D1.1 Project Management, Quality Plan and

Date: April 25, 2023

This Project has received funding from the European Union's HORIZON Research and Innovation Programme under Grant Agreement number 101096698

Document Identification			
Status	Final	**Due Date**	30/04/2023
Version	1.0	**Submission Date**	26/04/2023

Related WP	WP1	**Document Reference**	D1.1
Related Deliverable(s)		**Dissemination Level (*)**	SEN
Lead Participant	KTH	**Lead Author**	Gerardo Zampino
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Keywords:
Project Handbook, Quality Plan, Risk assessment

Document Information

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Document History			
Version	**Date**	**Change editors**	**Changes**
0.1	06/04/2023	Gerardo Zampino (KTH)	First draft
0.2	20/04/2023	Ioannis Kitsos (FN)	First Reviewed Document
0.3	22/04/2023	Gerardo Zampino (KTH)	Second Draft
0.4	25/04/2023	Ioannis Kitsos (FN)	Second Reviewed Document
1.0	25/04/2023	Gerardo Zampino (KTH)	Final version

Quality Control		
Role	**Who (Partner short name)**	**Approval Date**
Deliverable leader	Gerardo Zampino (KTH)	25/04/2023
Quality manager	Gerardo Zampino (KTH)	26/04/2023
Project Coordinator	Ricardo Vinuesa (KTH)	25/04/2023

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List of Acronyms

Abbreviation / acronym	Description
ATM	Air Traffic Management
DRL	Deep Reinforcement Learning
Dx.y	Deliverable number y belonging to WP x
EC	European Commission
MSx	Milestone number x
PC	Project Coordinator
PM	Project Manager
PO	Project Officer of the European Commision
SAF	Sustainable Aviation Fuels
KPI	Key Performance Indicator
UAM	Urban Air Mobility
UAS	Unmanned Aircraft Systems, commonly known as UAVs or drones
WP	Work Package

Executive Summary

The present document aims to describe the overall purpose of the project, the project management and organisation of RefMap. In addition, this handbook outlines the communication procedures that all the members of the consortium referring to the RefMap project, need to follow for both the internal and external communication of information and data. This document is based on the contents that have been defined in both the Consortium Agreement, that was signed by all members of the consortium, and the Grant Agreement.

The project organisation and the governance structures are reported in chapter 3 where the decision-making process is explained.

Given these assumptions, the present document provides the guidelines to all partners for the communication strategies and what is expected by the end of the project (chapter 4), for the production of all deliverables and documents (chapter 5), the risk assessment and management of the risky event (chapter 6). It is useful for the partners as a reference for the quality management of the deliverables and of the other material produced by the partners in the lifetime of the project.

The RefMap handbook is subjected to a continuous review and will be updated and changed whenever necessary for the entire lifetime of the project.

2 Introduction

2.1 Purpose of the document

The purpose of this document is to specify the aims and objectives of the RefMap project with a focus on the methodology and the internal organisation of the consortium, in particular concerning the organisation of the work between the partners, the quality management of the results and deliverables and the risks assessments.

2.2 Structure of the document

This document is structured in 4 major chapters.

Chapter 3 presents an overview of the project with respect to the project aims and methodology.

Chapter 4 presents the project organisation.

Chapter 5 presents the project communication strategies both external and internal.

Chapter 6 presents the risk management.

Chapter 7 presents the quality management.

3 Overview of RefMap

RefMap project funded by the european community as a part of the programme Horizon Europe Framework Programme (HORIZON) whose aim is to develop new digital aviation technologies for the services in the aircraft business and reduce the impact of emerging threats, such as the climate change, on the aviation between and within the cities.

3.1 RefMap objectives

The combination of the climate, COVID-19, and the energetic crisis promoted a new need to develop a more digital, intermodal, and sustainable air transport in agreement with the guidelines of the European commission in the matter of green economy. In future scenarios, the airliners will operate in an environment-neutral manner. In urban areas, smaller air vehicles that are electrically powered (e.g. eVTOLs), such as freight UAS (Unmanned Aircraft Systems, commonly known as UAVs or drones), will be more widely used for a large variety of purposes, from the delivery to the communication. This will intensify current airspace use while exacerbating noise levels and incorporating UAS traffic management (U-Space in EU), making its management complex and difficult to sustain and predict through the classic air traffic management (ATM) technologies available today. In addition, increasing population densities and climate change are stressing the importance of developing an aviation business model that is not only more resilient but respectful of the environment and enabling sustainable last mile logistics, Urban Air Mobility (UAM), as well as regional and long hauls (Advanced Air Mobility).

The mission of RefMap is to develop a digital service aimed at quantifying the environmental footprints of air mobility for airliners and UAS at a "multi-scale" level where single-trajectories (micro) and the flow traffic of multiple vehicles (macro) are optimised to minimise the environmental impact in communities. RefMap investigates how the aviation business models will be affected by the availability of environmental data for each type and route of air vehicle, as this will enable stricter evidence-based Green policy making in the sector. This will be achieved via the development of the RefMap analytics platform processing environmental and weather data such as wind, noise, CO2 and non-CO2 emissions for both U-space and ATM and the development of new aviation business models aligned with EU‘s Green Agenda. The overall aim is to reduce the environmental impact (noise, local air quality and climate-change) of aviation, including both commercial aviation and smaller air vehicles such as UAS.

