CS - MACH1

D1.1 Quality Control and Risk Management Documentation

Viviana Piermattei (CMCC), Camilla Campanati (CMCC)

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List of referenced acronyms

AUA	American University of Armenia
CFS	Certificate on the Financial Statement
CMCC	Centro Euro-Mediterraneo sui Cambiamenti Climatici
CS	Citizen Science
CSIC	Consejo Superior de Investigaciones Científica
CS-MACH1	MArine Citizen science data Horizon
DMP	Data Management Plan
DOI	Digital Object Identifier
DTO	Digital Twin Ocean
GA	General Assembly
GBIF	Global Biodiversity Information Facility
EAB	External Advisory Board
EC	European Commission
ECSA	European Citizen Science Association
EDITO	European Digital Twin Ocean
EI	Expected Impact
EMODnet	European Marine Observation and Data Network
ETT	ETT SPA
EU	European Union
EurOBIS	European node of the Ocean Biodiversity Information System
FAIR	Findable, Accessible, Interoperable and Re-usable
KPI	Key Performance Indicator
IEEE	IEEE France Section
Ifremer	The Institut Français de Recherche pour l'Exploitation de la Mer
LP	Lead Partner
MARIS	MARIS B.V.
MCS	Marine Citizen Science
MCSI	Marine Citizen Science Initiatives
MCSDN	Marine Citizen Science Data Network
NOC BODC	National Oceanographic Centre
OutBe	OutBe S.R.L Società Benefit
PC	Project Coordinator
PMO	Project Management Office
SeaDataNet	Pan-European infrastructure for ocean & marine data management
SC	Steering Committee
SDN	Software-Defined Networking
SMHI	Swedish and Meteorological Institute
SO	Specific Objective
SSBE	Seascape Belgium
UM	University of Malta
VLIZ	Flanders Marine Institute
WP	Work Package

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1. Executive Summary

This document contains comprehensive procedures for implemented quality control and detailed risk management plan, including mitigation strategies.

D1.1 defines how the project quality and risks will be managed. It outlines the quality criteria, the deliverable review process, and mechanisms for monitoring and ensuring high-quality project outputs. It identifies potential risks and describes mitigation strategies and responsibilities for managing these risks.

Quality Control and Risk Management Documentation will be reviewed and updated regularly, in subsequent versions to submit by M18 (D1.2) and M28 (D1.3) respectively.

2. Scope of the document

The document presents the procedures for CS-MACH1 implemented quality control and detailed risk management plan, including mitigation strategies.

These procedures and rules are governed by the legally binding Grant Agreement and Consortium Agreement, signed by all the members of the consortium, and by several concrete actions:

- A clear and actionable governance structure established during the development of the project proposal and implemented right at the start of the implementation,
- Effective internal communication tools and processes, enabling the review process of each deliverable produced by the project
- A regular monitoring of project actions and budget leading to accurate technical and financial reporting,
- Clear Intellectual Property Rights management rules
- Well defined Key Performance Indicators and monitoring
- The management of risks foreseen at the time of writing the project proposal and monitored during implementation. And the management of unforeseen risks identified during the project development.

CMCC-Led-WP1 – Project coordination and management – will oversee the quality assurance and risk management plan to ensure high quality standards, a smooth project execution, and compliance with the Grant Agreement. WP1 will monitor and manage quality controls and risks, delivering high-quality outputs on time, identify risks and implement mitigation actions as needed. Quality control will be supported by regular meetings with WP leaders and partners. Coordination across all WPs will monitor resources, maintain the work plan, and review deliverables and progress.

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3. Governance structure

To ensure robust scientific coordination, a comprehensive governance structure is planned (see Table 1). This framework will provide close oversight of CS-MACH1 progress, continuous monitoring of KPIs (Table 2) and proactive identification of emerging risks, enabling timely implementation of appropriate mitigation measures.

Table 1. CS-MACH1 governance structure with members and responsibility listed for each management body.

