D1.1: Project Handbook

Specifies the partner responsibilities, the communication / meeting / reporting requirements

Revision: v3.0

Work package	WP 1
Task	Task 1.1
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Authors	Marco Menchetti (QTI)
Reviewers	Eva Hajdok (Martel NL), Caterina Vigliar (DTU), Elizaveta Semenova (DTU)
Abstract	The purpose of the deliverable Project Management Manual of the QPIC 1550 project defines the project organisation, roles, and responsibilities, ilt describes how the project will execute its day-to-day activities from a quality perspective, and ensures that standards, processes, and procedures are defined so that their execution is continuously monitored and improved. This deliverable defines all the necessary mechanisms and structures for the management and administrative coordination of the project with emphasis on the governance, change management, communication plan, project calendar, stages, milestones, and reporting roles and responsibilities for all the partners is also made.
Keywords	Project Management Plan, change management, scope management, cost management, cost baseline, schedule baseline, schedule management, effort, budget, indicators, guidance, administration

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v3.0	29/02/2023	3rd revision	Caterina Vigliar (DTU), Elizaveta Semenova (DTU)

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Nature of the deliverable:	**R**	
Dissemination Level		
PU	*Public, fully open, e.g. web (Deliverables flagged as public will be automatically published in CORDIS project's page)*	✓
SEN	*Sensitive, limited under the conditions of the Grant Agreement*	
Classified R-UE/ EU-R	*EU RESTRICTED under the Commission Decision No2015/ 444*	
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Classified S-UE/ EU-S	*EU SECRET under the Commission Decision No2015/ 444*	

* R: Document, report (excluding the periodic and final reports)

DEM: Demonstrator, pilot, prototype, plan designs

DEC: Websites, patents filing, press & media actions, videos, etc.

DATA: Data sets, microdata, etc.

DMP: Data management plan

ETHICS: Deliverables related to ethics issues.

SECURITY: Deliverables related to security issue

OTHER: Software, technical diagram, algorithms, models, etc.

EXECUTIVE SUMMARY

This Project Management Handbook serves as a comprehensive guide to navigating through the complexities of project management. It outlines the processes, and template to be used in the project delivery. The deliverable at hand defines the project organisation, roles and responsibilities, describes how the project will execute its day-to-day activities from a quality perspective, and ensures that standards, processes, and procedures are defined so that their execution is continuously monitored and improved. This deliverable defines all the necessary mechanisms and structures for the management and administrative coordination of the project with emphasis on the governance, communication plan, stages, milestones, and reporting roles and responsibilities for all the partners is also made.

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DEFINITIONS

Beneficiary	EC term used to designate the legal entity which has signed the Grant Agreement. This term is often substituted by the common language term 'partner'.
Consortium	Group of beneficiaries that have signed the Consortium Agreement and the Grant Agreement (either directly as Project Coordinator or by accession through the Form A).
Consortium Agreement	Contractual document signed by all the beneficiaries (and not the EC), explaining how the Consortium is managed and works together.
Deliverable Leader	Responsible for ensuring that the content of the deliverable meets the required expectations, both from a contractual point of view and in terms of usage within the project. Is also responsible for ensuring that the deliverable follows the deliverable process and is delivered on time.
Description of Action	Annex 1 to the Grant Agreement. It contains information on the work packages, deliverables, milestones, resources, and costs of the beneficiaries, as well as a text with a detailed description of the action. The DoA is made of Part A (structured data collected in web forms and workplan tables) and Part B (text document describing the action elements).
Dissemination	EC term for communication of information to a wide audience.
Foreground	The results, including information, whether they can be protected or not, are generated under the project. Such results include rights related to copyright, design rights, patent rights etc.
Grant Agreement	Contractual document which defines the contractual scope of the QPIC 1550 project. It is signed between the EC and the beneficiaries.
Third party	Any legal entity which does not sign the EC Grant Agreement. A subcontractor is a type of third party, but not the only one. In special circumstances, the GA accepts third parties whose costs may be eligible. Third parties are specified in the DoA, GA (Article 14) and CA.

1. INTRODUCTION

This Project Management Handbook serves as a comprehensive guide to navigating through the complexities of project management. It outlines the processes, and template to be used in the project delivery. The purpose of the "Project Handbook" of the QPIC 1550 project, is to provide a single point of reference on the quality that will be governed during the project. The deliverable at hand defines the project organisation, roles, and responsibilities with emphasis on the quality control and quality assurance activities that will be carried out. It describes how the project will execute its day-to-day activities from a quality perspective, and ensures that standards, processes, and procedures are defined so that their execution is continuously monitored and improved. This deliverable defines all the necessary mechanisms and structures for the management and administrative coordination of the project with emphasis on the governance, communication plan, stages, milestones, and reporting roles and responsibilities for all the partners is also made.

This document is comprised of the following chapters:

Chapter 1 presents an introduction to the document.

Chapter 2 offers information related to the project objectives and workplan, to provide the context for this document.

Chapter 3 explains the overall strategy and approach towards managing the project including the management structure, partner roles and responsibilities, procedures, baselines, milestones and indicators.

Chapter 4 establishes the communication plan of the QPIC 1550 project in terms of schedule, resources, cost, and overall quality.

2. QPIC 1550 CONTEXT

2.1 PROJECT SCOPE AND OBJECTIVES

Quantum photonic integrated circuits (QPICs) operating at 1550 nm are becoming increasingly important for the development of quantum technologies due to their ability to provide compact, high-performance, and scalable systems for creation, manipulation, and detection of single photons.
Single photons are the fundamental building blocks of quantum communication, computing, and quantum metrology. To realise these quantum technologies, it is crucial to have the ability to manipulate single photons with high precision and reliability. Heterogeneous QPICs offer a promising solution to this challenge by integrating different photonic components such as waveguides, modulators, detectors, and nonlinear materials on a single chip, enabling the creation of complex photonic circuits that can perform a wide range of functions with high efficiency and low loss.