RefMap aims to develop this technology through the following overarching goals:

1. To produce robust real-time artificial-intelligence (AI) models that optimise environmental performance in multi-scale ATM, including data exchanges with U-space. These models will be trained based on multi-fidelity flow data;
2. To develop a framework that facilitates the sustainable, interoperable, responsible, coordinated and safe expansion of the UAS industry;
3. To model noise of commercial aviation and drones (as novel air technology) and define targets for trajectory optimisation to minimise impact on exposed communities and wildlife, ensuring a quieter, greener and more sustainable aviation;
4. To develop innovative environmental key performance indicators (KPIs) connected to the multi-scale aviation European business;
5. To validate the newly developed models, services and KPIs using large-scale simulations to identify their impact on existing ATM and upcoming U-space services;
6. To align its functionalities and capabilities with the needs of the aviation stakeholders in order to accelerate its deployment and enable new aviation business models.

3.2 Project internal structure and WPs

RefMap counts eleven partners, three of them are from the United Kingdom and are associated partners for the projects. KTH is the coordinator of the entire project. The partners of the project are reported in table 1.

Nr	Organisation name	Short name	Country
1	KUNGLIGA TEKNISKA HÖGSKOLAN	KTH	Sweden
2	TECHNISCHE UNIVERSITEIT DELFT	TU Delft	Netherlands
3	AGENTFLY TECHNOLOGIES SRO	AFT	Czechia
4	FUTURE NEEDS MANAGEMENT CONSULTING LTD	FUTURE NEEDS	Cyprus
5	UNIVERSIDAD CARLOS III DE MADRID	UC3M	Spain
6	ISCTE - INSTITUTO UNIVERSITÁRIO DE LISBOA	ISCTE	Portugal
7	SCIENCE AND TECHNOLOGY BV	S&T B.V.	Netherlands

Nr	Organisation name	Short name	Country
8	INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS	ICCS	Greece
9	THE UNIVERSITY OF SALFORD	USAL	United Kingdom
10	THE UNIVERSITY OF BIRMINGHAM	UoB	United Kingdom
11	DRONEPREP LTD	DronePrep	United Kingdom

Table 1: Partners of RefMap

The project consists of 6 working packages (WP) that have different aims and objectives. The WPs are

- WP1 about the project management and dissemination and communication activities with the external associations,
- WP2 about the simulations of the flow in urban environments,
- WP3 about the deep-learning methods for flow prediction and trajectory optimisation for both UAS and Drones,
- WP4 about the noise modelling and prediction,
- WP5 about the integration and validation of models in multi-scale aviation simulations and RefMap service development,
- WP6 about the definition and the development of consequent new business models for aviation,

WP	Leader	Title	Objectives
1	KTH	Project Management & Dissemination and Communication activities	•To manage the project‘s scope, objectives, schedule, quality control, effort and budget settings; •To identify project risks by performing an effective risk management; •To ensure proper technical coordination and smooth integration of project components; •To manage and monitor data protection, research ethics and research data management; •To disseminate project results to relevant stakeholders and the general public.

WP	Leader	Title	Objectives
2	TU Delft	Simulations of the flow in urban environments	• To perform high-fidelity simulations of simplified urban environments; • To perform RANS-based simulations of detailed urban environments under meteorological uncertainty; • To develop a multi-fidelity approach to combine both types of simulations under meteorological uncertainty; • To develop an auto-tuning framework for performance optimisation of multi-fidelity simulations; • To develop a methodology to assess the impact of aviation emissions on local air quality; • To develop stochastic algorithm climate functions tailored for posterior optimisation.
3	KTH	Deep-learning methods for flow prediction and trajectory optimisation	• To develop a framework for non-intrusive sensing in cities; • To design innovative approaches for super-resolution and optimisation of sensor location; • To apply techniques for optimisation of trajectories based on deep reinforcement learning; • To apply techniques for performance optimisation of deep learning inference models.
4	USAL	Noise Modelling and Perception	• To develop more general aircraft noise models for noise assessment and trajectory optimisation in combination with other environmental stressors from commercial aviation; • To develop models for drone noise emission and propagation;

WP	Leader	Title	Objectives
			• To create a comprehensive dataset of drone sounds; • To develop a psychoacoustic model for drone noise assessment; • To investigate audio-visual interactions in drone noise perception and define targets for public acceptance; • To investigate drone noise impact on wildlife and define targets to reduce it.
5	AFT	Integration and Validation of Models in Multi-Scale Aviation Simulations & RefMap Service Development	• To create aircraft flight dynamics models taking into impact effects of weather phenomena, capable of producing output noise characteristics and emissions; • To create a tool for large-scale multi-scale aviation simulation with integrated processing of environmental and weather data such as wind, noise, CO2 and non-CO2 emissions for both ATM and U-space; • To integrate airflow simulations, dispersion predictions and noise models along with trajectory optimisation tools into the large-scale aviation simulation; • To evaluate the of impact of optimised trajectories on existing and upcoming air traffic management systems; • To define performance indicators for unmanned traffic management based on the existing indicators in ATM domain and evaluate the impact of proposed tools on future UAS operation and U-space ecosystem;

WP	Leader	Title	Objectives
			• To build the RefMap cloud service that will expose RefMap tools and technology through a well defined API to a larger user base for testing and assessment.
6	FN	Refmap MVP definition and development of consequent new business models for aviation	• Validate the potential of RefMap analytics, simulations and platform and define the MVP based on user needs; • Define and validate the new business model(s) that the RefMap analytics will enable.

