iMERMAID

D7.1: Quality Assurance Risk Contingency plan updated

Task 7.1: Project Coordination

WP7: Project Coordination and Management

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ABSTRACT	

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Document Revision Log

Version	Description of changes	Author	Role in the project
0.1	Draft	Noelia González, Rodrigo Sedano (ITCL)	Project Coordination Team
0.2	Final first draft	Rodrigo Sedano (ITCL)	Project Coordinator
0.3	First review	Yolanda Ballesteros, Esther Gómez (SOCAMEX)	Beneficiary
0.4	Second review	Maria Zafeiropolou (APCL)	Beneficiary
1.0	Final review and formatting	Rodrigo Sedano (ITCL)	Project Coordinator

Executive Summary

Deliverable D7.1 serves as a comprehensive document providing essential management information regarding the organization and quality management aspects of the iMERMAID project. It not only expands upon the definitions outlined in the Grant and Consortium Agreements but also functions as a dynamic document that will be continuously updated as necessary throughout the project's duration.

This document serves a practical purpose as a manual for consortium members, offering clear guidelines for facilitating internal collaboration. The current version of the deliverable covers several key topics:

- Management, extending the organisational structure proposed in the Grant Agreement and detailing project monitoring.

- Communication, providing useful information on the Contact Detail registry, Mailing Lists, and Video conferencing.

- Project repository, defining guidelines of use and explaining its structure.

- Deliverable development guidelines.

Additionally, the document addresses the concept of risk within the project context. Risk refers to potential events or issues that could occur and potentially impact the project. The Risk Management Plan's primary objective is to either prevent these events from occurring or to minimize their impact if they do happen.

The document further delves into the specifics of iMERMAID's risk management, including the presentation of a risk register and a Key Performance Indicators' register, which serves as the primary tool for monitoring risks and implementing corresponding mitigation measures.

Lastly, it is worth noting that this document may undergo updates during the project's course, particularly after submission to the European Commission, in case the risk management procedures are decided to be changed.

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Acronyms

CoEC	Contaminants of Emerging Concern
D	Deliverable
DoA	Description of the Action
EC	European Commission
EU	European Union
GDPR	General Data Protection Regulation
KPI	Key Performance Indicator
MS	Milestone
MT	Management Team
PC	Project Coordinator
PCT	Project Coordination Team
T	Task
TC	Technical Committee
TC	Technical Coordinator
TL	Task Leaders
WP	Work Package
WPL	Work Package Leaders

1. Introduction

1.1. Project Information

The **iMERMAID vision** is an advanced, innovative, and reproducible series of technological solutions to prevent, monitor and remedy toxic and persistent chemical pollution in the Mediterranean Sea basin in compliance with the goals and ambition of the European Zero Pollution Action Plan, the Convention for the protection of the Mediterranean Sea against pollution, the Chemical Strategy for Sustainability, 2030 Climate Target Plan and other EU regulations.

The **iMERMAID mission** is to create monitoring and remediation approaches in order to restore, protect and preserve the health of our oceans, seas and waters, preventing them from Contaminants of Emerging Concern (CoEC).

To accomplish this, several challenges and objectives need to be addressed, including policy making, development of monitoring tools and remediation technologies, as well as demonstration of the matured techniques through use case design, as listed in Table *2*.

On the one hand, iMERMAID **monitoring solutions** include electrochemical organic pollutant sensors, electrochemical heavy metal sensors and oil sensors, while **remediation approaches** encompass 4D Scavenger technology, nature-inspired microfluidic network-based system and HiNaPEF plasma technology.

Five pilots will implement and evaluate improvements in pollution monitoring, prevention and remediation in several water bodies: from the removal of contaminants of agricultural wastewater and complex mixtures of pollutants (Use Case #1), pharmaceutical contaminants (Use Case #2), heavy metals (Use Case #3) and contaminants from landfill leachates (Use Case #5), to the monitoring of the marine environment's health, trends estimation and evaluation of human activities impact (Use Case #4).

iMERMAID will identify Key Performance Indicators (**KPIs**) to measure efficiency without compromising quality, promoting a balanced and effective operational environment. Additionally, it will engage in liaison and cooperation activities with relevant stakeholders and issue **open calls** to foster ecosystem development and industrial clustering.

iMERMAID brings together a **consortium** of leading organizations (3 industrial enterprises, 12 SMEs, 9 academic & research organisations, 1 public organisation and 1 non-governmental organisation – see Table *1*).

1.2 Document scope

This document provides the common rules, processes, and tools for the execution of the iMERMAID project. It covers quality and risk management and will be updated throughout the project lifecycle.

Its main objective is to establish a practical set of regulations and procedures for the project's development, aiming to ensure the delivery of high-quality work within iMERMAID. While some of these guidelines pertain to strategic aspects, others provide day-to-day project operational guidance.

This document is based on the terms and conditions outlined in:

- The Grant Agreement (GA), identified by number 101112824, which was signed by the European Commission, the project coordinator and all beneficiaries.

- The Consortium Agreement (CA), signed by the project coordinator and all beneficiaries.

The contents of this document may refer to these agreements but do not replicate nor contradict their content. However, in the unlikely case of doubt, the content of the GA and CA shall always overrule the contents of this derivable, due to their status as legally binding agreements.

1.3 Document Structure

This document is comprised of the following chapters:

Chapter 1 presents an introduction to the project and the document.

Chapter 2 offers further project information, to provide the context for this document.

Chapter 3 explains the overall strategy, approach, and concepts towards managing the project.

Chapter 4 presents the communication & collaboration tools and guidelines.

Chapter 5 presents the common cloud storage for saving, developing, and sharing project files.

Chapter 6 provides the necessary information and procedure to produce the project deliverables.

Chapter 7 documents the overall risk management plan that will be used in the project.

Chapter 8 outlines the conclusions.

2. Project Context

Below is some key information about the iMERMAID project:

- Project summary: In Section 1.1.
- Start-end: From 1 June 2023 to 31 May 2026 (36 months).
- Maximum grant amount: 7 893 477,38 €.
- Consortium: In Table *1*.
- Project objectives: The objectives are described in the Description of Action (DoA), Part B, Section 1.1. Also listed in Table *2*.
- Use Cases: The use cases are described in DoA, Part B, Section 1.1. Also listed in Table *3*.
- WPs: The list of WPs is available in DoA, Part A. Also listed in Table *4*.
- Deliverables: Available in DoA, Part A. Also listed in Table *5*.
- Milestones: Available in DoA, Part A. Also listed in Table *6*.
- Workplan:
  - The iMERMAID methodology: Figure 1
  - Detailed project Gantt chart: Figure 6.
  - Partners effort distribution: Figure *7*.
  - The iMERMAID Ecosystem: **Error! Reference source not found.**.

Table 1: The iMERMAID consortium.

Number	Name	Short name
1	FUNDACIÓN INSTITUTO TECNOLÓGICO DE CASTILLA Y LEÓN	ITCL
2	EDEN TECH	EDEN
3	WEEFINER OY	WF
4	IRIS SRL	IRIS
5	HELLENIC CENTRE FOR MARINE RESEARCH	HCMR
6	UNIVERSITE D'ANGERS	UA
7	TEKNOLOGIAN TUTKIMUSKESKUS VTT OY	VTT
8	CMMI CYPRUS MARINE AND MARITIME INSTITUTE	CMMI
9	WATER EUROPE	WE
10	ECOLE NATIONALE D'INGENIEURS DE GABES	ENIG
11	UNIVERSITA DEGLI STUDI DI FIRENZE	UNIFI
12	F6S NETWORK IRELAND LIMITED	F6S
13	PRIVANOVA SAS	PN
14	SOCAMEX SA	SOCAMEX

15	PRIVREDNO DUSTVO ZENTRIX LAB DRUSTVO SA OGRANICENOM ODGOVORNOSCU PACEVO	ZEN
16	APCL ADVERTISING PRODUCT COMPANY LTD	APCL
17	SOCIETA METROPOLITANA ACQUE TORNIO S.P.A.	SMAT
18	H2O-PEOPLE B.V.	HP
18.1	MYGIJ B.V.	MyGij
19	ESDAK-ENIAIOS SYNDESMOS DIACHEIRISIS APORRIMATON KRITIS	ESDAK
20	ARMENGAUD INNOVATE GMBH	AIG
21	SOFTWATER SRL	SOTFTWATER
22	CUBEXLAB B.V.	CUB
23	VEREIN DER EUROPAEISCHEN BURGERWISSENSCHAFTEN – ECSA E.V.	ECSA
24	OPALIA PHARMA SA	OP
25	BIOSENSE INSTITUTE – RESEARCH AND DEVELOPMENT INSTITUTE FOR INFORMATION TECHNOLOGIES IN BIOSYSTEMS	BIOS
26	NATIONAL TECHNICAL UNIVERSITY OF UKRAINE IGOR SIKORSKY KYIV POLYTECHNIC INSTITUTE	NTUU KPI

Table 2: The iMERMAID objectives.

