AI-informed Holistic Electric Vehicles Integration Approaches for Distribution Grids

D11.1

Project management plan I

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LEGAL DISCLAIMER:

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EXECUTIVE SUMMARY

This document aims at presenting the project coordination aspects and the project supporting procedures.

A project overview is provided, then the project structure is presented. Subsequently, the quality assurance procedures are shown, and the document templates are described.

The document also includes the project management manual and the description of the procedures for the risk management.

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1. INTRODUCTION

1.1. Project Introduction

The AHEAD project—AI-informed Holistic Electric Vehicles Integration Approaches for Distribution Grids, will create a simulation environment capable of predicting the most convenient locations to place electric vehicle (EV) charging stations while optimising both the usage of the power grid resources and that of the charging stations in urban and rural areas. This simulation environment will exploit the unique features of the latest AI models and include two layers: a spatial mapping—placing the chargers where the people need them to be—and that of the power grid—placing the chargers where the grid can support them.

Innovative smart charging algorithms will be designed and tested in the model to minimise the impact of EV charging pools on the network while ensuring economic benefits for consumers. These smart charging algorithms will be tested in three demonstration sites to assess the technical and economic feasibility of smart charging light and heavy-duty EVs and boats.

Particular attention will be given to the user experience and cybersecurity and understanding how to minimise the impact of smart charging on the users while creating a model to simulate cyber-attacks on the chargers to suggest defensive mechanisms for system protection.

2. PROJECT ORGANIZATION STRUCTURE

This chapter provides an overview of the organizational and governance frameworks established for the AHEAD project to ensure seamless coordination and high-quality implementation of tasks.

2.1. Project Structure

Figure 1 illustrates the organization of the work packages (WPs) within the AHEAD project, divided into key thematic areas and their interconnections.

The main thematic areas are:

- **Technological trends and scenarios definition:** this area includes **WP1 (Technological trends and scenario definition)**, which aims to understand current and future usage patterns and charging behaviours, identify technological barriers, review regulatory frameworks, and define practical scenarios and use cases for testing, ultimately supporting the integration and flexibility of electric mobility solutions.
- **R&D on system modelling:** this area includes WP2, WP3, WP4 and WP5.

  WP2 (Charging infrastructure) aims to evaluate and advance charging technologies for EVs, heavy-duty vehicles (HDVs), and vessels, design smart bidirectional charging systems, and develop AI tools to optimize charging dynamics and grid support.

  WP3 (Flexibility Services) focuses on designing and modelling flexibility programs tailored to EVs, characterizing and quantifying their flexibility, and developing simulation tools to test and validate these services. It also proposes a contracting process to enable EV participation in grid flexibility services.

  WP4 (Grid models and spatial models) aims to simulate electric loads and EV flexibility services, validate grid models, and implement decision-making spatial maps for municipalities. It involves enhancing grid capacity planning, defining key performance indicators for electric vehicle supply equipment (EVSE), validating grid models, and creating spatial mapping tools to support the optimal integration of EV infrastructure.

  WP5 (ICT and cybersecurity requirements) focuses on mapping IT security measures, developing threat models, and defining countermeasures for EV charging infrastructure. It aims to design ICT requirements, create comprehensive threat models specific to EV charging, and establish cybersecurity guidelines to prevent, detect, and recover from cyberattacks.

- **AI-based planning:** this area includes the WP aimed at developing the AI tool (WP6) and the WP demos: WP7, WP8 and WP9.

  WP6 (AI tool for planning of grids and charging infrastructure) aims to design an AI-based decision support system for optimal placement of EV charging stations, define the AI model and key performance indicators, and evaluate model performance. It involves creating a comprehensive optimization framework, developing AI techniques to enhance grid utilization, and implementing user interfaces to facilitate planning and decision-making.

  WP7 (Combined service delivery from heterogeneous charging stations- Nordic Europe demo) demonstrates the combined grid services using multi-brand slow and fast chargers with hybrid resources, measures customer acceptance, and tests infrastructure robustness against data manipulation. It includes specification, commissioning, operation, monitoring, analysis of results, and deriving lessons for mass deployment.

  WP8 (AI-based planning tool and flexibility services from HDVs, fleets, and public transportation - Southern Europe demo) aims to review distribution system operator (DSO), public transport, and fleet management, test AI-based DSO planning tools, demonstrate EVs, HDVs, and vessels operation with flexibility services, and ensure infrastructure robustness against data manipulation and attacks. It includes detailed demo specifications, commissioning, operation, monitoring, and simulation of future scenarios to derive lessons for scalable deployment.

  WP9 (AI-tools for the seamless integration and coordination of public and private charging infrastructures - Western Europe demo) aims to assess challenges and opportunities for massive deployment of EVSEs in parking lots, demonstrate the impact of wireless EVSEs, evaluate AI-based planning tools for city-level coordination, and explore the electrification of maritime tourism. It includes detailed specifications, development of a digital twin, infrastructure installation, operation, monitoring, analysis of results, and lessons learned for scalable deployment.

- **Dissemination and project management:** this area includes WP10 and WP11.

  WP10 (Dissemination) focuses on developing and implementing a communication and dissemination plan, establishing links with related EU projects, and identifying exploitation pathways for project results. It includes creating a project website,

producing promotional materials, engaging in scientific publications, organizing workshops and B2B meetings, and developing a comprehensive exploitation strategy to ensure the scalability and impact of the AHEAD technology.

WP11 (Project management) ensures effective and timely project implementation, quality control of results, and risk management. It includes financial and administrative management, data management aligned with FAIR principles, and quality assurance. Regular progress reports, coordination with the European Commission, and maintaining external contacts are key activities.

2.1.1. Interconnections among WPs

The work packages within the AHEAD project are interlinked to ensure a cohesive and integrated approach to achieving the project's objectives. WP1 sets the foundational understanding of technological trends and scenario definitions, informing the subsequent research and development efforts in WP2, WP3, WP4, and WP5. These R&D activities focus on system modelling, advancing charging infrastructure, flexibility services, grid models, and cybersecurity requirements, creating a robust basis for the AI-based planning tools developed in WP6. The practical demonstrations in WP7, WP8, and WP9 utilize the outcomes from the R&D and AI planning WPs to validate and refine the tools and methods in real-world scenarios across different regions of Europe. Finally, WP10 and WP11 support the project through effective dissemination, communication, and management, ensuring that the project remains on track, results are shared widely, and insights are incorporated back into the ongoing work.

