



Multimegawatt high-temperature electrolyser to generate green hydrogen for production of high-quality biofuels

Management guidelines

Deliverable D1.1

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Abstract

This deliverable presents the management guidelines considered in WP1 – Coordination and Management, to manage in the most efficient and smooth way the MULTIPLHY project. It contains the most important information from both the Grant Agreement (GA) and Consortium Agreement (CA).

Table of acronyms

CA	Consortium agreement
DoA	Description of Action
FCH2 JU	Fuel Cell and Hydrogen Joint Undertaking
GA	Grant Agreement
HTE	High-temperature electrolyser
PC	Project Coordinator
PCC	Project Coordination Committee
RP	Reporting Period
SC	Scientific Coordinator
WP	Work Package
WPL	Work Package Leader
WT	Work Task
WTL	Work Task Leader

Introduction

This document represents the management guidelines of the MULTIPLHY project. It contains the most important information from both the Grant Agreement (GA) and Consortium Agreement (CA).

The main scope is to cover three basic objectives:

- General principles and guidelines for efficient and smooth management and for effective cooperation between partners
- Clear partner roles and responsibilities
- Good and goal-oriented communication between the partners as well as effective project management.

In order to achieve these goals this document covers the procedures ensuring that all the needed activities will be implemented by the partners, including the following aspects:

- Description of responsibilities of all the partners according to the Management Structure of the project
- Description of innovation management
- Organization of meetings
- Communication and internal exchange of information, e.g. preparation and submission of financial statements and deliverables
- Monitoring and reporting of progress according to the work plan and time schedule
- Risk management
- Conflict resolution

1. Contractual Framework

Beside the official Grant Agreement with FCH2 JU, signed before the start of the project, and its possible amendment(s), required in the case of change of partner, tasks, budget etc., the **Consortium Agreement** will be signed by all partners shortly after the start of the project. The Consortium Agreement describes all responsibilities and rights of the partners within the consortium including the intellectual property rights and technical background required for the implementation of the work packages. It is based on the DESCA model, used for European Projects.

2. Work plan

To accomplish the MULTIPLHY objectives, the project is structured into eight work packages. An overview of the work plan with the associated time schedule and work package interactions is given Figure 1.

1. **Coordination and management**

WP 1 is dedicated to the coordination of the project activities including all aspects of management and monitoring of the scientific and technological progress. The work package is active within the whole duration of the project.

2. **Stack tests at 10 kW in laboratory**

WP 2 is dedicated to testing SOEC stacks; firstly to release stacks for the larger high-temperature electrolyser (HTE) system and secondly to benchmark three different stack technologies with long-term durability tests for further upscaling.

3. **System design and manufacturing**

WP 3 contains all engineering, manufacturing and factory acceptance tests for the HTE system and auxiliary units. Additionally, prior to the systems' engineering, the systems' integration as well as operation concept with respect to their installation and long-term demonstration site are discussed and decided.

4. **Integration in refining process**

WP 4 holds the work necessary to engineer and prepare the installation site, all commissioning, site acceptance tests as well as the execution of first validation and operation procedures.

5. Technology validation and demonstration

WP 5 is dedicated to the long-term demonstration and assessment of the HTE system according to the objectives.

6. Regulatory framework & guarantee of origin for the hydrogen (CertifHy)

WP 6 deals with the purchasing of renewable power and hence also with the certification of the produced hydrogen via the CertifHy scheme.

7. Market, techno-economic and environment studies

WP 7 is dedicated to all economic and environmental assessments, e.g. a techno-economic analysis, GHG avoidance potential of hydrogen in the refining industry as well as the definition of future strategies for the utilization of intermittent RES.

8. Dissemination, communication and exploitation

WP 8 coordinates the dissemination activities, the follow-up of the exploitation road map and the IP management. The work package is active within the whole duration of the project.

Each of these work packages is coordinated by a Work Package Leader (WPL).

