



# D1.1 - PROJECT HANDBOOK AND QUALITY ASSURANCE PLAN

WP1 - Project Management

Partner:	KUL
Authors:	MARIA RECAMAN PAYO
Version:	v.final
Date:	18.01.2023



## PROJECT DETAILS AND DELIVERABLE INFORMATION

### Project details

<b>Project Title</b>	<b>Ferroelectric PHOTonics ENabling novel functionalities and enhanced performance of neXt generation PICs</b>
<b>Project Type</b>	Research and Innovation Action
<b>Project Acronym</b>	PHOENIX
<b>Grant Agreement No.</b>	101070690
<b>Duration</b>	36 months
<b>Project Start Date</b>	01/09/2022

### Deliverable information

<b>Status</b> F: final; D: draft; RD: revised draft	D
<b>Planned delivery date</b>	30/11/2022 (M3)
<b>Actual delivery date</b>	12/12/2022 (M4)
<b>Dissemination level</b> PU = Public; PP = Restricted to other program participants; RE = Restricted to a group specified by the consortium; CO = Confidential, only for members of the consortium	PU
<b>Type</b> Report, Website, Other, Ethics	Report

## DOCUMENT HISTORY AND QUALITY CHECK

### Document History

Version	Date (DD/MM/YYYY)	Created/Amended by	Changes
01	14/12/2022	Maria Recaman Payo	Implementing PNO input

### Quality check review

Reviewer (s)	Main changes

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## LIST OF ABBREVIATIONS AND DEFINITIONS

Abbreviation	Definition
<b>BTO</b>	Barium titanate (BaTiO <sub>3</sub> )
<b>CA</b>	Consortium Agreement
<b>DIH</b>	Digital Innovation Hub
<b>DoA</b>	Description of Action
<b>EB</b>	Executive Board
<b>EC</b>	European Commission
<b>ESGB</b>	Experiment Strategic Guidance Board
<b>FSTP</b>	Financial Support to Third Parties
<b>GA</b>	Grant Agreement
<b>IBMH</b>	IBM Haifa (Israel), partner
<b>IBMZ</b>	IBM Zürich (Switzerland), partner
<b>KUL</b>	KU Leuven (Belgium), partner
<b>M</b>	Month
<b>LUM</b>	Lumiphase (Switzerland), partner
<b>MBE</b>	Molecular Beam Epitaxy
<b>MZI</b>	Mach-Zehnder Interferometer
<b>NN</b>	Neural Network
<b>OPT</b>	Optalysys (United Kingdom), partner
<b>PC</b>	Project Coordinator
<b>PIC</b>	Photonic Integrated Circuit
<b>PM</b>	Person-Month
<b>PNO</b>	PNO Consultants (Spain), partner
<b>PO</b>	Project Officer
<b>PSG</b>	Project Steering Group
<b>SC</b>	Scientific Coordinator
<b>SiN</b>	Silicon nitride (Si <sub>3</sub> N <sub>4</sub> )
<b>SSL</b>	Secure Sockets Layer
<b>UPV</b>	Universitat Politècnica de València (Spain), partner
<b>VOx</b>	Vanadium oxide (e.g. VO <sub>2</sub> , V <sub>2</sub> O <sub>3</sub> )
<b>WG</b>	Waveguide
<b>WP(s)</b>	Work Package(s)

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## EXECUTIVE SUMMARY

The aim of D1.1 “Project Handbook and Quality Assurance Plan” is to support the PHOENIX consortium in the day-by-day execution of project activities, providing information about project management as well as specific management procedures and rules.

This document must be considered as a working tool, which can be improved during the project lifetime, to facilitate the collaboration among the partners and to create a “common language” within the people involved in the PHOENIX project.

## INTRODUCTION

The project management handbook is aimed at providing clear guidelines to the consortium in the day-by-day project activities and facilitate the work of the project coordinator for the management and monitoring of the PHOENIX project activities.

The document provides:

- Definition of roles and responsibilities for governance and management,
- Rules concerning the sharing and archive of documents, including guidelines on the usage of the internal web portal,
- Communication rules regarding mailings, meetings, and conference calls,
- Rules for usage of templates and documents naming.

## THE PHOENIX PROJECT

In PHOENIX, we create the next generation of compact photonic integrated circuits offering a continuous and efficient control over optical signals. The functionalities stem from a combination of materials having a metal-insulator transition with epitaxial ferroelectrics. The first ones deliver a maximum contrast in absorption while the second one offers an efficient and programmable control of the phase of an optical signal, through Pockels and photorefractive effects. The developed technologies will be demonstrated in four use cases in the fields of encryption, wireless telecommunications, and neuromorphic computing.