Main objective	The main objective of iMERMAID is to create innovative, and replicable approaches to prevent, monitor, and remediate chemical pollution to support the EU's mission to restore, protect, and preserve the health of our oceans, seas, and waters and to realise the goals of the Chemicals Strategy for Zero Chemical Pollution.
Objective 1	Pollution reduction via influencing public opinion and policy making
Objective 2	Mature and develop innovative, reproducible technologies to monitor pollution from chemicals.
Objective 3	Mature and develop innovative, reproducible technologies to reduce and remediate water from chemicals.
Objective 4	Integrate a set of compatible techniques and technology and carry out demonstration activities in 3 different areas of the Mediterranean Sea basin, comprising all relevant stakeholders to ensure wide take-up, sustainable development, expansion, and exploitation of the project t's results.
Objective 5	Maximise project outreach by attracting and engaging with a critical mass of target stakeholders, aiming for high participation in the open calls for associated regions, broad awareness of results and findings, market take-up in industrial sectors, and sustainable and collaborative community development.

Table 3: The iMERMAID use cases.

Use Case	Title	Site
UC1	Innovative solutions for the removal of contaminants from agricultural wastewater	San Esteban de Litera, Spain
UC2	Innovative solutions for the removal of pharmaceutical contaminants	Kalaat Al Andalouss, Tunisia
UC3	Innovative solutions for the removal of heavy metals	Turin, Italy
UC4	Monitoring platform on the Mediterranean Sea	Limassol, Cyprus
UC5	Innovative solutions for the removal of organic contaminants from landfill leachates	Crete, Greece

Table 4: List of WPs and Tasks.

ID	Title	Lead	Start Month	End Month
WP1	Societal actions for the reduction of the chemical pollution	HP	4	36
T1.1	Formulate policy recommendations and regulatory proposals for policymakers and decision makers to encourage influence and support policy changes to tackle CoEC	WE	12	36
T1.2	Pollution mitigation via influencing social perception	HP	4	30
T1.3	Sustainability impact assessment	VTT	12	30
WP2	Screening, mapping and monitoring of chemical pollution	HCMR	1	36
T2.1	Optimise, demonstrate and deploy electrochemical based sensors for the effective monitoring of organic CoEC in demonstration sites with extrapolation to Mediterranean Sea	UA	2	33
T2.2	Optimise, demonstrate and deploy sensors for the effective monitoring of oil in 2 demonstration sites with extrapolation to Mediterranean Sea	BIOS	1	24
T2.3	Optimise, demonstrate and deploy sensors for the effecti8ve monitoring of heavy metals in demonstration sites with extrapolation to Mediterranean Sea	UNIFI	4	24
T2.4	Evaluate bioaccumulation and biomagnification potential of CoEC in Mediterranean food webs	HCMR	6	24
T2.5	Develop Framework for Sensing, Data Collection, Storage and Visualisation	CUB	1	32
T2.6	Develop recommendations for the applicability of the iMERMAID monitoring sensors in the monitoring programmes of the WFD and MSFD Directives with focus on the Mediterranean Sea	HCMR	12	36

WP3	Removal and remediation of chemical pollutants via innovative technologies	EDEN	1	36
T3.1	Microfluidic systems integrated with photocatalysts for upstream organic CoEC pollution remediation	EDEN	1	24
T3.2	Plasma enabled systems for the effective remediation of organic CoEC: Module design and optimization for each demonstration site	IRIS	1	24
T3.3	4D Scavenger systems for the effective removal and recovery of heavy metals	WF	1	24
T3.4	Reclaimed RO membrane conversion to NF and/or UF pre filtration membranes	ENIG	1	24
T3.5	Life cycle cost, cost-benefit analysis and anthropogenic noise pollution evaluation	VTT	24	36
WP4	Demonstration of innovative technologies to achieve removal and remediation of chemical pollutants	CMMI	1	36
T4.1	Framework requirements & Use case design	CMMI	1	12
T4.2	Technical Specifications	ITCL	1	8
T4.3	Coordinate work between technical and demonstration work packages and align findings from the demonstration sites	SOCAMEX	20	36
WP5	Roadmaps for uptake and scalability of the innovative solutions	VTT	1	36
T5.1	Assessment and recommendation of chemical and non-chemical alternatives	VTT	1	6
T5.2	Strategic foresight	VTT	2	7
T5.3	Scalability analysis with SD-modelling	VTT	1	6
T5.4	Creating roadmap/action plan	VTT	1	6
T5.5	Multi-stakeholder web interface with solutions' Showcase	Softwater	6	36
WP6	Dissemination, communication, and exploitation of results via stakeholder involvement and linking to the missions and wider outreach	F6S	1	36
T6.1	Communication, dissemination and outreach activities	WE	1	36
T6.2	Open Call and FSTP Management and Open Call promotion	F6S	10	36
T6.3	Innovation, Management, Exploitation and Sustainability	AIG	6	36
T6.4	Synergies and liaisons with other Mission Initiatives	APCL	1	36
T6.5	Capacity-building and Training programme and one-stop-shop solution Marketplace	HP	1	36
WP7	Project Coordination and Management	ITCL	1	36
T7.1	Project Coordination	ITCL	1	36
T7.2	Scientific & Technical Coordination	SOCAMEX	1	36

| T7.3 | Ethics Compliance Management and Ethics Advisory Board | PN | 1 | 36 |
| T7.4 | Data Protection Compliance and Data Management Plan | PN | 1 | 36 |

Table 5: List of Deliverables.

Del. No.	Deliverable name	Del. Leader	Type	Disse. Level	Due Date
D1.1	Report on societal actions	HP	Report	PU	30
D1.2	Final report on EU policy recommendations	WE	Report	PU	36
D1.3	Toolkit for social impact	HP	Demonstrator	PU	12
D1.4	Sustainability impact assessment	VTT	Report	PU	30
D2.1	EC sensor box dedicated to organic micropollutants	UA	Demonstrator	SEN	24
D2.2	EC sensor box for heavy metal monitoring	UNIFI	Demonstrator	SEN	24
D2.3	Bioaccumulation and potential for biomagnification of CoEC in Mediterranean Sea waters	HCMR	Report	PU	24
D2.4	Recommendations on the use of the iMERMAID monitoring sensors for the purposes of the WFD and MSFD Directives	HCMR	Report	PU	33
D3.1	Microfluidic remediation pilot module for remediation of organic CoEC	EDEN	Demonstrator	PU	24
D3.2	PDP pilot module for remediation of organic CoEC	IRIS	Demonstrator	PU	24
D3.3	4DS Pilot equipment for heavy metal removal from demonstration sites	WF	Demonstrator	PU	24
D3.4	RO membrane conversion to NF and UF pre filtration membranes	ENIG	Report	SEN	24
D3.5	Evaluation of the different techniques	VTT	Report	PU	36
D4.1	Requirements and design of the use cases	CMMI	Demonstrator	PU	13
D4.2	Benchmarking report on water remediation	ITCL	Report	PU	8
D4.3	Report on the demonstration activities	SOCAMEX	Report	SEN	36
D5.1	White paper on upstream solutions; strategic foresight	VTT	Report	PU	12
D5.2	Modelled Scalability of Solutions	VTT	Report	PU	18
D5.3	Roadmap	VTT	Report	PU	34
D5.4	Final release of multi-stakeholder web interface	SOFTWATER	Report	PU	32

D6.1	Communication, dissemination strategies – Initial plan; Midterm report; Final report	WE	Report	PU	6
D6.2	Exploitation Plan of the project's results and IPR protection; Initial versions and final reports	APCL	Report	SEN	24
D6.3	Initial Innovation Management Report	AIG	Report	SEN	24
D6.4	Material for the Open Call for Third Parties	F6S	Websites, patents, filings, videos, etc.	PU	13
D6.5	Results of the Open Call	F6S	Report	PU	36
D6.6	Exploitation Plan of the project's results and IPR protection report	APCL	Report	SEN	36
D6.7	Innovation management report	AIG	Report	SEN	36
D7.1	Quality assurance Risk contingency plan updated	ITCL	Report	PU	6
D7.2	Project Handbook	ITCL	Report	PU	36
D7.3	Ethics Compliance Report	PN	Report	SEN	6
D7.4	Data Management Plan	PN	DMP	SEN[1]	6

Table 6: List of Milestones.

