



FLOATECH

D7.1 Quality Management Plan

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Robert Behrens de Luna

Technische Universität Berlin



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FLOATECH
THE FUTURE OF FLOATING WIND TURBINES

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Background: about the FLOATECH project

The FLOATECH project is a Research and Innovation Action funded by the European Union's H2020 programme aiming to increase the technical maturity and the cost competitiveness of floating offshore wind (FOW) energy. This is particularly important because, due to the limitations of available installation sites onshore, offshore wind is becoming crucial to ensure the further growth of the wind energy sector.

The project is implemented by a European consortium of 5 public research institutions with relevant skills in the field of offshore floating wind energy and 3 industrial partners, two of which have been involved in the most recent developments of floating wind systems.

The approach of FLOATECH can be broken down into three actions:

- The development, implementation and validation of a user-friendly and efficient design engineering tool (named QBlade-Ocean) performing simulations of floating offshore wind turbines with an unseen combination of aerodynamic and hydrodynamic fidelity. The advanced modelling theories will lead to a reduction of the uncertainties in the design process and an increase of turbine efficiency.
- The development of two innovative control techniques (i.e. Active Wave-based feed-forward Control and the Active Wake Mixing) for Floating Wind Turbines and floaters, combining wave prediction and anticipation of induced platform motions. This is expected to improve the performance of each machine and to minimize wake effects in floating wind farms, leading to a net increase in the annual energy production of the farm.
- The economic analysis of these concepts to demonstrate qualitatively and quantitatively the impact of the developed technologies on the Levelized Cost of Energy (LCOE) of FOW technology.

In addition to the technological and economic impacts, the project is expected to have several impacts at societal, environmental and political levels, such as: public acceptance, due to no noise and visibility issues of FOWT; very low impact on biodiversity and wildlife habitat because no piles are needed to be installed into the seabed; the use of less material and space thanks to an environmentally friendly design; the promotion of the installation of FOW in transitional water depths (30-50 meters), as the costs for FOW at those locations will become more competitive compared to the fixed bottom foundations.

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List of acronyms and abbreviations

Acronym / Abbreviation	Meaning / Full text
AGA	Annotated Grant Agreement
CA	Consortium Agreement
DC	Deputy Coordinator
DoA	Description of Action
DX.Y	Deliverable X.Y
EC	European Commission
EB	Executive Board
GA	Grant Agreement
IAB	Innovation Advisory Board
IP	Intellectual Property
IPR	Intellectual Property Rights
KPI	Key Performance Indicator
PC	Project Coordinator
PM	Project Manager
PMT	Project Management Team
SC	Steering Committee
TX.Y	Task X.Y
WPL	Work Package Leader
WPX	Work Package

EXECUTIVE SUMMARY

This document is a deliverable of the FLOATECH project, funded under the European Union’s Horizon 2020 research and innovation programme under grant agreement No 101007142.

The aim of this deliverable (D7.1) is to define a standard for quality assurance (QA) and quality control (QC) on reports, papers, deliverables and milestones that will be generated during FLOATECH – a project funded by the European Union in the framework of H2020.

Furthermore, the present document defines the project governance structure, the decision-making process and the quality management tools that will ensure that the work related to FLOATECH matches the sought standards.

This quality management plan builds on the Annotated Model Grant Agreement (AGA) and the Consortium Agreement (CA).

First, the organizational framework of the project will be outlined in Section 2-Governance Structure. Second, The Project Quality Plan is detailed.

1. OBJECTIVES

The Quality Management Plan will be an important management instrument during this project. In FLOATECH, nine different organizations play a key role in order to successfully complete the project. Additionally, seven Innovation Advisory Board (IAB) members support the consortium by providing an outside perspective.

The objective of this Quality Management Plan is to ensure a certain level of quality of all the numerous deliverables, technical reports and papers that will be generated during the project. Therefore, a quality standard that can be fulfilled consistently by all participating organizations is defined and procedures, which ensure that the defined quality has been achieved, are detailed.

This plan defines the quality management by three parameters:

- Quality management planning:
Definition of guidelines that define the project environment, such as guidelines for meetings, publications, etc.
- Quality management assurance:
Definition of actions and project processes to ensure that deliverables fulfil the desired quality standards
- Quality management control:
Definition of an internal review process that verifies that a document matches the necessary quality

2. GOVERNANCE STRUCTURE

This section defines the governance structure within FLOATECH. Every partner is included within the structure and may inhere one or more roles. Furthermore, the decision-making procedures and every partner's responsibilities are detailed.