Furthermore, QPICs at 1550 nm have the advantage of operating in the telecom band, which is the standard wavelength for optical communication. This compatibility with existing optical fibre networks allows for seamless integration with existing communication infrastructure, making these QPICs a cost-effective and practical solution for the development of practical quantum technologies.
While PICs have been extensively developed and used in classical optical communication systems, the current technology is not yet fully ready for quantum technologies due to several challenges that need to be addressed.

One of the primary challenges is the need for high-quality single photon and entangled photon pair sources and detectors that can be integrated with PICs. Current technologies suffer from low efficiency, high noise levels, and they are either low-efficiency and easily integrable or better efficiency but hard to integrate on PICs. In addition, the integration of multiple components on a single chip can introduce unwanted noise and losses, which can degrade the quality of the photonic signals and reduce the overall performance of the system.

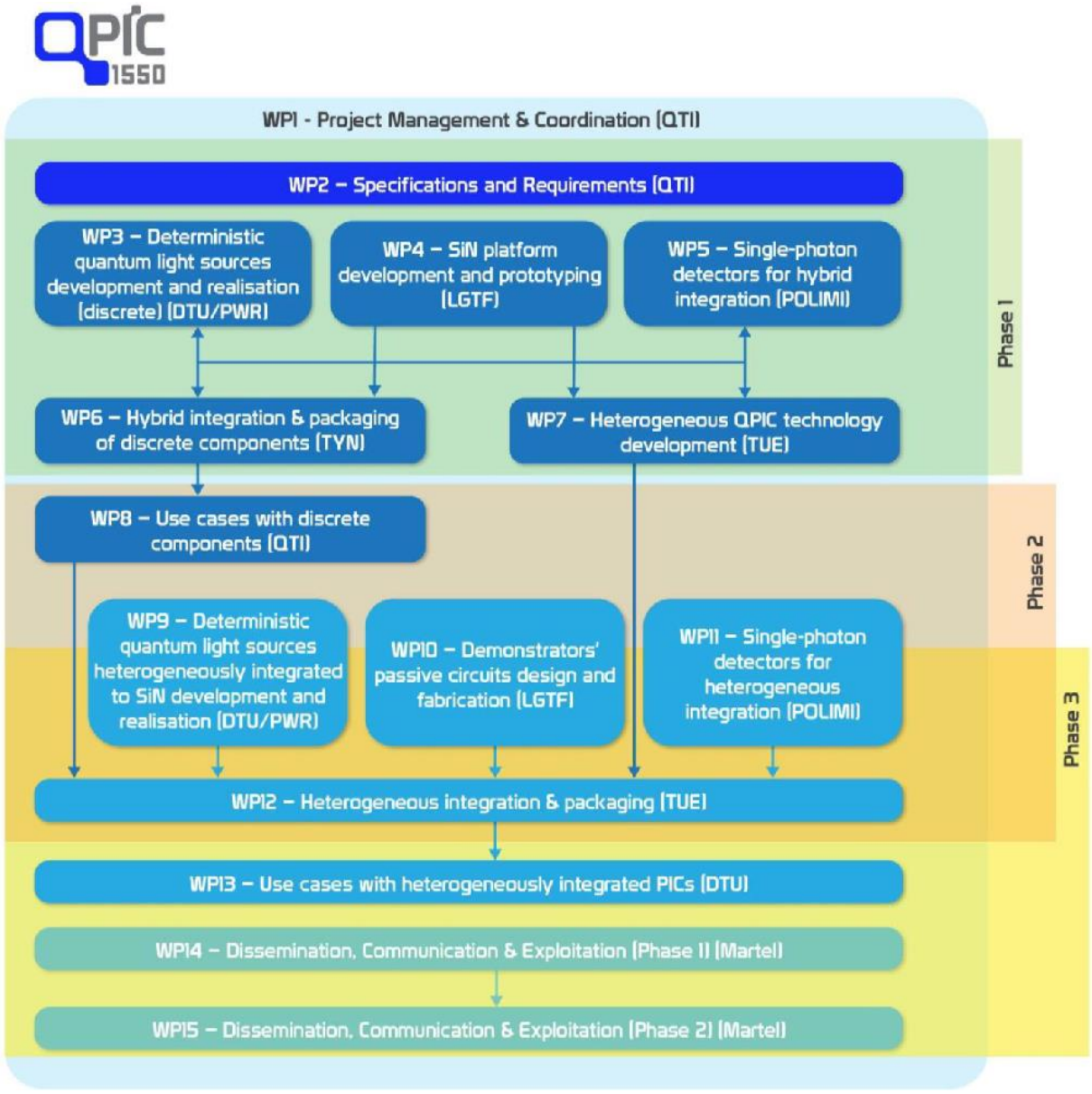
Furthermore, current PICs lack the necessary level of stability and control required for quantum technologies. For example, temperature fluctuations and vibrations can significantly affect the performance of the PICs, which can limit their usefulness in practical quantum applications.

In this project we aim to overcome those limitations by providing a universal PIC platform for quantum technologies. During the course of the project, we will develop a source of on-demand highly indistinguishable photons based on InAs/InP Quantum Dots (QD), a source of entangled photons using the same QD technology, and single photon detectors in InGaAs/InP. Those components will be integrated on a SiN platform for the manipulation and control of the photons. All working at the telecom wavelength of 1550 nm.

After the success of this project, we will be able to use the platforms developed for the realisation of systems for real-world applications in the field of quantum communication, computing and time dissemination, with the advantage in cost, dimension and stability associated with PIC technology compared to the solutions currently used in those fields.

2.2 PROJECT WORK PLAN

The QPIC 1550 work plan is organised in 15 work packages whose relations are shown in the PERT chart below.



