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Project Handbook
UC3M

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Revision **v1**

Work package	WP6
Task	T6.1
Due date	31-01-2023
Submission date	31-01-2023
Deliverable lead	UC3M
Version	v1
Authors	Antonio de la Oliva, Maria Molina
Reviewers	Manuel Lorenzo, Zoltan Vincze

Abstract

This handbook details management bodies, documents, and procedures which are described in the Project, Grant Agreement and Consortium Agreement. It also includes the Quality Plan to be followed by the project to ensure timely delivery of all results to the European Commission.

Keywords

Handbook, Management, Proceedings

Document revision history

Version	Date	Description of change	Contributor(s)
v0.1	17-01-2023	1st version of deliverable template	UC3M
V0.2	20-01-2023	Deliverable ready for review	UC3M
V1.0	26-01-2023	Ready to submit version	UC3M, NOK, ERC
V2.0	05-06-2023	Modified document after the first periodic review	UC3M

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Project co-funded by the European Commission in the H2020 Programme

Nature of the deliverable		R	
Dissemination level			
PU	Public, fully open. e.g., website		✓
CL	Classified information as referred to in Commission Decision 2001/844/EC		
SEN	Confidential to PREDICT-6G project and Commission Services		

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> R: document, report (excluding periodic and final reports).
> DEM: demonstrator, pilot, prototype, plan designs.
> DEC: websites, patent filings, press and media actions, videos, etc.
> OTHER: software, technical diagrams, etc.

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Abbreviations

AI	Artificial Intelligence
CA	Consortium Agreement
DoA	Description of Action
EAB	External Advisory Board
GA	General Assembly
IM	Innovation Manager
OA	Open Access
OS	Open Science
PC	Project Coordinator
PMT	Project Management Team
QMR	Quarterly Management Report
SAC	Standardization Advisory Committee
TL	Task Leader
TM	Technical Manager
TMD	Technical Manager Deputy
WP	Work Package
WPL	Work Package Leader

1 Executive summary

This deliverable corresponds to the PREDICT-6G Project Handbook, where all management and quality assurance procedures for the project are recorded. Its main objective is to maintain a record of the different procedures so that any interested partner in the project can find specific procedures followed on its implementation.

2 Introduction

The aim of this document is to set-up and explicitly describe the different management procedures to be applied during the project lifetime. All those aspects were addressed also in their legal terms in the Consortium Agreement (CA) signed by all the Predict-6G partners. Summary guidelines are reported in this document for a quicker operative consultation by project participants. This document starts by describing the different Management Bodies and the organization of the Management Team in Section 3. The General Assembly (GA) includes a representative of each partner on the consortium and takes all the rest of decisions.

Once the key management and organizational bodies are presented, this deliverable tackles the different procedures required for the organization of meetings and audio-conferences in Section 4, defining the mechanisms to be followed while organizing a project meeting.

During the physical meetings and specific audio-conferences, there may be some situations when a voting is required to decide on a certain matter. This document explains in Section 5 the different voting rules and mechanisms for the decision process.

Following with the different rules that apply to the work of partners in Predict-6G, Section 6 specifies the obligations on the communication and dissemination of results, including the different rules for the approval of scientific contributions to public dissemination venues.

Section 7 specifies the different management reports due during the lifetime of the project. This section is complemented by different Annexes, which include the templates to be followed for quarterly management reports, technical deliverables, and Power Point presentations, respectively.

Finally, considering the Management of Risks and Contingency Plan sketched in Section 8, Section 9 presents the Quality Plan for the project. The Quality Plan will be enforced by the mechanisms defined in the whole Project Handbook, effectively making this document the set of rules to be followed in order to ensure the quality across the project activities. To always maintain the highest levels of quality in the execution of this project, we will periodically review internally the Quality Plan (therefore this complete document) and update it if needed.

3 Management Bodies and Organization

The Predict-6G management bodies include persons, committees and other entities that are responsible for making management decisions, implementing management actions, and their interrelation.

The management bodies include:

Management Body	Responsible person
Project Coordinator (PC)	Antonio de la Oliva (UC3M)
Technical Manager (TM)	Peter Szilagyi (NOK)
Technical Manager Deputy(TMD)	Manuel Lorenzo (ERC)
Innovation Manager (IM)	Valerio Frascolla (INT)
General Assembly (GA)	One representative per each partner
Work Package Leaders (WPL)	WP1 – Luis Miguel Contreras (TID) WP2 – Marc Molla (ERC) WP3 – Javier Moreno (ATOS) WP4 – Otilia Bularca (SIM) WP5 – Valerio Frascolla (INT) WP6 – Antonio de la Oliva (UC3M)
Project Management Team (PMT)	PC+TM+IM+WPL
Open Science and Output Manager	María Molina (UC3M)
External Advisory Board (EAB)	Pascal Thubert, Principal Engineer – Cisco Carlos Cordero, CTO – Fujitsu Technology Solutions Jean-Yves Le Boudec, Full Professor – EPFL Samer Talat, Researcher – ITRI
Standardization Advisory Committee (SAC)	Partners key players in the standards field.

Table 1. Management bodies and responsible persons

Their detailed role and duties are described in the next subsection.

3.1 Project Coordinator (PC)

The Project Coordinator(PC) is the Legal Entity acting as the intermediary between the Parties and the Funding Authority. The PC shall, in addition to its responsibilities as a Party, perform

the tasks assigned to it as described in the Grant Agreement (GA) and in the Consortium Agreement.

The PC oversees the overall administrative management of the project, being the single point of contact with the European Commission (EC). In particular, the PC is responsible for the execution of the administrative and financial activities of the GA. The PC is also in charge of ensuring effective communication, collaboration, and cooperation within the Consortium by defining document, reporting and control procedures, in collaboration with the Technical Manager (TM). In summary, the PC is the legal, contractual, financial, and administrative manager of the project.