Management body	Members	Responsibility
Project Coordinator (PC)	Viviana Piermattei (CMCC)	Overall quality of the project activities
Project Management Office (PMO)	Project Coordinator: Viviana Piermattei; Project Manager: Camilla Campanati; Financial Manager: Emanuela Mergola (CMCC)	Technical, administrative and project coordination and management, ensuring communication with and high-quality reporting (technical and financial) to the European Commission (EC).
The Steering Committee (SC)	PC, WP leaders and co-leaders and one representative per partner (see below)	It represents the ultimate decision-making body of CS-MACH1.
The External Advisory Board (EAB)	Panel of multidisciplinary experienced professionals – Established list in D1.4	The EAB will participate in the general assemblies and will provide scientific support and assessment in the different stages of the project and provide an additional layer of quality control, advice and validation of the project's outcomes, impacts and outreach.
The General Assembly (GA)	Each beneficiary is represented in the GA	The GA will meet every six months to discuss project progress and next steps.

The PMO, comprising the scientific coordinator, project manager, and financial manager, will facilitate communication and reporting to the European Commission (EC). Regular meetings with the EC and EAB will monitor KPIs.
The CS-MACH1 Steering Committee (SC), composed of the PMO members, WP leaders, co-leaders, and a representative from each partner, will serve as the project's main decision-making body.
CS-MACH1 SC members are:

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Viviana Piermattei (CMCC-LP, Project Coordinator and WP5 Leader); Camilla Campanati (CMCC-LP, Project Manager); Emilie Breviere – deputy Patrick Gorringe (SMHI, WP2 Leader) (SMHI, WP2 Leader); Nancy Fockedey (VLIZ, WP2 Co-Leader); Antonio Novellino (ETT, WP3 Leader); Peter Thijsse (MARIS, WP3 Co-Leader); Leonardo Veronesi - deputy Franziska Stressmann (ECSA, WP4 Leader); Garabet Kazanjian- deputy Aida Papikyan (AUA, WP4 Co-Leader); Jaume Piera (CSIC, WP5 Co-Leader); Joseph Nolan (SSBE, WP6 Leader); Arianna Liconti (OutBe, WP6 Co-Leader); Alexandra Kokkinaki (NOC BODC); Adam Gauci (UM); Sigmund Kluckner - deputy Laura Khatib (IEEE); Lucie Cocquempot (Ifremer).

This management structure is mandatory and shall hold meetings at least once a year, during GAs. Main tasks of the SC are:

- Monitoring and validation of project contents and KPIs: This includes verifying that the project implementation is in line with activities and expected impacts defined in the approved Grant Agreement (GA).
- Monitoring of project finances: this includes monitoring the project budget, budget flexibility and project spending.
- Review of the management performance and of the quality of progress reports towards the EC
- It decides on: approval of Data Management Plan (DMP), Internal Communication Strategy and Risk and Quality Management Strategy; proposals for amendments of the Grant Agreement.
- Decisions on required project modifications (e.g. content, partnership, budget, duration) to be requested for approval to the EC
- Co-define a list of External Advisory Board members to monitor and review KPIs
- Working groups and task forces may be established to coordinate the day-to-day running of activities, to fulfil specific tasks.

WP-leaders and co-leaders will more closely monitor the progress of their respective WPs. Online monthly WP leaders and PMO meetings will serve as checkpoints for regular progress reporting to the other WPs. In addition, the calendar of scheduled internal WP meetings is shared and opened for the entire partnership to join.
Three project-wide GA meetings will be held at key milestones (i) Kick-off meeting (M1); ii) Mid-term meeting (M13); and iii) Final meeting (M30) to review progress and present activities to the EAB. Notable experts have already expressed their support for the EAB, with the final list to be detailed in D1.4

4. Internal communication

Internal communication is guaranteed through regular updates via e-mail, online meetings, and a shared Google Drive, created and shared with the partnership, to ensure effective internal communication flows. The Google Drive hosts all the shared documents and

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deliverables to internally review, among which the Data Management Plan and the Communication and Dissemination Plan.
CS-MACH1 contacts have been managed through mailing lists (one specifically for administrative personnel contacts). A contact list has been created and is accessible to all on the shared folder. Each member of the Consortium is responsible to keep it updated, making sure that all relevant contacts are included in the list.
Throughout the project implementation, emails will represent the key channel for day-to-day communication among Consortium partners.
Regular WP-leaders and specific WP meetings have started; some scheduled monthly and some bi-weekly. A dynamic document will keep tracking internal meetings for easy access and sharing of information among the partnership.

