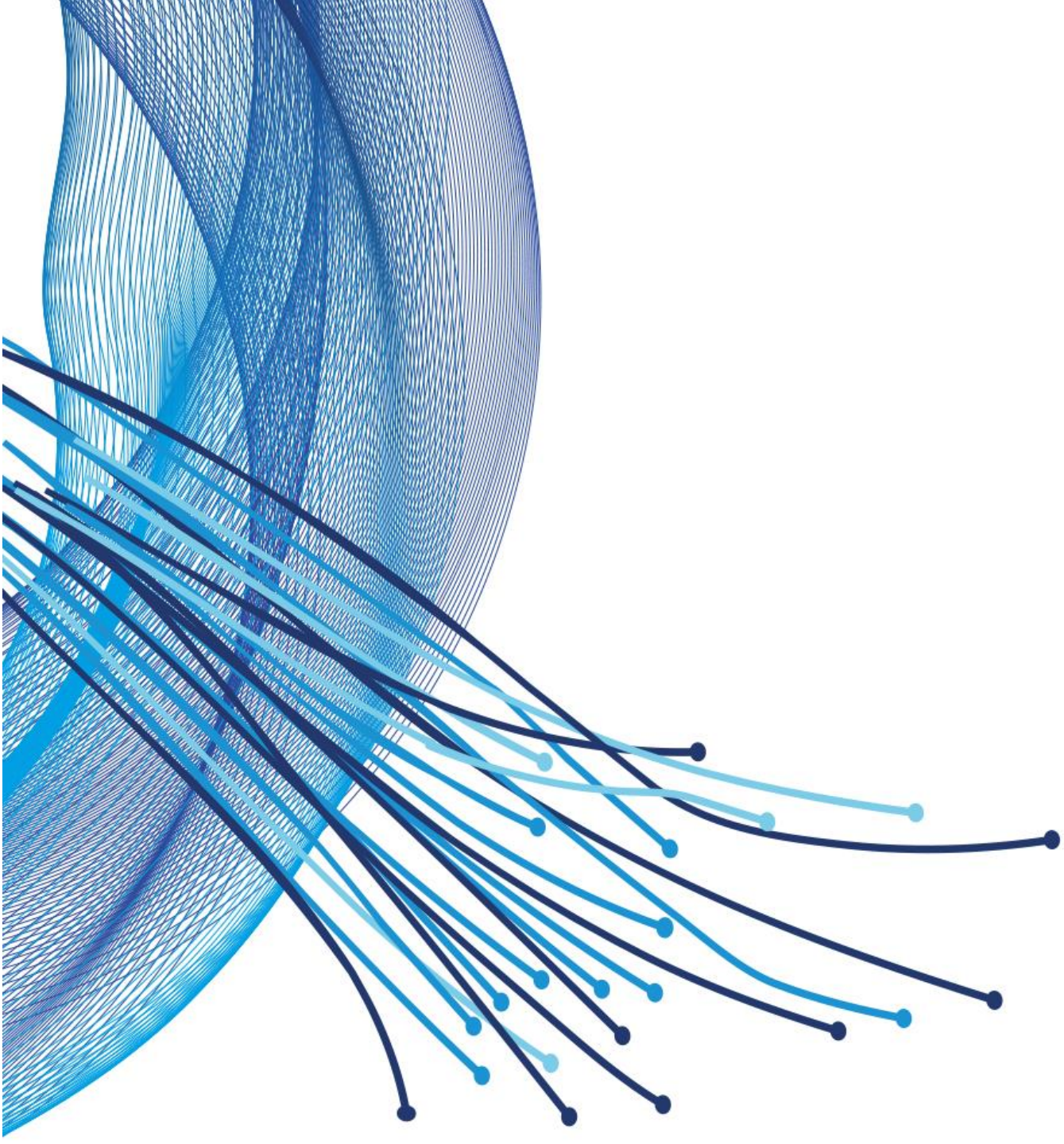


HellasQCI - Quantum Communication Infrastructure for Greece

Introduction of the project overall

Dr. Ilias Papastamatiou, GRNET

HellasQCI Coordinator

HellasQCI Kick-off Meeting, Athens, 19-20 January 2023

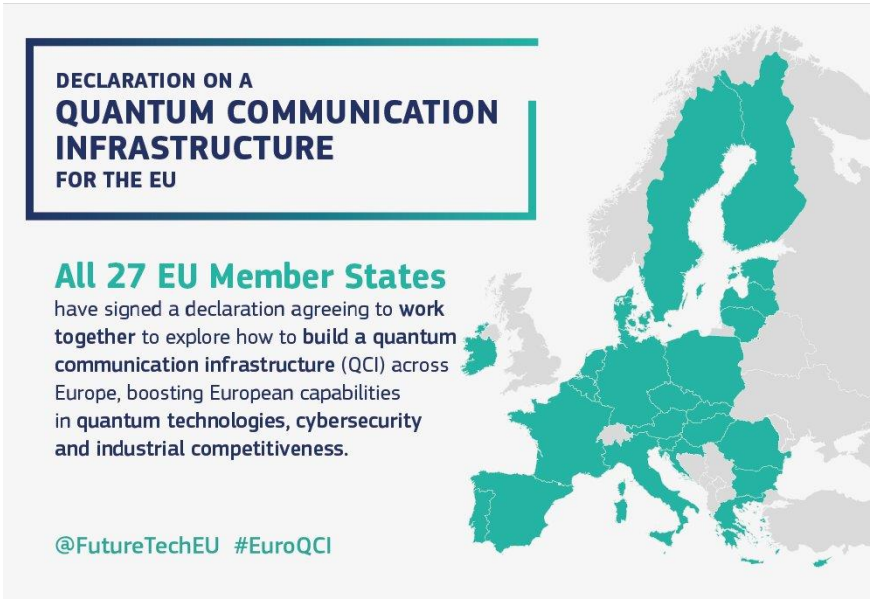
EuroQCI

Will build a **secure quantum communication infrastructure** that will span the whole EU.

Will safeguard **sensitive data** and **critical infrastructures**, providing an additional security layer based on **quantum physics**

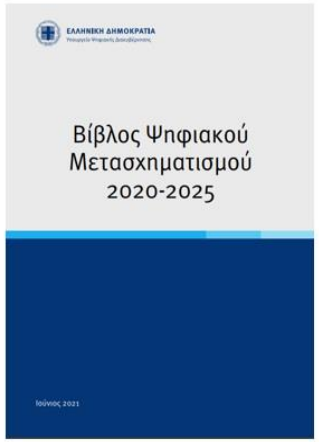