WP1 provides overall project, quality, risk, ethics and data management and coordinates the activities of the other work packages and the interactions with the EC;
WP2 deals with the identification of the specifics of all components needed for all the final demonstrators;
WP3 is dedicated to development of nearly deterministic quantum light sources;
WP4 focuses on initial SiN platform stack definition and corresponding early chips/wafers samples and prototypes;
WP5 deals with development of the first InGaAs/InP SPADs that will be hybridly integrated with PICs;

WP6 which will design the packages and develop suitable process for electrical and optical connectivity for various temperature ranges of operation as well as provide first-generation packaged devices;
WP7 develops the first verion of the QPIC1550 platform;
WP8 is devoted to the realisation of experimental demonstrations using discrete hybridly-integrated firstgeneration prototypes in the fields of QKD, QCS and Remote Quantum Computing;
WP9 dedicated to development of nearly deterministic SPS heterogeneously integrated to SiN photonic platform,
WP10 will design and fabricate SiN wafers suitable for heterogeneous integration of all different components for advanced prototypes and final demonstrators,
WP11 is dedicated to the design, fabrication and testing of waveguide-integrated InGaAs/InP SPADs,
WP12 realises the PICs and packages for the demonstrators,
WP13 is devoted to the realisation of experimental demonstrations using second-generation prototypes in the fields of QKD, QCS and Remote Quantum Computing;
WP14 plans and implements the necessary Communication, Dissemination and Exploitation activities, engages with stakeholders, looks at policy issues for the first period of the project
WP15 analyses the results of the second period of the project and updates its strategy and continues with the implementation of the dissemination and communication activities having a higher focus on exploitation and the organisation of the final event.

2.3 MILESTONES AND DELIVERABLES

Project milestones and deliverables are presented in **Annex 1 of the Grant Agreement**, in the **Description of the Action (DoA).** The complete milestone table is provided within Section **'List of deliverables' and 'List of milestones'** of the DoA, but also in the following tables.

WP1 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D1.1	Project Handbook	A set of project templates and explanations on the project management process, review process, internal checks, and meeting organisation.	1	QTI SRL	R	PU	3
D1.2	Quality Management Plan	The Quality Management Plan will outline the methods and the consortium's vision of a quality culture. It will specify the indicators for monitoring quality and outline the tools in terms of templates, techniques and products used to	1	MARTEL	R	PU	6

		achieve quality in the project.					
D1.3	Initial Data Management Plan	The DMP will ensure sound handling of data protection rules and describe the data management lifecycle for the data to be collected, processed and/or generated.	1	MART	DMP	PU	6
D1.4	Interim review of the Data Management Plan	Interim review of the DMP to ensure alignment with the scope of the project.	1	MART	DMP	PU	24
D1.5	Final revision of the Data Management Plan	Final review of the DMP to ensure alignment with the scope of the project.	1	MART	DMP	PU	48

WP2 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D2.1	Initial specifications for QPIC1550 devices and use cases	This report will contain the List of critical design issues and key requirements to provide initial feedback to WP3-WP7	2	QTI SRL	R	SEN	3
D2.2	Final system specifications relying on 1st generation evaluation results.	This report will collect all the requirements needed for the realisation of the final use cases of this project that rely on the second-generation devices.	2	QTI SRL	R	SEN	20

WP3 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D3.1	Epitaxy of QDs with FSS<30μeV	Report on epitaxial method to grow an array of QDs with high in-plane symmetry emitting at 1550nm	3	DTU	R	PU	12
D3.2	QD-based non-classical light source at 1550nm	Report on design and deterministic fabrication of on-demand source of entangled photon pairs.	3	DTU	R	PU	24

WP4 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D4.1	Report on the first released SiN wafers	Short report on the process quality and basic characterisation of the wafers released according to the developing QPIC1550 flow	4	LGTF	R	SEN	14
D4.2	Report on the first-generation SiN prototypes	Report on the design and basic characterisation of the first-generation SiN prototype chi	4	LGTF	R	SEN	20

WP5 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D5.1	Surface-normal InGaAs/InP SPAD for hybrid integration to waveguides	Report on the development of surface normal InGaAs/InP SPAD for hybrid integration to waveguides	5	POLIMI	R	SEN	20

D5.2	ASIC for surface normal InGaAs/InP SPAD	Report on the development of application-specific integrated circuit working as front-end electronics for surface-normal InGaAs/InP SPAD	5	POLIMI	R	SEN	20

WP6 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D6.1	Package design document	Document detailing mechanical, electronic and thermal design of packages for all use-cases	6	UCC	R	SEN	20
D6.2	Intermediate-temperature package and process design	Document detailing packaging procedure for detectors that require operating temperature of 220K	6	UCC	R	SEN	20
D6.3	First-generation packages for QKD	Fully packaged devices for testing QKD	6	UCC	DEM	SEN	25
D6.4	First-generation packages for quantum computing	Fully packaged devices for testing quantum computing systems	6	UCC	DEM	SEN	25
D6.5	First-generation packages for quantum clock synchronisation	Fully packaged devices for testing quantum synchronisation system	6	UCC	DEM	SEN	25
D6.6	Cryogenic Packaging Process	Document detailing materials and procedures for	6	UCC	R	SEN	24

		packaging chips requiring cryogenic operating conditions					

WP7 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D7.1	Process flow for QPIC1550	Report on the process flow for QPIC1550, including details on the layer stacks and coupler designs	7	TU/e	R	SEN	9
D7.2	APD design	Report on the APD design, fabrication, and characterization	7	TU/e	R	PU	18
D7.3	First PDK version	Report on first PDK version, including a manual and a design tool, implemented in commercial design software	7	TU/e	R	SEN	20

WP8 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D8.1	Evaluation of discrete QPIC1550 devices in QKD	Demonstration of 1st generation QPICs for QKD after experimenting in the lab.	8	QTI SRL	DEM	SEN	36
D8.2	Evaluation of discrete QPIC1550 devices in QCS, Q-PUF	Report on the evaluation of QCS performance and Q-PUF properties based on 1st generation devices - lab experiments.	8	UWA	DEM	SEN	36