With the aim of ensuring that deliverables are produced in a timely and effective manner - in accordance with quality objectives - a general review approach has been defined:
1) All Deliverables will be led by specific partners which will firstly share the draft document with partners involved in the task for a round of review in the shared Google Drive. The project manager will oversee the progress and keep the timeline aligned among partners.
2) The finalised clean version of the deliverable should be shared with the PMO, which will run the final internal review, at least within 3 days prior submission.
3) The PMO will submit the final version of the deliverable to the EC via the Portal, at the latest on the last day of the month in which it is due.
4) The PMO will upload the final version of the deliverable in the shared Google Drive and inform the consortium members of the submission.

5. Technical and financial reporting

At the end of each reporting period (M18 -November 2026 and M30-November 2027), the periodic reporting is opened in the Grant Management System and the **Periodic Report to the Grant Authority** is prepared (— deadline for submission is normally 60 days).

The periodic report consists of two parts, the Technical Report and Financial Report.

The **Technical Report** is itself also divided in two parts: Part A: Contains the structured tables with project information (retrieved from the Grant Management System). Part B: Mirrors the application form and requires the participants to report on differences *(delays, work not implemented, new subcontracts, budget overruns etc.)*

The **Financial Report** consists of the structured individual and consolidated Financial Statements (retrieved from the Grant Management System).

The technical report Part A and the financial report is generated automatically on the basis of the data in the Grant Management System; Part B needs to be prepared outside the tools (using the template downloaded from the system) and then uploaded as PDF (together with Annexes, if any).

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CS-MACH1 Technical and Financial reporting is expected to be submitted in January 2027 and January 2028.

Timely preparation and input collection from the partners will be coordinated to allow a smooth reporting. The LP will check that the Continuous Reporting Module is updated in time (before the Periodic Report is Locked for review), will check that all participants have submitted their Financial Statements (and CFS, if needed) and will check that the Report is coherent and that information in Part A and B is consistent, the template has been followed and all sections are completed and no annexes are missing. All participants will contribute to the parts. The LP will submit them as a single report and will coordinate the interface between the EC and the project partners.

To assess and evaluate the progress of the project in terms of activities implementation, **two Project Reviews** are foreseen: RVI at month 18 (November 2026) and RV2 at month 30 (November 2027). These official reviews will involve both the Project Officer of the European Commission and external evaluators.
The detailed agenda and all logistics aspects, including the decision whether to meet in person or online, will be discussed and agreed by the PC and the PMO in a timely manner. The PMO shall keep the entire consortium updated on all decisions.
The internal organisation of the review meetings foresees the following plan:
1) All consortium members will contribute to the drafting of specific materials for the review, in the agreed format, in line with the detailed agenda. The PMO shall collect the material in a timely manner and share it with the partners for formal review at least one week before the review meeting.
2) The week before the review (or a few days before, depending on the team members' availability) the PC will organise a dry run of the entire session. This can occur on conference call. In the dry run, the rehearsal of the session is held to ensure complete alignment among team members on the contents to be presented and the roles. The documentation is eventually fine-tuned.
3) The EC review will take place.
4) The day after (or a few days after) the review, the SC will meet in a conference call to discuss internally the reviewers'/EC's feedback and start to plan together the way forward.

6. Privacy data management rules

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CS-MACH1 aims at enabling more CS data to be used for community benefit, hence the project outputs and any new data collected by the project in the demonstration cases will be open and free (CC-BY/CC0) by default.

