QUANTERA

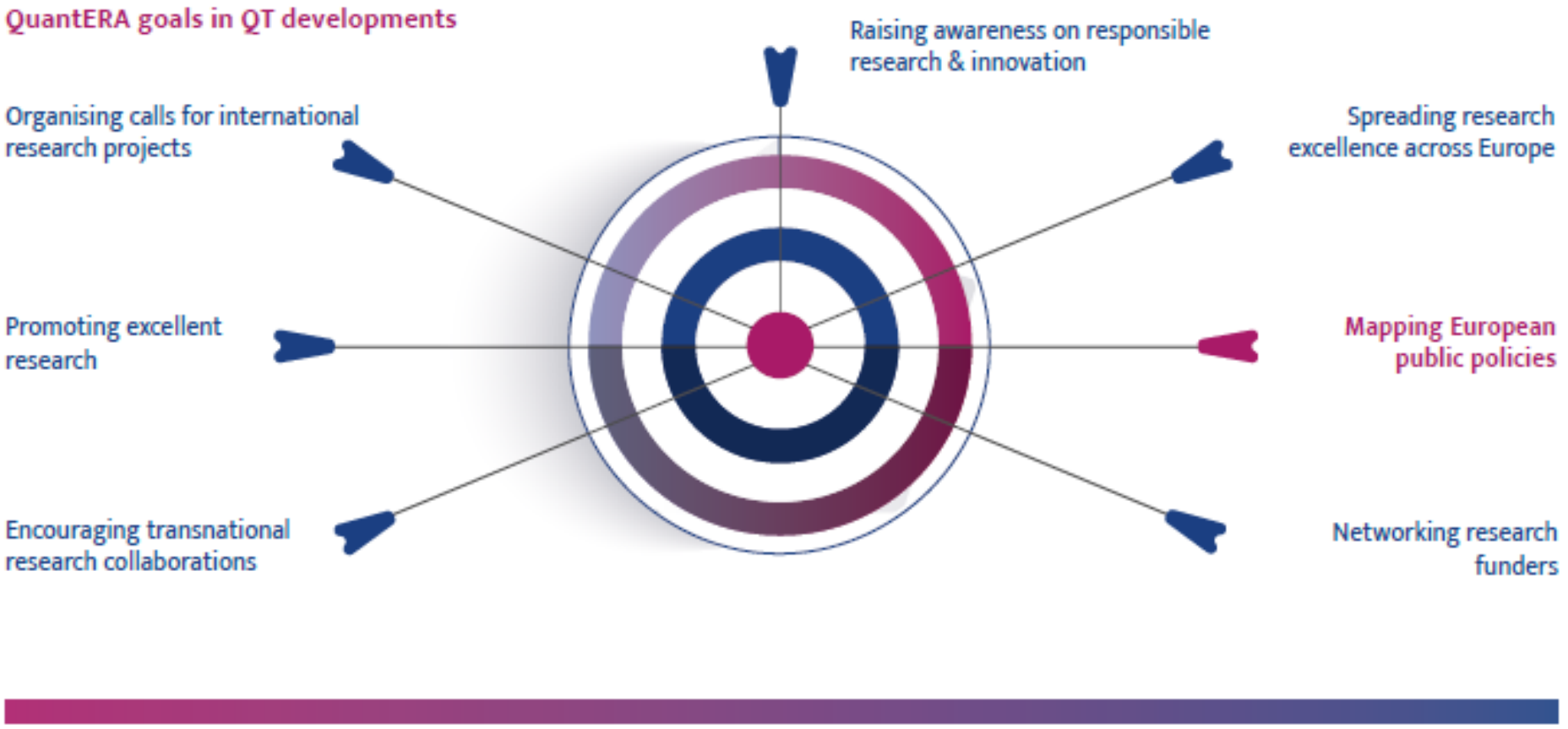
Quantum ideas are born in Europe

Multilateral Cooperation in Europe

Quantum Technologies

Christian Trefzger,
Policy Officer
CNECT.C2 – High Performance Computing and Quantum Technologies