The 4 main objectives of PHOENIX are:

- Objective 1: to provide novel photonic technologies which combine features like photorefractive and Pockels effects in BTO with modulation in VOx to enable a continuous control of optical elements in 2D mesh.
- Objective 2: to provide a BTO/SiN WG platform for subsequent manufacturing of photonics integrated circuits and an upgraded version of such a platform integrating VOx with the potential to improve their performance and scalability.
- Objective 3: to build up the demonstrators for four use cases (two hardware platforms).
- Objective 4: to advance in the understanding, realization and upscaling of high-quality oxide thin films by Molecular Beam Epitaxy (MBE).

## PHOENIX PROJECT MANAGEMENT

**Table 1** displays the list of Work Packages (WPs) and tasks in PHOENIX as well as the WP leader and main partners responsible. A more detailed description of the WP tasks is given in the Grant Agreement (GA) and the Description of Action (DoA).

WP1 on project management is led by KUL (project coordinator) and supported by all partners (UPV, OPT, IBMH, PNO, LUM and IBMZ) of the consortium.

**Table 1.** WP list in PHOENIX.

WP	WP leader	Tasks	Partners ( <u>leader</u> )
WP1	KUL	T1.1. Administrative & financial management	<u>KUL</u> , all
		T1.2 Technical progress monitoring & risk management	<u>LUM</u> , all
		T1.3 Quality assurance	<u>KUL</u> , all
WP2	OPT	T2.1. Use cases requirements: from system to device and material level	<u>IBMZ</u> , OPT, IBMH
		T2.2. Design of material systems	<u>KUL</u> , LUM
		T2.3. Design of structures and building blocks	<u>UPV</u> , LUM, IBMZ
		T2.4. PIC and PIC packaging design	<u>OPT</u> , LUM
WP3	LUM	T3.1. Basic structures/building blocks fabrication at chip level and testing	<u>LUM</u> , UPV, KUL
		T3.2. PIC fabrication and on-wafer testing	<u>LUM</u> , UPV
		T3.3. PIC packaging and test	<u>UPV</u> , OPT, IBMZ, LUM
		T3.4. Roadmap for photonic-electronic integration and upscaling	<u>OPT</u> , LUM, KUL
WP4	IBMZ	T4.1. FW/SW and control, biasing and driving electronics design & fabrication	<u>IBMH</u> , IBMZ, OPT
		T4.2. Use cases demonstrators' set-up	<u>IBMZ</u> , IBMH, OPT
		T4.3. Use cases demonstrators' technical evaluation	<u>IBMZ</u> , IBMH, OPT
WP5	PNO	Task 5.1. Communication and dissemination plan	<u>PNO</u> , all
		Task 5.2. Data management plan	<u>PNO</u> , all
		Task 5.3. Stakeholder analysis and engagement	<u>PNO</u> , all
		Task 5.4. Market analysis and Exploitation Plan	<u>PNO</u> , all

The management procedures, decision-making rules, conflict resolution and arbitration mechanisms are established by the Consortium Agreement (CA) and followed up throughout the project in WP1.

The main goal of this WP is to set up an effective framework to ensure the proper level of coordination and cooperation among partners as well as to act as the interface between the consortium and the European Commission (EC), particularly:

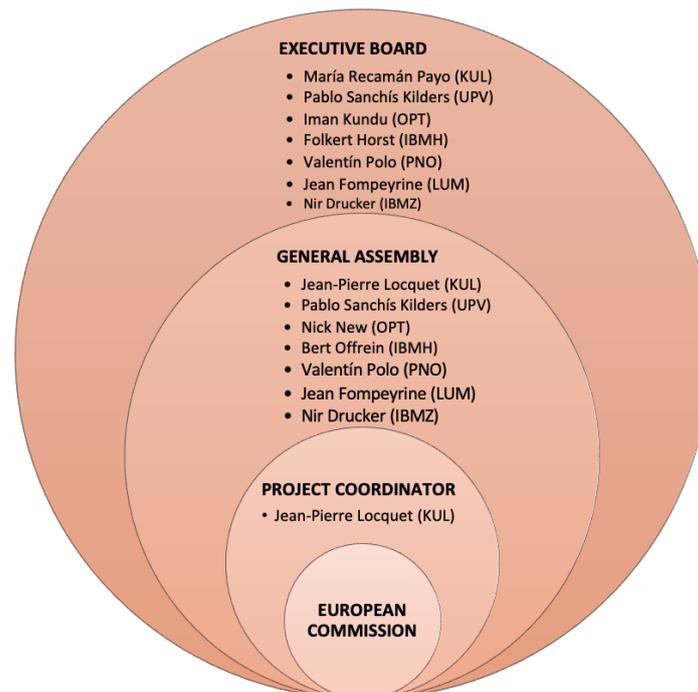
- To establish the project operation tools and supervise the implementation to ensure progress towards the project objectives.
- To ensure that all actions are performed correctly and within the rules and regulations established by the EC.
- To set up internal quality and risks management procedures.
- To administrate and distribute the EC funds in a timely fashion and keeping record of all allocations.