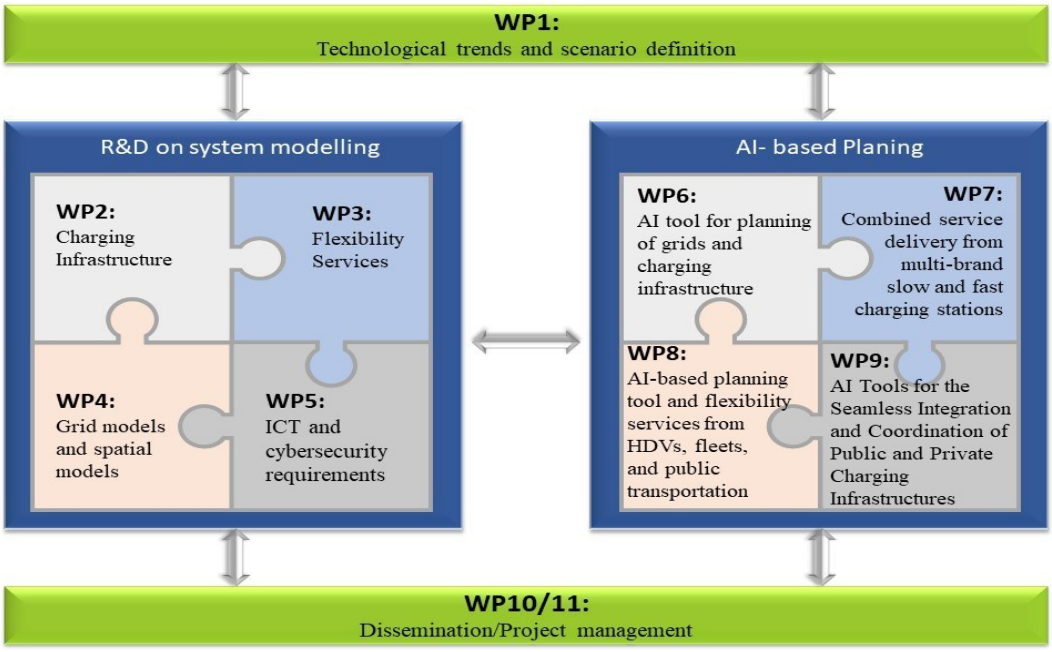


Figure 1 – WP layout of the project.

2.2. Project Management Structure

Although AHEAD is characterized by a complex structure and interdependencies of WPs and related tasks, the project governance structure has been conceived in a standardized simple way, to achieve an efficient coordination of activities and minimizing the effort in managing the project while avoiding adding excessive heavy administrative burdens on the management processes. Key roles are defined to guarantee the high quality and timely tasks implementation.

Several project bodies are crucial for project management and for its smooth implementation. Each of them has specific roles and competences.

Project Coordinator: the project coordination is led by POLIMI, which established a dedicated Project Management Team, and includes the following functions: financial supervision, progress report preparation and submission, formal revision and submission of official communications/documents to be produced within the project, final approval of project deliverables, organization and supervision of project meetings as well as liaison with project governing bodies.

The Project Coordinator of AHEAD project is Professor Samuele Grillo of POLIMI. The core management team at POLIMI is composed of Prof. Maria Stefania Carmeli, Dr Marzio Barresi, and Dr Davide Piantella.

General Assembly (GA): composed of one representative per beneficiary, this body has competences and responsibility in taking the main decisions affecting the implementation and success of the project, namely:

- monitoring and reviewing the overall technical, management and financial progress of the project.
- ensuring that milestones are met, and deliverables are completed.
- ensuring the quality of the data coming from the WPs, the reports and the deliverables.
- monitoring and ensuring efficient communication and co-ordination between partners, WPs and tasks.

The first General Assembly meeting was held during the kick-off meeting in Milano on June 3rd – June 4th, 2024. There will be a second GA in September 2024. Each partner has a unique representation point in the GA, as proposed in Table 1.

Table 1 – Designated Members to the GA.

Partner	Representative
1 – POLIMI	Samuele Grillo
2 – DTU	Mattia Marinelli
3 – INSEC ID	Hugo Morais
4 – A2A	Alessandro Cirocco
5 – SPIRII	Torben Fog
6 – IST ID	Luca Pereira
7 – AMINA	Fredrik Erland Lima
8 – KEMPOWER	Ville Naumanen
9 – UPT	Donald Selmanaj
10 – EASELINK	Christian Thren
11 – UNR	Annalisa Tognollo
12 – EEM	Diogo Vasconcelos
13 – EG	Blaž Dobravec
14 – CMF	José Augusto Batista Vieira
15 – MOBIE	Pedro Santos
16 – AVERE	Danielle Kutka
17 – EDP LABELEC	Samuel Matias
18 – ELBIL	Ian Bednar
19 – NTTDATA	Marco Iusi
20 – RUC	Simon Bolwig
21 – ATM	Roberto Conte
Associated Partner	**Representative**
22 – EMACOM	Diogo Vasconcelos
23 – NISSAN	Mohammed Amin
24 – ENERGINET	Andreas Pedersen
25 – STATNETT	Knut Hornnes
26 – LYSE	Torbjorn Ostby

The members, selected by the project partners, are subject to change over the course of the project. Furthermore, it is important to note that these members have the authority to delegate responsibilities to other individuals as needed.

Executive Board (EB): it consists of the different directors responsible for monitoring the implementation of all project tasks: Project Coordinator, Scientific Director, Integration Director, Pilot Manager, Use cases implementation Director, and Communication and Impact Director. Their roles are well defined as summarized in Table 2. The composition of the EB is to be reviewed and voted during the second GA.

Table 2 – Prospective Members to the EB (pending approval by the GA).

Person	Partner	Role	Responsibility
S. Grillo	POLIMI	Project Coordinator	Overall project management, interface with EU.
M. Barresi	POLIMI	Scientific Director	Supervision of scientific development and quality management.
M. Iusi	NTTDATA	Integration Director	Supervision on the integration of different components and on the toolkit realization.
M. Marinelli	DTU	Pilot Manager	Supervision of pilot activities and validation activities
H. Morais	INESC ID	Impact Director	Project uptake and impact
D. Kutka	AVERE	Communication and Dissemination Director	Coordination of all activities for enhancing project visibility

The Executive Board is chaired by the Project Coordinator that is responsible for monitoring the day-by-day management of the technical WPs, taking actions to ensure WP goals are met on time and within the budget limits. The Executive Board reports periodically, at least twice a year, to the General Assembly.