Objectives


QuantERA goals in QT developments
Raising awareness on responsible research & innovation
Organising calls for international research projects
Spreading research excellence across Europe
Promoting excellent research
Mapping European public policies
Encouraging transnational research collaborations
Networking research funders

QuantERA overview

77
transnational projects

carried out by

400
national research teams

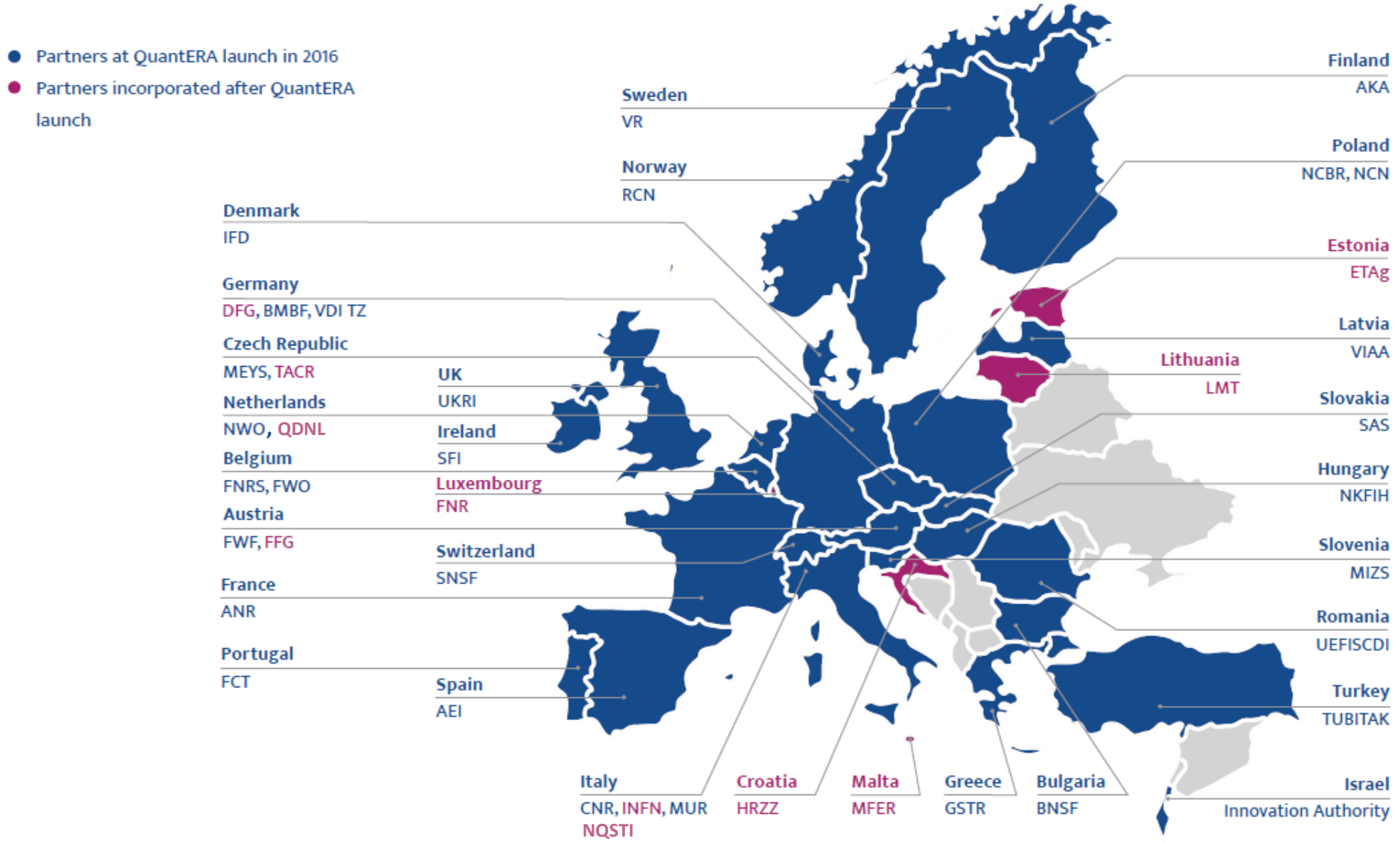
Calls for proposals

€32 M	€13 M	€43.5 M	ca. €33 M
CALL 2017	CALL 2019	CALL 2021	CALL 2023 (Pending)

