activities	WP8	ICCS	R	PU	M36
D8.7	Report on liaison activities and international cooperation	WP8	ERT	R	PU	M36
D8.8	Exploitation Report	WP8	EBOS	R	SEN	M36

Table 3: ENVELOPE deliverables

2.6 Key milestones

To monitor the overall project progress and implement an effective monitoring plan, a list of milestones has been set, as shown in Table 4.

MS	Milestone name	WP	Lead	Due	Means of verifications
1	Project kick-off	WP1	ICCS	M01	Minutes of the kick-off meeting.
2	Risk and quality procedures established	WP1	ICCS	M03	All necessary documentation and procedures are finalised by the TMT

					and adopted by WP Leaders (WPLs). D1.1 and D1.2 submitted.
3	First periodic report	WP1	ICCS	M18	Every activity report and cost justification for the first period of the project are delivered in accordance with the quality procedures – Submitted to the EC.
4	Project successfully completed	WP1	ICCS	M36	All activities are finished and all activity reports are submitted for final review by the EC.
5	Requirements and specifications defined	WP2	NCSRD	M12	D2.2 successfully submitted.
6	ENVELOPE experimentation as a service and relative innovations/system components developed	WP3	UDE	M24	D3.3 successfully submitted. Mid-term progress verified on M21 with the submission of D3.2 and the developments of an open and dynamically reconfigurable B5GS.
7	ENVELOPE integration activities completed in all trial sites	WP4	TNO	M30	ENVELOPE integration activities completed in all trial sites (TNO) WP4 M32 D4.2 successfully submitted.
8	1st Open call launched	WP5	EBOS	M18	Launch of the 1st open call and initialization of the submission phase.
9	2nd Open call launched	WP5	EBOS	M22	Launch of the 2nd open call and initialization of the submission phase.
10	Evaluation plan ready	WP6	VICOM	M27	D6.1 successfully submitted.
11	ENVELOPE UCs and open call projects evaluation results available and demonstrations completed	WP6	VICOM	M34	D6.2 and D6.3 submitted. Demos are achieved and all associated data have been correctly collected to conduct final public acceptance assessment.
12	Business models ready	WP7	INC	M36	D7.3 Submitted
13	Communication and Dissemination Strategy ready	WP8	ERT	M04	Strategy and plan for communication, dissemination and exploitation documented and adopted by the consortium. D8.1-D8.3 submitted
14	Final Event	WP8	ICCS	M36	The Final event is successfully organised.

Table 4: ENVELOPE milestones

3 PROJECT MANAGEMENT

3.1 Management structure and functions

3.1.1 Project management overview

The coordination of the ENVELOPE project is a complex procedure, that requires efficient management structure and decision-making processes for the main consortium partners and pilot sites for the:

- Establishment of a unified view of the overall approach and objectives, at all times.
- Oversight and completion of objectives (within agreed calendar, budget and quality of deliverables) both internally (within the consortium) and externally (i.e., the EC).
- Early identification, management and mitigation of risks.
- Efficient and effective collaboration and synergistic effects between and among involved entities.

In this direction, the ENVELOPE consortium has established a cohesive management structure to address the challenges of coordinating a project with partners working in many different locations including also the onboarding and management of new partners introduced at later stages of the project via the open calls.

The ENVELOPE management structure aims to:

- Ensure seamless and straightforward coordination of the consortium while fulfilling the EC contractual obligations through the **Project Coordinator (PC)**.
- Ease communication and coordination at the thematic levels of the WPs in the **Technical Management Team (TMT)**.
- Enable efficient and fair decisions about project resources and objectives by the **Steering Committee (SC)**.
- Secure the alignment of the project activities with the industry and the EU political agenda with the help of an **External Advisory Board (EAB)**.

The ENVELOPE organisational and management structure is detailed in the following sections. For what concerns the horizontal activities and cross-WP coordination four managers are to be involved, namely: Technical & Innovation Manager (a.k.a. the Technical Manager – TM role), Risk & Quality Manager, Data Manager & Protection Officer and Communication Manager. These four managers have been assigned key tasks within the project. An additional management role has been specified for handling the Open Calls.

The PC monitors the progress of all WPs and the activities of the appointed management teams, coordinates the thematic of the meeting agendas and the discussions, and decides about solutions for resolving potential issues. Two main activities are supporting TMT in the overall technical project coordination and ensure the relevance of ENVELOPE with other ongoing activities, namely:

- The EAB, supporting the alignment of the project with the current research, societal and industry needs.
- ENVELOPE liaison with other related projects on a bilateral basis for exchange of information and of the lessons learned, planning and coordination of activities. Indicative such examples of liaisons that have been already initiated are with PoDIUM (PDI connectivity and cooperation enablers building trust and sustainability for CCAM) Innovation action, CONNECT (Continuous and Efficient Cooperative Trust Management for Resilient CCAM) Research & Innovation action and FAME (Framework for coordination of Automated Mobility in Europe) Research & Innovation Action, all

funded by the EC under the Horizon Europe Programme. Furthermore, other liaison activities are envisioned under the Smart Networks and Services (SNS) Joint Undertaking (JU) initiatives, including other Stream D (SNS Large-Scale Trials and Pilots (LST&Ps) with Verticals) projects, Stream C (Complementary SNS Experimental Pan-EU Federated Infrastructure (RIA)), Stream B (Wireless Communication Technologies and Signal Processing) and Stream CSAs (SNS Societal Challenges) activities.