ID	Name	WP	Lead	Due Date
MS1	Kick-off Meeting	WP7	ITCL	1
MS2	Benchmarking and analysis of current aspects, requirements, specifications & conceptual architecture	WP4	ITCL	8
MS3	Sampling cruise for the bioaccumulation-biomagnification study	WP2	HCMR	6
MS4	Kick off Social Media Campaign, social influencing	WP1, WP6	WE	10
MS5	Kick off Schooling project	WP1	ECSA	18
MS6	First policy brief	WP1	WE	18
MS7	Laboratory prototype of monitoring and remediation solutions	WP3	EDEN	20
MS8	Pilot installed in San Esteban de Litera (Huesca, Spain); Limassol (Cyprus); Turin (Italy); Crete (Greece), Kalaat Al Andalouss (Tunisia)	WP4	CMMI	24

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[1] Both Deliverables D7.3 'Ethical Compliance Report' and D7.4 'Data Management Plan' have been approved to be changed from Public to Sensitive, due to their contents.

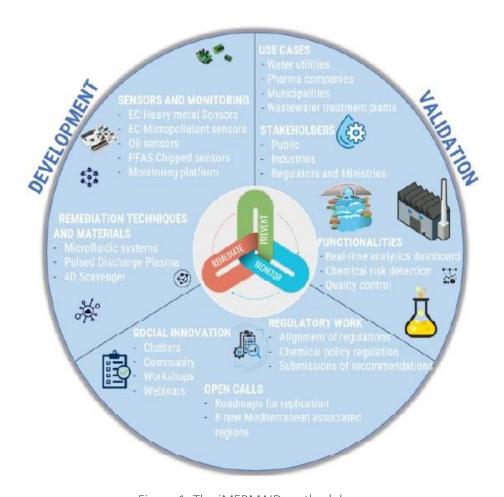| MS9	First SD model created, ready for recommendation by stakeholder group	WP5	VTT	12
MS10	First prototype of the multi-stakeholder web interface	WP5	SOFTWATER	24
MS11	Piloting completed	WP3	IRIS	36
MS12	Project website completed	WP6	WE	6
MS13	Open Calls: open call executed, and new projects integrated into iMERMAID	WP6	F6S	24
MS14	Launching of the Open Call	WP6	F6S	13

Figure 1: The iMERMAID methodology.

3. Management

3.1. Project Management Structure

The different bodies within the consortium, such as boards and committees, play a crucial role in the coordination of the iMERMAID project. The project's management framework, as originally outlined in section 3.1.1 of the DoA, Part B (pages 39-40), provides details about the functions and duties of these consortium bodies, as well as the communication structure between them, as depicted in the organizational chart below (Figure *2*).
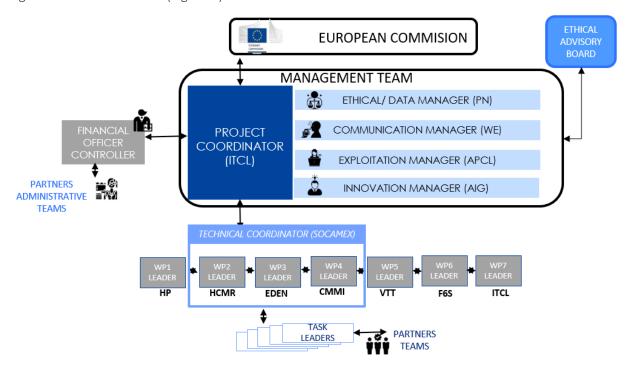

Figure 2: Consortium management structure.

As observed, the Technical Committee's scope (TC) encompasses WP2, WP3 and WP4. Hence, aside from coordinator SOCAMEX, the TC consists of the respective WP leaders (HCMR, EDEN and CMMI), the technology creators (IRIS, EDEN, WEEFINER and ENIG), as well as the sensor developers (HCMR, UA, UNIFI, MMDA and BIOS). SOCAMEX's responsibilities will involve ensuring the consistency of technical developments and the coverage of all technical tasks, coordinating regular TC meetings, etc.

3.2. Project Schedule

The initial project planning was defined in the Gantt Chart of the DoA, Part B, Section 3.1.1 (page 39). The Gantt is stored within the project repository under WP7. It will undergo periodic revisions by the PC in collaboration with the WP leaders, with a minimum frequency of every six months at the consortium meetings.

During WP and task-specific meetings, planning adjustments will be made at the WP or task level. Any modifications agreed upon during these sessions should be communicated to the PC.

All project participants will receive timely email notifications regarding upcoming deliverables and milestones.

To monitor progress, the Project Coordinator and/or the chair of the Technical Committee (TC) can review the meeting minutes from WP and other relevant meetings. The TC chair is responsible for technical monitoring, while the PC focuses on administrative, legal, and broader project-level matters. WP leaders shall place all meeting minutes in the designated folders within the project repository (as described in the repository section) and invite the PC and/or TC chair to key meetings to ensure they are informed about progress and can provide input on project-wide context.

3.3. KPI Register

To facilitate monitoring of KPIs, a register has been created. A fragment of this spreadsheet is illustrated in Figure 3, **Error! Reference source not found.** and **Error! Reference source not found.**. This register contains details such as the KPI's unique identifier (ID), its name, the current progress or level of fulfilment, the responsible WP, and the associated deliverables for each KPI. It also includes a description of the KPI and allows for comments.

The register comprises all KPIs defined in the DoA. Not only the KPIs directly linked to the project objectives, but also specific KPIs related to communication activities and technical KPIs. These include 'Use Cases KPIs', 'Success Indicators KPIs' based on objectives and 'Expected Outcomes KPIs'. Besides, if considered useful, additional KPIs may be defined during the course of the project.

The technical coordinator is responsible for updating the register at least once every six months, prior to the consortium meetings.

The KPIs Register contains the following fields:

- KPI ID.
- Risk description.
- Log date.
- Last updated date.
- Assessment, including likelihood, consequence, and the risk assessment.
- Managing Work Package (s).
- Risk owner.
- Risk status (Open/Occurred/Not occurred/Cancelled).
- Solutions for the mitigation plan including the action number, the action description, a target date for the action, and a current action status (Not commenced/In progress/Completed).
- The deadline for decision.
- Progress/comments.