launched in 2016 by
30 RFOs
from 26 countries

currently comprises
(as QuantERA II)
41 RFOs
from 31 countries

QuantERA Network

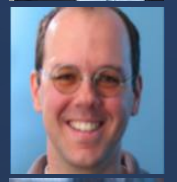


Strategic Advisory Board (SAB)

Alain Aspect
Institut d'Optique

Stefanie Barz
University of Stuttgart

Harry Burharm
University of Amsterdam
CWI



Tommaso Calarco
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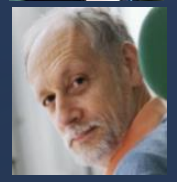

Nicolas Gisin
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Igor Jex
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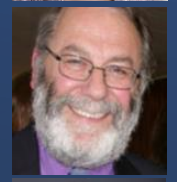
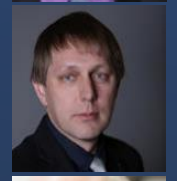


Sir Peter L. Knight
Imperial College



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Institute of Scientific Instruments of the CAS

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Max Planck Society

Yehuda Naveh
IBM Research Israel

Saverio Pascazio
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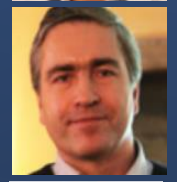
Vienna University of Technology

Andrew Shields
Toshiba Research Labs Europe



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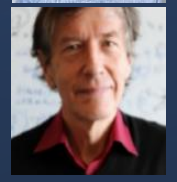
Maynooth University

Dominik Zumbühl University of Basel



Marek Żukowski
Uniwersytet Gdański

internationally recognised scientists and industry representatives

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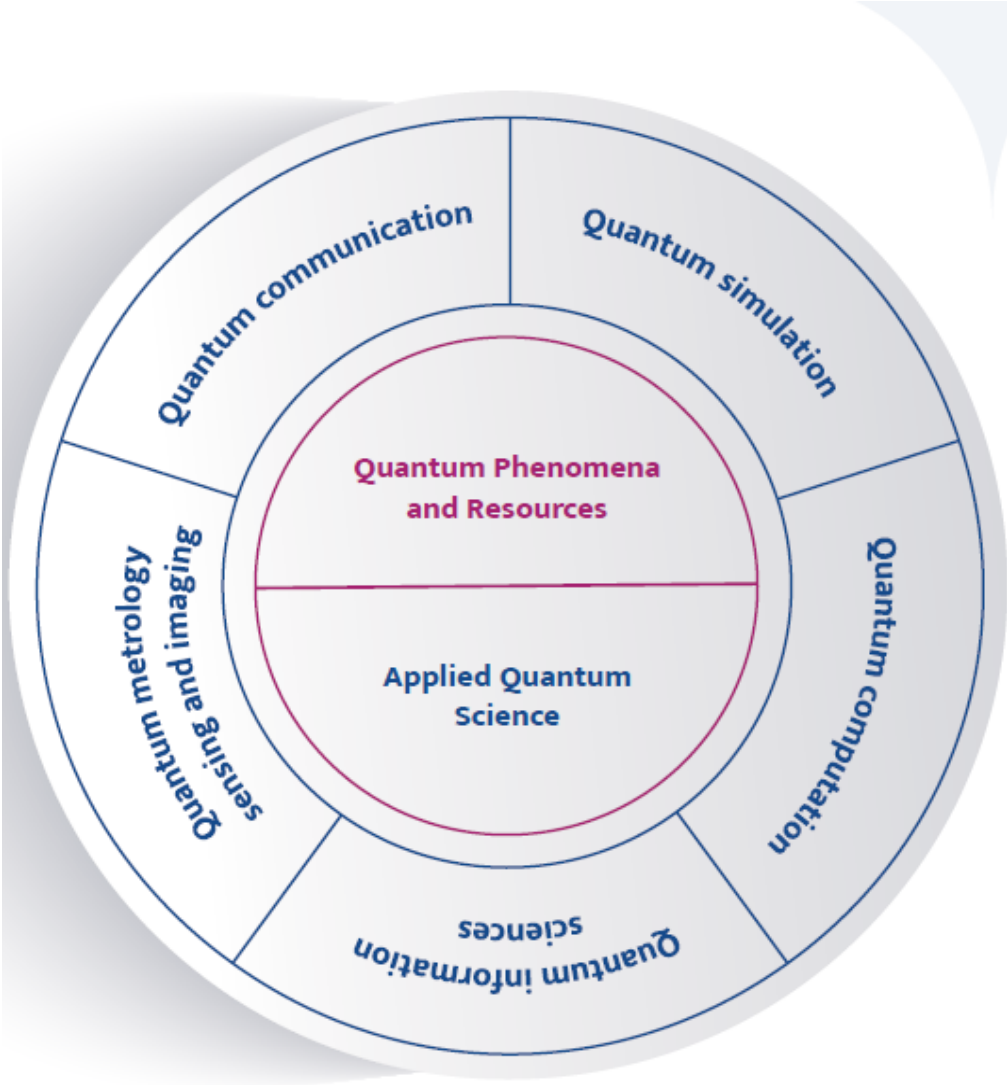
Calls for proposals 2021 and 2023

