Future & Emerging Technologies (FET)

Horizon 2020

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[FET]

Excellent Science

- **European Research Council**
  - Frontier research by the best individual teams

- **Future and Emerging Technologies**
  - Collaborative research to open new fields of innovation

- **Marie Skłodowska Curie actions**
  - Opportunities for training and career development

- **Research infrastructures**
  (including e-infrastructure)
  - Ensuring access to world-class facilities

Industrial Technologies

- **Leadership in enabling and industrial technologies**
  - ICT, nanotechnologies, materials, biotechnology, manufacturing, space

- **Access to risk finance**
  - Leveraging private finance and venture capital for research and innovation

- **Innovation in SMEs**
  - Fostering all forms of innovation in all types of SMEs

Societal Challenges

- **Health, demographic change and wellbeing**
- **Food security, sustainable agriculture, marine and maritime research & the bioeconomy**
- **Secure, clean and efficient energy**
- **Smart, green and integrated transport**
- **Climate action, resource efficiency and raw materials**
- **Inclusive, innovative and reflective societies**
- **Security society**

European Institute of Innovation and Technology (EIT)

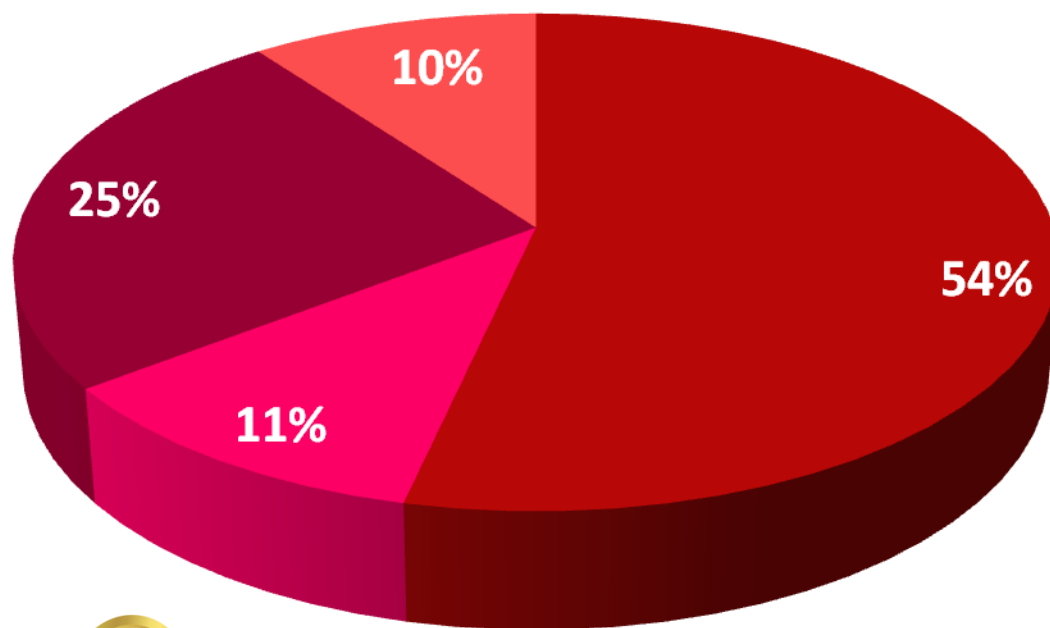**Spreading Excellence and Widening Participation**

Science with and for society

Joint Research Center (JRC)

[Excellent Science]
Budget

€ **22.274 M**

54% European Research Council

11% Future and Emerging Technologies

25% Marie Skłodowska Curie Actions

10% European Research Infrastructures (including eInfrastructures)

€ **2.696 M for FET**

[FET in Horizon 2020]

Future and emerging technologies:

- collaborative research

- extend Europe's <u>capacity for advanced and paradigm-changing innovation</u>.

- foster <u>scientific collaboration across disciplines</u> on <u>radically new, high-risk ideas</u>

- accelerate development of the most promising emerging areas of science and technology

Pathfinding Europe's technological future

[FET in Horizon2020]

Pathfinding Europe's technological future

*"**Future and emerging technologies** shall support collaborative research in order to extend Europe's capacity for advanced and paradigm-changing innovation. It shall foster scientific collaboration across disciplines on <u>radically new, high-risk ideas</u> and accelerate <u>development of the most promising emerging areas of science and technology</u> as well as the Union <u>wide structuring of the corresponding scientific communities</u>."*

- ➤ Create a fertile ground for **responsible and dynamic multi-disciplinary collaborations** on future and emerging technologies

- ➤ kick-starting **new European research and innovation eco-systems** around them

[FET : Main Lines of activities]

❑**FET Open** supports the **early-stages of the science and technology research and innovation** around new ideas **towards radically new future technologies**. It also funds coordination and support activities for such high-risk forward looking research to prosper in Europe.

-> Initial stages of developing ideas into a proof-of-concept

❑**FET Proactive** addresses promising directions for **research on future technologies** in order to build up **a European critical mass of knowledge and excellence** around them.

-> Being "lighthouse" and reference for others (community building), within which the technology and its uses can be taken up in the future.

❑**FET Flagships** are **science-driven, large-scale, multidisciplinary research initiatives oriented towards a unifying goal**, aiming at transformational impacts with substantial benefits for European competitiveness and for society.

[FET Funding Schemes]

Open, light and agile ←——→ Roadmap based research

40%

FET-Open

Early Ideas

Individual research projects

FET Proactive

Exploration and Incubation

Topical clusters of research projects

FET Flagships

Large-Scale Partnering Initiatives

Common research agendas

Exploring novel ideas

Developing topics & communities

Addressing grand challenges

FET WP 2016-17 Structure

- Call - FET-Open – Novel ideas for radically new technologies
  - FETOPEN-01-2016-2017: FET-Open research and innovation actions
  - FETOPEN-02-2016: FET-Open Coordination and Support Actions
  - FETOPEN-03-2017: FET-Open Coordination and Support Actions
  - FETOPEN-04-2016-2017: FET Innovation Launchpad NEW
- Call - FET Proactive – Boosting emerging technologies
  - FETPROACT-01-2016: FET Proactive: emerging themes and communities
  - FETPROACT-02-2017: FET ERANET Cofund
  - FETPROACT-03-2016: FET ERANET Cofund in Quantum Technologies NEW
- Call - FET Proactive – High Performance Computing
  - FETHPC-01-2016: Co-design of HPC systems and applications
  - FETHPC-02-2017: Transition to Exascale Computing
  - FETHPC-03-2017: Exascale HPC ecosystem development
- Call - FET FLAGSHIPS – Tackling grand interdisciplinary science and technology challenges
  - FETFLAG-01-2016: Partnering environment for FET flagships
- Other Actions
  - FET Flagship Core Projects (within FPAs)