## PHOENIX management bodies

The PHOENIX management structure is composed by different roles and bodies that will support the project coordinator in the implementation of the management activities to guarantee the proper execution of tasks and use of resources, the follow-up of deadlines and the compliance of European Commission (EC) rules.

As shown in **Figure 1**, the management structure supporting the PHOENIX project consists of:

- The General Assembly as the ultimate decision-making body of the consortium. The decisions that shall be taken by the General Assembly are defined in the CA under sections 6.3.1.2.
- The Executive Board as the supervisory body for the proper execution and implementation within the project of the decisions of the General Assembly to which they shall report to.
- The Coordinator is the legal entity acting as the intermediary between the parties of the consortium and the EC as granting authority. A detailed list of the Coordinator’s responsibilities is given in section 6.4.2 of the CA as well as in the GA.



**Figure 1.** Management structure supporting the PHOENIX project.

The meetings of the General Assembly and the Executive Board should be organized following the rules established in the CA. The Executive Board shall meet at least every 6 months to check the progress of the project, assess its compliance with the consortium plan and, if necessary, propose modifications of the consortium plan to the General Assembly. A detailed overview on the meetings is given in the section on Monitoring and Reporting.

The Coordinator as chairperson of each consortium body shall produce the minutes of each meeting and send the draft minutes to all members within 10 calendar days. If no member objects to the draft within 15 days, it is considered accepted, and the final version must be archived in the PHOENIX Internal Portal at <http://www.heu-phoenix.eu>.

## Decision-making procedures

As indicated in the Consortium Agreement, which details the rights and obligations of the beneficiaries, the communication between different levels is established as follows:

- WP leaders coordinate daily work with the involvement of task leaders.
- WP leaders will periodically report the work progress to the Coordinator, and on demand in case of deviations.
- The Coordinator will be responsible for the communication with the EC, as well as initiate the meetings with the General Assembly and the Executive Board (whether periodical or on demand).

Decision-making is based on a democratic approach in which each member of the consortium body has a vote. The validity of a decision shall follow the guidelines described in section 6.2.3 of the CA.

## RISK MANAGEMENT

**Table 2** describes the critical risks identified for the execution of the PHOENIX tasks as described in the DoA.

The process for risk management will be iterative. During each iteration a risk register will be built (see **Table 2**):

- 1) Each partner in the project is responsible for reporting potential risks (and proposing mitigating actions) by informing the WP leader and/or Coordinator as soon as possible, and the remaining partners during the follow-up monthly meetings.
- 2) The partners together will assess the risk impact and agree on some remedial actions as soon as possible. Major risks creating deviations from the original DoA will be also reported to the EC by the Coordinator.
- 3) The risk register table (**Table 2**) will be updated accordingly. The risk register should be reviewed and updated, if necessary, quarterly.

**Table 5.** Critical risks (date of update: 11.01.2023).

Description of risk. Level of (i) likelihood, and (ii) severity: Low/Medium/High	WPs involved	Proposed risk-mitigation measures
Delays in signing the CA: (i) high, (ii) low	WP1, all	Open detailed discussions among the partners already agreeing with and signing the CA. Limited discussion with the partner still reviewing the CA.
Poor uniformity and thin-film quality on 300 mm MBE: (i) medium, (ii) medium.	WP2-WP3	The demonstrators will only be realized on a 200 mm platform. The work on 300 mm targets the development of advanced characterization techniques and process improvements for a potential upscale of MBE systems.
High driving voltage required in the hybrid VOx/BTO device to achieve the required extinction ratio: (i) medium, (ii) medium.	WP2-WP4	Lower voltage could be achieved at the expense of increasing insertion losses. The VOx can also be triggered by a thermal approach at the expense of a lower speed.
Higher optical losses than anticipated from VOx/BTO device: (i) medium, (ii) medium.	WP2-WP4	For demos 1 and 2 we will reduce the pixel resolution to compensate for optical loss
Re-spin required of PIC: (i) low, (ii) high.	WP2-WP4	Software emulation of application use cases
Too low photorefractive effect in BTO PIC: (i) medium, (ii) medium.	WP2-WP4	Re-focus on the use of standard Pockels effect in 2D MZI mesh for NN inference only

Exploitation plan not able to maximise the expected impacts: (i) low, (ii) medium.	WP5	As described in WP5, PHOENIX will work on the exploitation strategy from the project start, by identifying the KERs, analyzing markets and stakeholders, defining suitable business models, and in close collaboration with multiplier organizations to maximize replicability and sustainability results.
Conflicts between academic partners and industrial partner in exploitation and dissemination of results: (i) low, (ii) low.	WP5	Discussion within the Consortium following HE rules and clear IP management rules set up in the CA.
Difficulty to engage stakeholders: (i) low, (ii) medium.	WP5	Partners have an extensive R&D cooperation and commercial network already in place. Initial focus on key established partners and industrial associations to build around.