Work Package Leaders (WPLs): they are responsible for coordinating the activities within each WP. Their duties include the coordination and implementation of each WP within the foreseen timeframe and budget, proposition of orientation of work to reach project objectives, deliverables preparation supervision, risk monitoring and liaison with the different Directors.

The list of WP Leaders was provided at proposal stage and confirmed at the beginning of the project (Table 3).

Table 3 – WP leaders.

WP No.	Work package title	Resp.	Name
WP1	Technological trends and scenario definition	POLIMI	S. Carmeli
WP2	Charging infrastructure	INESC ID	Cindy P. Guzman
WP3	Flexibility services	EG	B. Dobravec
WP4	Grid models and spatial models	EDP LABELEC	S. Matias
WP5	ICT and cybersecurity requirements	SPIRII	T. Fog
WP6	AI tool for planning of grids and charging Infrastructure	NTTDATA	M. Iusi
WP7	Combined service delivery from heterogeneous charging stations (Nordic Europe demo)	DTU	K. Sevdari
WP8	AI-based planning tool and flexibility services from HDVs, fleets, and public transportation (Southern Europe Demo)	A2A	A. Cirocco
WP9	AI Tools for the Seamless Integration and Coordination of Public and Private Charging Infrastructures (Western Europe Demo)	IST ID	L. Pereira

WP No.	Work package title	Resp.	Name
WP10	Dissemination	AVERE	D. Kutka
WP11	Project management	POLIMI	S. Grillo

Exploitation Board: chaired by the Impact Director, it is composed by representatives of all industrial partners. Its main function is to monitor the business trends to adapt AHEAD business strategy to real market needs. The Exploitation Board is also involved in the management of intellectual property.

2.3. Decision Making Processes and Conflict Resolutions

As a rule, decision making processes are aimed at minimizing conflicts. In case of conflicts, the partners will try to solve them amicably, under the rules set out in the Consortium Agreement.

Conflicts may arise at different project levels and consequently specific solutions will be identified to solve the conflicts promptly. At WP level, the WP leader will settle the dispute internally possibly with the intervention of the Executive Board, if need be. Should the decision not be approved by all partners, the discussion can be taken at Executive Board level and the Project Coordinator will also be involved. All changes needed for settling a dispute must be minor to ensure that integrity and coherence among WPs are maintained.

3. QUALITY ASSURANCE PROCEDURES

3.1. Quality Control Procedures for Communication Tools

A complex international project such as AHEAD requires precise and transparent communication between all partners for its smooth implementation. Day-to-day communication and achievements distribution will be carried out mainly by e-mail and file sharing via the project file-sharing cloud storage.

3.1.1. Public Website

Public information about AHEAD, aiming at external communication and dissemination purposes and targeted to the greater public, is available at the following URL: https://www.horizon-ahead.eu/

The project website will be kept updated and improved along and beyond the project lifetime, adding new content and functionality, under the responsibility of WP10.

3.1.2. File-sharing cloud storage

The file-sharing cloud storage for internal use is hosted on SharePoint. It contains all the technical information about the project, designed to support online cooperation. Partners must use the file-sharing cloud storage to share information, upload intermediate versions of deliverables, and all the intermediate reports/roadmaps.

The file-sharing cloud storage also contains a structured repository of officially released documents, together with all contractual information, templates and so on.

3.1.3. Content of the project file-sharing cloud storage

Table 4 shows the information that can be accessed and downloaded in the project's file-sharing cloud storage.

Table 4 – Information in the project's file-sharing cloud storage.

General	This folder contains all administrative documents and guidelines, crucial to keep under control the project implementation, including project meeting information.
Work Package Folders	Breakdown of AHEAD WPs. Each folder contains working documents and official documents produced under each WP. Moreover, mailing list, partner specific information, logos, images, flyers and presentations are stored here.

A snapshot of the AHEAD file-sharing cloud storage is shown in Figure 2.

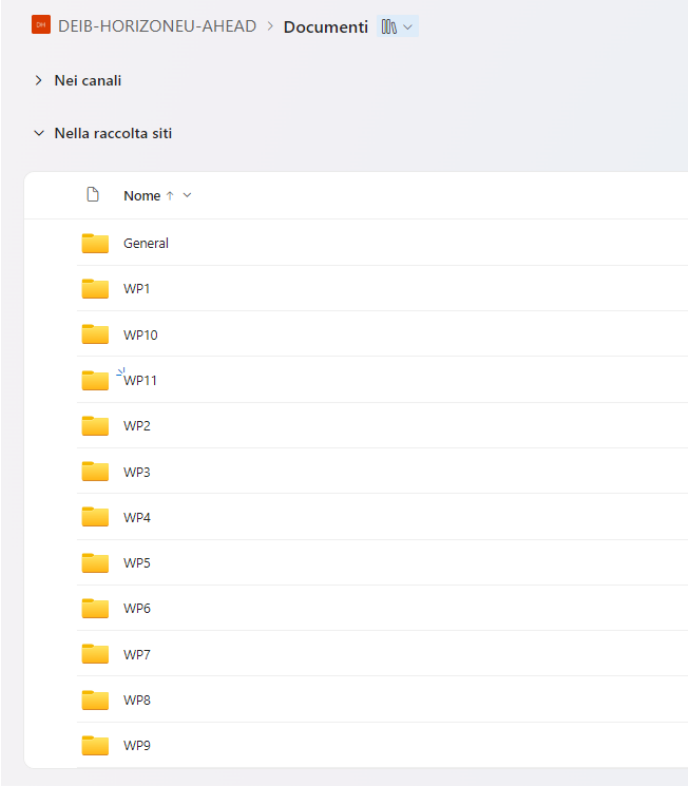


Figure 2 – Home page of the AHEAD file-sharing cloud storage.

3.1.4. E-mail

E-mail will be one of the major means used in AHEAD project to exchange information, while the main exchange of documents in electronic form over the Internet will be accomplished using the file-sharing cloud storage.

AHEAD specific mailing lists have been setup to advise the partners of the availability of new information, circulate agendas of meetings and events related to the project, and notify the presence of new documents on the file-sharing cloud storage of the project. Usage of mailing lists is strongly recommended. The usage of person-to-person private emailing should be limited to privilege visibility within the project to all people working in the project.

The main mailing lists set up for the AHEAD project are reported in Table 5.

Table 5 – Mailing lists of the project.