FETOPEN

FETPROACT

FETHPC

FETFLAG

Agenda

➢ Future and Emerging Technologies in Horizon 2020

➢ WP FET 2016-17

  ➢**FET Open**

  ➢FET Proactive

  ➢FET Flagship

➢ Performance italiana nelle precedenti calls

  ➢FET Proactive

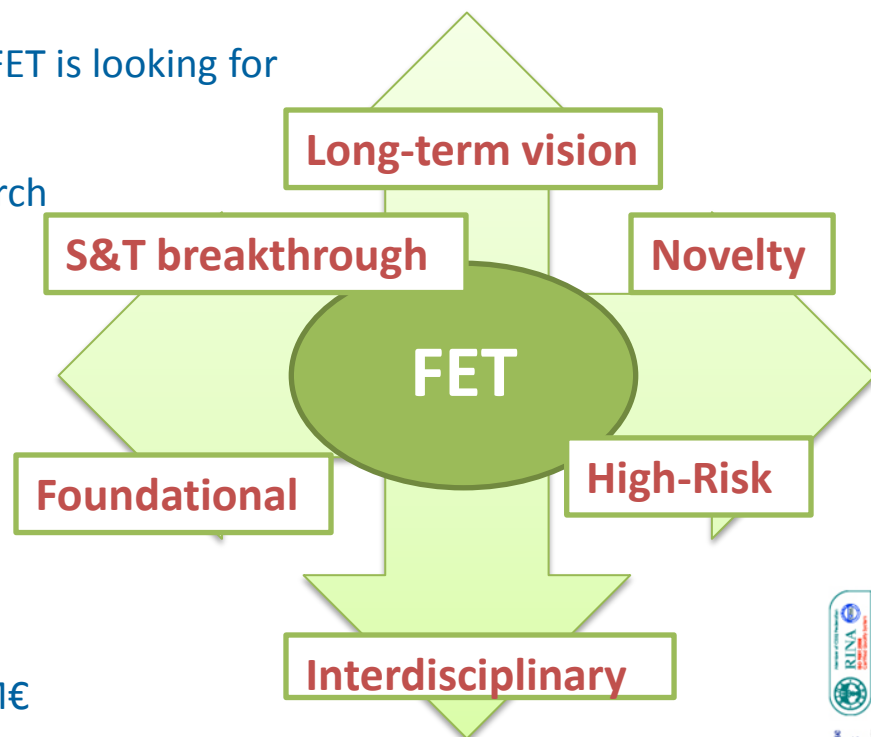 ➢FET Open

➢ Focus FET Open

  ➢Useful Tips

[FET OPEN: Continuity in 2016-17]

- Continuity with WP2014-15 – more than **50% budget increase**

- Early stages of R&I on any new technological possibility

- Scope defined by FET gatekeepers

- Expected impact

- Establish **baseline of feasibility and innovation potential**

- European thought-leadership and future leaders

- **New R&I practices**

- Collaborative projects (RIA) **up to 4M funding** (indicative)

- 3 cut-off dates with 84MEuro each

- Single step submission, **'1+15' pages**
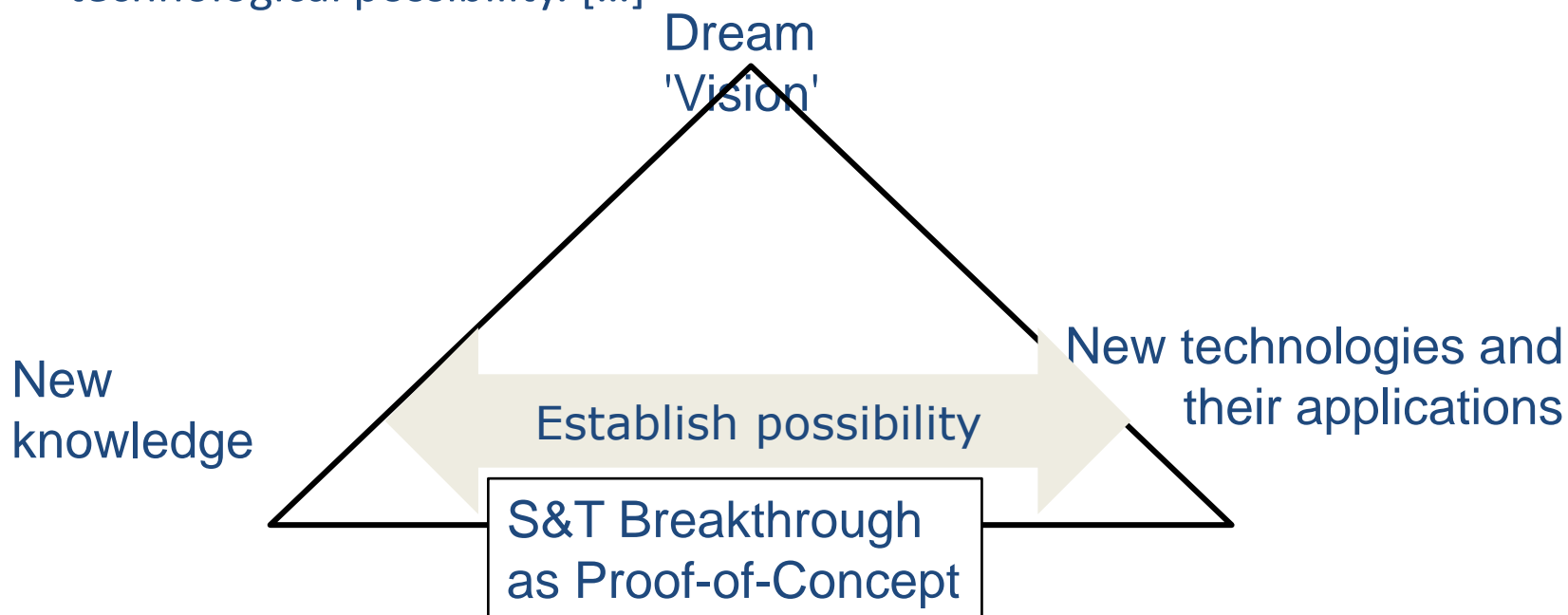
[FET Open: 2016-17]

Call FET-Open : novel ideas for radically new technologies

- 'Open is open'
  - All technologies, no thematic restriction
- FET gatekeepers define the kind of research that FET is looking for
  - Scope defined by the 6 gatekeepers
  - Bottom-up, but targeted - not blue sky research
  - Collaborative research

- Total budget: 202 M € in 2016-17
       in 2014-15 160 M €

- Instrument
  - Research and Innovation Action - 154M€
  - Coordination and Support actions (CSA) – 6M€
- RIA Proposal Template: 16 pages

Long-term vision

S&T breakthrough   **Novelty**

FET

Foundational   **High-Risk**

Interdisciplinary

[FET Open RIA 2016-17]

- ## Scope:

-     This topic supports the early stages of research to establish a new technological possibility. […]

Dream
'Vision'

New knowledge

Establish possibility

New technologies and their applications

S&T Breakthrough
as Proof-of-Concept

[FET Open: Gatekeepers]

✓ **Long-term vision**: a new and radical long-term vision of a science- and technology-enabled future that is far beyond the state of the art and not currently foreseen by technology roadmaps.

✓ **Breakthrough scientific and technological target** : scientifically ambitious and technologically concrete breakthrough, argued to be a crucial step towards achieving the long-term vision. The plausibility of the proposed breakthrough(s) to be attained within the life-time of the project must be argued in the proposal.

→ A proof of principle is a realisation or demonstration of a certain method or idea to demonstrate its feasibility, in order to verify that a concept or theory has the potential of being used. In FET-Open, the required breakthrough S&T targets might comprise a proof-of-principle.

✓ **Novelty**: based on cutting-edge knowledge, new ideas and concepts, rather than in the mere application or incremental refinement of existing ones.