Table 2: Working packages

Figure 1 illustrates the structure of the project and the interactions between the working packages. In the figure, each WP is associated with a different colour and a short name that summarises its purpose. On the top of each balloon is reported the leader of each WP

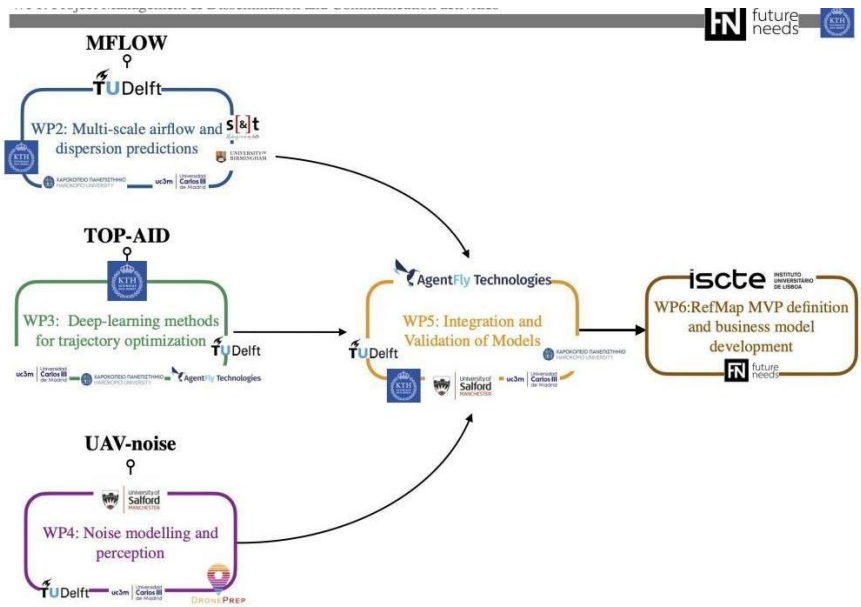


Figure 1: project structure and working packages interconnections

3.3 Proposed methodology

High-performance accelerated AI methodologies will be utilised for the creation of innovative prediction models. This objective is the main topic of the working packages from WP2 to WP4.

Regarding the ATM, the flight planning through trajectory is optimised using deep reinforcement learning (DRL). This aims to reduce the environmental footprints in terms of climate, air quality and noise, considering as well the impact of sustainable aviation fuels (SAFs) (WP3). Through post-operations the resulting environmental footprints will be assessed and new key performance indicators (KPIs) that connect non-CO2 aviation induced effects on climate, local air quality and noise will be developed.
On the UAV side, the urban space flights will be managed using environmental factors and public acceptance. These new methodologies will be applied to predict the UAV safe operations within urban and peri-urban areas based on the knowledge about the ATM. We will develop a data-driven framework that enables online airflow predictions to facilitate the safe and publicly-acceptable operation of UAVs in terms of noise, visual pollution and air traffic density (WP3).
The research will interconnect and perform two-way feedbacks between ATM and UAV information by focusing on single trajectory planning and optimisation, as well as network management and optimisation.

AI strategies will be exploited to weather conditions and urban airflow effects with large impacts in environmental footprints and safety (WP2). This approach will improve current productivity and efficiency in ATM systems while allowing its development for U-space. We will provide the first multi-scale, cloud-based service with information for air traffic optimisation and its derived minimised environmental footprint for the aviation sector (WP5). This service will enable other innovative digital aviation services and new associated business models (WP6).

3.4 List of deliverables

The list of deliverables and their name are reported in table 3

WP	Nr	Deliverable name	Partner	Type	Diss. Level	Due date
WP 1	D1.1	Project Management, Quality Plan and Risk Management	KTH	R	SEN	30 Apr 2023
WP	D7.1	OEI - Requirement No. 1	KTH	ETHI	SEN	30 Apr 2023

WP	Nr	Deliverable name	Partner	Type	Diss. Level	Due date
6				CS		
WP 1	D1.2	Dissemination and Communication Plan	FN	R	PU	31 May 2023
WP 1	D1.3	Data Management Plan	FN	DMP	PU	31 Jul 2023
WP 2	D2.6	Aviation climate change models	UC3M	R	PU	31 Jan 2024
WP 3	D3.1	Description of framework for non-intrusive sensing in cities	KTH	R	PU	31 Jan 2024
WP 5	D5.1	Flight dynamics models with environmental impact assessment support	AFT	OTHER	PU	31 Jan 2024
WP 2	D2.1	Description of high-fidelity simulations and results	KTH	R	PU	31 Mar 2024
WP 4	D4.3	Systematic review and framework for testing drone noise impact on human and wildlife	USAL	R	PU	30 Apr 2024
WP 1	D1.4	Report on Dissemination and Communication activities of Period 1	FN	R	PU	31 Jul 2024
WP 1	D1.6	Data Management Plan Midterm	FN	DMP	PU	31 Jul 2024
WP 3	D3.4	First report on deep learning inference optimisation	ICCS	R	PU	31 Jan 2025
WP 3	D3.2	Description of approach for super-resolution and optimisation of sensor location	KTH	R	PU	31 Jan 2025
WP 5	D5.3	Resilient and environmentally optimal aerial network	UC3M	R	PU	31 Jan 2025
WP 6	D6.1	Minimum Viable Product requirements report based on a review of aviation stakeholder needs and market insights	FN	R	PU	31 Jan 2025