Log date	Last updated	KPIs description	Target	Partners involved	Progress (%)	Managing WPs	Deliverables related	Progress description_	Comments	Progress description_2	Comments2
01/06/2023		European industry adopts effective remediation technology by scaling up of innovative solutions and onsite	5 industries	ESDAK - SMAT - SOCAMEX - VTT		WP 3, WP 4	D3.5 - Evaluation of the different techniques D4.3 - Report on the demonstration activities				
01/06/2023		Increased use of remediation technology focused on heavy industry	>20 %	SOCAMEX - VTT		WP 3, WP 4	D3.5 - Evaluation of the different techniques D4.3 - Report on the demonstration activities				
01/06/2023		Reduction in chemical pollutants in the Mediterranean areas where technology is adopted	80%	CMMI - ESDAK - SMAT - SOCAMEX - VTT		WP 3, WP 4	D3.5 - Evaluation of the different techniques D4.3 - Report on the demonstration activities				
01/06/2023		Industry actors adopts the monitoring and remediation technology	≥ 50	OP - VTT - SOCAMEX		WP 3, WP 4	D3.5 - Evaluation of the different techniques D4.3 - Report on the demonstration activities				
01/06/2023		Number of associated regions replicating demonstrators with numer of local support organisations during 2 open calls	≥ 5 ≥ 15	CMMI - ESDAK - F6S		WP 6	D6.4 - Material for the Open Call for Third parties D6.5 - Results of the open call				
01/06/2023		Support WFD with scalable monitoring low-cost solutions for better spatial resolution coverage	<80% lower cost compared to existing	SMAT - SOCAMEX - WE - VTT		WP 1	D1.2 - Final report on EU policy recommendations D1.4 - Sustainability impact assesment				
01/06/2023		Improve MSFD knowledge by data acquisition from number of areas in the Mediterranean basin	10000 km2	SMAT - SOCAMEX - APLC - VTT		WP 5, WP 6	D5.1 - White paper on upstream solutions; strategic foresigh D6.6 - Exploitation Plan of the project's results and IPR protection report				

iMERMAID_KPIs   UseCases_KPIs   Success indicators_KPIs

Figure 3: Expected Outcomes KPI register.

KPIs ID	KPIs name	Target	Owner	Log date	Last updated	Description	WP & Deliverables related	Progress (%, YES/NO)	Progress description_1	Comments	Progress description
KPI_Spain_1	Efficiency of PDP on agropollutants	95%	SOCAMEX	01/06/2023		The validation of the PDP technology in the facilities of San Esteban de Litera WWTP will allow to reduce the concentration of selected agropollutants.	D4.1 – Requirements and design of the use cases D4.2 – Benchmarking report on water remediation D4.3 – Report on the demonstration activities				
KPI_Spain_2	Real-time pollutant sensors	Installation and operation	SOCAMEX	01/06/2023		The installation of specific sensor for detecting organic compounds will allow the real-time monitorization of these contaminants.	D4.1 – Requirements and design of the use cases D4.2 – Benchmarking report on water remediation D4.3 – Report on the demonstration activities				
KPI_Spain_3	Reduction in pollutants transfer	50%	SOCAMEX	01/06/2023		After PDP treatment, the complete pollutants removal will decrease (at least 50%) their transfer to the Mediterranean Basin.	D4.1 – Requirements and design of the use cases D4.2 – Benchmarking report on water remediation D4.3 – Report on the demonstration activities				
KPI_Tuniss_1	Degradation of pharma COECs	>95%	OP	01/06/2023		Using micro-fluidic photocatalytic reactor allows the reduction of pharma COECs	D4.1 – Requirements and design of the use cases D4.2 – Benchmarking report on water remediation D4.3 – Report on the demonstration activities				
KPI_Tuniss_2	Reduction than conventional techniques	>50%	OP	01/06/2023		Using micro-fluidic photocatalytic reactor allows reduction in comparison with conventional techniques	D4.1 – Requirements and design of the use cases D4.2 – Benchmarking report on water remediation D4.3 – Report on the demonstration activities				
KPI_Tuniss_3	Monitoring box	Installation and operation	OP	01/06/2023		Control as mant effluent parameters as possible to ensure proper treatment of dissolved molecules	D4.1 – Requirements and design of the use cases D4.2 – Benchmarking report on water remediation D4.3 – Report on the demonstration activities				
KPI_Italy_1	Removal of heavy metals	95%	SMAT	01/06/2023		Using 4D Scavenger technology allows the reduction of heavy metals	D4.1 – Requirements and design of the use cases D4.2 – Benchmarking report on water remediation D4.3 – Report on the demonstration activities				
KPI_Italy_2	Real-time pollutant sensors	Installation and operation	SMAT	01/06/2023		The installation of specific sensor for detecting organic compounds will allow the real-time monitorization of these contaminants.	D4.1 – Requirements and design of the use cases D4.2 – Benchmarking report on water remediation D4.3 – Report on the demonstration activities				
KPI_Cyprus_1	Monitoring box	Installation and operation	CMMI	01/06/2023		The Monitoring Box will be installed during the first maintenance of the already deployed buoy	D4.1 – Requirements and design of the use cases D4.2 – Benchmarking report on water remediation D4.3 – Report on the demonstration activities				
KPI_Cyprus_2	Replication potential of	YES	CMMI	01/06/2023		The operation of MB allows to study the	D4.1 – Requirements and design of the use cases D4.2 – Benchmarking report on water				

iMERMAID_KPIs | **UseCases_KPIs** | Success indicators_KPIs | ⊕

Figure 4: Use Cases KPI register.

KPIs ID	KPIs name	Target	WP related	Partner involved	Log date	Last update	Progress (%, YES/NO)	Progress description_1	Comments	Progress
KPI_O1_1	Dialogs established between CSO and iMERMAID WGs	>20	WP1	HP	01/06/2023					
KPI_O1_2	Development of policy briefs	3	WP1	HP	01/06/2023					
KPI_O1_3	Integration of educational program in target regions	3	WP1	HP	01/06/2023					
KPI_O2_1	Effective electrochemical sensors by selection of relevant chemicals	>95%	WP2	HCMR	01/06/2023					
KPI_O2_2	Monitoring boxes with electrochemical sensors for organic CoECs and heavy metals	Development and operation	WP2	HCMR	01/06/2023					
KPI_O2_3	Protocols to demosntrate technologies in Use Cases of the Mediterranean sea	Development protocols	WP2	HCMR	01/06/2023					
KPI_O3_1	Persistent Organic Pollutants treatment with a significant reduction of energy	>30%	WP3	EDEN	01/06/2023					
KPI_O3_2	Recovery rate for heavy metals	>95%	WP3	EDEN	01/06/2023					
KPI_O3_3	Effectiveness in the degradation of plant protection products	>95 %	WP3	EDEN	01/06/2023					
KPI_O3_4	Effectiveness in the degradation of POPs and PFAs	>95%	WP3	EDEN	01/06/2023					
KPI_O3_5	Efficient, environmentally friendly solutions for removal of aquatic CoECs	>95%	WP3	EDEN	01/06/2023					
KPI_O3_6	Select a dataset of emerging pollutatns and evaluation of PDP technology	Selection performed	WP3	EDEN	01/06/2023					
KPI_O4_1	End users to validate the remediation infrastructure in 3 pilot units	>20	WP4	CMMI	01/06/2023					
KPI_O4_2	End users to validate the real-time monitoring platform in 5 pilots	>50	WP4	CMMI	01/06/2023					

iMERMAID_KPIs | UseCases_KPIs | **Success indicators_KPIs** | ⊕

Figure 5: Success Indicators KPIs based on objectives.

3.4. Monitoring

The primary means of tracking progress involve project meetings at various levels, including plenary consortium meetings and WP meetings, as outlined in the DoA, along with day-to-day communications. According to the size of the project, these methods are deemed sufficient.

A correct balance between active monitoring and any additional workload it may impose on the project team will always be pursued. This might entail reaching agreements on suitable meeting frequencies, the depth of detail within meeting minutes, the level of granularity in semi-annual reports that aid in project management and periodic reporting, among other considerations.

3.5. Gantt Chart

An advanced Gantt chart has been developed to facilitate project execution (Figure 6). This chart provides a comprehensive breakdown of the project, including its work packages and tasks, along with associated deliverables and milestones.

This Gantt chart has been accessible to the project consortium since the beginning of the project, made available through the project repository on Microsoft Teams. The chart is organized into Work Packages, visualising the leading partner, the months during which each task will be carried out, and the total effort required for each task. Effort allocation is then linearly distributed over the project's duration to estimate the person-months (PMs) needed each month. Additionally, a grouping function on the left side allows for the display of corresponding deliverables and milestones associated with each Work Package.

The two reporting periods of iMERMAID are clearly marked in the Gantt too, as shown in Figure 6:

- Reporting Period 1: Month 1 – Month 18
- Reporting Period 2: Month 19 – Month 36

Also, in Figure 7, we can find a table with the partners effort distribution.