✓ **Foundational**: the breakthroughs that are envisaged must be foundational in the sense that, if achieved, they would establish an essential basis for a new kind of technology and its future uses, not currently anticipated.

[FET Open: Gatekeepers]

✓ **High-risk**: the inherently high risk of the research proposed will be reflected in a flexible but effective methodology for exploring alternative directions and options, supported by open and agile research and innovation practices.

✓ **Interdisciplinary**: the proposed collaborations are expected to go beyond 'waterfall' configurations in multi-disciplinary science- and technology research. Instead they should seek new solutions through genuine exchanges, mutual learning, cross-fertilisation and synergistic advances among distant disciplines in order to open unexplored areas of investigation and new directions for joint research.

→ "beyond 'waterfall' configurations" refer to collaborations where a discipline simply hands over results to another one, and so on, each one doing their routine thing. This would be the case in many engineering-type of projects. In those cases there is no genuine exchange, no mutual learning, and little risk.

→ Whenever disciplines share a common vocabulary or methodological core they are not distant. If they can be considered sub-disciplines of larger disciplines (like physics or biology) then they are probably not very distant.

http://ec.europa.eu/digital-agenda/en/news/fet-living-interdisciplinarity

[FET Open: CSA 2016-17]

✓ <u>Specific challenge</u>: The challenge is to make Europe the best place in the world for collaborative research on future and emerging technologies that will renew the basis for future European competitiveness and growth, and that will make a difference for society in the decades to come.

<u>Scope</u>: Proposals shall address one of the following topics:

✓ **FET Exchange** – networking in future and emerging R&I areas [2016 and 2017]

✓ **FET Communication** – visibility and outreach [2016]

✓ **FET Conference** – 2018 [2016]

✓ **FET Innovation Greenhouse** – capacity for facilitating earliest stages of innovation from FET research [2016]

✓ **FET Futures** – looking for new topics and strategies [2017]

✓ **FET-Open Innovation Launchpad**– funding further innovation related activities to verify the innovation potential of ideas arising from FET funded projects [2017]

<u>Project size</u>: 0,3 to 0,5M€ per topic, up to 1M€ for FET Conference

<u>Budget & deadline</u>:
– 3M€ -> Deadline: 11/05/2016 e 17/01/2017
– Innovation Launchpad: 100 K€ Special Deadlines: 29/09/2016 e 27/09/2017

[FET Open: Innovation Launchpad]

- <u>Short and focused actions </u>(18 months indicative, 100K funding)

- <u>Early innovation steps </u>to improve market- and investor-readiness

- Based on results from an <u>ongoing or recently finished FET project</u>

  - Any FET-funded project from FP7 or H2020, ongoing or <u>maximum 1 year from end-date </u>of originating project to call deadline

  - The link with the originating project is to be substantiated in the proposal

- No additional S&T research

- No actions that are/were foreseen in originating project

- <u>No direct link needed with originating consortium</u>

- <u>Single participant possibility</u>

- Assurance on necessary rights and agreements to be stated in the proposal

- single step submission, <u>'1+7' pages</u>

- Inspired by the successful ERC Proof-of-Concept (PoC) scheme

[FET OPEN: Deadlines]

Topic	Budget 2016 (€ Million)	Budget 2017 (€ Million)	Deadlines	Opening
FETOPEN-01-2016-2017 (RIA)	84.00	84.00 84.00*	11 May 2016 17 Jan 2017 27 Sep 2017	8 Dec 2015
FETOPEN-02-2016 (CSA)	3.00		11 May 2016	8 Dec 2015
FETOPEN-03-2017 (CSA)		1.50	17 Jan 2017	20 Sep 2016
FETOPEN-04-2016-2017 (CSA)	1.20	1.80	29 Sep 2016 27 Sep 2017	1 Mar 2016
Total:	88.20	113.80		

Agenda

➢ Future and Emerging Technologies in Horizon 2020

➢ WP FET 2016-17

  ➢FET Open

  ➢**FET Proactive**

  ➢FET Flagship

➢ Performance italiana nelle precedenti calls

  ➢FET Proactive

  ➢FET Open

➢ Focus FET Open

  ➢Useful Tips

[FET Proactive 2016-2017]

FET Proactive addresses promising directions for research on future technologies in order to build up a European critical mass of knowledge and excellence around them.

	FET-Proactive – boosting emerging technologies	95M
FETPROACT-01-2016	Emerging themes and communities	80M
FETPROACT-02-2017	FET ERANET Cofund	5M
FETPROACT-03-2016	FET ERANET Cofund on quantum technologies	10M

[FET Proactive 2016-2017]

Boosting emerging technologies

Emerging themes and communities

- **Almost 3x budget increase compared to WP2014-15**
- **Further opening up to all technology areas**
- **10 sub-topics identified from on-line public consultation and other sources**
- **New design in WP2016-17 - more 'bottom-up' while still strategic**

FET ERANET Cofund

FET ERANET Cofund on quantum technologies
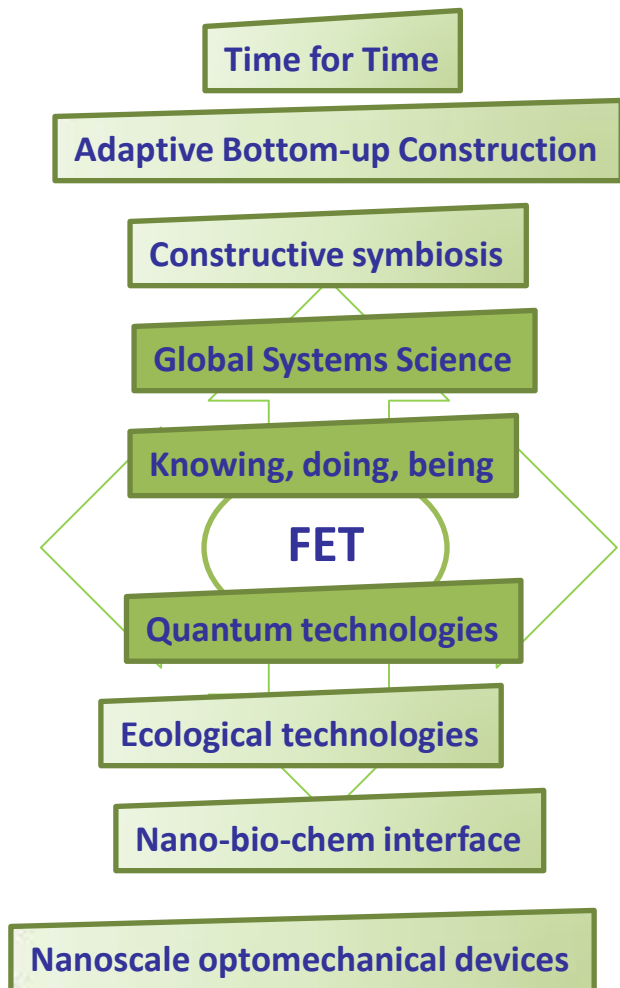
[FET Proactive 2016-2017]

<u>Scope</u>: Proposals should address research and innovation activities, aimed at jointly exploring directions and options to establish a solid baseline of knowledge and skills, and to foster the emergence of a broader innovation ecosystem for a new technology as well as a fertile ground for its future take-up (e.g., through public engagement processes when relevant, or through formal and informal education). Proposals should address a single of the specific subtopics within one of the following areas:

- **Area 1: Future technologies for societal change**
- **Area 2: Biotech for better life**
- **Area 3: Disruptive information technologies**
- **Area 4: New technologies for energy and functional materials**

Only one subtopic to be addressed

- *Fixed deadlines calls*   *Research and Innovation Actions (100% funding)*
- *30 page proposals, 1 step submission*   *3 evaluation criteria, 1 stage evaluation*
- *Larger projects: 4-10MEuro,*   *up to 5 years addressing a single theme*
- *Optional use of cascade funding (e.g., for prize)*
- ***Total budget: 80M€ in WP 2016-17***

[FET Proactive from 2014-2015 to 2016-2017]

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Time for Time

Adaptive Bottom-up Construction

Constructive symbiosis

Global Systems Science

Knowing, doing, being

        FET

Quantum technologies

Ecological technologies

Nano-bio-chem interface

Nanoscale optomechanical devices
```

Future technologies for societal challenges

- **Being human in a technological world**
- **New science for a globalised world**

20M

Biotech for better life

- **Intra- and inter-cell bio-technologies**
- **Bio-electronic medicines and therapies**
- **Cognitive neuro-technologies**

30M

Disruptive information technologies

- **New computing paradigms and their technologies**
- **Quantum engineering**
- **Hybrid opto-electro-mechanical devices at the nano-scale**

30M

New technologies for energy and functional materials

- **Ecosystem engineering**
- **Complex bottom-up construction**

20M

FET-Proactive ERANET Cofund on FET (think 'Chistera' follow-up)

- *Scope*

    coordinate national and regional programmes for research in the FET domain by implementing a joint transnational call for proposals (resulting in grants to third parties) with EU cofunding. […] These activities should in particular cover the following areas:

    - Share information on existing research programmes, strategic research agendas and technological roadmaps, among research funding organisations and with the relevant other stakeholders;

    - Jointly identify emerging topics where transnational cooperation and support to community structuration is most needed, in complementarity with the FET programme;

    - Develop strategic agendas for these topics and accompany the structuration of the related communities though workshops and support to transversal activities.

FET-Proactive ERANET Cofund on Quantum Technologies

- *Expected impact:*
  - Opportunity for closer coordination and greater mobilisation and pooling of resources from regional, national and EU levels
  - Complementary to EU WP
  - Spreading excellence across Europe
  - Better overview of multiple levels of development
  - Increased awareness of synergies and complementarities

- *Scope*
  - New principles, experiments, technologies, devices and systems
  - Demonstrations, critical assessment, benchmarking
  - Quantum-enabled applications

EU investments pioneered in FET…

o ~ 20 years of EU investment in quantum
- o **Sensing & metrology, communication, computing**
- o **World-class scientific and technical expertise**
- o **Nobel prize laureates**

o Steady increase of EU funding: ~350 M€ until now
- o **FET ~250 M€, ERC ~100 M€, MSCA,**

  European Metrology Research Programme (EMRP)/ European Metrology Programme for I&R (EMPIR) in the area of metrology

o National initiatives recently launched

Quantum Technology in H2020

LEIT Work Programme 2016-2017

ICT-30-2017: Photonics KET 2017
Calling for "Disruptive approaches to optical manufacturing by 2 and 3 D opto-structuring:
… Novelty may be related for example to the laser source, to the optical system for light manipulation, to light-matter interaction or to the exploitation of quantum effects."

ICT-31-2017: Micro- and nano-electronics technologies
Calling for "… Technologies exploiting the quantum effects in solid-state devices are also relevant. Advanced explorative technology development at TRL 2-3 is called for."

SC7 - Secure Societies, Digital Security Focus Area
DS-05-2016: EU Cooperation and International Dialogues in Cybersecurity and Privacy Research and Innovation
"Identify new opportunities for cyber security innovation in Europe by looking at emerging trends and disruptive technologies (such as quantum cryptography)"
DS-06-2017: Cryptography
Calling for "New techniques, such as quantum safe cryptography, which are secure from quantum computers and other advances in computing and cryptanalysis"