## MONITORING AND REPORTING

### Confidentiality

All consortium partners must follow the agreements on confidential information established in the GA and the CA (sections 9 and 10), as well as their national legislation and EU directives in relation to the management of personal data.

### Follow-up online meetings

To monitor the work progress throughout the project, online meetings are organized every 4 weeks on Wednesday from 10h to 11h starting on 27<sup>th</sup> October 2022 and finishing on 18<sup>th</sup> September 2025.

The meetings take place online via Microsoft Teams.

All partners in the consortium (represented at least by a member of the Executive Board) shall attend the meetings. If a partner cannot attend the meeting, they should inform the Coordinator (KUL) upfront and provide their monthly feedback via a text message (e-mail, word, power point, etc) to the Coordinator and/or other partners of the consortium working in the same task or WP.

All the documents shared during the follow-up monthly meetings shall be archived in the PHOENIX Internal Portal at <http://www.heu-phoenix.eu>.

The Coordinator is responsible of the meetings minutes as described in the section on PHOENIX Project Management (Decision-making procedures) and the CA.

### Face-to-face meetings

Face-to-face meetings are planned every six months. A tentative schedule is listed in **Table 3** below.

**Table 3.** Tentative schedule for the face-to-face meetings within PHOENIX.

When?	Meeting details	Done?
<b>M1</b> Kick-Off Meeting	Location: Leuven (Belgium) Date: 14 September 2022 (9h-18h) Host: KUL	Yes
<b>M6</b>	Location: Zurich (Switzerland)	

	Date: 1-2 February 2023 Host: IBMZ	
<b>M12</b>	Location: Date: Sept-Oct 2023 Host:	
<b>M18 Review Meeting with PO + external reviewers</b>	Location: Date: Feb-Mar 2024 Host:	
<b>M24</b>	Location: Date: Sept-Oct 2024 Host:	
<b>M30</b>	Location: Date: Feb-Mar 2025 Host:	
<b>M36 Review Meeting with PO + external reviewers</b>	Location: Date: Sept-Oct 2025 Host:	

In the face-to-face meetings, which may be extended over 1 or 2 full days, each WP leader (see **Table 1**) must give an overview of the running activities during the previous 6 months. For a detailed description of the tasks, refer to the DoA.

Each meeting shall be organized by a partner of the consortium. The agenda shall be outlined upfront with the assistance of the project Coordinator.

All partners in the consortium shall be represented in the face-to-face meetings. The members of the Executive Board and the General Assembly shall be present as, depending on the work progress, certain decisions must be taken and agreed upon, which may change the original consortium plan.

All the documents shared during the face-to-face meetings shall be archived in the PHOENIX Internal Portal at <http://www.heu-phoenix.eu>.

The Coordinator is responsible of the meetings minutes as described in the section on PHOENIX Project Management (Decision-making procedures) and the CA.

## Deliverables and milestones

The schedule for the main project deliverables and milestones is outlined in the DoA. A list of those deliverables and the main responsible for each of them is shared in **Table 4**. **Table 5** lists the agreed milestones.

**Table 4.** List of deliverables.

#	Name	WP	Led by	Type	Dissemination level	Deadline
D1.1	Project handbook and quality assurance	1	KUL	R	PU	M3
D2.1	Report on the specifications for the materials, devices and system	2	IBMZ	R	SEN	M8
D3.1	Report on the evaluation of first building blocks	3	LUM	R	SEN	M8
D2.2	Report on the designed building blocks	2	UPV	R	SEN	M24
D5.3	Stakeholder analysis	5	PNO	R	SEN	M24
D2.3	Report on the PIC design	2	OPT	R	SEN	M27
D3.2	Report on the PICs packaging and testing results	3	UPV	R	SEN	M29

D3.3	Roadmap for up-scaling	3	OPT	R	SEN	M36
D4.1	Report on HW platform for FHE and 5G	4	IBMH	R, DEM	SEN	M36
D4.2	Report on HW platform for NN inference and training	4	IBMZ	R, DEM	SEN	M36
D5.1	Communication and dissemination plan	5	PNO	R	PU	M6, M36
D5.2	Data management plan	5	PNO	R, DMP	PU	M6, M36
D5.4	Market analysis & exploitation plan	5	PNO	R	SEN	M36

