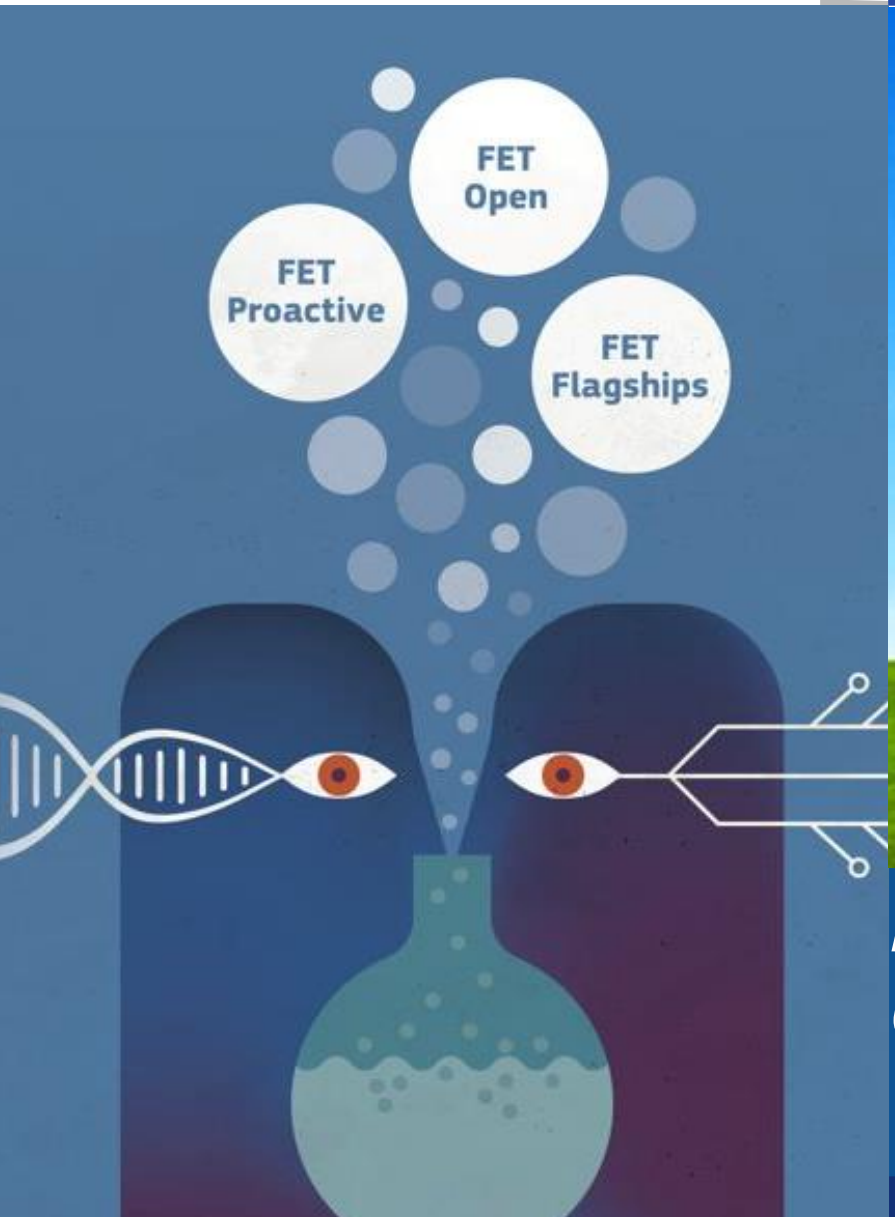


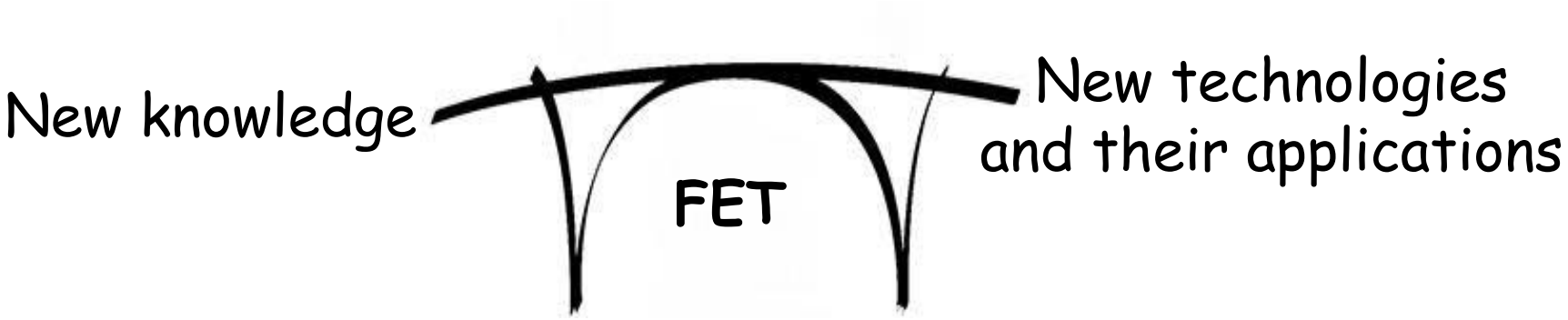
FET WP 2018-2020 Overview

Viorel Peca

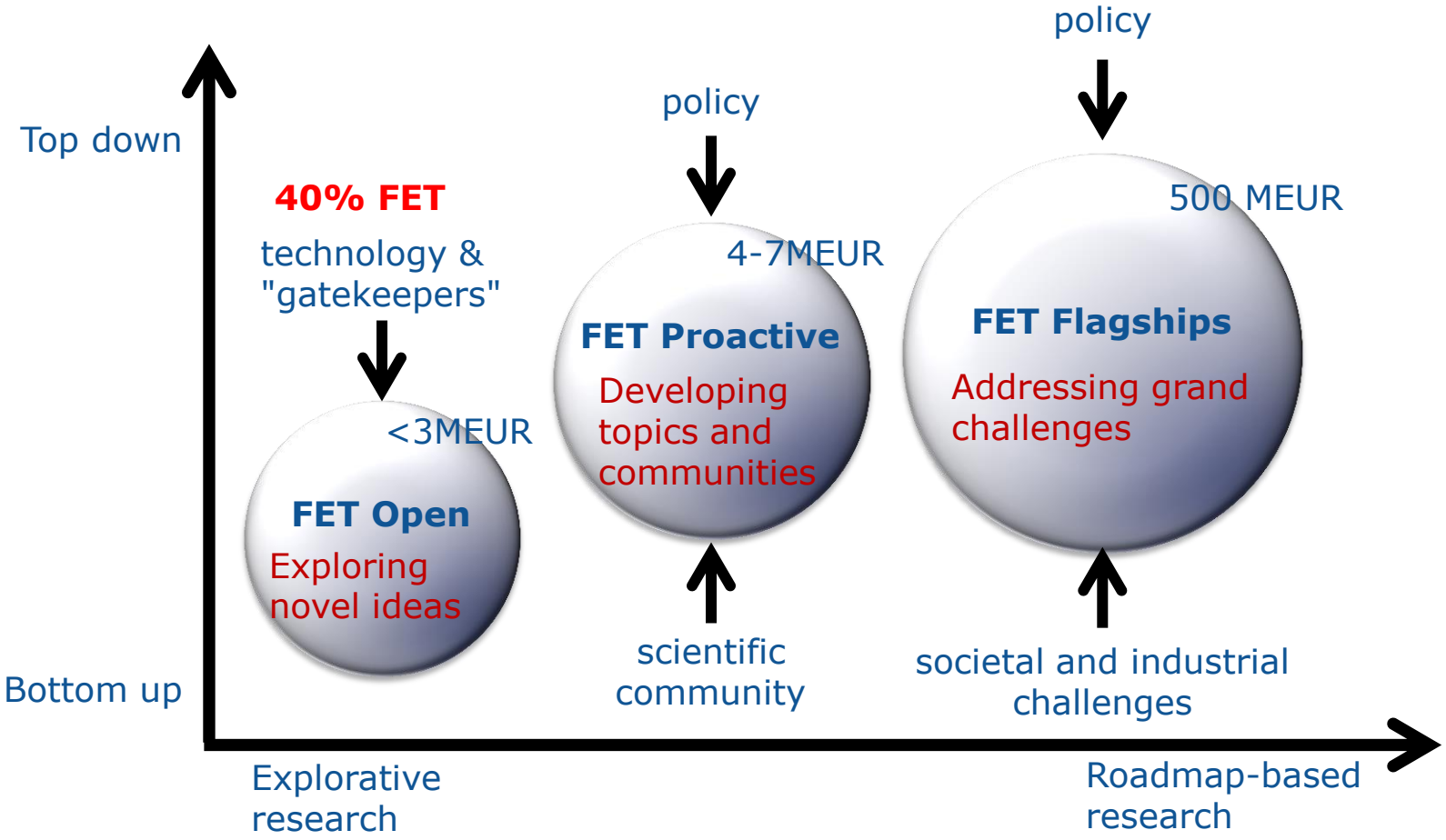
23/11/2017

FET Mission

- To turn Europe's excellent science base into a competitive advantage by uncovering radically new technological possibilities
- To turn Europe into best place for collaborative and interdisciplinary research and innovation in future and emerging technologies