Calling for "Proposals on quantum key distribution addressing challenges such as improved performance (higher bit rates, increased loss and noise resilience), network integration (coexistence on existing infrastructure) and the development of new protocols beyond key distribution. Proposals on quantum key distribution should include experimentation and validation with end-users in realistic and relevant scenarios such as for mobile communication backhauling, optical access networks or data-centre to data-centre communication."

[FET Proactive 2016-2017]

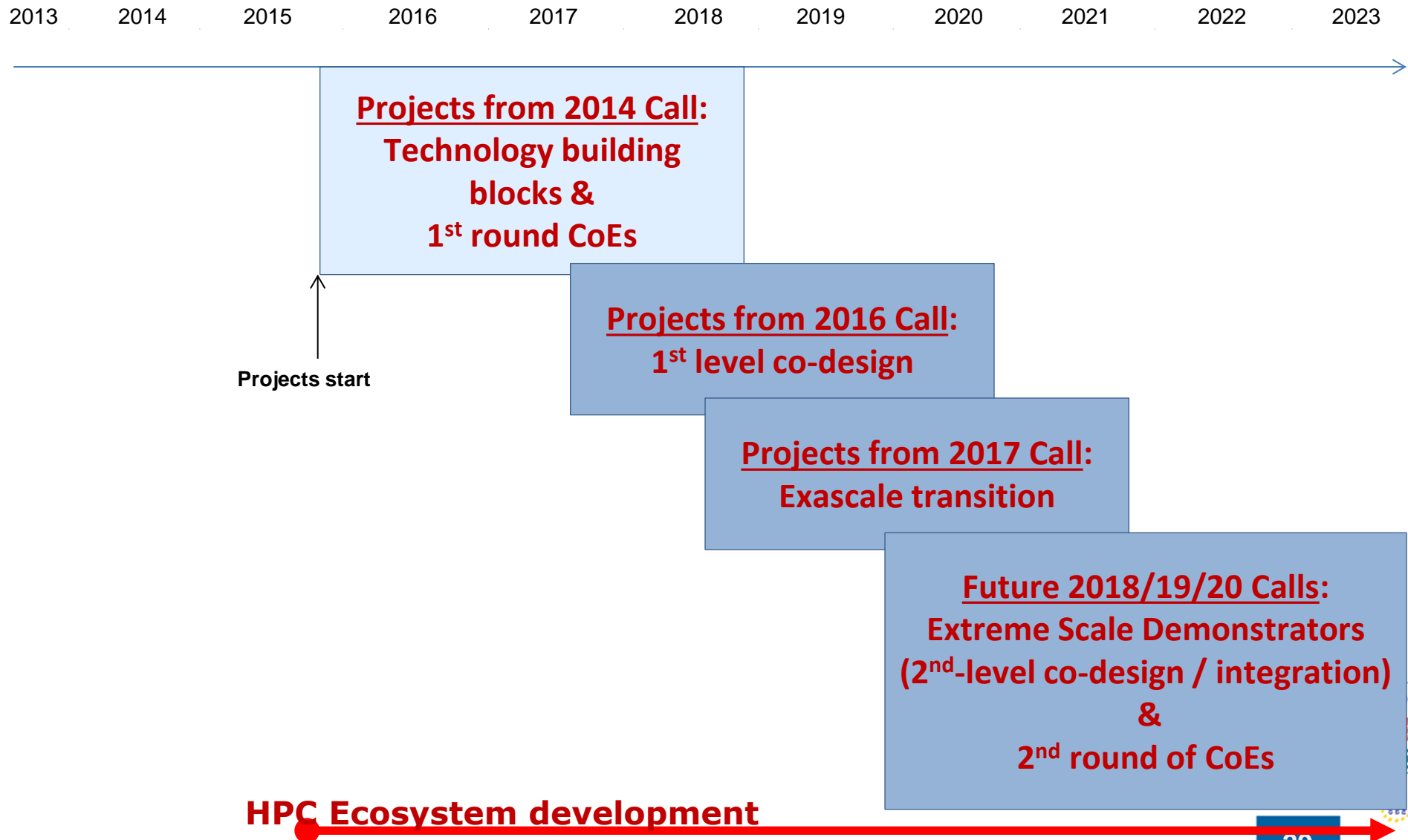| Topic	Budget 2016 (€ Million)	Budget 2017 (€ Million)	Deadlines	Opening
FETPROACT-01-2016 (RIA)	80.00		12 Apr 2016	14 Ott 2015
FETPROACT-02-2017 (ERA-NET-Cofund)		5.00	24 Jan 2017	20 Sep 2016
FETPROACT-03-2016 (ERA-NET-Cofund)	10.00		12 Apr 2016	14 Ott 2015
Total:	90.00	5.00		

[FET Proactive High Performance Computing 2016-2017]

*The **FET-Proactive call on HPC** aims at the next steps for leveraging the existing European strengths for building the next generation of extreme performance computing and taking advantage of the new opportunities created from the transition from peta to exascale computing. The ultimate goal is to achieve world-class extreme scale computing capabilities in platforms, technologies and applications.*

- *Implements Strategic Research Agenda (SRA) of ETP4HPC in Public-Private Partnership*

- *See http://www.etp4hpc.eu/strategy/strategic-research-agenda*

- *Complements other building blocks of HPC strategy under LEIT and e-Infrastructures*

[HPC PPP timeline in H2020]

2013   2014   2015   2016   2017   2018   2019   2020   2021   2022   2023

Projects from 2014 Call:
Technology building blocks &
1st round CoEs

Projects start

Projects from 2016 Call:
1st level co-design

Projects from 2017 Call:
Exascale transition

Future 2018/19/20 Calls:
Extreme Scale Demonstrators
(2nd-level co-design / integration)
&
2nd round of CoEs

HPC Ecosystem development

[HPC Overall strategy]

WP2014-15 ~155 M€ (~144 in the cPPP)

WP2016-17 ~151 M€ (85 in the cPPP)

HIGH PERFORMANCE COMPUTING

PRACE-4IP (15 m€)

PRACE (15 m€)
PPI for HPC (26 m€)

Pan-European HPC Infrastructure
HPC Capability
HPC Services
Support to innovation

Exascale technologies
Architectures, programming.
environments, tools…
Exascale Prototypes

Training
Education
Skills

Core technologies (93,4 m€)
Ecosystem development (4 m€)

Flagship
Applications
(HBP)

Applications
Societal challenges
Scientific strategic applications
Emerging domains (Big Data)
New methods and algorithms

Co-design (41 m€)
Transition to exascale (40 m€)
Ecosystem development (4 m€)

HBP – HPC (25 m€)

ADVANCED COMPUTING

Centres of Excellence (40 m€)

Clouds for Science

SMEs
Services, Competence Centres

Network of SME competence centres (2 m€)

CLOUDS

@APRE 2013

[FET Proactive: HPC 2016-17]

- ***Co-design of HPC systems and applications***: *bigger projects with 10-20m indicative funding per project*

- ***Transition to exascale computing*** *: smaller focused projects with 2-4m indicative funding per project*
    - **High productivity programming environments for exascale**
    - **Exascale system software and management**
    - **Exascale I/O and storage in the presence of multiple tiers of data storage:**
    - **Supercomputing for Extreme Data and emerging HPC use modes**
    - **Mathematics and algorithms for extreme scale HPC systems and applications working with extreme data**

- *Exascale **Ecosystem Development** : Coordination and Support Actions with 1-2m indicative funding per project*

[FET Proactive: HPC 2016-17]

Topic	Budget 2016 (€ Million)	Budget 2017 (€ Million)	Deadlines	Opening
FETHPC-01-2016: Co-design of HPC systems and applications (RIA)	41M		14 Apr 2016	27 Sep 2016
FETHPC-02-2017: Transition to Exascale Computing (RIA)		40M	12 Apr 2017	26 Sep 2017
FETHPC-03-2017: Exascale HPC ecosystem development (CSA)		4M	12 Apr 2017	26 Sep 2017
Total:	41.00	44.00		

Agenda

- Future and Emerging Technologies in Horizon 2020
- WP FET 2016-17
  - FET Open
  - FET Proactive
  - **FET Flagship**
- Performance italiana nelle precedenti calls
  - FET Proactive
  - FET Open
- Focus FET Open
  - Useful Tips

[FET Flagship 2016-17]

FET Flagships address ambitious S&T challenges that require:

- *Setting up large-scale partnerships that bring together the leading researchers from a large number of research organisations (academia and industry);*

