

## Press Release

### **d-fine and planqc support DLR Quantum Computing Initiative (DLR QCI) in the development of compilers and a remote access platform for quantum computers**

Frankfurt am Main | 01/29/2024

- The companies d-fine and planqc have been selected again by the German Aerospace Center (DLR) to support the DLR Quantum Computing Initiative (DLR QCI).
- The objective is to provide users with access to the various DLR quantum computers and compile quantum algorithms for different hardware platforms.
- d-fine is a European management consulting firm specializing in analytically challenging topics. One important focus is the practical implementation of quantum computers in companies or financial institutions.
- planqc is located in the Munich Quantum Valley and was founded by scientists from the Max Planck Institute of Quantum Optics and Ludwig Maximilian University Munich.
- This is already the third assignment for d-fine within the DLR Quantum Computing Initiative (DLR QCI). In addition to their assignment to build a neutral atom quantum computer, planqc has been commissioned by DLR for two projects.
- Keywords: quantum technology, quantum algorithms, compilers, quantum computing.

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**Frankfurt, January 29<sup>th</sup>, 2024 – d-fine and planqc are supporting the DLR Quantum Computing Initiative (DLR QCI) in the development of compilers and a remote access platform for the quantum computers of the German Aerospace Center (DLR).**

The German Aerospace Center (DLR) has announced its collaboration with consulting company d-fine and quantum computer manufacturer planqc. The goal of the ALQU project is to establish a unified platform for managing and executing quantum algorithms. The new DLR quantum computers, including a model from planqc, will serve as hardware backends. The platform will enable DLR institutes and external partners to access the DLR quantum computers.

d-fine and planqc were selected based on their expertise in software programming and compilation strategies. Their role in the ALQU project will focus on integrating quantum compilers into the DLR quantum computer architecture to enable efficient and user-friendly access. The realization of the platform is based on technologies that cover the entire quantum compiler stack. In addition to hardware-specific compilation, the implementation also includes experiment management, the application of error correction methods, and the provision of simulators with various error models.

For d-fine and planqc, this project highlights the necessity of close co-design between hardware and software in the field of quantum computing. It is crucial to incorporate hardware metrics and error models into algorithms and ensure that the hardware supports efficient execution of the algorithms. ALQU aims to bridge this gap by focusing on efficient compilation for quantum computers.

**END**

## Press Release

### NOTES FOR EDITORS

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#### **About d-fine**

d-fine's success is based on the expertise of its 1,500 employees: all of them hold a university degree with a strong research background, 90% of them in the fields of physics, mathematics and computer science. 50% of our employees hold a PhD, which is also reflected in our excellent ranking in the CASE Employer Ranking for employee qualifications. d-fine supports its customers from strategy development through technical conception and the development of preliminary studies and prototypes to IT implementation and go-live, and attaches great importance to close, trusting and fair cooperation.

Further information can be found at <https://www.d-fine.com/>

#### **About planqc**

planqc builds quantum computers and stores quantum information in individual atoms – inherently the best qubits. The quantum information is processed by arranging these qubits in highly scalable registers and then manipulating them using precisely controlled laser pulses.

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planqc is characterized by a unique combination of quantum technologies that opens up the fastest path to quantum processors with thousands of qubits, thereby creating the necessary prerequisites for an industry-relevant quantum advantage. planqc was founded in April 2022 by Alexander Glätzle, Sebastian Blatt, Johannes Zeiher, Lukas Reichsöllner together with Ann-Kristin Achleitner and Markus Wagner. planqc is based in Garching near Munich.

Further information can be found at <https://www.planqc.eu>

### **About the DLR Quantencomputing-Initiative (DLR QCI) of the German Aerospace Center (DLR)**

The DLR Quantum Computing Initiative (DLR QCI) involves partners from industry and business, start-ups and research in order to jointly develop quantum computers, enabling technologies, software and applications and the necessary economic environment. The Federal Ministry of Economics and Climate Protection (BMWK) has provided DLR with funding for this purpose. At two innovation centres in Hamburg and Ulm, DLR offers quantum start-ups and industrial consortia laboratories, workshops and office space, thereby pooling infrastructure, expertise and resources for effective technology transfer. This creates the industrial basis and the economic environment for quantum computers from Germany, the quantum computing ecosystem.

Further information can be found at <https://qci.dlr.de/>