OPENQKD paves the way for a secure Pan-European Quantum Communication Infrastructure

(Vienna, September 2019) Today marks the launch of a pilot project, OPENQKD, that will install a test quantum communication infrastructure in several European countries. It will boost the security of critical applications in the fields of telecommunications, health care, electricity supply and government services.

OPENQKD will aim to bring about a change in the way we see, understand and use quantum communication. Its main focus is to create and test a communication network infrastructure with a built-in quantum element, using Quantum Key Distribution (QKD), a ultra-secure form of encryption that allows data to be transmitted with a very high level of security. It will lay the groundwork for a pan-European quantum communication infrastructure that uses satellite as well as ground-based solutions: recently, the European Commission and several EU countries announced plans to work together to explore the development of such a quantum communication infrastructure linking European regions and cities.

Hannes Hübel, scientist at the AIT Austrian Institute of Technology, and project leader of OPENQKD: "After successfully demonstrating the basic concept of QKD, quantum based cryptography has achieved a mature state and we are proud to lift quantum technology now onto a market-ready level – ready to be deployed in everyday-life applications."

Helmut Leopold, Head of Center for Digital Safety & Security at the Austrian Institute of Technology, which is coordinating the project, added: "With the European OPENQKD initiative, Europe builds on its leadership in science and technology in the sector of quantum technologies by fostering a strong cooperation among research, industry as well as the public sector to enable an innovative eco-system for creating a new perspective for our secure digital Europe and building the foundation for next generation communication technologies."

Building closer European links

The Europe Commission chose to fund OPENQKD following a Horizon 2020 call for proposals in 2018. Its mission is to develop an experimental testbed based on QKD and to test the interoperability of equipment supplied by different manufacturers of quantum. OPENQKD's activities will take place all over Europe (in Austria, Spain, Poland, Germany, Netherlands, Switzerland, France, Italy, UK, Greece and the Czech Republic). It will focus on several key fields of operations, especially the telecommunications sector, where data traffic in transit and at rest needs to be secured. Other applications, such as securing medical and governmental data or the transmission of secure control signals in the electricity grid will also be demonstrated and evaluated.

In addition, OPENQKD will address the development of a European ecosystem for quantum technology providers, application developers. It will also work to identify new use-cases by supporting start-ups and SMEs, as well as offering modern test facilities to new quantum stakeholders. A further objective for the project is to devise standards and security certifications for this infrastructure.

To achieve its ambitious goals, the OPENQKD project will last three years and have a budget of €15 million. Its consortium consists of 38 partners from 13 Member States and Horizon 2020 Associated States. The consortium partners cover a wide range of competences including quantum equipment manufacturers, network operators, system integrators, small and medium-sized enterprises, Research and Technology Organisations, universities, certification and standardisation bodies and end users.

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IT4Innovations National Supercomputing Center provides state-of-the-art technology and services to both Czech and foreign research teams from academia and industry in the field of high-performance computing and data analysis. Currently, IT4Innovations runs two supercomputers - Anselm (installed in the summer of 2013) and Salomon (installed in the summer of 2015) and has a special system DGX-2 for artificial intelligence calculation installed in 2019. IT4Innovations is also a research centre with strong international links. Core IT4Innovations research topics are advanced data processing and analysis, machine learning, the development of parallel scalable algorithms, the solution of demanding engineering tasks, and modelling for nanotechnology.

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