



Irish Involvement in QuantERA

FET ERA-NET Co-fund Action in Quantum
Technologies

Science Foundation Ireland

Key Information

Founded in
2000

Officially
established in
2003

€1.9bn
Spend and
€2.4bn

Committed
to date in

4,470
Awards

As at 31 December 2015

700 Live Awards

with future commitments totaling

€426m

SFI Agenda 2020

Excellence and Impact



1 To be the **Best** science funding agency in the world at creating **impact** from **excellent** research and demonstrating clear value for money invested

2 To be the exemplar in **building partnerships** that **fund excellent science** and drive it out into the market and society



3 To have the most engaged and **scientifically informed public**

4 To represent the **ideal modern public service organisation**, staffed in a lean and flexible manner, with efficient and effective management.



Science Foundation Ireland Position in the RDI Landscape

Department of Jobs, Enterprise & Innovation



Supporting Indigenous Irish
Companies



Supporting Research
and Innovation
for the Future



Supporting Multinational
Companies in Ireland

SFI's Legal Remit

- Science Foundation Ireland (SFI) funds **oriented basic** and **applied research** in the areas of science, technology, engineering and mathematics (STEM), which promotes and assists the development and competitiveness of industry, enterprise and employment in Ireland.

Oriented basic research is research that is carried out with the expectation that it will produce a broad base of knowledge that is likely to form the background to the solution of recognised, or expected, current or future problems or possibilities.

Applied research is an original investigation undertaken to acquire new knowledge and is directed primarily towards a specific practical aim or objective. The results of applied research are intended primarily to be valid for a single or limited number of products, operations, methods, or systems.

What SFI actually does

Makes **grants** to
Higher Education
Institutes (HEIs) in
Ireland

Based on competitive,
international merit
review for **scientific
excellence** and
impact

Trains
people

**Leverages
other research
funding** e.g.
Industrial / EU /
Charitable/
Philanthropic/
International

Builds
infrastructure

Significant industrial
linkages
**attracting,
anchoring** and
**starting
companies**

Produces
**scientific
results** and
technology



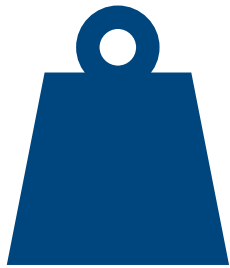
+ **People and technology** transfer to Industry and Society

+ Industry **more competitive**, better public services

+ **Higher value** products/services

+ **Higher living standards**

Impact and Excellence Concept



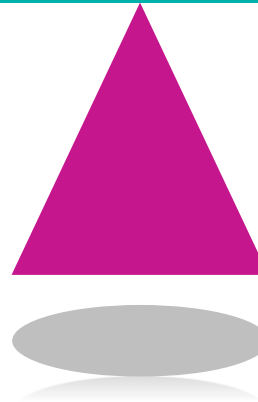
EXCELLENCE

Ensuring
Quality/Excellence
both of the person and
of the proposed
programme via
International Peer/Merit
Review



IMPACT

Increase focus on applicants
**demonstrating and
delivering impact
from research** due to an
absolute need to demonstrate
to government and the public,
**the value to the Irish
economy and society
of public funds spent
on research**



What Science Foundation Ireland delivers for it's annual €160m budget

A research engine of **3,000** people led by **450** leading scientists

12 world leading research centres spanning several HEIs and industry

750 Active Research Projects

Generating Annually

3,000 scientific publications

17 spin out companies formed

1200 collaborations with industry (50% MNCs, 50% SMEs)

30 licensed technologies

80 patent filings, **25** patents awarded

€170m in leveraged non-SFI funding

1,850 international collaborations in over 60 countries

500 primary schools received Discover Primary Science and Maths Awards

500,000 citizens reached through SFI Discover Programme



International Collaborations



SFI H2020 Joint Transnational Programming Mechanisms

Joint
Programming
Initiatives

European
Research Area
Networks
(ERA-NETs)

Evolution of ERA-NET Instrument

	ERA-NET	ERA-NET +	ERA-NET Co-fund
MAIN GOAL	Transnational coordination of national programmes (including joint calls)	Single Joint Transnational Call	Single Joint Transnational Call with EC contribution + Additional activities (including other joint calls)
IMPLICATION OF MS	MS agree and fund Joint calls/programmes	MS contribute to Joint call	MS contribute to Joint call And additional activities
IMPLICATION OF EU	EU funding for Coordination	EU contributes to Joint call	EU contributes to Joint call and additional Activities (Unit Costs)

ERA-NET Co-fund in H2020

The ERA-NET instrument under Horizon 2020 is designed to support public-public partnerships in their preparation, establishment of networking structures, design, implementation and coordination of joint activities as well as topping up of single joint calls and of actions of a transnational nature.



