Press Release

QIA Enters Phase to Build Full-Stack Quantum Networks

The European Commission is providing 47.5 million euros in funding to support the Quantum Internet Alliance (QIA) in the next phase of developing and deploying quantum internet technologies. The Fraunhofer ILT is contributing to this effort by developing low-noise quantum frequency converters and, through ALICE, providing a hardware-based, open-access platform in Aachen for testing and further developing quantum networking technologies based on an NV network node.

The Quantum Internet Alliance (QIA) has received €47.5 million in new funding from the European Commission to advance its work on a full-stack quantum internet prototype and prepare it for real-world deployment. The Specific Grant Agreement (SGA 2) will support the next 42 months of research and development, building on the consortium's achievements during the first phase (SGA1) which ran from October 2022 to March 2026.

Aim is to develop a complete, programmable quantum network prototype

In SGA1, QIA expanded its European platform for quantum internet development, integrating hardware, software and networking research while laying the technological foundations for a prototype quantum network. Over the next 3.5 years, QIA will focus on combining these technologies into a complete, programmable quantum network prototype capable of running quantum network applications. A key milestone is demonstrating how two metropolitan-scale quantum networks can be interconnected via a long-distance fibre link using quantum repeaters, a critical step toward large-scale quantum communication.

"Over the past years, we have developed the core building blocks of a quantum internet. Our mission in this next phase is to integrate these components into a full stack quantum internet prototype. Europe is at the very forefront of quantum internet technologies world-wide, and this prototype may become the first of its kind in the world," said QIA Director Stephanie Wehner. The programme will also take first steps towards Quantum Internet Initiative by transitioning quantum networking technologies from laboratory experiments to real-world applications, including initial preparations for quantum internet pilot facilities and open-access infrastructure for researchers, developers and companies.

QIA's Holistic Approach Facilitates Rapid Commercialization

QIA is already delivering impact beyond the lab. Technologies developed within the programme have moved to products, and new startups are emerging from the QIA ecosystem, ready to translate QIA's breakthroughs now into practical products and services. QIA's full

stack effort also includes work on advancing use cases of quantum network technologies and provides a platform for all Quantum Internet efforts across Europe to connect and join forces.

"Right now, Europe is still at the forefront of quantum internet efforts worldwide," Wehner added. "With this second phase, we are creating technology that does not yet exist anywhere on earth. But to remain ahead, it is critically important that in addition to the second phase of this R&D project, QIA's startups can now move to the realization of proof-of-concept use cases, we empower the ecosystem by making open access facilities available, and we further strengthen Europe's technological capabilities and create the conditions for a vibrant quantum ecosystem that can compete globally," she concluded.

The Fraunhofer ILT will play an essential role in the second phase

With the second phase of the Quantum Internet Alliance (QIA), greater emphasis is being placed on transferring quantum networking technologies from the laboratory into application-oriented pilot and open-access infrastructures. Fraunhofer ILT is taking on a central role in this effort: it leads the work package "Pilot Facilities and Open Access" and thereby coordinates the preparation of European pilot facilities and open research infrastructures. "Our aim is to advance key quantum internet technologies towards higher technology readiness levels and operation in real-world environments", explains Dr. Bernd Jungbluth, head of the Strategic Mission Quantum Technology at Fraunhofer ILT.

The Fraunhofer ILT is also making a direct technological contribution. In close cooperation with Delft Networks, it is further developing a low-noise quantum frequency conversion system for an SnV-based quantum network. The development ranges from a laboratory setup to a rack-integrated demonstration module for the transmission of individual photons over telecommunications fibers. With ALICE (Access Link for Interplatform Communication Experiments), the Fraunhofer ILT also provides a hardware-based open-access platform in Aachen for testing and further developing quantum network technologies based on an NV network node.

In this context, ILT is collaborating directly with the junior research group led by Dr. Florian Elsen at RWTH Aachen University's Chair for Laser Technology. The group is likewise working on new technologies for connecting different quantum platforms and will use ALICE as a scientific trial user, integrating the Aachen quantum network node directly into its own technology development activities. "In this way, the open-access concept will already be tested in practice during the project: technologies developed in RWTH research can be tested and further developed directly at ILT's quantum network node", Elsen adds.



Image 1:
A wealth of quantum expertise on one stage. Members of the Quantum Internet Alliance (QIA) met in Lisbon in late September 2026 for professional exchange and networking.
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The European **Quantum Internet Alliance (QIA)** is a partnership of 50+ world-leading institutions on a mission to build a global Quantum Internet made in Europe. By combining QIA's diverse interdisciplinary team, QIA drives an innovative European platform for Quantum Internet development. In the near-term, QIA builds a full-stack prototype network that has the potential to become the first of its kind in the world.
Led by TU Delft, QIA currently consists of academic institutions, telecom operators, system integrators and quantum technology start-ups across 12 European member states.

For more information, visit www.quantuminternetalliance.org

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With more than 30,000 employees at 74 institutes and independent research units in Germany, Fraunhofer operates with an annual budget of 3.6 billion euros. Contract research, Fraunhofer's mainstay, generates 3.2 billion of this budget.

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