The **General Assembly (GA)** is the body where all project beneficiaries are represented and, thus, can vote all decisions either relating to changes in the project plans or decisions submitted by the TMT, in case of a lack of consensus. The PC chairs the meetings of the TMT and the GA and is the unique point of contact with the EC. The management functions within ENVELOPE will be performed at two levels:

- The **operational level**: The PC and the TMT carry out the day-to-day project management responsibilities – the planning, steering, and controlling of the work progress from WPs and UCs, as well as the overall quality of results and the management of risks. The Technical Coordinator (TC) contributes significantly to these matters, as detailed later.
- The **strategic level**: The GA approves the PC and TMT decisions and, if necessary, changes project plans or the consortium. The EAB provides non-binding recommendations and counsel on project functions and activities.

The following sections present in detail the different bodies.

3.1.2 Operational bodies

3.1.2.1 Project Coordinator (PC - ICCS)

The project Coordinator of ENVELOPE is ICCS, represented by the primary Coordinator Contact, Dr. Angelos Amditis, ICCS Research Director and I-SENSE Group Director, who has a wide experience in project and technical coordination from the past 20 years. Dr. Lazaros Gkatzikis is the Deputy PC, and performs day-to-day project coordination. The PC and deputy PC are responsible for the successful and smooth development of all project activities throughout the project's lifespan, and shall coordinate the project according to EC rules and the terms of the Grant Agreement and the Consortium Agreement of the HORIZON Programme. In more detail, as chairman of all management bodies, the responsibilities of the PC include:

1. Monitor the effective and efficient implementation of the project.
2. Ensure the proper execution and implementation of the decisions of the GA.
3. Organize (methodologies, tools, knowledge management) and pilot at project level the Science and Technology management carried out by the WP leaders on WP basis.
4. Monitor the compliance by the partners with their obligations.
5. Assess the compliance of the project with the work plan and, if necessary, propose modifications to it to the GA.
6. Resolve conflicts on technical, financial and strategic issues and consult the GA if needed.
7. Prepare meetings with the EC and related data and deliverables.
8. Prepare plenary meetings where the GA is represented.
9. Collect and consolidate the contributions for the progress and financial reports.
10. Provide the GA with critical analysis on the global technical performance of the project especially through a close follow-up of the project level indicators as well as summarize related recommendations.
11. Ensure on a daily basis the communication among the different partners, as well as arrange recurring GA teleconferences (telcos).

The PC serves as the sole, legitimate intermediary between the ENVELOPE consortium and the EC. He is responsible for monitoring the project's progress, providing periodic reports to the Commission, and organising technical reviews. Some specific activities that ICCS will carry out concerning the EC are to:

1. Inform the EC about events likely to significantly affect or delay the implementation of the action or the EU's financial interests, and inform the EC of circumstances affecting the decision to award the Grant or the compliance with requirements under the Agreement.
2. Submit deliverables and reports (periodic and final) to the EC.
3. Coordinate reviews of the EC to the project.
4. Receive EU funding payments from the EC and distribute them to the beneficiaries.
5. Collect, review and 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 PC is also responsible for keeping the contact list of ENVELOPE partner beneficiaries and other contact persons updated and available. He shall organise and chair all meetings of the strategic management bodies described later, and is responsible for the preparation, distribution and recording of the meeting documentation such as agendas and minutes. The PC organizes a recurring GA telco, where TMT attendance is required.

3.1.2.2 Technical Manager (TM - CMS)

To meet the technical challenges of the ENVELOPE project, Task 1.2 (Technical coordination and innovation management) is dedicated to ensure the seamless and efficient coordination of the different technical activities for all pilot sites. The task leadership for this ambiguous task is assigned to COMMSIGNIA (CMS). In accordance to T1.2 responsibilities, the TM will play a crucial role in the overall coordination of the technical activities (for all living labs, LLs), including monitoring of their compliance with the project advancement. The TM also needs to ensure that the proposed solutions, and UCs conducted by ENVELOPE are technically sound, viable and in line with standardization activities. The TM carries out the technical coordination with the support of the Technical Coordination task partners, and the PC.

In more detail the TM will:

1. monitor the activities of all WPs and UCs with regular teleconferences; identify technical risks or deviations and advise and consult the coordinator to take corrective actions.
2. monitor and guarantee timely execution of all project tasks against the project Gantt chart;
3. carefully monitor the deployment plans at the LLs, raise issues during the TMT calls and propose solutions to solve the issues;
4. moderate technical decisions and manage conflicting choices for technical developments;
5. generate close working cooperation between the Work Package Leaders (WPLs) and Use Case Leaders (UCLs) – refine and refocus any activity as necessary;
6. in collaboration with the PC, organise and convene regular TMT meetings for productive interaction among all the leaders;
7. monitor and control the production of the content of the deliverables from a technical and consistency point of view.

In terms of innovation management, the role of the TM is to have constant awareness of the project status with respect to the identified innovative outcomes, to monitor activities with respect to potential innovations (including new innovations driven by market needs), and to identify the readiness to generate new innovation pathways potentially exceeding the project objectives.

3.1.2.3 Technical Management Team (TMT)

The TMT is collectively responsible for the operational management of the project and provides a link between the WPLs and the GA.

Through regular meetings, the TMT will monitor risks and identify problems and delays early. This enables the TMT to proactively prevent conflict situations and anticipate deviations from the project plan. In addition, the TMT will meet physically during the GA/Plenary meetings. During these meetings, updates are exchanged among the leadership of the project and towards the PC regarding progress achieved, issues and challenges on a per UC level and on per WP/task levels, as reported by the respective leaders. These regular updates are more targeted towards a higher management level and aim to ensure that all UCs and WPs are following through with their technical tasks towards achieving their objectives on time. In case that the need for a deeper technical session is identified, the matter is passed on to the TMT.