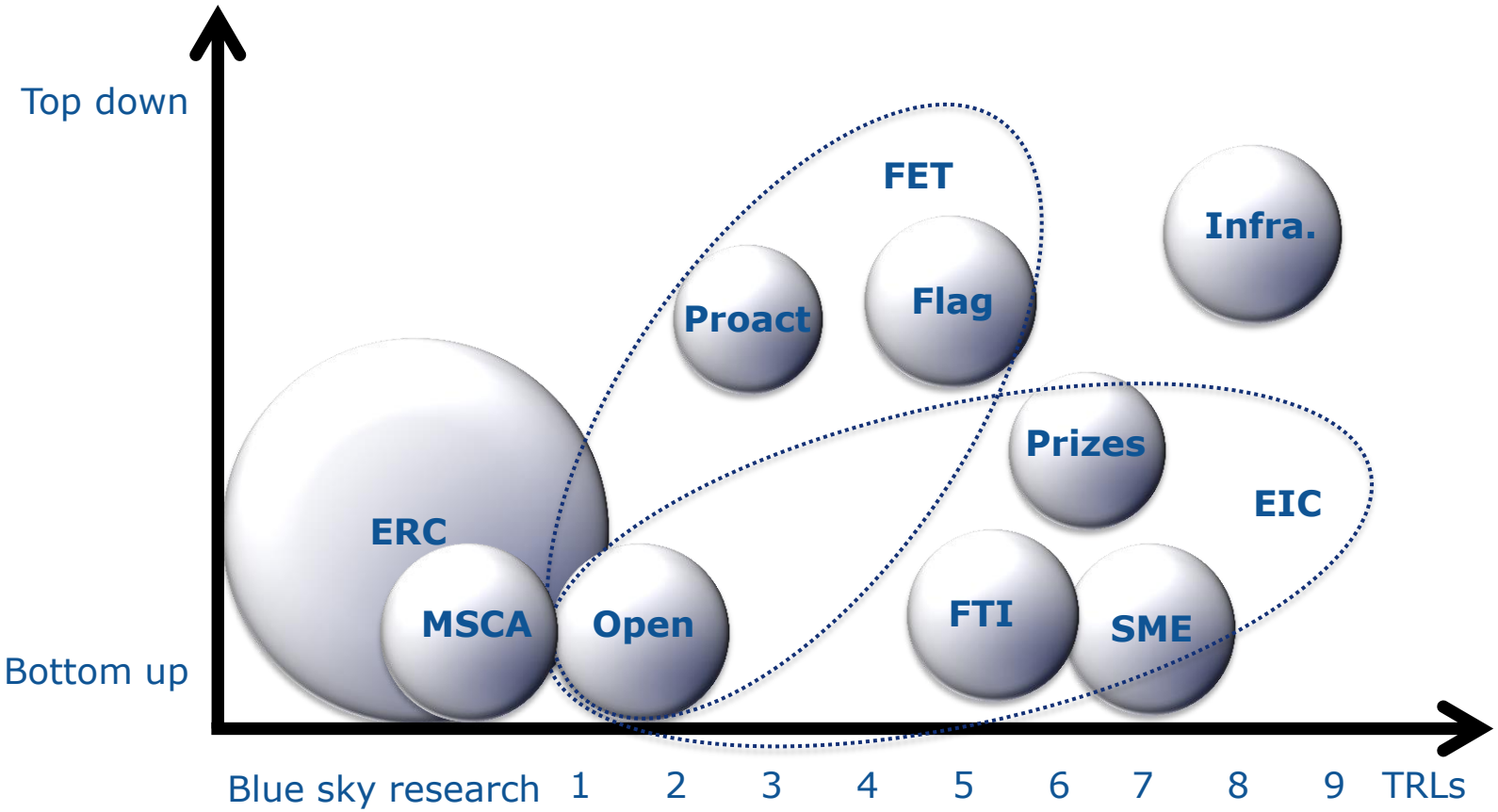


The power of FET – 3 complementary schemes



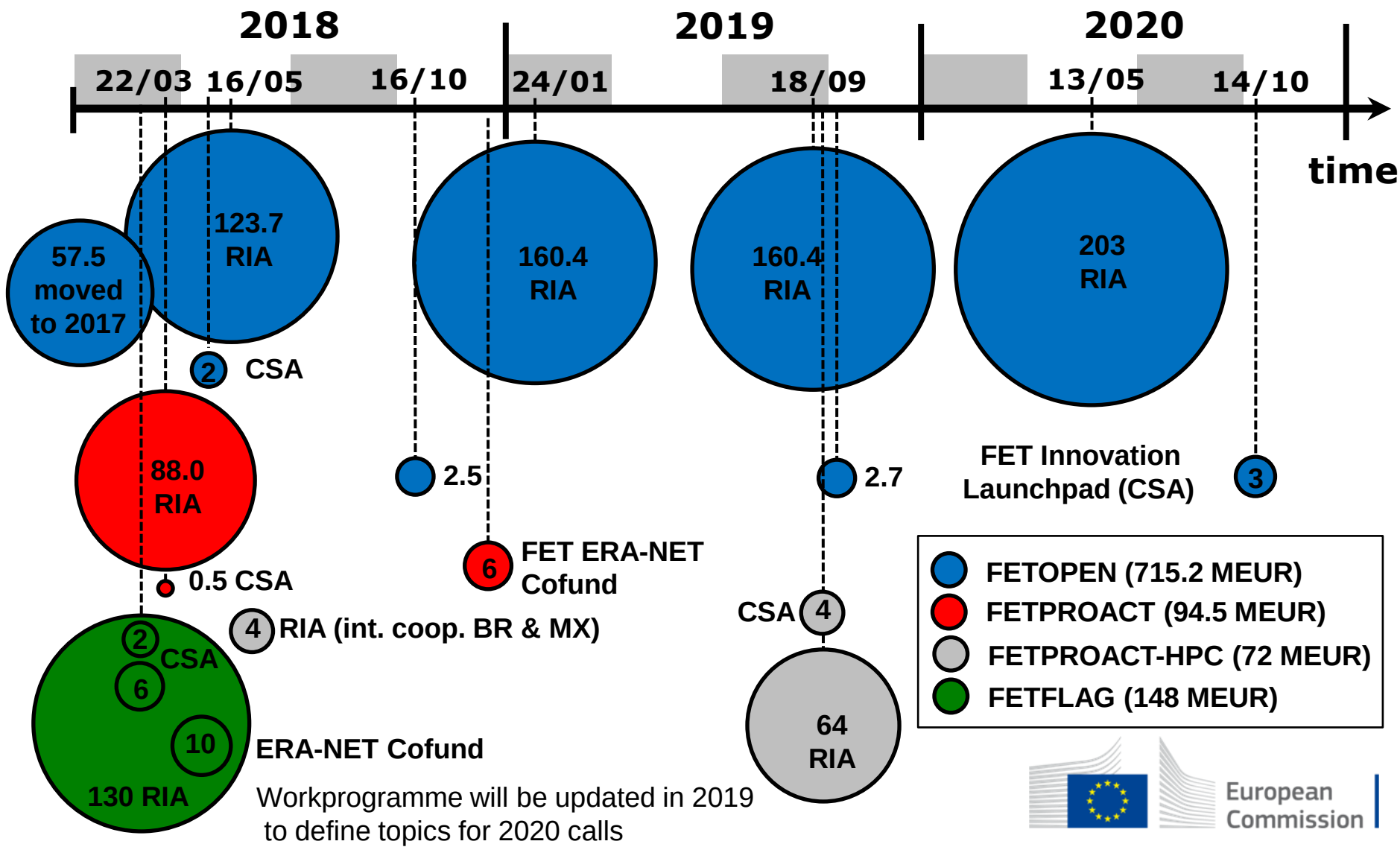
European Commission

FET in H2020 Excellence Science pillar



European Commission

FET Work Programme 2018-2020



Workprogramme will be updated in 2019 to define topics for 2020 calls

European Commission

FET Open - mission

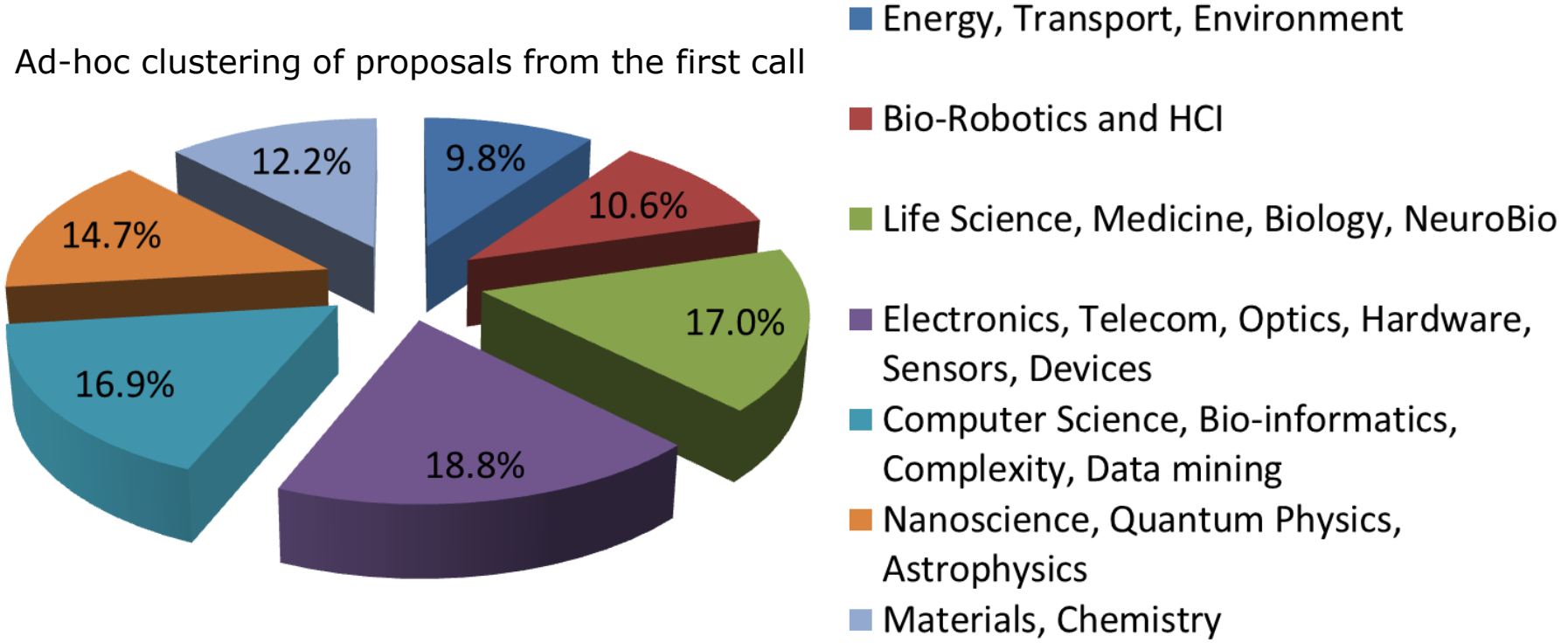
Aims to establish European leadership in the early **exploration** of future technologies;

- Looks for opportunities of long-term benefit for citizens, the economy and society;
- aims to mobilise Europe's most creative and forward thinking researchers from all disciplines to work together and **explore** what may become the leading technology paradigms of the future.

FET Open – all technologies

Reaching out to many domains!