In particular, the PC shall be responsible for:

- monitoring compliance by the Parties with their obligations;
- keeping the address list of Members and other contact persons updated and available;
- collecting, reviewing to verify consistency and submitting reports, other deliverables (including financial statements and related certifications) and specific requested documents to the Funding Authority;
- transmitting documents and information connected with the Action to any other Parties concerned;
- administering the financial contribution of the Funding Authority and fulfilling the financial tasks described in Section 7.3; and,
- providing, upon request, the Parties with official copies or originals of documents which are in the sole possession of the Coordinator when such copies or originals are necessary for the Parties to present claims.

If one or more of the Parties is late in submission of any project deliverable, the PC may nevertheless submit the other Parties' Action deliverables and all other documents required by the Grant Agreement to the Funding Authority in time.

If the PC fails in its coordination tasks, the GA – General Assembly may propose to the Funding Authority to change the Project Coordinator.

The PC shall not be entitled to act or to make legally binding declarations on behalf of any other Party or of the Consortium, unless explicitly stated otherwise in the Grant Agreement or in the Consortium Agreement.

The PC shall not enlarge its role beyond the tasks specified in the Consortium Agreement and in the Grant Agreement.

3.2 Technical Manager (TM)

The TM oversees the overall technical management of the project and is responsible for the correct execution of the technical activities of the project. TM's tasks include the leading of the Project Management Team (PMT), ensuring timely release, technical high quality and accuracy of technical deliverables.
The TM is assisted by the Technical Manager Deputy (TMD).

3.3 Innovation Manager (IM)

The Innovation Manager (IM) has the technical skills to understand very closely, and contribute to, the most advanced research tasks. Indeed, the IM will assist and advise the Project Management Team (PMT) in best responding to emerging market opportunities. In turn, by thoroughly following the evolution of the sector, the new emerging technologies and products, and the changing needs, the IM will help bringing all this inside the project and will assist the project in identifying changes in strategies and re-planning of technical activities to best fit the evolving sector.

3.4 General Assembly (GA) and Partner Representative (PR)

The General Assembly is the ultimate decision-making Consortium Body and shall consist of one Partner Representative appointed by each Party and chaired by the Project Coordinator.

Its purpose is to set and review the project direction, ensure that the project fulfils its commitments and meets the stated objectives, continuously evaluate the project performance and results, and to supervise and coordinate the technical work performed by all consortium partners. Among others, the GA has the following duties:

   i)   tracks the progress and results of the project, assuring they meet the contractual obligations,
   ii)   identifies risks and defining contingency plans,
   iii)   financial monitoring to obtain a timely and complete control of the financial situation of the project and
   iv)   proposes changes to CA and contracts.

The GA will meet periodically at the project scheduled events in face-to-face meetings.

The GA shall be free to act on its own initiative to formulate proposals and take decisions in accordance with the procedures set out herein. In addition, all proposals made by the PMT - Project Management Team shall also be considered and decided upon by the GA.

The following decisions can only be taken by the General Assembly:

- decide upon any proposal made by the PMT for the allocation of the Action's budget in accordance with the GA, and review and propose budget reallocations to the Parties;
- proposals to the Parties for the review and/or amendment of the terms of the GA;
- decide upon material changes to the Action Plan;
- decide upon proposals from the Project Management Team for the plan for use and the Dissemination of Results;
- proposal to the Parties for modifications or withdrawals to CA's Attachment 1A (Background included, as applicable);
- addition to Attachment 3 (List of third parties for simplified transfer according to Section 8.3.2 of the CA);
- proposals to the Parties for the accession of a new Party to the Consortium and approval of the settlement on the conditions of the accession of such a new Party;
- proposals to the Parties for the withdrawal of a Party from the Consortium and the approval of the settlement on the conditions of the withdrawal;
- identification of a substantial breach by a Party of its obligations under the CA or the GA;
- declaration, remedies and termination of a Defaulting Party;
- proposals to the Funding Authority for a change of the PC if made a Defaulting Party;
- proposals to the Funding Authority for suspension or termination of all or part of the Action;
- the appointment - if necessary - of any vacancy to the Project Management Team; and
- Unanimously decide on the introduction of material (including, but not limited to Software) under Controlled License Terms in the Action. Objections must be duly justified.

In the case of abolished tasks as a result of a decision of the GA, the PMT shall advise the GA on ways to rearrange tasks and budgets of the Parties concerned. Such rearrangement shall take into consideration the legitimate commitments taken prior to the decisions, which cannot be cancelled.

3.5 Project Management Team (PMT)

The Project Management Team (PMT) is the supervisory Consortium Body for the implementation and for the daily management of the Action and shall report to and be accountable to the General Assembly.

The PMT is responsible for the daily management of Predict-6G. In detail the PMT has to monitor the overall project progress (objectives, schedule, milestones, etc.) and to find proper solutions in conformance with the decisions of the GA, in case of deviations from project plan. Activities of the PMT will address the following issues:

i)   Coordination, monitoring, and control of the progress of the work in the project,

    ii)   Launch or stop of tasks within defined WP structure,

    iii)   Technical management of the project,

    iv)   Analyses and solutions on technical issues,

    v)   Technological roadmaps, and,

    vi)   Approval of the deliverables.

