SCALABLE MULTI-CHIP QUANTUM ARCHITECTURES ENABLED BY CRYOGENIC WIRELESS / QUANTUM - COHERENT NETWORK-IN PACKAGE

Fact Sheet

Project Information

**QUADRATURE**

Grant agreement ID: 101099697

**Funded under**
The European Innovation Council (EIC)

**DOI**
10.3030/101099697

**Start date**
1 June 2023

**End date**
31 May 2027

**Total cost**
€ 3 420 513,75

**EU contribution**
€ 3 420 513,75

**Coordinated by**
UNIVERSITAT POLITECNICA DE VALENCIA

Spain

Project description

Cryogenics and multi-core distributed architectures offer a step to scaling up quantum computing

Noisy intermediate-scale quantum computers are currently the most powerful quantum computers. Although they are not fault-tolerant, they have proved to be far more efficient than today's more advanced supercomputers. However, fully error-corrected quantum computers would require millions of qubits to address real-world problems. The EIC-funded QUADRATURE project will rise to the million-qubit challenge by pioneering a new generation of quantum computing architectures.
Rather than individually wiring and connecting millions of individual qubits, QUADRATURE will develop scalable architectures by connecting distributed quantum cores. These cores will be connected via quantum-coherent qubit state transfer links and wireless interconnects. The network components will be functioning under cryogenic temperatures. The proposed architecture supports reconfigurability, addressing a massive number of heterogeneous quantum algorithmic requirements.

**Fields of science**

- [electrical engineering](#)  [electronic engineering](#)  [information engineering](#)  [computer hardware](#)  [quantum computers](#)

**Programme(s)**

- [HORIZON.3.1 - The European Innovation Council (EIC)](#)  [MAIN PROGRAMME](#)

**Topic(s)**

- [HORIZON-EIC-2022-PATHFINDEROPEN-01-01 - EIC Pathfinder Open 2022](#)

**Call for proposal**

- [HORIZON-EIC-2022-PATHFINDEROPEN-01](#)

**Funding Scheme**

- [EIC - EIC](#)

**Coordinator**

- [UNIVERSITAT POLITECNICA DE VALENCIA](#)

  *Net EU contribution*

  - € 447 375,00
Participants (7)

UNIVERSITAT POLITECNICA DE CATALUNYA

Address
Calle jordi girona 31
08034 Barcelona

Region
Este > Cataluña > Barcelona

Activity type
Higher or Secondary Education Establishments

Links
Contact the organisation  
Website  
Participation in EU R&I programmes  
HORIZON collaboration network 

Other funding
€ 0,00

TECHNISCHE UNIVERSITEIT DELFT
Netherlands
Net EU contribution
€ 624 143,75
Address
Stevinweg 1
2628 CN Delft
Region
West-Nederland > Zuid-Holland > Delft en Westland
Links
Contact the organisation Website Participation in EU R&I programmes HORIZON collaboration network
Other funding
€ 0,00

UNIVERSITAET SIEGEN
Germany
Net EU contribution
€ 659 993,75
Address
Adolf reichwein strasse 2a
57076 Siegen
Region
Nordrhein-Westfalen > Arnsberg > Siegen-Wittgenstein
Links
Contact the organisation Website Participation in EU R&I programmes HORIZON collaboration network
Other funding
€ 0,00

UNIVERSITA DEGLI STUDI DI CATANIA
Italy
Net EU contribution

4 of 7
EQUAL 1 LABORATORIES IRELAND LIMITED

Ireland

Net EU contribution

€ 516 472,50

Address

30 heathervue
A63 XV61 Wicklow

SME

Yes

Region

Ireland > Eastern and Midland > Mid-East

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

Contact the organisation
Participation in EU R&I programmes
HORIZON collaboration network

Other funding

€ 0,00
BARCELONA SUPERCOMPUTING CENTER CENTRO NACIONAL DE SUPERCOMPUTACION

Spain

Net EU contribution
€ 305 000,00

Address
Calle jordi girona 31
08034 Barcelona

Region
Este > Cataluña > Barcelona

Activity type
Research Organisations

Links
Contact the organisation Website Participation in EU R&I programmes HORIZON collaboration network

Other funding
€ 0,00

UNIVERSITY COLLEGE DUBLIN, NATIONAL UNIVERSITY OF IRELAND, DUBLIN

Ireland

Net EU contribution
€ 216 027,50

Address
Belfield
4 Dublin

Region
Ireland > Eastern and Midland > Dublin

Links
Contact the organisation Website Participation in EU R&I programmes HORIZON collaboration network
Partners (1)

ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE

Net EU contribution

Address

Batiment ce 3316 station 1
1015 Lausanne

Region

Schweiz/Suisse/Svizzera > Région lémanique > Vaud

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation  Website  Participation in EU R&I programmes  HORIZON collaboration network

Other funding

EC signature date 9 December 2022

Last update: 7 March 2023

Permalink: https://cordis.europa.eu/project/id/101099697

European Union, 2023