The management of FLOATECH is aimed at ensuring the support, coordination and facilitation of the activities of the consortium in the project as a whole. The management structure is aimed to work towards efficiency so the project's objectives can be achieved within the defined budget limits. Figure 1 shows the governance structure of FLOATECH. All project partners are represented in the Steering Committee (SC) to allow a collegial and inclusive participation. As displayed, four levels of governance are defined:

- Level 1 – Decision making level:
The SC acts as the ultimate decision-making body of the consortium and comprises one representative of each partner organization.

- Level 2 – Operational management level:

The PMT supervises the operational management of the project. It shall assist and facilitate the work of the Executive Board (EB) and of the Project Coordinator (PC) for executing the decisions of the SC as well as the day-to-day management of the project.

- Level 3 – Implementation level:

The Executive Board is in charge of the execution of the project and shall report to and be accountable to the SC.

- Level 4 – Strategic advice level:

The Innovation Advisory Board (IAB) is a consultive body which will consult the SC and the EB members on the scientific strategy and results exploitation issues. The IAB is composed of seven members of relevant players and networks in offshore wind energy (UL International GmbH, DNVGL, WAB e.V., WEAMEC, Wind Europe, Eolfi, TÜV Nord).

2.1. PROJECT MANAGEMENT TEAM

The overall Project Coordinator, who is responsible for the coordination of the project as a whole, is Dr. Navid Nayeri, Technische Universität Berlin. The Coordinator is supported by the Project Manager (PM), Robert Behrens de Luna (TUB) and the Deputy Coordinator (DC) Dr. David Marten (TUB). The DC replaces the PC during meetings in case of illness or other unforeseen events. The PMT supervises the operational management and is responsible for the internal organization. It acts as the intermediary between the EC and the consortium members. Within its tasks, it will support the EB and the PC in putting the decisions of the SC into practice, as well as in the day-to-day management of the project

The main management activities of the PMT are:

- Acting as liaison with the European Commission (EC);
- Monitoring contractual obligations, reporting duties;
- Compiling legal documents, the contract and annexes, consortium agreement etc.;
- Submitting deliverables and project reports;
- Performing budget control and financial management;
- Controlling progress control (deadlines, deliverables etc.);
- Co-organizing project meetings (together with the host partner);
- Organizing compliance with ethics issues requirements and promote gender equality in the project.