Ad-hoc clustering of proposals from the first call



First call : 638 eligible proposals - 77M€ budget - success rate : 3,75%
Second call: 664 eligible proposals – 38,5M€ budget – success rate : 1,7%
Third call: 799 eligible proposals – 38,5M€ budget – success rate 1,5%

European Commission

FET WP 2018-2020: FET Open

Call - FET Open – Novel ideas for radically new technologies

- FETOPEN-01-2018-2019-2020: FET-Open Challenging Current Thinking
  - Research projects (RIA): 705 M€, deadlines 2018, 2019, 2020
- FETOPEN-02-2018: FET-Open Coordination and Support Actions
  - 3 CSA topics: Communication and outreach, Innovation and Observatory
  - Total budget 2 M€, deadline 11/04/2018
- FETOPEN-03-2018-2019-2020: FET Innovation Launchpad
  - CSA projects to support take-up of FET project results
  - Total budget 8.2 M€, deadlines 2018, 2019, 2020

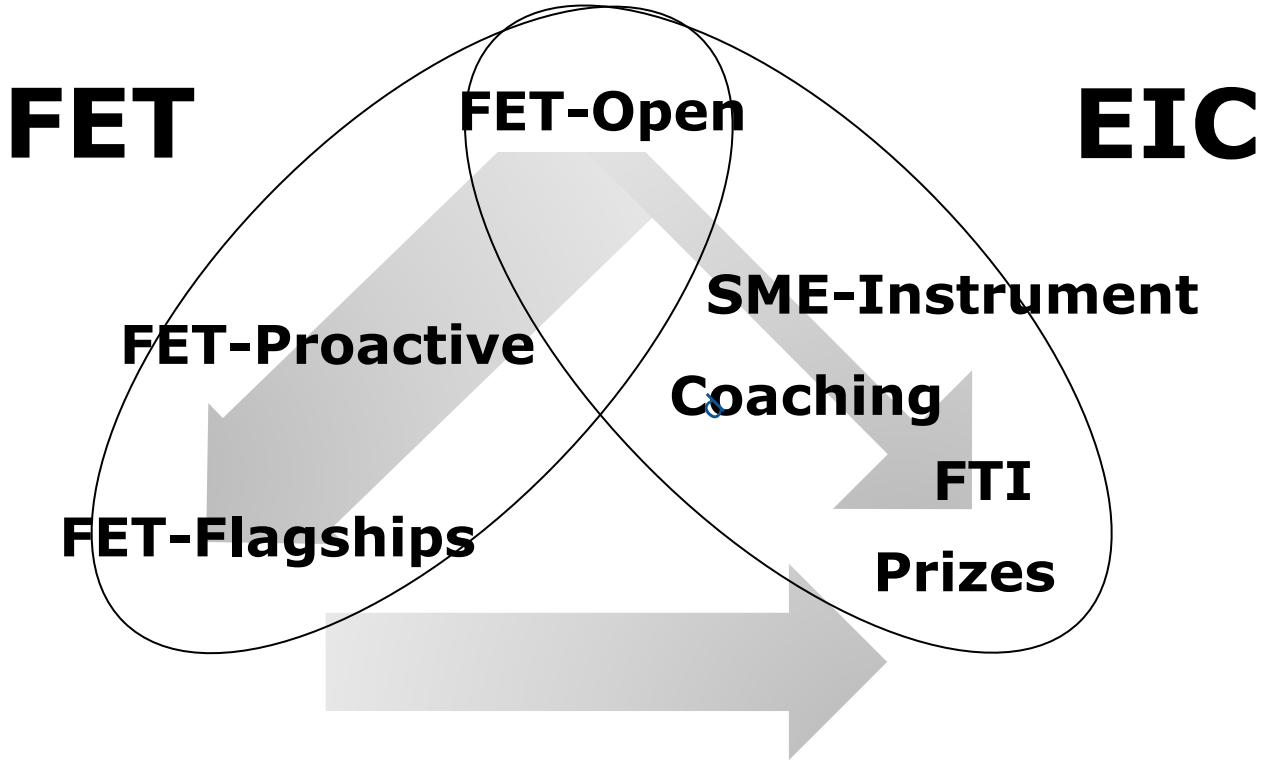
FET Open – changes for 2018

FET Open - Novel ideas for radically new technologies

- FET Open Challenging Current Thinking
  - FET gatekeepers reduced from 6 to 3 for clearer scoping
  - Evaluation strengthens role of scope and discourages poor resubmissions
  - Indicative size 'up to EUR 3 million'
  - Single stage, continuously open with regular cut-off dates
- FET Open Coordination and Support Actions
  - Focused on impact enhancing measures for Communication, Innovation and Horizon Scanning (Observatory)
- FET Open FET Innovation Launchpad
  - Call text simplified, taking into account lessons learned

Total budget for FET Open in Horizon 2020 (incl. CSAs) will be around 1070 M€, i.e., meeting the target of 40% of the total FET budget in Horizon 2020

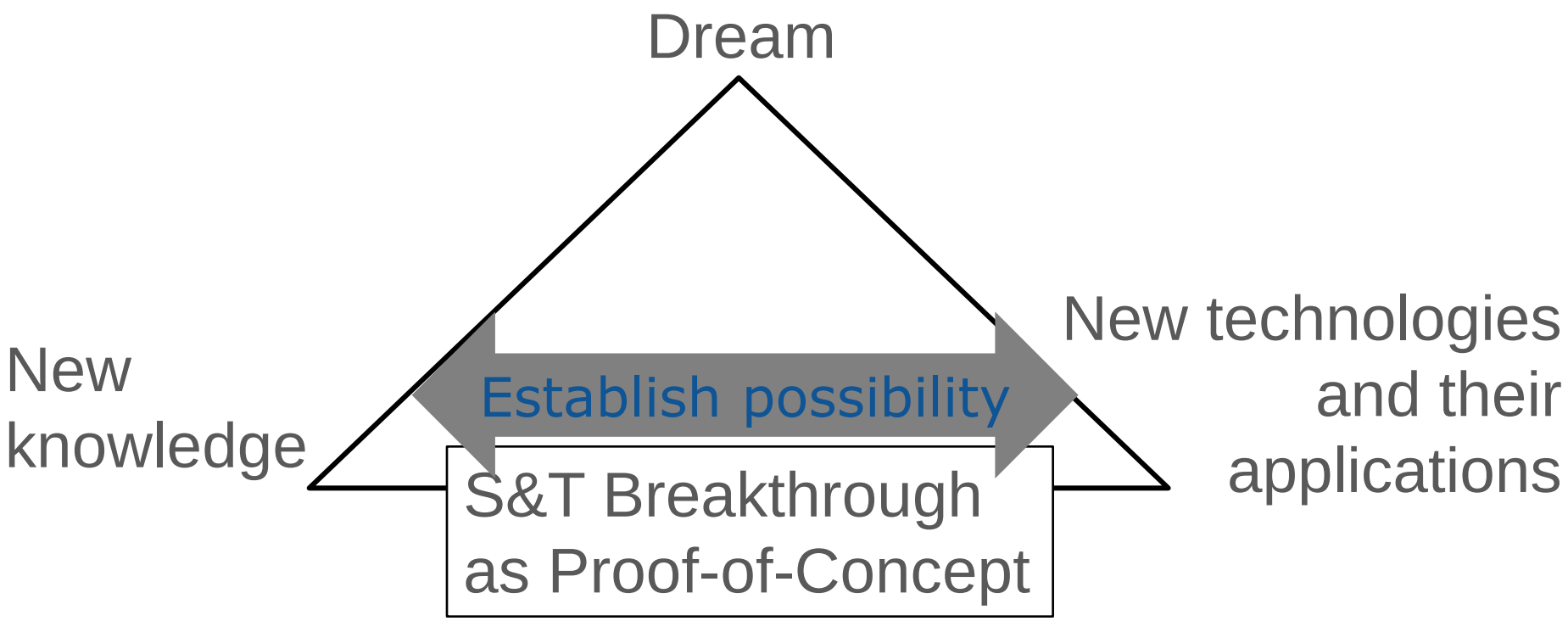
FET Open and EIC



FET mission


Dream
New knowledge
Establish possibility
New technologies and their applications