**Table 5.** List of milestones.

#	Name	WP	Deadline	Means of verification
<b>M2.1</b>	Requirement freeze for BTO/VOx devices. Design tapeout of electronic driver for photonic encoder and system/board architecture	2	M8	<b>Mask design file available based on the required specifications.</b>
<b>M2.2</b>	Choice of the most suitable in-situ characterization techniques to be acquired and installed in the large area MBE.	2	M8	<b>Purchase order in place.</b>
<b>M2.3</b>	Best configuration of BTO/VOx devices for PIC	2	M21	<b>Process flow definition (processing conditions available)</b>
<b>M2.4</b>	GDSII tapeout of Optalysys Etile chiplet powered up with BTO/VOx PIC	2	M21	<b>Database file available</b>
<b>M3.1</b>	Release of the PIC for the first MPW round	3	M8	<b>First functional devices and building blocks tested.</b>
<b>M3.2</b>	Release of the PIC for the second MPW round	3	M21	<b>First MPW finished and further points of improvement identified.</b>
<b>M4.1</b>	<b>Full set-up of the demonstrators (ready for testing)</b>	<b>4</b>	<b>M30</b>	<b>Demonstrators built</b>

A template to be used by all partners when generating the deliverable reports can be found in the PHOENIX Internal Portal at <http://www.heu-phoenix.eu>. Each deliverable report will contain:

- Title page.
- Table with the main attributes of the project details and the deliverable.
- Table with a revision of the document history and quality check.
- Table of contents.
- List of abbreviations and definitions.
- Executive summary.
- Description of the work (in several sections).
- Annexes as appropriate.

**Table 6** below provides the guidelines on how to name the deliverables.

**Table 6.** How to build the document ID of a deliverable.

Each deliverable report will normally have a unique identifier which will become the name of the file as well.

Before submission, this identifier is built as follows:

*<Project name abbreviation>\_D<Number of deliverable>\_<Document name>\_v.<Version\_Revision>*

*e.g.: PHOENIX\_D1.1\_QualityAssurancePlan\_v.01*

The final version of the document to be submitted to the EC, will be simply labelled as versional “final” as follows:

Before submission to the EC, each deliverable will undergo a peer review by the partners also involved in the related WP, to assess that each deliverable meets acceptable standards on the technical, quality and cost levels. This review process is documented in the history table of the document.

Once the responsible partners for that deliverable agree on their content, the deliverable will be submitted by the project coordinator to the EC through the “Funder & Tender Opportunities” portal.

If the report is refused by the EC, the deliverable will be modified considering the remarks, and a new review process will be carried out again before re-submission.

The report finally approved by the EC shall be archived in the PHOENIX Internal Portal at <http://www.heu-phoenix.eu>.

## Internal continuous reporting

Continuous monitoring is useful for the identification of strengths and weaknesses, as well as for providing the WP leader and tasks responsible with sufficient information to make the right decisions at the right time to improve the quality of the results. The follow-up of the work progress will be realized by means of:

- 1) The monthly follow-up (online) meetings where we will internally share the minutes meetings and the technical documentation under discussion. In the monthly follow-up meetings, we will also assess the potential risks for the project activities and propose mitigating actions. The risk register table (**Table 2**) will be updated accordingly.
- 2) The update of the EC portal every 6 months on the work performed, main achievements, publications, critical risks, etc.
- 3) The interim monitoring reports for internal use (not for submission to the EC) built every 6 months after each of the planned face-to-face meetings (at M6, M12, M18, M24, M30 and M36). Interim reports will be used to collect information about the status of the project and the progress achieved by each single partner in the tasks/WPs of their responsibility, as well as the progress of the project. These reports shall include information on activities realised, results reached, usage of resources, issues (if any) arose during the period of reference and contingency plans suggested and/or agreed to solve the issues. The interim reports template will follow a structure like the one used for the periodic reporting to the EC (see next section). The interim reports will be also used to monitor the alignment of the usage of resources of each partner with respect to what was planned in the DoA, and to provide information on any eventual adjustment needed.

## Periodic reporting to the European Commission

In addition to the milestones and deliverables, reported to the EC according to the timeline of **Tables 4 and 5**, the project Coordinator is in regular contact with the Project Officer (PO). The goal of this communication is to report the project progress on the scheduled activities in a transparent and practical manner so that

the PO can continuously monitor the performance of the project in accordance with the DoA. Such contact may occur by email, phone calls, or physical meetings.

The Consortium will meet face-to-face with the PO 2 times (at M18 and at M36 as indicated in **Table 3**). In addition, periodic technical reviews will be performed by the EC to assess the work carried out in the project. The project has two formal reporting periods:

- First reporting period: M1-M18.
- Second reporting period: M19-M36.