D8.3	Theoretical framework for remote Quantum Computing	Report on the creation of a theoretical framework for Measurement-Based Remote Quantum Computing	8	DTU	DEM	SEN	36
D8.4	Testing first-generation SiN prototypes for Remote Quantum Computing	Report on the testing of discrete first-generation SiN prototypes as receivers for Remote Quantum Computing - provide feedback to WP10.	8	DTU	DEM	SEN	36
D8.5	Testing telecom QD devices, for Remote Quantum Computing.	Report on the testing of prototypes of telecom QD devices, pumped with advanced excitation schemes, as transmitters for Remote Quantum Computing - provide feedback to WP9.	8	DTU	DEM	SEN	36

WP9 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D9.1	Design and fabrication of SPS	Design and deterministic fabrication of SPS for on-chip integration.	9	DTU	R	PU	30
D9.2	Heterogeneous integration of SPS to SiN platform	Development of µTP technique for heterogeneous integration of SPS to SiN with high coupling efficiency	9	DTU	R	PU	36

WP10 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D10.1	Report on the second-generation SiN prototype chips	Design report for the second-generation SiN prototype chips	10	LGTF	R	SEN	30

WP11 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D11.1	Fabricated and tested waveguide InGaAs/InP SPAD	Report on the design, fabrication and testing of InGaAs/InP SPAD ready to be heterogeneously integrated to waveguides	11	POLIMI	R	SEN	36
D11.2	ASIC for waveguide InGaAs/InP SPAD	Report on the development of application-specific integrated circuit working as front-end electronics for waveguide InGaAs/InP SPAD	11	POLIMI	R	SEN	36

WP12 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D12.1	Second-generation packaging design document	Document detailing revised mechanical, electronic and thermal design of packages for all integrated use-cases	12	UCC	R	SEN	34
D12.2	Second-generation	Fully packaged integrated	12	UCC	DEM	SEN	44

	packages for QKD	devices for testing QKD					
D12.3	Second-generation packages for quantum computing	Fully packaged integrated devices for testing quantum computing systems	12	UCC	DEM	SEN	44
D12.4	Second-generation packages for quantum clock synchronisation	Fully packaged integrated devices for testing quantum synchronisation system	12	UCC	DEM	SEN	44
D12.5	Plan for Demonstrator PICs	Plan for Demonstrator PIC runs, based on two full-wafer QPIC1550 runs, each offering a subset of building blocks, and only the last run offering SPADs	12	TU/e	R	SEN	26
D12.6	D12.6 Second PDK version	Second version of the QPIC1550 PDK, which is an update of the first version, and will further include SPADs and SPSs	12	TU/e	R	SEN	36
D12.7	Demonstrator PICs	Report on the delivered PIC runs, including characterization of test and reference structures	12	TU/e	R	PU	39

WP13 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D13.1	Evaluation of QPIC1550 prototypes in QKD	Demonstration of 2nd generation QPICs for QKD after	13	QTI SRL	DEM	SEN	48

		experimenting in the lab.					
D13.2	Evaluation of QPIC1550 prototypes in Quantum Clock Synchronisation	Evaluation of 1st and 2nd generation QPICs in QCS after experimenting in the lab and in an installed fiber network	13	UWA	DEM	SEN	48
D13.3	Testing of second-generation SiN prototypes for Remote Quantum Computing use cases.	Report on the implementation of packaging and testing of second-generation SiN QPIC1550 devices in Remote Quantum Computing applications.	13	DTU	DEM	SEN	40
D13.4	Evaluation of implementation of a QPIC1550 Remote Quantum network interfacing QDOTs and SiN packaged devices.	Report on the implementation of a final proof-of-concept quantum network interfacing QDOTs and SiN packaged devices.	13	DTU	DEM	SEN	48

WP14 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D14.1	Dissemination and Communication Strategy and Plan (P1)	This document provides information about the Project communication and dissemination plan including the specification of the target dissemination groups, the publication policy, event planning, and marketing.	14	MART	R	PU	6

D14.2	Initial Exploitation and Sustainability Plan	The preliminary exploitation plan is the first approach to define what should be done concerning the exploitation of the Project results. Depending on the prominent business models, each partner will elaborate a first business model canvas.	14	QTI SRL	R	PU	12
D14.3	First Dissemination and Communication Report (P1)	This document reports the dissemination activities that will take place in the first period of the project (M1-M24).	14	MART	R	PU	24

WP15 DELIVERABLES

Deliverable No	Deliverable Name	Description	WP No	Lead Beneficiary	Type	Dissemination level	Due Date (month number)
D15.1	Update of the Dissemination and Communication Strategy and Plan (IT-2)	This document analyses the results from D14.3, and updates the strategy defined on D14.1, and gives a timeline of the activities for period 2.	15	MART	R	PU	26
D15.2	Final Dissemination and Communication Report (IT-2)	This document reports the dissemination activities that will take place in the second period of the project (M25-M48), including the results of the participation at events and the final event.	15	MART	R	PU	48

D15.3	Final Exploitation and Sustainability Plan	The final exploitation plan will use the results of the project to update the Initial Exploitation and Sustainability Plan.	15	QTI SRL	R	PU	48