Description:	e-mail address
Work Package Leaders of the AHEAD Project	wpleaders-ahead@polimi.it
All contacts involved in the AHEAD Project	all-ahead@polimi.it
Primary project contacts of all the partners of the AHEAD Project	primarycontacts-ahead@polimi.it
Administrative people of all the partners of the AHEAD Project	administrativecontacts-ahead@polimi.it
All partners of the AHEAD project	partners-ahead@polimi.it

All associated partners of the AHEAD project	associatedpartners-ahead@polimi.it

It is recommended not to send e-mails with attached documents to the mailing lists in Table 5. It is more effective to post them on the file-sharing cloud storage and allow each participant to download them including a document link in the email.

3.1.5. Microsoft Teams

It is recommended that each participant use MS Teams service for voice communications.

3.1.6. Conference Calls

Conference calls have proven effective for organising short meetings and quickly became a major tool for the management of projects, avoiding the jeopardizing effect of long email exchanges and allowing for the reduction of travel expenses.

The following general principles should be respected for calls where critical/strategic decision for the project implementation are to be taken:

- in the same way for a physical meeting, the date, time, expected duration, agenda and name of participants should be communicated in advance, together with all required documents,
- the meeting agenda will be distributed prior to the meeting with a clear indication of the topics to be covered during the conference call and the partners responsible for them,
- as with all other meetings, minutes must be produced by the meeting chairperson, and circulated to the other participants.

A minute of each conference call has to be recorded and stored in the SharePoint folder.

3.2. Quality Control Procedures for Meetings

Whether virtual or physical, a meeting is convened by the chairperson, who also determines the location in accordance with the foreseen attendees. For major meetings, the Coordinator will provide support and keep track of the action items. If the Coordinator is not present, it is the responsibility of the chairperson to prepare and distribute the action items.

Regular meetings should be convened with at least fourteen (14) calendar days (45 days for the project General Assembly meeting) prior notice and be accompanied by an agenda proposed by the meeting convenor. The agenda will be considered accepted unless one of

the partners notifies the Project Coordinator and the other partners in writing of additional points to add, at the latest two working days before the date of the meeting (14 days for the General Assembly meetings). Partners may also participate to physical meetings by teleconference, if the facilities are available, although this should be avoided as much as possible for General Assembly meetings.

Please note that it is mandatory to produce and share action items or minutes of every meeting, this can help support any audit checks the Commission may carry out concerning claimed travel expenses. The format for the meeting minutes is shared in the SharePoint folder.

3.2.1. Project General Assembly and Executive Board Meetings

The project **kick-off meeting** was the first plenary meeting and marked the effective launch of the project. It reinforced the sense of common goal of all partners and identified the responsibility of each one. Open technical issues were identified and debated; co-operation between work packages was initiated. Specific thematic tables were organized to start identifying potential risks and actions to be undertaken. The project management team exposed what is expected of each in terms of results, performance and reporting. The detailed course for the whole duration of the project was confirmed and fine-tuned.

Other **project plenary meetings** will take place approximately every 6 months (or earlier if required). They will involve all the participants. They will be complemented and prepared by Executive Board meetings to be held in the same time frame. Additional Executive Board meetings will be convened as required. Specific intra or cross WP meetings will be organised by the work package leaders as needed for the progress of their tasks.

In addition to the planned plenary meetings, Virtual Meetings may be held as necessary. All General Assembly meetings are convened by the chairperson, who also determines the location in consultation with the Executive Board.

Any decision requiring a vote at a General Assembly and Executive Board meeting must be identified as such on the pre-meeting agenda, unless there is a unanimous agreement to vote on a decision at that meeting.

Each Consortium Body shall not deliberate and decide validly unless a majority of two-thirds (2/3) of its voting members are present or represented, including those participating by teleconference. Where decisions are to be taken unanimously, all members must be present or represented at the meeting.

Full details can be found in the Consortium Agreement.

3.2.2. WP meeting

General

Technical meetings or conference calls can be held as necessary. A WP Chairperson can convene meetings of the WP whenever required, giving members at least seven (7) calendar days' notice and providing an agenda.

Decisions

For major decisions, the WP Chairperson should consult with the Executive Board for final approval.

3.3. Quality Control Procedures for Project Reviews

3.3.1. General

The European Commission controls the progress of the project by essentially three means:

- Periodic Reports;
- Deliverables;
- Project Reviews.

Project Reviews are normally one or two-day meetings held in a specific period of time defined by the European Commission where the participants illustrate the status to the Project Officer and a number of independent Project Reviewers nominated by the Commission.

These meetings are the most important events in the project's life, for the following reasons:

- The Project Officer and the Project Reviewers usually do not have much time to dedicate to the project. For them, Project Reviews are the main events to evaluate the project.
- Project Reviews are the only occasion to present to the Project Officer and Reviewers results of the project and to discuss its progress.
- Project Reviews are real opportunities to demonstrate the cohesion of the consortium and the commitment of the partners to achieve project objectives.

As a consequence, Project Reviews should be paid special attention by all the partners.

3.3.2. Preparation

The following procedure is recommended for the preparation of Project Reviews:

- Approximately one to two months before the Review, the Project Coordinator in consultation with the General Assembly will define the main objectives to be accomplished during the Review, and consequently assign roles to the partners, prepare a detailed agenda and ask partners to prepare their contributions.
- Once agreed, the agenda will be sent to the Project Officer and agreed with her.
- Approximately two weeks before the Review, all project deliverables for the time period concerned must be made available to the Reviewers. This will be done by granting them access to the AHEAD Administrative file-sharing cloud storage site.
- Also, two weeks before the Review, all presentation material must be ready internally, so that all partners can check its consistency, the quality of the presentations, and choose the best approach. The Project Coordinator will ensure the necessary quality checks are carried out. The day before the Review, a final rehearsal will be held for fine-tuning. Rules among the attending partners will be agreed (e.g. order of presentations, time management, etc.).
- The day before the Review, a final rehearsal will be held for fine-tuning. Rules among the attending partners will be agreed (e.g. order of presentations, time management, etc.).

3.3.3. Logistics

In case that the review meeting is not held on EC premises, a detailed description of travel details (not just the address – but details of train, metro, taxi, schematic map of the meeting location, telephone number of someone in contact with the meeting coordinator) must be made available to the reviewers at least two weeks before the Review.

The location should be easy to access, all efforts must be made to avoid having reviews in places that imply long and complicated travel arrangements. Too much time is lost, and the Project Officer and the Project Reviewers will not appreciate it.

Ensure that the meeting has internet access, printing services and photocopy equipment available at the Review location.

The Project Coordinator must liaise with the Project Officer for logistics information, checking that all the necessary information has been supplied.

