



Management and knowledge of European research model and promotion of research results

3. Horizon 2020

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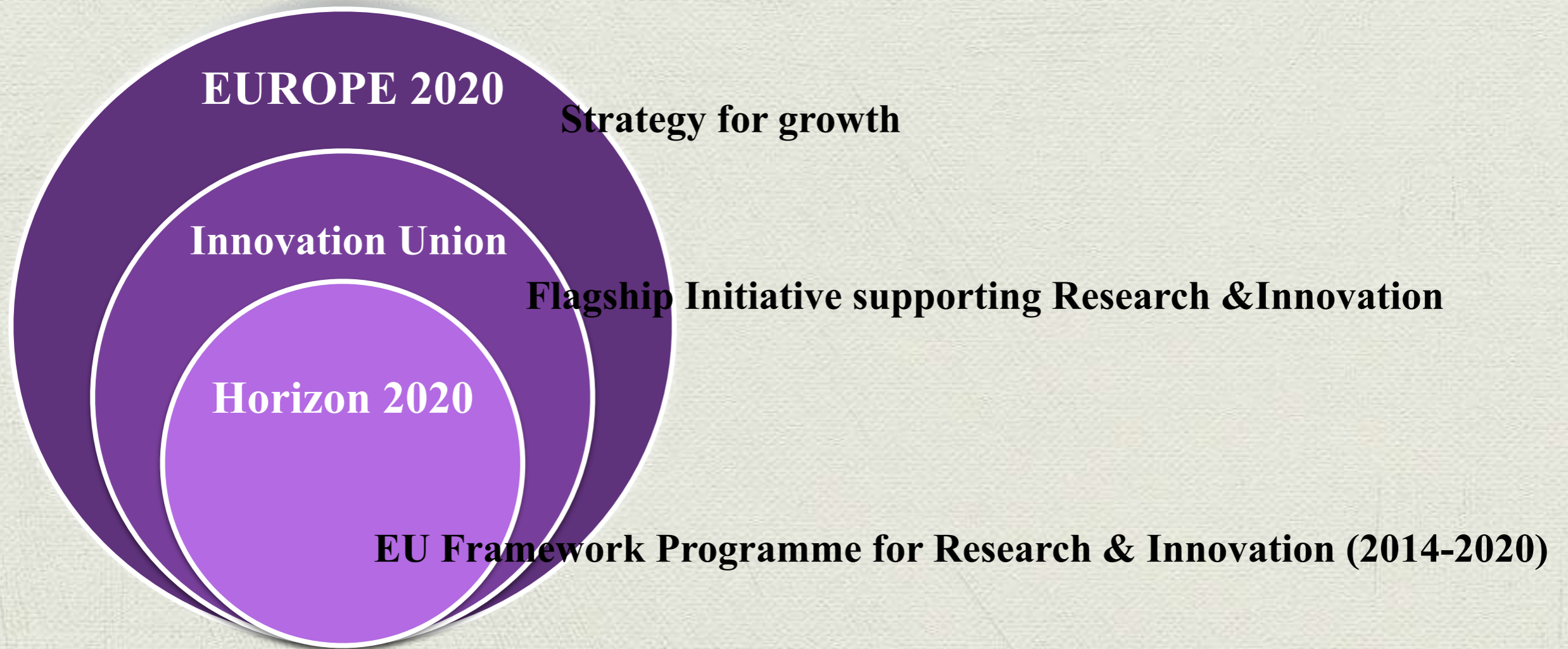
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Horizon 2020



What is Horizon 2020

The [EU programme for research and innovation](#) for 2014-2020

- ♦ A **budget** of nearly €80 billion in current price*
- ♦ A **core part of Europe 2020, Innovation Union & ERA:**
 - * Responding to the economic crisis to invest in jobs and growth
 - * Addressing people's concerns about their livelihoods, safety and environment
 - * Strengthening the EU's global position in research, innovation and technology

*current price are the amount that will be effectively requested to the budgetary authority and include inflation effect. Constant price do not factor in an inflation effect and "fix" all amounts at the value of a given year



What is new in Horizon 2020

- ♦ **An integrated programme covering the entire cycle from research to innovation**, structured in 3 pillars and 5 cross-cutting initiatives
- ♦ **Challenge based** - tackling major challenges facing EU society, e.g. health, clean energy, transport
- ♦ Opportunities for individual researchers and groups of researchers, including individual grants, funding for European collaborative research, mobility, close to market activities
- ♦ **Strong focus on Small and Medium Enterprise (SME)**
- ♦ **Open to the rest of the world**
- ♦ **Major simplification** - for all companies, universities, institutes in all EU countries and beyond
- ♦ The **Participant Portal** is the single gateway to funding-related interactions between applicants and the EC / Agencies



Horizon 2020 structure

EXCELLENT SCIENCE

Strengthening the EU's excellence in science in the world, growing talent in Europe, and attracting leading researchers plan.

INDUSTRIAL LEADERSHIP

Consolidation of European leadership in the field of enabling and industrial technologies, promoting innovation in SMEs with high growth potential and promotion an easier access to risk capital funding for R & D.

SOCIET. CHALLENGES

Response to major social challenges identified in the Europe 2020 strategy, supporting full cycle from research to market, with a new focus on innovation related activities in all strategic areas.

Science with and for Society (SWAFS)

Spreading Excellence and Widening Participation

Cross Cutting Activities (Focus Area)

European Institute of Innovation and Technology (EIT)

Joint Research Center(JRC)

EURATOM

Horizon 2020 structure

EXCELLENT SCIENCE

- European Research Council ([ERC](#))
- Marie Skłodowska-Curie actions ([MSCA](#))
- Future and Emerging Technologies ([FET](#))
- Research Infrastructures ([RI](#)) including [e-infrastructure](#)

INDUSTRIAL LEADERSHIP

- Leadership in enabling and industrial technologies ([LEITs](#))
 - * ICT ([link](#))
 - * Nanotechnologies ([link](#))
 - * Advanced Materials ([link](#))
 - * Biotechnology ([link](#))
 - * Advanced manufacturing and processing ([link](#))
 - * Space ([link](#))
- Access to risk finance ([link](#))
- Innovation in SMEs ([link](#))

SOCIET. CHALLENGES

- Health (SC1)
- Food (SC2)
- Energy (SC3)
- Transport (SC4)
- Environment (SC5)
- Inclusive Societies (SC6)
- Secure Societies (SC7)

<http://ec.europa.eu/programmes/horizon2020/en/h2020-section/societal-challenges>

Science with and for Society ([SWAFS](#))

Spreading Excellence and Widening Participation

Cross Cutting Activities (Focus Area)

European Institute of Innovation and Technology ([EIT](#))

Joint Research Center([JRC](#))

EURATOM

Rationale for 3 Pillars

- ♦ Clear **distinction between funding for bottom-up, excellence based research** (Excellent Science) and **research addressing specific challenges** (Societal Challenges)
- ♦ Dedicated **part** of the programme **targeted primarily at SME** (Industrial Leadership)
- ♦ Programme **integrated funding** for research and innovation projects: funding for innovation projects within all 3 pillars
- ♦ Clear and detailed definitions of each pillar's **key objectives**



Approach to WP and calls

More strategic work programmes (WP)

- ♦ Strategic Programme defines overall focus areas
- ♦ **Focusing on areas where EU level action has greatest impact**
- ♦ With a coherent set of actions from research to innovation
- ♦ Greater integrated across different parts of H2020

Less prescriptive calls

- ♦ More open to innovative proposals
- ♦ **Stronger emphasis on impact**
- ♦ **Stimulating inter-disciplinary projects**

Two year work programmes

- ♦ Greater participation in setting work programmes
- ♦ More advanced notice for applicants



Strong focus on SME

- ♦ **In collaborative projects** - 20% of total budget for societal challenges and enabling & industrial technologies to go to SMEs
- ♦ A **new SME instrument** in all societal challenges and enabling & industrial technologies (7% of relevant budgets)
- ♦ **Simplification** of particular benefit to SMEs (e.g. single entry point)
- ♦ **Eurostars joint programme** with Member States and associated countries for research-intensive SMEs
- ♦ Support measures under '**Innovation in SMEs**' - networking and brokering; SMEs to 'spin in' technology by connecting to researchers and innovators across Europe
- ♦ **Access to risk finance** to have a strong SME focus - (debt and equity facilities)

H2020: Major simplification

- ♦ **A single set of rules for all funding under H2020**

- ✓ Fewer, more flexible, funding instruments
- ✓ More coherent with other EU Programmes

- ♦ **Simpler reimbursement: 1 project = 1 funding rate**

- ✓ 100% of the total eligible costs (70% for innovation actions)
- ✓ **Single flat rate for indirect costs (25% of total eligible costs)**

Only costs eligible according to EU rules will be reimbursed

- ♦ **Faster time to grant**

- ✓ Within 8 months of call deadline in most cases (5 month max for evaluation + 3 month for GA signature)
- ✓ No more negotiation: each proposal evaluated 'as it is'



H2020: Major simplification

♦ Fewer, better targeted controls and audits

- ✓ Lowest possible level of requirements for submission of audit certificates without undermining sound financial management
- ✓ Audit strategy focused on risk and fraud prevention



♦ Coherent implementation

- ✓ Through dedicated agencies with central support service within the EC
- ✓ Single IT system

♦ Simplification in grant agreements

- ✓ No time-sheets for personnel working full time (100%) on a project
- ✓ broader acceptance of participants accounting practices for direct costs, flat rate for indirect costs

Who is eligible for funding?

- ♦ All **28 Member States** and Overseas Countries and Territories (**OCT**) linked to the Member States
- ♦ **Associate Countries (AC)** to H2020 (Association to Horizon 2020 takes place through the conclusion of an International Agreement). List of AC can be updated at any time: http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cp/h2020-hi-list-ac_en.pdf
- ♦ **Third Countries** (whether they can receive funding depends on GDP / list in WP)
- ♦ Industrialised countries (e.g. USA, Canada, Japan), BRICs (Brazil, Russian, India, and China) countries, and Mexico not eligibles for funding, with some exceptions

For details on list of eligible countries check Annex A of H2020 General Annex
http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-ga_en.pdf

H2020 - Types of Action

For Researchers

Type of Action ¹	Code	Minimum Conditions ²	Funding Rate	Typical Duration	Average EC Contribution	Aim
Research & Innovation Action	RIA	≥ 3 legal entities from 3 MS/AC	100%	36-48 months	€ 2.0 - 5.0M	collaborative research projects
Innovation Action	IA	≥ 3 legal entities from 3 MS/AC	70% ³	30-36 months	€ 2.0 - 5.0M	produce plans & arrangements or designs for new, altered or improved products, processes or services
Coordination & Support Action	CSA	1 legal entity	100%	12-30 months	€ 0.5 - 2.0M	accompanying measures (standardisation, dissemination, policy dialogues etc.) no research
MSCA ⁴ (except Cofund)	MSCA		100%	MSCA will be explained later		facilitate mobility of researchers for training & career development
ERC Grants	ERC	1 legal entity in MS/AC	100%	60 months	Starting: ≤ € 2.0M Consolidator: ≤ € 2.75M Advanced: ≤ € 3.5M	support excellent investigators and their research teams to pursue ground-breaking, high-gain/ high-risk research
Prizes	PRI	1 legal entity	n/a	n/a	variable; see respective topic	<ul style="list-style-type: none"> - recognise past achievements - induce future activities
SME Instrument	SME	1 SME in MS/AC	3 phases: <ul style="list-style-type: none"> • Phase 1: lump sum of € 50K / project • Phase 2: € 1 - 2.5M / project (1-2 years) (70% of eligible costs reimbursed) • Phase 3 : no funding 			combination of demonstration activities (testing, prototyping, ...), market replication
Fast Track to Innovation	FTI	≤ 5 legal entities from 5 MS/AC	70% ³	tbd	≤ € 3.0M	produce plans & arrangements or designs for new, altered or improved products, processes or services

¹ Defined in the Work Programme.