MILESTONES

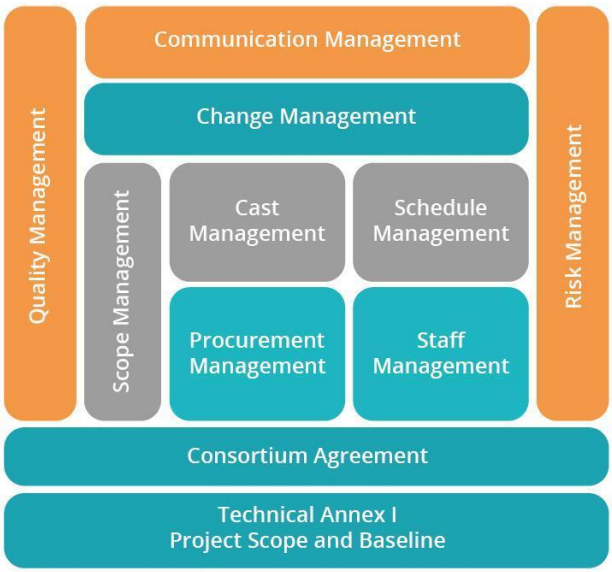
Milestone No	Milestone Name	WP No	Lead Beneficiary	Due Date (month number)	Means of Verification
M1	Consortium Agreement	1	QTI SRL	1	Consortium Agreement signed by partners
M2	QD source of entangled photon pairs	3	DTU	23	"Plug-and-play" QD sources available for hybrid integration and quantum optical experiments
M3	First generation of SiN wafers for bonding flow is released	4, 7	LGTF	12	Wafers compatible with integration flow and agreed QPIC stack are available to start post-processing at TUE
M4	Hybrid integration of InGaAs/InP SPAD with PIC	5, 6	POLIMI	18	Discrete SPAD hybridly integrated with a waveguide on PIC is able to detect single photons
M5	Packaging of devices at 220K	6	UCC	20	Electrical and optical testing of a reference device in a hermetic package operating at 220K
M6	Evaluation of first-generation devices in computing, QCS and QKD applications	8	QTI SRL	34	Experimental testbeds and evaluation results that will be reported in D8.1-D8.5
M7	Theoretical framework for remote Quantum Computing	8	DTU	34	Report on the creation of a theoretical framework for Measurement-Based Remote Quantum Computing
M8	Heterogeneous integration of QD-based SPS with SiN PIC	9	DTU	35	QD SPS heterogeneously integrated with a waveguide on PIC
M9	Heterogeneous integration of InGaAs/InP SPAD with PIC	11, 12 ...	TU/e	34	SPAD heterogeneously integrated with a waveguide on PIC is able to detect single photons; target metrics are 1) comparable performance to discrete SPADs, and 2) waveguide-to-SPAD loss <0.5dB
M10	PIC runs available for Demonstrators	12	TU/e	39	Validation by testing reference structures and see whether in target range (SiN waveguide loss < 0.1 dB/cm, SiN-to-InP loss < 0.5 dB, modulator Vpi < 10 V;

M11	Launch of the project website	14	MART	6	Online website page
M12	Organisation of Final Event	15	MART	48	Recording of the event

3. PROJECT MANAGEMENT APPROACH

3.1 OVERALL MANAGEMENT STRATEGY

The QPIC 1550 project management description is found in **Annex 1 of the Grant Agreement (DoA)**, as part of the contract with the European Commission, along with the project scope and baselines. The **Consortium Agreement** is based on the contract with the European Commission and is another legal instrument establishing the fundamental rights and obligations in the relationships **between partners**. In the metaphor of project management being a building, the Annex 1 of the Grant Agreement (DoA) is the foundation, whereas the Consortium Agreement is the skeleton. All other parts of project management rely on these two. **Quality** and **risk management** are the external walls. They permeate all activities of the project and act as safeguards. Quality is assured and risks are assessed for both project products and project management practices. All activities end with the communication of decisions, changes and actions to consortium members and the European Commission. These are the activities that bound project management for QPIC 1550 as it is shown in the figure below.



The core activities to ensure the project stays on track are the **scope**, **cost,** and **schedule management**. They keep the project in line with what the Annex 1 of the DoA prescribes that the project should do, cost and how long it should take to accomplish its objectives respectively. **Procurement management** describes how to handle purchases needed to execute the project at a partner level, while **staff management** defines the needs in terms of people, their roles and who is going to fill those roles in terms of their expertise. The core activities of project management lead to decisions and changes in both the work of the project and its management but cannot impose practices or plans to partner without their approval.

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3.2 PROJECT MANAGEMENT STRUCTURE

Overall, project management encompasses operational, technical, financial, and administrative co-ordination as well as the supervision of various activities within the project. To manage a project such as QPIC 1550, a professional and flexible management structure is vital. Transparent decision-making processes are required to both encourage project development and foster confidence amongst the members of the project consortium. Conflict management should be focused on prevention and be apparent from project commencement, and contingency plans must be derived. Clear and pragmatic decision-making and communication pathways and prompt reporting mechanisms are necessary. For this reason, each consortium partner will nominate a **Management Representative** (often referred to as partner project manager or primary contact person). If necessary, one person can fulfil more than one role.

Furthermore, the **Project Coordinator (PC)** (QTI), the **Project Management Office (PMO)** and the **Project Manager (MARTEL)** constitute the Project Management and Coordination Team.

To tackle its coordination and technical goals, QPIC 1550 is organized in 15 Work Packages (WPs). WPs are further divided into WP Tasks. Therefore, a **Work Package Leader** per WP and a **Task Leader** per Task are nominated, according to the project plan. WP leaders and Task leaders are responsible for coordinating efforts in the WP and Task level accordingly.

The QPIC 1550 project management considers all the partners' interests and expertise, to ensure an effective project's time-plan and execution. The main objectives of the project management that have been defined are to:

- Ensure the effective administrative, financial, and technical management of the project.
- Identify quantifiable and targeted measurement criteria of project progress and clear milestones.
- Ensure that the project results are achieved within the proposed resources (time, cost, resources).
- Apply quality assurance measures to all project related procedures and products.
- Provide successful dissemination of project's results and apply efficient exploitation activities.
- Strengthen the co-operation of all project partners and external participants.

The QPIC 1550 hierarchical organisation positioned above is comprised of the:

The Project Coordinator (PC) is responsible for the overall management, communication and coordination of the project and assures in collaboration with WP Leaders and the Exploitation Manager the overall integration of the work packages. The project coordinator of QPIC1550 will be Dr. Marco Menchetti from QTI. The project coordinator is supported by the PMO within MARTEL, and together take care of all administrative, financial, and legal affairs, communication and reporting to the EC, collection and consolidation of reports, contractual issues of the Grant and Consortium Agreements, organisation of meetings, and setup of the communication and shared workspace environment.

Work Package Leaders (WPL) are responsible for managing their work packages and integrating their work with that of other WPs. In many of the core work packages of the project the Work Packages are co-led, due to the collaborative nature of the work. Their responsibilities include coordinating,

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monitoring, and assessing the progress of the WP to ensure that output performance, costs and timelines are met.