3.3.4. Agenda of Review

The objective of a Project Review is to:

- demonstrate project progress to the Project Officer and the Project Reviewers;
- demonstrate achievements through presentations, demonstrations, etc.;
- explain modifications to initial project objectives or planning to the Project Officer and the Project Reviewers.

The agenda should be organised accordingly, and have the following contents:

- Welcome,
- Introduction (by Project Coordinator):
    - Presentation of the partners,
    - Presentation of project objectives,
    - Presentation of project organisation.
- Management summary:
    - Activities performed since previous Review,
    - Dissemination and exploitation efforts
- Technical summary:
    - Major results achieved since last Review,
    - Modifications to the Workplan.
- Answer to questions, comments made by the Project Officer or Project Reviewers since last Review (when appropriate);
- Technical presentation of major results (presentation documents, demos, visit of laboratories, etc.);
- Conclusions and plans for the next period.

4. DOCUMENTS TEMPLATE

4.1. Document features

Most documents in a collaborative project are written with contributions from several partners. In order to minimise the effort for handling such documents, it is important for all participants to follow agreed standards for formats and tools to be used in document editing and exchange.

This chapter specifically deals with the procedures for the release of official documents.

4.1.1. Standards

Table 6 – Standard software and tool used in the project.

Tool:	Name:	Publisher:
Word Processing	MS Word	Microsoft
Spreadsheet	MS Excel	Microsoft
Overhead slides	MS Power Point	Microsoft
Web publication	WordPress	WordPress.com
File compression	MS Native compression tool	Microsoft
Documents for the file-sharing cloud storage	MS Word / Acrobat PDF	
File-sharing cloud storage folders	SharePoint “DEIB-HORIZONEU-AHEAD”	

4.1.2. Document versioning

When a document is issued for the first time, it should be defined as a draft (version 0.x). Usually, the approval process requires that a document is circulated for comments among the interested partners. Upon receiving the comments by the specified deadline, the author will make the proper modifications, therefore changing the version sub-number, without affecting the main number.

Normally, the first official release of a document will be called V1.0 and this number will be assigned by the Project Coordinator when he has approved the document. The main version number (the first digits before the “.”) is increased by one unit only if a different version of the document is delivered to the Commission, or if major modifications have significantly altered the contents of the document. The editor must not forget to update the version number in all its occurrences in the document (File Properties and cover pages). Clearly, every care should be taken to avoid distributing different documents with the same version number.

Every time that modifications are made to a document, the new version must contain a clear indication of what has been added, modified or removed.

4.2. Editing guidelines

4.2.1. Logo

The logo of the project is shown on the first page and footer of this document and is available for downloading from the file-sharing cloud storage of the project, under “Visual Identity” folder, and is also included in all document templates.

4.2.2. Page formats

The following rules should be followed in the production of all official project documents (Deliverables, Reports, etc.), and have also been used in the present document:

Table 7 – Standard parameters for deliverable template.

Document size and orientation	A4 vertical orientation
Margins	Top: 2.54 cm; Bottom: 2.75 cm; Left: 2.54 cm; Right: 2.54 cm.
Normal font (for text)	11p Arial

4.2.3. Templates

Basic models for the production of official project documentation are available on the file-sharing cloud storage. They are Microsoft Word Templates:

AHEAD_DX.X_Template.docx. All **AHEAD** deliverables must use this standard template. This will ensure that the look of all deliverables follows the **AHEAD** model. To create a new document, use right mouse and select “new”, then “save as” “name.doc(x)”

AHEAD_Minutes_GoverningBody_YYMMDD.doc(x) for minutes of meetings.

4.2.4. Styles

A few basic styles have been defined in the editing of the present document. The different versions of Word in the different languages should automatically translate the basic styles (such as Normal, Heading 1 ..., etc.). Extra styles include styles for use in figure captions, table text and table titles, bullet lists and a few others. Specific styles are used in the cover sheet. In order to keep consistency across documents, the number of newly defined styles should be minimised.

Every time that part of a document is pasted into a second one, all the styles defined in the first document are automatically transferred into the second one. To avoid this (which results in an exponential growth of styles) this kind of operation should be carried out with care.

4.2.5. PowerPoint presentations

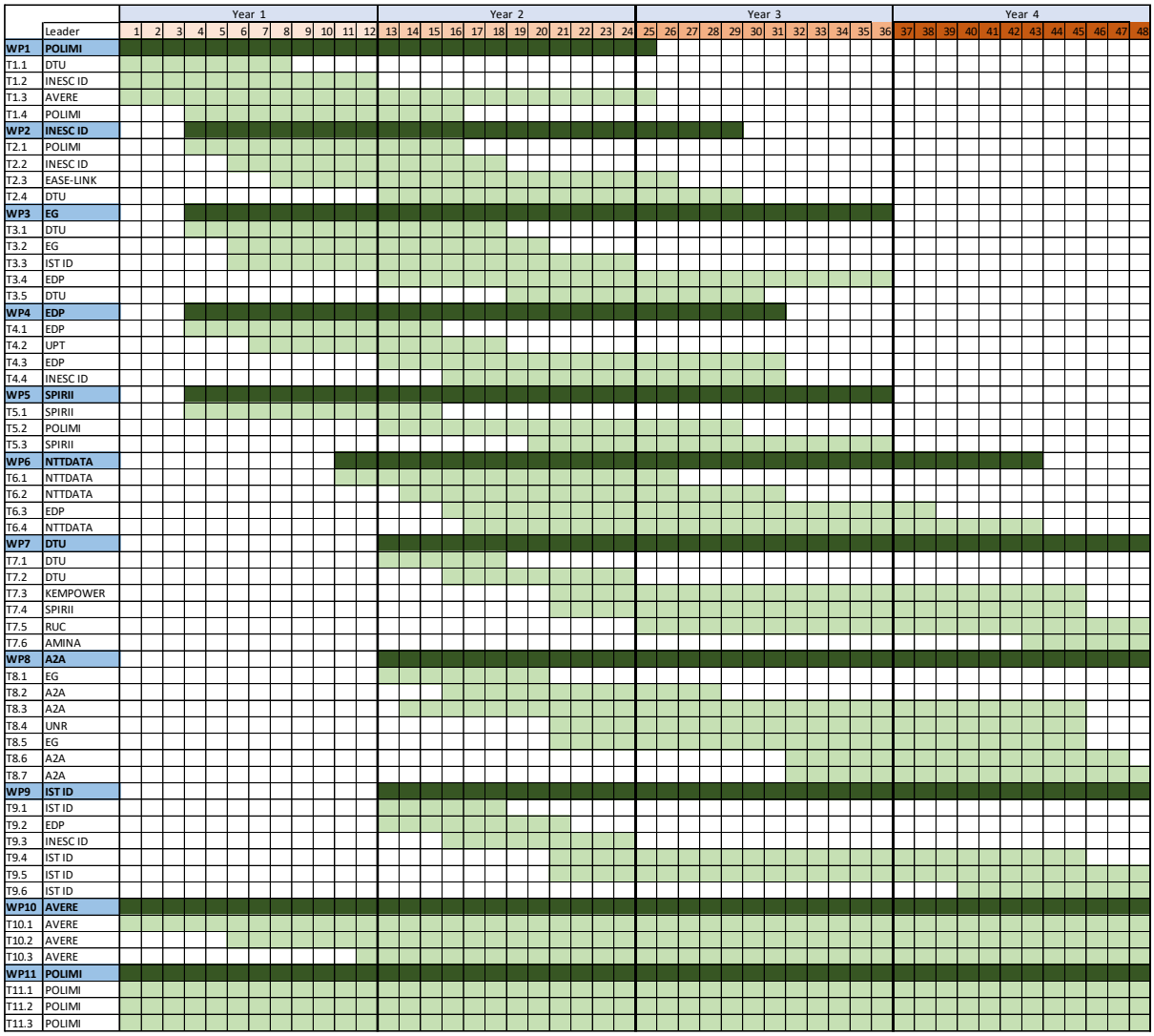
A template for overhead slideshows has been defined in **AHEAD_Template.ppt(x)**

