



MEEP

MareNostrum Experimental
Exascale Platform

D1.1 Project Management and Quality Guidelines

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Change Log

Version	Author	Description of Change
V 1.0	Sergi Madonar (BSC)	Initial draft
V 1.1	John David Davis (BSC)	Review
V 1.2	Elisenda Rasero Rebull (BSC)	Review
V1.3	Sergi Madonar (BSC)	Added changes requested in the interim review regarding the deliverables review process (page 10).

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1. Executive Summary

The purpose of the "Project Management and Quality Guidelines" deliverable is to provide an overview of the internal management procedures of the MEEP project, in order to ensure efficient project execution together with high quality project results. It will also serve as a support reference manual for project partners as it describes, in an understandable way, the governance structure, the main project legal documents of reference, the project management procedures and tools, and the reporting procedure. It also includes roles and responsibilities and internal monitoring process for project progress.

Planning the management procedures contributes to the Management objectives of the project and will indirectly influence the technical implementation of the project by ensuring an efficient working environment.

This is a living document that may be updated during the project.

2. Project Coordination and Management

2.1 Governance Structure

2.1.1 Project Coordinator

Beneficiary 1, Barcelona Supercomputing Center (BSC), serves as the Coordinator of the MEEP project. This role is a shared responsibility between the **Technical Manager (TM)**, John David Davis and the **Project Manager (PM)**, Sergi Madonar or the individuals assigned to these roles during any interim absence from the project. The Coordinator is fully responsible for all the project affairs and acts as the official link between MEEP beneficiaries and the European Commission (EC).

The Technical Manager (TM):

- Has the overall responsibility for the project progress.
- Guarantees that the scientific and technical objectives are met.
- Chairs the Technical Board (TB) meetings.
- Defines high-level technical strategy and drives the consortium accordingly.
- Works with the Work Package Leaders to identify issues and propose suitable corrective actions (e.g. temporary resource reallocation, taskforce creation, etc.) that might require approval by the GA.
- Is also responsible for calling the General Assembly (GA) and Industrial Advisory Board (IAB) meetings.
- Is supported by the Project Manager (PM), collaborating closely to provide clear and accurate periodic reports.

The Project Manager (PM):

- Controls the day-to-day execution of the project.
- Ensures the timely delivery of project objectives and deliverables by continuously monitoring how closely project progress is following the plan.
- Compiles and distributes the minutes of the meetings.
- Is in charge of day-to-day management tasks including meeting schedules, quality control, and risk management.
- Provides administrative and financial management of the project, including provisioning of Periodic Reports and Financial Statements to ensure a timely distribution of the budget to the beneficiaries according to the Grant Agreement.
- Ensures a timely and efficient distribution of EU funding according to the Grant Agreement.
- Acts as the official point of contact between the EC and the Beneficiaries.

2.1.2 Work Package Leaders

The Work Package Leaders (WPLs) are responsible for the scientific and technical work of their respective Work Packages (WPs). This includes planning and control of all activities within the WP, and the collection of the contributions from other partners for internal and external reports while inter work package issues will be solved by the GA. The role of WPL and Task Leader is to distribute the workload among the partners participating in the WP/task (including itself) and ensure a timely and qualitatively delivery.

WP	Name	WP Leader
1	Coordination and Management	John Davis
2	Dissemination	Dayana Fernandes
3	Exploitation	Xavier Salazar
4	Architecture and Accelerator RTL	Peter Hsu
5	Accelerator Software and Software Toolchain	Eduard Ayguadé
6	FPGA programming/Tools support and Emulation Integration	John Davis

Table 1: Work Package Leaders

2.1.3 Technical Board

The Technical Board (TB), chaired by the TM or a member appointed by the TM, is responsible for the overall direction of the project. It is formed of the Work Package Leaders and of a delegate from each beneficiary, who can be represented by another member of the same partner if explicitly appointed. The TB meets in person at least once a year and performs monthly teleconferences. The TB will provide a forum for the discussion of administrative and strategic management issues linked to the project, will decide on approving major modifications to project plans, allocated efforts, and budget issues.

