Future & Emerging Technologies

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National Contact Point
FET and INFRA Domains

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What is FET?

The Future & Emerging Technologies (FET) programme is all about transforming advanced scientific ideas into radically new technologies for the future. It does this through a unique combination of high risk, long term, multidisciplinary and collaborative frontier research. The programme consists of three complementary schemes: FET-Open, FET-Proactive and FET Flagships.

- FET-Open uses a bottom-up approach for exploring novel and visionary ideas for radically new technologies. It accommodates new and alternative ideas, concepts or paradigms that are so early-stage, high-risk and out-of-the-box that they cannot be supported elsewhere in the Framework Programme. The scheme is truly open in scope as there are no restrictions on themes that can be funded, as long as they are relevant for new future technologies.

To date, two Flagships are running: Graphene and the Human Brain Project. A third one on Quantum Technologies will start in 2018.
FET Philosophy

Let's try even if it may fail!

Go far beyond of what it is considered a standard technology

From knowledge...

... to new technology
FET-Open

- Early Ideas
  - Individual research projects

FET Proactive

- Exploration and Incubation
  - Critical mass making a case

FET Flagships

- Large-Scale Partnering Initiatives
  - Common research agenda

- Exploring novel ideas
- Developing topics & communities
- Addressing grand challenges

40%
Participation in FET Projects*

FET funding (million €) & number of participants:
- 1-10
- 11-25
- 26-50
- >50

*As December 2016 (131 projects)
FET Open: Diversity of domains

FET-Open H2020: Snapshot of topics covered

- Energy, Transport, Environment: 18.8%
- Bio-Robotics and HCI: 14.7%
- Life Science, Medicine, Biology, NeuroBio: 12.2%
- Electronics, Telecom, Optics, Hardware, Sensors, Devices: 10.6%
- Computer Science, Bio-informatics, Complexity, Data mining: 9.8%
- Nanoscience, Quantum Physics, Astrophysics: 7.0%
- Materials, Chemistry
FET Open 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
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
Calls in FET: Open and Proactive

RIA Research and Innovation action
Open 07 November 2017
RIA Research and Innovation action
multiple cut-off dates: 16 May 2018
24 January 2019
18 September 2019
13 May 2020

**FETOPEN-02-2018: FET-Open Coordination and Support Actions**
Open 07 November 2017
CSA Coordination and support action
Close 11 April 2018

Open 07 November 2017
CSA Coordination and support action
multiple cut-off dates: 16 October 2018
08 October 2019
14 October 2020

**FETPROACT-01-2018: FET Proactive: emerging paradigms and communities**
Open 31 October 2017
RIA Research and Innovation action
Close 22 March 2018

**FETPROACT-02-2018: Community building in Neuromorphic Computing Technologies**
Open 31 October 2017
CSA Coordination and support action
Close 22 March 2018

**FETPROACT-03-2018: FET ERA-NET Cofund**
Open 31 October 2017
ERA-NET-Cofund
Close 18 December 2018
### Participation of EU-13 in FET-Open*

<table>
<thead>
<tr>
<th></th>
<th>#applicants</th>
<th>#applicants (%)</th>
<th>#funded applicants</th>
<th># funded applicants (%)</th>
<th>success rate</th>
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<tbody>
<tr>
<td>EU-13</td>
<td>1207</td>
<td>7.1%</td>
<td>21</td>
<td>3.9%</td>
<td>1.7%</td>
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<tr>
<td>EU-15</td>
<td>14163</td>
<td>83.5%</td>
<td>473</td>
<td>87.9%</td>
<td>3.3%</td>
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<td>Non-EU**</td>
<td>1601</td>
<td>9.4%</td>
<td>44</td>
<td>8.2%</td>
<td>2.7%</td>
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<tr>
<td>Total</td>
<td>16971</td>
<td></td>
<td>538</td>
<td></td>
<td>3.2%</td>
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</table>

*All FET-Open calls in 2014-2016 (RIA & CSA)  
** Mostly associated countries (1379) + Third countries (173) + Other (49)