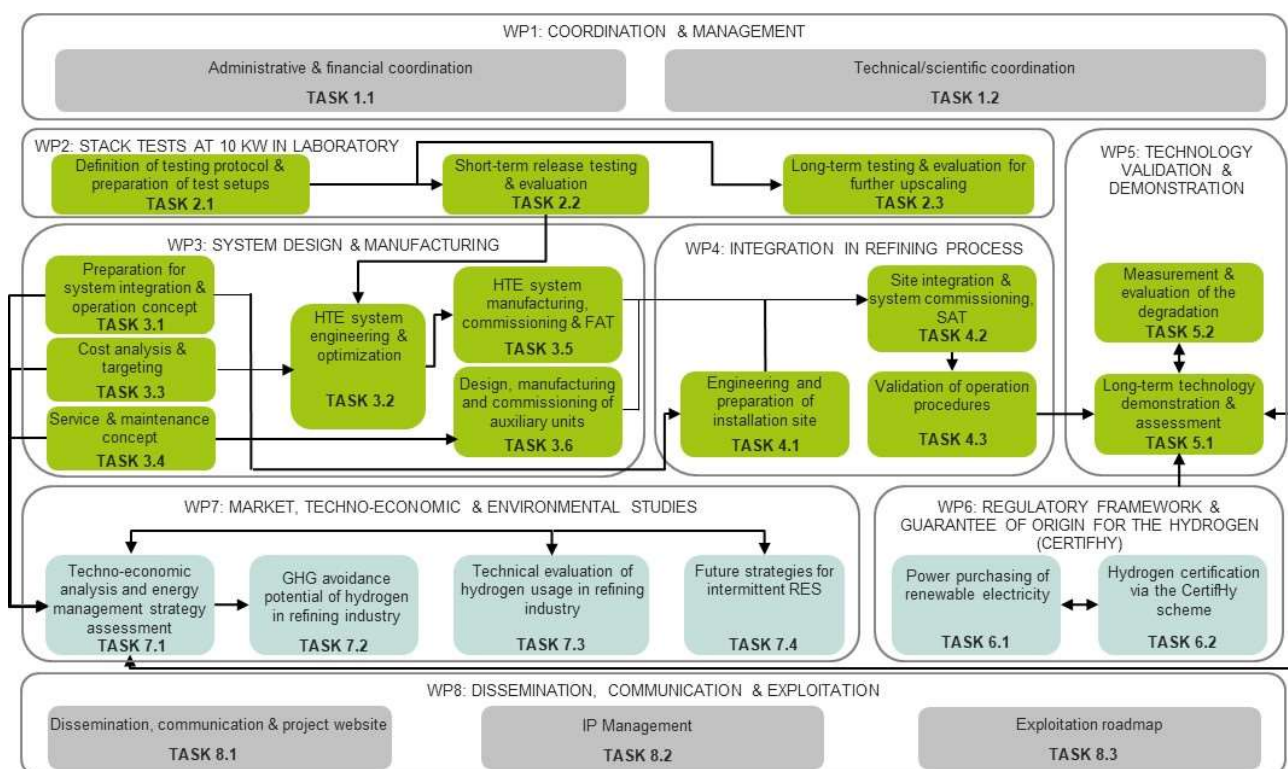


Figure 1: PERT diagram

3. Management structure and procedure

The MULTIPLY project is the first Innovation Action focusing on a large-scale (multi MW) HTE. The planned project duration is 60 months.

Due to the relatively low number of partners (5 partners), a flat organizational structure with a one level management is adequate and has been proven most effectively.

A schematic of the management structure that will be implemented for MULTIPLY is shown in Figure 2. The defined structure will enable the effective achievement of the project objectives and will help

to select the most appropriate exploitation routes for further collaboration. The management of the consortium will be carried out by the project coordinator (PC) divided into an overall (administrative) coordinator, and a scientific coordinator (SC). The scientific and technical management will be performed by Project Coordination Committee (PCC) with one representative from each beneficiary and chaired by the scientific coordinator.

All project relevant decisions will be clarified by a democratic vote among the PCC. By doing so, the management structure ensures a fast decision-making.