Calls are intended for projects exploring one of two topics:

Quantum Phenomena and Resources (QPR)
laying the foundations for the QT of the future

Applied Quantum Science (AQS)
translating quantum concepts into technological applications



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Funded projects:

26 completed
51 in progres

Proposals:

101 under evaluation

Out of 26 completed projects…

- 12 projects reported having **links with industry** (including 5 that explicity had a private partner in their consortium)
- 6 projects reported having **future plans of collaboration with industry**
- 22 projects have all their publications available in **open access** (via open access journals or through the arXiv)
- 16 projects reported specific **Responsible Research and Innovation (RRI) activities**

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Mapping of public policies

QuantERA monitors public policies in Europe to provide information about Europe-wide approach in Quantum Technologies

2020

2023

Collaboration with Quantum Flagship

Close collaboration with the European Quantum Flagship initiative is constantly maintained.

- Quantum Flagship and European Commission representatives are invited to all strategic QuantERA meetings to discuss all developments and ensure the coherence with the EU's policy in quantum.
- QuantERA representatives are present and active at all strategic events and actions organised by Flagship.
- Quantum Flagship representatives are members of the QuantERA Strategic Advisory Board.

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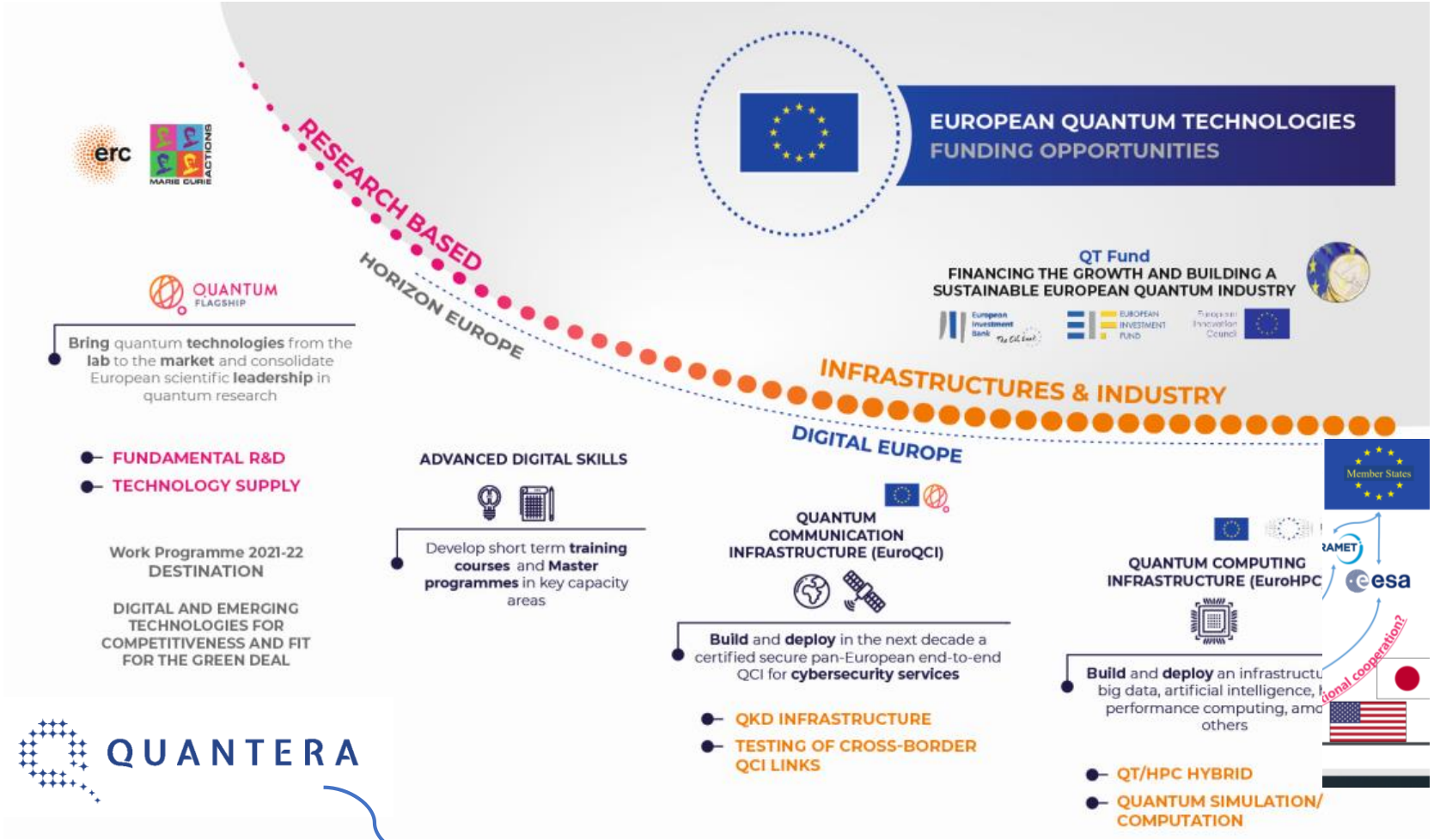
Collaboration with Quantum Flagship



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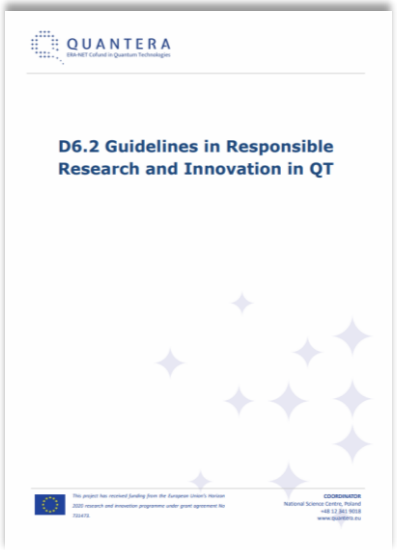
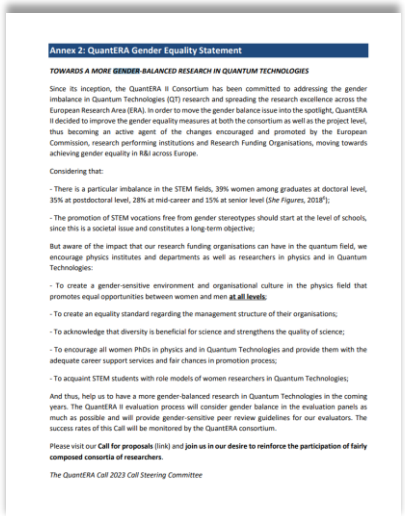
Responsible Research & Innovation

The QuantERA Consortium has set forth **Guidelines in Responsible Research and Innovation in QT**



QuantERA II Call Announcements included **Gender Equality Statement** which was highlighted in the policy brief of GENDERACTION project: “How to promote gender in partnerships” as a promising practice in promoting gender equality.