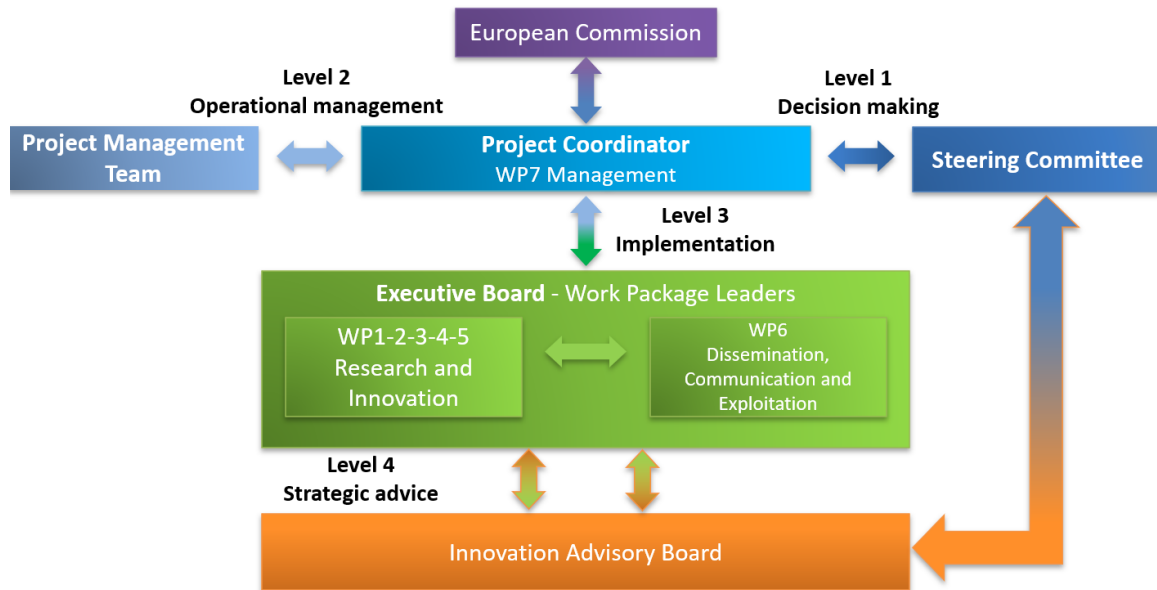


Figure 1 - Governance Structure

2.2. STEERING COMMITTEE

The SC acts as the ultimate decision-making body of FLOATECH. It will be composed by one representative of every participating organization in the project, each one with a voting right. The representatives should be authorized by their respective organization to deliberate, negotiate and decide on behalf of their organization. Each representative should additionally name a deputy with equal authorization to replace him/her in case of he/she could not attend the SC meeting. The SC will deliberate over:

- the reporting to the European Commission
- any changes in the overall project plan including the re-allocation of tasks and budget
- the organization of the project events
- any strategic decision at specific milestones
- the assessment of the activities of the consortium (including the accuracy of the technical progress and of the deliverables)
- any strategic decision over IPR protection
- any ethical issue
- the resolution of conflicts, which could not be settled after a WP meeting
- the entry of a new partner and/or the exit of a defaulting partner
- actions with regards to a defaulting partner

2.3. EXECUTIVE BOARD

The members of the EB are the core partner institutions, which have substantial experience in research projects. The EB is composed by all the Work Package Leaders (WPL) and is headed by the PC. In particular, a WPL is responsible for the planning, progress, achievement and control of the results within the WP, acting as a sub-project coordinator. More precisely, each WPL will be responsible for:

- Ensuring that the work carried out by each WP Team meets the defined requirements of the work plan and the timely completion of deliverables and milestones
- Assisting in preparing and approving the progress reports prior to the submission to the EC
- Organizing WP meetings (either audio/videoconferences or meetings)
- Reporting on a regular basis to the PMT about the WP progress by providing it with a follow-up form every 3 months
- Proposing changes in work sharing and participants; budget transfers or changes in accordance with the Grant Agreement; if necessary, proposing corrective actions and authorization of appropriate amendments to the work plan to meet the objectives in agreement with the EC
- Recommending any significant developments for dissemination and exploitation of the results

2.4. INNOVATION ADVISORY BOARD

FLOATECH is accompanied and supported during the project lifetime by the Innovation Advisory Board. The IAB is constituted by representatives of seven companies and networks. They provide valuable input in order to foster acceptance through the offshore wind energy community and to advise and guide on the topic from a broader viewpoint. Actions of the IAB will include:

- Analysis of the technical project and suggestion of a list of exploitable results
- Regular identification of results and knowledge generated by the project through the implementation of a monitoring process (see §3.2.2)
- Analysis and review of the successive plans for exploitation and dissemination of the project results to provide further guidance steps for better actions
- Support in monitoring of the market, IP and technology landscapes
- Strategic recommendations for the quality improvement of the project regarding the content and the execution of the work plan

Innovation Advisory Board Members	
1	WEAMEC
2	WAB e.V.
3	DNV GL
4	UL International GmbH
5	Wind Europe
6	Eolfi
7	Executive Board

3. QUALITY MANAGEMENT PLAN

This section defines the Quality Management Plan that will serve as a handbook during this project. Its purpose is to define a framework that allows a successful implementation of the project activities in time and with a high level of quality. The set of procedures that are laid out aim to secure the following points.

- The FLOATECH Consortium adheres to the Grant Agreement (GA)
- The FLOATECH project matches the EC requirements for communication and dissemination
- All Consortium members follow their obligations within the CA
- All project activities are realized in accordance with the plan outlined in the Description of Action (DoA)

3.1. COMMUNICATION PROCEDURES

It is readily arguable that a successful cooperation does rely on a good communication between the partners. Despite the development of remote communications systems and the extensive use of them among the research entities, face-to-face meetings remain essential to facilitate the synergy between partners and to solve upcoming problems (e.g. for experiments). However, phone, teleconferences and email contacts will be used for day-to-day work discussions among consortium partners involved in the same activity, where specific web meetings on activities can be organized (usually by the WPL) when the need arises.

There are three types of regular reoccurring meetings:

1. Steering Committee Meetings

At least one designated representative of each partner organization should attend (every 6 months)

2. Executive Board Meetings

Coordination among WP (every 3 months)

3. Technical Meetings

Organized at WP/Task levels (when necessary)

The objectives and the organizational aspects of the official meetings are detailed in the following section.