Will boost Europe's scientific and technological capabilities in **cybersecurity** and **quantum technologies**

Will improve Europe's **digital sovereignty** and **industrial competitiveness**



The aim is for it to be fully operational **by 2027**

EuroQCI - Greece



Since **June 2019**, all 27 EU Member States have signed the **EuroQCI Declaration**, signaling their commitment to the EuroQCI initiative.

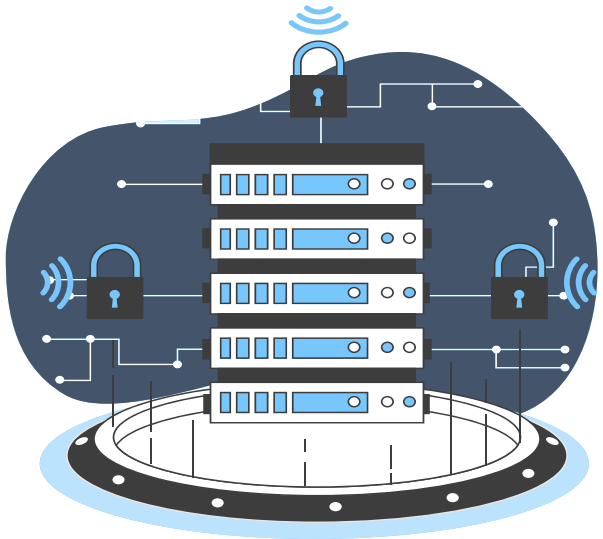
The participating countries are working with the **European Commission** and the **European Space Agency** to design and deploy the EuroQCI.