### Participation of EU-13 in FET-Proact*

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<thead>
<tr>
<th></th>
<th>#applicants</th>
<th>#applicants (%)</th>
<th>#funded applicants</th>
<th># funded applicants (%)</th>
<th>success rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU-13</td>
<td>189</td>
<td>6.4%</td>
<td>24</td>
<td>8.4%</td>
<td>12.7%</td>
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<tr>
<td>EU-15</td>
<td>2488</td>
<td>84.5%</td>
<td>239</td>
<td>84.2%</td>
<td>9.6%</td>
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<tr>
<td>Non-EU**</td>
<td>269</td>
<td>9.1%</td>
<td>21</td>
<td>7.4%</td>
<td>7.8%</td>
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<tr>
<td>Total</td>
<td>2946</td>
<td></td>
<td>284</td>
<td></td>
<td>9.6%</td>
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*All FET-Proactive calls in 2014-2017 (RIA & ERANET Cofound)  
** Mostly associated countries
**Evaluation process**

**Remote phase**

1. Individual Evaluation Report
2. Individual Evaluation Report
3. Individual Evaluation Report
4. Draft CR

**Panel in Brussels**

- Entire process monitored by independent experts

**Steps**

**Step 1:**
- Eligibility check
- Assignment of experts

**Step 2:** IER
- Experts prepare Individual Evaluation Report (IER)

**Step 3:**
- EC Quality check of IER

**Step 4:** Draft CR
- Collation of 4 IER comments per criteria
- Median score per criteria

**Step 5:** Panel finalise CR:
- Check IER comments
- Add panel comments
- Decide on final score

**Step 6:** Ranking on:
- Total score
- If tied: topic overlap -> S&T score
- Impact score -> SME budget -> gender balance
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<th>FET-OPEN RIA FET-PROACTIVE</th>
<th>FET-OPEN CSA</th>
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<tr>
<td>Excellence</td>
<td>Threshold: 4/5, Weight: 60%</td>
<td>Threshold: 3/5, Weight: 40%</td>
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<tr>
<td>Impact</td>
<td>Threshold: 3.5/5, Weight: 20%</td>
<td>Threshold: 3/5, Weight: 40%</td>
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<tr>
<td>Implementation</td>
<td>Threshold: 3/5, Weight: 20%</td>
<td>Threshold: 3/5, Weight: 20%</td>
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FET Flagships

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.

Graphene FET Flagship

Graphene is a 2D material, a single layer of carbon atoms, stronger than diamond, yet lightweight and flexible and an exceptional electricity conductor.

The Graphene Flagship will bring graphene and related 2D materials from academic labs to industry, manufacturing and society.

Examples Applications:
- Electronic paper; bendable smartphones; enhanced solar cells and batteries; lighter and more energy efficient airplanes...
- On the longer term, graphene is expected to give rise to new computers and revolutionary medical applications such as artificial retinas.

The Human Brain Project

HBP will create the world’s largest experimental facility for developing the most detailed models of the brain (from gene to mind), for studying how the human brain works and ultimately for simulating and developing personalised treatment of brain diseases.

This research lays the scientific and technical foundation for medical progress: identifying new drug targets and treatment, in response to the urgent need to combat brain diseases and their associated costs to society.

HBP will also produce brain-inspired ‘neuromorphic’ computing systems that could drastically reduce power consumption for supercomputers and enhance robots.
Quantum Flagship

The future is Quantum.

The Second Quantum Revolution is unfolding now, exploiting the enormous advancements in our ability to detect and manipulate single quantum objects. The Quantum Flagship is driving this revolution in Europe.
TR National Initiative on Quantum

Calls in FET: HPC, Flagships and Quantum

**FETHPC-01-2018: International Cooperation on HPC**
Open 01 February 2018  
RIA Research and Innovation action  
Close 15 May 2018  

**FETFLAG-01-2018: Preparatory Actions for new FET Flagships**
Open 31 October 2017  
CSA Coordination and support action  
two-stage; closes 20 February 2018; 18 December 2018  

**FETFLAG-02-2018: ERA-NET Cofund for FET Flagships**
Open 31 October 2017  
ERA-NET Cofund  
Close 17 April 2018  

**FETFLAG-03-2018: FET Flagship on Quantum Technologies**
Open 31 October 2017  
CSA Coordination and support action, RIA Research and Innovation action  
Close 20 February 2018
FET EraNETs