WP / Task	iMERMAID	WP / Task Leader	Start / Type	End	Sum
WP1	Societal actions for the reduction of	HP	4	36	73,0
T1.1	Formulate policy recommendations and re	WE	12	36	
T1.2	Pollution mitigation via influencing social pe	HP	4	30	
T1.3	Sustainability impact assessment (LCA an	VTT	12	30	
WP2	Screening, mapping and monitoring	HCMR	1	36	269,5
T2.1	Optimise, demonstrate and deploy electro	UA	2	33	
T2.2	Optimise, demonstrate and deploy sensor	BIOS	1	24	
T2.3	Optimise, demonstrate and deploy sensor	UNIFI	4	24	
T2.4	Evaluate bioaccumulation and biomagnifica	HCMR	6	24	
T2.5	Develop Framework for Sensing, Data Co	CUB	1	32	
T2.6	Develop recommendations for the applica	HCMR	12	36	
WP3	Removal and remediation of chemica	EDEN	1	36	199,0
T3.1	Microfluidic systems integrated with photo	EDEN	1	24	
T3.2	Plasma enabled systems for the effective	IRIS	1	24	
T3.3	4D Scavenger systems for the effective r	WF	1	24	
T3.4	Reclaimed RO membrane conversion to NI	ENIG	1	24	
T3.5	Life cycle cost, cost-benefit analysis and	VTT	24	36	
WP4	Demonstration of innovative technol	CMMI	1	36	242,82
T4.1	Framework requirements & Use case des	CMMI	1	12	
T4.2	Technical Specifications	ITCL	1	8	
T4.3	Coordinate work between technical and d	SOCAMEX	20	36	
WP5	Roadmaps for uptake and scalability	VTT	1	36	105,0
T5.1	Assessment and recommendation of cher	VTT	1	6	
T5.2	Strategic foresight	VTT	2	7	
T5.3	Scalability analysis with SD-modelling	VTT	1	6	
T5.4	Creating roadmap/action plan	VTT	1	6	
T5.5	Multi-stakeholder web interface with solut	Softwater	6	36	
WP6	Dissemination, communication and e	F6S	1	36	259,2
T6.1	Communication, dissemination and outrea	WE	1	36	
T6.2	Open Call and FSTP Management and Ope	F6S	10	36	
T6.3	Innovation Management, Exploitation and S	AIG	6	36	
T6.4	Synergies and liasons with other Mission	APCL	1	36	
T6.5	Capacity-building and Training programme	HP	1	36	
WP7	Project Coordination and Manageme	ITCL	1	36	68,0
T7.1	Communication and dissemination strategy	ITCL	1	36	
T7.2	Scientific & Technical Coordination	SOCAMEX	1	36	
T7.3	Ethics Compliance Management and Ethics	PN	1	36	
T7.4	Data Protection Compliance and Data Man	PN	1	36	
	TOTAL PMs				1216,52

Figure 6: Detailed project Gantt chart.

TOTAL	1 ITCL	2 EDEN	3 Weefiner	4 IRIS	5 HCMR	6 UA	7 VTT	8 CMMI	9 WE	10 ENIG	11 UNIFI	12 F6S	13 PN	14 SOCAMEX	15 ZEN	16 APCL	17 SMAT	18 HP	19 ESDAK	20 AUG	21 Softwater	22 CUB	23 ECSA	24 Opalia	25 BIOS	26 NTUU KPI	
73	3	0	3	0	6	0	9	7	3	0	0	0	0	6	0	12	6	10	0	0	0	0	8	0	0	0	WP1
																											T1.1
																											T1.2
																											T1.3
269,5	36	0	0	5	19	24	4	9	0	0	49,5	0	0	8	39	0	5	0	0	0	0	12	0	3	36	20	WP2
																											T2.1
																											T2.2
																											T2.3
																											T2.4
																											T2.5
																											T2.6
199	0	44	40	51	0	0	8	0	0	30	0	0	0	5	0	12	2	0	0	0	3	0	0	4	0	0	WP3
																											T3.1
																											T3.2
																											T3.3
																											T3.4
																											T3.5
242,82	16	28	14	5	17	24	1	30	0	6	7	0	0	26	5	2	9	0	6,82	4	0	5	1	28	4	4	WP4
																											T4.1
																											T4.2
																											T4.3
105	17	1	1	1	1	1	24	3	0	1	1	0	0	6	1	4	2	3	0	1	27	8	2	0	0	0	WP5
																											T5.1
																											T5.2
																											T5.3
																											T5.4
																											T5.5
259,2	12	12	3	2	4	2	3	8	14	6	3	55	3	10	6	22	4	18	4,2	26	5	8	14	9	3	3	WP6
																											T6.1
																											T6.2
																											T6.3
																											T6.4
																											T6.5
68	19	1	1	1	1	1	1	1	1	1	1	1	11	7	1	1	2	1	1	6	1	1	3	1	1	1	WP7
																											T7.1
																											T7.2
																											T7.3
																											T7.4
1216,52	103	86	62	65	48	52	50	58	18	44	61,5	56	14	68	52	53	30	32	12,02	37	36	34	28	45	44	28	Total PMs

Figure 7: Partners effort distribution.

3.6. Task interdependencies

The aim of this section is to study in more detail the project's task interdependencies, as the DoA provides limited general information for day-to-day work.

To achieve this, Figure 8 outlines the main connections between work packages and tasks, along with identifying the partners responsible for each task and the execution of the pilots, providing a clear concept of the project. Hence, this diagram offers a concise visualization of the project's structure.

It consists of the following items:

- A blue block for each of the WPs, from 1 to 7.
- Purple balloons/text, which represent each of the tasks of the different WPs.
- Lilac balloons/text, which symbolise the 5 pilots.
- Black arrows, which indicate specific technical elements or components that will be needed for the execution of the pilots. The one originating in WP2 covers the different developed sensors that will be used during the monitoring part of the use cases, while the arrow that comes from WP3 refers to the innovative technologies which will be responsible for the remediation of contaminants.
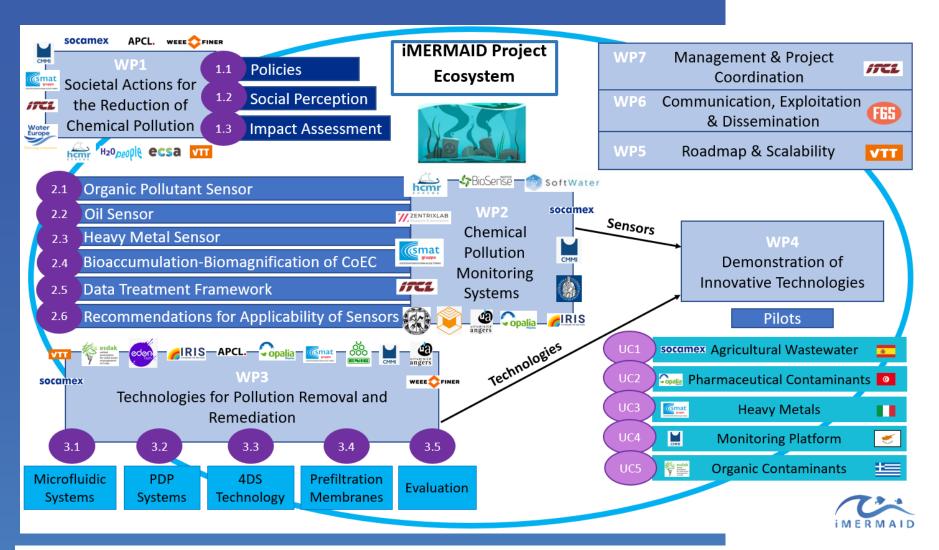- Logos of the different collaborating entities taking part in the project.

Figure 8: iMERMAID project ecosystem.

4. Communication

Effective communication is of paramount importance for achieving high quality project objectives.

4.1. Consortium team contacts

To facilitate communication with consortium partners, the contact information of all project contributors is consolidated within a singular file in the repository. This file, named 'Contact Details iMERMAID', is an Excel document located in the root of WP7 folder.

All participants have the obligation of maintaining this registry up to date. It contains the following information:

- Contact details of the individuals contributing to the project.
- Designated roles within the project.

The file contains brief instructions on its utilization. The format of this registry may change throughout the course of the project.