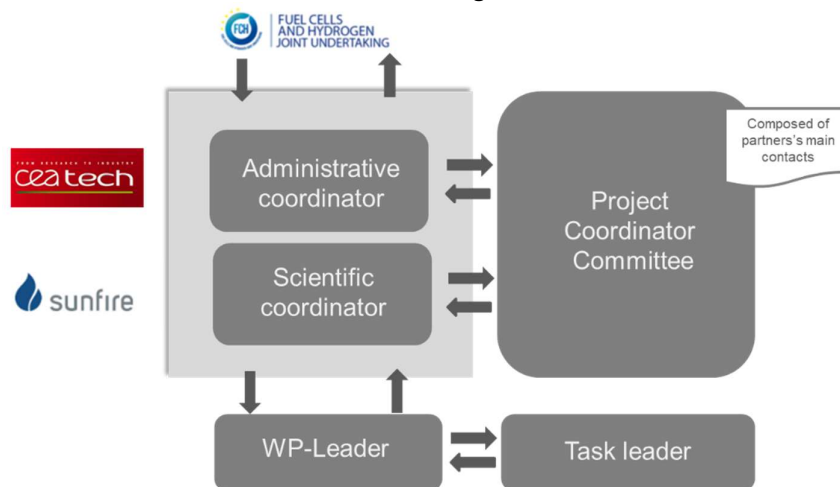


Figure 2: Management structure of MULTIPLHY

4. Roles and Responsibilities

MULTIPLHY consortium consists in 5 partners from 4 countries, the demonstration site being in a fifth country (the Netherlands), as can be seen in Figure 3, with also the main activities for each partner.

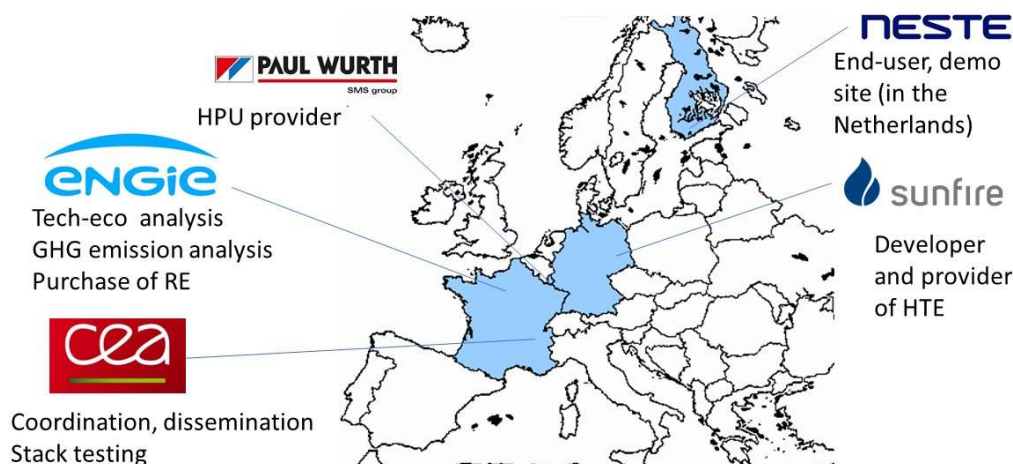


Figure 3: partners of the project and main activities

The day-to-day management of the project is done by the project coordinator, who communicates directly with the FCH2 JU office, in collaboration with the scientific coordinator, who is the thematic contact person to the work package leaders (WPL). Whereas SF takes on the scientific coordination, CEA ensures the administrative coordination.

4.1 Project Coordinator

CEA (Julie Mougin) as overall Project Coordinator (PC) is the single-point intermediary between the Parties and the Funding Authority (FCH2 JU).