These periodic reports to the EC will be realized following the same procedures as for the deliverables. The main difference is that these reports will be created by the Coordinator after receiving input from each WP leader. Once the Coordinator compiles a full overview of all the results of the project over the corresponding period (M1-M18, M19-M36), the report shall be shared with all the partners for reviewing and approval before submission to the EC.

The information to be provided must contain both technical and financial reports as indicated in the GA. These periodic reports will be structured as follow:

- Publishable summary (for the period).
- Explanation of the work carried out per WP for the period.
- Main WP objectives.
- Work progress and achievements per task.
- Deviation and corrective action per WP.
- Deliverables and milestones tables.
- Update of risks and contingency plan.
- Table of effort (PMs and activities) per partner involved in the period/tasks.
- Direct costs per partner involved.

**Table 7** below provides the guidelines on how to name these reports.

**Table 7.** How to build the document ID of a report.

Each report will normally have a unique identifier which will become the name of the file as well.

Before submission, this identifier is built as follows:

*<Project name abbreviation > <Document name>\_draft\_v.<Version\_Revision>*

*e.g.: PHOENIX\_Minutes KoM\_draft\_v.01*

The final version of the document will be simply labelled as version “final” as follows:

*e.g.: PHOENIX\_Minutes KoM\_v.final*

## AMENDMENTS AND POTENTIAL ISSUES

The main aim of the beneficiaries is to carry out the planned tasks and activities within the time scheduled and the foreseen resources as described in the GA and DoA.

Any deviation (e.g. delays, change in the status of a beneficiary, etc.) must be communicated immediately to the project Coordinator. The project Coordinator shall resolve queries and give advice to the beneficiaries.

Significant deviations from the work plan described in the DoA may require an amendment and must be communicated in writing to the project Coordinator. To request an amendment, the involved beneficiary/ies need to first communicate it in writing to the project Coordinator. If the project Coordinator confirms the need of an amendment, the beneficiary/ies involved should distribute a written communication to the consortium detailing the reason behind the proposed changes, as well as the direct consequences in terms of budget, activities, work plan, etc. Once the amendment need is confirmed by the consortium, the project Coordinator will follow the rules detailed in the GA to comply with the requirements and procedures indicated by the EC and request the amendment process to the PO on behalf of the consortium.

## COMMUNICATION

Properly communicating on a project is a critical project success factor. Communication within PHOENIX will take mainly the form of:

- Information sharing and storage through the portal,
- Emails via mailing list regularly updated and available in the internal website,
- Phone + video conferences,
- Meetings.

### Administrative data for formal communication

Partners shall provide to the project Coordinator updated information regarding administrative data such as address to which send paper documentation (i.e. countersigned version of the CA), contact details, banking information form (to be confirmed prior any wire transfer from KUL as project Coordinator towards the partners), changes in legal structure (change of ownership, change of name, etc.).

### Communication with the European Commission

The project Coordinator is responsible for an efficient communication between the consortium and the EC. Any communication of the partners with the EC shall pass through the project Coordinator. This means that the partners shall not directly contact the European Commission officers for questions regarding the PHOENIX project.

## Meetings/Video conferences

The consortium can meet any time needed taking into consideration the limit of budget allocated for travels and the situation regarding COVID-19 restrictions. Video conferences are considered an effective way to be in contact and provide regular updates on the progress of the project activities.

The PHOENIX consortium has agreed to set-up the following meetings/conferences as already described in the section on Monitoring and Reporting:

- KoM: already held on 14 September 2022 (in Leuven)
- Monthly follow-up online meetings.
- Face-to-face progress meetings (at least one every 6 months, see **Table 3**).
- Review meetings with the participation of the EC Project Officer and external reviewers as indicated in the GA (see **Table 3**).
- WPs meetings/tasks meetings/call conferences: at any time when requested by the WP leader, task leader, etc

Meetings dates and timing shall be defined, when possible, with at least 3 months in advance.

## Internal communication

The communication on the technical progress of the work within the consortium will be realized by means of the e-mailing list: [PHOENIX@LS.KULEUVEN.BE](mailto:PHOENIX@LS.KULEUVEN.BE).

To allow an effective communication, additional mailing lists can be created by the project Coordinator. The contacts for the mailing list shall be continuously updated by the project Coordinator, after receiving request for update by the project partners.

The most updated version of a detailed list of contacts (in excel format) is available in the Internal Portal of the PHOENIX project at <http://www.heu-phoenix.eu/>.

1-to-1 communication between partners of the consortium may take place via their individual e-mail organization. If relevant for the progress of the project and the tasks to be realized by other partners, the outcome of that 1-to-1 communication shall be reported in the monthly follow-up meetings.

## External communication

External communication is necessary to properly disseminate the project activities to the public and raise the interest of the potential stakeholders.