- *Commitment to a strong science investment over a long time period that cannot be carried out alone by the Commission or any single Member State*

[FET Flagship 2016-17]

FET Flagships are science-driven, large-scale, multidisciplinary research initiatives oriented towards a unifying goal, aiming at transformational impacts with substantial benefits for European competitiveness and for society.

- *Advancing the two Flagships (Graphene and Human Brain Project) on the basis of their FPAs*

- *ERA-NET Cofund to coordinate national and regional research programmes and to fund Partnering Projects (PPs) → FLAG-ERA http://flagera.eu/*

- *CSA for supporting the PPs in their networking, coordination and participation in Flagship activities*

	FET-Flagships	185M
FETFLAG-01-2016	Partnering environment for FET Flagships	
	- ERA-NET Cofund action	8M
	- Coordination and Support Action	1M
[2017]	Pro memori: Core project funding (through 'Other Actions')	88+88M

[FET Flagship Partnering Projects]

- *The implementation model of the Flagships aims to link together and ensure coordination and synergy of all those research activities relevant for the Flagship that are funded by the Commission and the Member States.**

- *Partnering Projects are projects supported by national/regional funding agencies and/or by private funding. They are addressing areas relevant for the Flagships and contribute to their objectives.***
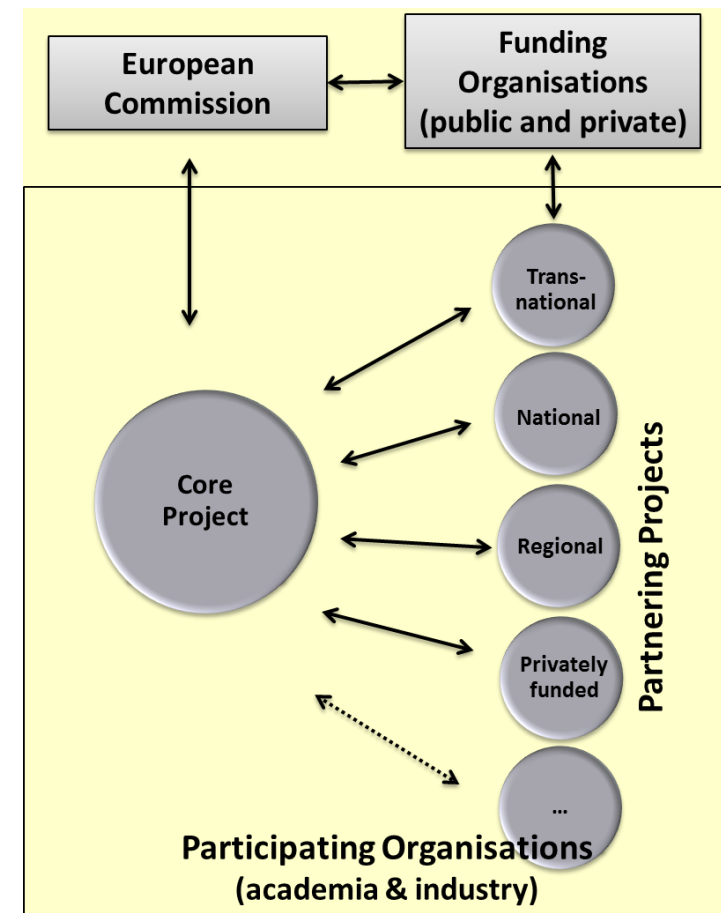
***See http://ec.europa.eu/programmes/horizon2020/en/news/
fet-flagship-model-implementation-and-governance-model-horizon-2020-short-overview-presentation
See Staff Working Document: SWD(2014) 283 final of 16.09.2014

[FET 2016-17 Budget]

	FET-Open	202M
FETOPEN-1-2016-2017	FET-Open Research and Innovation Actions	194,5 M
FETOPEN-2-2016	FET-Open Coordination and Support Actions	3M
FETOPEN-3-2017	FET-Open Coordination and Support Actions	1,5M
FETOPEN-4-2016-2017	FET Innovation Launchpad (CSA)	3M
	FET-Proactive – boosting emerging technologies	95M
FETPROACT-01-2016	Emerging themes and communities (RIA)	80M
FETPROACT-02-2017	FET ERANET Cofund	5M
FETPROACT-03-2016	FET ERANET Cofund on quantum technologies	10M
	FET Proactive – High Performance Computing	85M
FETHPC-01-2016	Co-design of HPC systems and applications (RIA)	41M
FETHPC-02-2017	Transition to Exascale Computing (RIA)	40M
FETHPC-03-2017	Exascale HPC ecosystem development (CSA)	4M
	FET-Flagships	185M
FETFLAG-01-2016	Partnering environment for FET Flagships	9M
[Other Actions 2017]	Core project funding	176M

Future & Emerging Technologies (FET)

Complementary elements

FET keywords

➢ Radically new technological possibilities

➢ Interdisciplinary Collaborations (advanced sciences - e.g. life sciences, social sciences and humanities- and cutting-edge engineering disciplines)

➢ New research and innovation practices

➢ Innovation potential

➢ Responsible Research and Innovation (RRI)

  ➢ encouraging formal and informal science education

  ➢ public engagement

  ➢ gender and ethical dimension

  ➢ potential long term implications (i.e., socioeconomic, climate, sustainability)

➢ Global collaborations

➢ maximise Access to and Re-use of research outcomes and research data generated

Education in FET

While FET actions have a **direct impact on career opportunities** through the researchers that complete PhD or post-PhD study within FET projects, further specific actions will increase the **impact on education**, for example through:

- **new academic curricula in multidisciplinary domains**,

- increased **visibility of inspiring FET topics to high-school students**,

- **entrepreneurship courses,**

- **training opportunities for industry**.

Responsible Research and Innovation (RRI) and Social Sciences and Humanities (SSH)

Future and emerging technologies can have a profound impact on our lives and society. Therefore, the **Social Sciences and Humanities (SSH)** play an important role in the **multi-disciplinary research** supported by FET.

Attention will be given also to **Responsible Research and Innovation (RRI)** so that new technologies can be gracefully embedded in society, thus contributing fully to a more sustainable future and to a <u>society that is supportive of research</u>.

Specific actions could cover the **widening of the ethics debate** in multi-disciplinary research endeavors, involving also the behavioral sciences, and active engagement with the organized civil society and the public at large.