² Additional conditions may be listed in the respective Work Programmes.

³ 100% for non-profit organisation (= any legal entity except companies)

⁴ MSCA = Marie Skłodowska Curie Actions

H2020 - Types of Action

For Public Sector and other Funding Bodies, Programme Managers etc. (Cofund Actions)

Type of Action ¹	Funding Code	Minimum Conditions ²	Funding Rate	Typical Duration	EC Contribution	Comment
MSCA Cofund ³	MSCA Cofund	1 legal entity	50%	36-60 months	≤ € 10.0 M	Co-funding of regional, national & international doctoral & fellowship programmes
ERA-NETs	ERA-NET	≥ 2 legal entities in MS/AC	33%	60 months	variable, see respective topic	coordinate research efforts of participating MS/AC in the field described & implement joint transnational call for proposals with EU co-funding
Pre-Commercial Procurement	PCP	≥ 3 public procurers from MS/AC	70%	18-48 months for 2 Phases: A) Preparation B) Execution	variable, see respective topic	enable the public sector as a technologically demanding buyer to encourage research, development and validation of breakthrough solutions in areas of public interest
Public Procurement of Innovative Solutions	PPI	≥ 3 public procurers from MS/AC	20%	18-48 months for 2 Phases: A) Preparation B) Execution	variable, see respective topic	enable trans-national buyer groups of procurers to share the risks of acting as early adopters of innovative goods or services which are not yet available on a large-scale commercial basis

non-competitive action

Most common types of Action

Research and Innovation action (RIA)

primarily consisting of activities aiming to establish **new knowledge** and/or to explore the **feasibility** of a new or improved technology, product, process, service or solution

basic and applied research, technology development and integration, testing and validation on a small scale prototype in a laboratory or simulated environment

Innovation action (IA)

primarily consisting of activities directly aimed at **producing plans and arrangements** or **designs** for new, altered or improved products, processes or services

prototyping, testing, demonstrating, piloting, large-scale product validation and market replication

Coordination and support action (CSA)

Consists primarily of **accompanying measures** which could include standardisation, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogue and mutual learning exercises and studies, include design studies for new RI, strategic planning networking and coordination between programmes in different countries

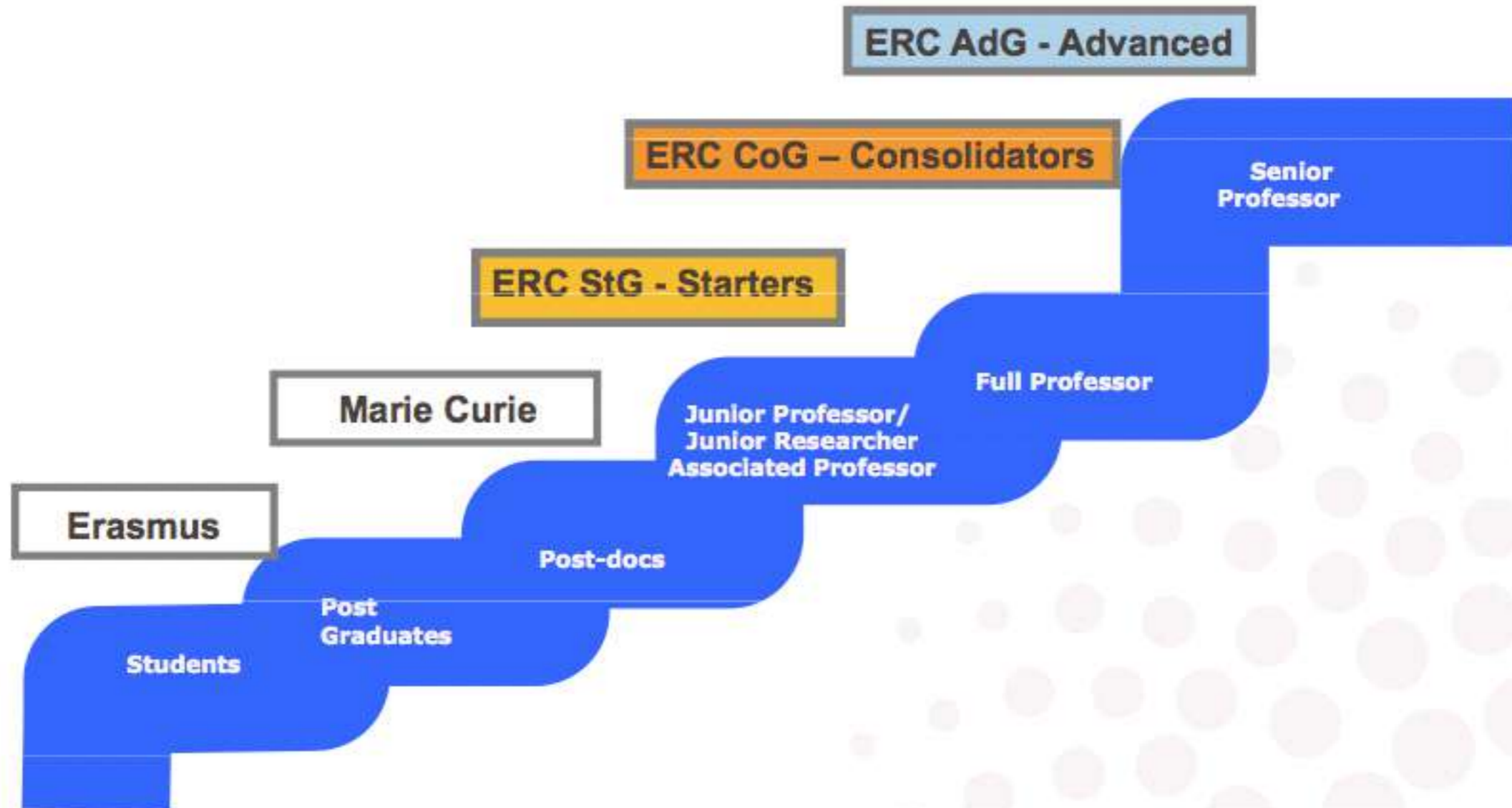
Horizon 2020

Excellent Science Pillar



Before starting with Excellent Science Pillar overview...

Research career development “with EU grants”

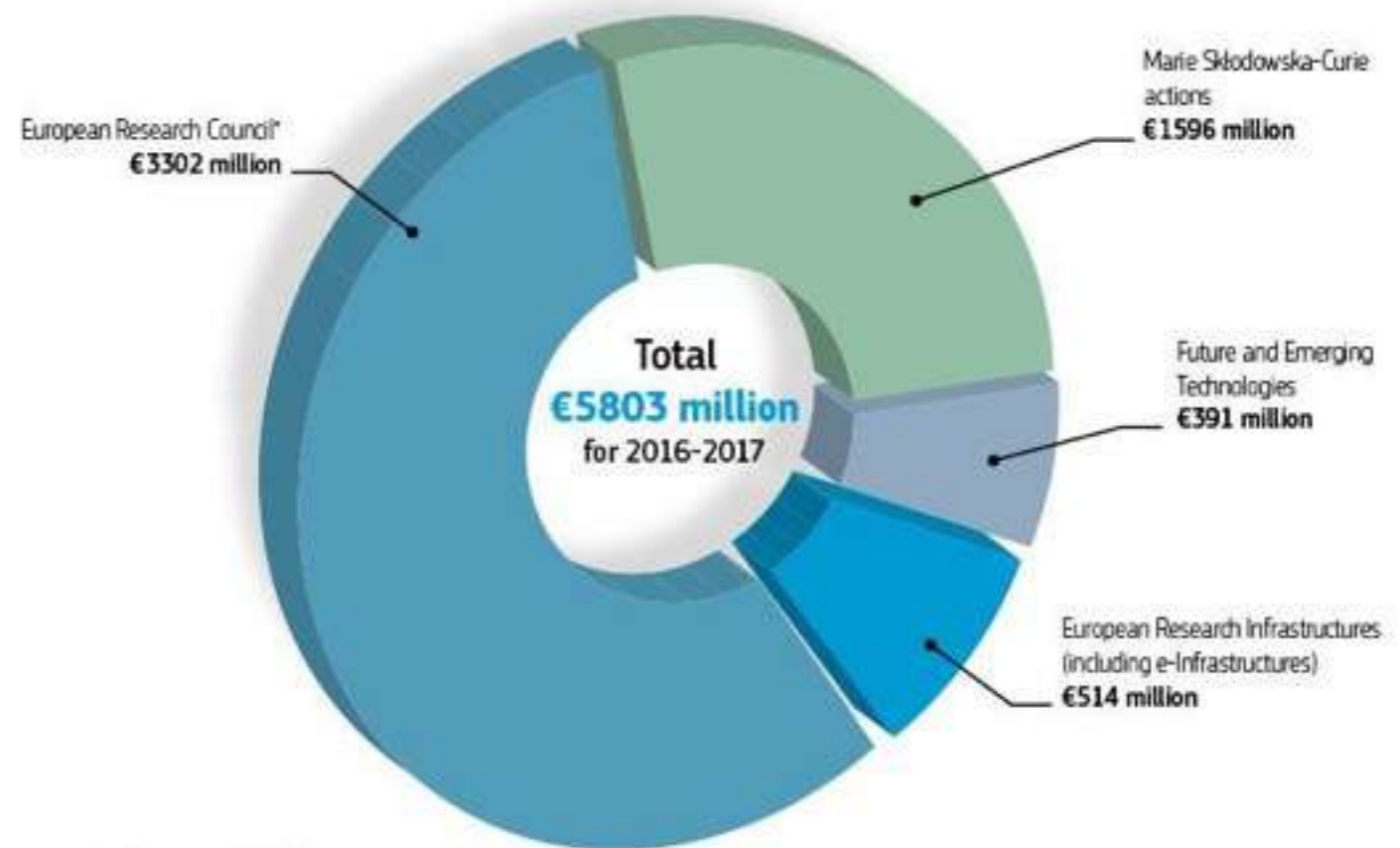


Excellent Science: budget 2016-2017

EXCELLENT SCIENCE

- European Research Council (ERC)
- Marie Skłodowska-Curie actions (MSCA)
- Future and Emerging Technologies (FET)
- Research Infrastructures (including e-infrastructure)