The following bodies are part of the TMT:

1. The Work Package Leaders (WPLs): Each WP has a clearly identified leader responsible for coordinating the work within the WP (cooperating with the TMT) and for setting WP objectives and milestones. The WPLs are also responsible for monitoring progress of tasks within their WP, as well as for inter-WP liaison. Each task has a leader too, who reports to the respective WPL. The WPLs report to the TMT and SC. Task Leaders assist the WPLs in planning, managing and performing their tasks. This structure fits ENVELOPE's complexity and ensures flexibility as decisions are made at the appropriate level with a well-defined succession of responsibility. After the first few months, most WPs will be active in parallel and frequent exchange of information/results is foreseen.
2. The Technical & Innovation Manager (CMS), who leads also the innovation activities of T1.2, will ensure that the project coordination develops favourable conditions for innovation and takes the necessary actions to facilitate that the innovations will be effectively exploited after the end of ENVELOPE. More details on this role are also included in Section 3.1.2 above.
3. The Data Manager & Protection Officer (ISI), who leads the Data Management Plan of task (T1.3), will coordinate the elaboration of a plan for collection, storage and handling of the validation data, as well as for data publication as part of the Open Research Data Pilot (ORDP). This manager/officer raises potential issues and proposes solutions for dealing adequately with data privacy and data protection regulations, and will liaise with the partners who will perform the trials to establish procedures that ensure proper application of the Data Protection policies at the national level. This manager/officer is responsible for defining procedures to ensure that "openness" will be fulfilled in terms of data produced by the project, in diverse forms (Technical data, Evaluation data, Data on project outcomes and studies). More details about this kind of data will be included in D1.4 – Data management plan.
4. The Risk and Quality Manager (ICCS), who leads the Quality Assurance and Risk Management Task (T1.4), will ensure high quality of deliverables and outcomes of the overall project targets. This manager also supports project coordination in achieving the milestones by monitoring the production of deliverables and by executing the risk management process. They also have the authority to approach the GA directly to ensure that risks related to the TMT and PC can and will be discussed at the highest body for decisions.
5. The UCLs are responsible to coordinate and carry out activities related to the analysis, preparation, and execution of each ENVELOPE UC, with the ultimate objective of successfully conducting the demonstration trials. As members of the TMT, they will represent issues of the UCs and will actively participate in the coordination across trials.
6. The Communication Manager (ERT), who leads the Dissemination, exploitation and international cooperation WP (WP8) and the Communication strategy and tools task (T8.1), will ensure that the

project is well coordinated for achieving excellent outreach with public events, scientific publications, and presentations.

The main roles of the TMT include:

1. Communicate regularly to monitor WP and UC progress and to discuss potential issues.
2. Hold periodic teleconferences, chaired by the PC on a regular basis, to:
    a. Assess the status and progress of all the project activities and results.
    b. Discuss issues and try to find solutions and reach a consensus and adapt the project plan as necessary.
    c. Assess the needs for changing the allocation of resources.
    d. Monitor the risks in the risk register and potential mitigation measures in place, and identify new risks.
    e. Discuss the dates of the GA and prepare the agenda and the presentations.
    f. Prepare the review meeting with the EC as well as the presentations.
    g. Prepare the meetings with the EAB.
    h. Discuss feedback from the EC or the EAB and propose corrective actions.
    i. Support the dissemination activities and in particular the preparation of events and demonstrations.
3. All members of the TMT will attend the important coordination meetings of the project, particularly the official review meetings with the EC.
4. As necessary, the TMT may create and instruct task forces, particularly to efficiently solve cross-WP issues.
5. Act as intermediary in cases of conflicts that cannot be resolved at the WP level.
6. Assess and approve calls for extraordinary GA meetings (beyond the required meetings).

3.1.2.4 Use case leaders

The successful rollout of the project activities, critically depends on the role and advancements of the individual Living Labs (LLs), their targeted advanced 5GS features, and the LL -associated UCs. Their expertise, adaptability, and ability to effectively communicate and collaborate with both their team and the central project (technical) management are essential. Throughout the project, technical work will progress mainly through the daily communication and ad-hoc meetings organised on a per UC basis. Thus, a Use Case Leader (UCL) is assigned to each UC. These leaders are not just responsible for overseeing the day-to-day operations, but they also embody the bridge between the project's overarching goals and the unique challenges and opportunities at their specific sites. The WPLs will work closely with the UCLs, in order to successfully and uniformly materialise all six UCs of the project, respecting and taking full advantage of the ENVELOPE potential. The UCLs are presented in Table 5.

The main role of the UCLs therefore spans across the following project management procedures:

- Convening and chairing periodic meetings. All UCs have setup such regular “internal” UC calls, that take place on a monthly basis. The periodicity is subject to change throughout the course of the project and some UCs switch from one periodicity to another based on the current needs. Specific LL mailing lists have been setup by the PC that facilitate this communication.
- Assessing risks that arise within their UCs, and proposing plans to move forward with respect to the comments received during the project reviews, together with the assistance of the TMT.
- Cross-UC coordination. The UCLs serve as the contact points for such cross-UC collaboration and communication.

