CYQCI safe communications

Co-funded by the European Union

Republic of Cyprus

CYQCI newsletter

June 2025

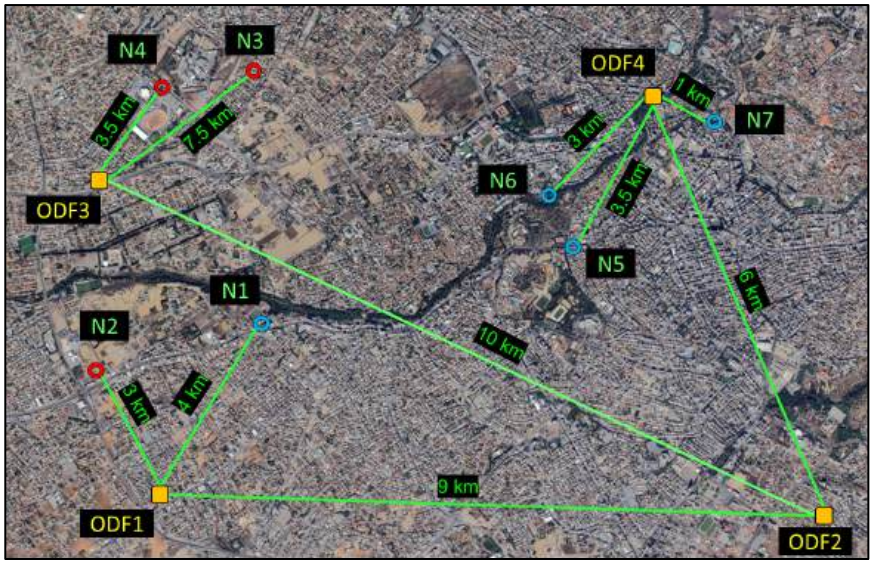
Cyprus University of Technology | cyta | DEC Department of Electronic Communications | Commissioner of Communications – Digital Security Authority | CYNET

The CYQCI team is growing

Launched in early 2023, the CYQCI project is co-funded by the European Commission's Digital Europe Programme and the Cyprus Deputy Ministry of Research, Innovation and Digital Policy, with a total budget of €7.5 million. It has established a state-of-the-art quantum communications lab at the Cyprus University of Technology in Limassol, now equipped with advanced tools—including superconducting nanowire single-photon detectors and high-speed optical instruments—enabling cutting-edge research in quantum key distribution (QKD).

If you are interested in joining the only QKD lab nationally, please get in touch with Professor Kyriacos Kalli at kyriacos.kalli@cut.ac.cy.

Cyprus' national quantum network now a reality



Earlier this year, Cyprus marked a major milestone in secure communications with the deployment of its first quantum communication network. Designed to serve seven key governmental entities across Nicosia, the network was implemented under the Cyprus Quantum Communication Infrastructure (CYQCI) project and spearheaded by the Cyprus University of Technology (CUT), utilising the existing CYTA fibre backbone to interconnect critical endpoints in the capital region. This initiative not only represents a leap forward in national cybersecurity but also positions Cyprus at the forefront of Europe's burgeoning quantum communications landscape

Network Architecture and Topology: The quantum network deployed in Nicosia employs a mix of architectures to connect two use-cases into a larger network. The first use-case is a "trusted-node" architecture linking four governmental sites—including but not limited to ministries critical to the security of the nation—via dedicated dark fibres. The second use-case connects three cybersecurity crisis management centres in the capital. With optical and electro-optical switching and wavelength multiplexing, the two use-cases interconnect, scaling to a large, seven-node quantum network.

Each site houses state-of-the-art QKD hardware by QTI, and classical encryption hardware by Adtran and Telsy, in order to realise a fully-fledged and operational quantum network from QKD applications. Secure links between adjacent nodes are established through point-to-point QKD sessions operating over distances of 5–15 km, depending on fibre routing. The network's capabilities were recently showcased during a live demonstration at the Cyprus Quantum Communications Infoday, held in Nicosia on June 5th.

Leveraging an active QKD link and the Antares web conferencing platform, two governmental entities successfully exchanged audiovisual information with unprecedented security—live and in real time—before an audience of key technology stakeholders and policy-makers.

Conclusion: The successful deployment and demonstration of Cyprus's first quantum communication network mark a pivotal step toward the nation's digital sovereignty and cybersecurity resilience. By integrating cutting-edge QKD technologies into real-world government operations, the CYQCI project has laid the foundation for a secure, scalable, and future-ready communications infrastructure. As Cyprus continues to develop its national quantum capabilities, this milestone signals not only local progress but also a meaningful contribution to the broader European Quantum Communication Infrastructure.

Groundwork completed for national quantum optical ground station in Cyprus

Following several months of hard work and unforeseen delays related to EAGLE1—particularly in the development of the initial design specifications and the absence of the Critical Design Review — the Cyprus NatQCI project has concluded its tendering process for the acquisition of its national Optical Ground Station (OGS).

Once sufficient technical information became available, it was possible to formulate and release a relevant tender in December 2024. The OGS tender process, conducted using the open EU tendering procedure to ensure transparency for this high-value procurement and completed in 2025, resulting in the selection of a company able to supply the OGS.

While this is a critical milestone for the CYQCI project, the significant delays that affected the OGS tender, along with the time required for manufacturing, deploying, and testing this complex system, were the primary reasons for requesting—and being granted—a 14-month extension for CYQCI.

Cyprus Quantum Security Infoday 2025

On 5 June 2025, Cyprus officially launched its first quantum communication network, a key achievement under the CYQCI project. Authorities emphasized the need for secure communications across Europe, supported by Quantum Key Distribution (QKD) technology enabling ultra-secure links between government entities. A live demo showcased a quantum-secure video call, and plans were announced for an optical ground station to expand the network via satellite. The event also addressed standardisation, policy challenges, and included international insights into quantum communication developments. More information can be found at:

https://cyprus-mail.com/2025/06/21/cyprus-launches-first-quantum-secure-communication-network

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