The following table summarizes the TB members:

Partner	Role	Member
BSC	Chairman (TM and WP6 Leader)	John Davis
BSC	Member (PM)	Sergi Madonar
BSC	Member (WP2 Leader)	Dayana Fernandes
BSC	Member (WP3 Leader)	Xavier Salazar
BSC	Member (WP4 Leader)	Peter Hsu
BSC	Member (WP5 Leader)	Eduard Ayguadé
UNIZG-FER	Member (Delegate)	Mario Kovač
TUBITAK	Member (Delegate)	Celal Erbay

Table 2: Technical Board members

2.1.4 Innovation Manager

In order to maximize the exploitation of the results and their chances of reaching the market, Intellectual Property Rights (IPR) issues will be coordinated by an Innovation Manager (IM), who will be the point of contact for the Technical Board members and project partners. The IM will plan and manage IPR issues and support the Technical Manager and the other partners in the decision making process. The IM will also ensure that IP is managed in compliance with H2020 and with the rules agreed in the consortium agreement. The IM will also help identify commercialization opportunities and raise awareness of the importance of exploitation.

2.2 Project Meetings

Monthly face-to-face meetings and online meetings were scheduled at the beginning of the project. In order to keep track of the main points discussed and the action points to be implemented, meeting minutes are registered by the Technical Manager and Project Manager in each session.

2.2.1 Online Meetings

Monthly teleconferences are scheduled to review the progress of the Work Packages on a regular basis. Zoom software is used to facilitate the online information sharing. In addition, WP Leaders organize specific meetings for their WPs as needed. To ensure a smooth start of all tasks, it has been decided to make biweekly teleconferences.

2.2.2 Face-to-face Meetings

The project already had the Kick-off Meeting (KoM) on 14th-15th of January 2020 at the coordinator's premises.



Image 1. KoM attendees in Barcelona

During the meeting it was decided that BSC would host, by default, all the meetings since most of the team is part of the BSC staff, so travelling costs would be really reduced. It was also decided to have at least one face-to-face meeting per year.

Additional workshops and bilateral meetings will be set on demand to address any challenge hindering the progress of the project.

2.3 Conflict of interest

Goodwill to avoid any conflict of interest and to act in good faith is essential for the MEEP project. When beneficiaries identify conflicts of interest which cannot be resolved through bilateral communication, they should bring the issues to the attention of the Project Coordinator immediately. The Project Coordinator will bring the issue to the Technical Board for discussion and hold a vote if required.

2.4 Emergency procedures

Any event that may jeopardize the overall completion date of the Project should be reported immediately to the Project Coordinator. The Project Coordinator will endeavour to resolve the issue as soon as possible by calling an emergency Technical Board Meeting as required in order to determine the next steps.

3. Legal documents

3.1 Grant Agreement

The Grant Agreement is the main legal document underpinning the project's execution. It is a contract among the project beneficiaries and the European Commission. The Grant Agreement mainly provides information about the grant (parties, duration, start date, budget, maximum funding, etc.), obligations of the beneficiaries towards the European Commission (such as reporting requirements), as well as the intellectual property framework and other legal conditions. The MEEP Grant Agreement is dated 1st January 2020 and has the number 946002.

Beyond its core terms and conditions, mostly standard text, the Grant Agreement also includes the following annexes, which form an integral part of the contract:

- Annex I. Description of the Action (DoA)
- Annex II. Estimated budget for the action
- Annex III. Accession form for beneficiaries
- Annex IV. Financial statement
- Annex V. Model for the certificate on financial statements
- Annex VI. Model for the certificate on the methodology

The most extensive and important Annex to the Grant Agreement is the Description of Action (DoA), which comprises the technical description of the work to be undertaken in the project (work packages, tasks, deliverables, milestones), the description and roles of the different partners, allocated efforts in person-months, and budget details.

3.1.1 Changes to the Grant Agreement

The Grant Agreement can and must be changed when an important project parameter changes: partnership, duration, budget, etc. Implementation of such changes must follow a specific procedure called "Grant Agreement Amendment". Most changes that trigger Grant Agreement amendments relate to updates in the DoA (e.g. changes in tasks and deliverables, changes in efforts allocated, changes in partner's teams, budget transfers across participants, etc.). Whenever it is possible, changes tend to be grouped and implemented all at once in an amendment.

Grant Agreement amendments are submitted to the European Commission through the "Funding and Tenders Portal" by the Coordinator on behalf of the Consortium. This implies that the Consortium must be informed and must agree on the proposed changes before the amendment is requested. The PM will be responsible of preparing and following-up the amendments to the Grant Agreement during the project. Participants should contact the PM and TM for any modification they

consider necessary. The PM should contact the Project Officer to inform about the proposed changes before officially launching the amendment through the portal.