4.2. Mailing lists

To ensure that all communications are neatly recorded and to make it easier to access specific information if needed, several Google Groups have been created, divided into different sections:

- One group per work package, from WP1 to WP6.
- One group named 'iMERMAID all'.
- One group labelled 'iMERMAID Management Team Meetings'.

Google Groups is a platform that enables individuals to create and join online communities centred around certain topics or interests. These groups serve as virtual forums for discussions, collaboration and information sharing. Users can subscribe to groups, receive email notifications for new posts, and participate in conversations by posting messages and sharing content. Google Groups offers features for managing group membership, permissions, and content moderation, making it a versatile tool for both public and private discussions, facilitating communication and knowledge exchange in a user-friendly online environment.

For instance, let's consider the project's 'WP1' Google Group. Thanks to it, users can efficiently share information with all recipients by posting a single message in the 'WP1' Google Group, instead of sending individual emails to each WP1 member. This way communication is optimised and time saved.

In the table below, mailing lists created for the iMERMAID project can be found:

Table 7: Mailing lists.

Group	Mailing address
ALL	imermaid.all@itcl.es
MTM	imermaid.management.team@itcl.es
WP1	imermaid.wp1@itcl.es
WP2	imermaid.wp2@itcl.es
WP3	imermaid.wp3@itcl.es
WP4	imermaid.wp4@itcl.es
WP5	imermaid.wp5@itcl.es
WP6	imermaid.wp6@itcl.es

4.3. Videoconferencing

Videoconferencing is one of the most important communication channels in any Horizon Europe project. ITCL has purchased Microsoft Teams and it will be used by the project. Certainly, this does not exclude the use of other platforms for videoconferencing.

The PC manages the account, monitors its use, and provides access to consortium partners.

4.4. Email

Many colleagues receive a substantial volume of emails, which is why we offer some recommendations to enhance their effective use:

- Include '[iMERMAID]' in the subject.
- Use a concise subject that accurately describes the email's content.
- Thoughtfully select addresses, including only those who are essential.
- Respond in the same manner you'd prefer your messages to be answered.
- Consider that a phone call (or a one-on-one video call) is often faster, more efficient, more personalized, and fosters better comprehension compared to written communication.

4.5.   Chatting

The use of Microsoft Teams chat is highly recommended due to its speed and effectiveness. Furthermore, it is also possible to create groups, temporarily or for the whole duration of the project.

Nevertheless, colleagues are obviously allowed to use alternative chat platforms such as Slack or Skype.

5. Project Repository

The project repository is common cloud storage for saving, developing and sharing project files. The platform proposed by the PC and accepted by the consortium is Microsoft Teams. The Project Coordinator, ITCL Technology Centre, is responsible for managing the repository.

5.1. Security

The PC grants access to selected personnel from the consortium partners only, meaning that project data is inaccessible for third parties outside the consortium. All people that were granted access to the repository are responsible for taking utmost care that unauthorised people do not obtain access to the data stored on the repository (e.g., links to data on the repository shall not be shared with third parties, passwords are strictly personal). Breaches may have legal consequences as described in the Grant Agreement and the Consortium Agreement.

On this page the GDPR compliance of Microsoft Teams is explained: https://learn.microsoft.com/en-gb/compliance/regulatory/gdpr. This includes compliance of articles 45 and 46 of the GDPR regarding data transfer of personal data outside the EU.

Microsoft Teams provides file versioning, i.e., previous and/or overwritten versions can be recovered.

5.2. Use

On the repository, any project file may be saved and shared; except for privacy sensitive data obtained from pilots, these are not allowed to be shared with the entire consortium. Specific rules will be defined for these data and clearly presented and highlighted in the corresponding documents/sections.

Initially, all users have full access to the entire repository. All users are allowed to create, modify and delete data as deemed useful. It is the responsibility of the users to keep the repository workable for all colleagues. During the course of the project, it may be decided to restrict access to certain (sensitive) data or to change access rights for certain users. The Project Coordinator must always be involved in these decisions and will be responsible for applying these modifications.

One of the purposes of the repository is to make sure that all partners work with the most recent version of a file. It also allows for online editing of files by several partners at the same time. For this reason, sharing files by email should be minimised as it increases the risk of parallel versions of files and risk data loss.

The repository's storage size is not unlimited. Therefore, users should consider the added value for the project of very large files, such as videos, before saving them.

ITCL has purchased an educational licence of MS Teams. This means that by default some tools, contents and terms are included related to education (e.g. classroom, teachers). This is not expected to affect the use of the platform for the iMERMAID project.

Any doubts regarding the repository can be addressed to the Project Coordination Team and/or the Project Coordinator.

5.3. Folder Structure

The initial folder structure of the repository is described, with the intentioned use of the folders. Any significant change to this structure during the project will be included in updates of this document. All users are encouraged to create additional subfolders to organise the work as deemed useful.

MS Teams organises groups/projects in so-called 'teams'. The team for this project is named 'iMERMAID'. The following structure has been defined:

- 'General'

  This is a standard folder generated by Teams. It may be used for general matters in the future, yet at the time of writing it remains empty.

- 'Meetings'

  For meetings in which more than one WPs are involved. This can be any kind of meeting, i.e. face-to-face or online, Consortium meetings, General Assembly, bilateral meetings, etc.

  A subfolder should be created for each meeting. Its name should start with the date in format 'yymmdd'.

  Used for sharing meeting minutes, agenda, presentations, and any other related files.

- 'Communication and dissemination materials'

  This folder contains iMERMAID templates: Power Point, Deliverables, Meeting minutes, Agenda, etc.

  Also, the iMERMAID logos in various formats and the EU logo (flag) to be used in dissemination activities etc.

- 'WPn'

  One folder per work package. The WP leaders are free to add more, yet several subfolders have been predefined:

  - 'Dn.n Title'

    Here all partners involved in a deliverable can draft it. Remind that Teams saves versions, abusive use of suffixes to the filename should be avoided.

    - 'Drafting'

      Subfolder where the document is drafted. After submission the draft is kept here. This ensures having the document on which the partners have worked so that previous versions can be recovered.

    - 'Submitted EC'

      Subfolder where the submitted version to the EC Portal is saved. This version has to be saved in Word and PDF formats.

    - 'Submitted internally'

      Subfolder where project-internal submissions of the deliverable are saved. Both in Word and PDF formats.

      Any updates of deliverables after submission to the EC must be included here.

- ▪ 'Updates after submission'

  If a deliverable is updated after submission (either to the EC or internally), this folder is created to store the updated document. This clearly identifies the last version of the document to be used.

  o 'Meetings WPn'

  For meetings within the work package.

  o 'Working Place'

  Folder where everybody is free to work on any file related to the WP.

- • 'WP7'

  In the WP7 folder for Project Coordination and Management, the following folders and documents of general interest are added:

  o '1 Grant Agreement'

  Folder for the Grant Agreement, its Amendments and other related documents.

  o '2 Consortium Agreement'

  Folder for the Consortium Agreement, its Amendments (if any) and other related documents.

  o '3 Periodic Reports'

  Folder where the Interim Periodic Reports and similar reporting to the EC will be drafted.

  o 'Contact Details iMERMAID'

  Excel containing mailing lists and the contact details of all people working on the project, see section **Error! Reference source not found.**.

  o 'Gantt Chart iMERMAID'

  An advanced Gantt chart was developed to support project planning, see section **Error! Reference source not found.**.

6. Deliverables guidelines

6.1. Deliverable development

Several guidelines are in place for the development of deliverables:

- To employ the most recent version of the deliverable template, available within the Teams repository under the Communication and dissemination materials folder. Avoid using any other deliverable as a template.
- Strictly follow the template formatting in order to create a coherent set of deliverables.
- To set the language to English U.K. (i.e., 'colour' instead of 'color'). English U.K. is the language preference of the European Commission.
- To implement version numbering and do an appropriate use of the Document Revision Log.
- Each deliverable reviewer must utilise the Track Changes function for review purposes.
- There is no prescribed minimum length for deliverables, just including easily comprehensible language and structure.
- All deliverables typically encompass the following sections, as a general guideline:
  - Executive summary, resuming the content of the deliverable, as a first section before the table of contents. (1 page max)
  - Conclusions, summarising the main conclusions of the work described in the deliverable, serving as the last section. (1 page max). Annexes should be added after this section.