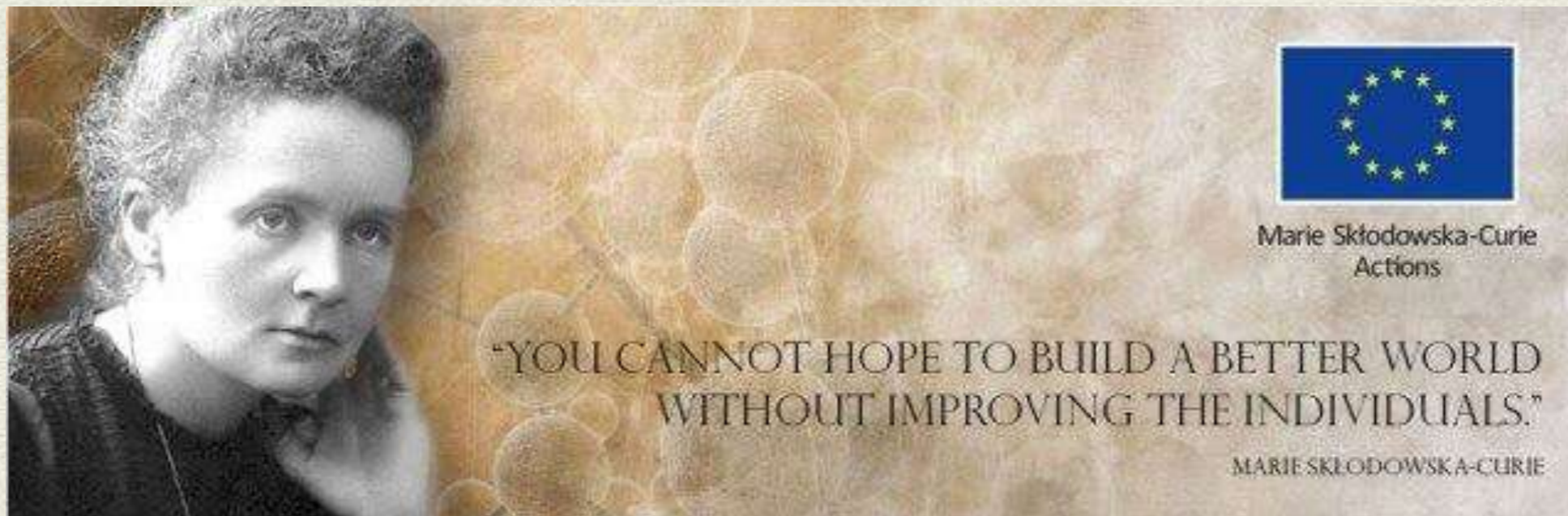
Funding for Excellent Science calls



* separate work programme for 2017



Marie Skłodowska-Curie Actions (MSCA)



<http://ec.europa.eu/research/mariecurieactions/>

MSCA in key-words

Excellence

Research

Training

Skills

Mobility

“3i rule”: international, interdisciplinary, intersectorial

Communication, dissemination, management, research career development plan, gender

evaluation criteria (weighted) : Excellence (50%), Impact (30%), Implementation (20%)



Marie Skłodowska-Curie Actions

MSCA **fund mobility, training and career development for researchers**. Open to all domain of research and innovation, entirely bottom-up.

There are 5 funding schemes:

- ♦ **Innovative Training Networks (ITN)**

Collaborative projects to train creative, entrepreneurial and innovative researchers through initial and doctoral training of early-stage researchers (ESR).

Projects typically involve a partnership (consortium) of universities, research institutions, businesses, SMEs and other organisations from across Europe (and beyond) who deliver a training programme (including secondment experiences) within a collaborative research programme.

- * **European Training Network (ETN)**
- * **European Industrial Doctorate (EID)**
- * **European Joint Doctorates (EJD)**

Marie Skłodowska-Curie Actions

♦ **Individual Fellowships (IF)**

Fund **post-doctoral researchers** (at any stage in their career) for a research fellowship.

Fellowships are intended to enhance and broaden skills through international and/or inter-sectoral mobility, and the inclusion of personal development opportunities in the design of the research fellowship.

Fellowship opportunities exist both for researchers wishing to move within Europe (**European Fellowships**), and for researchers wishing to spend some time (12-24 months) outside Europe before returning to Europe (**Global Fellowships**).



Marie Skłodowska-Curie Actions

- ♦ **Research and Innovation Staff Exchange (RISE)**

promotes international and inter-sectoral collaboration through the **exchange of research and innovation staff**. Projects fund staff exchanges between Europe and non-European countries and/or inter-sectoral exchanges between academic and non-academic partners.

- ♦ **Cofunding of regional, national and international programmes (COFUND)**

Cofunds new or existing multi-annual **doctoral or fellowship programmes** which are run at regional, national and international level.

- ♦ **European Researchers' Night (ERN)**

- ♦ aims at **bringing researchers and research and innovation activities closer to the public, particularly to inspire young people**. The Night is usually held on the last Friday in September and activities will promote the European dimension of research and innovation.

<http://erc.europa.eu>



European Research Council (ERC)

Unlocking brilliant ideas

Ideas beyond imagination

The mark of excellence

*Independence for
creative minds*

ERC in a nutshell



European Research Council

Funding schemes set up "for scientists, by scientists"

The ERC funds talented Principal Investigators and their teams to carry out 'frontier research' in any discipline.

- ♦ **Sole selection criterion: scientific excellence** (50% excellence of the PI, and 50% excellence of the proposed research project)
- ♦ **Bottom-up, curiosity driven approach**
- ♦ **No thematic priorities;** any field of research: **Physical Sciences & Engineering, Life Sciences, Social Sciences & Humanities**
- ♦ Long-term, individual grants for **ground-breaking, high-risk and high-gain research**
- ♦ Open to top researchers of **any nationality, age and gender, from anywhere in the world**, to perform research in Europe
- ♦ Selection based on international high-quality peer review
- ♦ No consortia, 1 Host Institution in Europe

ERC Funding schemes

Starting Grants

starters
(2-7 years after PhD)
up to € 2.0 Mln
for 5 years

Consolidator Grants

consolidators
(7-12 years after PhD)
up to € 2.75 Mln
for 5 years

Advanced Grants

track-record of
significant research
achievements in the
last 10 years
up to € 3.5 Mln
for 5 years

Proof-of-Concept

bridging gap between research - earliest
stage of marketable innovation
up to €150,000 for ERC grant holders

Note: Restrictions on Re-submissions of proposals for StG, CoG, AdG!

ERC Proposal structure

Administrative documentation

- Part A - online forms
- General information on research proposal
- Host Institution (HI) and applicant
- Budget
- Ethics
- Call specific questions

Annexes - submitted as .pdf

- Host Institution support letter
- Copy of PhD (or equivalent degree) certificate (StG & CoG)
- If applicable document for extension of eligibility window (StG & CoG)
- If applicable explanatory information on ethical issues

Documents sent to the panel members :

Part B1 – submitted as .pdf

- a) Extended Synopsis 5p
- b) CV 2p
- c) Early achievements (StG & CoG) or 10-year track-record 2p

Documents sent to the panel/reviewers:

Part B2 – submitted as .pdf

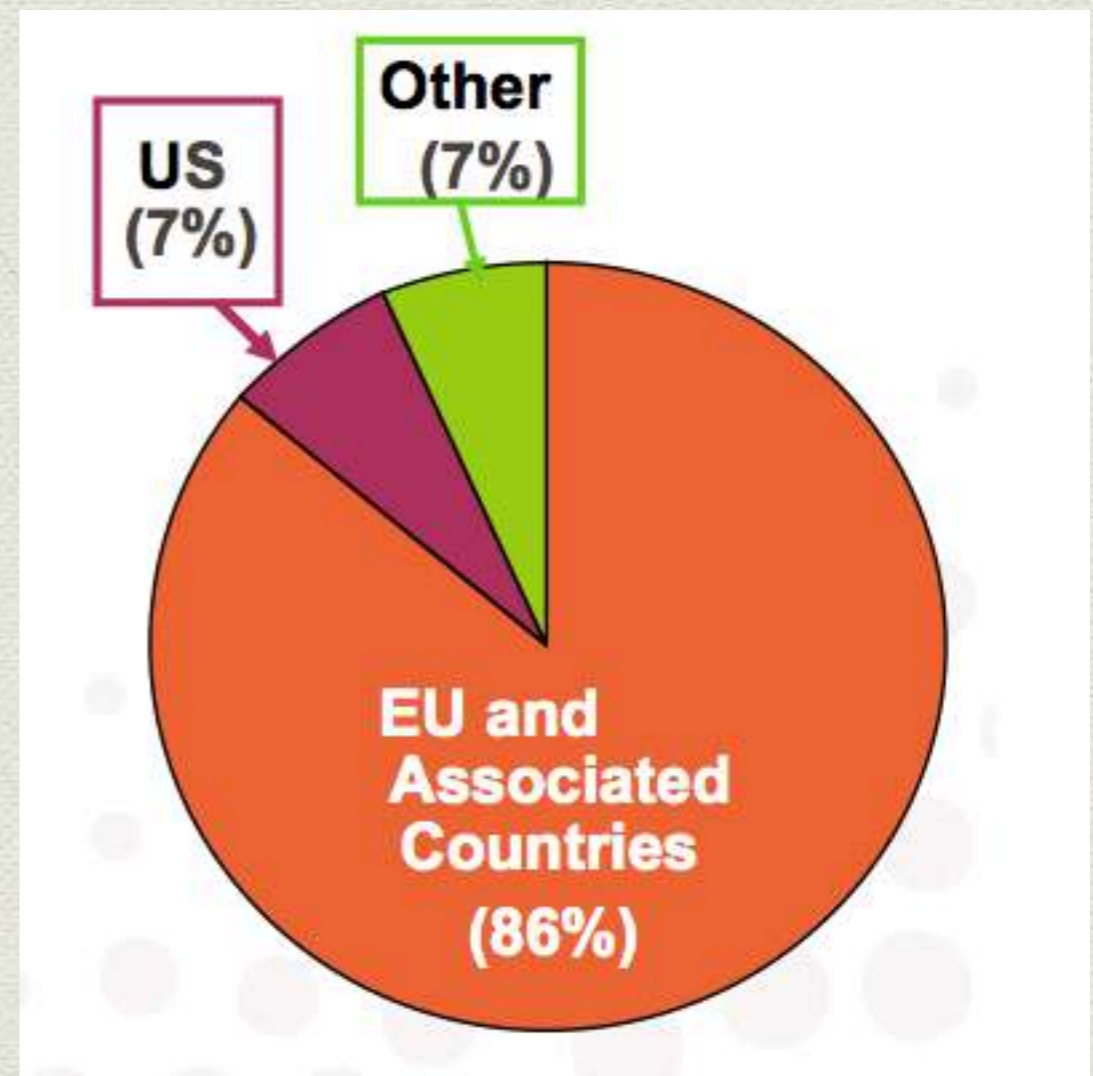
- Full Scientific Proposal 15p
 - a) State-of-the-art and objectives
 - b) Methodology
 - c) Resources (incl project cost)

STEP 1/2 ONLY FOR STEP 2

Different structure with respect to the 'standard' H2020 template

Who evaluates the proposals?

- ♦ **Panel members:** typically 375 / call
 - * High-level scientists
 - * Recruited by ERC Scientific Committee from all over the world: ~14% from outside Europe
 - * About 12-16 members plus a chair person
- ♦ **External Reviewers:** typically 2000 / call
 - * Evaluate only a small number of proposals
 - * Similar to normal practise in peer-reviewed journals



Panel structure: 3 main domains

Life Sciences – 9 Panels

- LS1 Molecular & Structural Biology & Biochemistry
- LS2 Genetics, Genomics, Bioinformatics & Systems Biology
- LS3 Cellular and Developmental Biology
- LS4 Physiology, Pathophysiology & Endocrinology
- LS5 Neurosciences & neural disorders
- LS6 Immunity & infection
- LS7 Diagnostic tools, therapies & public health
- LS8 Evolutionary, population & environmental biology
- LS9 Applied life sciences & biotechnology

Physical Sciences & Engineering – 10 Panels

- PE1 Mathematics
- PE2 Fundamental constituents of matter
- PE3 Condensed matter physics
- PE4 Physical & Analytical Chemical sciences
- PE5 Materials & Synthesis
- PE6 Computer science & informatics
- PE7 Systems & communication engineering
- PE8 Products & process engineering
- PE9 Universe sciences
- PE10 Earth system science