A typical FET-Open project



FET Gatekeepers

FET Open proposals should:

- Have a clear and radical vision for new technology challenging current paradigms
  - incremental research following a well-established roadmap will not be funded
- Target a technological breakthrough
  - blue-sky exploratory research without a clear technological objective will not be funded
- Involve ambitious interdisciplinary research that opens up new areas of investigation
  - proposals with only low-risk incremental research will not be funded

FET-Open is extremely competitive

Don't waste time on a proposal that has no chance to make it through the FET-Open evaluation.

- Is FET-Open really the right scheme for you?
- Check out LEIT and Societal Challenges work progammes.
- FET is not ERC: collaboration, science and technology are all essential ingredients.
- It is not because something has not been done before that it is sufficiently novel for FET.
- FET is not the long-term end of an established industry's road-map
- A long-term vision is essential, but also a plausible idea on how to get there.
- Writing a good proposal is probably as hard as writing a good scientific publication (and more intellectually rewarding).

Writing a good FET proposal

Be ambitious, follow your 'dream'

- Novelty is essential
- Incremental refinements rarely make it – high-risk does
- Boil down the vision to a concrete and ambitious target
- Check with others but keep it your proposal (e.g. FET NCPs through IDEALIST)

Consortium

- There are no hidden expectations from our side (beyond the rules for participation), i.e. no cosmetic roles – keep it simple
- Look for renewal here too - novelty probably starts here
- Narrow inter-disciplinarity will not be good enough to win (look beyond your comfort zone – this is not ERC-like career building)
- Commitment: will the project transform the partner(ship)? (mission vs. role)

Collaborate, collaborate, collaborate..

- Take inter-disciplinarity seriously - write your proposal together
- Collaboration throughout the project, driven by joint questions, goals and mutual learning, not just passing on results between silos
- Explore new ways of working/learning/changing together

Communicate engage

- Scientific publications
- Social networks & media
- Public engagement

Keep it simple

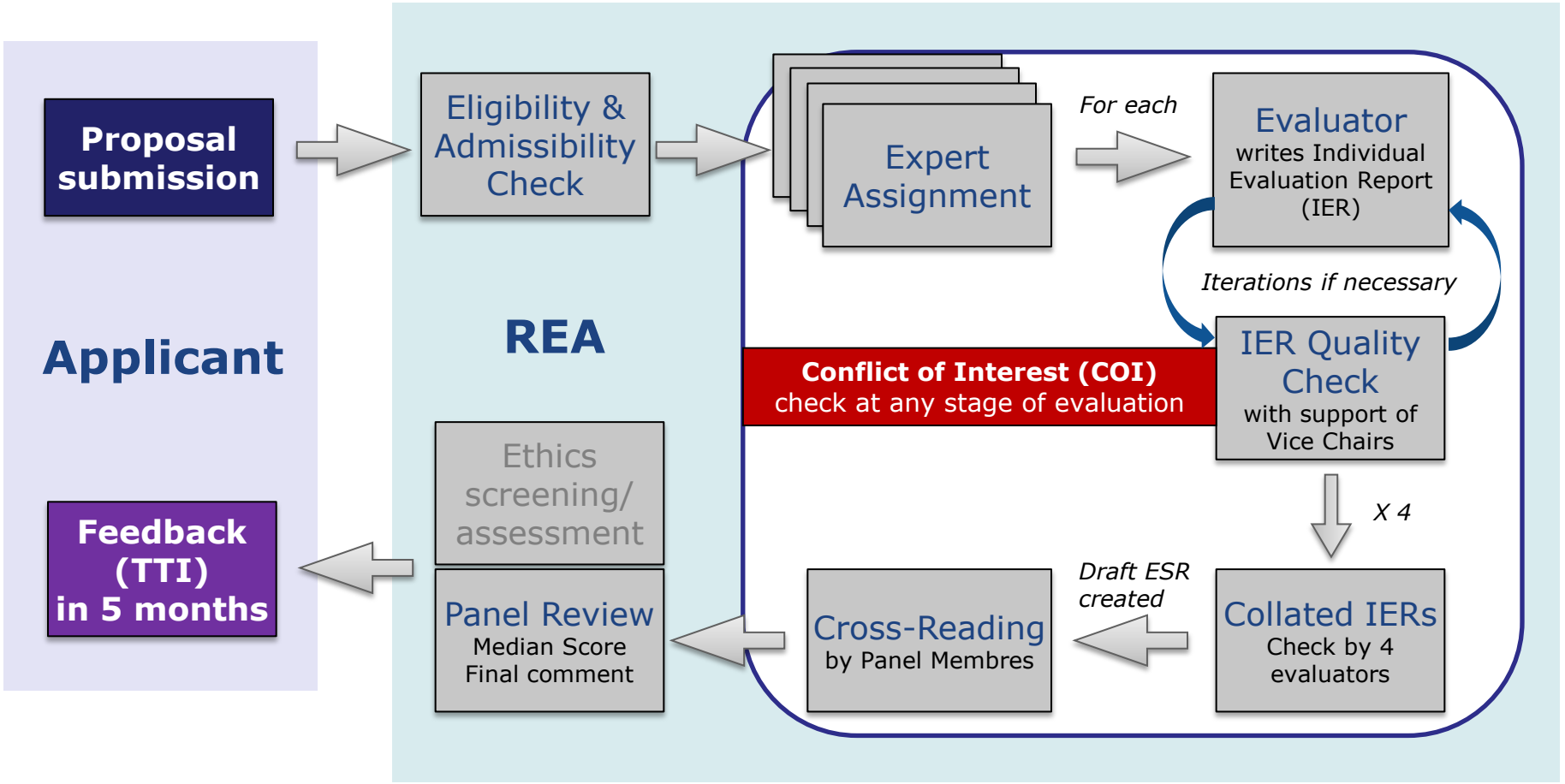
- Focus on the high-risk parts with crisp targets
- Don't write for 'us', but for people like you
- Check your deliverables list – write what *you* need and what *you* want

FET-Open Call Conditions and Evaluation

- **Single stage procedure** (submission and evaluation)
- **High quality peer review** by experts
- Timetable for evaluation and GA signature
  - **Time to Inform** (TTI) – outcome of the evaluation within 5 months
  - **Time to Grant** (TTG) – signature of the GA within 8 months
- **Eligibility and admissibility conditions** – parts B and C of the General Annexes to the Work Programme (exception for FETOPEN-03-2018-2019-2020)
- **Grant Agreement Preparation (GAP)** – grant completely based on proposal (no negotiation)
- **Consortium Agreement** for RIA: to be concluded in principle prior to signature of Grant Agreement (GA)

Note: Evaluation procedure, criteria, scoring and threshold are described in General Annex H of the work programme (but exceptions apply to both topics!)