WP	Nr	Deliverable name	Partner	Type	Diss. Level	Due date
WP 2	D2.2	Description of RANS-based simulations and results	T.U. DELFT	R	PU	31 Mar 2025
WP 4	D4.4	Model for Drone Noise Perception	USAL	OTHER	PU	31 Jul 2025
WP 5	D5.2	Multi-scale aviation simulation	AFT	DEM	PU	31 Jul 2025
WP 2	D2.3	Description of multi-fidelity approach to combine both types of simulations	T.U. DELFT	R	PU	30 Sep 2025
WP 3	D3.3	Trajectory optimisation for minimum environmental impact	KTH	R	PU	30 Sep 2025
WP 1	D1.9	Final evaluation of the ethical compliance	KTH	R	SEN	31 Jan 2026
WP 2	D2.4	Multi-fidelity simulations auto-tuning framework	ICCS	R	PU	31 Jan 2026
WP 2	D2.5	Local air quality models	KTH	R	PU	31 Jan 2026
WP 3	D3.5	Final deep learning inference optimisation framework	ICCS	R	PU	31 Jan 2026
WP 4	D4.1	Aircraft noise model and integration in the trajectory optimisation code	KTH	R	PU	31 Jan 2026
WP 4	D4.2	Model for emission and propagation of drone noise	T.U. DELFT	R	PU	31 Jan 2026
WP 4	D4.5	Report on targets for public acceptance of drone noise in cities	USAL	R	PU	31 Jan 2026
WP 4	D4.6	Report on impact of drone noise on wildlife	USAL	R	PU	31 Jan 2026
WP 5	D5.4	Report on assessment of impact of optimised trajectories on the performance of UAS operation in urban environment	AFT	R	PU	31 Jan 2026
WP	D5.5	The RefMap cloud service	ICCS	R	PU	31 Jan 2026

WP	Nr	Deliverable name	Partner	Type	Diss. Level	Due date
5						
WP 6	D6.2	Presentation of new European business models and products prototypes enabled by RefMap services	Iscte	R	PU	31 Jan 2026
WP 1	D1.5	Report on Dissemination and Communication activities of Period 2	FUTURE NEEDS	R	PU	31 Jan 2026
WP 1	D1.7	Data Management Plan Final	FUTURE NEEDS	DMP	PU	31 Jan 2026
WP 1	D1.8	Research ethics monitoring report	FUTURE NEEDS	R	SEN	31 Jan 2026

Table 3: List of deliverables in chronological order

3.5 List of milestones

The list of the milestones are reported in the following table 4

WP	Nr	Milestone name	Partner	Due date	Means of verification
WP1	MS1	Project Management Plan	FN	30 Apr 2023	D1.1
WP2	MS2	High.fidelity simulation	KTH	31 Mar 2024	D2.1
WP4	MS3	Systematic review and framework for drone noise impact testing	USAL	30 Apr 2024	D4.3
WP3	MS4	Flow prediction	KTH	31 Jan 2025	D3.2
WP2	MS5	RANS simulations	TU Delft	31 Mar 2025	D2.2
WP2	MS6	Multi-fidelity	TU Delft	30 Sep 2025	D2.3
WP2	MS7	DRL trajectory optimisation	KTH	31 Jan 2026	D3.3
WP5	MS8	Large-scale simulation of drone operation in urban	AFT	31 Jan 2026	D5.1

WP	Nr	Milestone name	Partner	Due date	Means of verification
		environment			

Table 4: List of milestones in chronological order

4 Project organisation

4.1 Governance structures

RefMap is organised in four consortium bodies that have different responsibilities and members. The consortium bodies have been reported in table 5.

Consortium body	Responsibilities	Members
General Assembly	Decision-making body of the consortium	All partners
Executive Board	Supervisory body for the execution of the project, which shall report to and be accountable to the General Assembly	The leader of each WP
Coordinator	Intermediary between the partners and the EC project officer. He manages European funding.	Prof. Ricardo Vinuesa (KTH)
Project Manager	Responsible for the management of the meetings and for the submission for the deliverables	Gerardo Zampino (KTH)
External Expert Advisory Board	Assembly of non-partners that can assist the development of the project with reference to the key stakeholders	Non-partners

Table 5: Consortium bodies

4.2 Contacts

Project Manager

Gerardo Zampino

Kungliga Tekniska Högskolan, SE-100 44 Stockholm.
mail: gzampino@kth.se

Coordinator

Prof. Ricardo Vinuesa
Kungliga Tekniska Högskolan, SE-100 44 Stockholm.
mail: rvinuesa@kth.se

The communication with the EC project officer is made via the project coordinator.

5 Project communication strategies

In this chapter the project communication strategies described in the GA are summarised. The Dissemination and Communication plan will be prepared for the deliverable D1.2 where the communication strategies are described and discussed deeply. However, it is convenient for the members of RefMap to know the strategies for the external and internal communication since all members are responsible for the management of the social media and the official website.