As a general rule, presentations should not be long, each page should contain only a few items summarizing one idea (avoiding verbose descriptions that can be made by the speaker). The fonts used in both text and graphics should be large enough for the audience to read, cryptic abbreviations should be avoided, the use of colour can improve readability.

5. PROJECT MANAGEMENT MANUAL

5.1. Project monitoring

The Gantt chart of AHEAD summarizes the project activities and their expected start and end dates. The project progress will be monitored by the Project Coordinator through regular WPs, Tasks and Deliverable reporting prior to every GA/EB meeting on a fixed basis.



5.2. Project reporting

5.2.1. Deliverables

Overview

Each deliverable must be submitted to the EC, before obtaining approval by the Project Officer. Final acceptance of deliverables can only happen in a review. If deliverables are not accepted, then payment of financial claims could be delayed. Thus, it is in the interests of all partners that deliverables are produced with high quality standards and in the required format.

The AHEAD 51 Deliverables are strictly tied to the breakdown into Work Packages that defines the structure of the project. Deliverables are generally technical documents and have an essential importance for the Commission's appraisal of how the project is evolving, since they are written reports in which results produced during the project are collected and analysed.

Deliverable production

Each deliverable tackles a specific subject and has a "Deliverable Manager" who will coordinate the production of the document, interacting as necessary with the other involved partners. Unless otherwise agreed upon among the involved partners, the Deliverable Manager is normally a person working for the consortium partner that is responsible for the deliverable according to the DoA.

The Deliverable Manager will define the document structure and the contributions expected from each partner in a preliminary document named DDP (Deliverable Development Plan) and will propose the calendar for the meetings he/she may consider necessary for the development of the deliverable. The Deliverable Manager, in accordance with the Project Coordinator, will also appoint 1-2 reviewers, chosen among project partners, who will be responsible for ensuring the high-quality level of the deliverable. The contents of the DDP must be finalised at least 45 days before the contractual date of the deliverable.

Then the deliverable will be produced. The Deliverable Manager will merge all contributions into a single document following as much as possible the structure defined in the DDP. This first draft will then be circulated for comments. Each partner will check the consistency with the plans and give their feedback and approval.

This iterative procedure will be repeated as necessary, until all involved partners give approval. The Deliverable Manager will then prepare a final draft, which will be sent to the reviewers at least 15 days before the contractual date. The reviewers will normally not enter into the technical merits of the deliverable but will essentially ensure that it is of sufficient quality to be sent to the Commission. They will also format it correctly and make sure all the naming conventions have been followed. The Coordinator will finally send the requested number of copies to the Commission.

The diagram in Figure 3 the procedure to be followed for the preparation of deliverables.

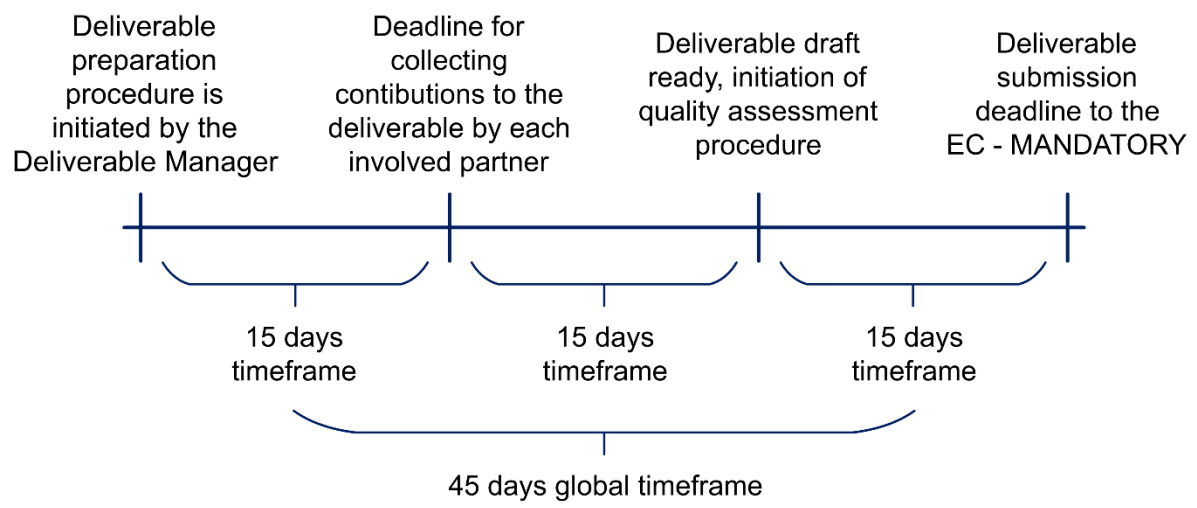


Figure 3 – The deliverable preparation process.