In addition, and considering the writing in the Grant Agreement, the PMT can only do the following:

- make proposals to the General Assembly for allocation of the Action's budget in accordance with the GA, review and propose budget reallocations to the Parties;
- manage the Action;
- propose to the General Assembly procedures and tools for the marking and handling of information exchanged between Parties in the performance of the Action;
- decide upon measures in the framework of controls and audit procedures
- to ensure the effective day-to-day coordination and monitoring of the progress of the technical work affecting the Action as a whole;
- decide upon the technical roadmaps with regard to the Action;
- propose to the General Assembly the plan for using and Disseminating the Results;
- make proposals to the General Assembly that the General Assembly should serve notice on a Defaulting Party and that the General Assembly decide to assign the Defaulting Party's tasks to one or more specific Legal Entity(ies) (preferably chosen from the remaining Parties);
- support the Coordinator in preparing meetings with the Funding Authority and in preparing related data and deliverables; and
- prepare and implement the content and timing of press releases and other external communications by the Consortium or proposed by the Funding Authority in respect of the procedures of Article 29 of the Grant Agreement.

The PMT is composed of the PC, the TM, the TMD, the IM and the Work Package Leaders. Any additional member of the consortium may be appointed, if needed, to form part of the PMT by the PC. The PMT shall meet on a per-need basis as determined by the PC. The default is monthly phone calls and on request (in accordance with the CA rules). Physical meetings will take place co-located with project periodic meetings.

3.6 Work Package Leaders (WPLs)

Each work package is led by a Work Package Leader (WPL), who is responsible for making the day-to-day technical and management decisions that solely affect their work package. The responsibilities of WPLs include:

    i)   leading and coordinating the task activities involved in the WP through the Task Leaders,

ii)   performing the initial quality check of the WP work and deliverables,

iii)   handling resource/skills balance within the WP, subject to agreement of the GA to changes,

iv)   participating in the PMT,

v)   highlighting to the PMT of potential threats to the technical success of the project; and,

vi)   reporting progress to the GA and raise amendments, issues and red flags to the TM if needed.

The following table presents the different WP leaders and emails:

WP #	WP Leader name (PARTNER)	Email
1	WP1 – Luis Miguel Contreras (TID)	luismiguel.contrerasmurillo@telefonica.com
2	WP2 – Marc Molla (ERC)	marc.molla@ericsson.com
3	WP3 – Javier Moreno (ATOS)	francisco.moreno@atos.net
4	WP4 – Otilia Bularca (SIM)	otilia.Bularca@simavi.ro
5	WP5 – Valerio Frascolla (INT)	valerio.frascolla@intel.com
6	WP6 – Antonio de la Oliva (UC3M)	aoliva@it.uc3m.es

Table 2. WP leaders and emails

3.7 Task Leaders (TLs)

Each Task is led by the Task Leader (TL), who is responsible for the activities performed in his/her task coordinating the technical work, and making the day-to-day technical decisions that solely affect his/her Task. It should be stressed that task leadership is partner-based.

TLs should report (internally) to the WPL every month (at least, although more frequent communications are encouraged) on the progress of their task.

3.8 Open Science (OS) and Output Manager

The Open Science (OS) and Output Manager takes care of checking if the different results produced meet the standards on OS as defined in the DoA.

3.9 External Advisory Board (EAB)

The External Advisory Board (EAB) is a body that provides non-binding technical advice to the management of PREDICT-6G. The EAB is composed of accomplished representatives from industry and academia (from entities outside of the PREDICT-6G consortium) and could bring useful insights and feedback. The informal nature of an advisory board gives greater flexibility in structure and management. The EAB will meet virtually three times during the lifetime of

the project: (*i*) at M6 to present and discuss the use case analysis, initial work on architecture design and the standardization roadmap; (*ii*) at M12 to present the main results achieved during the first reporting period; (*iii*) at M30 to present the results achieved in the project and the main learnings and conclusions. The EAB will provide feedback and advice on technical directions and potential challenges. The EAB may be contacted by the PMT if advice is needed. The EAB is composed of the following members: Pascal Thubert (Principal Engineer – Cisco), Carlos Cordero (CTO – Fujitsu Technology Solutions), Jean-Yves Le Boudec (Full Professor – EPFL), and Samer Talat (Researcher – ITRI).

3.10 Standardization Advisory Committee (SAC)

The SAC will be a dynamic advisory committee formed by current standards leaders of each partner. The project standardization activities include four main tasks: (*i*) formation and operation of a Standardization Advisory Committee (SAC) that will lead the following tasks, (*ii*) the creation and regular update of a Standardization Roadmap as a result of continuous monitoring on SDO activities relevant to PREDICT-6G focus, (*iii*) the dissemination through contributions of the project technologies and findings into relevant SDOs, and (*iv*) promote continuously the project concept and solutions at standardization-related workshops, panels, and summits. Several PREDICT-6G researchers play leadership roles at different SDOs (e.g., WG chairing positions at IETF, ETSI and 3GPP).

4 Management Information and Procedures

The large size of Predict-6G requires specific mechanisms to assure the coordination among the partners and the fulfilment of the objectives. The management will be based on the following recurring events:

- **Plenary meetings**, face to face meetings regularly held with a 4/6-month period, up to a total of 8 meetings throughout the whole 30-month project duration. Plenary meetings are dedicated to sharing and following up the advances in all the project WPs and to transfer knowledge and achievements across WPs. Whenever more extensive per-WP discussion is needed, separate per-WP sessions will be organized.
- **6G-IA integration meetings:** Following the experience gained in the 5G-PPP framework, we have allocated resources to attend the Steering Board, Technology Board and Technical Working Groups (as defined in the 6G-IA). We have planned resources and travel budget for this activity based on current experience.
- **Monthly Project Management Team phone call:** The PC will schedule a regular phone call, to be held in a fixed date. The PMT conference call will be organized and chaired by the PC to review the status of each WP one –by one, the global project status, and to discuss possible issues. Ad-hoc calls to address any relevant issue will be allocated whenever is needed upon request from any member of the PMT.