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Spreading excellence

The QuantERA Programme incorporates **17 Research Funding Organisations from 15 Widening Countries**: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Luxembourg, Poland, Portugal, Romania, Slovakia, Slovenia and Turkey

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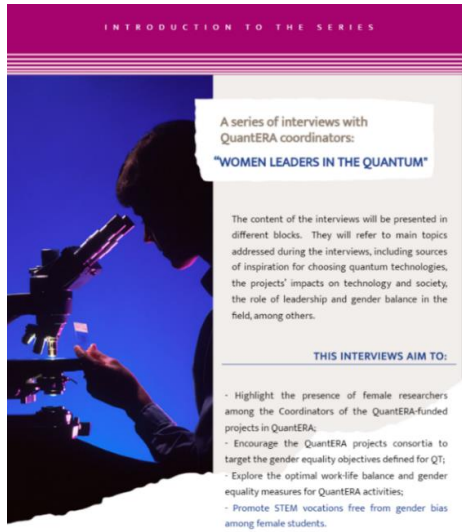
Gender balance in QT research

QuantERA focused on **gender in quantum** by conducting interviews with QuantERA women coordinators of projects funded in the 2017, 2019 and 2021 Calls.

The interviews aimed to:

- Highlight the presence of women researchers among the Coordinators of the QuantERA-funded projects;
- Encourage the QuantERA projects consortia to target the gender equality objectives defined for QT;
- Explore the optimal work-life balance and gender equality measures for QuantERA activities;
- Promote STEM vocations free from gender bias among women students.



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Industry engagement

Guidance report on industry engagement for the public sector, 2020

The report states examples of mechanisms targeted at **enhancing industry engagement** and collaboration with the funding councils and the **research base** and ends with a **list of recommendations** on promoting entrepreneurship and talent development.

Guidance on actions for QT technology developers, 2021

The report provides a list of recommendations to new developers about becoming market ready and preparing a value proposition.

Commercialising quantum research workshop, 2021

The workshop focused mainly on:

- IP concerns when commercialising research: Patent and competition landscape
- Building a value proposition and becoming market ready
- Identifying business opportunities for QT
- Examples of leading research to commercialisation

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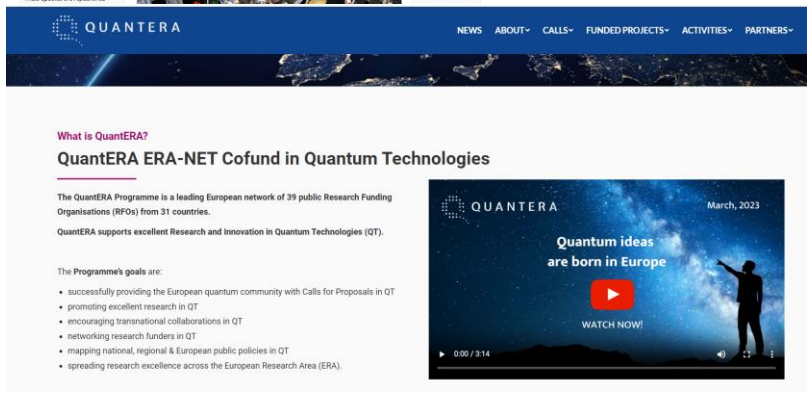
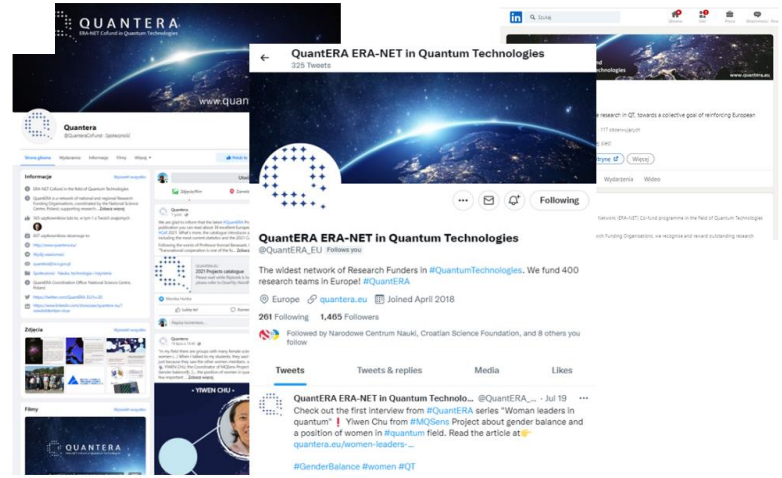
Dissemination & Communication