5.1 External communication

For the dissemination and communication activities, we envisaged the creation of an active community capable of understanding the importance of RefMap solutions. We need to create a direct communication line with the main stakeholders:

1. Policy makers in the field of mobility as well as traffic management. They will be the main target of RefMap, being them at a regional, national, EU, and international level. The decision making process of the policy will affect the environmental impact of motorised transport on air and land has on the air quality, the transport networks, identification of transport nodes, the establishment of penalization policies, the development of UAM-Sustainable Urban Mobility Plans.
2. Professionals: U-space providers and UAM organisations are at the heart of the RefMap consortium and an important piece of the value chain in the battle against U-space, and thus one of the priority target audiences of the RefMap communication strategy. The UAM professionals in using new technologies will strengthen the aviation domain/sector. User partners will experience the scenario of a use of RefMap tools during simulations of High-fidelity and RANS-based as part of the demonstrators of RefMap.
3. Technology providers: We will use the collaboration networks of partners and events targeting discussions between related stakeholders in order to ensure that technology providers, potential users and policy makers become aware of project results and how they can affect future platforms and services. RefMap partners will make use of a set of dissemination activities, tools and channels that embrace online and onsite engaging activities. The dissemination and communication plan will provide a mapped ecosystem of key stakeholders to be engaged. Each partner will support FN in sharing the information about the project, in translating the key messages into national language, in sharing RefMap materials/ newsletter etc. within their corporate mailing lists.

4. Logistics providers: They need to be aware of the environmental impacts of drone fleets to optimise their operations.
5. Civil protection authorities: this target group will benefit from our project since our tools will provide vital information for the early detection of risky events such as fires that affect air quality.

The communications activities will be implemented, based on the strategy developed in WP1. The responsibles for the communication activities will ensure that the key messages are delivered to aforementioned stakeholders. Communication in the project will be greatly boosted by the fact that it focuses on a high-profile topic that is currently widely covered. Partners will measure the impact of all communications activities. In addition, whilst the measures listed below are primarily quantitative in nature, the focus for ongoing measurement will equally be on quality. The communication plan will be continuously developed to ensure appropriate activities are performed to inform, engage, create awareness and promote information about the project, its aims, its funding source, its results, impacts and wider societal implications.

The key objectives are summarised in Table 6.

Instruments	Targeted stakeholder	KPIs
Website	All stakeholders	Project website, at least 8,000 unique visits by M36.
Visual Identity	All Stakeholders	Project logo has been finalised for all format requirements therefore development of communication templates (M02), first brochure and poster (M06).
Press releases	Citizens, NGOs, Media, public authorities	press releases which are take-up by CORDIS Wire and by popular media outlets in all project countries.
Newsletters	Policy-makers, media, researchers, NGOs, public authorities	Publication three times a year. 300 individuals/ organisations signed up to receive newsletters by M24 and at least 600 total by M36.
Project factsheet	All stakeholders	Publication of flyer on website with 250 downloads. 1500 copies distributed at third-party events attended. At least one factsheet displayed in a public organisation or local authority

Instruments	Targeted stakeholder	KPIs
		visited by citizens and sector professionals.
Presentations at third-party events	Policy makers, Researchers, NGOs	Consortium partners will attend at least 30 conferences, trade shows, workshops, and networking activities with pertinent EU/national projects.
Peer-reviewed papers & popular science articles	Researchers & Media	Submission and acceptance for publication of 30 articles (aiming at open-access publications when agreements are in place through institutions), a blog post every month (starting from Month 2) on the website and a total of 10 articles on third party websites.
Social Media	Planners, U-space Professionals, general public	• Over 1000 Twitter followers, over 1500 linkedin followers. • Over 5000+ likes on Twitter and Linkedin. At least 5 other projects involved in various online campaigns
RefMap Workshops & Final Conference	All stakeholders	• At least 20 public authorities and at least 10 other stakeholders from at least 6 different countries (not limited to the EU) included in an advisory board. • Develop a Community on regional levels: at least 10 stakeholders in each partner country engaged in project activities; • At least 150 persons will attend the final conference

Table 6: Communication instruments and targeted stakeholders

We will provide widespread visibility to the project and its outputs and ensure that target audiences are convinced that due to European collaboration in RefMap more has been achieved than would otherwise be possible. As a result, the project has created measurable benefits to citizens and other stakeholders. The decision-makers would support the implementation of the project. We aim also to demonstrate how the outcomes of RefMap are relevant to the lives of European citizens. We ensure that the results of RefMap influence policy makers and other decision makers around pandemic preparedness and cross border public health data sharing, to ensure long-term impact.

5.1.1 Website and social networks

We created a webpage where all the partners can share the papers they published in scientific journals and the latest news about the status of the project. We expect more than 8000 visits before the end of the project and more than 30 articles available on the official website. RefMap is also on Twitter and Linkedin in order to increase the RefMap network. The management of the social network is divided equally between the partners in agreement with a scheduled agenda that is shared and accepted by all the members of the consortium. We expect at least one content in the social media accounts of the project from the responsible partner. Another partner can also contribute to the social account at any moment.

5.1.2 Press and publicity

We planned press releases which are take-up by CORDIS Wire and by popular media outlets in all project countries. This will help the project to grow in popularity across the European citizens and the public authorities. Moreover, we expect the creation of a newsletter that includes up to 600 subscribers for a quicker and more efficient communication about the latest news on the status of the project. Part of the publicity for the project is done by the members themselves with the participation of the third-parties events and conferences. It is a common interest for all the members of the consortium that during the public presentation of their work, they can use the official logo of the project and explain the aims and purpose of RefMap.

5.1.3 Publications

We aim to produce a total of 30 peer-reviewed scientific articles that will be published in third-parties journals as open access. The articles will be available also on the official webpage.