3.2. PROGRESS MONITORING

For the sake of monitoring the progress, the consortium has a number of instruments at its disposal.

3.2.1. Progress Meetings

The regular meetings within FLOATECH should at least be scheduled as defined in the following:

- Kick-off meeting (M1)
- EB meetings (WPLs): every 3 months (every 2nd meeting together with the SC)
- SC meetings: every 6 months. To discuss purely managerial aspects, the SC may organize a separate meeting.
- Individual WP regular meetings: whenever necessary between the WP partners. Audio/videoconferences will be preferred but if needed, meetings will be organized at the same venue of the SC meetings
- IAB meetings: at least once a year by videoconference (or physical if necessary)
- Final meeting (M36)
- Review meetings will be scheduled based on EC requirements after each reporting period

The progress meetings will be held every six months. At these meetings, all individual members of the consortium are expected to be represented, at least by their primary responsible. The meetings will typically cover one-and-a-half to two days, to allow for sufficient time for presentation of results and discussion of progress. The WPL will present the progress within their WP during the past six months. The meetings will be hosted by the project partners on a rotational basis in order to optimize the culture of cooperation and to allow the partners to discover the work environment of their colleagues. Whenever possible and appropriate, the meetings will be combined of different project bodies in order to save financial resources. Additional meetings or audio/videoconferences will be organized if needed.

3.2.2. 3-Months WPL Monitoring Form

The WPL should provide to the PMT every 3 months an updated monitoring form (page 19) indicating: the status of the activities to be carried out (on the WP and Tasks basis), the resources spent, the potential modifications to the original work plan and the chosen solutions, the status of deliverables and milestones and the dissemination and innovation activities. The progress status of the WP, deliverables and milestones should be reported in terms of Key Performance Indicators (KPI). In case of a mismatch between activities progress and the original project schedule, the reasons for this should be addressed, as well as the proposed contingency plans. These follow-up forms will be the basis for the PMT whilst providing the EC with the scientific and financial periodic reports.

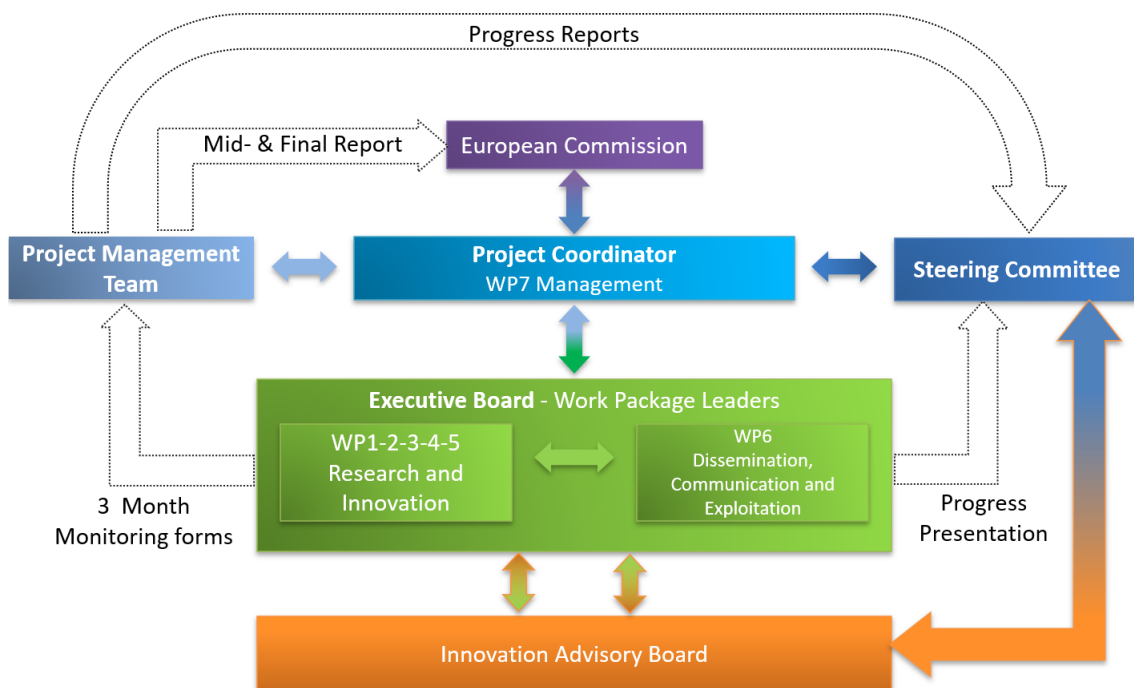


Figure 2 - Reporting Structure

3.2.3. 3-Months WPL Monitoring Form

The EB should report every six months their actual progress (via monitoring form) before the SC meetings. The PMT will compile these reports before the meetings and will inform the SC if any decision has to be made related to delays or mismatches between the EB reports and the work plan.