- Website
- Social media: Twitter, LinkedIn, Facebook
- PR materials: leaflets, brochures, promotional films, etc.
- Publicatons, articles
- QuantERA and other QT events





QuantERA Impacts

on developments in the quantum technologies area

Mobilisation of efforts and resources

Closer coordination, greater mobilisation and pooling of resources between regional, national and EU research programmes

Alignment of national initiatives

Increased awareness of national and regional research and innovation interests followed by establishment and alignment of plans and initiatives

Enhancement of trans-national collaboration

Increased transnational collaboration, especially on topics that are complementary to the EU work programmes

Boost of research capacity

Expansion of European quantum research capacity and inducement of scientific developments

Indication of future developments

Identification of promising directions and drawing outlines for future research programming

Development of industry connections

Incentive for setting up various forms of collaborations with industry

Spread of excellence

Inclusiveness of widening countries in the Programme's activities and quantum research

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Partner's view

"We see that maintaining support for the topic brings predictability to the research community which positively influences its pro-activeness and initiatives. Such support enables sustainable collaborations to be planned and formed. As a result, it improves the quality of research (projects), makes stronger networks and – hopefully – more local projects qualifying for support.

Nicoleta Dumitrache
UEFISCDI, Romania

"The robustness of the partnership in QuantERA is something that should be shared and replicated, as QuantERA not only managed to develop an efficient 'know-how' throughout the past years, but also developed a trust among its partners that allows for the smooth running of the Programme.

Sergueï Fedortchenko
ANR, France

"In QuantERA, we have been able to bring together many, many agencies from almost all the countries in Europe. It is extremely important and has contributed to reinforcing and even building a great quantum community working on all subjects related to quantum science and technologies.

Elisabeth Giacobino
Agence Nationale de la Recherche (ANR)

QuantERA Consortium Partners' view

97%

of partners expressed satisfaction with participation in QuantERA

75%

of partners find QuantERA important for alignment of national research policies in QT in Europe

63%

of partners appreciate QuantERA in identifying common call topics in QT

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QuantERA Project Coordinators' voice

From my experience as a project coordinator, QuantERA is an excellent tool for collaborative research devoted to fundamental science.

Chiara Macchiavello
Coordinator of the QuiCHE Project

QuantERA connects the funding efforts of national funding agencies and the EU. This is an important mechanism since our work is not yet at market product level. QuantERA funds fundamental research and this was perfect for our problem. (…)

All QuantERA projects cover research for the future.

Marzena Szymańska
Coordinator of the Interpol Project

One big advantage of QuantERA for us, as a private company – startup involving quantum computing, is the indirect connection that we have with potential customers, the feedback that we get from them is incredibly valuable for us. Thank you, QuantERA.

Ramon Szmuk
Coordinator of the QuCoS Project

For me, QuantERA is about teaming up with incredible scientists from across Europe. It's an absolutely amazing opportunity to be on the cutting edge of modern research.

Adam Wojciechowski
Coordinator of the Mf-QDS Project

QuantERA is the glue that connects multiple scientists who are interested in different aspects of the research. This glue brings people together.