Efficient communication flows between participants will be guaranteed by the mechanisms described above and by the communication facilities defined below. A further source of internal project monitoring and synchronization are the quarterly management reports (QMR) to be delivered by each project partner to the coordinator 15 days after the end of each three-month period.

4.1 Representation in Meetings

Any Party which is a member of a Consortium Body (hereinafter referred to as "Member"):

- should be represented at any meeting of such Consortium Body;
- may appoint a substitute or a proxy to attend and vote at any meeting;
- and shall participate in a cooperative manner in the meetings.

4.2 Preparation and Organization of Plenary Meetings

Plenary meetings will be held every 4 to 6 months and convene by the PC of the project. Technical meeting venues and dates will be decided on each physical meeting (always having the next two physical meetings agreed), hence no special deadlines or actions are required to convene them. For the GA meetings, due to the need of the presence of a representative of

each partner, we have set up some rules on timing requirements to convene them. These rules are described in the following sections.

4.3 Convening Meetings

	Ordinary meeting	Extraordinary meeting
GA	At least once a year	At any time upon written request of the PMT or 1/3 of the General Assembly Members
PMT	At least quarterly	At any time upon written request of any PMT Member

Table 3. Convening Meetings

4.4 Notice of a meeting

The chairperson of a Consortium Body shall give notice in writing of a meeting to each Member of that Consortium Body as soon as possible and no later than the minimum number of days preceding the meeting as indicated below.

	Ordinary meeting	Extraordinary meeting
GA	45 calendar days	10 calendar days
PMT	No requirement	No requirement

Table 4. Notice of a meeting

4.5 Sending the agenda

The chairperson of a Consortium Body shall prepare and send each Member of that Consortium Body a written (original) agenda no later than the minimum number of days preceding the meeting as indicated below.

	Ordinary meeting	Extraordinary meeting	Face to face meetings
GA	21 calendar days	10 calendar days	45 calendar days
PMT	to accompany the notice	to accompany the notice	to accompany the notice

Table 5. Sending the agenda

4.6 Adding agenda items

Any agenda item requiring a decision by the Members of a Consortium Body must be identified as such on the agenda.

Any Member of a Consortium Body may add an item to the original agenda by written notification to all the other Members of that Consortium Body up to the minimum number of days preceding the meeting as indicated below.

	Ordinary meeting	Extraordinary meeting
GA	14 calendar days	7 calendar days
PMT	5 calendar days	5 calendar days

Table 6. Adding agenda items

Any Member of a Consortium Body may add an item to the original agenda during a meeting provided all Members of a Consortium Body are present or represented and all the Members agree to add an agenda item.

Any decision may also be taken without a meeting if the PC circulates to all Members of the Consortium Body a written document setting out the decision being requested, which is then agreed to in writing by the number of representatives equal to the defined majority (see Section 5 below) of all Members of the Consortium Body. Such document shall include the deadline for responses, but such deadline shall be at least fifteen (15) calendar days after such document is sent.

Meetings of each Consortium Body may also be held remotely by means of communications whereby all members can hear and speak to each other.

5 Decision Process

Decisions will only be binding once the relevant part of the Minutes has been accepted according to Section 6.2.3 of the Consortium Agreement (CA).

5.1 Voting Rules and Quorum

Each Consortium Body shall not deliberate and decide validly unless two-thirds (2/3) of the Members of that Consortium Body are present or represented ("Quorum").

If the quorum is not reached, the chairperson of the Consortium Body shall promptly convene another meeting within 15 calendar days. If in this second meeting the Quorum is not reached, then this second meeting shall be entitled to decide even if less than the Quorum of Members is present or represented.

Each Member of a Consortium Body present or represented in the meeting shall have one vote.

Defaulting Parties may not vote. Defaulting Partner is defined in the CA.

Decisions in the General Assembly shall be taken by a majority of two-thirds (2/3) of the votes cast, except for accession of a new party and any change of any Party's Share, where unanimous vote of all Members is required.

Decisions in the PMT shall be taken by a majority of two-thirds (2/3) of the votes cast.

5.2 Veto Rights

A Party which can show that its own work, time for performance, costs, liabilities, Intellectual Property Rights, Access Rights, Share, Sensitive Information or Legitimate Interests would be adversely affected by a decision of a Consortium Body may exercise a veto with respect to the corresponding decision or relevant part of the decision.

A Party may veto such decision within 15 calendar days after the draft minutes of the meeting have been sent. In case of exercise of veto, the Members of the related Consortium Body shall make good faith efforts to resolve the matter which occasioned the veto in a way which minimizes disruption to the Action.

A Party will not veto decisions relating to it being in substantial breach of its obligations or to its identification as a Defaulting Party. The Defaulting Party may not veto decisions relating to its participation and termination in the Consortium or the consequences of them. A non-Defaulting Party requesting to leave the consortium will not veto decisions relating thereto.

5.3 Minutes of Meetings

The chairperson of a Consortium Body shall produce written minutes of each meeting which shall be the formal record of all decisions taken. The chairperson shall send the draft minutes to all Members within 10 calendar days counting from the date on which the meeting was held.

Each Member of a Consortium Body that has attended the meeting, shall have the right to request that a factual inaccuracy be corrected. The minutes shall be considered as accepted if, within 15 calendar days from sending, no Member has sent an objection in writing to the chairperson with respect to the accuracy of the draft of the minutes. The PC shall provide authenticated duplicates of the minutes to all Parties.