3.2 Consortium Agreement

The Consortium Agreement (CA) has been signed between the project participants. It aims to provide a legal framework for their collaboration within the boundaries of the Grant Agreement. The CA includes provisions on governance, intellectual property, dissemination and liability among others. The European Commission is not a party to the CA.

4. Internal communication

To ensure a proper project implementation, internal communication is essential. The MEEP Consortium will use electronic mail as the main tool of communication and will document all meetings by means of agenda and minutes which will be made available through the private intranet area in the webpage.

4.1 Mailing lists

The following mailing lists have been created to facilitate the internal communication:

- meep-all@bsc.es: all MEEP contacts, general purpose.
- meep-BSC@bsc.es: BSC MEEP contacts
- meep-WPX@bsc.es: MEEP contacts for Work Package "X" (1-6)
- meep-project@bsc.es: Technical manager and dissemination officer, default external contact.

Requests to modify members of the lists should be directed to the Project Manager.

4.2 Private Intranet

An intranet has been created in order to keep track of project results and other project documents that might be useful for the implementation of the project. This will be used as document repository for all the partners.

The intranet can be found at: <https://meep-project.eu/intranet>

5. Project Management procedures and tools

5.1 Financial management

In order to control the effort consumption according to plan, partners are requested every six months by the PM to complete a template where they indicate the person/months incurred across

the WP they are involved in, together with a cost justification. This exercise allows the PM to early detect any potential deviation and take any corrective actions if necessary.

5.2 Deliverable quality criteria and review procedure

Project deliverables are the outcome of the technical progress. As a general rule, the generation of deliverables is a responsibility of the corresponding WPLs, who need to gather contributions from WP participants as appropriate. Prior to submission to the "Funding and Tenders Portal", deliverables are examined against a quality criteria and undergo an internal review process, as detailed in subsections 5.2.1 and 5.2.2 respectively.

A MEEP deliverable template including a general deliverable structure was sent to MEEP mailing list and is available in the website intranet (<https://meep-project.eu/intranet>).

5.2.1 Quality criteria

The review procedure uses the following quality criteria as reference:

- **Objective.** The deliverable corresponds to its characterization in the DoA.
- **Completeness.** Information must address all aspects related to the purpose for which the information is produced. On the other hand, a redundancy of information must be avoided, as it may obscure the clarity of the deliverables. Information should be provided to the depth needed for the purpose of the document.
- **Accuracy.** Information provided in the deliverable must be evidence-based. This means that all factual information used in the deliverables should be supported by relevant and up-to-date references.
- **Relevance.** Information used in the deliverable should be focused on the key issues and be written in a way that takes into consideration its target audience.
- **Adherence** to uniform appearance. It is important that deliverables are prepared with uniform appearance and structure so that they appear as originated from a single initiative. Therefore, the MEEP deliverable template must be used.

5.2.2 Review procedure

The intention of the Deliverable Review Procedure is to ensure that the document has been reviewed against the set of quality criteria described above. There is a total of 19 deliverables in the project and the MEEP Consortium is made up of 3 partners. Usually BSC tries to define external reviewers that are not part of the deliverable's author(s), nevertheless, partners' role and weight in the project is clearly unbalanced, so it is decided that most of the reviewing effort will rely on BSC.

Inputs to Work Package 4 deliverables will be requested from TUBITAK and UNIZG-FER because of their direct contribution on them.

This does not exclude that other partners not appointed as reviewers can provide their comments to the different deliverables if they wish to do it. The list of deliverables and their corresponding appointed reviewers will be available in the intranet.

The following table summarizes the internal deliverable review process established to ensure timely submission of deliverables:

Action	Time
PM sends reminder to author	5 weeks before the deadline
Author sends draft deliverable to appointed reviewer	3 weeks before the deadline
Appointed reviewer sends comments to author	2 weeks before the deadline
Author sends consolidated deliverable back to reviewer	1 week before the deadline
Reviewer accepts deliverable and inform the PM	2 days before the deadline
PM reviews the format and sends the deliverable to the EC	Deadline

Table 3: Internal deliverable timeline

In order to reject a deliverable, the reviewer must provide constructive suggestions for improvement in writing to the deliverable author. Upon receiving the suggestions for improvement, the deliverable author must determine together with the Project Manager the schedule to complete the deliverable.