The **Ministry of Digital Transformation** signed on behalf of **Greece**

EuroQCI is part of the **Digital Transformation Strategy of Greece** (2020-2025) and specifically at section 7.6.5. **Applications of Quantum-Resistant Cryptography** – EuroQCI: Development of a National Experimental Infrastructure for QKD

EuroQCI - GRNET

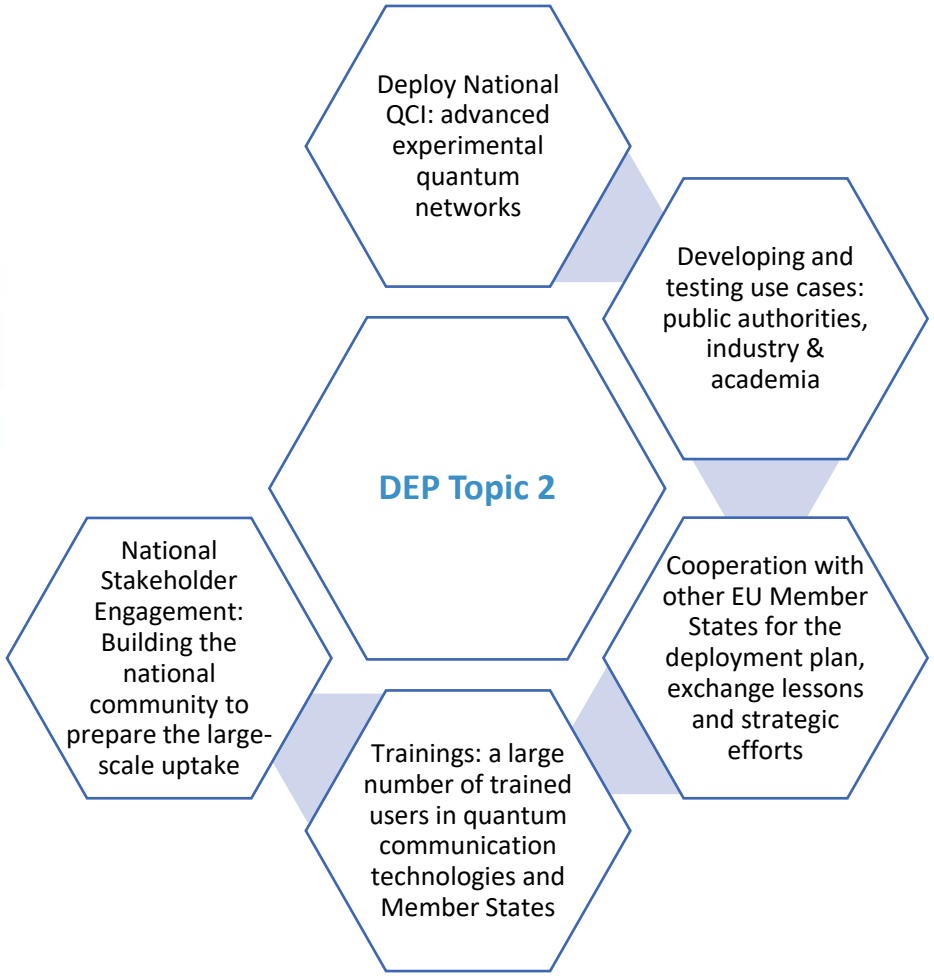
According to **Law 4623** Art. 58 GRNET "has the central role of **coordinator of all digital infrastructures** for Education and Research" and "constitutes **the national representative of the research and technological community** in the research infrastructures of the EU" and according **to Law 4727** Art. 87, GRNET "manages the **Government Cloud of the RE**".



GRNET is **appointed (October 2021) by the Ministry of Digital Transformation and the General Secretariat for Telecommunication and Post** to act as part of the national representation scheme to the **EuroQCI special group** and responsible for the **DEP-CEF proposals** coordination and submissions.