The **Task Leader (TL)** is responsible for coordination of work on task deliverables and has a similar role to the WP leader, on a task level.

External Expert Advisory Board (AB) will have a significant and structural role throughout the project, in ensuring that their interests and perspectives are effectively incorporated (right from the start) in the activities of EQUO in pursuit of its main results. The members of the board will have access to all information generated in EQUO, needed to form their (expert) opinion and specific perspectives on the activities and results. The AB has a pure advisory role in EQUO and will not have any decision authority in the EQUO consortium. They will be invited to the project meetings 12 months after the start of the project, at mid-term, and at the end, and will be asked to provide input and advise the consortium on the following aspects throughout the project:

- relevance of the activities and (proposed) results;
- quality of the activities and results obtained;
- suggestions for improvements to the activities and results.

The Advisory Board will be defined early in the project and the consortium is already putting together a list of candidates.

Each Work Package/Task is led by the partner most competent in the domain concerned as identified within the Annex 1 of the DoA. Work Package leaders and Task leaders are responsible for coordinating efforts in their Work Package and Task level accordingly. Reporting on the successful completion of tasks, progress on deliverables, and on problems, delays and conflicts and proposals for decision making start from the partners involved at the Task level and escalate up to the final decision body that is the **Project Coordination Team (PCT)**. Active support will be given, and formal controls will be applied to ensure sufficient feedback loops and close, effective, and efficient inter-relation and co-operation of all parties involved, through the quality and risk management, the project management office, and the PCT.

However, the PMO retains the responsibility to intervene at any point of the management structure if the cohesion of the project is threatened. More specifically, in case of:

- Decisions which have broader project implications and/or involve communication with the Project Officer and contradict the DoA,
- Delays, costs overruns or other lack of project progress against the objectives described in the DoA,
- Conflicts, which the Work Package leader is unable to resolve or whose resolution remains elusive for an extended period, threatening overall project progress.

Beyond these roles, also the **Deliverable Leader (DL)** is defined. DLs are listed in the table of Section ‘List of Deliverables’ in the Annex 1 of the DoA. They are the **ultimate responsible** partners to produce the deliverable for which they are listed as Lead Beneficiary. They **plan and coordinate** the deliverable production process **following the project guidelines** and they are not precluded from contributing to the deliverable. They are responsible for the content of the deliverable including its veracity, quality and technical integrity. DLs report progress of the work to WPL. Each deliverable is assigned **internal reviewers** agreed by the consortium members. The DL is responsible to incorporate the reviewers’ comments in the deliverable.

Based on the aforementioned, the various project management bodies and roles are further described in the Annex I of DoA.

3.3 ETHICS

Within the course of the QPIC 1550 project we foresee to especially cater for ethical issues that might arise, i.e., issues of data privacy, potential for infringement of human rights, personal data collection and misuse of technologies developed. The PCT will ensure that each partner strictly adheres to the highest privacy and ethical standards regarding all activities that will be carried out within the design and functional implementation during the project, making sure that they conform to the legislation regulations in force in the countries where the research will be carried out, as well as to the EC Ethical Legislation.

Regarding data collection, storage, protection, retention, and destruction, it is hereby confirmed that these activities will be rigorously implemented in compliance with the privacy and data collection rules and regulations as they are applied nationally and, in the EU, as well as with the Horizon Europe rules. PCT will safeguard the Privacy and Data Protection, as well as Human Data Collection as follows. Data will be:

1. fairly and lawfully processed,
2. processed for limited purposes,
3. adequate, relevant, and not excessive,
4. accurate,
5. not kept longer than necessary,
6. processed in accordance with the data subject's rights,
7. secure, *and*
8. not transferred to countries without adequate protection.

About the GDPR: The EU General Data Protection Regulation (GDPR) is a regulation with the intent to strengthen and unify data protection for individuals within the European Union, which replaces the data protection directive (95/46/EC) from 1995[1]. The QPIC 1550L project pays special attention to fulfil GDPR requirements:

9. making sure subscribers may easily change or delete their subscription,
10. making sure there is no pre-checked or automatically pre-filled forms on the websites,
11. simplifying the language of the forms on the website,
12. informing visitors on the website to use cookies,
13. informing visitors clearly on the website who is the data controller of the personal data and what it means, *and*
14. making sure the privacy policy on the website is written in words understandable for everyone.

In case any personal data related to the QPIC 1550 project is processed by a third party (a Data Processor), a written contract or other legal act will be prepared between a beneficiary (a Data Controller) of the QPIC 1550 project and a third party. The contracts will contain: the subject matter and duration of the processing, the nature and purpose of the processing, the type of personal data and categories of data subject, *and* the obligations and rights of the controller.

[1] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.119.01.0001.01.ENG&toc=OJ:L:2016:119:TOC

3.4 MANAGEMENT PROCEDURES

Project and quality management activities will ensure the proper implementation of the project plan and the realisation of its objectives. Decisions will normally be taken by the responsible team members based on the work to be performed, as stated in the **Grant Agreement**, **the Description of the Action (DoA)** and the individual Work Package or Task plans.

During the project, the participating organisations will have to reach an agreement and resolve various technical issues. This agreement/resolution can be reached by informal contact as a first step, followed by official verification by means of e-mail, letter or minutes. Technical issues/conflicts within the given contractual commitments that do not involve alterations in the **Grant Agreement (DoA)**, in budget and in the overall focus will be initially handled on the Work Package basis.

In the event of a project conflict among partners, the participants, with the intervention of the Project Manager, if necessary, settle conflicts at the daily management level. If no consensus is achieved, the conflict will be resolved by the PCT. Any issues that cannot be set amicably will be set in accordance with the relevant provisions of the Consortium Agreement.