CS-MACH1 project outputs, including scientific articles, educational materials, policy-making resources, etc. will be made available in publicly accessible repositories and community tools e.g. CS-MACH1 website, https://cs-mach1.eu/, ZENODO -CS-MACH1 community, https://zenodo.org/communities/cs-mach1, Github.

All personal data collected for the sake of event organization will be fairly and lawfully processed; processed for limited purposes; adequate, relevant and not excessive; accurate; not kept longer than necessary; processed in accordance with the data subject's rights; secure; not transferred to countries without adequate protection. Limited personal data (name, email) will be collected for the purpose of meeting/workshop/event registration.

This general approach is described in detail in the DMP (D1.5) which all partners will adhere to.

7. Key Performance Indicators to ensure quality standards

As per Grant Agreement, the project's success in terms of achievement of expected strategic impact will be measured against Key Performance Indicators (KPIs), duly monitored in WP1, task 1.2 with EC and EAB.

CS-MACH1 KPIs, monitored by SC, EC and EAB are measures to achieve the following Expected Impacts (EI):

EI- 1: Increase the added value coming from MCS by ensuring that the information and data they collect becomes available and useful for wider use. This will mainly be achieved by elevating the efforts of citizen scientists and improving the FAIRness of their data.

EI-2: Support targeted engagement of different categories of social actors in the production of credible Marine Knowledge, to support the development of the Digital Ocean and Water Knowledge System. CS-MACH1 connects and engages a network of MCS actors to encourage marine observation and data collection, and demonstrate how this data can be used in the DTO via specific use cases.

EI-3: Supporting the scaling up of MCS activities in Europe. Through training activities, demonstration use cases, and the creation of a directory to support and highlight impactful CSI, CS-MACH1 engages MCS actors, fosters collaboration, and informs policy-making, laying the foundation for a sustainable MCS network beyond the project's duration.

Table 2. CS-MACH1 KPIs linked to each Expected Impact (EI) and related WP in which to focus the monitoring

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EI	Key Performance Indicator	Target value	Related WP
EI-1	MCSI registered in the network	>100	2
EI-1	Cost-efficient instruments fit for CS connected to the network	>20	2,3
EI-1	Training documents available via the project website	>10	4,6
EI-1	CSI and communities with improved FAIRness aspects	>25	2,3
EI-1	CS datasets published on EMODnet Data Ingestion and GBIF	>25	3,5
EI-1	CS datasets taken up in EMODnet data product pipelines	>10	3,5
EI-2	CSI representatives reached in outreach events	>250	2,5,6
EI-2	Engaged devices developers	>50	2,6
EI-2	Engaged data management experts	>25	2,3,6
EI-2	Engaged marine scientists	>50	2,5,6
EI-2	New datasets collected in the WP5 demonstrators	>15	5
EI-2	Users involved/reached per demonstrators (in online workshops and views| downloads for e-learning)	>100	2,5,6
EI-2	EU policy makers reached via networking activities	>20	4,6
EI-3	Total aware citizens	>2000	2,6
EI-3	Educational/training materials produced	>10	4,6
EI-3	Organised (online) lessons, workshops, events	>5	4,6
EI-3	CS managers trainees engaged (in-person and online)	>50	2,4,6
EI-3	Female trainees	>50%	2,4,6
EI-3	Beneficiary countries	>10	1
EI-3	Co-organised CS campaigns initiated	>10	2,5,6
EI-3	MCS projects/ programmes involved	>40	1,2,5,6
EI-3	Scientific expert participating	>20	1,2,5,6
EI-3	Blue Economy sector stakeholders reached via networking activities	>50	1,2,6
EI-3	Presentations about CS-MACH1 results disseminated in conferences and workshops	>10 (presentations) >20 (conferences/ workshops)	6

8. Risk management plan and mitigation measures

Table 3. *CS-MACH1 risks and proposed mitigation measures identified in the Grant Preparation phase. Level of (I) impact/severity and (L) likelihood of risks are also categorised as: Low/Medium/High*