FET ERA-NET Co-fund in Quantum Technologies

- Future Emerging Technologies Proactive nurtures emerging themes, seeking to establish a critical mass of European researchers in a number of promising exploratory research topics.
- 2016/2017 Work Programme contained a call for a FET ERA-NET Co-fund in Quantum Technologies.
- **Specific Challenge:** *Research on Quantum Technologies in Europe is currently funded through several targeted initiatives at a European, national and regional level. The aim is to foster synergy between these initiatives in the area of Quantum Technologies in order to create collaboration among the best groups in Europe and encourage broader partnerships around them to spread excellence and to strengthen the European footprint of this emerging technology area.*

Irish expertise in Quantum Technologies

- Ireland has a solid academic research base in quantum technologies which can be leveraged by integration with similar EU activities within QuantERA.
- Relevant Irish activities span areas such as:
 - Advanced and quantum materials, including graphene and topological insulators and semiconductors;
 - Quantum transport and processes;
 - Nanostructures;
 - Nanomanufacturing;
 - Plasma physics;
 - Photonics;
 - Quantum control

QuantERA

- Consortium of 27 research funding organisations from 22 countries.
- Co-funded by the European Commission through an ERA-NET action (up to 33% of the research funding). Need to demonstrate added value to Europe.
- Planned total budget of approx. €30M.
- The call will be complemented by a range of additional activities e.g. monitoring funded research; mapping future challenges in quantum technologies; facilitating interactions with industrial players.

Scientific Scope of QuantERA

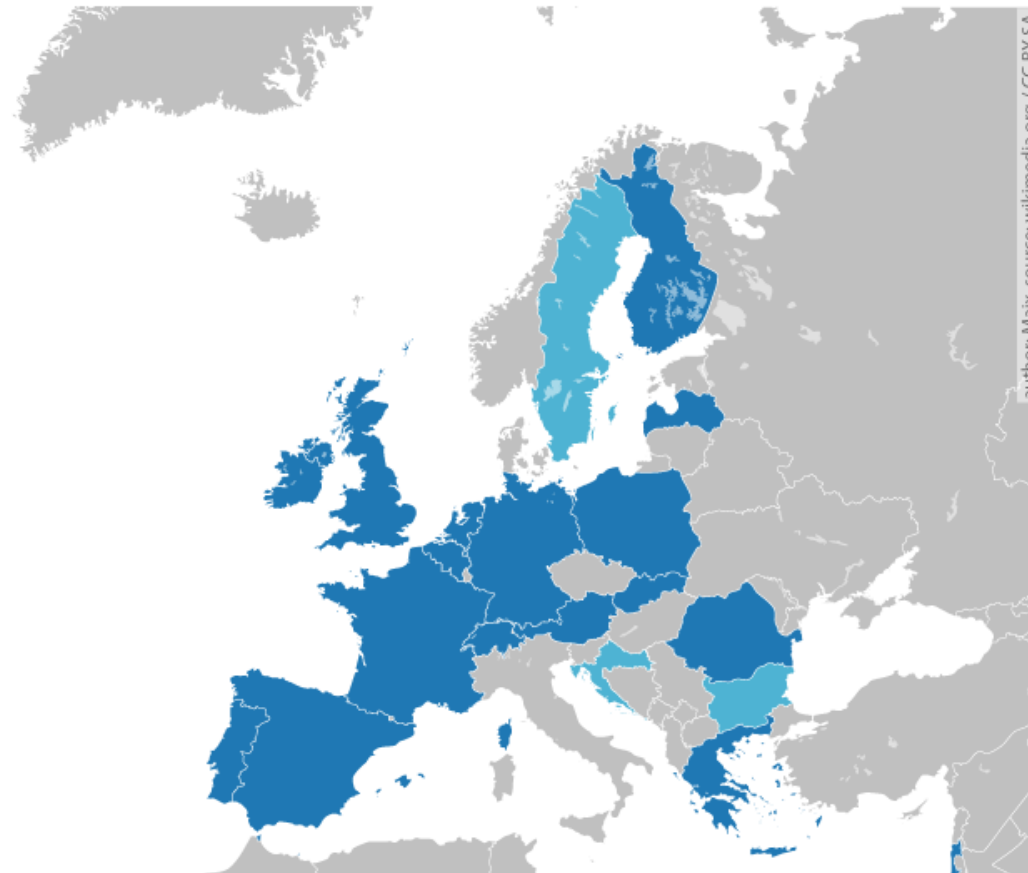
- New principles, experiments, technologies, devices and systems that exploit quantum phenomena
- Demonstration of advancements compared to classical or other quantum-based technological options
- Exploration of advanced quantum-enabled applications in areas of scientific, industrial or societal interest