6 Communication and Document Management Facilities

The project has set up the following mailing lists:

- **administration@predict-6g.eu**
- **all@predict-6g.eu**
- **eab@predict-6g.eu**
- **ga@predict-6g.eu**
- **legal@predict-6g.eu**
- **contact@predict-6g.eu**
- **pmt@predict-6g.eu**
- **sac@predict-6g.eu**
- **WP1 to WP6@predict-6g.eu**

The global mailing list will be used for issues affecting several WPs and for other issues requiring global communication. This mailing list was composed by all the members of the consortium. We advocate the use of separate mailing lists per WP. Although the use of a single list for all WPs improves the interaction between the different researchers working on each WP, we think that due to its dimension, the project needs an approach limiting the number of emails received by each researcher. Additionally, there are list devoted to legal, PMT, GA, SAC, EAB, contact from external parties and communications.

All technical mailing lists involve the TM and will be open to any other additional employee the project partners will wish to include.

All the information related to the project, including all draft deliverables, the final deliverables, the shared documentation, the source code, the meeting reports, the updated project timetable, and so on, will be normalized in a common format according to defined templates to maintain homogeneity in the project, and will be stored in a common central facility. To keep control and confidentiality of the storage, the project **will adopt common cloud-based public services**, in the form of a **SharePoint** server, hosted by the PC. Access will be restricted to the project members (eventually with further access control restrictions for documentation strictly restricted to the GA). Centralized maintenance and housekeeping of all the project documentation will be guaranteed by the PC, and by the WP leader for the internal WP documentation. Documents will be organized in sub-folders related to project activities or information, as well as dedicated folders for WPs and task.

The choice of SharePoint will also provide a convenient platform for collaborative software development over the same storage facility. The deliverables will be managed and released under the responsibility of the editor, after a well-defined review procedure.

6.1 Obligations to Disseminate Results

Unless it goes against their legitimate interests, each beneficiary must — as soon as possible — 'disseminate' its results by disclosing them to the public by appropriate means (other than those resulting from protecting or exploiting the results), including in scientific publications (in any medium).

This does not change the obligation to protect results, the confidentiality obligations, the security obligations, or the obligations to protect personal data, all of which still apply.

During the Action and for the period as stated in Section 10.2 of the CA, the Dissemination of Results by one or several Parties including but not restricted to publications of whatever form (excluding patent applications(s) and other registrations of Intellectual Property Rights), shall be governed by the procedure of Article 17 with reference to Annex 5 of the Grant Agreement subject to the following provisions:

Prior written notice of the final version of any planned publication shall be given to the other Parties at least thirty (30) calendar days before the planned publication submission date. Any objection to the planned publication shall be made in writing to all Parties within twenty (20) calendar days after receipt of the written notice. If no objection is made within the time limit stated above, the publication is permitted.

An objection to a planned publication by a Party is justified if any of the following applies:

- the protection of the objecting Party's Results or Background is adversely affected;
- the proposed publication includes Sensitive Information of the objecting Party;
- the objecting Party's Legitimate Interests would be significantly harmed.

All objection(s) shall include, to the extent possible, a precise request for necessary modifications.

If an objection has been raised on one or more of the above-mentioned grounds, the objecting Party and the publishing Party shall discuss how to overcome the justified grounds for the objection on a timely basis (for example by amendment to the planned publication and/or by protecting Sensitive Information before publication) and the objecting Party shall not unreasonably continue the opposition if appropriate measures are taken following the discussion. The publication must be suspended if the objection remains, and the concerned Parties have not found a solution.

In case a Party wishes to include in a Dissemination activity another Party's Results (which are not publicly available), Background and/or Sensitive Information, it needs to first obtain that Party's prior written approval.

The mere absence of an objection according to Section 8.4.1 of the CA is not considered as an approval.

The Parties undertake to co-operate to allow the timely submission, examination, publication and defense of any dissertation or thesis for a degree which includes their Results, Background and/or Sensitive Information, subject to the confidentiality and Dissemination provisions agreed in the CA.

In accordance with Section 8.4.1 of the CA, prior to notifying any planned publication and/or any planned Dissemination activity of Results, Parties shall undertake reasonable efforts to refrain from including in such planned publication and/or such planned Dissemination activity of any other Party's Results, Background or Sensitive Information.

6.2 Open Access to Scientific Publications

All projects receiving Horizon funding are required to provide online access to any peer-reviewed scientific research article published in scholarly journals, free and reusable (Article 17 of the Model Grant Agreement). PREDICT-6G fully embraces this vision and will rely on all major international publishers (including IEEE and OSA) that provide several models for Open Access (OA), with two major options on what license to place on the published documents.

- **'Green' OA:** The publisher's policy allows the authors to archive the final manuscript in an institutional or subject-based repository, before peer review (pre-print version) or after peer-review (post-print version); We will use a Zenodo Community as 'Green' repository.

- **'Gold' OA:** Authors can publish in open access journals, or in hybrid journals that both sell subscriptions and offer the option of making individual articles openly accessible. An article is immediately provided in open access mode (on the publisher/journal website), where the payment of publication costs is shifted away from subscribing readers. Articles published in Gold OA will also be made available in the project's Zenodo Community.

PREDICT-6G will leverage the services provided by the Open Access Infrastructure for Research in Europe (OpenAIRE), which is an active service provider of the European Open Science Cloud (EOSC). This European initiative, which lists 37+ million publications and 9+ million research data, has the mission to promote open scholarship and improve the discoverability, accessibility, shareability, reusability, reproducibility, and monitoring of data-driven research results, across scientific disciplines.

The project will rely on complementary open access channels including:

(i)   The release of pre-publication versions through the website;
(ii)   The release of paper presentations in conferences through the website;
(iii)   The use of social media to provide links to publications and presentation files.