HELLENIC REPUBLIC
Ministry of Digital Governance

DEP topic 2 - Deploying advanced national QCI



Digital Europe Programme (DIGITAL)

Call for proposals

EU secure Quantum Communication Infrastructure

(DIGITAL-2022-QCI-02)

Call Budget: 110 M€

EU funding rate at 50% - Simple grant

10 M€ per grant EU Funding per grant: 5 M€	Call opening: 17 November 2021	Deadline for submission: 22 February 2022

HellasQCI

EDU
- NKUA (BEN)
- FORTH (BEN)
- NCSRD (BEN)
- AUTH (BEN)
- NOA (BEN)
- ICCS (AP)

GOV
- MinDigital (BEN)
- NIS (LoS)
- Army (LoS)
- Police (LoS)

HellasQCI Consortium

GRNET (COO)

IND
- Cosmote (BEN)
- Motor Oil Hellas (BEN)
- Space Hellas (BEN)
- Qubitech (BEN)

National QCI Partnerships

Luxembourg (AP)
Ireland (AP)
Austria (LoS)
Bulgaria (LoS)
Cyprus (LoS)
Poland (LoS)

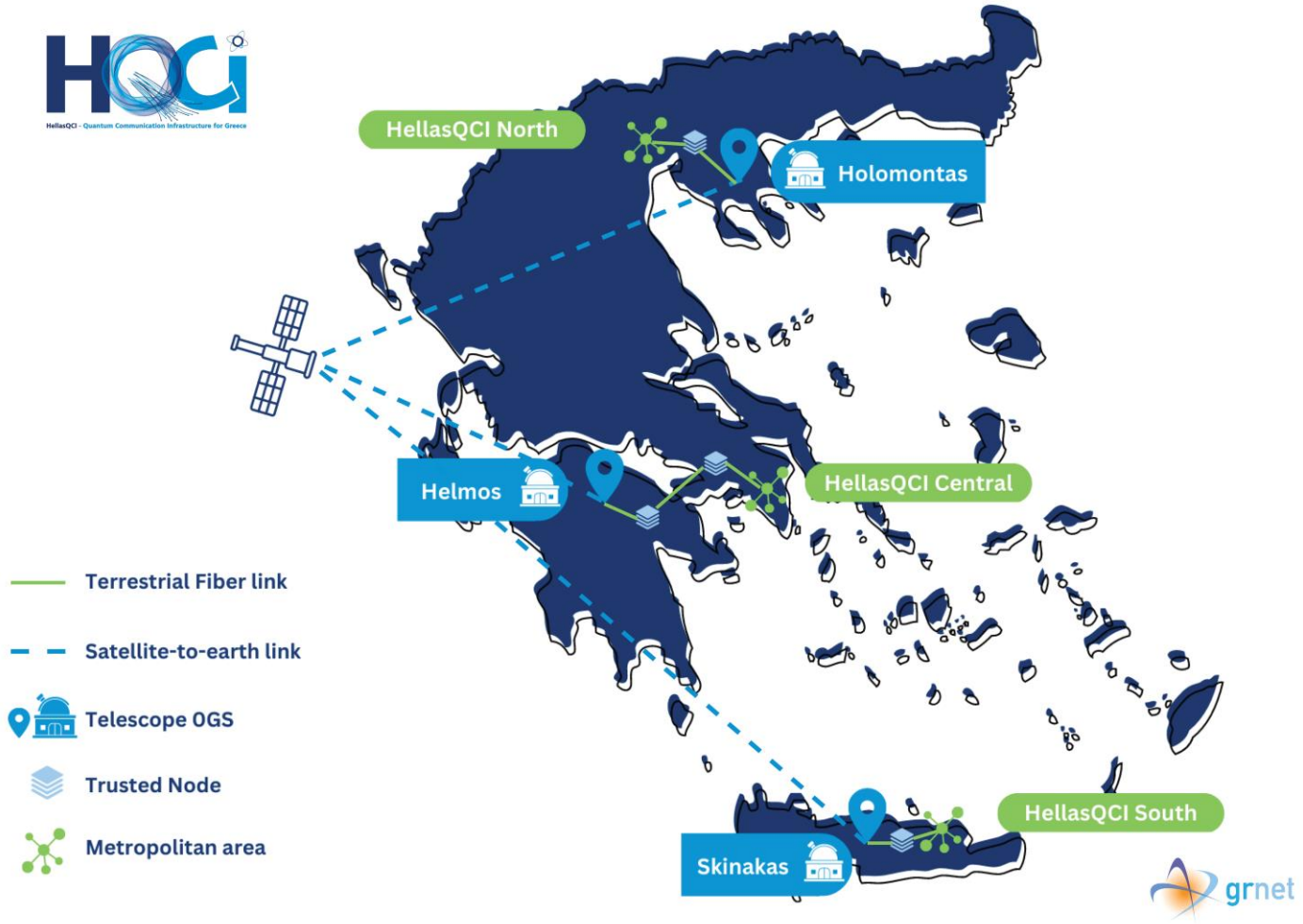
HellasQCI Budget: 9.997.545 €	
EU funding rate at 50%	
EU Funding: 4.998.772,50 € National Funding: 4.998.772,50 € Around 6M € for equipment and fibers	Project Starts: 1 January 2023 Project Ends: 30 June 2025

