

## Factsheet



**ACRONYM** EuRyQa

**FULL TITLE** European infrastructure for Rydberg Quantum Computing

**PROGRAMME** HORIZON-CL4-2021-DIGITAL-EMERGING-01

**CONTRACT NUMBER** 101070144

**ABSTRACT** EuRyQa aims to establish Rydberg quantum processors as a leading platform for scalable quantum computing. Rydberg atoms have already provided proof-of-principle demonstrations of all the requirements for general-purpose digital quantum computing and are today the only platform that has demonstrated more than 200 qubits with strong interactions and with a clear path to further scalability and eventually fault-tolerant operation. To develop the next generation of fully programmable and scalable quantum computing systems based on Rydberg atoms and open them up for the European community now requires a coordinated interdisciplinary and intersectoral effort. For this, the EuRyQa consortium combines partners from academia and the private sector that are at the forefront of cold-atom technology with key industrial partners with complementary expertise in quantum hardware, classical electronics, firmware, and software. The project will bring together four Rydberg platforms with 100 – 1000 qubits, including three nationally funded platforms and one leading European start-up, to provide a unique European solution to Rydberg-based quantum computers together with Europe-wide benchmarking and standardization of the technology. We will provide a common quantum computing stack for Rydberg atoms, a federated cloud service, solutions to concrete computational problems leading to a quantum advantage, and key technology as well as a blueprint for fault-tolerant quantum computing with Rydberg qubits.

**DURATION** 36 months (01/10/2022 – 30/09/2025)

**PROJECT FUNDING** 4,970,860.00 €

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