Any communication from the PHOENIX project must contain the project logo, the EU flag, and the following statement: *"PHOENIX has received funding from the EU Horizon Europe Programme under grant agreement No 101070690"*.

A list with the logo's can be found in the Internal Portal of the PHOENIX project at <http://www.heu-phoenix.eu/>.

The PHOENIX project has established various communication channels targeting diverse audiences:

## PROJECT WEBSITE

Targeting the general public, and also containing specific sections with dedicated content, the PHOENIX project website <http://www.heu-phoenix.eu/> will be continuously updated with project general information, brochures, news, deliverables, publications, consortium information, and complementary content to provide visitors a broad idea on the project concept and the progress of the activities.

## SOCIAL MEDIA

Multiple profiles in different social networks have been created to communicate the project activities and disseminate the outcomes of the project to different audiences:

- Twitter: <https://twitter.com/Phoenix49163114>
- LinkedIn: <https://www.linkedin.com/company/phoenix-project-photonics/>

Any content to be shared using social media should be sent to PNO as WP5 leader.

## DISSEMINATION MATERIAL

Brochures, posters, white papers, videos, scientific publications, press material, newsletters, press releases, presentations, etc., will be prepared to promote the PHOENIX results. These materials will follow quality standards and will be distributed in the regular dissemination activities scheduled in the project under WP5. All materials will be produced in English although translations to other European languages may be performed by interested beneficiaries.

## LIAISON WITH RELATED INITIATIVES

PHOENIX will perform liaison activities with related R&I activities, especially with I4MS initiatives, with the aim of finding synergies and common interests and to carry out further dissemination activities.

## EVENTS

PHOENIX will organize two code camps per experiment wave with the aim of boosting the implementation of the experiments. Experiment and core technical partners will participate in the PHOENIX code camps.

Training events will be organised for DIHs and local stakeholders on the PHOENIX technology.

Finally, one large event will be organized by the end of the project to disseminate the project results.

## PUBLICATIONS

The following presentation modes are normally meant as publications:

- An article or an editorial in a refereed or non-refereed international or national journal or conference,
- invited/keynote presentations at a conference,
- a conference poster not included in proceedings,
- a Ph.D. thesis,
- a M.Sc. thesis,

- a stand at a fair,
- an interview in the media,
- a flyer, a newsletter,
- a web page
- ...

## General guidelines for internal and external communication

Some general guidelines on the use of the website, the PHOENIX Internal Portal, e-mail or video-conference are given in **Table 7**.

**Table 7.** Guidelines for the use of the website, intranet, e-mail, post, and video-conference.

Tool	Purpose / Comments	Condition
<b>Website</b> <a href="http://www.heu-phoenix.eu/">http://www.heu-phoenix.eu/</a>	<ul style="list-style-type: none"> <li>- <b>Project description and objectives.</b></li> <li>- <b>Project announcements, press releases.</b></li> <li>- <b>Public reports.</b></li> <li>- <b>Scientific publications</b> (journal articles...).</li> </ul>	<ul style="list-style-type: none"> <li>- Open access.</li> </ul>
<b>Intranet</b> <a href="https://pmp.innovationplace.eu/login">https://pmp.innovationplace.eu/login</a>	<ul style="list-style-type: none"> <li>- <b>Working area of the project.</b></li> <li>- <b>Project official document repository.</b></li> <li>- <b>Exchange of project material &amp; data storage</b> (templates, official &amp; contractual documents e.g. reports, meeting materials, financial documents, drafts...).</li> <li>- <b>Technical &amp; financial follow-up.</b></li> <li>- <b>Meeting organization</b> (calendar...).</li> <li>- <b>Strategic or technical discussions.</b></li> </ul>	<ul style="list-style-type: none"> <li>- Personal login (username/password).</li> <li>- All project material &amp; documentation to be shared exclusively via the website intranet.</li> </ul>
<b>E-mail</b>	<ul style="list-style-type: none"> <li>- E-mail subject starts with [PHOENIX].</li> <li>- Communication among partners: within the whole consortium via e-mail list <a href="mailto:phoenix@ls.kuleuven.be">phoenix@ls.kuleuven.be</a> + 1-to-1 communication via individual organization e-mail or intranet (discussions tab).</li> </ul>	<ul style="list-style-type: none"> <li>- Do not use to exchange project material.</li> <li>- All relevant decisions for the consortium derived from 1-to-1 meetings also reported in the monthly follow-up meetings.</li> </ul>
<b>Post</b>	<ul style="list-style-type: none"> <li>- Sending signed documents or samples.</li> </ul>	
<b>Video conference, phone calls</b>	<ul style="list-style-type: none"> <li>- Monthly follow-up meetings including the whole consortium.</li> <li>- 1-to-1 meetings between specific partners.</li> <li>- Video conference will be available in face-to-face meetings if at least one partner cannot be present or represented.</li> </ul>	<ul style="list-style-type: none"> <li>- All documents shared during a meeting must be distributed upfront.</li> <li>- All relevant decisions for the consortium derived from 1-to-1 meetings must also be reported in the monthly follow-up meetings.</li> <li>- Important to confirm in writing any decision that can change the original consortium plan.</li> </ul>

## TEMPLATES

Templates are made available for partners to strengthen the uniformity of the outputs, including for presentations (PowerPoint), project deliverables and reports.