DEP 2 - Results	
Excellent score (13.5/15)	Ranked in the 2nd cluster based on rating (out of 7) along with Germany's, Finland's and Ireland's National QCI proposals.

HellasQCI Objectives

O1: Build the National Quantum Networks infrastructure as part of the EuroQCI

- 3 national HellasQCI test-sites
- 3 national OGS will be connected
- 450km length of fiber links will be deployed
- 20 HellasQCI end nodes



HellasQCI Objectives

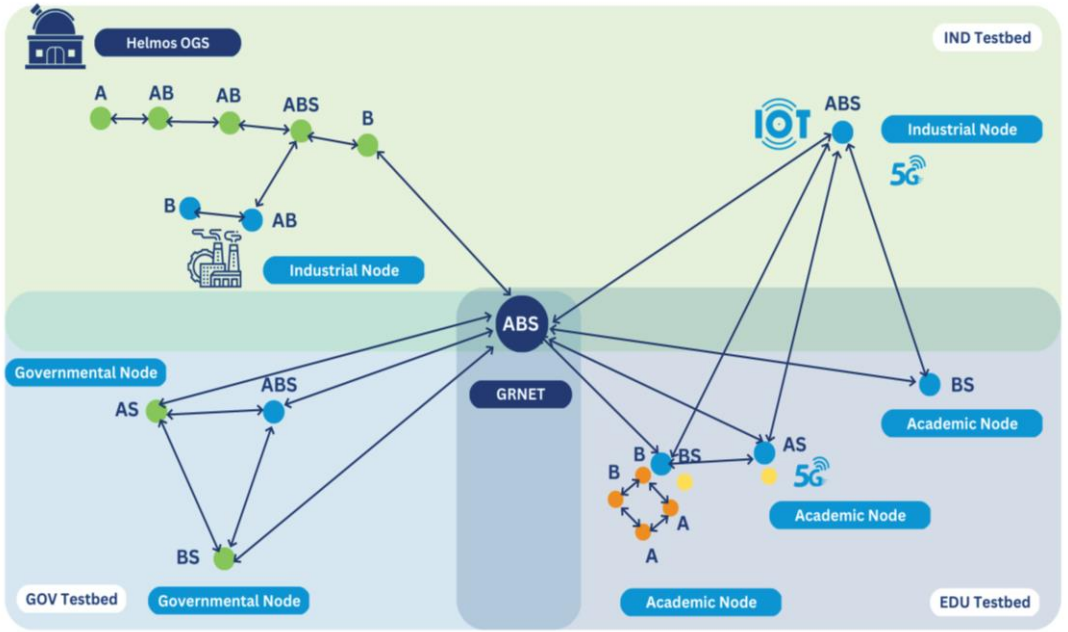
O2: Develop and Deploy advanced quantum systems and networking technologies