Social Sciences and Humanities – 6 Panels

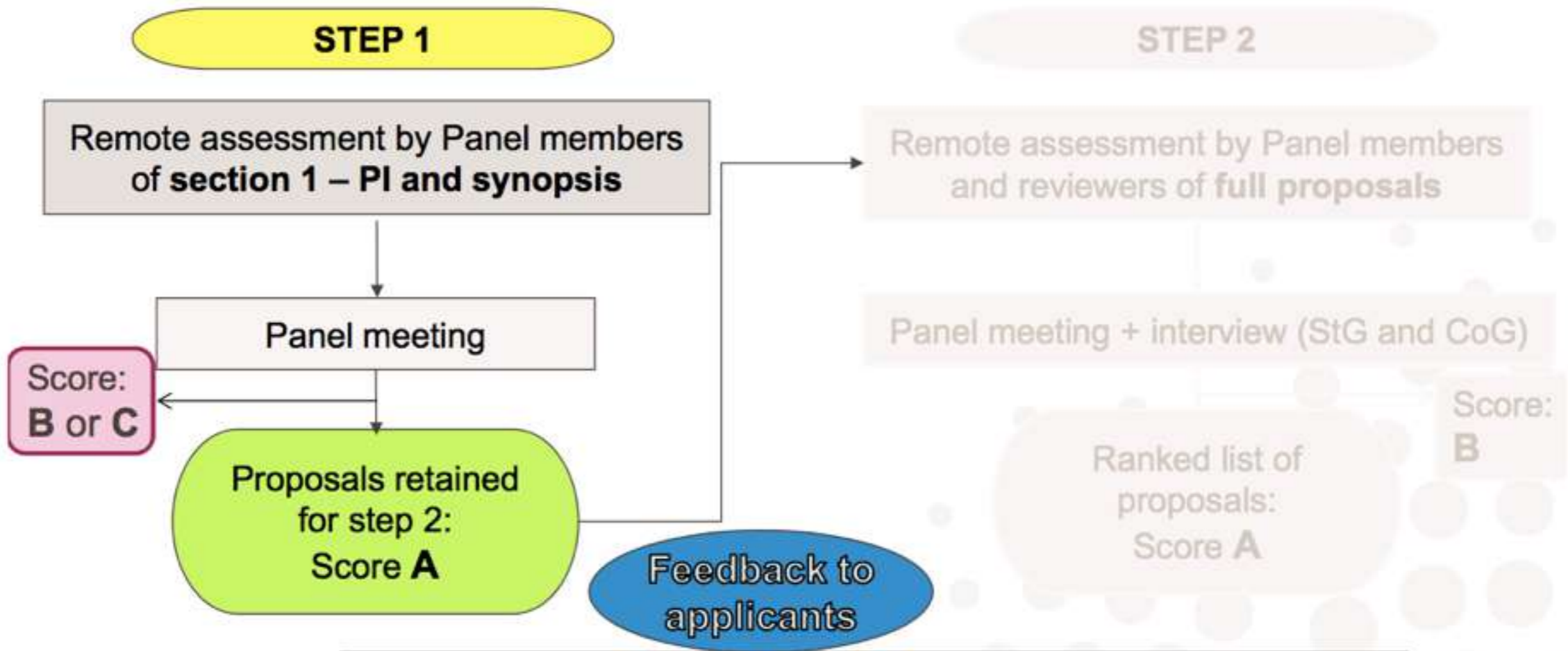
- SH1 Markets, individuals & institutions
- SH2 The social world, diversity, institutions & values
- SH3 Environment, space & population
- SH4 The Human Mind and its complexity
- SH5 Cultures & cultural production
- SH6 The study of the human past



European
Commission

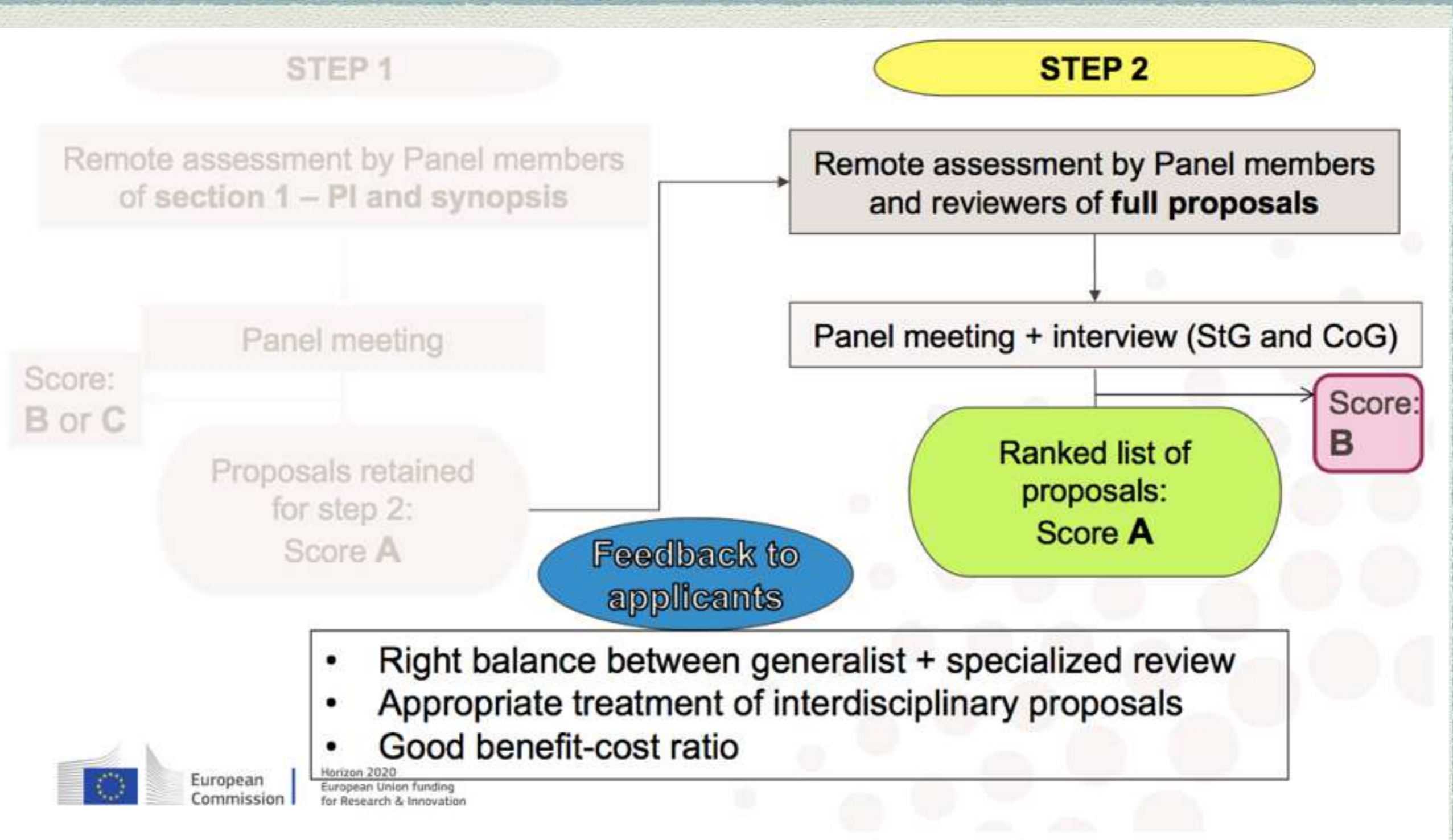
Horizon 2020
European Union Funding
for Research & Innovation

ERC Evaluation Procedure

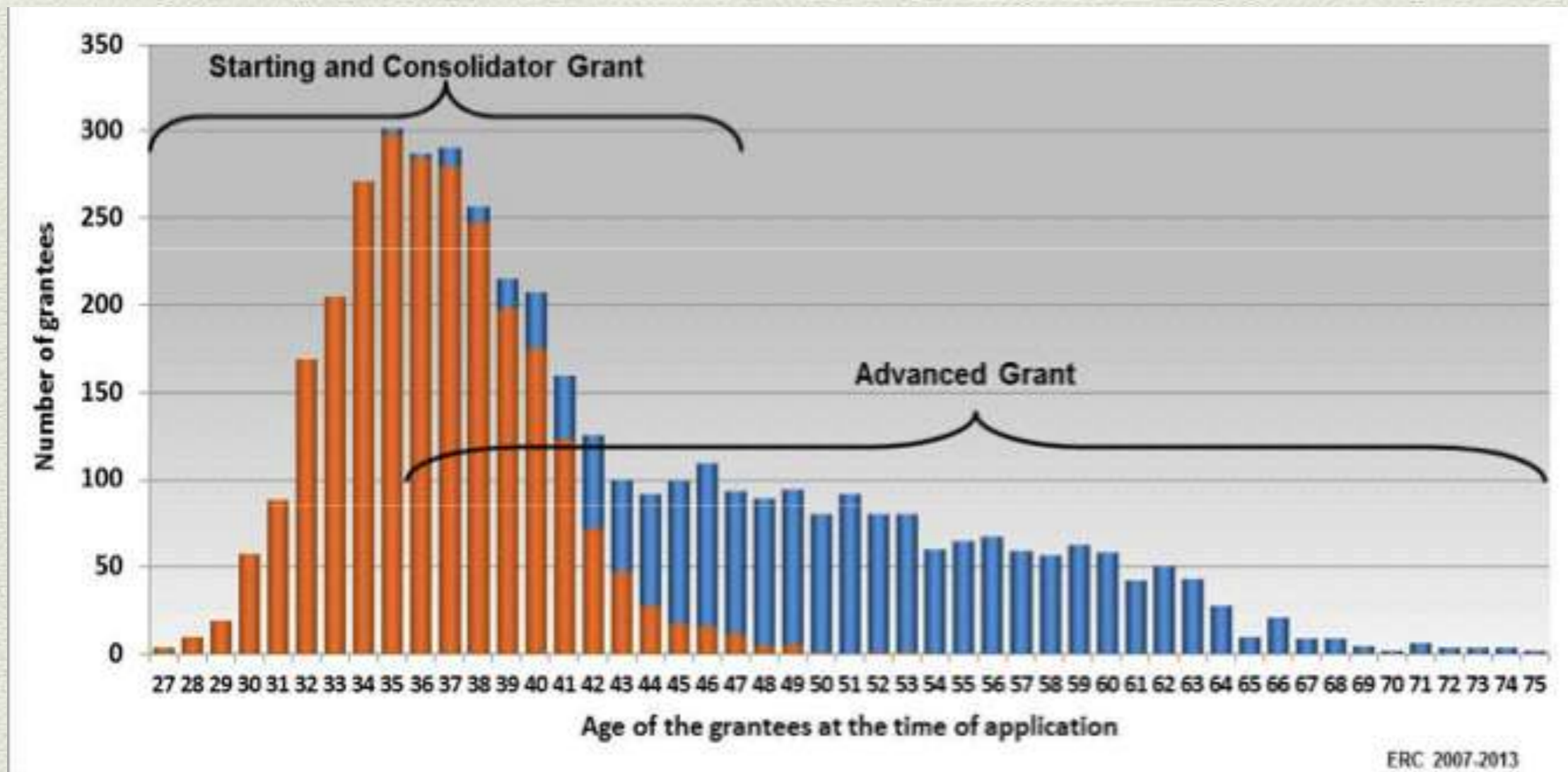


- Right balance between generalist + specialized review
- Appropriate treatment of interdisciplinary proposals
- Good benefit-cost ratio