4. COMMUNICATION MANAGEMENT PLAN

INTRODUCTION

The **Communication Management Plan** sets the communication framework for QPIC 1550 project among the Partners and among the Consortium and the EC. It will serve as a guide for communication throughout the life of the project and will be updated as communication requirements change. This plan identifies and defines the roles of QPIC project partners as they pertain to communications. It also includes a communications matrix, which maps the communication requirements of this project, and communication conduct for meetings and other forms of communication. A project team directory is also included to provide contact information for all partners directly involved in the project.

4.1 COMMUNICATION MANAGEMENT APPROACH

The **project management and coordination team** will take a central and proactive role in ensuring effective communication on this project. Overall information flow within the project will be ensured by the following means / guidelines:

- Activities like exchange of information, internal technical and business documents (i.e. meeting minutes), technical documentation generated by the project, notifications of relevant new publications, reports from external / bilateral meetings (if any), notifications of the consortium of any updates from the relevant standardisation bodies, are foreseen to occur in electronic format via the project's web-based repository as well as by e-mail. For each document upload the consortium will be notified by email.
- Urgent correspondence over e-mail will be sent with a request for explicit acknowledgement and indicated in the title with "URGENT".
- Ordinary mail will be used for strictly formal correspondence, i.e. when executive signatures are required.
- A defined calendar of Telco meetings will be set, to ensure the communication among members.

4.2 PROJECT TEAM DIRECTORY

QPIC 1550 maintains a listing with **communication information** for all people identified in this communications management plan, available at the **document repository** within the cloud infrastructure offered by QTI. Based on this directory, a mailing list has been created including representatives from all partners: all@qpic1550-project.eu.

4.3 COMMUNICATION CHANNELS

This section presents several communication matrices with all the types of communication needs, which have been identified in the context of the project such as meetings, reports, reviews etc. In addition, the attributes of each identified type are specified.

The communication requirements from the project stakeholders in terms of the type, level of detail, and format of the information that they need will be analysed and documented. The documents from the Commission or other projects will be circulated as appropriate. For all matters within the scope of the project, there will be no limitations on access to information from the Partners and this is also foreseen in the project Consortium Agreement.

External communication: For external communications, the consortium will establish its own website and also communicate with external stakeholders by e-mail, social media accounts and social platforms. For relevant aspects of the work, the partners shall produce high quality presentations and digital material / news items, announcements for publication in the online presence means. These efforts will be pursued throughout the project to raise awareness, ensure high visibility of the project results and objectives, and establish the grounds for knowledge transfer and proper support of the project activities.

Internal communication: The project will use advanced ICT means, like audio and video conferencing (**Skype**, **Microsoft Teams, Google Meet**), instant messaging, electronic mail, e-mailing lists, along with thematic ones where necessary, online Docs and Document Management System (DMS) within **cloud infrastructure offered by QTI**. Moreover, the project will hold various physical meetings hosted in turn by Partners. At least two to four plenary meetings are planned yearly to guarantee consistency and integrity of the project. PCT meetings will be held in this context. Additional workshops or meetings will be held as required by the work plan and the needs identified by the project. In case of special conditions that do now allow the organisation of physical meetings, online meetings will be planned instead properly.

The **SharePoint** tool set up and maintained by QTI, will be utilised for the exchange of working documents and ideas for brainstorming, as well as keeping an action plan of activities. This platform will provide a digital workspace to support the electronic communication and cooperation between project team members. Through this platform, users will have access to a wide range of tools and features necessary for the successful coordination of the team, such as e-mail, on-line forums, dynamic news board, document management etc. The platform will support the team to share project files, exchange and co-edit files, share information and organize discussions across members of the consortium.

4.4 MEETING MATRIX

The following table identifies the communication requirements for project coordination.

Meeting	Objectives	Audience	Freq. / Time	Prior Notice	Chair	Medium / Location	Output
Kick-Off Meeting	Introduce the team, roles and members. Review project history, scope, objectives, planning and management approach.	All project partners	Once M1	1 month	QTI	Online	Agenda Meeting presentations Minutes - Action Plan
Interim Project Review	Evaluation of project results by European Commission.	All project partners, EC	Within 60 days after M18	Upon communication with the EC	QTI	Face-to-Face or online	All deliverables to be submitted by M18
Physical Plenary Meetings	To direct the project, ensure correct implementation of activities at all project levels, monitor the project's progress, and examine future plans	All project partners	To be once per year	2 months	QTI	Face-to-Face or online	Agenda Meeting presentations Minutes Action Plan
Online plenary meetings	To direct the project, ensure correct implementation of activities at all project levels, monitor the project's progress, and examine future plans	All project partners	To be held every 6 months	Set once for the project lifetime	QTI	Online	Agenda, minutes, action plan
WP meetings	Each WP leader will define the meeting schedule according to the needs and the coordinating actions among the involved parties for the implementation of WP activities.	WP related partners	To be held every month	15 days to 1 month	WP participating partners	online	WP related issues
Ad hoc meetings	Organised in case of an emergency or a conflict resolution as specified in the escalation procedure.	QTI + relevant partners	Ad hoc		QTI + PMO	TBD per case	Agenda Decisions Taken Action Plan
Final Project Review	Evaluation of project results by European Commission.	All project partners, EC	Within 60 days after project comple-tion	Upon communication with the EC	EC, QTI	Face to Face or online	All deliverables to be submitted by M36

4.5 PROJECT REPORT MATRIX

The following table identifies the Project Reporting Matrix.

Meeting	Objectives	Freq / Time	Leader	Contributors	Output
Interim Progress Reports	18-month reporting progress of project achievements and effort consumption for evaluation by the European Commission.	18 months	PC	All Partners	Delivery of interim project progress report following the structure of the European Commission Horizon Europe Guidance Notes on Project Reporting .doc template and the format of the QPIC 1550 Deliverable .doc template Upload of Form C (and Certificate of Financial Statement; where needed) to the European Commission Participant Portal (ECAS system).
Deliverables	Concise document reporting the outcomes of the work for the deliverable. For deliverables which are not reports, an executive summary providing information about the deliverable should be provided.	According to 'List of Deliverables' at section 3.2.1: 'List of Deliverables' in the Annex 1 of the DoA	DL	Contributing Partners	Utilising the QPIC 1550 Deliverable .docx template.