Various aspects (**gender, participation, public engagement, informal learning**) explicitly mentioned where relevant

Industrial & SMEs Participation

FET Open will discover the essential tools for building **operational links between science, technology, innovation and society**, as well as **across disciplines**, so that even the most advanced results can find their way to **stimulate industrial leadership and for addressing societal challenges**.

A particular attention will be paid to tap into the **innovation potential** that can **accelerate the exploitation of early results** from FET research. It will be considered including support to the **high-potential innovators** that can push the realization of untapped market opportunities emerging from FET research results.

Interdisciplinary aspects will be discovered also on regards of innovation potential between **collaboration academia/private sector**, in order to achieve advances on **professional skills and market replicable ideas** coming from academia landscape.

Industrial & SMEs Participation

Key Note:

- Link **novel ideas** from science on the one hand, and marketable ideas on the other, and can lead to new, visionary and **non-mainstream business opportunities** and future markets.

- Generate a new scientific and technological asset base on which the SMEs can establish themselves firmly as future innovation players in areas with a **high potential for future commercial or societal impact**.

- **NO short term commercial outcomes**:
  not support, for example, the incremental improvement of state-of-the-art technology, mainstream research aimed at short term product or service development, the incremental improvement of existing lines of business activity, research aimed to catch-up with the competition, forsighting or market studies, or the mere development of new business models or business plans.

- The aim is **not for the industrial part to coordinate the academic part something obviously unrealistic**. What we need is to build further the academic dimension of the European ecosystem through a separate action driven by academia itself.

[FET Advisory Group - FETAG]

✓ Provided for in the legislative text to **give consistent and consolidated advice on relevant objectives and S&T&I priorities** during the WP preparations

✓ Provides expertise to the Commission when preparing implementing measures, i.e. before the Commission submits these draft measures to a comitology committee

✓ First meeting planned for 21 February 2014

✓ IT: Lucia Sorba (CNR- Nanoscienze)
  Domenico Laforenza (CNR - Informatica e Telematica)
  Gloria Origgi (CNRS- Paris e Unibo - scienze cognitive)

The FET Advisory Group concludes that the FET programme should be recommended as the **nucleus for the establishment of a European Innovation Council**. Positioned as an evolving entity, FET is a natural model upon which to build the European Innovation Council because of its inherent focus on community building, its openness, its target driven outlook, its flexibility, and its responsiveness, all of which are fundamentally important characteristics in a rapidly changing world.

FET OPEN
TYPE OF ACTION

Research and innovation actions

- *Description:*
  Action 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.

  For this purpose they may include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment.

  Projects may contain closely connected but limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment.

- *Funding rate:* **maximum 100%**

Eligibility criteria

Three legal entities. Each of the three shall be established in a different Member State or associated country. All three legal entities shall be independent of each other.

Global Collaborations

FET research is well placed for global collaborations that can raise the level of excellence and accelerate the impact from global alliances. Thus, participation of excellent non EU partners in FET activities, **whenever necessary**, is welcome.

Evaluation Process

Proposal — Eligible proposal

Expert · Expert · Expert · Expert — 4 experts

Individual Evaluation Report — Individual evaluation

Panel Review — Additional 4 experts

Evaluation Summary Report
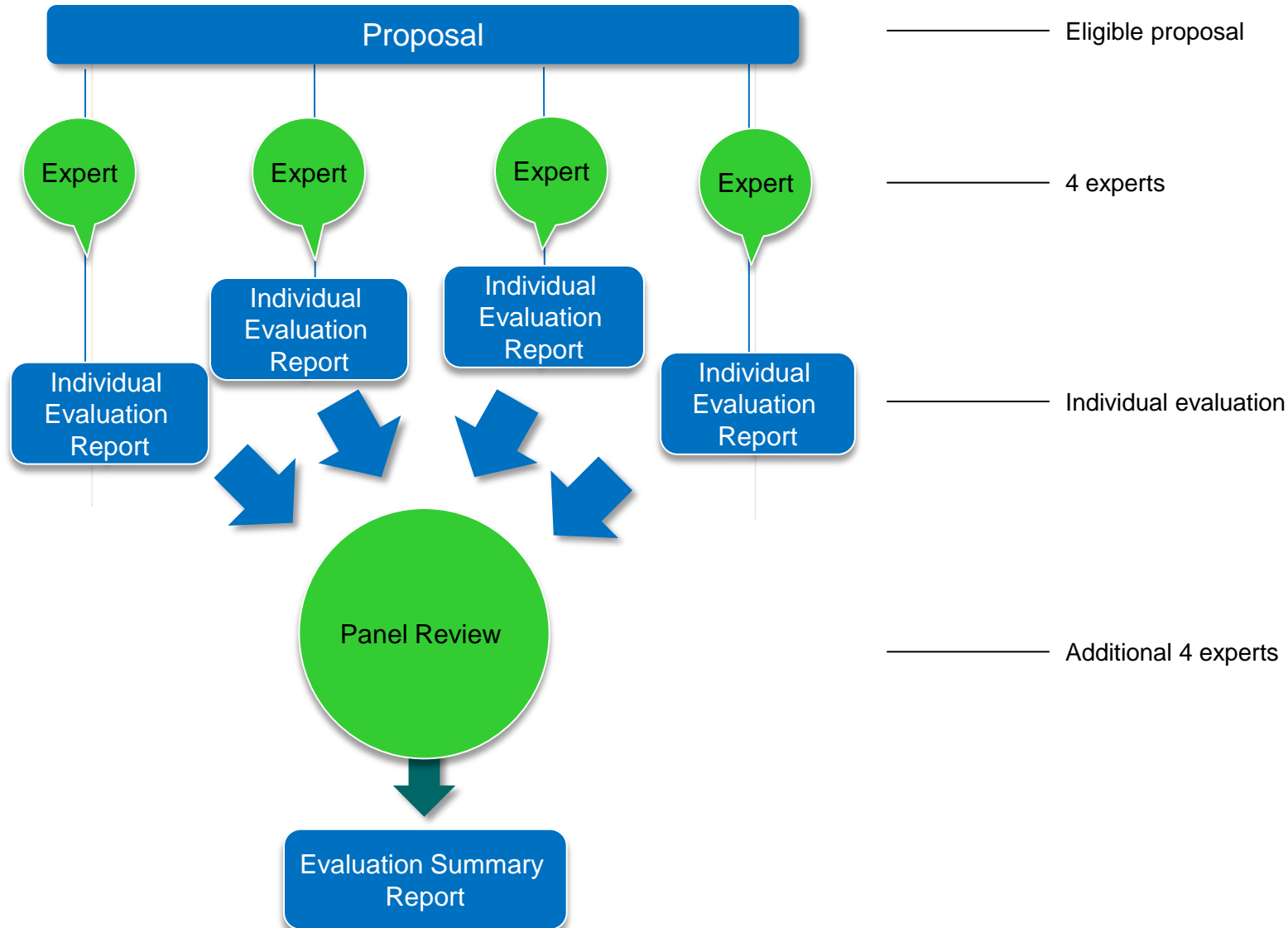
FET
ITALIAN PARTICIPATION

FET 2014- 2015 – Call Summary

Call Identifier	Deadline	Indicative Budget	Allocated Budget