5.1.4 Communication with the European Commision

The project manager is in constant contact with the project officer (PO) of the European Commission. When a partner needs to communicate with the PO, they should write an email to the project manager (PM) explaining the reason why they need to contact the PO. Then, the PM will forward the email to the PO.

The deliverables are submitted using the Funding & Tender Opportunities portal and the System for Grant Management (SyGMa).

5.1.5 IPR and strategy for knowledge management and protection

RefMap results entail Intellectual Property Rights (IPR) protection issues. The ownership of the knowledge and innovation created (Results) and the rules to access background knowledge for the successful exploitation of the project results by each partner require that rules are agreed on IPR and that provisions are taken for IPR access rights. Ownership of background knowledge is not affected by participation and, since its relevance to the project is included in its definition, it will be made available to partners free of charge if it is necessary for performing the project tasks.

Side-ground knowledge (information acquired in parallel to the contract) is to be negotiated between partners on a case-by-case basis. Results knowledge is owned by the partner generating it. Each partner shall make available its Results on a royalty-free basis, unless otherwise agreed to by other contractors to the extent that such information is necessary to produce their own Results within the project. In cases where joint work by several partners leads to generated knowledge and where their respective work share cannot be ascertained, they shall have joint ownership of such knowledge.

The partners concerned shall all agree on the allocation and terms of exercising ownership of that knowledge. Pre-existing know-how and Results will be made available to partners for exploitation purposes at fair and reasonable conditions, with respect to the normal commercial conditions applied by the granting partner. Research partners will be granted a fair compensation in the form of royalties by partners exploiting the Results in which the research partners have contributed; they will also be entitled to create spin-offs for the commercialisation of their Results, in which case the same conditions apply as to any other partner of the consortium. To ensure the project success, all partners will agree beforehand on specific rules with respect to IP ownership, on access rights to background and Results IP for the project execution and the protection of IPRs and confidential information. This will be established with

the joint signature of a Consortium Agreement (CA), to be signed by all parties before the Contract signature. The CA formalises project management processes, IPR issues and the exploitation of results describing the rules for sharing

access rights to IP, upon the principle that each partner has the required information to achieve its share of results and to subsequently exploit them. To ensure this goal is met, the description will be updated if and as required during the project course. If needed, specific agreements will be made among partners to secure the individual or

joint exploitation of results. Standard rules in the EC contract will be implemented without restriction; the consortium will promote open architectures and choose technologies based on open standards as much as possible, intending to avoid vendor lock-in. However, to achieve a working and exploitable solution, the consortium will combine open and proprietary technologies and know-how resulting from past investments. Abiding to CA rules, the consortium will establish a knowledge portfolio management, able to identify relevant background, to collect information on Results that have a potential commercial exploitation, to generate IPRs related with the new knowledge and to update the knowledge portfolio in accordance to the project‘s dissemination and exploitation plans. To avoid compromising other forms of IP protection, the CA will specify all documents and dissemination material will be screened for information that could compromise the IP protection process.

5.2 Internal communications

RefMap has an internal communication system for sharing the documents produced by the partners and the results of each WP that are the input for the others. The internal communication system consists of a space created on Google Chat where the partners can write the important communications. In addition, a new folder on Google Drive where the reports, documents and results are available for all the partners and colleagues. Other internal communication and organisation of the working packages are at the discretion of the leaders of each group.

5.2.1 Regular meetings

The intermediate results of RefMap are discussed periodically with regular meetings. We scheduled a meeting in person with all the partners, say the General Assembly, every six months that will take place in different locations decided in the months before the meeting. The board meetings with the responsible people for each partner will take place online using Zoom at least four times a year and every three months. Extraordinary meetings will be scheduled when required by the members of the Executive Board.

The responsible of each WP should contact involved partners to their WP and arrange a regular meeting as soon as possible, in the frequency deemed necessary.

The frequency of regular and extraordinary meetings are summarised in table 7.

	Regular meeting	Extraordinary meeting
General Assembly	Twice per year or every six months	At any time upon request of the executive board or ⅓ of the Members of the General Assembly
Board Meeting	Four times per year or every three months.	At any time upon request of any Member of the Executive Board

Table 7: Summary of the regular and extraordinary meeting

5.2.2 Document Repository

The documents produced by the RefMap members are available to all partners and can be shared within the members using the shared folder on Google Drive. The access of this document repository is available to all participants to RefMap. In this repository, all members have access to the reports produced by the partners to monitor the status of the project and to the main results produced by each WP.