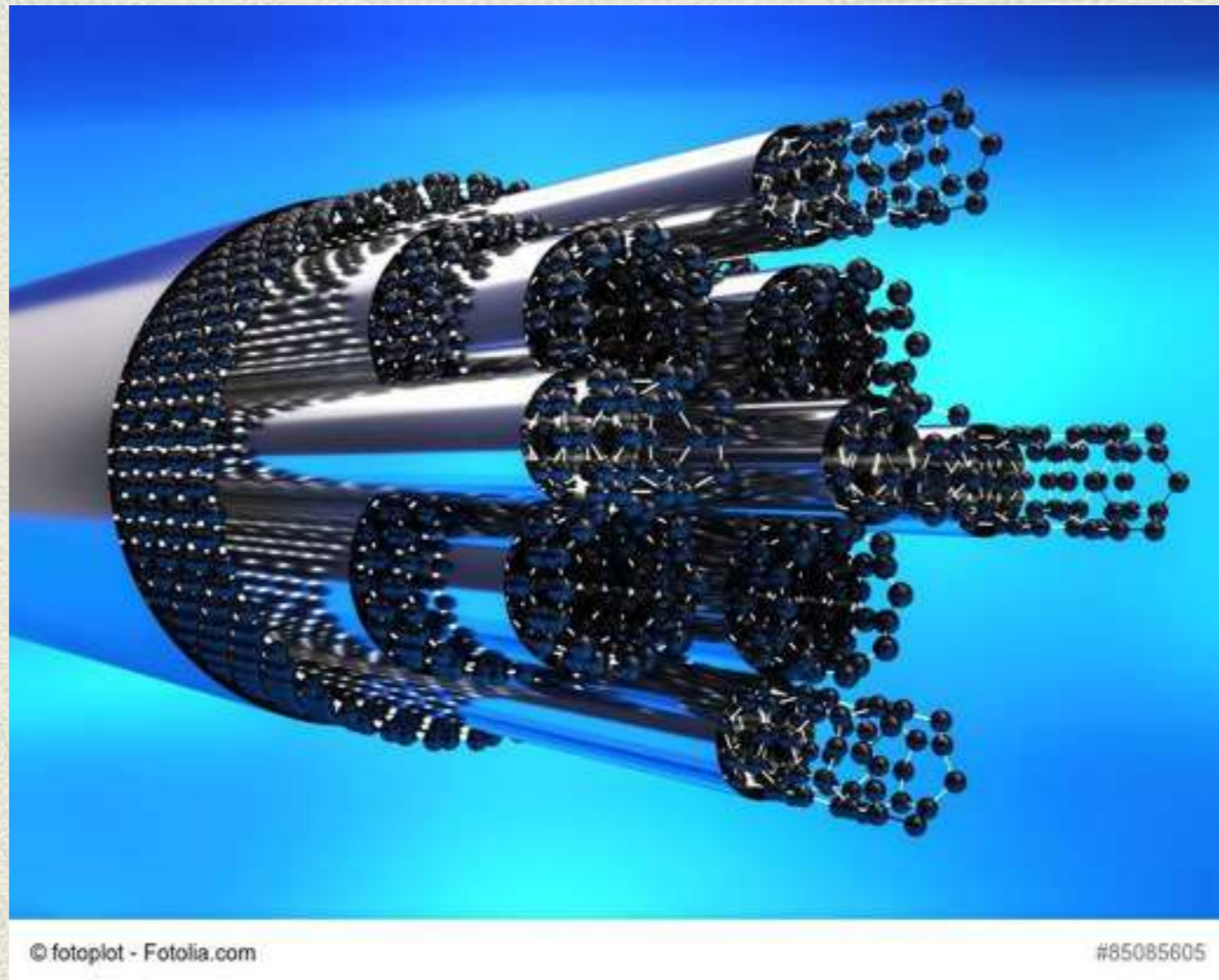
ERC Evaluation Procedure



Age of grantees at time of application



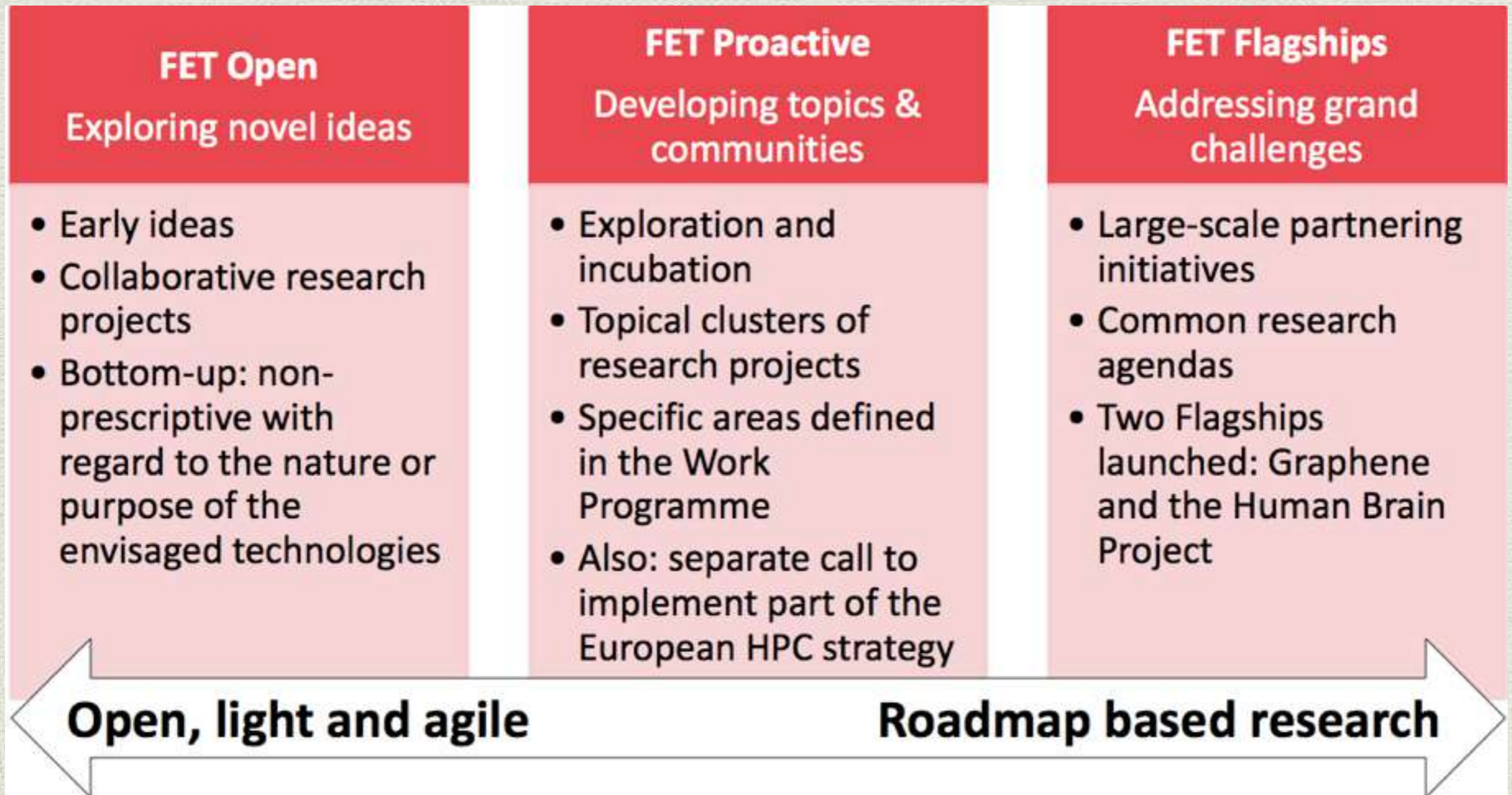
Future and Emerging Technologies (FET)



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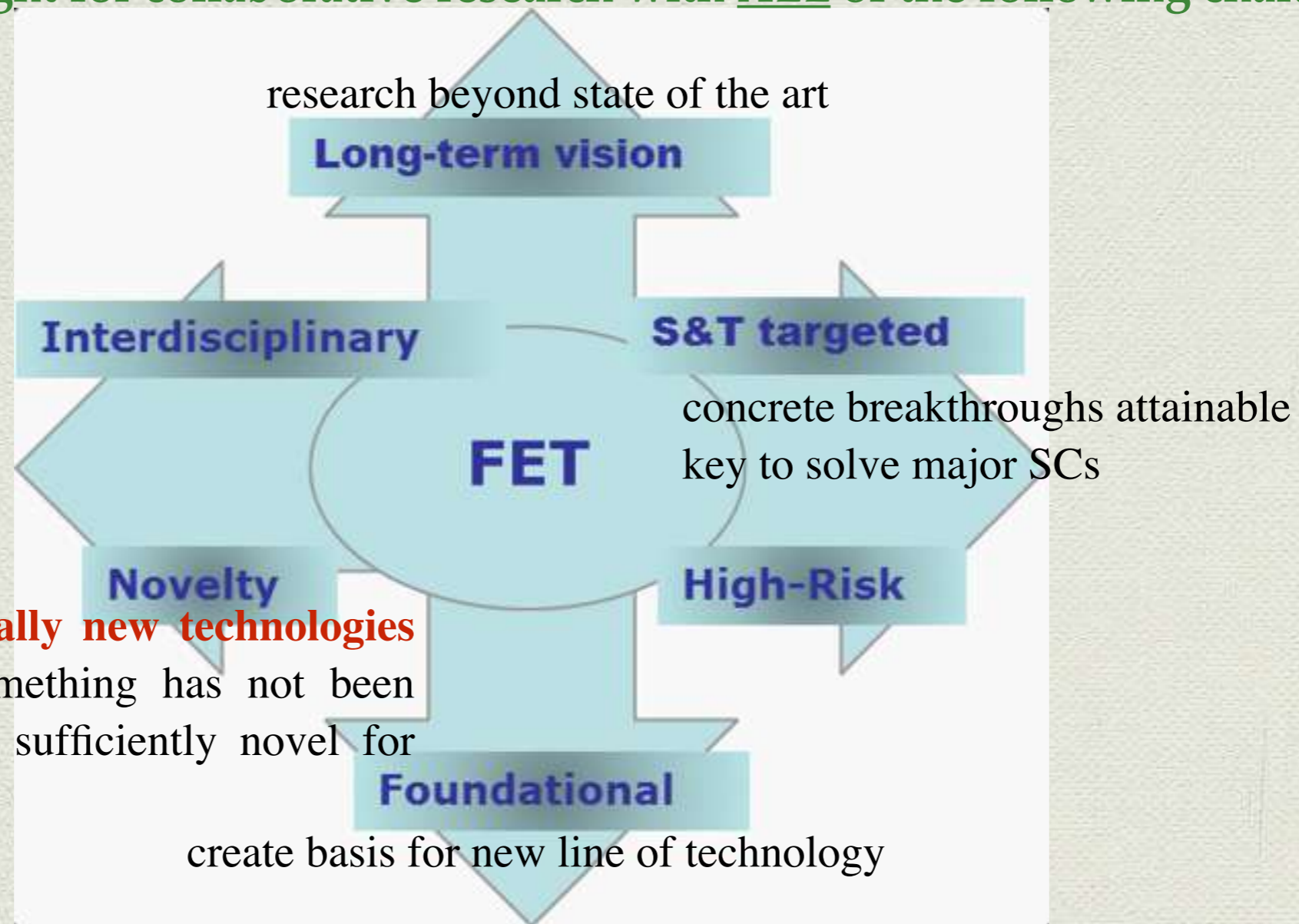
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What is FET?