UC LL	UC Id	Use case description	UCL
Italian	IT-UC1	Advanced In-Service Reporting for Automated Driving Vehicles	LINKS
Italian	IT-UC2	Dynamic Collaborative Mapping for Automated Driving	LINKS
Dutch	DU-UC1	Periodic vehicle data collection for improving digital twin, e.g., for predictive maintenance	TNO
Dutch	DU-UC2	Vehicle testing with mixed reality	TNO
Dutch	DU-UC3	Tele-operated driving aided by DT	TNO
Greek	GR-UC1	MEC handover between multiple MNOs	NCSRD

Table 5: ENVELOPE Use case leaders (UCLs)

Alongside the main use cases, the project also includes the development of technology enablers that are independent in nature but integral to the broader ENVELOPE initiative, i.e., ATSSS-like multi-connectivity and predictive Quality of Service (pQoS). These technological advancements, designed and developed autonomously, are set to play a pivotal role in enhancing the capabilities of various living labs, and are to be tested in at least one LL, in coordination with the UCLs.

3.1.2.5 Open Calls Manager (OCM - EBOS)

ENVELOPE will offer financial support to be awarded to third-party initiatives that will exploit the ENVELOPE's Beyond 5G systems available at the project's LL sites. The Open Calls will be organized in two distinct calls, where at least 9 third-party experiments will be selected. All relevant details are presented in WP5 (Open calls management and support to 3rd parties) and in the Annex of the GA we discuss all relevant details.

For the successful management of all open call activities, we have defined the role of the ENVELOPE Open Calls Manager (OCM) to be realized by EBOS. The OCM will be responsible for orchestrating the complex process of open calls management, aligning it with the project's initiatives and obligations, and the specific objectives and guidelines set by EC. The OCM coordinates the ENVELOPE Open call Selection Committee (OSC), which additionally includes the Project Coordinator which will also undertake the role of the Ethics Manager, the Technical Manager, and the Innovation Manager with aim to ensure transparency, equal treatment, conflict of interest resolution, and confidentiality among the open call applicants.

To better present the activities of the OCM in ENVELOPE, we split the procedures in two phases, namely the *Preparation Phase* and the *Implementation Phase*. The Preparation Phase encompasses all activities conducted prior to the onboarding of successful applicants. On the other hand, the Implementation Phase commences once the applicants have been successfully selected. This process ensures that the transition from candidate selection to active participation is seamless and effective.

The OCM during the preparation phase will:

- Coordinate with the OSC to prepare the open call documentation package (ODP). This includes the definition of the open call proposals evaluation methodology, selection criteria and KPIs, openness and transparency conditions, the applicant documents, eligibility and exclusion criteria.
- Present the ODP to the General Assembly for validation and approval.
- Launch the 1st Open Call on M18 and 2nd Open Call on M22.

- Coordinate with the OSC and conclude on the **Eligible List** of applications (checked against the Eligibility Check Criteria set out in the Guide for Applicants prepared in the ODP).
- Coordinate with the OSC, for the In/Out scope screening of the submissions (from the **Eligible List**) and conclude on the final **in-Scope List** of applications.
- Present the **in-Scope List** to the General Assembly for validation and approval.
- Coordinate with the OSC, for the selection of two (2) external experts per proposal (based on the individual characteristics of the applicants), that will provide an Independent Individual Evaluation.
- Ensure before the beginning of reviews, that the external experts endorse the Confidentiality Statement and the "Non-conflict of interest" clause.
- Initiate the review process.
- Create a consensus group including the OSC and the external reviewers. The role of this group, chaired by the OCM, is focused on resolving potential issues in the ranking score of applications (e.g., potential ties or other issues), according to the methodology described in the Grant Agreement and the ODP. If no consensus is reached, an additional evaluator will be included to provide an additional evaluation. These actions will produce the applicants **Ranking List**.
- Present the **Ranking list** to the General assembly, for validation and approval.
- Consolidate with the ENVELOPE Ethics Manager to define the "List of Finalists" and "Reserve List".
- Notify successful and rejected applicants, including detailed reviews.

The OCM during the implementation phase will:

- Coordinate with the OSC to appoint a Mentoring Committee to the awarded sub-projects from the ENVELOPE consortium. The objective of the sub-project mentors is to define the awarded project's "Individual Mentoring Plan" (which will specify, among other things, the KPIs and Deliverables that will be evaluated during the milestones review) and ensure that the beneficiaries receive the necessary support to execute their projects successfully.
- Organize and implement the signing of the Sub Grant Agreements (SGAs) under a "lump sum model", in coordination with the PC and the Mentoring Committee.
- At each Milestone Review (which occurs when a payment is due), the OCM consolidates with the Technical Manager who is responsible for assessing the performance of the grantees. If sub-project beneficiaries do not meet the established threshold evaluation criteria (as described in their respective SGAs), the OCM raises the issue to the OSC which will make the final decision if the beneficiaries will be required to leave the program and forfeit any further payments.

3.1.3 Strategic bodies

In addition to the TMT, ENVELOPE will rely on three other strategic bodies that will perform a complementary role to guarantee transparency, accountability and expert topical knowledge: the General Assembly (GA), the Steering Committee (SC), and the External Advisory Board (EAB).

3.1.3.1 General Assembly (GA)

The GA is the ultimate decision-making and conflict resolution body of the project. It will be chaired by the PC and attended by one representative of each partner. The GA will be responsible for the overall strategic orientation and policy of the project. It will make sure that the adopted strategy is respected in order to reach excellence. Its tasks include:

1. Assessment of and agreement on project progress and status and allocations of resources.
2. Changes of Grant Agreement & technical annex to be submitted for EC approval.
3. Changes to the work programme and its timing.