Deliverable Development Plan (DDP)

The DDP is issued by the Deliverable Manager in order to clarify the main objectives of the Deliverable and to assign the different contributors with specific tasks in the report. It should be agreed upon with the Project Coordinator at least 45 days before the due contractual date of the deliverable. The DDP must sketch the structure of the future Deliverable, and therefore contain a clear indication of:

- person responsible for the deliverable (Deliverable Manager);
- table of contents;
- persons in charge of each chapter/section;
- a timetable for the deliverable development, setting deadlines at least for:
    1. submission of contributions;
    2. production of the first draft (version 0.1);
    3. internal review (partners' comments);
    4. production of further versions of the draft (versions 0.x);
    5. delivery to the Scientific Director.

All reports (scientific and financial) have to be submitted via the SyGMa portal.

The Project Coordinator keeps track of the deliverable advancements by filling in a table which summarizes the most important information about the deliverable and specifically its level of

development. The screenshot below shows how this table is summarized and gives evidence of the information needed (by the Deliverable Manager):

5.2.2. Periodic reports

The AHEAD project is organized in 3 reporting periods:

Table 8 – Reporting periods.

Reporting Period 1	From M1 (Jun. 2024) to M18 (Nov. 2025)
Reporting Period 2	From M19 (Dec. 2025) to M34 (Mar. 2027)
Reporting Period 3	From M35 (Apr. 2027) to M48 (May 2028)

Contractual obligations imply that within 60 days of the end of each reporting period (including the last reporting period) a **periodic report** should be submitted to the Commission, organised by sections as follows:

An **overview**, including a publishable summary of the progress of work towards the objectives of the project, including achievements and attainment of any milestones and deliverables identified in the DoA. This technical report should include the differences between work expected to be carried out in accordance with Annex I and that actually carried out.

An explanation of the **use of the resources**.

A **Financial Statement** from each beneficiary and each linked third party, if applicable, together with a summary financial report consolidating the claimed European contribution of all the beneficiaries (and third parties) in an aggregate form.

Financial statements should be accompanied by **certificates**, when this is appropriate (see Article 24 of the Grant Agreement).

Technical Report

At the end of every reporting period, POLIMI will prepare the project Periodic Report. It will contain the following summary information:

- Major achievements during the reporting period.
- Major problems identified.
- Deviations from the project plan.
- Resources used during the period.

POLIMI will be in charge of preparing this report with the support of all partners for additional contributions. This report will summarise the major achievements to date, any critical issues, the expected organisation for the remaining months of the project. It will include also a critical self- evaluation.

Financial Report

At the end of every reporting period, POLIMI will prepare a consolidated overview of the budgetary situation of the project, based on the cost statements received from the partners. This report will be submitted to the Commission. The payments that have been made will also be reported. The budgetary situation will be compared with the original annual budget plan.

5.2.3. Internal management report

To support the efficiency and quality of this Periodic reporting process, an internal reporting procedure is set up in AHEAD on a fixed calendar basis.

Every six months, the partners are requested to send to POLIMI a “continuous update form” related to the previous period, according to the format shared in the SharePoint folder. Prerequisites for easing the reporting procedure are:

- all participants to keep timesheet records of who is involved in the project. These can follow the normal practice of each partner, but must track, month for month, who worked on what part of the project. The information stored should be at WP level for every person concerned.
- For travel costs, again the normal practices of the organisation concerned can be used. Thus, if itemised travel costs are normally kept, then the total cost of the travel for each person involved should be reported in the management reports. If, on the other hand, a default daily reimbursement is used (irrespective of the real costs involved), then these default values can be reported again for every person involved. Please note that all travel costs must be specified per partner for every person who travelled. Please do not group travel costs together — they must be specific costs per person. Also, receipts must be kept, as the EC may want to see them.

5.3. Financial management

5.3.1. Coordinator’s responsibility

Overall financial management of the project is under the responsibility of the Coordinator, who shall distribute the financial contribution of the Funding Authority according to the Consortium

Agreement and the approval of reports by the Funding Authority. Parties shall be funded only for their tasks carried out in accordance with the Consortium Agreement.

5.3.2. Management of funding contribution from the EU Commission

Pre-financing payments are received by the Coordinator and distributed to the partners considering their share of the project budget.

The interim payment and the balance payment will be received by the project coordinator according to the rules set in the Grant Agreement with the Commission upon submission of the interim and final reports.

5.3.3. Audit Certificates

In line with the rules set by the European Commission, an audit certificate is required when the actual costs (personnel costs, other direct costs and subcontracting) are above 430.000 euros. The audit certificate will be requested once only during the project lifetime at the end of the action. To avoid timing issues, partners above this threshold are strongly advised to get in contact with their auditor in advance and before the end of the last reporting period.

6. RISK MANAGEMENT

6.1. Risk classification

As defined in the Description of the Action, the Consortium has conducted analysis of the risks that may compromise the achievement of the project's objectives. Corrective actions have been defined on the basis of the Work Plan, with the aim of mitigating or eliminating the most probable risks, and risks with the largest negative potential impact on the project's success. Risks that could not be completely eliminated have been studied in detail in order to prepare a reasonable backup plan in case they occur (see Table 9).

Table 9 – Critical risks for implementation

Description of risk (indicate level of (i) likelihood, and (ii) severity: Low/Medium/High)	Work package(s) involved	Proposed risk-mitigation measures
Researchers and developers involved in the project leave the team. (*Likelihood/ Severity*): High/High	All	Teams are very versatile, and therefore, existing collaborators can be quickly assigned to the project. The workforce is highly qualified and can replace leaving researchers.
Time spent on economic and technical coordination between partners. (*Likelihood/ Severity*): Medium/Moderate	All	The POLIMI experience in coordination allows identifying the need and act to overcome potential delays in collaborative work. A measure to mitigate delays and noise in communication between partners is to schedule regular meetings with each partner. These meetings will be useful for discussing and detailing inputs, outputs, and the interaction between different solutions.
Lack of data for models' simulation. (*Likelihood/ Severity*): Medium/High	WP3, WP4, WP5, WP6	Synthetic or already available data can be used to test and assess the performance and accuracy of models.
Difficulty of finding and using appropriate free solvers in complex optimization problems. (*Likelihood/ Severity*): Medium/High	WP3, WP4, WP5	Free solvers are usually very restricted in terms of solving large and complex problems. Thus, commercial solvers can be used to solve complex problems, such as mixed-integer nonlinear problems, ensuring high levels of accuracy.
New regulation related to electric mobility or grid planning can impact AHEAD approaches mainly the ones related with flexibility models. (*Likelihood/ Severity*): Medium/Moderate	WP3, WP4, WP5	Partners are aware of the most innovative ideas and trends in e-mobility and distribution system planning. However, country-based market regulation may be a challenge for these new approaches. Thus, the regulatory framework analysis developed in WP1 should take into account different regulations established in each country.
Issues in the integration of the planning algorithms with tools and platforms. (*Likelihood/ Severity*): Medium/High	WP6	POLIMI, DTU, IST ID, and NTTDATA have strong experience in the development and integration of algorithms in platforms allowing them to overcome potential issues in the communication between partners to integrate the algorithms. The communication and the continuous time spent from the early stages of the project to the standardisation of inputs and outputs to integrate all the tools in the platform is required.
Difficulties to assure interoperability between charging stations. (*Likelihood/ Severity*): Medium/High	WP7, WP8, WP9	Some of the charging stations can use proprietary protocols. In that case, gateways for protocol conversion will be used.