FET-OPEN (RIA) gatekeepers

Proposals are sought for collaborative research with ALL of the following characteristics



novel ideas for radically new technologies

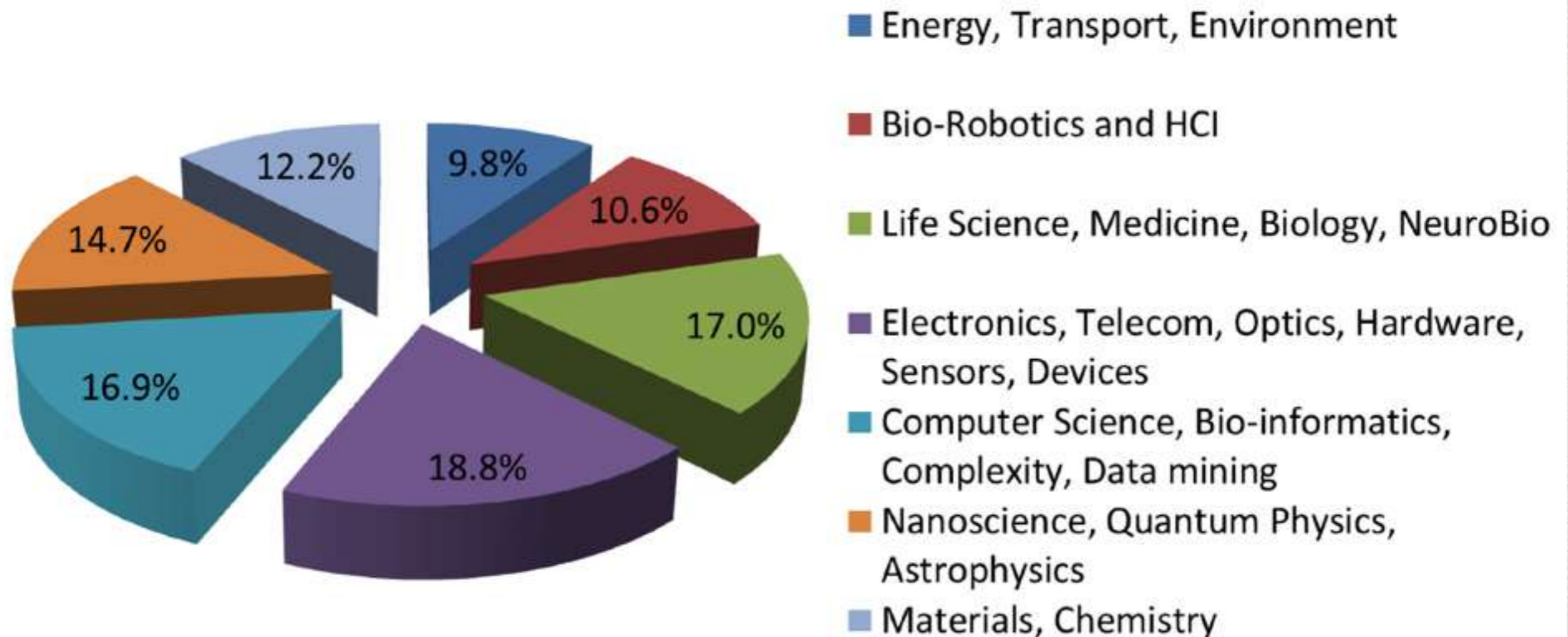
(It is not because something has not been done before that it is sufficiently novel for FET)

evaluation criteria (weighted) : excellence (60%), impact (20%), implementation (20%)

FET-OPEN gatekeepers

- ♦ **Long-term vision:** a new, original or radical long-term vision of science- and technology-enabled possibilities going far beyond the state of the art and not currently foreseen by technology roadmaps.
- ♦ **Breakthrough S&T target:** scientifically ambitious and technologically concrete breakthroughs plausibly attainable within the life-time of the project (to be argued in the proposal)
- ♦ **Foundational:** the breakthroughs must be foundational in the sense that, if achieved, they can establish a basis for a new line of technology not currently anticipated.
- ♦ **Novelty:** new ideas and concepts, rather than the application or incremental refinement of existing ones.
- ♦ **High-risk:** the potential of a new technological direction depends on a whole range of factors that cannot be apprehended from a single disciplinary viewpoint.
- ♦ **Interdisciplinary:** the proposed collaborations must go beyond current mainstream collaboration configurations in joint S&T research, and must aim to **advance different scientific and technological disciplines together and in synergy** towards a breakthrough.

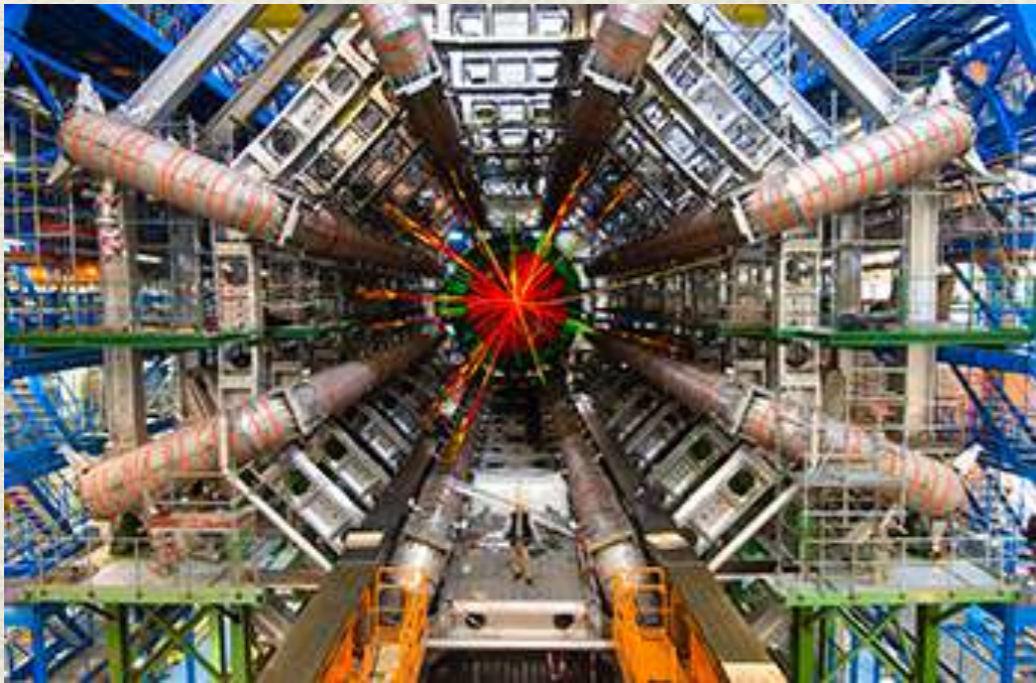
FET-OPEN: overview of topic covered (2014 data)



*first cut-off in 2014: 640 eligible RIA proposals - 77M€ budget - success rate ~3,75%

in 2015 success rate ~ 1.3-1.7%

Research Infrastructures (RI) including e-infrastructures



Research Infrastructures

The Research Infrastructures WP aims to **support, develop and open up European research infrastructures** - defined as “**facilities, resources and services that are used to conduct research and foster innovation in their fields**”.

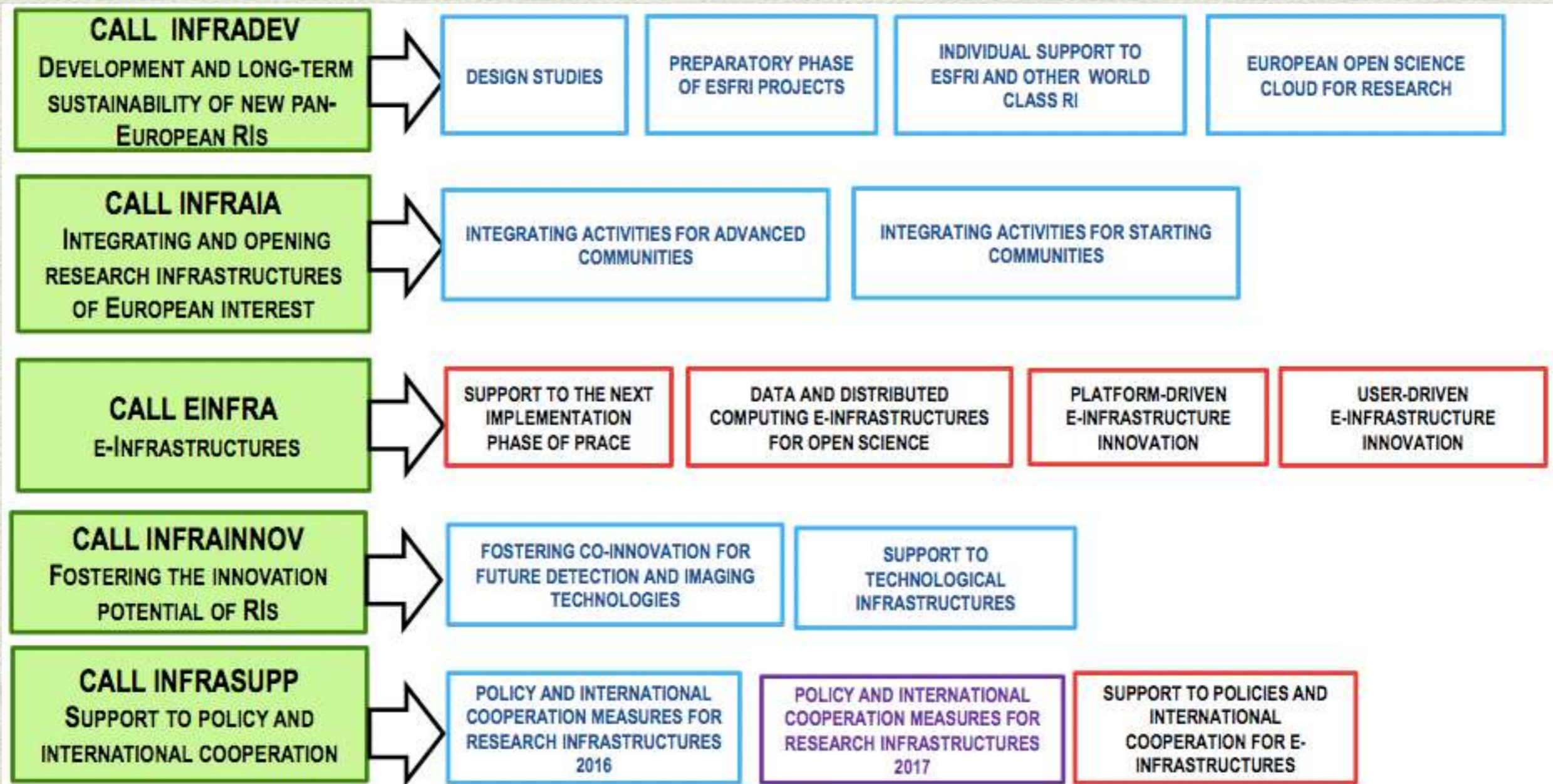
The following are included in the definition: major scientific equipment (or sets of instruments); knowledge-based resources such as collections, archives or scientific data; **e-infrastructures** such as data and computing systems and communications networks.

ESFRI, the European Strategy Forum on Research Infrastructures, is a strategic instrument created in 2002 to develop the scientific integration of Europe and to strengthen its international outreach. ESFRI mission is to support a coherent and strategy-led approach to policy-making on research infrastructures in Europe.

Why an EU approach for RIs?