Itamar Sivan, CEO of Quantum Machines

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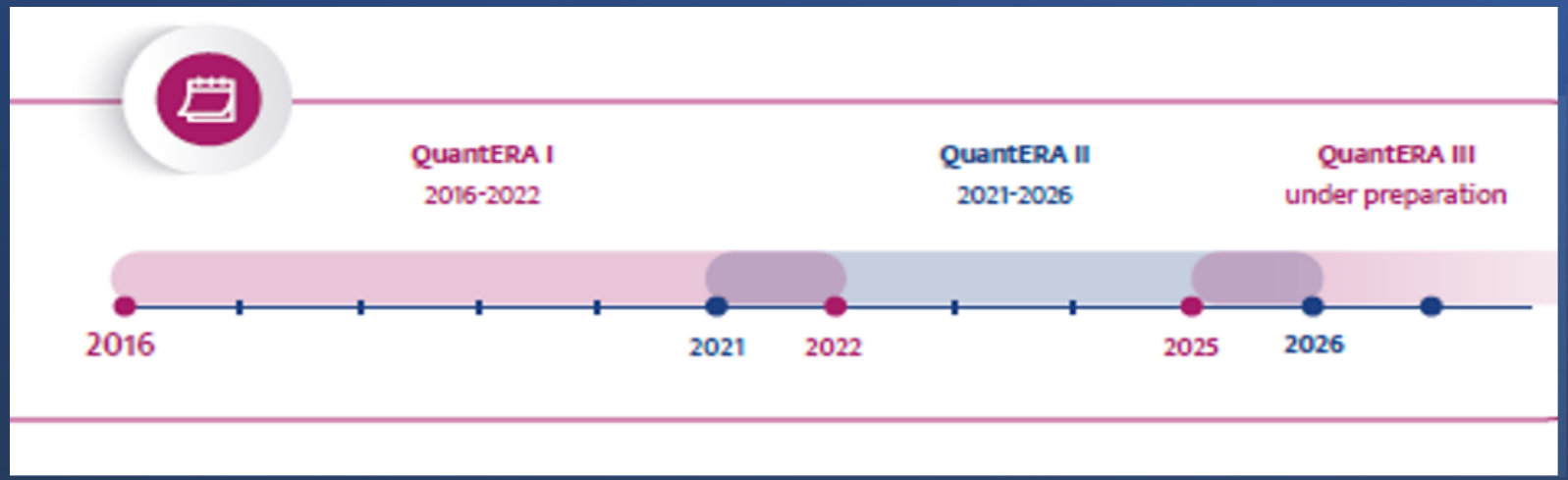
Frame of action



QuantERA I, II
Horizon 2020

ERA-NET Cofund

What next?

QuantERA III
Horizon Europe

RIA + FSTP
Cofunding

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QuantERA III

Work Programme 2023-2024:

HORIZON-CL4-2024-DIGITAL-EMERGING-01-42: Stimulating transnational research and development of next generation quantum technologies, including basic theories and components (Cascading grant with FSTP)

Envisaged outcome:

- ✓ **support to transnational projects** in quantum technologies
- ✓ **fostering synergy** between European, national and regional initiatives
- ✓ **promoting broader partnerships** between the European stakeholders in quantum technologies

Scope:

- ✓ implementing **calls for transnational projects proposals**
- ✓ support for the **networking and coordination of national activities** in support of the Quantum Flagship
- ✓ **filling the gaps in the Strategic Research Agenda**, not covered by the Flagship activities
- ✓ support for transnational efforts in guaranteeing availability of critical technologies, materials and resources essential for a competitive **development of next generation quantum technologies** and central to strategic supply chains for an autonomous and technologically sovereign pan-European quantum ecosystem
- ✓ support for early-stage **involvement of industry** in transnational R&D agendas to next generation quantum technologies, emphasizing high inclusion and participation of SME and start-ups in realizing an innovative and agile pan-European quantum ecosystem

QuantERA directions fit perfectly to the expected outcome and the indicated scope.
QuantERA network can guarantee high quality of implementation and its results.

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ERA-NET Cofund in Quantum Technologies

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