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Risk	Description	WP	Proposed mitigation measures
1	Coordination issues as a lack of understanding between partners I: Low/ L: Low	1	All the partners have a long-standing experience in EU projects. Dedicated temporary more support for management and organise more frequent internal meetings.
2	Financial and management difficulties, issues such as insufficient rigour or timeliness in invoices and timesheet documentation, delay of deliverable or project activities I: Medium/ L: Low		The partners are aware about the importance of the rigour in the fulfillment of administrative issues, and they agree to follow the established procedures. CS-MACH1 has a clear management structure, PC and project partners have a long-standing experience in EU projects.
3	Partners leave, long-term illness of key staff, change of roles or loss of skills, and conflicts; Delay in the recruitment of personnel. I: Medium/ L: Low	1, 2, 3, 4, 5, 6	Partners will notify the issue and/or the conflict, to be solved as defined in the CA Close monitoring of all activities will mitigate the risk. PC and most WP leaders and co-leaders are tenured staff. All partners have qualified, alternative personnel. Internationally open, efficient, transparent recruitment processes and worldwide advertising will speed hiring
4	Low interest by stakeholders; Insufficient feedback and engagement of key CS actors and policy makers. I: Medium/ L: Low	2, 5	Early and regular engagement of key stakeholders. Develop clear and compelling communication and engagement strategies to attract key stakeholders. Establishing regular channels for feedback and input from participants.
5	Diverging or overly demanding needs collected in co-designs meetings I: Medium/ L: Low	3, 5	Partners involved will assist all co-design processes and work to translate stakeholder needs into achievable specifications for the technical implementation.
6	Changes in regulations and policies may lead to outdated recommendations. I: Low/ L: Medium	4	Continuous monitoring of legal regulations will be ensured with the commitment of all partners throughout the project
7	Issues with technical implementation of the platform or services I: Medium/ L: Low	2, 3, 5, 6	Partners with overlapping knowledge and skills have already well-established technology, data streams and production chains. Tight coordination will be used to ensure progress to meet planned deliveries.

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8	Integration with EDITO Model Lab and EDITO Infra is not accomplished I: Medium/ L: Low	3, 5	Direct involvement of consortium participants in EDITO Model Lab (CMCC) and EDITO Infra (VLIZ) will ensure the achievement of the activity.
9	The real-world DTO products from demonstrations/ use-cases data to not raise the interest and usage of users I: Medium/ L: Low	5	The design of the DTO products in T3.4 will align with stakeholder and user engagement at pilot sites (T5.2) to enhance product exploitation and demonstrate the value of using CS data. Targeted communication efforts will be employed to boost interest and usage further.
10	Lack of wider stakeholder awareness about the project and/or failure of the planned comm. and dissem. activities I: Medium; L: Low	6	There will be a clear, stepwise and multi-channeled communication and dissemination plan delivering fit-for-use public tools to engage the key stakeholder groups of the project.
11	Need of further funding to keep the platform and community going, with a secretariat, contributors etc. I: Medium/ L: Low	1, 2, 3, 4, 5, 6	Partners will participate to other EU grants to prepare our infrastructure towards a secretariat route
12	Risk of a mismatch between the parameters observed by Citizen Science groups and the requirements of EurOBIS, SeaDataNet, and EMODnet data products, particularly in terms of methodologies, protocols, and the metadata needed to describe observations and ensure data quality. I: Low/ L: Medium	2, 3	CS-MACH1 will support Citizen Science initiatives by providing training and materials to improve methodologies, metadata, and data management. Datasets can be published via the EMODnet Data Ingestion Service, ensuring DOI assignment. If additional vocabularies or metadata fields are needed for integration with national data centers, SDN, or EurOBIS, partners like BODC (responsible for the NERC Vocabulary Service) will facilitate their expansion.

These risks and newly arising risks will be monitored and mitigations updated accordingly in the following document update (D1.2).

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