Other "lighter" publications, for example, conference and workshop contributions, will also be provided with Open Access, likely through a 'green' approach using e.g., arXiv.org or other appropriate repositories. Similarly, (public) deliverables produced by the project will also be archived in stable repositories, to ensure the long-term availability of the material. Archiving of the deliverables may be done with an embargo period, in coordination with the EC office. Open Access publishing will be handled in the CA. It does not impose any changes compared to "normal" publishing, however, rules around open-source publishing must be agreed upon.

Each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results.

It must:

i.   as soon as possible and at the latest on publication, deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication in a repository for scientific publications;
Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.
ii.   ensure open access to the deposited publication — via the repository — at the latest:
(a) on publication, if an electronic version is available for free via the publisher, or
(b) within six months of publication in any other case.
iii.   ensure open access — via the repository — to the bibliographic metadata that identify the deposited publication.

The bibliographic metadata must be in a standard format and must include all of the following:

- the terms "European Union (EU)" and "Horizon Europe";
- the name of the action, acronym and grant number;
- the publication date, and length of embargo period if applicable, and
- a persistent identifier.

6.3 Information on EU funding — Obligation and right to use the EU emblem

Unless the European Commission requests or agrees otherwise or unless it is impossible, any dissemination of results (in any form, including electronic) must:

    i. display the EU emblem and
    ii. include the following text:
    "This work has been partially funded by the EU Horizon Europe SNS JU PREDICT-6G (GA 101095890) Project.".

When displayed together with another logo, the EU emblem must have appropriate prominence.

For the purposes of their obligations under this Article, the beneficiaries may use the EU emblem without first obtaining approval from the Commission.

This does not however give them the right to exclusive use.

Moreover, they may not appropriate the EU emblem or any similar trademark or logo, either by registration or by any other means.

6.4 Disclaimer excluding Commission responsibility

Any dissemination of results must indicate that it reflects only the author's view and that the Commission is not responsible for any use that may be made of the information it contains.

7 Reports

The action is divided into the following 'reporting periods' (RP):
- RP1: from month 1 to month 12
- RP2: from month 13 to month 30.

7.1 Periodic Reports

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

The periodic report must include the following:

(a) 'Periodic technical report' containing:
- an explanation of the work carried out by the beneficiaries;
- an overview of the progress towards the objectives of the action, including milestones and deliverables. This report must include explanations justifying the differences between work expected to be carried out and that actually carried out. The report must also detail the exploitation and dissemination of the results and an updated 'plan for the exploitation and dissemination of the results';
- a summary for publication by the Commission;
- the answers to the 'questionnaire', covering issues related to the action implementation and the economic and societal impact, notably in the context of the Horizon Europe key performance indicators and the Horizon Europe monitoring requirements;

(b) 'Periodic financial report' containing:
- an 'individual financial statement' from each beneficiary and from each linked third party, for the reporting period concerned. The individual financial statement must detail the eligible costs (actual costs, unit costs and flat-rate costs) for each budget category. The beneficiaries and linked third parties must declare all eligible costs, even if — for actual costs, unit costs and flat-rate costs — they exceed the amounts indicated in the estimated budget. Amounts which are not declared in the individual financial statement will not be taken into account by the Commission.

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

The individual financial statements of the last reporting period must also detail the receipts of the action.

This may change subject to new modifications introduced by the funding body.

Each beneficiary and each linked third party must certify that:
- the information provided is full, reliable and true;
- the costs declared are eligible;
- the costs can be substantiated by adequate records and supporting documentation that will be produced upon request or in the context of checks, reviews, audits and investigations, and
- for the last reporting period: that all the receipts have been declared;
- an explanation of the use of resources and the information on subcontracting and in-kind contributions provided by third parties from each beneficiary and from each linked third party, for the reporting period concerned;
- a 'periodic summary financial statement', created automatically by the electronic exchange system, consolidating the individual financial statements for the reporting period concerned and including — except for the last reporting period — the request for interim payment.

7.2 Quarterly Management Reports

In addition to the reports defined in the contract with the EC, the PC will collect from partners, and integrate supplementary quarterly management reports (QMR), to be submitted by each project partner to the coordinator 15 days after the end of each three-month period. These reports will be delivered to the EU Project Officer, and will at least include:

- management data for the considered quarter (persons-month spent per each active WP, major travels and other resources deployed),
- predicted management data for the next quarter,
- report on the technical work and related accomplishments carried out in the quarter,
- dissemination accomplishments,
- major issues or problems encountered and/or foreseen in the next quarter.

The template to be used for the QMR is available in the Template folder at the Project Sharepoint.

7.3 Final Report

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

The final report must include the following:

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

- an overview of the results and their exploitation and dissemination;
- the conclusions on the action, and
- the socio-economic impact of the action;

(b) a 'final financial report' containing:
- a 'final summary financial statement', created automatically by the electronic exchange system, consolidating the individual financial statements for all reporting periods and including the request for payment of the balance and
- a 'certificate on the financial statements' for each beneficiary and for each linked third party, if it requests a total contribution of EUR 430,000 or more, as reimbursement of actual costs and unit costs calculated on the basis of its usual cost accounting practices.

7.4 Deliverables

Deliverables will be delivered according to the Workplan and in due time. A template for the Deliverables can be found in the Templates folder of the Project Sharepoint.

8 Management of Risks and Contingency Plans

There are several contingencies that can negatively impact on the ambitious PREDICT-6G roadmap. This table presents the critical risks for the implementation of the project. The likelihood and the severity of each risk is assessed as low (L), medium (M), or high (H) and tailored countermeasures are proposed. PREDICT-6G has conceived several structural mechanisms to reduce the probability of these events and to contain their effects in case they cannot be avoided.