4. Modifications to the Consortium Agreement notably to Background Included, additions to list of Third Parties for simplified transfer, etc.
5. Evolution of the consortium: conditions of entry and withdrawal of parties, identification of breach by a party or defaulting party.
6. Agreeing on external opportunities.
7. Ensuring the leverage effect of the project and achievement of expected impacts.

The GA is, therefore, the highest decision-making body of ENVELOPE where all partners of the consortium are represented. Upon recommendations from the TMT, the Risk & Quality Manager and/or the PC, 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 PC chairs the GA, which will meet physically one time per year and one time per year remotely, to report and discuss progress. Attendance at the GA is mandatory and requires at least one representative of each beneficiary to be present at the meetings. Therefore, all partner representatives are expected to participate in GA decisions; any representatives that cannot attend a GA meeting, they may give power to another from the same organisation. The GA meeting will follow a written agenda.

3.1.3.2 Steering Committee (SC)

The Steering Committee (SC), consisting of the ENVELOPE managers and WPLs, will be responsible for the proper execution and implementation of the decisions of the GA. It will monitor the effective and efficient implementation of the project. In particular, the SC will:

1. Collect information on the progress, IPR, dissemination, communication, etc., and the status of resources of the project.
2. Examine information to assess the compliance of the project with the work plan and, if necessary, propose modifications to it to the GA.
3. Resolve conflicts on technical, financial and strategic issues and consult GA if needed.
4. Support the PC in preparing meetings with the EC and in preparing related data and deliverables.
5. Prepare the content and timing of press releases and joint publications by the consortium or proposed by the EC.
6. Propose and set up internal quality processes, common templates and communication tools.

3.1.3.3 External Advisory Board (EAB)

The EAB 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 issues identified in the Grant Agreement that ENVELOPE will address, e.g., to transform the reference 5G-Advanced architecture into a vertical-oriented one with primary focus on the CCAM vertical, also align with the EAB's views on market deployment needs.
- The overall project results demonstrate the applicability and potential of ENVELOPE's 5G-advanced architecture to empower the CCAM services in real-life scenarios.

The EAB formation is open to stakeholders from the global telecommunications and mobility community. The ENVELOPE EAB members will be defined, with the objective to include regulation authorities, vehicle manufacturers, and telecom industry stakeholders involved in the development of CCAM scenarios. The added value of the EAB will be to offer insights from different links of the value chain.

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.

All recruited EAB members will be approved by the GA and will be asked to sign a non-disclosure agreement (NDA). A travel budget will be managed by ICCS to cover the members' travel costs to participate in EAB meetings, if needed.

3.2 Management processes and procedures

The 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 outputs 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 ENVELOPE administrative management processes

The following 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 (described separately in Section 4)

3.2.1.1 Project administration and contract management

The conditions and procedures for a Grant Agreement amendment are set in Article 39 of the Grant Agreement. Requests for amendments to the Grant Agreement and significant project changes and deviations must be submitted in writing to the PC. The project beneficiary requesting the change must indicate to the PC the reasons for the proposed amendment and its consequences in terms of budget, work programme, etc. The PC 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 (non-exhaustive list):

- Partners joining or leaving the project.
- Re-allocation of budget.
- Incorporation of requirements from the EC.
- Extension of contract duration.
- Modification of DoA (Annex 1 to the Grant Agreement, Milestones, Deliverables' submission date, Partner tasks, etc.).

The amendment request must be approved by a GA vote. It will then be forwarded by the PC to the EC on behalf of the consortium.

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

3.2.1.2 Planning and implementation of changes

The PC 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 within 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 WPL involved.

3.2.1.3 Progress reporting and evaluation of results

The ENVELOPE project is bound by the Grant Agreement to provide periodic reports on its progress towards the project objectives. A Technical Report reflecting the progress within the reporting period M1-M18 and a Final Report at the end of the project in M36 must be provided to the EC. To complement these reports, ENVELOPE will produce six Internal Reports.

Internal Reports

These reports entitled project Coordination Internal Reports (numbered IR1.1 - IR1.6) will be produced every six months (M06, M12, M18, M24, M30, M36) to provide the status of each WP in terms of:

- Objectives of the period.
- Progress towards objectives in the 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 actions and will also be the basis for preparing the EC periodic reports. A risk register will be presented to the EC as part of the periodic reporting process. Recommendations arising from project periodic reviews will also be added as items to be addressed in the following reporting period.

Except for these 6-monthly reports, the PC sends a monthly report in the form of an e-mail to the whole consortium, summarising the activities of the past month per WP, reminding the milestones and deliverables for the next six months, and setting an action plan for the next month. This activity has started in M01 of the project, immediately after the project's technical kick-off meeting.

WPLs will be responsible for compiling the reports on work done by collecting status reports from their Task Leaders. When the timing overlaps with the official periodic report, the official report will serve as internal report as well.

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

Interim and final periodic reports for the EC

The Grant Agreement obliges the PC 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 PC for submission to the EC.

Information for all project activities (per WP) will be provided to the project Officer and EU experts (reviewers) before each project review, namely, even if there are no planned periodic reports available just before a

review. The PC will provide reviewers the necessary reports of the project activities for the period under review at the latest two weeks in advance of a review meeting. Reporting will also include information about any tasks whose work may not be reported in any deliverable during the period under review.