FET-Open Evaluation process (example for RIA)



FETOPEN-01-2018-2019-2020:
FET-Open Challenging Current Thinking (RIA)

+ Foundations for **radically new future technologies**

+ **Cutting-edge high-risk / high-impact** interdisciplinary research with "**FET gatekeepers**":

- Radical vision
- Breakthrough technological target
- Ambitious interdisciplinary research

Expected Impact:

- Scientific and technological contributions to the foundation of a new future technology
- Potential for future social or economic impact or market creation
- Building leading research and innovation capacity across Europe by involvement of key actors that can make a difference in the future

EU contribution of up to 3M€ (indicative)
Consortium of minimum 3 partners from different EU/AC (eligibility)

Evaluation criteria, Scoring and Thresholds

Excellence	Impact	Quality and efficiency of the implementation
Adherence to the "FET gatekeepers" as described in the call text: ☐ Clarity of the **radical vision** of a science-enabled technology and its differentiation from current paradigms. ☐ Novelty and ambition of the proposed **science-to-technology breakthrough** that addresses this vision. ☐ Range of and added value from **interdisciplinarity** for opening up new areas of research; **non-incrementality** of the research proposed. ☐ **High-risk, plausibility and flexibility** of the research approach.	☐ The extent to which the outputs of the project would contribute to the **expected impacts** listed in the work programme under this topic. ☐ Effectiveness of measures and plans to **disseminate** and **use the results** (including management of IPR) and to **communicate** about the project to different target audiences.	The following aspects are taken into account: ☐ **Coherence** and **effectiveness** of the research methodology and work plan to achieve project objectives and impacts, including **adequate allocation** of resources to tasks and partners. ☐ **Role** and **complementarity** of the participants and extent to which the consortium as a whole brings together the necessary expertise.
Threshold: **4/5** Weight: **60%**	Threshold: **3.5/5** Weight: **20%**	Threshold: **3/5** Weight: **20%**

Feedback to applicants – Evaluation Summary Report (ESR)

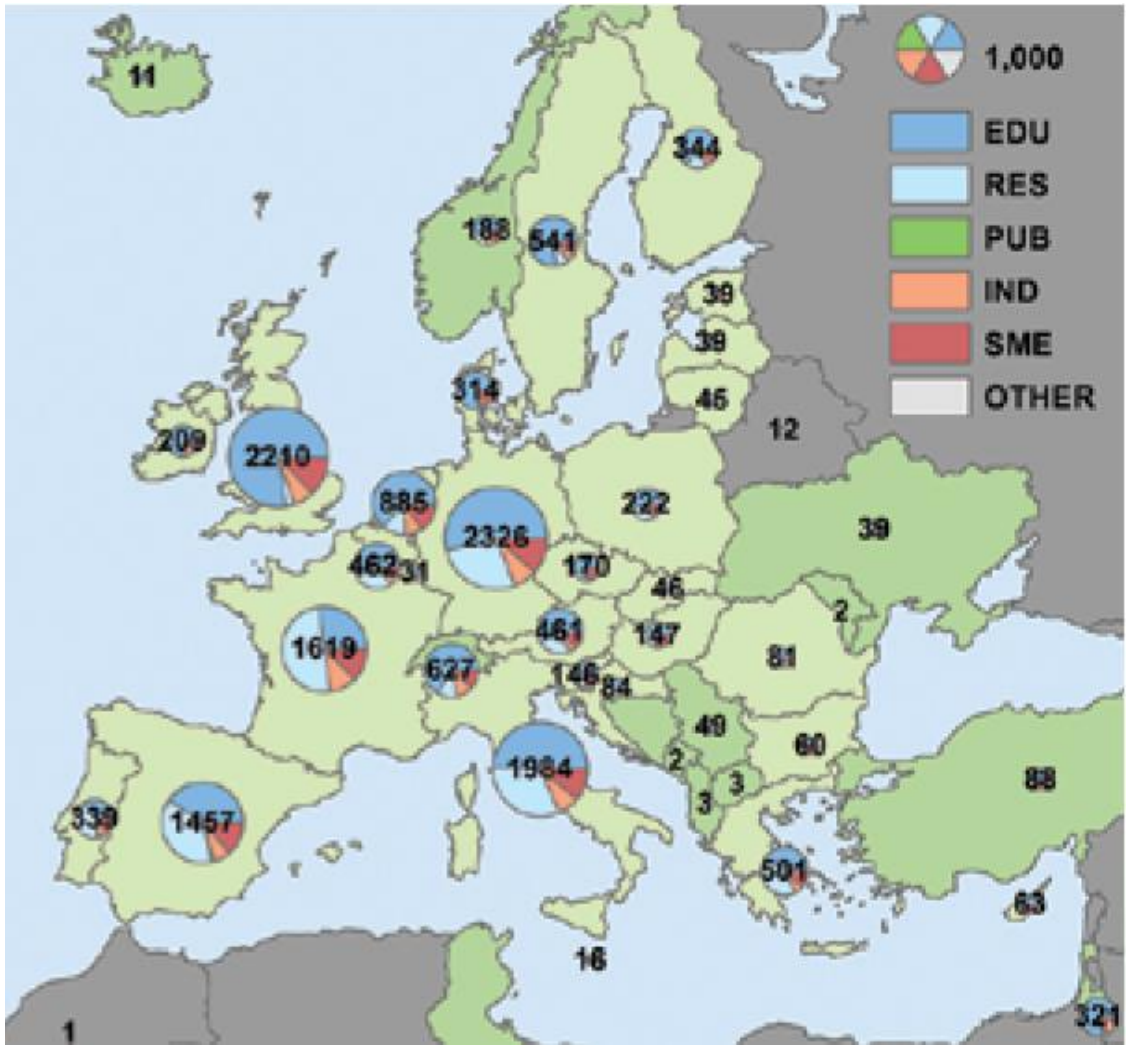
- **Collation of all individual comments**, per sub-criterion, from the IERs – may be mutually contradicting (no consensus): full transparency
- **Consensus score** of the proposal, per criterion, is calculated as a median of all individual scores from Individual Evaluation Reports (IERs)
- **Final score** is decided by the final Panel Review and calculated as a weighted sum of scores from all 3 criteria
- Final **Panel Review** adds also some additional comments, possibly including the advice not to resubmit the proposal

Additional important information

- **No more** "cover page"**!**
- **In/Out of scope** (decided by each evaluator) - "does the proposal convincingly satisfy all FET gatekeepers?": assessment under Criterion 1 (RIA)
- **Operational capacity** – reflected in the score for Criterion 3
- **Ethics screening/assessment** – not part of the evaluation
- **Research Data sharing** (default, but possible opt-out) as stipulated under Art. 29.3 of the Horizon 2020 Model Grant Agreement (MGA) - deliverable *"Data Management Plan"* due at month 6

