



Post Quantum Cryptography Framework for Energy Aware Contexts

Fact Sheet

Project Information

PQ-REACT

Grant agreement ID: 101119547

DOI
[10.3030/101119547](https://doi.org/10.3030/101119547)

EC signature date
6 July 2023

Start date	End date
1 September 2023	31 August 2026

Funded under
Civil Security for Society

Total cost
€ 5 366 883,20

EU contribution
€ 4 935 859,50

Investment in EU policy priorities

Digital agenda		Clean air	
Artificial Intelligence		Climate action	
Biodiversity			

Coordinated by
"NATIONAL CENTER FOR
SCIENTIFIC RESEARCH
""DEMOKRITOS""
 Greece

Objective

In the last three decades, public key cryptography has become an indispensable component of global communication digital infrastructure. These networks support a plethora of applications that are important to our economy, our security, and our way

of life, such as mobile phones, internet commerce, social networks, and cloud computing. In such a connected world, the ability of individuals, businesses and governments to communicate securely is of the utmost importance. At the moment, the quantum threat is theoretical as quantum computers that fulfill the requirements of Shor's and Grover's algorithms for long keys are not available, but it is evident that widely used RSA, ECDSA, ECDH, and DSA cryptosystems will need to be replaced by post-quantum cryptography (PQC). The need for addressing this problem early enough has been recognized by various relevant organizations and the National Institute of Standards and Technology (NIST) has started an effort to identify cryptographic algorithms able to withstand quantum computer attacks by 2022 — and make them available by 2024. The main objective of PQ-REACT project is to design, develop and validate a framework for a faster and smoother transition from classical to post-quantum cryptography for a wide variety of contexts and usage domains, while leveraging Europe's most powerful Quantum infrastructure (IBM Quantum Computer from Fraunhofer FOKUS). This framework will include PQC migration paths and cryptographic agility methods and will develop a portfolio of tools for validation of post quantum cryptographic systems, that will allow users to switch to post-quantum cryptography, taking under consideration their individualities and various contexts and a wide variety of real world pilots, i.e. Smart Grids, 5G and Ledgers. The project will also foster a series of open calls for SMEs and other stakeholders to bring and test their PQC algorithms and external pilots on the PQ-REACT, Quantum Computing Infrastructure.

Fields of science (EuroSciVoc)

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

[social sciences](#) > [economics and business](#) > [business and management](#) > **[commerce](#)**



Keywords

QKD

5G

Blockchain

Programme(s)

[HORIZON.2.3 - Civil Security for Society](#)

MAIN PROGRAMME

[HORIZON.2.3.3 - Cybersecurity](#)

Topic(s)

[HORIZON-CL3-2022-CS-01-03 - Transition towards Quantum-Resistant Cryptography](#)

Call for proposal

[HORIZON-CL3-2022-CS-01](#)

[See other projects for this call](#)

Funding Scheme

[HORIZON-IA - HORIZON Innovation Actions](#)

Coordinator



"NATIONAL CENTER FOR SCIENTIFIC RESEARCH ""DEMOKRITOS"""

Net EU contribution

€ 1 465 125,00

Total cost

€ 1 465 125,00

Address

**END OF PATRIARCHOU GRIGORIOU E AND 27 NEAPOLEOS STREET
15341 Agia Paraskevi**

 **Greece** 

Region

Αττική > Αττική > Βόρειος Τομέας Αθηνών

Activity type

Research Organisations

Links

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

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

[HORIZON collaboration network](#) 

Participants (14)



INDRA SISTEMAS SA

Spain

Net EU contribution

€ 85 413,62

Address

AVENIDA DE BRUSELAS 35

28108 Alcobendas Madrid

Region

Comunidad de Madrid > Comunidad de Madrid > Madrid

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

€ 567 120,70

THIRD-PARTY

INDRA FACTORIA TECNOLOGICA SL

Spain

Net EU contribution

€ 6 589,63

Address

AVENIDA DE BRUSELAS 35

28108 Alcobendas

Region

Comunidad de Madrid > Comunidad de Madrid > Madrid

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](#)

Total cost

No data

 THIRD-PARTY 

INDRA SISTEMAS DE COMUNICACIONES SEGURAS S.L.U

 Spain

Net EU contribution

€ 304 981,25

Address

AV. DE BRUSELAS 35
28108 ALCOBENDAS 

Region

Comunidad de Madrid > Comunidad de Madrid > Madrid

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](#) 