Such templates can be used for internal and external communications and can be found in the PHOENIX Internal Portal at <http://www.heu-phoenix.eu>.

### Deliverables templates

To homogenize the structure of the documents prepared during the project, a template for deliverables was defined. This template (in word format) consists in a general document structure that must be used by each deliverable responsible to prepare the document.

The template is composed mainly by the following sections:

- Cover: including the project references and number and title of the deliverable,
- Table of contents,
- Publishable summary: even when the level of dissemination is confidential or restricted,
- Content: body of the document,
- Conclusions,
- Bibliography (if any),
- Annexes (if any).

### Template for minutes of meetings/calls

A word template has been created for the preparation of the minutes of project meetings. This template allows to include a detailed description of the meeting outputs (when required) and an “action list” table where the activities to be realised in the upcoming days/weeks/months are listed, indicating: WP associated to the action, description of the action, who will do the action, and when it should be completed.

### Power point presentations template

A specific power point presentation template has been designed to be used in internal meetings and for the project’s presentation in dissemination events.

The power point presentation includes the logo of the project, specific format for fonts and titles, and a frame and colours that identify the project.

## PHOENIX MANAGEMENT PLATFORM

A management platform, restricted for partners’ internal usage, has been set-up by the project coordinator at the beginning of the project.

Each person, associated to a beneficiary of PHOENIX, has his own user ID and password to access to the portal via the project web page <http://www.heu-phoenix.eu>.

The objective of the management platform is to be an efficient tool to internally manage and share documents and information related to the project, and facilitate a proper communication among the consortium. In addition, WP leaders can manage the folder of their own WP, organising and sharing the documentation with the people involved in the specific WP.

That is, the management platform has two main functions:

- Act as repository of all the useful documents (templates, GA, CA, guidelines, list of contacts, etc.) to support the management of the project.
- Be a management tool to exchange documents per WPs, plan meetings, maintain a calendar of internal events/meetings dates, etc.

## Main sections and tools

The platform is composed by the following sections and tools.

### SECTIONS OF CONTENTS

- **DOCUMENTS:** this section is the document repository of the PHOENIX project where each partner can upload and download documents. The documents are stored in specific folders to facilitate the document search. Folders could be reorganised according to necessities and the repository has the option of assigning different permission levels to guarantee the right privacy for each document.
- **PARTNERS:** it includes the list (organisation name, last name, first name and email) of all people linked to the project in the portal.

### TOOLS FOR MANAGEMENT

- **CALENDAR:** each user can add new events and delete the ones that he/she creates. Events in the calendar are visible to all users and the event could be edit any time.
- **DOODLE:** this section offers the possibility to collect the opinion of all users for meetings, calls, events data, etc. Each user can create new doodles filling a specific online form.
- **MAILING LISTS:** this tool allows the coordinator to create mailing lists with the emails of people associated to the project. It is possible to create lists for each WP, for just administrative people, for the steering committee members, etc.

## Security and Backup

The platform is hosted by PNO and reachable through an authentication system that is managed by PNO.

Main security characteristics are:

- The platform is totally under secure connection using SSL protocol.
- The application stands on a dedicated machine not accessible from other/applications or domains.
- The machine is hosted by a primary world leading service with high-level physical and IT security.



- The entire management is under PNO control and its access is restricted by certificates own by PNO administrators.

Backup:

- A backup of the entire system is done daily with a complete snapshot of the Linux virtual machine.
- Application backups (database, files, etc.) are executed with 24 hours frequency.
- Backup are stored on a separate storage disk provided by the hosting service.

## CONCLUSIONS

This Project Management Handbook is aimed at providing clear guidelines to the consortium in the day-by-day project activities, and to facilitate the monitoring of PHOENIX progress.

These guidelines should be adopted by all project's partners in order to establish and share an operational methodology to reduce the project overhead and increase the efficiency of the work carried out.

It is expected that all members of PHOENIX consortium are aware of the general aspects addressed in this document to successfully contribute to the project.

## BIBLIOGRAPHY / REFERENCES

- PHOENIX Description of Action (DoA).
- Kick-off meeting (14.09.2022) presentations.
- Consortium Agreement (CA).