QuantERA will target quantum technologies with lower technology readiness levels, where the scope for international cooperation is greatest and issues related to exploitation are not expected to impose significant constraints on collaborative research activities.

QuantERA Partners

Partners

- Austria
- Belgium
- Croatia
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Greece
- Israel
- Ireland
- Italy
- Latvia
- Poland
- Portugal
- Romania
- Slovakia
- Spain
- Switzerland
- The Netherlands
- United Kingdom



SFI Involvement in QuantERA

- SFI have committed to investing in QuantERA, should the EC Proposal be successful.
- The specifics of the QuantERA transnational call are currently under discussion.
- The call framework must allow for the different research funding terms of the different Member States, e.g. Irish research teams will need to be within SFI remit and adhere to SFI's eligibility criteria, in addition to fulfilling the terms and conditions and eligibility criteria of the QuantERA call.
- SFI will fund and sign grant agreements with Irish research teams.

Benefits to Ireland of engaging in Joint Transnational Initiatives

- Developing Connections and Partnerships
- Learn from others
- Leading by example
- Opportunities to lead and influence in Europe

Expected Impact by European Commission

- Closer **coordination, mobilization and pooling of resources** between regional, national and EU research programs in the area of QT
- Increased **transnational collaboration** on QT, especially on topics that are complementary to the EU work programs in this area
- Spreading of **excellence** on QT across Europe
- Establishment and **alignment of national and regional research and innovation plans** and initiatives in the area of QT
- Identification of **promising directions** for future research programming through a comprehensive overview on multiple lines of development across Europe
- Increased **awareness of national and regional** research and innovation **interests, synergies and complementarities** in the area of QT and their applications

QuantERA Timeline

- Proposal Submitted to European Commission April 2016
- Decision expected Autumn 2016 (approx. 5 month timeframe)

If successful,

- Call Launch: **January 2017**
- Funding decisions: late 2017

Visit SFI

<http://www.sfi.ie/international/european-research-area-era/h2020/horizon-2020-%E2%80%93-joint-transnational-programming-mechanisms.html>



INTERNATIONAL

Science Foundation Ireland Programmes With An International Focus

European Research Area (ERA)

- > Horizon 2020
- > Science Europe

International Strategic Cooperation Award Programme (ISCA)

SFI St. Patrick's Day Science Medal

Links And Resources

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HORIZON 2020 – JOINT TRANSNATIONAL PROGRAMMING MECHANISMS

Effective research is paramount when tackling the key societal challenges that face us today. Some of these challenges go beyond the capabilities of individual research groups, instead requiring a collaborative and coordinated effort.

Joint Transnational Programming Mechanisms aim to pool research expertise and resources to address these challenges through consortia of research funding agencies. These consortia coordinate research funding, targeting areas of strategic importance.

Outlined in Horizon 2020, the EU Framework Programme for Research and Innovation, there are two types of initiative that facilitate this:

- *Joint Programming Initiatives (JPI's)*
- *European Research Area Networks (ERA-Nets)*