5.3 Milestones management

At the end of each phase in the project, a milestone is set up to perform key technical reviews and make strategic decisions to guarantee that the progress of the project is in line with project objectives. Table 4 presents the milestones, while the means of verification for each of them can be found in the DoA.

Number and name	Due date (month)
MS1. FPGA RTL revision 1 complete, with complete verification environment.	18
MS2. Full accelerator system RTL for FPGA complete.	36
MS3. HPC benchmark suite	6
MS4. Linux with host interface that supports basic functionality of the initial emulator.	18
MS5. OpenMP and data analytics support. Stretch goal: Basic container support made available.	30
MS6. Full SW stack running applications on traditional HPC and containerized environment on the accelerators.	36
MS7. FPGA emulated accelerator initial release with scalar processor+vector unit running with FPGA HBM memory system, able to communicate with the host computer.	18

MS8. Full prototype final release with complete FPGA shell with full applications running	36
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Table 4: MEEP milestones

5.4 Risk management

The project risk management process defines the activities to identify, assess, prioritize, manage, and control risks that may affect the execution of the project and the achievement of its objectives.

Before risks can be managed, they must first be identified. Risks that could affect the full accomplishment of the objectives may arise due to the complex activities in the project. These have been identified in advance, and mitigation measures have been arranged for each case as detailed in the DoA. However, unforeseen risks may arise as the project evolves and their identification should be analyzed through the MEEP project lifecycle. Analysis of deliverable status, WP objectives and periodic reports will be considered as tools for risk identification. In addition, brainstorming meetings might be organized among Work Packages Leaders in order to identify new potential risks. Table 5 presents the initial risks detected in the proposal stage:

Number, name and level	Proposed risk-mitigation measures
1. The project results will be delayed (Low)	The Coordinator has plenty of experience in project management and the project has appropriate measures to detect delays early on and address the issues that are delaying the results.
2. Partners are not capable to perform the planned activities (Low)	Partners have been chosen carefully. Partners will react quickly if replacements are required. The Technical Manager will contribute by identifying alternatives.
3. Possible delays in the appointment of personnel (Medium)	Partners already have personnel with the required expertise and will start early (before actual project kick-off) to search for qualified personnel. If needed, we will resort to subcontracting to European-based companies. Thus the consortium will have the personnel with the necessary expertise albeit indirectly.
4. Key milestones or deliverables are delayed (Low)	The Coordinator foresees possible issues while regular monitoring of technical progress (WPs, deliverables, milestones) and take early corrective actions to improve the performance of concerned partners.
5. Delay in delivering OAM FPGA Boards (Low)	In case of a delay, project will start the development on similar high-end FPGA boards with HBM2 memory that is already deployed at BSC
6. Issues with sharing of IP with specific EPI partners (Low)	Project will revert to equivalent open source RTL such as the RISC-V pulpino core or BSC's RISC-V implementation
7. Delay in interfacing the accelerator platform with the pre-exascale system (Medium)	The accelerator will be able to operate in a standalone manner
8. Inability of compiler to vectorize key applications (Low)	Key application kernels will be vectorized by hand through employing intrinsics
9. COVID-19 (Medium)	All aspects of the project may be delayed due to unforeseen impacts of the global pandemic. This may alter/prevent in-

	person meetings and increase costs to accelerate remote processes.
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Table 5: MEEP milestones

6. Reporting and reviews

6.1 Periodic reporting

Throughout the entire MEEP execution period (from 1st of January 2020 until 31st of December 2022) the Coordinator will have to submit 2 periodic reports with the contributions of all beneficiaries. In compliance with the H2020 rules specified in clause 20.3 of MEEP Grant Agreement, periodic reports must be submitted within 60 days following the end of each reporting period, which in MEEP Project are established at M18 and M36:

- First Reporting Period: 1st January 2020 – 30th June 2021
- Second Reporting Period: 1st July 2021 – 31st December 2022

Each periodic report consists of a Technical and a Financial Report that must describe the technical activities and cost incurred over the corresponding periods specified above.

The purpose of the Periodic Report is to check the technical development of the project and to ensure its alignment with the project costs.