Action List

The PMT will maintain an overall action list, i.e. a list of criticalities and proper actions needed to solve them, which will be updated after every meeting of the EB. The list will be available to everyone on the FLOATECH repository.

EC reviews

The PMT will deliver reports to the EC that are based upon the follow-up forms provided by the WPL and of the financial statements provided by each partner organization.

3.3. QUALITY STANDARDS FOR DELIVERABLES

This section outlines the procedures that ensure a high quality of the results that will emerge during FLOATECH. Since part of the results are generated in a collaborative manner, a standard that all organizations can refer to becomes an important instrument of quality assurance.

3.3.1. Deliverable Template

This template will be provided on the shared tubCloud repository and is available to every partner institution for future use. All deliverables must include:

- FLOATECH logo
- EU flag
- Reference to the GA number
- Reference to the Work Package and Deliverable number
- Disclaimer

3.3.2. Quality Assurance

The following guidelines should be completed for all kinds of results that emerge during FLOATECH. The due date of every deliverable is defined in the list of deliverables (Section 6.1-Table of Deliverables) that is kept up to date in the shared repository by the PMT. The internal deadline for each deliverable draft is set two weeks before the deliverable due date. Partners responsible for the deliverable are to communicate directly with the EB whilst including the Project Coordinator and Manager in the dialogue.

Revision

The document should be sent to the EB in order to ensure the overall quality of the results and that the presentation corresponds to a high standard. As defined above, the responsible of the deliverable should send the draft two weeks before the deliverable due date. The EB will review the document upon one week before deliverable due date. This allows the responsible person to have enough time to address the reviewers' comments. The "document history and validation table" on page two of the deliverable template shall be used to document the proposed changes.

Approval

After the revision, all partners that were involved in the deliverable should approve the final version of the deliverable and document the the final version in the “document history and validation table” on page two. After the approval, the final .pdf version is to be placed in the appropriate folder of the shared cloud repository and the PMT shall be informed.

Document management in the repository

For the management of the documents the PMT provides a repository on TUB’s own cloud service tubCloud. The repository can be accessed via the following link

Link: <https://tubcloud.tu-berlin.de/s/bBsm9p6SzW8Lk9d>

Separate folders will be enabled for each WP. Content management will be carried out by the project coordinator and each WPL. The names of the documents will be set as follows:

WPX_date_document type_version_description.extension

(e.g. WP4_20210101_D41_v1_Qulaity Management Plan.docx).

The final versions of the deliverables will be collected in the same folder once the appropriate reviews have been made prior to the document upload to the EC platform.

3.3.3. List of Deliverables

3.3.4. Dissemination of Results

During the project and for a period of one year after the end of the project, the dissemination of own results by one or several parties including but not restricted to publications and presentations, shall be governed by the procedure of Article 29.1 of the Grant Agreement.

Prior notice of any planned publication shall be given to the other parties at least 45 calendar days before the publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement in writing to the Coordinator and to the party or parties proposing the dissemination within 30 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

Besides the intended publication, the paper/article, or the link to it will be published on the FLOATECH project official website and Social Networks available (at least Twitter), as soon as a link or document in .pdf format is available. Preferably, all publications should be open access.

All publications or any other dissemination relating to foreground that was generated with the assistance of financial support from the EC will include the statements that can be found in this document in Section 5-Disclaimer.

3.3.5. Dissemination of Results

FLOATECH has two reporting periods going from M1 to M18 and M19 to M36. The PC is obligated to submit the reports within 60 days following the end of this period.