Given the fact that iMERMAID represents an extensive project involving multiple partners contributing to specific workflow stages, this approach facilitates a swift grasp of the document's actual substance.

- The designated file name format is 'Dn.n Title_iMERMAID.docx'.
- It is highly recommended to avoid parallel versions, e.g., several partners download deliverables and upload them again; or create new files adding suffixes like '_ITCL_v2'). Instead, edit online in Teams, especially when several project partners need to work on the document at the same time. But also because of the automatic versioning and backups. Should offline work be necessary (e.g., for special formatting), consider if others need to be informed.
- It is strongly recommended to incorporate images and graphs, as these visual aids can convey information more effectively than extensive text.
- When dealing with extensive tables and comparable content, it is prudent to transfer them to an annex or appendix. This relocation enhances both the overall organization and readability of the material.

6.2. Deliverable reviewing

As delineated within the DoA, the PC holds ultimate responsibility for overseeing the quality control of project deliverables destined for the Commission. This role involves close coordination with the TC for technical quality assessments.

Every project deliverable is entrusted to a leading partner who assumes the duty of ensuring the congruence of content with established objectives, the quality of the work accomplished, and timely submission. Additionally, each deliverable undergoes a peer review process, involving up to two internal reviewers possessing expertise relevant to the deliverable, though not directly involved in its development or authorship.

Subsequently, the PC will make a final evaluation of all deliverables to ensure uniformity, coherence, and clarity before the submission to the EC. When necessary, the PC could request further work of the partners on a deliverable.

The subsequent timeline, approved by all consortium partners in the iMERMAID's Kick-off meeting, is established as a reference point, open to practical adaptations as needed. The WP leader is responsible for complying with the schedule.

- 4 weeks before deadline: The responsible for the deliverable must have a draft version ready, while the PC in collaboration with the TC assign up to two reviewers to initiate the review process.
- 2 weeks before deadline: At this point, all partners are given the opportunity to review the document. Proposed changes by the reviewers have been deliberated upon and successfully incorporated by the author.
- 1 week before deadline: The author finalises any remaining changes and adjustments, then promptly informs the PC.
- Deadline: The PC has conducted a final assessment encompassing formatting and adherence to guidelines before ultimately submitting the deliverable to the EC Funding & Tenders Portal.

7. Milestones development

The iMERMAID project will achieve fourteen milestones during the project lifetime. Milestones (MS) are considered as control points in the project that help to chart progress. Sometimes, they may correspond to the completion of a key deliverable, which allows the next phase of the work to begin or is needed at intermediary key points in the project.

The development and submission will be marked as achieved in the EC Portal 'Funding and Tenders Portal' by the Project Coordinator. Partners who are leading any of the milestones must report the updates, progress, and completion, in order to have a successful achievement of the milestones.

By the time of presentation of this deliverable, three milestones have been achieved:

- MS1: Kick-off meeting.
- MS3: Sampling cruise for the bioaccumulation-biomagnification study.
- MS12: Project website completed.

8. Risk Management

8.1. Risk Methodology

Risk management constitutes a comprehensive procedure that envelops risk planning (comprising identification, assessment, analysis, mitigation, and planning), as well as risk reduction (implementation of mitigation plans, monitoring, and risk re-evaluation). This process unfolds as an iterative cycle during project lifetime, guaranteeing the prompt identification and proactive addressing of risks.

To provide further insight, this involves identifying risks, assessing their significance, and determining whether their level surpasses what is permissible for the project. In case that a risk exceeds the acceptable levels, a risk analysis activity will be instantiated that will define the required actions, in order to set the risk within acceptable levels. In addition, the management of risks also involves the planning of the required activities to handle the risk, the redistribution of resources, and the evaluation of the results, as well as ensuring the stability of the new status.

Figure 9: Risk management process.

Alterations and changes may emerge in project extent, project expenses, timeline, or utilised methodologies. Within the context of the iMERMAID project, change management will be executed through standardised procedures, ensuring that potential modifications will happen only if necessary, and that they will be reported appropriately. This encompasses evaluating the necessity of a change and the assessment of its consequences. The list of identified risks has been included in the iMERMAID Risk Register presented in Section 8.5.

Internal risks will be minimised and overseen by employing well-established techniques for project planning and control. The PC, in collaboration with the TC and the MT, will be mainly responsible to handle internal risks and inform all partners when necessary.

The responsibility assignment matrix in Table *8* summarises the roles for the risk management process. The PC is ultimately accountable for all tasks, and responsible for the risk management plan. Work Package leaders (WPL) are in principle responsible for all other subsequent steps in the process, ask risk owners. Note that other partners may be assigned risk ownership. Frequently, the most directly involved Tasks Leaders (TL) are consulted about the risk or mitigation, as well as the TC if the risk affects more than one technical work package. Technical WPs into the iMERMAID project are involved in WP2, WP3 and WP4.

The RASCI model is used for the assignment of the risk tasks:

- o R (Responsible): Those responsible to complete the task.
- o A (Accountable): The individual responsible for ensuring the accurate and comprehensive fulfilment of the task.
- o S (Support): Resources allocated to Responsible, helps complete the task.
- o C (Consulted): Those whose opinions are sought, typically subject-matter experts.
- o I (Informed): Those who are kept up to date on the progress.

Table 8: Responsibility assignment matrix for risk management process.

Task	PC	TC	WPL	TL	Partner
Risk management plan	A/R	C	C	S	S
Risk Identification	A	C	R	C	S
Risk Assessment & Analysis	A	C	R	C	S
Risk Mitigation Planning	A	C	R	C	S
Risk Mitigation Plan Implementation	A	C	R	C	S
Risk Tracking	A	C	R	C	S

The following subsections explain the steps following the planning in the risk management process.

8.2. Risk Identification

Risk Identification serves as the initial step, examining each element of the project to identify associated risk and set the stage for their effective management. The risks in the context of the iMERMAID project will be classified per WP.

Each risk is classified by a number and is assigned a responsible partner(s) as the risk owner. The risk owner has the overall responsibility for risk management activities until the risk is conclusively resolved. By default, the risk owner is the WP leader, however, the PC may assign the risk to another partner if considered more adequate.

Furthermore, an initial collection of risks has already been identified in the DoA. Should any new risk come to light, raised by any member of the consortium, be promptly communicated to the relevant task leader. The task leader evaluates the risk, and if considered an actual risk, communicates it to the WP leader who in turn evaluates and communicates to the PC.

8.3. Risk Assessment and Analysis

After the identification of the risks, they should undergo an analysis and assessment in terms of the probability (the likelihood of occurrence) and the potential impact on the project if they materialize (the consequence of occurrence). The level of likelihood of each risk is established utilizing the following specific criteria.

Table 9: Levels of risk likelihood.

Level	Likelihood	Probability of Occurrence
1	Not likely	~10%
2	Low likelihood	~30%
3	Likely	~50%
4	Highly likely	~70%
5	Near certainty	~90%

The level of consequence of each risk is established utilizing a number of criteria related to a concrete situation or a recognized hazard. The level of consequence is determined within the following specific criteria.

Table 10: Levels of risk consequence.

Level	Likelihood
1	Negligible
2	Minor
3	Moderate
4	Significant
5	Severe

In order to enable a systematic analysis of the risks, the following matrix calculates quantitatively the risk 'score'. The matrix is not symmetric as consequence values are weighted more than likelihood values.

Table 11: Assessment of the identified risk according to its likelihood and consequence levels.

		Consequence				
		1	2	3	4	5
Likelihood	5	LOW	MODERATE	MODERATE	HIGH	HIGH
	4	LOW	MODERATE	MODERATE	HIGH	HIGH
	3	LOW	LOW	MODERATE	MODERATE	HIGH
	2	LOW	LOW	MODERATE	MODERATE	MODERATE
	1	LOW	LOW	LOW	MODERATE	MODERATE

The following table converts the score to a qualitative risk assessment.

Table 12: Risk score assessment.