3.2.2 ENVELOPE management procedures

ENVELOPE has defined a set of procedures to support the coordination tasks and to ensure the above processes are efficiently executed. These procedures relate primarily to conflict resolution, resource management, and quality and risk assurance. Project meetings are the main tool for the coordination of work. The corresponding procedures for organising meetings are also described below.

3.2.2.1 Conflict resolution

Consensus will be pursued as the general principle in the decision-making processes of ENVELOPE. Decisions in the project will generally be taken at the lowest organisational level possible, i.e., starting with the Task Leaders. The TMT will be the preferred entity to solve most of the issues in a consensus-based manner. If the conflict remains unresolved at the TMT level, the GA will be consulted and will vote for a decision to resolve the issue.

3.2.2.2 Procedure for resource reporting and management

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

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.

In more detail:

- Towards the end of each reporting period (M01-M06, M07-M12, etc.), the PC (ICCS), will send out a request to all partners to provide input in the dedicated templates.
- For Part A, each beneficiary partner will report their resource use for the period based on a per task estimation of expected resource use; a summary of the activities performed will be provided along with justification for deviations.
- For Part B, WPLs 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.
- The PC will use this report to ensure that project activities are on course and all beneficiaries are contributing as expected.
- Corrective action may include shifting resources (PMs) 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 ENVELOPE Consortium Agreement. It is essential to follow these procedures closely to ensure the validity of all decisions and actions of the consortium.

Convening meetings

ENVELOPE meetings will be convened at various representation levels from a GA to Task level. In order to create synergies, cooperate and organize activities, periodic meetings have been scheduled at the task and WP 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. The following meetings take place on a regular basis:

- GA telcos: These are chaired by the PC.
- TMT telcos: These are chaired by the PC and TM.
- WP telcos: These are chaired by each WPL. They also occur on a regular basis. Specifically, their average periodicity is bi-weekly.
- UC telcos: These are chaired by each UC leader. They occur on a bi-weekly or monthly basis based on the identified coordination needs.

The chairperson of a consortium body shall convene meetings of that Consortium Body.

	Ordinary meeting	Extraordinary meeting
General Assembly	At least once a year	At any time upon request of the Technical Management Team or 1/3 of the Members of the General Assembly
Technical Management Team	At least quarterly	At any time upon request of any Member of the Technical Management Team

Table 6: ENVELOPE's GA and TMT meetings periodicity

Ad-hoc meetings may occur, on demand, to discuss specific matters. Moreover, as the project tries to form and maintain strong liaison activities with the overall community, participation to the following online meetings is pursued:

- Cross-project telcos: A liaison activity with other related projects has been initiated, where ENVELOPE PC and TC participate.
- EAB telcos: Meetings with the EAB will take place on an ad-hoc basis. The TMT will participate in these meetings.

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 below. These notices apply to physical/virtual/hybrid plenary meetings.

	Ordinary meeting	Extraordinary meeting
General Assembly	45 calendar days	15 calendar days
Technical Management Team	14 calendar days	7 calendar days

Table 7: Notification period of management meetings

Sending the agenda

The chairperson of 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 below. This mainly applies to physical meetings.

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

Table 8: Period for agenda availability for management meetings

Adding agenda items

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

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

Table 9: Period for agenda modifications for management meetings

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

Representation in meetings

With the exception of UC 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. A meeting may be recorded after the consensus of all participants, and the recording will be shared with the partners.

Minutes of meetings

The PC 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 fifteen (15) calendar days of the meeting. This mainly applies to physical (plenary/review) meetings, while for online telcos the meeting minutes are generally to be prepared within the same or the next day.

The minutes shall be considered as accepted if, within ten (10) 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.

3.2.2.4 Management of risks and quality assurance

The purpose of Quality & Risk Management is to guarantee the timely delivery of the project results with high quality. In ENVELOPE, there is a specific quality management plan (deliverable D1.2) while Risk management is part of this deliverable.

Risk management with a thorough analysis of potential risks and close monitoring of the defined corrective actions is an important factor in the ENVELOPE project management plan. This is not only important in order to reach the objectives of the project within the given time, budget and with high quality, but also to achieve the maximum of synergies with related projects.

For the above reasons, ENVELOPE will use the Failure Mode and Effects Analysis (FMEA)[2] as the basis for risk-management. Although this process is usually employed for high-risk projects (where loss of life may be an effect), this structured approach offers ENVELOPE tools for discovery of potential failures in the design and processes of the project's activities. The process within ENVELOPE has been visualized in Figure 3, and as shown risk management is a cyclic process.

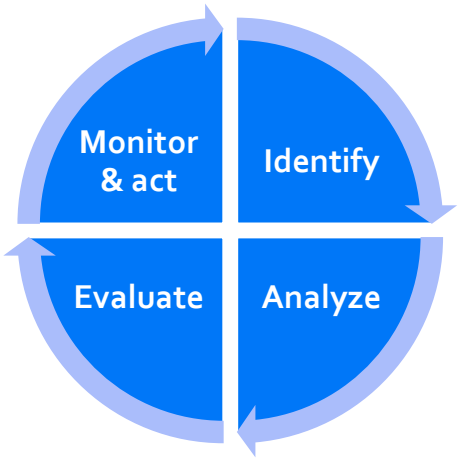

Figure 3: ENVELOPE risk management steps

For ENVELOPE, the periodicity is related to the internal reports. As part of reporting, the risk management cycle will be executed as well. During the process, a dedicated risk session is held to identify and analyse the risks. A 'risk' is defined as a future event precluding the achievement of the objectives of a certain activity or task. Risks can be identified by any consortium member.