ChistERA:  http://www.chistera.eu/

FlagERA:  https://www.flagera.eu/

QuantERA:  https://www.quantera.eu/
# FET Delegation of Turkey

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<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Serkan Üçer</td>
<td>Ulusal İrtibat Noktası</td>
<td>TÜBİTAK</td>
</tr>
<tr>
<td>Murat Doğruel, Prof. Dr.</td>
<td>Alan Delegesi</td>
<td>Marmara Ü.</td>
</tr>
<tr>
<td>Zafer Gedik, Prof. Dr.</td>
<td>QT Üyesi</td>
<td>Sabancı Ü.</td>
</tr>
<tr>
<td>Orkun Hasekioğlu, Dr.</td>
<td>FET BoF Üyesi</td>
<td>TÜBİTAK</td>
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<tr>
<td>Mehmet Demirer, Dr.</td>
<td>FET BoF Üyesi</td>
<td>TÜBİTAK</td>
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FET after Horizon 2020
"Lamy" High Level Group - recommendations

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<tr>
<td>1.</td>
<td><strong>Prioritise research and innovation in EU and national budgets</strong></td>
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<td><strong>Action:</strong> double the budget of the post-2020 EU research and innovation programme</td>
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<td>2.</td>
<td><strong>Build a true EU innovation policy that creates future markets</strong></td>
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<td><strong>Action:</strong> foster ecosystems for researchers, innovators, industries and governments; promote and invest in innovative ideas with rapid scale-up potential through a European Innovation Council</td>
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<td>3.</td>
<td><strong>Educate for the future and invest in people who will make the change</strong></td>
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<td><strong>Action:</strong> modernise, reward and resource the education and training of people for a creative and innovative Europe.</td>
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<td>4.</td>
<td><strong>Design the EU R&amp;I programme for greater impact</strong></td>
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<td><strong>Action:</strong> make the future programme's pillars driven by purpose and impact, fine-tune the proposal evaluation system and increase flexibility</td>
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<td>5.</td>
<td><strong>Adopt a mission-oriented, impact-focused approach to address global challenges</strong></td>
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<td><strong>Action:</strong> set research and innovation missions that address global challenges and mobilise researchers, innovators and other stakeholders to realise them.</td>
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<td>6.</td>
<td><strong>Rationalise the EU funding landscape and achieve synergy with structural funds</strong></td>
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<td><strong>Action:</strong> cut the number of R&amp;I funding instruments, make those remaining reinforce each other and make synergy with other programmes work.</td>
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<tr>
<td></td>
<td><strong>High Level Group – recommendations #2</strong></td>
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<td>7.</td>
<td><strong>Simplify further</strong>&lt;br&gt;Action: become the most attractive R&amp;I funder in the world, privileging impact over process</td>
</tr>
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<td>8.</td>
<td><strong>Mobilise and involve citizens</strong>&lt;br&gt;Action: stimulate co-design and co-creation through citizen involvement</td>
</tr>
<tr>
<td>9.</td>
<td><strong>Better align EU and national R&amp;I investment</strong>&lt;br&gt;Action: ensure EU and national alignment where it adds value to the EU's R&amp;I ambitions and missions.</td>
</tr>
<tr>
<td>10.</td>
<td><strong>Make international R&amp;I cooperation a trademark of EU research and innovation</strong>&lt;br&gt;Action: open up the R&amp;I programme to association by the best and participation by all, based on reciprocal co-funding or access to co-funding in the partner country.</td>
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<tr>
<td>11.</td>
<td><strong>Capture and better communicate impact</strong>&lt;br&gt;Action: brand EU research and innovation and ensure wide communication of its results and impacts.</td>
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Topics to consider in FP9:

• New funding schemes between EU/MS/industry e.g. Germany comments: The model of tripartite funding (as used in ECSEL) is of great strategic added value compared with purely nationally or EU-financed initiatives. It should be considered for other JTIs... bureaucratic effort should be substantially reduced.

• Role of early technology research in FP9 versus close-to-market/commercial innovation-driven

• Tackling oversubscription in FET (budget)

• ... ?
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