- **3 QKD technologies will be deployed**
  - ✓DV-QKD technology (Most mature solution)
  - ✓CV-QKD technology (low-cost deployment)
  - ✓Single photon detectors and sources (entanglement)
- **HellasQCI advanced technologies**
  - ✓Dynamic QKD (optimization of resources)
  - ✓Hybrid authentication: PQC/PUF-based authentication
  - ✓Co-existing WDM/QKD links

O3: Advanced use cases in different application scenarios

- **16 use cases**
  - ✓Public Sector use cases
  - ✓Industrial use cases
  - ✓Research and Innovation Use cases
- 7 National Security and Governmental nodes connected
- 6 Critical infrastructures, health sector and ICT industry nodes connected
- 6 Total Research and Innovation nodes connected
- Entanglement distribution network 4 receivers – 2 nodes

Athens Testbed



HellasQCI Objectives

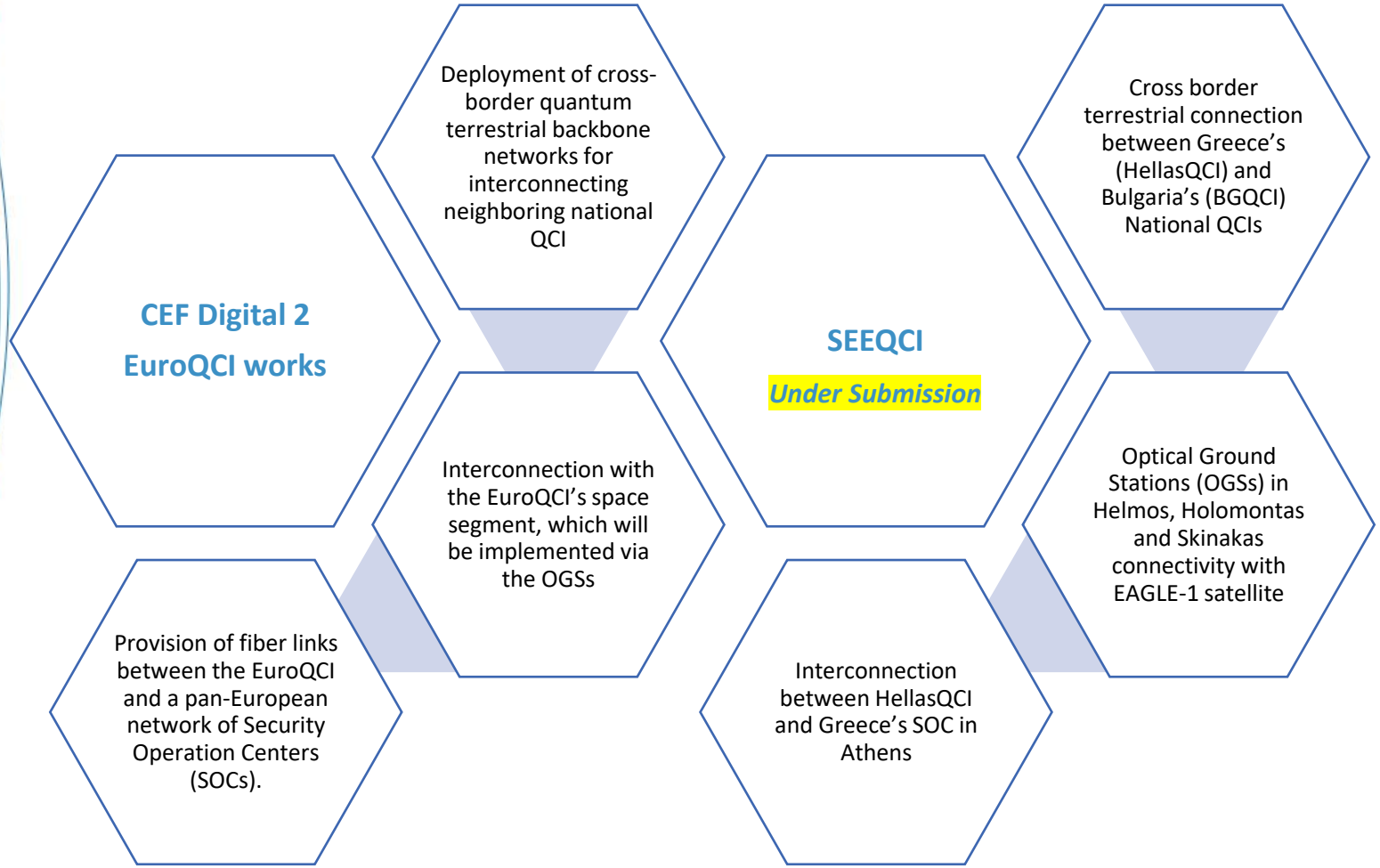
O4: Provide a training environment for technical, research and end-users staff	O5: Cooperation with EU Member States to build robust, interoperable and secure QKD systems and networks for the EuroQCI
• Large number of trained users in quantum communication technologies • 8 training workshop events • 1-week summer schools devoted for MsC/PhD students • PhD students participating in HellasQCI activities/experiments • Integration of HellasQCI training material in MSc and undergraduate courses (2 MSc courses & Undergraduate programs) • Online training platform	•6 partnerships for cooperation with **Austria, Luxembourg, Bulgaria, Cyprus, Poland** and **Ireland** National QCI proposals •University of Luxembourg (UNILU) the coordinator of **Lux4QCI** and the Walton Institute, Waterford Institute of Technology (SETU-WIT) **IrishQCI** are Associated Partners (AP) in the HellasQCI proposal and vice-versa