To fulfil the necessary quality and in order to stay within the required timeframe, the Coordinator will follow the procedure detailed in the following:

- Two weeks before the end of the reporting period, all beneficiaries should start preparing the technical and financial reports.
- Deadline for the technical reports is two weeks after the end of the reporting period.
- The PC will review the technical contributions and send feedback within two weeks.
- The beneficiaries must submit their revised technical and financial statements at least two weeks before the deadline.
- The PC submits the financial statements and final revisions of the technical reports to the EC platform on time, within 60 days following the end of this period.

4. QUALITY MANAGEMENT PLAN

This project seeks to obtain a high degree of quality for all documents and results that emerge during its duration. This Quality Management Plan aims to provide guidelines and procedures that allow an efficient, whilst accurate, adherence to the proposed quality standard. Furthermore, it allocates responsibilities to ensure that the procedures and guidelines are followed by the consortium partners.

The Project Management Team monitors that the processes within the FLOATECH consortium proceed in accordance with this plan.

In conclusion, this Quality Management Plan is supposed to be valid throughout the project lifetime but is open to revision if necessary.

5. DISCLAIMER

“This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 101007142”

6. APPENDICES

6.1. TABLE OF DELIVERABLES

Del Rel. No	Title	Beneficiary	Nature	Diss. Level	Est. Del. Date
D1.1	1.1 Technical Report: Hybrid Eulerian- Lagrangian Aerodynamic Model	TUB	Report	Public	28 Feb 2022
D1.2	1.2 Technical Report: Higher Order Hydroelastic Module	TUB	Report	Public	31 Dec 2021
D1.3	1.3 Training Manual, Project Partner Workshop and Public Dissemination	TUB	Report	Public	30 Jun 2022
D2.1	2.1 Aero-hydro-elastic model definition	TUB	Other	Public	31 Mar 2022
D2.2	2.2 Validation report QBlade-Ocean	TUB	Report	Public	31 Aug 2022
D2.3	2.3 DLC Database	UNIFI	Report	Public	31 Oct 2022
D2.4	2.4 Report on estimated reduction of uncertainties	UNIFI	Report	Public	31 Dec 2022
D3.1	3.1 Advanced open source wind turbine controller	ECN	Other	Public	30 Jun 2022
D3.2	3.2 Controller development, findings and validation against numerical simulations	TU Delft	Other	Confidential	30 Jun 2022
D3.3	3.3 Experimental wave tank validation database	ECN	Other	Confidential	30 Jun 2023
D3.4	3.4 Experimental offshore validation database	ECN	Other	Confidential	30 Sep 2023
D4.1	4.1 Study on the physics underlying the active wake mixing concept	TUB	Report	Confidential	30 Apr 2022
D4.2	4.2 Initial design report: tether hinge, compliant turbine floater, and controllers	TU Delft	Report	Confidential	31 Dec 2022
D4.3	4.3 Final design report: integrated design optimization	TU Delft	Report	Confidential	30 Sep 2023
D4.4	4.4 Validation report: numerical and experimental	TU Delft	Report	Confidential	30 Sep 2023
D5.1	5.1 Report on the LCOE improvement of AWC controlled FOWT	Seapower	Report	Public	30 Jun 2023
D5.2	5.2 Report on the LCOE improvement of AWM controlled FOWT	Seapower	Report	Public	30 Jun 2023
D5.3	5.3 Report on the LCOE parameterization for AWC and AWM controlled WT	Seapower	Report	Public	30 Sep 2023
D6.1	6.1 Data Management Plan	EURO	ORDP	Public	30 Jun 2021
D6.2	6.2 Plan for exploitation and dissemination of the project results	EURO	Report	Public	30 Jun 2021
D6.3	6.3 Mid-term report on dissemination and communication activities	EURO	Report	Public	31 Dec 2022
D6.4	6.4 Final report on the project exploitation initiatives	EURO	Report	Public	31 Dec 2023
D7.1	7.1 Quality Management Plan	TUB	Report	Public	31 Mar 2021
D7.2	D7.2	TUB	Report	Public	30 Jun 2022
D7.3	D7.3	TUB	Report	Public	31 Dec 2023

6.2. MONITORING FORM



FLOATECH - Monitoring Form

Work Package: _____

Work Package Leader: _____

Reporting Period from: to:

Task / Deliverable / Milestone	Percentage of Completion [%]	Time to Completion [Months]	Person-Hours Spent	Person-Hours Needed for Completion	Mismatch Between Progress and Original Schedule. If yes Reasons	Contingency Plan

To be filed every 3 Months by the WPL to the PMT (every 2nd term before the SC-Meetings)