4.6 COMMUNICATION GUIDELINES

4.6.1 Meeting Guidelines

4.6.1.1 Meeting Requests

To find the best time for all the partners who should participate in the meeting, use a Doodle (http://www.doodle.com), unless you have agreed about the time at a previous meeting. Send the Doodle link to all the partners' persons in the WP according to the mailing list.

When deciding for the best time, the most important is that the requested partners can participate, not the number of persons (as counted by Doodle).

When the best time is found, send the information about the meeting time with the meeting link to all the partners' persons in the WP according to the mailing list (like for the Doodle). Send this as a calendar invite, if possible, so it enters the receivers' calendar automatically.

4.6.1.2 Participants to Meetings

All partners requested for a meeting are required to be represented by at least one person at the meeting and to participate in a cooperative manner. During the management meetings the representatives should be in the position to take decisions.

4.6.1.3 Meeting Agenda

For face-to-face meetings, a draft meeting agenda will be prepared by the meeting chair and distributed 15 business days in advance of the meeting following the template that is available; the meeting agenda is also maintained within the **SharePoint**. Any partner can add an item to the original agenda by written notification to all the other partners no later than 10 calendar days preceding the meeting (7 calendar days for an extraordinary meeting). During the meeting the consortium can add new items on the agenda following a unanimous decision. Any agenda item requiring a decision from the Consortium body must be identified as such on the agenda. For Telco meetings, the same policy applies with the only exception on the meeting announcement date that may be less than a week.

4.6.1.4 Meeting Minutes

Meeting minutes must be distributed within 10 calendar days following the meeting by the chair; the meeting minutes template is maintained within the document's repository and **all meeting minutes of all nature must be uploaded at the document repository** (QPIC 1550 > Meetings > WPs) into the relevant WP folder or subfolder for the task in the WP.

The minutes draft (or a corrected version of them) shall be considered as accepted if, within 15 calendar days from distributing them, no partner has sent an objection in writing to the chairperson. All decisions become binding after they have been recorded in the meeting minutes and the meeting minutes are accepted.

4.6.1.5 Meeting Chairperson

The Meeting Chairperson is normally the person who requested the meeting. Meeting Chairperson is responsible for distributing the meeting agenda, facilitating the meeting and distributing the meeting minutes. The Chairperson will ensure that the meeting starts and ends on time and that all presenters adhere to their allocated time frames.

4.6.1.6 Document Formats

The following software formats and version of production tools shall be used in the project:

Data type	File format	Tool
Word processing	.docx	Microsoft Word, google docs
Tabular spreadsheet information and graphs	.xlsx	Microsoft Excel, google sheets
Presentations	.pptx	Microsoft PowerPoint
Project Planning	.xlsx	Microsoft Excel, google docs
Images	.jpeg	Any software tools that can produce .jpeg files
Portable Document Format	.pdf	Any software that can produce .pdf files
Compressed files	.zip, .rar	Any software that can produce .zip and .rar files

It is recommended that changes to draft Word documents are made with Track Changes on unless the document author requests otherwise.

The partner shall ensure that the images are suitable for printing and, especially for those images to be used for dissemination purposes, that they can be embedded in larger printing.

The use of the PDF format is limited to its capability of obtaining files that are printable with the same layout regardless of the printer. This explicitly excludes the use of any modification capability that can be offered by a PDF capable tool.

4.6.2 Filename Conventions

The partners are expected to exchange several documents between them during the project's lifetime. To facilitate document identification and differentiation between multiple versions of the same document, the following file naming convention should be used for the final version of the documents uploaded in shared repository:

QPIC1550 _<document name>_<version>_<date>_<company/person>.extension

<date> : dd.mm.yyyy, e.g. 30.11.2023

<document name> short (3-4 words) document name, e.g. D1.1 Project Management Manual

<version>: increasing number with decimals between public releases

<company/person>: consortium partner short name e.g. Martel or sender initials e.g. EH for Eva Hajdok

e.g. "QPIC1550.D1.1_PM Manual_V03_30.11.2023.docx"

When a partner makes comments or changes to a file, he/she should append his/her "_<company/person>" field just before the extension.

These filename conventions apply to other electronic objects, besides documents, that are used to exchange project information, e.g. prototype code. If such an object is composed of multiple files organised within a directory structure (e.g., source code that has not been zipped into one file), the filename convention requirement applies only to the top directory name.

4.6.2.1 Email convention

Syntax for the subject field:

[QPIC 1550] [WP9 T9.9] short title of the topic of the mail

where WP9 stand for the WP number and T9.9 for the task number to be included if the mail is about a particular task.

4.6.3 Deliverable Preparation Guidelines

A total of 29 deliverables will need to be submitted to the European Commission during the QPIC 1550 project. To ensure smooth and timely delivery of deliverables as well as homogeneous presentation, a set of guidelines for the preparation of deliverables is presented here.

4.6.3.1 Deliverable Types and Confidentiality Levels

The deliverables are classified according to the following types:

R: Report
D: Data
E: Ethics
O: Other

Insofar the confidentiality of deliverables and other documents, including presentations, is concerned, the following two (2) levels of security are considered:

PU: Public Usage. No restrictions on access (in secured PDF format).
SEN: Sensitive. Restricted to other programme participants (including the Commission Services).

4.6.4 Templates

3 templates have been generated for this project for the following use:

1. Consortium meeting agenda and minutes
2. Deliverable
3. Presentation

Those templates will be used for all internal and external presentations concerning the project.

A Logo has been created to be used for the external presentation.

Those templates and logo can be found in the shared folder under Administration and exploitation > Logos, templates

5. CONCLUSIONS

This document provides a practical guide to project WPs, Tasks, Milestones and Deliverables as reported in the Grant Agreement. The document also describes the project bodies and the standard procedures for the management of the project. Moreover, it includes the Project Log.

Project Log reported in Appendix A will be constantly updated and stored as a living document in the QPIC 1550 project's shared folder.

Funded by the European Union