- ♦ To **open access** to the Research Infrastructures existing in the individual MS to all European researchers
- ♦ to **avoid duplication of efforts** and to coordinate and **rationalise the use** of these RIs
- ♦ to trigger the **exchange of best practices**, develop **interoperability** of facilities and resources, develop the training of the next generation of researchers
- ♦ to **connect national research communities** and increase the overall quality of the research and innovation
- ♦ to **help pooling resources** so that the EU can also acquire and operate RI globally

Research Infrastructures thematic



Horizon 2020

Industrial Leadership Pillar

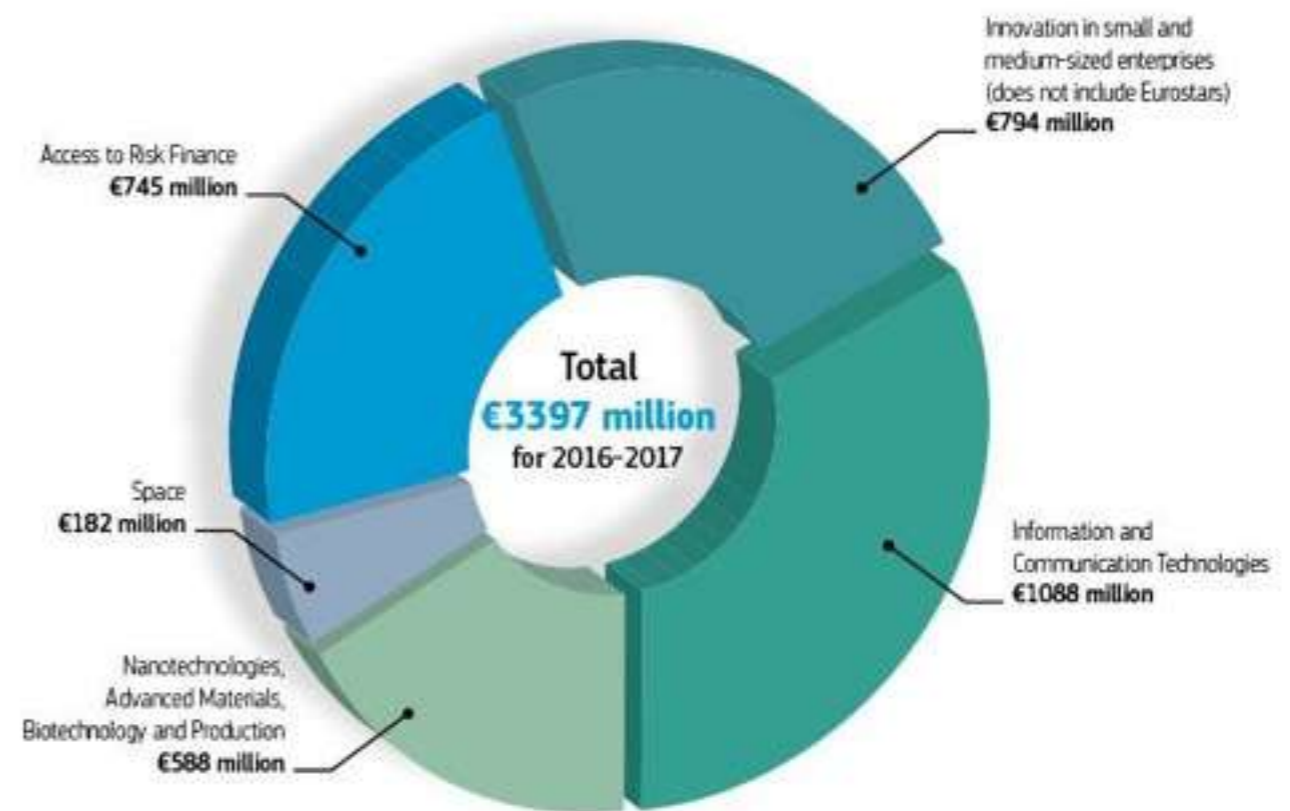


Industrial Leadership budget 2016-2017

INDUSTRIAL LEADERSHIP

- Leadership in enabling and industrial technologies (LEITs)
 - * ICT
 - * Nanotechnologies
 - * Advanced Materials
 - * Biotechnology
 - * Advanced manufacturing and processing
 - * Space
- Access to risk finance
- Innovation in SMEs

Funding for Industrial Leadership calls and Financial Instruments



Industrial Leadership overview

♦ Leadership in enabling and industrial technologies

Emphasis on areas of R&D and innovation with a strong industrial dimension, where **mastering new technological opportunities will enable and drive innovation**. The activities included have been primarily developed with reference to relevant industrial roadmaps, including those of [European Technology Platforms](#). The **involvement of industrial participants, and of SMEs in particular, is crucial** to maximise the expected impact of proposals.

LEIT support the development and deployment of [Key Enabling Technologies](#) (KETs) – micro- and nano-electronics, nanotechnologies, advanced materials, advanced manufacturing and processing, biotechnology and photonics:

- **ICT**: activities supported includes new generation of components and systems, advanced computing, future internet, robotics, photonics
- **Nanotechnology, advanced materials, biotechnology, advanced manufacturing and processing**: Funded projects will be outcome oriented, developing key technology building blocks, bringing solutions closer to the market, and paving the way for industrial and commercial implementation.
- **Space** aims to foster a cost-effective, competitive and innovative space industry and research community to develop and exploit space infrastructure to meet future European policy and societal needs.

ICT-related topics in H2020

ICT, as a generic technology is present in many of the H2020 areas

Excellent Science

Frontier Research (ERC)
Future & Emerging Technologies (FET) 
Skills & career development (Marie Skłodowska-Curie)
Research Infrastructures 

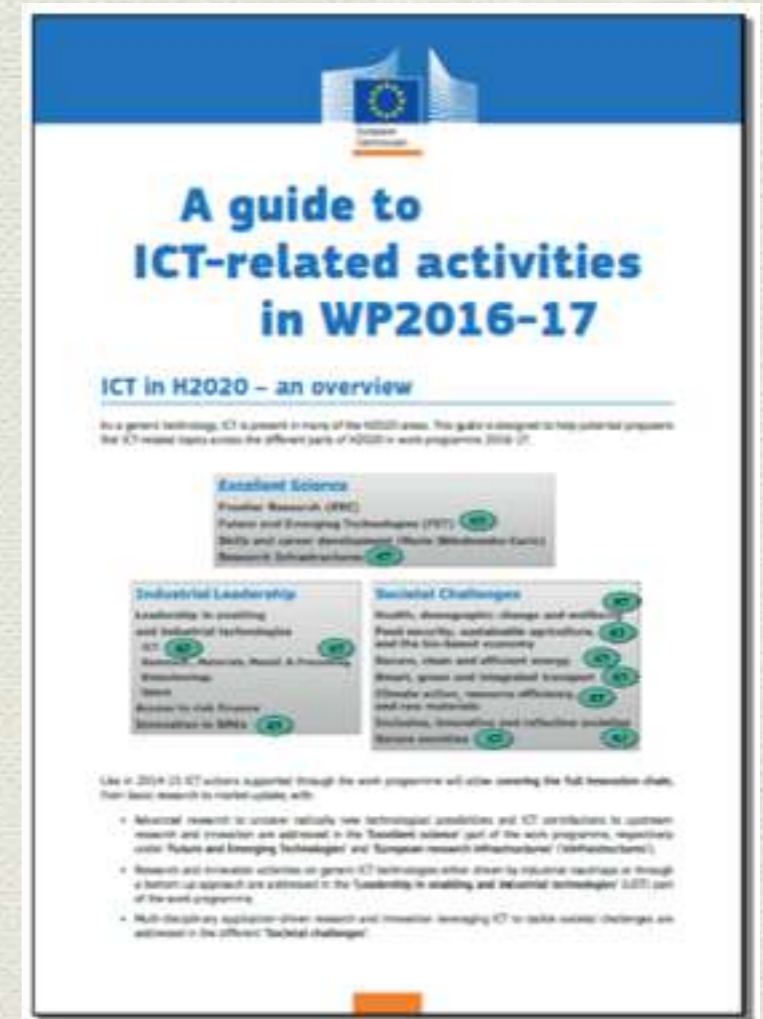
Note that ICT is also addressed by ERC and MSCA

Industrial Leadership

Leadership in enabling & industrial technologies
ICT 
Nanotech., Materials, Manuf. & Processing 
Biotechnology
Space
Access to risk finance
Innovation in SMEs 

Societal Challenges

Health, demographic change & wellbeing 
Food security, sustainable agriculture, & the bio-based economy 
Secure, clean & efficient energy 
Smart, green & integrated transport 
Climate action, resource efficiency, & raw materials 
Inclusive, innovative & reflective societies 
Secure societies 



CE wrote a **guide** to help potential proposers **find ICT-related topics across the different parts of H2020 in WP 2016-2017.**

The guide include a list of the topics where ICT's contribution is the most relevant.

<https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/Guide%20to%20ICT-related%20activities%20in%20WP2016-17%20A4%20v8.pdf>

Industrial Leadership overview

♦ Access to risk finance

It shall aim to **overcome deficits in the availability of debt and equity finance for R&D and innovation-driven companies and projects at all stages of development.** Together with the equity instrument of the Programme for the Competitiveness of Enterprises and SMEs, it shall support the development of Union-level venture capital.



♦ Innovation in SMEs

It shall **stimulate all forms of innovation in SMEs,** targeting those with the potential to grow and internationalise across the single market and beyond. The activities shall follow a business-driven agenda.

The activities of this programme will operate in conjunction with those of EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME)

Horizon 2020

Societal Challenges Pillar



Societal Challenges budget 2016-2017

SOCIET. CHALLENGES

- Health (SC1)
- Food (SC2)
- Energy (SC3)
- Transport (SC4)
- Environment (SC5)
- Inclusive Societies (SC6)
- Secure Societies (SC7)

Funding for Societal Challenges calls

-  1. Health, demographic change and wellbeing
€658 million
-  2. Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy
€716 million
-  3. Secure, clean and efficient energy
€917 million
-  4. Smart, green and integrated transport
€756 million
-  5. Climate action, environment, resource efficiency and raw materials
€326 million
-  6. Europe in a changing world - inclusive, innovative and reflective societies
€212 million
-  7. Secure societies – protecting freedom and security of Europe and its citizens
€393 million



* Additional €1040 million will be dedicated to Cross-Cutting Calls: Internet of things, Industry 2020 in the Circular Economy, Smart and Sustainable Cities

Societal Challenges overview

♦ Health, demographic change and wellbeing (SC1)

it aims to improve our **understanding of the causes and mechanisms underlying health, healthy ageing and disease** as well as our ability to monitor health and to prevent, detect, treat and manage disease. It also supports research to help older persons remain active and healthy for longer, and the testing and demonstration of new models and tools for health and care delivery.

Other areas of H2020 include topics related to health, for example: SC2 (Food security) has nutrition and lifestyle-related topics; SC4 (Smart, green and integrated transport) includes health and behaviour topics related to transport use; ICT programme includes topics on Big Data and biophotonics; and Nanotechnologies programme has topics on advanced materials and nanotechnologies for health care.



Societal Challenges overview

- ✦ **Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the bio-economy (SC2)**

It aims to make the best of our **biological resources in a sustainable way**. By targeting particular research areas, it aims to contribute to **securing sufficient supplies of safe, healthy and high-quality food** and other bio-based products by developing productive, sustainable and resource-efficient primary production systems. The ambition is faster progress towards a **sustainable European bio-economy**.

Activities in this SC **complement others funds** elsewhere in the H2020 work programme – particularly the Energy work programme, the Transport work programme; the Climate work programme, SC6 and the Nanotechnologies calls.



Societal Challenges overview

♦ **Secure, clean and efficient energy (SC3)**

It aims “to make the transition to a **reliable, sustainable and competitive energy system**, in the face of increasingly scarce resources, increasing energy needs and climate change”.

Other funding relevant to energy can also be found in SC2 (Food/Maritime), SC4 (Transport) and SC5 (Climate); and in the ICT and Nanotechnologies, advanced materials, advanced manufacturing and processing, and biotechnology sections of the Horizon 2020 work programme.

Energy related calls reflect the priorities of the European [SET-Plan](#) (Strategic Energy Technology Plan, and the research and innovation aspects of the European Energy Union strategy).



Societal Challenges overview

♦ Smart, green and integrated transport (SC4)

It aims to achieve a **European transport system that is resource-efficient, climate- and environmentally-friendly, safe and seamless** for the benefit of all citizens, the economy and society.

Transport is also addressed in other areas of H2020 such as Blue Growth in SC2.



Societal Challenges overview

♦ **Climate action, environment, resource efficiency and raw materials (SC5)**

it aims to achieve a resource – and water – efficient and climate change resilient economy and society, the protection and sustainable management of natural resources and ecosystems, and a sustainable supply and use of raw materials, in order to meet the needs of a growing global population within the limits of the planet's natural resources and eco-systems.