Description of risk	Like./ Sev.	Proposed risk-mitigation measures	WP (s)
Management Risks			
Poor coordination and communication	Low / High	This may bring to uncoordinated project solutions activities, resulting in diverging results and inconsistent platform tools and components. This will be avoided thanks to the frequent and constant monitoring of the activities of all Tasks, which will allow the adoption of timely and effective countermeasures by the PC, WP and task leaders, especially during the most critical stages of the project.	ALL
Lack of commitment	Low / High	This risk has already been mitigated through the careful selection of all the partners, who have proven capacity and relevant background expertise to properly implement the project activities. The attentive monitoring of the WP leads on the ongoing work will, in case such risk occurs, immediately trigger a warning and request for immediate intervention of the project coordinator, so that corrective actions can take place, e.g., re-assigning the task to another partner.	ALL
Partners leaving consortium in a critical phase	Low / High	For all the critical design, development, and validation activities, more than one competent partner is allocated. A redistribution of workload budget among the other partners involved in those activities will reduce the impact. Alternatively, if the expertise of the withdrawing partner is too specific, the possibility of bringing a new partner aboard may be considered.	ALL
Departure of key technical personnel	Medium / Medium	On project planning, every partner should try to avoid dependency on a single expert by assigning team members with similar competences. The	ALL

		project work and results will be properly documented to mitigate the impact of potential departures and facilitate replacements.	
Deviations affecting activities schedule	Medium / High	The project workplan and budget distribution have been carefully planned to avoid significant impact in such situations. The project coordinator will define corrective actions on the overall project plan, which has been carefully crafted to provide the necessary flexibility. Moreover, a constant monitoring of the project status will be performed with QMRs, to ensure that causes of milestones or deliverables delay are recognized in early stages, ensuring timely and effective implementation of necessary corrections.	ALL
Higher than planned management effort	Low / Medium	UC3M has substantial and proven experience in the coordination of EU research projects involving many partners and complex research goals. The project coordinator served in the same role and in other various decision-making positions in several research projects.	WP6
Underestimated partner resources or overspending by one or more partners	Low / Medium	The project budget and the selection of the partners have been planned carefully to minimize the likelihood of this risk. During the project execution, a constant monitoring of the spent resources will be performed with QMRs, to early detect risky conditions. The contingency plan includes the following actions: re-balancing of resources among the partners; supporting actions from other consortium partners; re-planning of the activities; commitment of further internal resources.	ALL
Low quality of deliverables	Low / Medium	Quality assurance procedures will be established as part of the management tasks, organizing at least two peer reviews for each deliverable to guarantee the scientific and editorial quality of the submitted documents.	ALL
Technical Risks			
Limited or unsatisfactory interactions among WPs or tasks	Low / High	The periodical synchronization and the technical interaction among the WPs will be performed in the scope of project management activities, under the coordination of the TM. In case of detection of	ALL

		potential misalignment or limited collaboration between the WPs, corrective actions will be promptly implemented. If the problem persists, the TM together with the WP leaders will propose changes to WP structure and related effort distribution.	
Difficulties in achieving agreements among partners	Low / Medium	The collaboration spirit in the consortium targets to achieve consensus among all partners on the scientific and technological decisions of the project and the technical management will work in this direction. Several consortium partners have already worked together in previous research projects. Frequent remote meetings will be organized to facilitate proactive and collaborative communications on scientific and technical decisions. In case of difficulties, to avoid too long consensus making processes which might affect the project plan, management procedures for decision-making and conflict resolution in the CA will be applied.	ALL
Limited representativeness of use cases	Low / Medium	Preliminary use cases relevant for the applicability of deterministic networking in 6G infrastructures have been already defined at the proposal stage. Moreover, the consortium has the expertise required to further refine such use cases or identify new ones to properly drive the system design, the KPIs evaluation and the validation of the technologies developed in the project.	WP1
Delayed or insufficient definition of the system architecture to feed the technical activities in WP2 and WP3	Low / Medium	The workplan has been designed to maximize the interaction between the technical WPs and guarantee a continuous flow of information among them. Such interaction will be monitored by WPLs and TM. Moreover, WP2 and WP3 will be able to start their activities with preliminary specifications of the system architecture and related interfaces, providing feedbacks on the architectural items to be prioritized during the execution of the project to properly feed the ongoing implementation activities.	WP1 WP2 WP3
Poor network programmability	Low / Medium	The consortium includes partners with the expertise required to guarantee a suitable level of	WP2 WP3

limiting the control and orchestration capabilities		programmability and openness of the interfaces in the network devices. Moreover, WP2 and WP3 will cooperate in the specification of the interfaces, under the coordination of the TM and in line with the overall architecture design, to guarantee a suitable level of control for the different network technologies.	
Poor monitoring capabilities to feed digital twining and AI-based algorithms with real-time data	Medium / Medium	The partners in the consortium have extensive experience in network monitoring and, where needed, new interfaces and network probes will be implemented to retrieve monitoring data with different granularities. The network monitoring requirements will be identified in WP3 as part of the monitoring platform design and the collaboration with WP2 will guarantee a suitable support at the data-plane level and in terms of open APIs.	WP2 WP3
Incompatibility of interfaces across different technological or administrative domains	Medium / Medium	The variety of interfaces, potentially proprietary ones, at the different technology domains can complicate the integration activities and limit the E2E control and orchestration capabilities. However, the consortium includes partners with practical experience in system integration and, where required, mechanisms for abstraction and interface adaptation will be implemented to enable the interoperability of the various technologies.	WP2 WP3 WP4
Lack of datasets for training and validation of AI algorithms	Medium / Medium	The plan is to leverage on publicly available datasets widely used in the scientific community, to facilitate not only the training but also the evaluation of the developed solution with respect to the SotA. However, in case of missing or not entirely suitable datasets, additional ones will be generated via simulation or through emulations and experimental testing in the two target testbeds.	WP4
Difficulties in delivering planned technologies or components	Low / High	The consortium has been selected to guarantee the right expertise for the successful and timely delivery of the planned system components and technologies. In case of issues with the implementation of a particular system element or the adoption of an existing technology, SW baseline or technological enabler, the WPLs and the TM will timely identify the problem and collaborate with	WP2 WP3 WP4