The PC is responsible for the following tasks:

- Overall project management, administrative and financial tasks, which includes the communication between the Consortium and the FCH2 JU office;
- Administration of the financial contribution of the Funding Authority and fulfilling the financial tasks described according to the GA and CA;
- Monitoring the compliance by the Parties with their obligations;
- Collection, reviewing and prompt submission of information on the progress of the Project, reports and other deliverables (including financial statements and related certification) to the Funding Authority;
- Preparation (e.g. preparing the agenda, proposing decisions, ...) of General Assembly Meetings – also referred to as Project Meetings –, chairing the meetings, preparing the minutes of the meetings and monitoring the implementation of decisions taken at meetings of the Project Meetings;

4.2 Scientific Coordinator

Sunfire (Oliver Posdziech) is the project's Scientific Coordinator (SC) and will support the PC in scientific and technical matters. The SC is responsible for:

- Supporting the Project Coordinator in preparing the meetings, proposing decisions and preparing the agenda of General Assembly meetings, preparing the minutes of the meetings and monitoring the implementation of decisions taken at meetings
- Collection and finalization of the Technical Report of the official reports;
- Annual data reporting to FCH2 JU;
- Tracking of Milestones, including fulfilment criteria.

4.3 Project Coordination Committee

The Project and Scientific Coordinators receive support in their work from the **Project Coordination Committee** (PCC) consisting of one member from each beneficiary. Members of the PCC shall also act as members of the project's General Assembly. Therefore, its tasks will be the following:

- Supporting the coordinator in fulfilling obligations towards the FCH2 JU office;
- Ensuring that all work meets functional requirements;
- Reviewing and proposing to the project budget transfers in accordance with the contract and the possible revisions of the implementation plan;
- Monitoring the project budget in accordance with the contract, including if necessary the project plan, and reviewing and proposing to the partners budget transfers;
- Agreeing on press releases and joint publications by the parties with regard to the project;
- In case of default of a partner agreeing on actions to be taken against the defaulting partner, including a request to the FCH2 JU office for an audit or for the assistance of the FCH2 JU office, and making proposals to the other partners to assign the tasks of the defaulting partner, and if appropriate to agree upon a new entity to join the project for that purpose;
- Reporting major changes in work packages;
- Managing conflicts.

4.4 Work Package and Work Task Leaders

The technical leadership and responsibility for each single work package is assigned to single project partners, the **Work Package Leaders** (WPL). WPL's tasks will be to control the progress of the

scheduled work within the WP in terms of technical achievement, planned deliverables and expenses and to inform the General Assembly and the other WPLs. The following tasks of WPLs are considered in particular:

- to coordinate the work to be carried out in the WP to reach the objectives defined
- to organize, prepare and chair WP meetings, as often as needed
- to collect the information (technical, programmatic) needed to prepare periodic progress reporting required by the Project Coordinator,
- to transmit information from the Project Coordinator to the partners involved in the Work Package,
- to report to the Project Coordinator on all matters related to the topic (planning, costs, etc.),
- to allow a fluid upstream and downstream exchange of information, regular contact will be kept between the Project Coordinator, the Scientific Coordinator and WP leaders.

Furthermore, **Work Task Leaders** (TL) are appointed for single tasks within each WP. The TLs are responsible for the task supervision and implementation and provides the relevant information to the respective WPL (technical reports, etc.). From the above, the interrelation and the complementarity among of the various sub-units can be derived. Usually, Task Leaders are responsible for drafting a deliverable.

5. Innovation Management

SF (Oliver Posdziech) will be responsible of Innovation Management (IP manager), which will be managed under 2 aspects in the project:

- The innovation margins of major results will be identified in market terms. This will enable to reinforce the Exploitation Strategy with qualitative and quantitative measures. Innovation Management will work in parallel to the dissemination & communication activities of the project results which will indicate the customer segments and which value propositions they require/need.
- To continuously meet market and costumer demands, SF will address methodologically technical problems on process and product level in innovation workshops. Under the direction of SF, innovation workshops will tackle appearing issues with appropriate creative methods to generate goal-oriented solutions. Depending on the severity of those issues the workshops will be carried out either in person or as web-based meetings.

CEA as WP8 leader will ensure a continuous identification, monitoring and qualification of tangible and intangible results that should be either kept confidential, legally protected (intellectual property), disseminated or transferred to third parties.