FET Open

European Commission

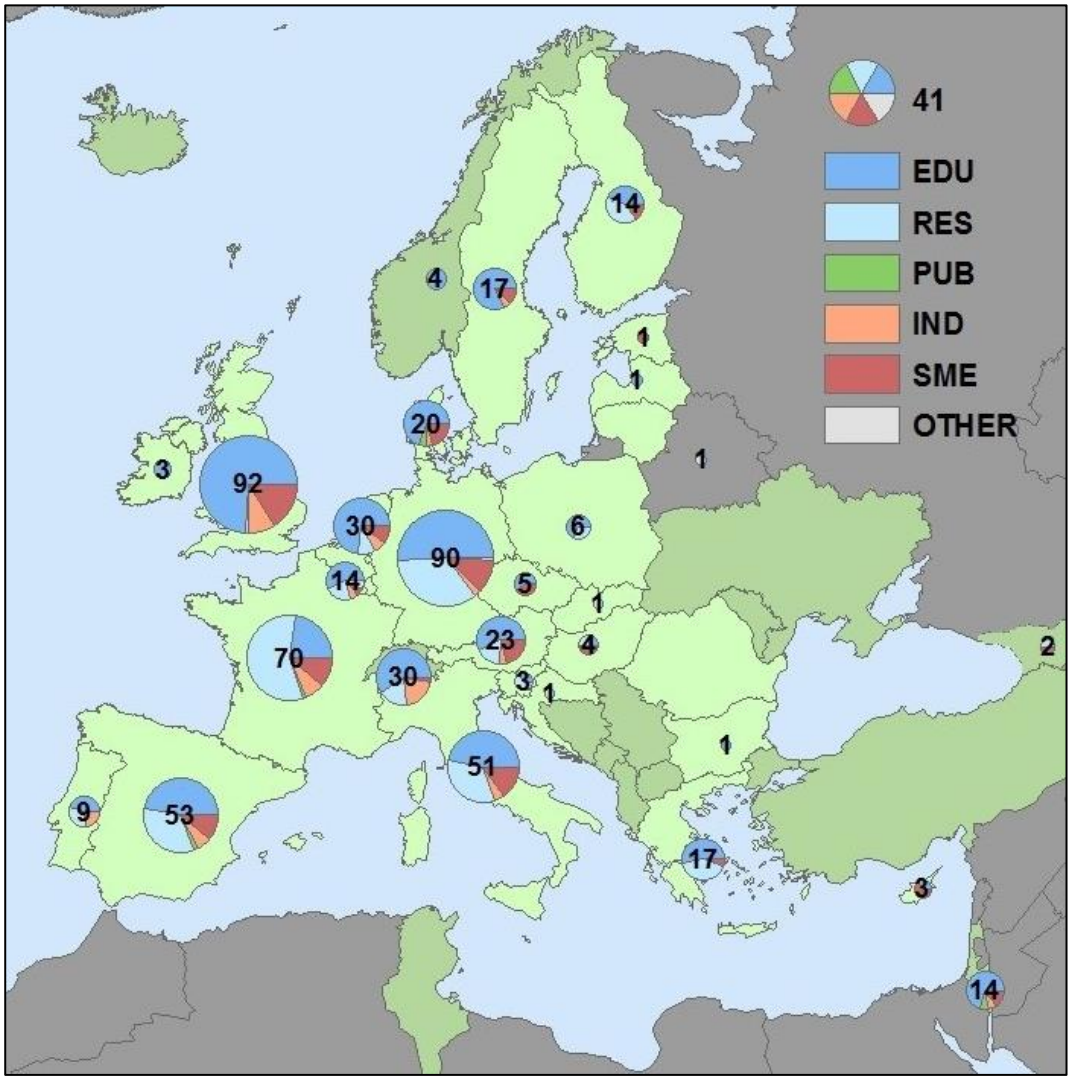


Country participation

H2020 FET-Open 2014-2017
(RIA number of applicants)

Research Executive Agency

FET Open



Country participation

H2020 FET-Open 2014-2017
(RIA signed grants)

Research Executive Agency

FET Proactive - mission

- *FET Proactive aims to identify the **future and emerging technological paradigms** with highest potential for Europe's economy and society.*
- *For each of them, it looks to establish a broad and solid **European basis** in terms of knowledge, key technological building blocks and **interdisciplinary communities**.*
- *By **reaching out** well beyond the research world, it ensures that Europe has the best **'first mover'** position to capitalise rapidly and effectively on emerging societal and industrial opportunities.*

European Commission

FET Proactive call: Boosting emerging technologies

Topic FETPROACT-01-2018

FET Proactive: emerging paradigms and communities (RIA)

- Establish new technological paradigms
- Creating pools of European expertise
- Stimulating the emergence of Innovation eco-systems
- 6 themes selected for 2018
- Targets a mix of small and large; up to EUR 7 million
- A second set of topics is to be addressed in 2020

Topic FETPROACT-02-2018

Community building in Neuromorphic Computing Technologies (CSA)

- NMC showcasing, impact awareness, networking across research and industry

Topic FETPROACT-03-2018

FET ERA-NET Cofund (research funding agencies only)

- Follow-up of CHIST-ERA series

Topic FETPROACT-01-2018: 6 proactive sub-topics

a. Artificial organs, tissues, cells and sub-cellular structures
   - indicative project size 4-7MEuro, indicative total budget 15MEuro

b. Time
   - indicative project size 4-5MEuro, indicative total budget 13MEuro

c. Living technologies
   - indicative project size 4-7MEuro, indicative total budget 20MEuro

d. Socially interactive technologies
   - indicative project size 4-7MEuro, indicative total budget 15MEuro

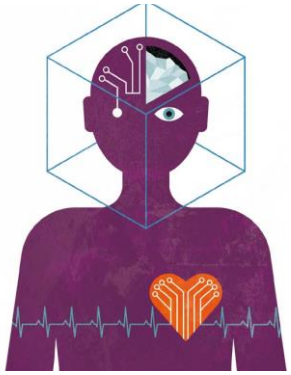
e. Disruptive micro-energy and storage technologies
   - indicative project size 4-7MEuro, indicative total budget 15MEuro

f. Topological matter
   - indicative project size 4-5MEuro, indicative total budget 10MEuro

Total: 88 Meuro
Call deadline: 22/03/2018

European Commission

FET Proactive: Artificial organs, tissues, cells and sub-cellular structures



Proposals should aim at engineering biological, artificial or hybrid sub-cellular systems (e.g., synapses, organelles, vesicles), highly specific cell assemblies (including microbial), tissues, organs or multi-organ systems.

- Exploit recent advances in integrative biology (including modelling and simulation) and bio-engineering
- Combine the growing understanding of genome, proteome, metabolome and cell behaviour with strategies for the engineering and use of biological and hybrid functional constructs

- Possible long-term research targets include:
  - synthetic cell building
  - organ reproduction, replacement, control or repair
  - high-throughput organ- and body-on-chip technologies for the development of personalised treatment, drugs or vaccines

- Ethical issues should be properly addressed

FET Proactive: Time

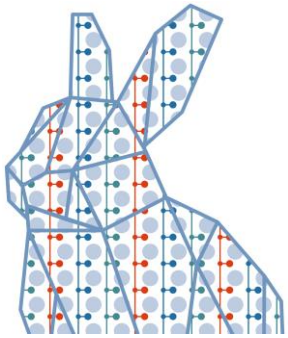
This proactive is about new technological possibilities inspired by notions of time, not seen as a given and singular background against which things unfold, but rather as a resource that can be experienced and used in different ways.