		the other consortium partner to select the most appropriate alternative solutions.	
Difficulties in the integration of system components	Medium / Medium	The technologies and components developed in WP2 and WP3 may be difficult to integrate in a consistent E2E prototype. However, the consortium has the right expertise to deal with similar challenges, with partners expert in system integration. Moreover, the definition of open interfaces and clear workflows at the architecture design stage will facilitate the integration activities. Moreover, continuous interactions between WP5 and WP3/4 will facilitate any adaptation or bug fix that may be needed for integration purposes.	WP2 WP3 WP4
Difficulties in KPIs evaluation and system validation	Low / Low	The consortium involves partners with relevant experience on evaluation and validation of KPIs for 5G networks. Moreover, a clear validation methodology will be defined at the beginning of WP2, 3 and 4 activities, identifying benchmarks and baselines to drive the KPIs analysis. Where needed, simulations will complement emulation-based and experimental validations to address aspects (e.g., scalability) difficult to target in testbed environments.	WP4
Lack of required equipment availability for the validation activities	Low / High	3GPP R16, IEEE 802.1TSN and Wi-Fi 7 (IEEE 802.11be wave 1) will be available for testing innovations in real setups deployed at the Open Labs, provided by INT, ERC and NOK.	WP2 WP4
Business Value and Exploitation Risks			
The business value of the project results may be difficult to evaluate	Medium / Medium	Considering the low target TRL, it may be complex to evaluate in a concrete manner business value and identify related business models. The workplan includes a task (T1.4) specifically dedicated to evaluating the business impact and performing a techno-economic analysis. The involvement of partners with different roles in the 6G ecosystem will facilitate this analysis and the definition of a suitable roadmap towards the deployment of 6G networks.	WP1
Standardization and Dissemination Risks			
Insufficient impact on standardization	Low / Low	The project consortium includes partners with major roles and involvement in key relevant	WP5

		standardization bodies (3GPP, ETSI, IEEE, IETF). The project will intensify when needed the efforts to take part as active organizations involved in SDO initiatives.	
New relevant standards and technologies arise, making the project technical approach obsolete or incompatible	Low / Medium	The consortium includes partners with major roles in key SDOs and their outcomes, together with any relevant research trends and technological innovations, will be constantly monitored also through continued liaisons with other research projects and initiatives (T6.3). The TM, with the support of the WPLs, will steer the technical activities considering the latest technological advancements minimizing the risk of misalignment or obsolescence of the project approach and results with respect to the most recent standards and trends.	ALL
Inappropriate or not impactful dissemination and communication	Low / High	The WP6 leader will constantly monitor the impact and relevance of the dissemination and communication activities and, in case a deficiency or nonconformity is detected, will work together with task leaders on the redefinition of guidelines and strategies to implement corrective actions.	WP5
Other risks			
Virus outbreak or other force majeure issues force the project partners to cancel travelling and work remotely	Medium / High	From recent experience, consortium members are ready to carry out the project work remotely. Project meetings can be replaced by virtual meetings and integration activities can be performed remotely (at least partially) setting up an extensive and secure interconnectivity between the partners' premises and the target testbeds. A future pandemic would impact on three fronts: (i) delay in the activities that cannot be performed remotely, (ii) impossibility to meet some goals such as dissemination targets, and (iii) need of re-planning the schedule of the project, even extending it. The project will monitor the future situation to be ready to act in advance in case of repetition of a similar scenario.	ALL
UK does not sign the Horizon Europe	Low / Low	PREDICT-6G has only one UK partner (IDE). While UK has indicated their interest in signing the Horizon Europe association agreement and it is unlikely this	ALL

association agreement		does not happen, IDE has taken all the precautions and provided a commitment by the Executive leadership of InterDigital Inc. (corporate owner of InterDigital Europe Ltd) to execute upon the project regardless of the signature of the agreement.	

Table 7. Critical risks for the implementation of the project

9 Quality Plan

The quality management of the project will be led by the PC, TM and IM, who will be responsible for the review and assessment of the project progress according to:

- correspondence of the solutions to the objectives;
- accuracy and quality of the deliverables, and
- adherence to time and cost constraints planned for the project.

The Quality Plan will be updated every six months, if necessary. All the Project Handbook is a Quality Plan itself.

The principal objective of the plan is to ensure the quality across the different activities of the project, including the responsibilities within the team to achieve and maintain the quality, the monitoring and control procedures, the reporting procedures and the document procedures standards and control.

The PC, in close cooperation with the TM, will provide overall monitoring and coordination of each activity and milestone from a time perspective, paying special attention to the impact if any of changes in the schedule on other related items. In parallel, the IM will check that all possible mechanisms to increase the impact of the project are taken and will advertise partners of potential impacts identified during the project lifetime.

Finally, two deliverable reviewers will be identified for each deliverable, which will be subject to an internal approval procedure prior to release (and public dissemination, in case of public deliverables). Quality control metrics will be defined to measure the progress of the work being achieved. Each WPL will be responsible for assuring the quality of their deliverables and for adopting the most appropriate quality-assurance measures to contribute to the fulfilment of the WP targets.