Protection of intellectual property is also be detailed within the Consortium Agreement (CA). The main rules are listed below:

- **Pre-existing know-how (PEKH):** each partner is and remains the sole owner of its intellectual property rights over its PEKH. The partners have identified and will list in the CA the PEKH over which they may grant access rights for the Project.
- **Ownership and protection of knowledge:** knowledge shall be the property of the partner generating it. Joint ownership remains possible.
- **Protection of intellectual property:** legal protection mechanisms will be investigated every time exploitable results have been achieved. WP leaders will be responsible for detecting the results to be protected, in respect of the contract and consortium agreement.

6. Project Meetings

Project plenary meetings are the most important controlling instrument of the project coordinators. At each project meeting every partner presents the progress of work, addresses possible and occurring risks and indicates the next steps. In addition, the project coordinators provide administrative and

cross-cutting information to the consortium and compare the progress of work against the work plan. They are organized regularly on a six-month basis for physical meetings. Preferably, the meetings are organized by changing parties

They are complemented by Skype conferences every 3 months.

Depending on the progress and the results achieved, a change in the work-program may be proposed. Alternatively, in case of insufficient technical results or poor outlooks for further exploitation, it can be decided to discontinue the project. Those decisions will be based on a democratic vote and need a simple majority. However, serious changes are addressed by the ordinary General Assembly which is integrated into each Project Meeting.

Additional to regular project meetings, each WPL and WTL are encouraged to hold meetings with other partners according to WP needs or on demand.

7. Documents management and communication

7.1 General

During the project a significant amount documents will be produced, usually by more than one partner. To be most efficient, a file sharing system shall be employed for the partners of the Consortium. For this purpose, CEA sets up a sharepoint. On request to the PC, each project member shall receive a personal login and password and has the rights to add, modify and delete files.

Besides the opportunity to jointly work on reports, the sharepoint room shall provide an easy access to finalized project documents and information. Those are, among others:

- Project official documents: GA, amendments, CA
- Official Reports: periodic reports
- Documents related to the interaction with the FCH2 JU
- Deliverables (public and confidential),
- Contact list
- Documents relating to Project Meetings (presentations, minutes of meetings, arrival instructions,...)
- Templates
- Table with the list of dissemination/communication activities
- Published articles and/or presentations given at Workshops/symposiums
- Leaflets, posters, ...

In addition, approved public deliverables and presentations shall be available on the project's website.

7.2 Deliverables management

The list of the deliverables planned can be found in the GA, in section 1.3.2, which provided for each deliverable the reference, the title, the lead beneficiary, the dissemination level and the due date.

The PC will define templates for all official documents related to the project, with the selected graphic identify. Presented in the D8.1 Communication Toolkit, they will be send to all partners and available on the sharepoint for the use by all partners.

The following process (see table 1) is proposed for the preparation, reviewing and submission of a deliverable, which is an iterative process.

The previously mentioned sharepoint will be used. Only with reaching a final stage, the deliverables shall be added to the sharepoint room for comments from the other partners.

It must be noticed that the due date is the latest date of submission by the PC on the EU portal. It means that the draft deliverable needs to be circulated early enough before this date to allow the review and validation process.

What	Who	When
Writing of the draft deliverable (sharepoint + e-mail to inform)	Lead beneficiary	2 weeks before due date at the latest
Review (several loops if needed)	contributors	Max. duration: 1 week
Writing of the corrected version of the deliverable	Lead beneficiary	1 week before due date at the latest
Submission to the WPL, PC/SC (sharepoint + e-mail to inform)	Lead beneficiary	1 week before due date at the latest
Validation by WPL, PC/SC (feedback loop to lead beneficiary in case of modifications needed)	WPL, PC/SC (e-mail)	Max duration: 1 week
Submission by PC on EU participant portal	PC	Due date at the latest

Table 1: process for deliverable management

In all deliverables, a table including the references and the validation process is included. This table formalizes the validation process. The deliverable will be validated by the WP leader, and the coordinator (PC and SC). In addition, other partners, in case of use, can also validate the deliverable if they are not contributors and if they are concerned by the content of this deliverable. They can be appointed either by the deliverable writing partner or by the coordinator. A validation by e-mail is the nominal way.