Description of risk (indicate level of (i) likelihood, and (ii) severity: Low/Medium/High)	Work package(s) involved	Proposed risk-mitigation measures
Fast charger not being sufficiently utilised (*Likelihood/ Severity*): High/Medium	WP7	Promotion on different platforms, i.e., Spirii app, Plugshare, social media. In addition, increased awareness and project explanations on site (such as a free of charge period).
Delays in the provisioning of key components for fast chargers and overall system integration. (*Likelihood/ Severity*): Low/Medium	WP7, WP8	Temporary reuse of old and movable chargers from KEMPOWER (T-series).
Delays in the installation of electrical network due to the need of network renewal (*Likelihood/ Severity*): Low/Medium)	WP8	Temporary use of A2A V1G charging points to start testing
Security constraints in the DSO/CPO communication network do not allow for cybersecurity tests to be performed. (*Likelihood/ Severity*): High/Medium	WP8	Cybersecurity test requirements will be analysed before the charger is physically connected to the DSO network. Should the DSO security restrictions not allow for cybersecurity tests on its network, a temporary and separate communication network will be set up to perform the tests.
Challenges in identifying a residential parking lot that offers the right conditions to test V2G. (*Likelihood/ Severity*): Medium/Low	WP9	Use one of the many public parking lots that are operated by CMF, all of which already offer EVSEs.
Challenges in shipping the necessary equipment to Madeira Island. (*Likelihood/ Severity*): Low/Medium	WP9	The EVSEs to install are already identified and will be shipped early in the project. The demo also considers EVSEs that are already installed, meaning that it can start even if slight delays in delivery are observed.
Poor engagement of consumers in the demonstrators. (*Likelihood/ Severity*): Medium/High	WP9	Dedicated tasks studying user engagement will be proposed in T9.1, which will include open information sessions. In this task, strategies to reduce these risks will also be proposed. If necessary, employers of the partner companies in the project will be invited to participate in the demonstrations.
Challenges in retrofitting the EV (*Likelihood/ Severity*): Medium/Low	WP9	Not all EV cars in EDP's fleet are suitable for wireless charging modification. If the right car is not available, it's considered the possibility of leasing a compatible vehicle.

The risk management of the project is based on the coexistence of two elements classifying the risks: the likelihood of the risks and the severity of the impact of the risks on project's results. Likelihood is classified according to the chance of the risk to come true, and the severity is calculated on the how much it affects project's results.

Therefore, likelihood is classified as follows:

- Low: Very unlikely/low probability to occur
- Medium: May occur
- High: Very likely to occur / expected to occur

On the other hand, severity classification follows these criteria:

- Low: No effect or very limited effect on the project, without changing its achievements.
- Medium: Moderate impact but important project outcomes and main goals are met
- High: Severe consequences on project achievements and, in the worst case, project fail.

6.2. Risk process management

For technical problems related to a specific WP, the procedure to be adopted is to highlight the problem to the WP Leader. Depending on the seriousness of the situation, the WP leader may also decide to reach out to the appropriate Director in the EB and—should the situation be particularly critical—also to the rest of the EB. The EB could, if need be, raise the matter at the GA meeting.

The GA has the ultimate authority to solve the problem.

6.3. Specific management risks

6.3.1. Problems concerning partners' performance

In the unlikely event that partners do not perform technical tasks satisfactorily, the issue will most likely first be raised by the WP Leader involved, and reported to the EB who may raise the issue with the GA.

The first actions to be taken will be direct discussions with the partner concerned to correct the inadequacies. If these do not lead to a satisfactory conclusion, the GA will meet to decide on action. Possible sanctions are:

- sending a formal warning to the partner, addressing the possible negative consequences of the inadequacies;
- allocation of part of the work to be performed from the partner concerned to another partner in the same WP, with a subsequent transfer of budget;
- identifying an alternative partner/subject to support the activities, to be funded with the budget assigned to the partner that is not performing properly.

Similar actions could also result if the reporting provided by the partner is considered unsatisfactory. A short time to correct the reporting will be allowed, before more severe sanctions are considered by the GA.

6.3.2. Problems concerning the financial stability of a partner

The consortium has joint technical and financial liability concerning the project. If serious concerns regarding the financial soundness of a partner exist, or a partner is increasingly going into debt, or if the financial situation of the partner changes in a substantially negative way, there is an obligation on the partner to report this to the Project Coordinator.

The Project Coordinator will liaise with the EB to prepare an assessment of the risk to the project, which will then be discussed with the full GA. First, a complete assessment of the work satisfactorily completed by the partner will be carried out and, based on the progress reports to date and the advance payments received by the partner, a calculation will be made of the credit or debit of the partner to the EC. Then a direct discussion with the partner concerned will determine the capacity of the partner to carry out the contractual work in the next period.

This will allow the GA to evaluate the risk to the project, both financial and technical. Concerning the financial risk, an evaluation will be made of the risk of providing the next advance payment to the partner. In any case, at this stage an audit certificate for the work done to the date will most likely be requested of the partner.

6.3.3. Project organization and activity changes

Any modifications that may be required in the work plan must be promptly reported to the Project Management. Requests for modification could come from a particular WP: in this case, the WP Leader should report the situation to the Project Coordinator, who will discuss the issue with the GA.

Other instances of change could occur based on general project assessments, carried out as part of the normal management. If the work plan needs to be changed, the Project Coordinator will need to discuss this with the EC. If a Review is imminent, it may be more practical to present the revised situation to the Reviewers, who can then recommend the change as an outcome of the Review.

7. CONCLUSION

This document describes the project management plan for the AHEAD project. It outlines the organizational structure, quality assurance procedures, risk management strategies, and communication protocols essential for the execution of the project. This document serves as a guide for all partners, providing clear directives on project coordination, document handling, and reporting requirements.