Risk level	Definition
LOW	Has Little potential to cause disruption of schedule, increase in cost, or disruption of performance. Normal comp any effort will probably be able to overcome difficulties.
MODERATE	Can potentially cause some disruption of schedule, increase in cost, or disruption of performance. However, special effort will probably be able to overcome difficulties.
HIGH	Likely to cause significant serious disruption of schedule, increase in cost, or degradation of performance even with special effort and close monitoring of the contracting activity.

8.4. Risk Mitigation Plan & Implementation

Risk mitigation planning identifies, evaluates, and selects options to lower risk at acceptable levels given program constrains and objectives.

This can be accomplished through reduction in likelihood, reduction in consequences, or a combination of both. It includes the specifics of what should be done, when it should be accomplished, who is responsible, and the resources required to implement the risk mitigation plan.

The implementation of risk mitigation actions is responsibility of the risk owner.

8.5. Risk Tracking

The ultimate essential task is risk monitoring and tracking, which involves the activity of tracking and evaluating the performance of risk mitigation actions. Risk tracking essentially constitutes a

feedback process wherein adjustments or updates to risk mitigation plans may be made in response to the current risk status. If the plan is not effective, alternative plans must be put in place to ensure that risk is appropriately handled.

The risk owners are responsible for monitoring progress and regularly updating risk status and information, at least every half year at the plenary consortium meetings. This process will be coordinated by T7.1 leader ITCL.

8.6. Risk Register

The PCT has developed a risk register for the iMERMAID project. This risks register will be updated regularly, at least with each consortium meeting (every 6 months).

The first assessment of the project risks as defined in the DoA has been transferred to the register; and completed with likelihood (probability of materialisation of the risk) and consequences (impact of the materialisation of the risk).

The Risk Register contains the following fields:

- Risk ID.
- Risk description.
- Log date.
- Last updated date.
- Assessment, including likelihood, consequence, and the risk assessment.
- Managing Work Package (s).
- Risk owner.
- Risk status (Open/Occurred/Not occurred/Cancelled).
- Solutions for the mitigation plan including the action number, the action description, a target date for the action, and a current action status (Not commenced/In progress/Completed).
- The deadline for decision.
- Progress/comments.

The Risk Register is shown below in Figure 10 and Figure 11.

Risk ID	Risk description (event, causes, impact)	Log date	Last updated	Likelihood	Consequence	Risk assessment	Change	Managing WPs	Risk owner	Risk status	Action 1 number	Action 1 description
R_0001	The project team lack of the required knowledge	2023-06-01	2023-08-30	1	1	LOW	↔	WP1, WP6, WP7, WP2, WP4, WP5, WP3	PC	open	R_0001_A_01	Consortium has been carefully formed and WPLs assigned selecting the partner with the strongest relevant expertise. The project will generate new employment opportunities and involved entities are committed to hire new experts (preferably women), if needed.
R_0002	Lack of resources /personnel changes	2023-06-02	2023-08-30	1	2	LOW	↔	WP1, WP6, WP7, WP2, WP4, WP5, WP3	PC	open	R_0002_A_01	Project management will spot such situations early. Possibility of partner replacement will be evaluated with commission, if overlapping skills among the consortium partners cannot fulfil the created gap.
R_0003	Collaboration difficulties with external stakeholders to extract requirements from use cases	2023-06-03	2023-08-30	1	3	LOW	↔	WP4	PC	open	R_0003_A_01	Project management will spot such situations early. Possibility of partner replacement will be evaluated with commission, if overlapping skills among the consortium partners cannot fulfil the created gap.
R_0004	iMERMAID low acceptance	2023-06-04	2023-08-30	3	3	MODERATE	↔	WP6	PC	open	R_0004_A_01	Early collaboration with KoLs, relevant industrial experts. Business Models supported with extensive commercialisation and dissemination actions.
R_0005	Orchestration, distributed processes and integrated mechanisms not compatible	2023-06-05	2023-08-30	3	3	MODERATE	↔	WP4	PC	open	R_0005_A_01	iMERMAID aims to provide many heterogeneous developments that need to work together in an integrated manner. The work will be driven by a common use case where, early in the project, we define how all fits into the overall platform. Technical manager will pay special attention that the work done is aligned, and executed in synergy with relevant parts, producing complementary modular components.

Figure 10: iMERMAID Risk Register I.

ID	Risk	Date	End Date	P	I	Level		WP	Owner	Status	Action	Mitigation
R_0006	Publications not accepted/ deliverables quality low	2023-06-06	2023-08-30	1	2	LOW	↔	WP6	PC	open	R_0006_A_01	Establish and enforce good quality assurance procedures. Do more extensive internal paper/deliverable reviews. The partners already have a good track of publications. The Innovation and Scientific manager will monitor the activities.
R_0007	Composition platform is not ready for pilot exploitation	2023-06-07	2023-08-30	1	2	LOW	↔	WP4	PC	open	R_0007_A_01	The platform will be built incrementally, and priorities will be defined properly, carefully monitoring the progress of implementation at WP level, to detect gaps andreschedule priorities. Project will leverage existing technology to build upon.
R_0008	Delay in the development of components	2023-06-08	2023-08-30	2	3	MODERATE	↔	WP2, WP4, WP3	PC	open	R_0008_A_01	Partners have large experience in development of predefined components. Implementation will be managed via continuously monitoring the progress and taking necessary corrective actions.
R_0009	Ecosystem and community creation slow and participation to open calls low, low quality of third part projects	2023-06-09	2023-08-30	2	3	MODERATE	↔	WP6	PC	open	R_0009_A_01	Engagement activity has been properly planned. Engagement will rely on building the iMERMAID ecosystem starting from existing communities and ecosystems, to which the partners are already well connected. If the reception of proposals is lower than expected, the dissemination activities will be increased, online actions reinforced, actions with Partners' Networks, organising additional InfoDays and Webinars to inform and support applicants in project definition. iMERMAID Help Desk support is continuously available for applicants. GOAL: selection of proposals reaching the desired quality level.
R_0010	Failing Technical Readiness Level uplift	2023-06-10	2023-08-30	2	3	MODERATE	↔	WP4, WP3	PC	open	R_0010_A_01	The different tests will provide sufficient information for the improvement of the prototypes, if the techniques are not able to reach the required TRL the information from the laboratory tests will be used and simulations may be included for the required reports and societal actions.

Figure 11: iMERMAID Risk Register II.

9. Conclusions

Deliverable 'D7.1 Quality Assurance Risk Contingency Plan' includes general information on the organization and quality management of the iMERMAID project, as well as providing an overview of risk mitigation actions and risk occurrence throughout the project, useful for reporting. The quality and risks management plan outlines the procedures, control measures, and operational practices designed to guarantee the execution of all activities in the iMERMAID project with a superior level of quality.

It extends the related definitions of the Grant and Consortium Agreements and consists of a live document that will be updated throughout the project lifetime as needed.

This document is intended to be a practical manual with guidelines for the consortium members. The work established in this document is crucial to the other project tasks and will serve as a reference point for process monitoring, in both technical and managerial terms.

The Mediterranean Sea and its surrounding regions support a diverse variety of essential socioeconomic activities. It is one of the highly exploited water ways and the influence of anthropogenic activities on its marine habitats and ecosystems has grown significantly since the industrial revolution. Because of this, the Mediterranean Sea basin is very vulnerable to chemical contamination and build-up. To safeguard the Mediterranean Sea basin from contaminants for emerging concerns (CoEC), iMERMAID will integrate, coordinate, and synergize innovative preventive, monitoring, and remediation solutions. iMERMAID will build an evidence-based multidimensional framework that will guide policymaking and transform societal perceptions to reduce CoEC usage, emissions, and pollution. Furthermore, next generation sensor and remediation solutions will be developed within iMERMAID to monitor and remove prioritized chemicals from its source while reducing upstream pollution. iMERMAID builds an ideal interdisciplinary team by bringing together prominent SMEs, researchers, regulators, and innovation professionals who have been essential in improving the knowledge and awareness of CoEC. Beyond state-of-the-art techniques, iMERMAID will strive to strengthen regulations against CoEC, expand economic possibilities and competitiveness, improve the standard of living for EU residents, while preventing the accumulation of chemical pollution in the Mediterranean Sea basin. iMERMAID will empower the efforts to create a zero pollution, contaminant free waters by enabling the Chemical Strategy's goals to become a practical reality.