Within the risk management cycle the following steps are executed:

1. Identifying risks:
    a. WP and Task Leaders will identify the risks relevant to their activities or tasks and subsequently properly and promptly inform the Risk & Quality Manager who will add them to the risk register.

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

   b. Identification of risks is performed continuously during the last step (monitoring and acting upon risks) and periodically in dedicated risk sessions.
2. Analysing risks:
   a. Analysing risks is performed during the dedicated risk sessions.
   b. During this step, all risks are assessed for their relevance. If a risk is no longer relevant it may be closed.
   c. Risks are assigned a risk owner/caretaker, being the person who will be able to detect and/or manage the risk best.
3. Evaluating risks:
   a. All risks are rescored using the FMEA scoring methodology, assessing Severity (S) and Occurrence Probability (O).
   b. The risk register is constantly revisited and mitigating measures are defined by the owner in cooperation with the TMT.
4. Monitoring and acting upon risks:
   a. The risks are actively monitored during the TMT sessions.
   b. Certain risks that are identified as critical or highly probable will be actively managed. This means that preventive mitigating measures will be put in place.
   c. If a risk materialises, upon detection the necessary mitigating measure(s) will be put in place.

The risks are tracked in a Risk register. The risk register is updated by the Risk & Quality Manager. The complete list of quality management procedures is documented in D1.2 – Quality management plan. By defining clear procedures and establishing deadlines for deliverable production, review and submission, the Risk & Quality Manager will ensure low exposure to risk and the highest possible quality of ENVELOPE outcomes.

Table 10 in the Annex presents the risks identified. The risks are included in a shared collaboration space hosted at the ENVELOPE SharePoint, where they will be continuously monitored and updated.

4 PROJECT COORDINATION AND COMMUNICATION TOOLS

The successful execution of a project depends 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 ENVELOPE such management tools are indispensable, and, thus, the project has chosen a combination of tools for various purposes. The main ones are:

- **SharePoint**: The project uses a web-based tool as a document repository and file exchange system, ensuring both safe storage of documents and supporting collaboration among partners (such as public deliverables, minutes and agendas, and for the various project Registers).
- **Microsoft Teams**: This is the main platform used for the project regular or on-demand telcos. Doodle is usually used in order to setup new meetings, so that all required attendees have the chance to vote their preferred timeslots.
- **Website**: The main project vehicle for communication and dissemination activities will be available at: https://envelope-project.eu/
- **Sympa**: A listserv for targeted group-based internal communication. The [ENVELOPE] tag is used in all communication. Available at: https://lists.envelope-project.eu/wws. On top of per admin and WP lists, a list for each LL has been created to facilitate coordination and problem resolution for issues specific to the country or UC. All lists are open to members of the consortium and new members can be easily added (e.g., new colleagues joining ENVELOPE).

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 ENVELOPE contacts in the EC participant portal.

When the PC 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.

5 CONCLUSIONS

Deliverable D1.1 (Project Management Plan), is closely aligned with and takes as its starting point the Grant and Consortium Agreements of ENVELOPE. It details the roles and responsibilities of governance bodies as well as all beneficiaries and members of the project Consortium. It describes the structures, tools, processes, and procedures that WP1 (Project Management) 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 ENVELOPE's risk management strategy based on the Failure Mode and Effects Analysis.

D1.1 is specifically relevant for the execution of Tasks T1.1 (Administrative and financial coordination) and T1.2 (Technical coordination management sub-task). This deliverable will be complemented by the other deliverables of WP1.

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

6 ANNEXES

6.1 Risk management by failure mode and effects analysis

ENVELOPE uses the Failure Mode and Effects Analysis (FMEA)[3] for its risk-management as a basis. This structured approach enables 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 help mitigate the failure modes.

The risk assessment procedure comprises the following main steps:

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

Step 1 - Identification and definition of the risks

WP, UC 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.

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 severity, and occurrence probability.

- Risk Severity (S): The severity levels for technical and organisational failures range from Low to High.
- Risk Occurrence Probability (P): The occurrence probability index, ranging from Low to High, provides a ranking based on the probability that all the risk causes related to the risk modes described in the analysis can occur.

Step 3 - Mitigation strategies identification

The risk register will indicate the WPs or UCs implicated by the risk and, if needed, 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).

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

Table 10 presents the risks identified at the time of submitting this deliverable. A risk register document in the project's shared repository (hosted at ICCS) will be continuously monitored and updated.