Total cost

No data



TELEFONICA INNOVACION DIGITAL SL

 Spain

Net EU contribution

€ 217 612,50

Address

RONDA DE LA COMUNICACION S/N EDIFICO CENTRAL
28050 MADRID 

Region

Comunidad de Madrid > Comunidad de Madrid > Madrid

Activity type

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

Links

- [Contact the organisation](#) 
- [Participation in EU R&I programmes](#) 

Total cost

€ 498 387,50

 THIRD-PARTY

UNIVERSIDAD CARLOS III DE MADRID

 Spain

Net EU contribution

€ 187 512,50

Address

CALLE MADRID 126
28903 Getafe (Madrid) 

Region

Comunidad de Madrid > Comunidad de Madrid > Madrid

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



FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV

 Germany

Net EU contribution

€ 709 625,00

Address

HANSASTRASSE 27C
80686 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

€ 709 625,00



UNIVERSIDAD POLITECNICA DE MADRID

 Spain

Net EU contribution

€ 348 750,00

Address

CALLE RAMIRO DE MAEZTU 7 EDIFICIO RECTORADO

28040 Madrid 

Region

Comunidad de Madrid > Comunidad de Madrid > Madrid

Activity type

Higher or Secondary Education Establishments

Links

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

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

[HORIZON collaboration network](#) 

Total cost

€ 348 750,00



SCUOLA SUPERIORE DI STUDI UNIVERSITARI E DI PERFEZIONAMENTO S ANNA

 Italy

Net EU contribution

€ 233 750,00

Address

PIAZZA MARTIRI DELLA LIBERTA 33

56127 Pisa 

Region

Activity type

Higher or Secondary Education Establishments

Links

- [Contact the organisation](#)
- [Website](#)
- [Participation in EU R&I programmes](#)
- [HORIZON collaboration network](#)

Total cost

€ 233 750,00



MTU AUSTRALO ALPHA LAB

Estonia

Net EU contribution

€ 318 750,00

Address

NARVA MNT 7
10117 Tallinn

SME

Yes

Region

Eesti > Eesti > Põhja-Eesti

Activity type

Other

Links

- [Contact the organisation](#)
- [Participation in EU R&I programmes](#)
- [HORIZON collaboration network](#)

Total cost

€ 318 750,00



SPLOROTECH SL

Spain

Net EU contribution

€ 281 750,00

Address

**PARQUE TOMAS CABALLERO 2 SEXTO O
31006 PAMPLONA** 

SME 

Yes

Region

Noreste > Comunidad Foral de Navarra > Navarra

Activity type

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

Links

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

[HORIZON collaboration network](#) 

Total cost

€ 402 500,00



SMARTEX SRL SOCIETA' DI PRODOTTI E SERVIZI GIURIDICI INTERDISCIPLINARI

 Italy

Net EU contribution

€ 109 375,00

Address

**VIA MAZZINI 60 B
56017 S.Giuliano Terme** 

SME 

Yes

Region

Centro (IT) > Toscana > Pisa

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](#) 

Total cost

€ 156 250,00



ELLINIKO MESOGEIAKO PANEPISTIMIO

 Greece

Net EU contribution

€ 254 125,00

Address

ESTAVROMENOS

71004 Heraklion 

Activity type

Higher or Secondary Education Establishments

Links

[Contact the organisation](#) 

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

[HORIZON collaboration network](#) 

Total cost

€ 254 125,00



AKADEMIA GORNICZO-HUTNICZA IM. STANISŁAWA STASZICA W KRAKOWIE

 Poland

Net EU contribution

€ 206 250,00

Address

AL ADAMA MICKIEWICZA 30

30-059 Krakow 

Region

Makroregion południowy > Małopolskie > Miasto Kraków

Activity type

Higher or Secondary Education Establishments

Links

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

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

[HORIZON collaboration network](#) 

Total cost

€ 206 250,00



INSTITUT PO OTBRANA

 Bulgaria

Net EU contribution

€ 206 250,00

Address

prof. Tsvetan Lazarov blvd. 2

1574 Sofia 

Region

Югозападна и Южна централна България > Югозападен > София (столица)

Activity type

Research Organisations

Links

[Contact the organisation](#) 

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

[HORIZON collaboration network](#) 

Total cost

€ 206 250,00

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European Union, 2025