6 Risk management

6.1 Identification strategies

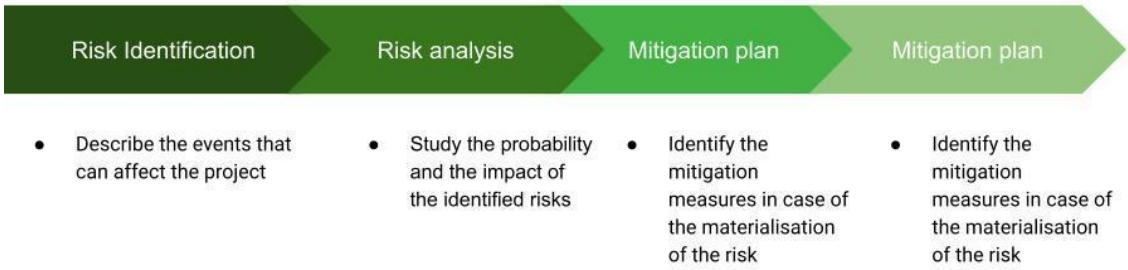


Figure 2: Summary of the regular and extraordinary meeting

The risk management strategy is applied to identify the possible risks of the project (figure 2). These risks can be classified as threats, when they negatively affect the correctness of the project, and opportunities, when their effect on the project is positive. This allows to decrease the impact of any hazardous events that can occur in the lifetime of the project. The identification strategy consists of five steps. Firstly, the risk is identified, described in detail and reported any possible negative effect on the development of the project. Secondly, the risk is analysed and the probability of the event is properly identified. Third, the PM produces a schedule for the periodic evaluation of the risk. Fourth, the PM, the PC and the leader of the WPs identify the measures that can be applied to reduce the impact of the events. Finally, the PM schedules some monitoring tasks.

6.2 Risk identification

Anyone can identify a new risk and share it with the consortium. After the risk is identified, an iterative approach will follow for adding the risk to the risk register and

effectively monitor it. This process involves the PM, the PC, the relevant WP leaders and the persons identified the risk. They will plan a series of iterations and meetings in order to effectively classify and monitor the risk and come up with the proper strategy to avoid the threats or encourage the opportunities. The risks identified during the proposal preparation will also be reviewed and classified as per this document dictates.

6.3 Risk analysis

During the step named “risk analysis”, each risk is described deeply in detail. In particular, the same committee that identified the risks in the previous step, also evaluates the consequences of the event and the probability that the hazardous event can affect the programmed development of the project. The impact level is also established using a proper scale that is provided by table 8. The risk of the event is the combination of the probability of the materialisation and the impact of the event on the project. The analysis of each risk is reported in a table where we describe the risk, the effects of risk materialising, the list of the WPs that are affected by the event and the strategies to adopt in order to mitigate the probability of the event.

Impact	Severe	Significant	Moderate	Minor	Negligible
Legal	-Stop of the funding from the EC	- Reduction of the funding due to delay of the project	-Significant legal penalties - Problems for experiments or data acquisition	-Low legal penalties	-Minor legal problems
Reputational	-Event affects the achievements of the publication and communications with the stakeholders -Serious loss of interests from the stakeholders	-Significant impacts on the publications of the results and the relationship with external stakeholders	- Low impact on the strategic communications of the objectives and aims of the project	-Minor impact on the publications and communications with the stakeholders about the aims and objectives of RefMap	-No impact on the publications and communications with the stakeholders about the aims and objectives of RefMap

Impact	Severe	Significant	Moderate	Minor	Negligible
Operational	-Inability to reach the purpose of the projects -Loss of the data produced during the lifetime of RefMap	-Severe difficulties for producing the data needed for the project -Limitations to the access of these data	-Delay in producing the results -Large and multiple operational problems	-Minor delay in producing results -Low operational inefficiencies	-Negligible operational inefficiencies

Table 8: Matrix of the risk severity

6.4 Mitigation measures

The PM and his collaborators plan a series of mitigation measures to mitigate the effect of the events, to reduce the risk of an event and to reduce the impact of the risk materialise. The strategies for the management of the risk have been chosen in order to control and handle the risk. These strategies should also consider the cost, effectiveness, and feasibility.

The measures are taken in agreement with the risk severity and effects. In particular, the measures can have different purposes such as

- Avoiding the negative risks/ Exploiting the positive risks
- Mitigating the negative risks/ Enhancing the positive risks
- Accepting the risk
- Transfering the negative risks/ Sharing the positive risks
- Escalating

6.5 Monitoring

Throughout the project's lifetime, the PM is also responsible for monitoring the risks and scheduling a series of tasks to check the frequency of the hazardous events. The frequency of these tasks are chosen in agreement with the Probability-Impact matrix reported in table 9. Each risk level is associated with a different colour and the frequency of the scheduled monitoring.

		Impact				
		Negligible	Minor	Moderate	Significant	Severe
Probability	Rare	9 months	9 months	9 months	7 months	7 months
	Unlikely	9 months	7 months	7 months	5 months	5 months
	Moderate	9 months	7 months	5 months	3 months	3 months
	Likely	7 months	5 months	3 months	3 months	1 month
	Almost Certain	7 months	5 months	3 months	1 month	1 month

Table 9: Matrix of the risk and the scheduled monitoring of the hazardous events

During the monitoring tasks, the PM will be responsible for identifying new risks, planning new mitigation measures, reviewing the project performance, monitoring the existing risks and modifying the probability, the impact, or the scheduled tasks if necessary, reviewing the effectiveness of the mitigation measures, reviewing the tools, techniques and the approach used for the risk detection.

7 Quality management

7.1 Deliverable production and monitoring

In this section, we establish the guidelines for the production of all documents that need to be followed for the entire lifetime of RefMap. Every partner makes sure that they are using the same template provided by the Project Manager and available in the shared folder relative to the WP1 on Google Drive. The shared folder contains all the project templates.

The name of the file will be in the form

Dx_y_TitleName_state_version.docx

where the TitleName is the name of the deliverable, state is the state of the deliverable such as *draft, reviewed, final* and the version of the deliverable in the format *v* followed by the number of the version.