Risk Id	Description of risk	WP	Prob.	Sev.	Mitigation measures
1	Discrepancies in the technical visions: Project delays, etc.	1	L	M	Frequent communication within WPs (through meetings, telcos, etc.) and at the TMT level to resolve issues. Good cooperation between Coordinator, Technical Manager, TMT and the Consortium.
2	Requirements and specifications are not ready on time.	2	L	L	The ENVELOPE platform architecture, the proposed UCs and the different innovation components are already well defined and commonly agreed among partners. The requirements and specification activities will be continuously monitored through periodic conference calls to check possible issues and delays.
3	Lack of cooperation of the different partners that lead to an incomplete definition of the technical, legal and operational requirements and specifications in WP2.	2	L	H	A collaborative and online tool based on Volere methodology will be used for the definition, revision and validation of the requirements and specifications in order to involve the different stakeholders to ensure its suitability for the development, integration and evaluation/demonstration phase.
4	Requirements and specifications not adequate for the development phase.	2-3	M	L	The requirements and specification activities and the development activities are planned with a partial time overlap in the scheduling. This will allow interaction among the two activities and ease the identification of possible not adequate aspects in the specifications.
5	Technical innovation work diverges from the project's initial goals.	2-3	L	M	All development activities will be closely monitored at various levels (Task, WP, TMT) to ensure that the proposed components are delivered according to the precise specifications. EC review feedback will be adhered to as closely as possible at all stages.
6	Implementations of open source cores (e.g., Open5GS) or HPE core implementations have not progressed according with their roadmap and cannot support basic functionalities needed for ENVELOPE.	2-3	L	M	The availability of both commercial and open source cores minimizes the probability that both will be missing a needed feature. If this happens, the consortium can proceed with the development of certain missing pieces as it has significant expertise in developing and contributing to open source projects. Alternatively, as ENVELOPE follows a standards compliant approach, integration of certain missing features from other core implementations like OAI will be pursued.
7	Current State-of-the-Art solutions for MEC Federation not suited to the scenarios considered in the project.	2-3,7	L	M	Identify new approaches and provide feedback about them to relevant standardization bodies (i.e., ETSI ISG MEC).
8	Technical challenges and development of incompatible methods in ENVELOPE platform architecture, the communication infrastructure, the MEC services, the UCs components and the end	3	L	H	Although this is highly improbable to happen, since there is significant expertise in the consortium in this field and several supporting tools exist, it will be handled with additional iterations of the development cycle and with intermediate deliveries.

	user equipment (e.g., vehicles, OBUs, RSUs).				
9	Even though the main focus of the Greek site is not inter-PLMN radio handover, providing a solution based on standards may still be a challenge due to the use of vendor-locked solutions in the RAN.	3	H	L	To demonstrate an end-to-end solution, a multi-SIM card solution can be considered where the modem can connect to the VPLMN network before the old connection is broken.
10	Inadequate integration of the different components and mechanisms in the ENVELOPE trial sites.	3-4	L	H	Where necessary, use of formal system modelling methods (e.g., SysML) to clarify interfaces and architecture before integration. If needed, an extension will be evaluated if the technical results fail to be delivered on time so as to deliver a fully functional platform to the demonstrators and the granted open call projects.
11	Evaluation trials are not successful/Data cannot be used.	4,6	L	H	Multi-phase evaluation and pre-testing methodology. Trials and demos are implemented to ensure the data collected is according to expectations. Clear and comprehensive data management plan
12	Legal restrictions imposed in the execution of the testing/demonstrations with higher levels of CAM automation services.	3,4,6	L	H	Both, the data collection and the ENVELOPE demonstration and evaluation trials will be handled in an ethical manner and based on the National and European legislation. The data collection procedure will be planned within ENVELOPE thoroughly by its General Assembly. In case of restrictions in testing vehicle automated manoeuvres, the strategies for motion control of vehicle will be implemented and will be tested in real traffic without acting on vehicles' actuators, but logging data on vehicles' data logger for real time processing to verify the extent to which the corresponding KPIs are matched.
13	Delays in receiving the authorization for using the frequency of the 5G mobile network in any of three sites.	3,4,6	L	H	Start the authorization procedure at the project's beginning or, alternatively rent a frequency for a 5G network from a mobile network provider that offers such possibility. ENVELOPE already has on-board the consortium one major MNO from each site country (TIM in Italy, KPN in Netherlands and OTE in Greece).
14	No or partial testing permissions in any of the ENVELOPE trial sites.	4,6	L	M	Early contacts with authorities. Engagement from multiple sides. Local authorities to provide the necessary permission at the different trial sites are members of the consortium (COTO in Italy, TNO in Netherlands and NCSRD in Greece).
15	Open call may not receive enough interest or participation, which may limit the potential impact of the project.	5	L	M	ENVELOPE consortium will widen their outreach by using various channels to promote the open calls. They can advertise the open call on social media platforms, relevant industry forums, and events. They can also collaborate with other organizations or projects that share similar goals to reach out to their audience.
16	The open call may receive low-quality proposals that are not aligned with the project objectives, which may result in a waste of resources.	5	L	M	ENVELOPE consortium will provide clear guidelines and criteria for proposal evaluation. This will include information on the project's goals, the required functionalities/interfaces, the evaluation criteria, and the expected outcomes. By providing detailed guidelines, ENVELOPE consortium will

					help participants understand what is expected of them and how their proposals will be evaluated
17	Conflicts of interest between partners on business/exploitation model.	7	L	M	The ENVELOPE consortium was built with a variety of complementing stakeholders. All project beneficiaries will have the possibility to contribute towards the development of a sustainable business model and list their interests. An IPR registry will be maintained to clearly list ownership and rights.
18	Business models will reveal poor sustainability.	7	L	M	Different variations from use cases will be examined, all roles and interactions will be evaluated and adapted based on realistic assumptions. Partners have experience and expertise in commercialization strategy.
19	Poor match between project outcomes and market needs, that can lead to poor adoption of project outcomes.	2,8	M	H	The market potential is high for the moment; TM will take input for market needs (WP7) and will guide the other WPs to match them. The exploitation plan will be adapted to match the market needs.
20	Dissemination and communication has limited impact (stakeholders engagement, publications, etc.).	8	L	H	KPIs are clearly defined and monitored. The Dissemination plan includes a sound selection of channels and planned activities to keep all stakeholders in the value chain informed on a regular basis. The plan will be re-evaluated periodically and updated as needed. Encourage the submission of papers around specific targeted events. Identify relevant deliverables that could be candidate topics. Use meetings as internal information channel for reminders.

Table 10: Risk register- description of critical risks and mitigation actions