The Project Officer have transmitted his intention to have an Interim Review approximately in October of 2020 (M10 of execution). This review will cover the M1 to M9 execution and will require the preparation of Technical and Financial Reports but will not be related to payment.

6.1.1 Technical Report

The Technical Report is composed of two parts:

- Part A can be updated at any time during the lifetime of the project. This has to be done through the “Funding and Tenders Portal” under the “Continuous Reporting Module”.

It consists of the following sections:

- Summary for publication
- Deliverables
- Milestones
- Ethical issues
- Critical implementation risks and mitigation measures
- Dissemination and exploitation of results
- Impact on SMEs
- Open Research Data
- Gender

With respect to dissemination and exploitation of results, WP2 leader will keep track of the project’s dissemination activities for the purpose of periodic reporting. Participants will be regularly asked to provide any dissemination activity related to MEEP they are involved in. The WP2 leader will

integrate all the available information in a general dissemination tracking table. Regarding the remaining sections, the Coordinator will be responsible of collecting and introducing the information indicated above through the “Funding and Tenders Portal”.

- Part B is the core part of the report and follows the template of Part B Technical Report made available by the European Commission. It has to be uploaded to the Grant management tool under the “Report Core tab”, as a single PDF document including:
 - Explanations of the work carried out by all beneficiaries during the reporting period.
 - An overview of the progress towards the project objectives, justifying the differences between work expected under Annex I (DoA) and work actually performed, if any.

The Coordinator, in close collaboration with the project partners, will be responsible of elaborating the Part B of the Technical Report and upload the file in the portal.

6.1.2 Financial Report

6.1.2.1 Eligible costs

In order to consider project costs as eligible and therefore to get them approved by the European Commission, they must fulfil the following general conditions:

- Incurred by the beneficiary and during the duration of the project, with the exception of costs related to the submission of the periodic report for the last reporting period and the final report.
- Indicated in the estimated overall budget in Annex II.
- Actual and necessary for carrying out MEEP implementation.
- Must be identifiable and verifiable and recorded in the participants’ accounts.
- Determined in accordance with the usual accounting principles of the participant.
- Comply with the applicable national law on taxes and social security.
- Reasonable, justified and must comply with the principle of sound financial management, in particular regarding economy and efficiency.

6.1.2.2 Financial Statements for each beneficiary

The Financial Report is composed of Individual Financial Statements for each beneficiary together with an explanation on the use of resources. Financial statements are specific documents in which each participant declares all the costs incurred over the corresponding reporting period.

The justification of costs is done through the “Funding and Tenders Portal” by using the “Periodic Reporting Module” (which is made available to the participants usually right after the end of the corresponding reporting period by the Project Officer). The costs must be filled by each Consortium partner through the system (in particular, users with the role Participant Contact) can use the Financial Statement model). Once all the information is completed, each beneficiary shall electronically sign the Financial Statement. Only users with the role of Project Financial Signatory (PFSIGN) can perform this action. Once all Financial Statements have been signed by all

beneficiaries, the Coordinator shall check that all information included is correct and include the different Financial Statements in the Periodic Report composition.

6.1.2.3 Explanation on the use of resources deviations

In addition to the financial statements for each beneficiary, an explanation of any deviation on the use of resources should be provided in the Part B of the Periodic Technical Report document (section 5.2 Use of resources). Moreover, information on unforeseen subcontracting and unforeseen in-kind contributions provided by third parties should be also provided and justified properly. The PM will be responsible of describing this section. To that end, the PM will monitor every 6 months the effort and cost incurred by all partners.

6.1.3 Periodic Reports submission

The Coordinator will be in charge of approving the Financial Statements of each beneficiary and revise all information included in the Technical Report (Part A and Part B). Once all information is completed, the PM shall submit the Periodic Report to the European Commission in a single step through the "Funding and Tenders Portal".

6.2 Reviews

The Commission carries out checks and reviews on the proper implementation of the action (including assessment of deliverables and reports). Reviews normally refer mainly to the technical implementation of the project (i.e. its scientific and technological relevance), but may also cover financial and budgetary aspects or compliance with other obligations under the GA. MEEP reviews will be at:

- Month 10 (Interim Review)
- Month 20 (Periodic Review)
- Month 38 (Final Review)

However, it is important to note that these dates are tentative and are subject to change based on the flexibility and availability of the Project Officer, the selected reviewers and the project partners.