Activities in this Societal Challenge complement others found in calls within SC2 (Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the Bio-economy), SC3 (Secure, clean and efficient energy) and SC7 (Secure societies - protecting freedom and security of Europe and its citizens).



Societal Challenges overview

♦ Europe in a changing world - inclusive, innovative and reflective societies (SC6)

It aims to foster solution and support inclusive, innovative and reflective societies in a changing world. It will **address social exclusion, discriminations and various forms of inequalities**. It will explore new forms of innovation and strengthen the evidence base for the Innovation Union, the ERA and other relevant EU policies. It will **promote coherent and effective cooperation with third countries**. Finally, it will **address the issues of memories, identities, tolerance and cultural heritage**.

This WP provides academics – particularly within the Social Sciences and Humanities Divisions - with opportunities to participate in a number of complex topics requiring multi-disciplinary approaches.



Societal Challenges overview

✦ **Secure societies - protecting freedom and security of Europe and its citizens (SC7)**

It is about protecting our citizens, society and economy as well as our assets, infrastructures and services, our prosperity, political stability and well-being. Threats or disruption to these could have serious implications and costs for society and our economy.

Fighting crime and terrorism requires **new technologies and capabilities for fighting and preventing crime** (including cyber-crime), **illegal trafficking and terrorism** (including cyber-terrorism), including understanding and tackling terrorist ideas and beliefs to also avoid aviation-related threats.

The protection of the European borders requires the development of systems, equipment, tools, processes, and methods for rapid identification. This includes supply chain security in the context of the EU's customs policy.



Science with and for Society

It aims to **build effective co-operation between science and society, to recruit new talent for science and to pair scientific excellence with social awareness and responsibility.**

Activities are intended to

- ♦ build capacities and develop innovative ways of **connecting science to society**
- ♦ make **science more attractive** (especially to young people)
- ♦ raise the appetite of society for science and innovation
- ♦ and open up further research and innovation activities.

It allows all societal actors (for example researchers, citizens, policy makers, business and third sector organisations) to work together during the whole R&I process to better align both the process and its outcomes with the values, needs and expectations of European society. This approach to research and innovation is termed Responsible Research and Innovation ([RRI](#)).

Responsible Research and Innovation

In practice, [RRI](#) consists of designing and implementing R&I policy that will

- ♦ engage society more broadly in its research and innovation activities,
- ♦ increase access to scientific results
- ♦ ensure gender equality in both the research process and research content
- ♦ take account of the ethics dimension
- ♦ promote formal and informal science education



Spreading Excellence and Widening Participation



Spreading Excellence and Widening Participation

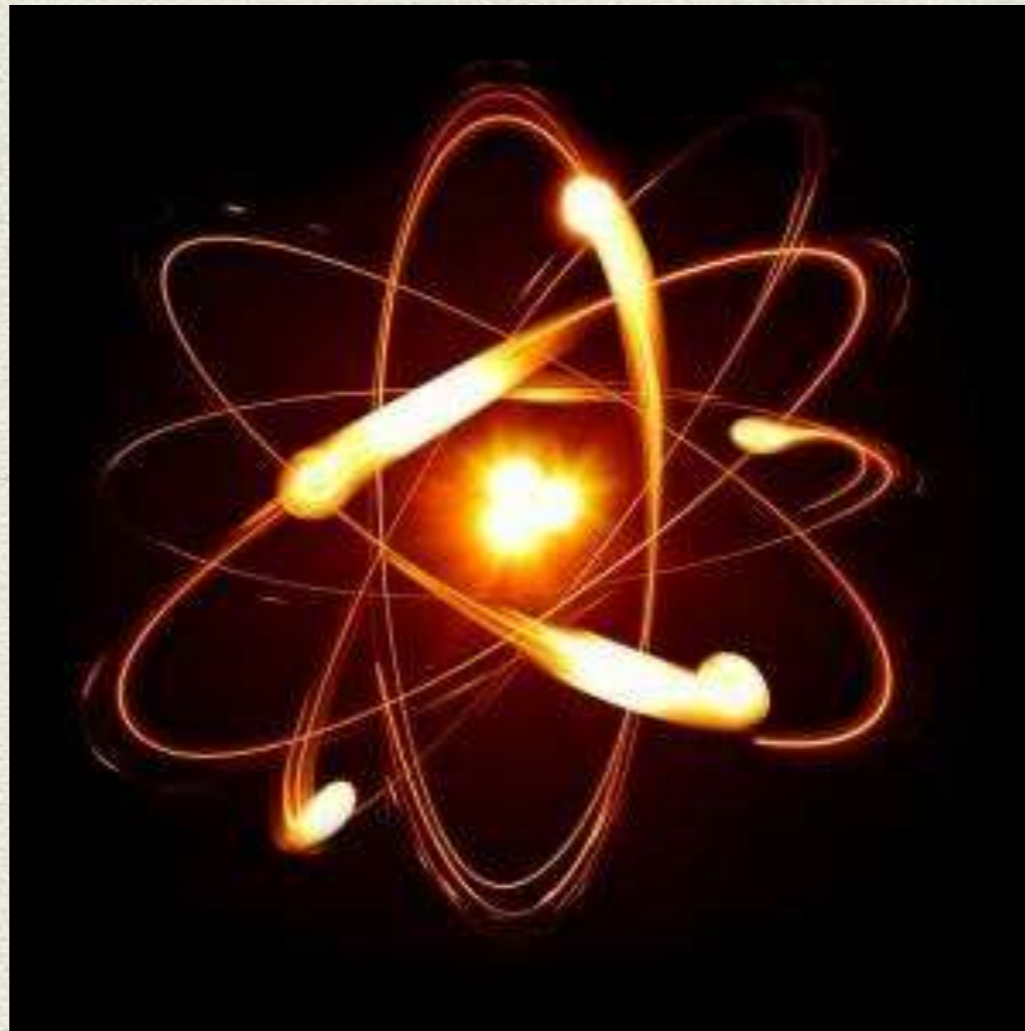
It aims at **bridging the innovation divide between EU Member States.**

There are 2 main area of activities (+ some other activities)

- ♦ **Twinning** involves activities that will help **strengthen a defined field of research** in a knowledge institution in a **low-performing** Member State* through linking with at least two internationally-leading counterparts in Europe.
- ♦ **Teaming** supports the **creation** of new (or upgrading of existing) **Centres of Excellence on the basis of partnerships** between low-performing Member States and internationally leading institutions. The proposal will need to demonstrate that the project is based on a true joint venture between the partners with both partners committed to continue supporting the Centre once the teaming grant is finished.

*low-performing member states: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia and Slovenia.

EURATOM

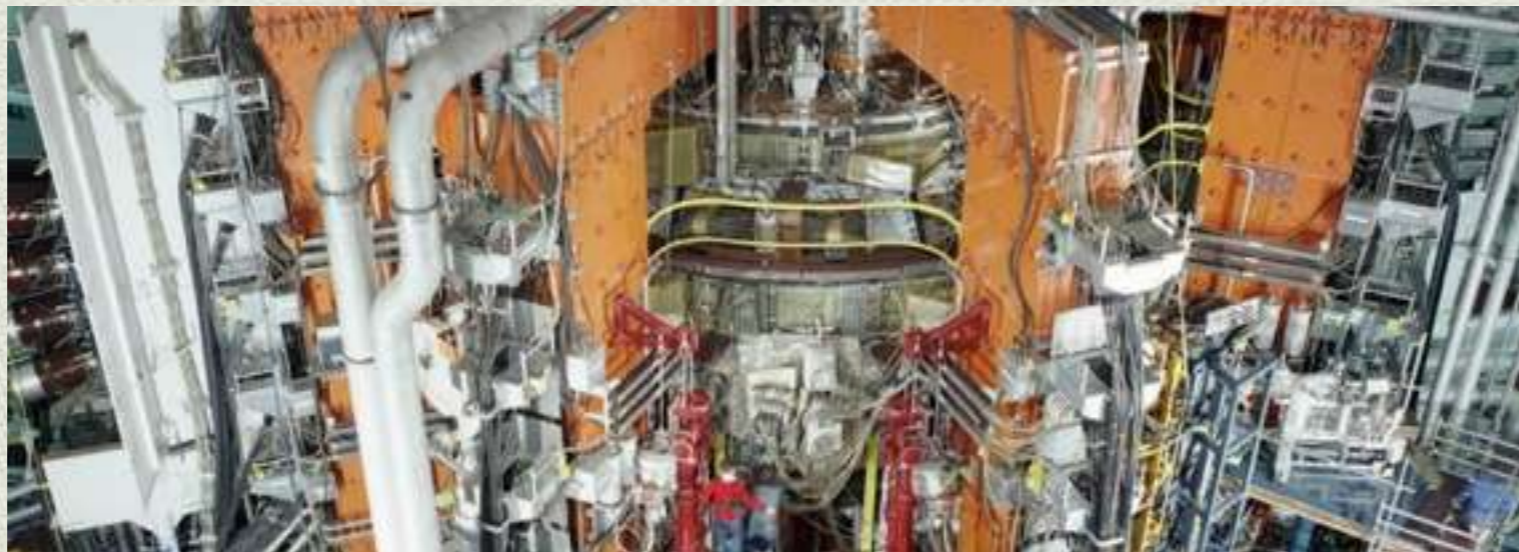


EURATOM

Nuclear energy research and innovation projects are funded through the EURATOM programme – not H2020. EURATOM runs from 2014 to 2018 and funding regime and rules for participation are the same as those for H2020.

The objective of the Euratom programme is to pursue nuclear research and training activities with an emphasis on continually improving **nuclear safety and radiation protection.**

The **Euratom WP** deals with Euratom indirect research actions in both **fission and fusion.**



European Institute of Innovation and Technology



European Institute of Innovation and Technology

EIT bring together the three sides of the 'knowledge triangle' - higher education, research and business.

The EIT's mission is to:

- ♦ **Increase European sustainable growth and competitiveness**
- ♦ **Reinforce the innovation capacity of the EU Member States**
- ♦ **Create the entrepreneurs of tomorrow and prepare for the next innovative breakthroughs**

It aims to **boost the innovation process from idea to product, from lab to market and from student to entrepreneur**. Funded projects should share knowledge, information and skills for joint exploitation.

The EIT funds '**Knowledge and Innovation Communities**' ([KICs](#)) which aim to bring together major players from higher education, research and business. KICs carry out a whole range of activities, covering the entire innovation chain – including training and education programmes, reinforcing the journey from research to market, innovation projects and business incubators.



Joint Research Centre



Joint Research Centre

JRC is the **EU Commission's in-house science and research service** and its mission is to provide EU policy makers with independent, evidence-based scientific and technical support throughout the whole policy cycle.

JRC has 7 scientific institutes around Europe, located in Belgium, Germany, Italy (Ispra <https://ec.europa.eu/jrc/en/about/jrc-site/ispra>), the Netherlands and Spain:

- ♦ [Institute for Environment and Sustainability](#) (IES)
- ♦ [Institute for Energy and Transport](#) (IET)
- ♦ [Institute for Health and Consumer Protection](#) (IHCP)
- ♦ [Institute for the Protection and Security of the Citizen](#) (IPSC)
- ♦ [Institute for Prospective Technological Studies](#) (IPTS)
- ♦ [Institute for Transuranium Elements](#) (ITU)
- ♦ [Institute for Reference Materials and Measurements](#) (IRMM)

JRC institutes are eligible to apply for funds in H2020.

If you want to work at JRC, check available position on the website of the EU Personnel Selection Office ([EPSO](#)), [selecting JRC](#), or in the JRC website