

The role of EuroQCS

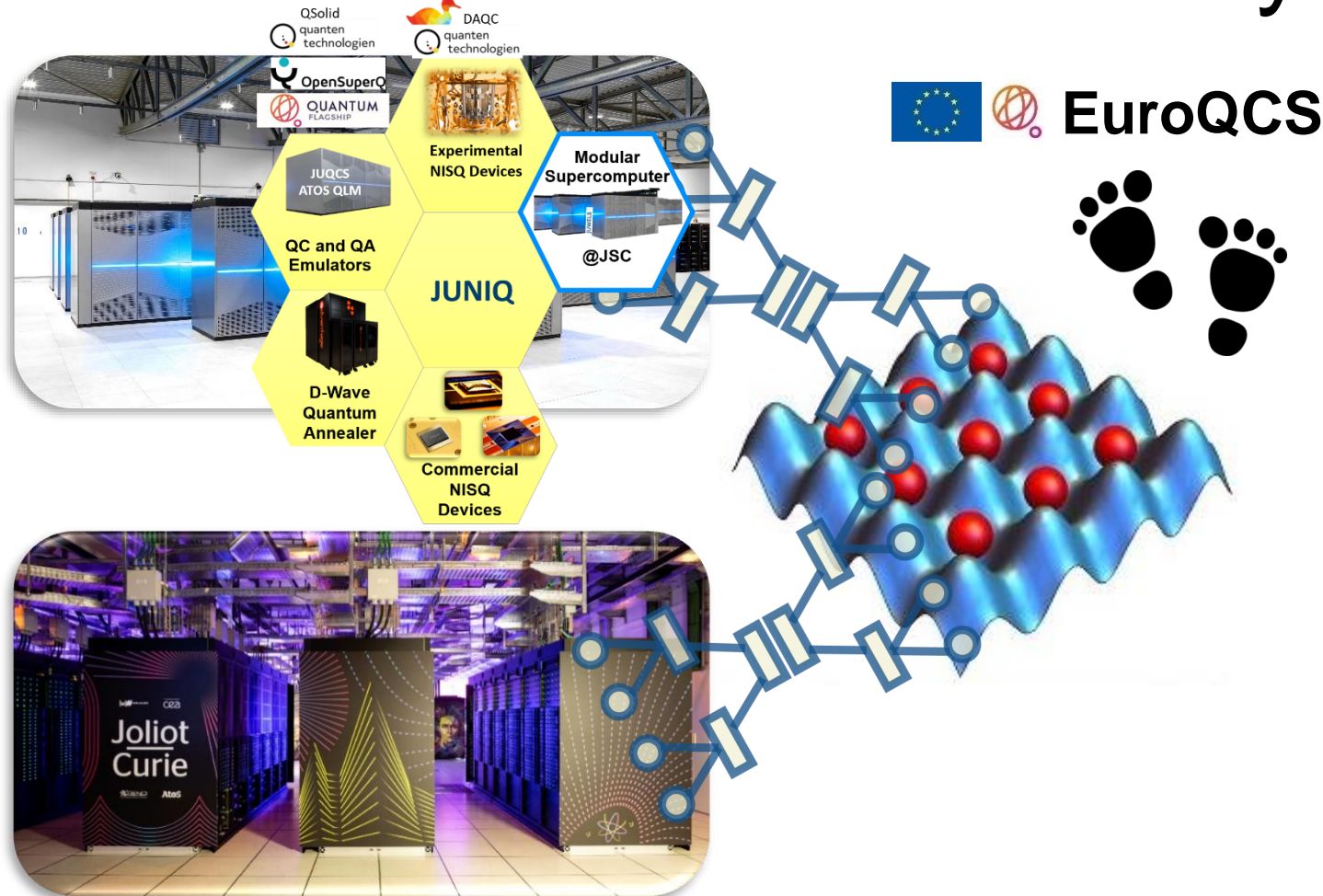
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EuroQCS: European Quantum Computing & Simulation Infrastructure

- **Aim:** Establish a federated European infrastructure for hybrid classical-quantum computing with remote access to QCS devices
- **Realization:** Unify access to
 - a variety of European HPC and QCS resources that are both **co-located and deeply integrated** in European supercomputing centers
 - or to **stand-alone systems** accessible via the **cloud** or connected to the supercomputing centers through **classical network links** in a first stage, and infrastructure developed by EuroQCI in the long term
- **Impact:** Hybrid HPC-QCS machines will enhance classical HPC in tackling industrial and societal challenges

<HPC|Q.S>: High Performance Computer and Quantum Simulator hybrid



EuroHPC
Joint Undertaking

December 1, 2021

November 30, 2025



German Quantum Computing Initiatives

- Federal Ministry of Research and Education: 1.1 billion EUR for QC demonstrators, a user network, and university funding
- Federal Ministry for Economic Affairs and Energy: 878 million EUR for QC HW and QC SW consortia
- Federal Ministry of Finance: 50 million EUR for projects
- QUTAC - Quantum Technology & Application Consortium (key industries)
- Various German state initiatives

An **academic** and **industrial 5 years** research programme based on a national physical hybrid HPC/Quantum platform

- Strategy from French Quantum Plan (21-01-21, 1.8 B€)
- National funding's 72,3 M€, leverage by European, industrial and regional funding
- Embedded into a European hybrid quantum infrastructure

Objectives

- Integrate (HW/SW) quantum technologies in CEA Computing Centre (TGCC)
 - Agnostic HPC/QC SW stack based on Atos QLM
- Assess QC **technologies**
- Develop QC **hybrid software stack (libraries/middleware)**
- Promote, disseminate and support HQI usage (**applications**)

Programme organization & funding

- QPU acquisitions (Analog, Gate based, Innovative, Upgrades)
- Industrial & academic R&D (QPU/HPC integration, SW environment, Applications, Exploration)
- QC ecosystem and User community support (cloud based access, national competence centres, hackathons, uses cases)