FET Open 2014	30/09/2014	80 M € (RIAs: 77 M €)	80,4 M € (RIAs: 78.1 M €)
FET Open 2015	30/03/2015	40 M € (RIAs: 38,5 M €)	42,4 M € (RIAs: 40,9 M €)
FET Open Sept 2015	30/09/2015	40 M € (RIAs: 38,5 M €)	39,1 M €
FET Proactive	01/04/2014	35 M €	34,9 M €
FET High Performance Computing	30/09/2014	97,4 M € (RIAs: 93,4 M €)	98,5 M € (RIAs: 94,5 M €)

FET 2014/2015 - Summary results

Research and Innovation actions submitted vs retained

18%	5,7%	24%	3,6%	Success Rate

QS (22) — (4)

GSS (52) — (3)

HPC (79) — (19)

KnowDoBe (110) — (4)

3,73%	1,7%	1,3%	Success Rate

FET Open 1 (643) — (24)

FET Open 2 (670) — (11)

FET Open 3 (800) — (11)
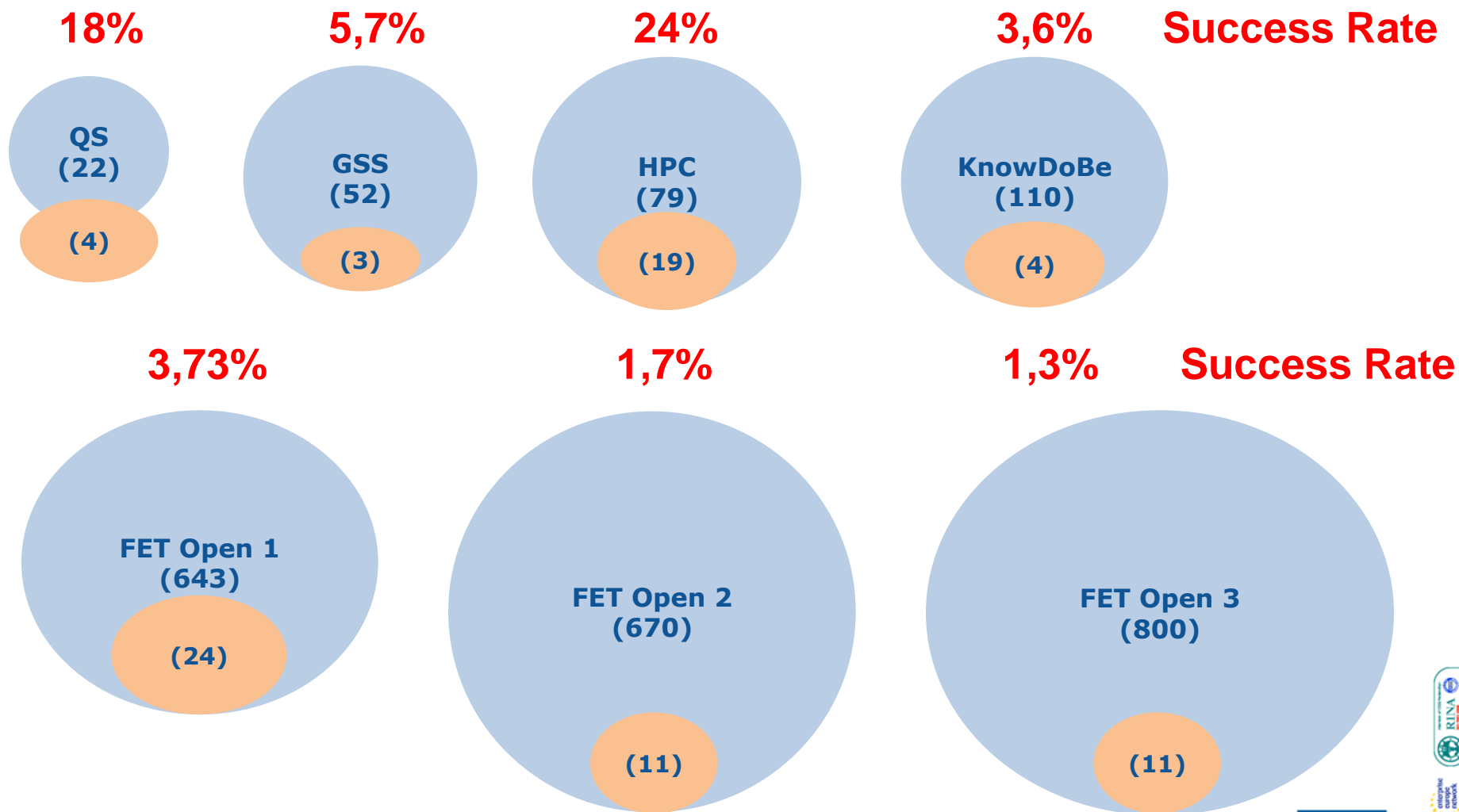
FETOPEN 2014- 2015

Overview of topics covered*
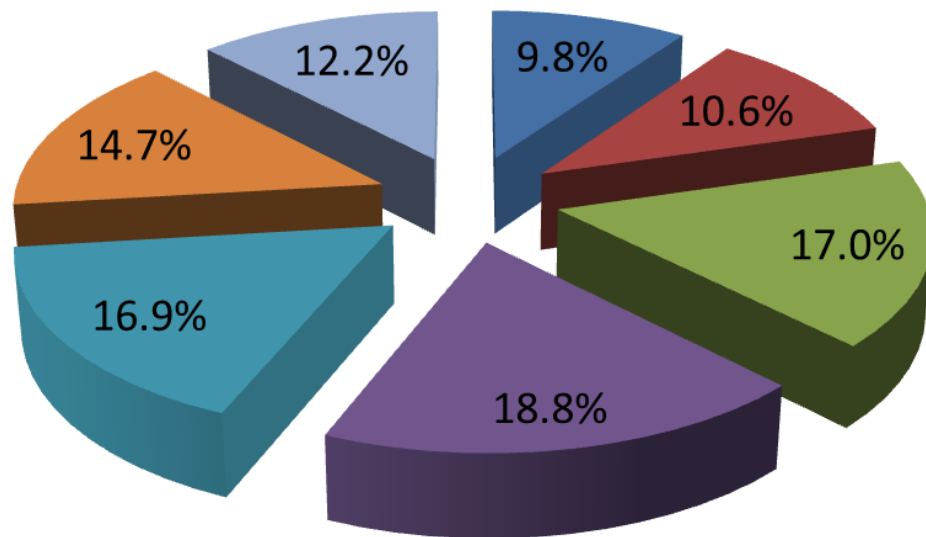
Legend:
- Energy, Transport, Environment
- Bio-Robotics and HCI
- Life Science, Medicine, Biology, NeuroBio
- Electronics, Telecom, Optics, Hardware, Sensors, Devices
- Computer Science, Bio-informatics, Complexity, Data mining
- Nanoscience, Quantum Physics, Astrophysics
- Materials, Chemistry

Pie chart values: 9.8%, 10.6%, 17.0%, 18.8%, 16.9%, 14.7%, 12.2%

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

FETOPEN 2014- 2015 - Summary results

ITALIAN PARTICIPANTS

H2020 FET Open -2014

Number of proposals with Italian participants		Italian Requested Grant amount (M€)	
Submitted	284	Submitted	253.02 M
Retained	5	Retained	2.35 M
Success (retained/submitted)	1,76 %	Success (retained/submitted)	0,93 %

H2020 FET Open -2015

Number of proposals with Italian participants		Italian Requested Grant amount (M€)	
Submitted	303	Submitted	245.4 M
Retained	6	Retained	4.104 M
Success (retained/submitted)	1,76 %	Success (retained/submitted)	1,6 %

FET
HIGHLIGHT WEAKNESSES

[Lessons Learnt]

1. Excellence

Weaknesses

Too much focused on the project and **not enough on the technology or problem to be addressed**;

Not convincing when **describing technology** (you have to explain why **a certain technology** will succeed in a long term vision);

Not providing enough evidence on **multidisciplinary aspects**;

Having a too **low level of novelty**, planning to develop a technology that already exists on the market or there is very low background;

Proposing just an idea **without any strong methodology**

[Lessons Learnt]

2. Impact

| **Weaknesses** | No description of **innovation potential** that can accelerate the **exploitation** of early results |

No reference to possible **exploitation plans**

No integrated **data management plans** (only coordinator involvement)

Limited dissemination (no publications on high scientific journals)

Open Access is Mandatory

Direct impact on career opportunities

Active engagement with the organized civil society and the public at large

[Lessons Learnt]

3. Implementation

Weaknesses

Interaction among work packages *(required)*

Task/role allocation not appropriate according to the activities

Involvement of non-EU partners *(to be clearly justified)*

Interaction among project partners

Useful Links

✓ **The Future of FET**

http://ec.europa.eu/futurium/en/content/report-fet-advisory-group-future-fet-possible-nucleus-european-innovation-council

✓ **Quantum Technologies - Opportunities for European industry**

https://ec.europa.eu/digital-agenda/en/news/quantum-technologies-opportunities-european-industry-report-round-table-discussion-and

✓ **FET – WP 2016-2017 preparation**

http://ec.europa.eu/programmes/horizon2020/en/node/1422

✓ **FET Open & FET Proactive Infoday, 25th January 2016**

http://ec.europa.eu/rea/pages/fet_open_and_fet_proactive_info_day_en.htm

✓ **Progetto FEAT Call for Projects and Artists;** Deadline: 31/01/2016

http://featart.eu/

Useful Links

✓ **Previous Projects funded under H2020- FET**

http://cordis.europa.eu/projects/result_en?q=(contenttype%3D'project'%20OR%20/result/relations/categories/resultCategory/code%3D'brief','report')%20AND%20programme/pga%3D'H2020-EU.1.2.*

✓ **FAQs on H2020 FET Open 2016-17 Topic Call**

http://ec.europa.eu/research/participants/portal/desktop/en/support/faq.html#c,faqs=question,answer,category,tagList,programmeList/s/H2020-FETOPEN-2016-2017/

✓ **FAQs on H2020 FET Proactive 2016-17 Topic Call**

http://ec.europa.eu/research/participants/portal/desktop/en/support/faq.html#c,faqs=question,answer,category,tagList,programmeList/s/H2020-FETPROACT-2016-2017/

THANK YOU FOR YOUR ATTENTION!

APRE

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