8. Reporting and Controlling

The project progress will be recorded by official project reports, mid-term review, deliverables, milestones and internal summary reports by every Work Package Leader.

Official reporting to the FCH2 JU occurs according to the Grant Agreement. Besides the continuous reporting via the participant portal, official reporting presumably consists of three periodic reports and one final project report. In turn, those reports contain a detailed technical report and financial statements of each beneficiary. Whereas each partner is responsible for providing technical and financial content, the coordinator is responsible for the submission of the reports to the FCH2 JU office.

The purpose of the **periodic review** is to report on the progress to date and to redefine, adjust or confirm the work plan and focus of the project for the remaining part of the Grant Agreement. Procedures for managing future exploitation of results will be discussed and assessed in close contact and cooperation with FCH2 JU's representatives, external reviewers, and the project coordination committee.

Deliverables and **milestones** are another instrument for controlling the project and reporting of its progress. Whereas milestones define measurable and specific state of the project, almost every task of the work plan ends with a confidential or public deliverable to provide detailed results and promote their exploitation.

Every six months during official project meetings, the WPLs are bound to prepare a **summary report of work packages**. In this summary the WPL presents the state of progress according to the general work plan, deliverables, milestones and risks. Based on those reports, the PC will compare the budgetary situation with the initial planning and take actions to correct any deviation.

Furthermore, each beneficiary shall provide an **update of their actual eligible costs**. For those statements separate templates will be provided by the PC before the meetings.

According to the Grant Agreement, the project will be externally monitored by FCH2-JU in terms of three periodic reports and a Final Report.

- 1st periodic report at the end of Reporting Period 1 (RP1) covering M1-M12

- 2nd periodic report at the end of Reporting Period 2 (RP2) covering M13-M24
- 3rd periodic report at the end of Reporting Period 3 (RP3) covering M25-M42
- Final report at the end of Reporting Period 4 (RP4) covering M43-M60

Those reporting reports include technical and financial reports.

The preparation of these reports will be initiated by the PC, who will deliver the reports to the FCH2-JU via the EC's participant portal maximum 60 days after the end of the reporting period.

A mid-term review will be organized in M27, covering the work carried out in the 2 first periods.

9. Risk management

Each WP leader is responsible for the determination of the possible risks that can affect the progress of their WP, supported by WT leaders. Whereas the Project Coordinator will ensure that the project timetable is adhered to by all partners, the Scientific Coordinator will monitor the technical risks. Should unforeseen delays nevertheless arise, alternative plans shall be discussed and approved by the General Assembly and immediately communicated to the FCH2-JU office by the PC.

The Table 2 below gives an overview of the roles of the project coordinators, work package leaders and all project partners.

	Project Coordinator Scientific coordinator	WP Leader	Project Partner
Risk management	Overall responsibility for risk management	Monitor risks related to own WP, manage risks in cooperation with Coordinator	Report potential risks to WP leaders as soon as discovered; involved in the proposition of mitigation strategy for risks concerning him

Table 2: Roles and responsibilities

A list of initially identified risks and ways to cope with them is given in GA, section 1.3.5. Deliverable D1.2 Risk Analysis Contingency plan is due in M18 and its update (D1.3) in M36 for a follow-up of those risks.

During the periodic meeting, each WPL will have to report about the risks identified in his WP, if they materialize, if mitigation strategies have been implemented etc.

10. Conflict resolution

The parties shall endeavor to settle their disputes amicably. In the first instance, strictly work related issues and disputes between parties shall be brought forward to the responsible Work Package Leader. Work related issues may be linked to the following:

- Progress of work package;
- Preparation of deliverables;
- Minor modifications of the Work Plan.

Ongoing disputes between two or more parties shall be solved by the Project Coordinator and/or the Scientific Coordinator with possible appeal before the General Assembly.

11. Conclusion

This deliverable presents the management guidelines considered in WP1 – Coordination and Management, to manage in the most efficient and smooth way the MULTIPLHY project. It contains the most important information from both the Grant Agreement (GA) and Consortium Agreement (CA).