The Deliverable has the following structure:

1. A cover page with the logo of RefMap, the title of the deliverable and the corresponding number

2. A table with the general information about the document such as the status, due date, the WP, the authors and the reviewer
3. A table of contents
4. A list of figures
5. A list of tables
6. A glossary
7. An executive summary
8. An introductory chapter that explains the purpose and the structure of the deliverable
9. At least one chapter as the central body of the document
10. Annexes if required

The responsible partner for each deliverable is reported in section 3.4 of the present document. He is responsible for choosing the *author* of the deliverable as the member of the consortium that writes the draft. The *contributors*, written on the cover page, are the members of the consortium that gave their contribution for the elaboration of the deliverables. On the cover page are finally reported the *reviewers* that reviewed the document behind the PM. The reviewers are other members of the consortium that did not contribute to the manuscript and are experts in the field of the deliverables. The number of reviewers is always two with some exceptions for the deliverables for which the PM is responsible. In these cases, a single reviewer is admitted. Any change of the document must be reported in the history table of the document. The author is responsible for these changes and he/she is free to not accept the changes to the documents. If the request of changes suggested by the reviewer is not accepted, the reason why of this decision needs to be communicated to the PM and PC.

Before the submission, the final document needs to be approved by the leader of the deliverables that could be the author of the document, by the PM as the quality manager of the entire project and by the project coordinator.

Note that the deliverables should be self-contained documents and references to the previous deliverables should be clearly stated in the text.

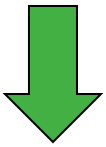
The procedure for the production and the monitoring of the deliverables is described in the following scheme.

Initial Draft

- The PM writes a reminder to the leader of the WP related to the Dx,y that choose the author of the draft
- The author creates the document online and can assign the sections to the contributors
- The PM in agreement with the author and the WP leader establish the deadline for the first draft as three weeks before the due date of the deliverable

Internal Review

- The PM sends the final draft to the internal reviewer(s) and establishes a new deadline two weeks before the due date of the deliverables.
- After the deadline, the reviewed manuscript is sent back to the author with a list of suggestions and questions from the reviewer
- The author writes a new version of the deliverable that is finally reviewed by the PM



Final document

- The PM checks the file format, the final version, template
- The PM submits the EC

Figure 3: Deliverable production process

The deadlines for each step of the deliverable production process are summarised in table 9.

State of Deliverable	Responsible	Expected Deadline
Initial Draft	Author	3 weeks before the submission deadline
First Review	Reviewer(s)	2 weeks before the submission deadline (1 week after receiving the first draft)

State of Deliverable	Responsible	Expected Deadline
Second Draft	Author	10 days before the submission deadline
Second Review	Reviewer(s)	7 days before the submission deadline
Final Version	PM	5 days before the submission deadline
Approved Version	PC and PM	2 days before the submission deadline

Table 9: Summary of the the deadlines for the production of the deliverables

It is important that the authors, the contributors and the reviewers respect the deadlines in order to submit the deliverable in time.

If one of the aforementioned authors, contributors or reviewers cannot respect the deadlines need to communicate the reason why to the PM and PC in order to request for an extension of the deadline for the deliverables.

7.2 Change Management

During the project it may be necessary to change some aspects that are described in the GA. The process to require a change of the activities, deliverables, report deadlines or other aspects related to the GA is summarised in the figure 4

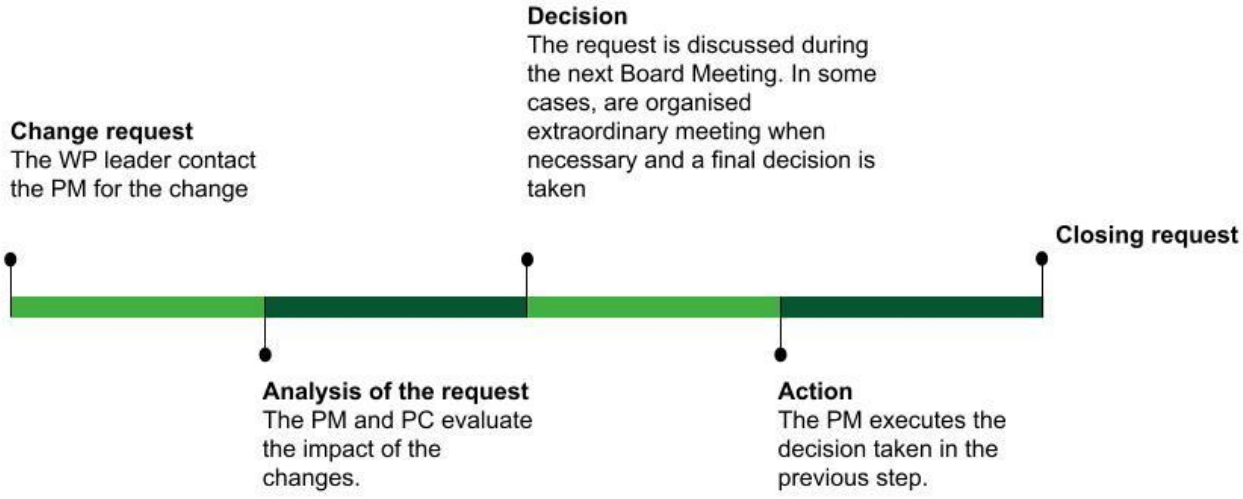


Figure 4: Change management process

8 Conclusions

This document illustrates the guidelines that the members and partners of RefMap need to follow to ensure the correctness and effectiveness of the project execution, as well as to ensure the results are in agreement with the results expected by the European Commission.