HellasQCI training plan		Academia & Research	Security & IT experts	End users & Public authorities
M04 - M18	Stage 1	Undergraduate and Msc Courses PhD programs Workshops & Tutorials	Workshops & Tutorials	High-level tutorials & High-level material
M18-M24	Stage 2	Lab-scale demo & summer school in Athens (July 2023)	Key management – QKD Hardware installation/operation /interfaces/classical encryptors	Emulation platforms for hands-on experience in lab
M24-M30	Stage 3	Demo activities in EDU/IND testbeds	Demo activities in EDU/IND testbeds	Demo activities in GOV testbeds

HellasQCI Objectives

O6: National Stakeholder Engagement	O7: Provide a secure architecture compatible with EU Standards and Certifications	O8: Space segment connectivity
• Establishment of the HellasQCI community from all relevant national stakeholders that can benefit and support the HellasQCI networks, gather expertise and share knowhow on QCI and QKD that can be applied in practical and sustainable use cases (Industry, SMEs, Public Sector) •Ensure better participation into the EuroQCI and leverage new end-users for the expansion of the HellasQCI networks	•Alignment with QKD security standards, certifications, and regulations: To assure HellasQCI alignment with the latest European and International QKD standards (Standardization Bodies such as ISG-QKD-ETSI group and FGQT CEN/Cenelec) •Cooperation with the EuroQCI DEP-Topic 3 CSA "Petrus"	•All 3 telescopes part of ESA ARTES Skylight programme •Each one of the 3 observatories is going to be connected via optical fibers to the closest HellasQCI test-site, and will serve as a permanent trusted node in the HellasQCI •Upon the availability of Eagle-1 satellite the OGSs will be ready to allow for the demonstration of various scenarios

CEF Digital 2- SEEQCI



CEF Digital 2 EuroQCI works Call Budget: 90 M€ EU funding rate at 30%-50%		
5 M€ per grant EU Funding per grant: 2,5 M€	Call opening: 12 October 2022	Deadline for submission: 23 February 2023

Thank you

Dr. Ilias Papastamatiou

HellasQCI - Quantum Communication Infrastructure for Greece

Co-funded by the European Union

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