- Possible research areas proposals could address include:
  - technologies for subjective time awareness (and its neural basis) and distortion
  - the role of time in processes like aging, healing, learning or evolution and how this can be influenced
  - understanding non-linear temporality in complex systems

- New ways to represent, modulate, duplicate or experience and use time could come from technologies in, for instance:
  - extreme electronics/photonics
  - data-streams analytics
  - time aware artificial intelligence
  - virtual and augmented reality
  - bio-engineering or neuroprosthetics

European Commission

FET Proactive: Living technologies



Proposals should develop new functional biological, technological or hybrid artefacts with features of living systems such as physical autonomy, growth, interaction and enaction, adaptation and evolution. This could involve, for example:

- hybrid materials and systems with programmable features of shape, structure, functionality and evolvability
- possibly starting from naturally existing complexes
- research on multi-level mathematics and complexity of living systems or the boundaries/characteristics of life could be a part of the work proposed

- Proposals could use relevant results from evolutionary biology, ethology, micro-, plant- and animal biology, synthetic biology, systems biology and /or chemical biology

- Ethical issues should be addressed

European Commission

FET Proactive: Socially interactive technologies

This addresses technologies to support deeper social interaction between people in groups which range in size from pairs to crowds

- This new socially interactive media should facilitate building trust and understanding, social integration, engagement, collaboration, learning, creativity, entertainment, education and wellbeing
- Proposals should include novel combinations of social sciences and humanities with neuroscience, engineering and computing to develop new experimental tools and paradigms
  - These tools could take into account, for example, context, culture, emotion, and factors of embodiment and cognition
- Ethical issues and the gender dimension should be addressed

European Commission

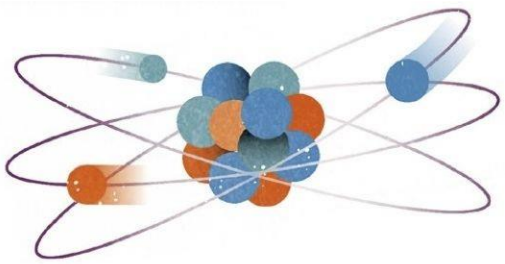
FET Proactive: Disruptive micro-energy and storage technologies

Proposals should address novel technologies for local (close to where needed) energy generation, capture or storage

- This proactive covers:
  - Technologies for micro-energy or nano-scale energy generation, transfer, dissipation and conversion
  - bio-inspired energy technologies
  - the use of soft or intelligent materials
  - new types of batteries
- Smart integration of novel energy sources within hybrid/distributed energy systems can be addressed.
- Sustainability and environmental impact issues should be addressed.

European Commission

FET Proactive: Topological matter



This topic addresses new materials exploiting interactions between quantum effects and topology

- Topological insulators already studied
  - possible applications in spintronics
- Other material properties can be addressed
  - applications in photonics, mechanics (eg elasticity, acoustics), superconductivity and plasmas are possible examples
- Proposals should go beyond pure physics and mathematics
  - Prototypes should be built, tested and benchmarked
- Methodology should include an engineering approach for using the quantum effects of wave-matter interactions in novel components

Practically…

- *Deadline 22nd of March 2018*
- *EUR 4 to 7 million (but up to EUR 5 million for proposals on the sub-topics of 'Time' and 'Topological matter') - indicative*
- *Duration up to 5 years – indicative*
- *Sections 1 to 3 of the part B of the proposal should consist of a maximum of 30 A4 pages.*

Topic FETPROACT-03-2018: FET ERA-NET Cofund

Type of Action: ERA-NET Cofound
Budget: 6 MEuro
Call opening/deadline: 5/06/2018 – 18/12/2018

Additional eligibility condition:

Consortium must be limited to

- **Research programme owners**
  (typically national or regional Ministries)
- **Research programme managers**
  (typically research funding agencies)

This topic continues support for the CHIST-ERA type activities

European Commission

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http://ec.europa.eu/newsroom/index.cfm?service_id=129

News
https://ec.europa.eu/digital-single-market/en/news/75998/3599

Blogs
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Web
https://ec.europa.eu/digital-single-market/en/policies/future-and-emerging-technologies

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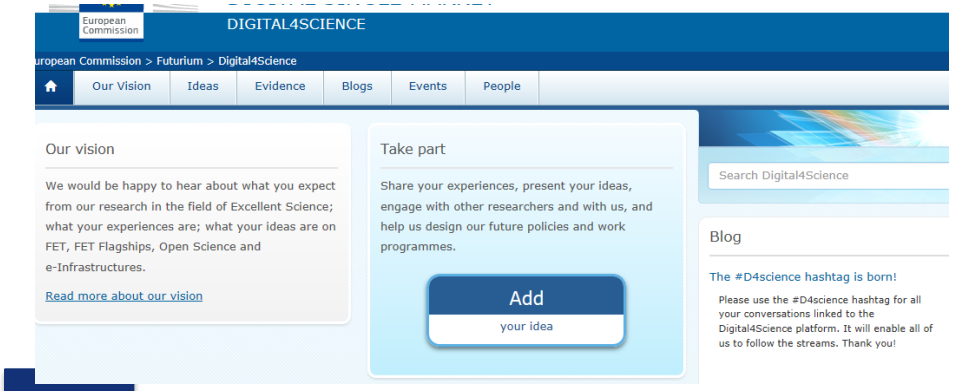

FET Proactive Evaluation criteria (RIA) - Excellence

Excellence

The following aspects are taken into account:

- *Clarity of long-term vision of a science-enabled technology.*
- *Concreteness and ambition of the proposed science-to-technology breakthrough that addresses this vision.*
- *Range and added value from interdisciplinarity, novelty and non-incrementality of the research proposed.*
- *High-risk of the research proposed and plausibility and flexibility of the approach.*

Threshold: 4/5, Weight: 60%

FET Proactive Evaluation criteria (RIA) - Impact

Impact

- *The extent to which the outputs of the project would contribute to the expected impacts mentioned in the work programme under the relevant FET topic.*
- *Effectiveness of measures and plans to disseminate and use the results (including management of IPR) and to communicate the project to different target audiences.*

Threshold: 3.5/5, Weight: 20%

FET Proactive Evaluation criteria (RIA) - Implementation

Quality and efficiency of the implementation

The following aspects are taken into account:

- *Coherence and effectiveness of the work plan to achieve project objectives and impacts, including adequate allocation of resources to tasks and partners.*
- *Appropriateness of the research and innovation management structures and procedures.*
- *Role and complementarity of the participants and extent to which the consortium as a whole brings together the necessary expertise.*

Threshold: 3/5, Weight: 20%

European Commission