

# Neuromorphic Quantum Computing

## Fact Sheet

### Project Information

#### Quomorphic

Grant agreement ID: 828826

[Project website](#) 

#### DOI

[10.3030/828826](https://doi.org/10.3030/828826) 

Project closed

#### EC signature date

15 January 2019

#### Start date

1 June 2019

#### End date

28 February 2023

#### Funded under

EXCELLENT SCIENCE - Future and Emerging Technologies (FET)

#### Total cost

€ 2 882 752,50

#### EU contribution

€ 2 882 752,50

#### Coordinated by

FRIEDRICH-ALEXANDER-  
UNIVERSITAET ERLANGEN-  
NUERNBERG



Germany

## Project description

### Neural networks could soon be running on quantum hardware

Artificial neural networks, which simulate the way the human brain analyses and processes information, are used to model complex patterns and prediction problems. This approach typically involves building software rather than creating hardware that mimics neurons. The EU-funded Quomorphic project plans to implement neuromorphic computing on the hardware level. The project aims to build the first dedicated neural network computer that works on quantum mechanics principles. It will be built in hardware made of superconducting electrical circuits. Neuromorphic

quantum hardware could possibly outperform classical von Neumann architectures as it can be trained on multiple batches of real-world data in parallel.

## Fields of science (EuroSciVoc)

[natural sciences](#) > [computer and information sciences](#) > **[software](#)**

[engineering and technology](#) > [electrical engineering, electronic engineering, information engineering](#) > [electronic engineering](#) > [computer hardware](#) > **[quantum computers](#)**

[natural sciences](#) > [computer and information sciences](#) > [artificial intelligence](#) > **[machine learning](#)**

[natural sciences](#) > [computer and information sciences](#) > [data science](#) > **[data processing](#)**

[natural sciences](#) > [computer and information sciences](#) > [artificial intelligence](#) > **[computational intelligence](#)**



## Keywords

[quantum computing](#)

[machine learning](#)

[superconducting circuits](#)

[neural networks](#)

## Programme(s)

[H2020-EU.1.2. - EXCELLENT SCIENCE - Future and Emerging Technologies \(FET\)](#)

MAIN PROGRAMME

[H2020-EU.1.2.1. - FET Open](#)

## Topic(s)

[FETOPEN-01-2018-2019-2020 - FET-Open Challenging Current Thinking](#)

## Call for proposal

[H2020-FETOPEN-2018-2020](#)

[See other projects for this call](#)

## Sub call

## Funding Scheme

[RIA - Research and Innovation action](#)

## Coordinator



### FRIEDRICH-ALEXANDER-UNIVERSITAET ERLANGEN-NUERNBERG

Net EU contribution

**€ 612 482,50**

Total cost

**€ 612 482,50**

Address

**FREYESLEBENSTRASSE 1**

**91058 ERLANGEN**

 **Germany** 

Region

**Bayern > Mittelfranken > Erlangen, Kreisfreie Stadt**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

## Participants (7)




### EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH

 **Switzerland**

Net EU contribution

**€ 556 875,00**

Address

Raemistrasse 101  
8092 Zuerich 

Region

Schweiz/Suisse/Svizzera > Zürich > Zürich

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 556 875,00**

---



## TECHNISCHE UNIVERSITEIT DELFT

 Netherlands

Net EU contribution

**€ 557 302,50**

Address

**STEVINWEG 1**

**2628 CN Delft** 

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 557 302,50**

---



**IBM RESEARCH GMBH** 

 Switzerland

Net EU contribution

**€ 195 659,61**

Address

SAEUMERSTRASSE 4  
8803 Rueschlikon 

Region

Schweiz/Suisse/Svizzera > Nordwestschweiz > Aargau

Activity type

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

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 195 659,61



## UNIVERSIDAD DEL PAIS VASCO/ EUSKAL HERRIKO UNIBERTSITATEA

 Spain

Net EU contribution

€ 304 750,00

Address

BARRIO SARRIENA S N

48940 Leioa 

Region

Noreste > País Vasco > Gipuzkoa

Activity type

Higher or Secondary Education Establishments

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 304 750,00




## VOLKSWAGEN AKTIENGESELLSCHAFT

 Germany

Net EU contribution

€ 306 405,00

Address

**BERLINER RING 2**  
**38440 Wolfsburg** 

Region

**Niedersachsen > Braunschweig > Wolfsburg, Kreisfreie Stadt**

Activity type

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

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 306 405,00



**HERIOT-WATT UNIVERSITY** 

 United Kingdom

Net EU contribution

€ 0,00

Address

**RICCARTON**  
**EH14 4AS Edinburgh** 

Region

**Scotland > Eastern Scotland > Edinburgh**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

No data



**BAYERISCHE AKADEMIE DER WISSENSCHAFTEN**

 Germany

Net EU contribution

€ 349 277,89

Address

**ALFONS GOPPEL STRASSE 11**  
**80539 Munchen** 

Region

**Bayern > Oberbayern > München, Kreisfreie Stadt**

Activity type

**Research Organisations**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 349 277,89

**Last update:** 2 January 2024

**Permalink:** <https://cordis.europa.eu/project/id/828826>

European Union, 2025