FLAG-ERA

# Joint Transnational Call (JTC) 2019

for transnational research proposals in synergy with the two FET Flagships:

**Graphene Flagship**

**Human Brain Project**

# Outline

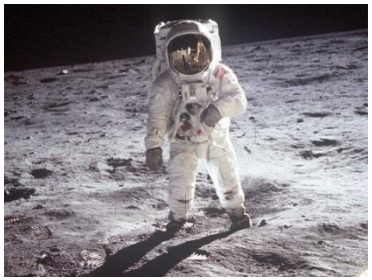
- Context
  - FET Flagships: General concept and funding model
  - FLAG-ERA: The Flagship ERA-NET
  - FLAG-ERA Joint Transnational Calls (JTC)
    - Calls for transnational projects in synergy with the Flagships
  - Overview and outcomes of the first two JTCs (2015 & 2017)
- JTC 2019
  - Overview
  - Research areas
  - Participating countries & indicative budgets
  - Evaluation criteria
  - Main steps after submission
- Important documents and further information

# What is a FET Flagship?

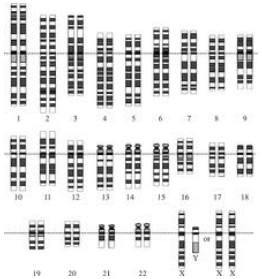
- FET Flagships are
  - Visionary, science-driven, large-scale research initiatives addressing grand scientific and technological challenges
  - A new partnering model for long-term co-operative research in the European Research Area, based on the combination of a large Core Project playing a leading role for the whole duration of the initiative and a set of Partnering Projects

**http://ec.europa.eu/digital-agenda/en/fet-flagships**

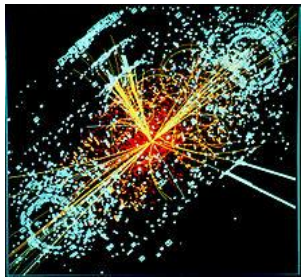
# Examples of Flagship-like past initiatives



Apollo program
("Man on the Moon")



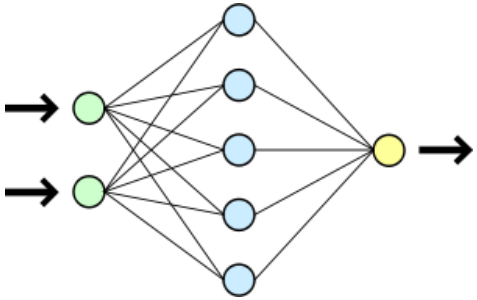
Human Genome Project



Large Hadron Collider

DARPA Grand Challenge

Deep Blue



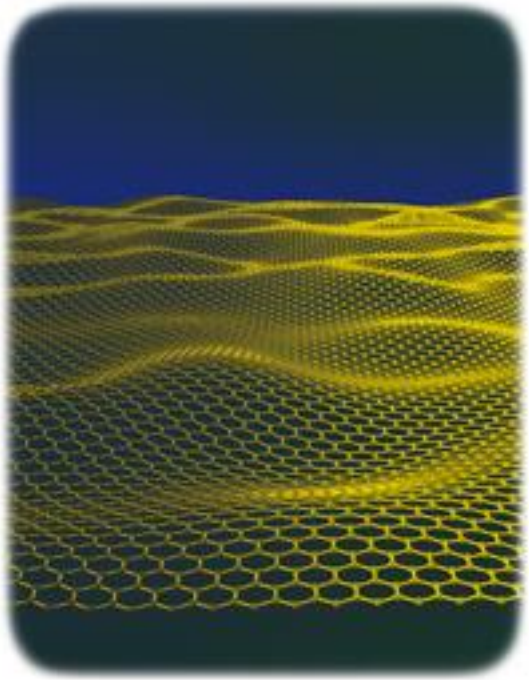
5th Generation Computer



Source: http://cordis.europa.eu/fp7/ict/programme/fet/flagship/doc/flagshipstudy_en.pdf

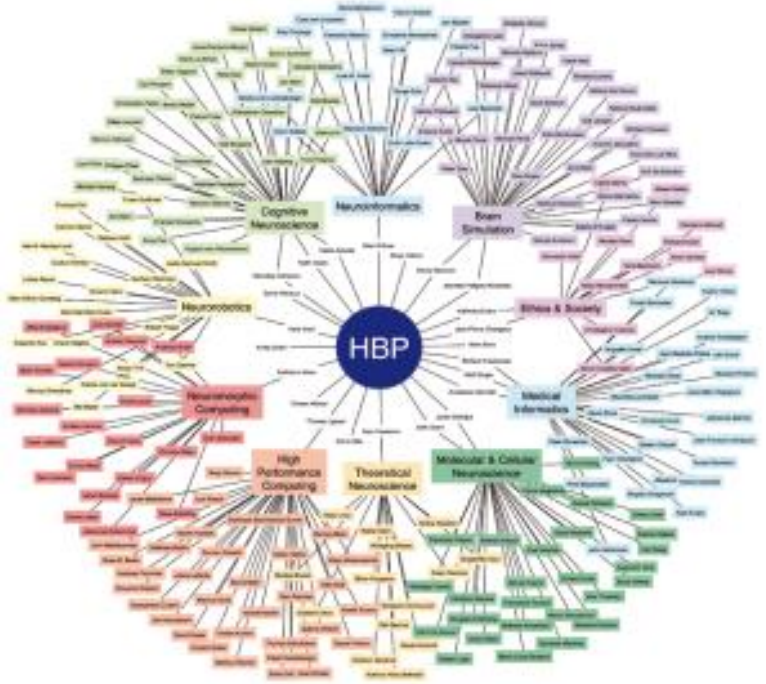
# The first two FET Flagships

## Graphene Flagship



www.graphene-flagship.eu

## Human Brain Project




www.humanbrainproject.eu

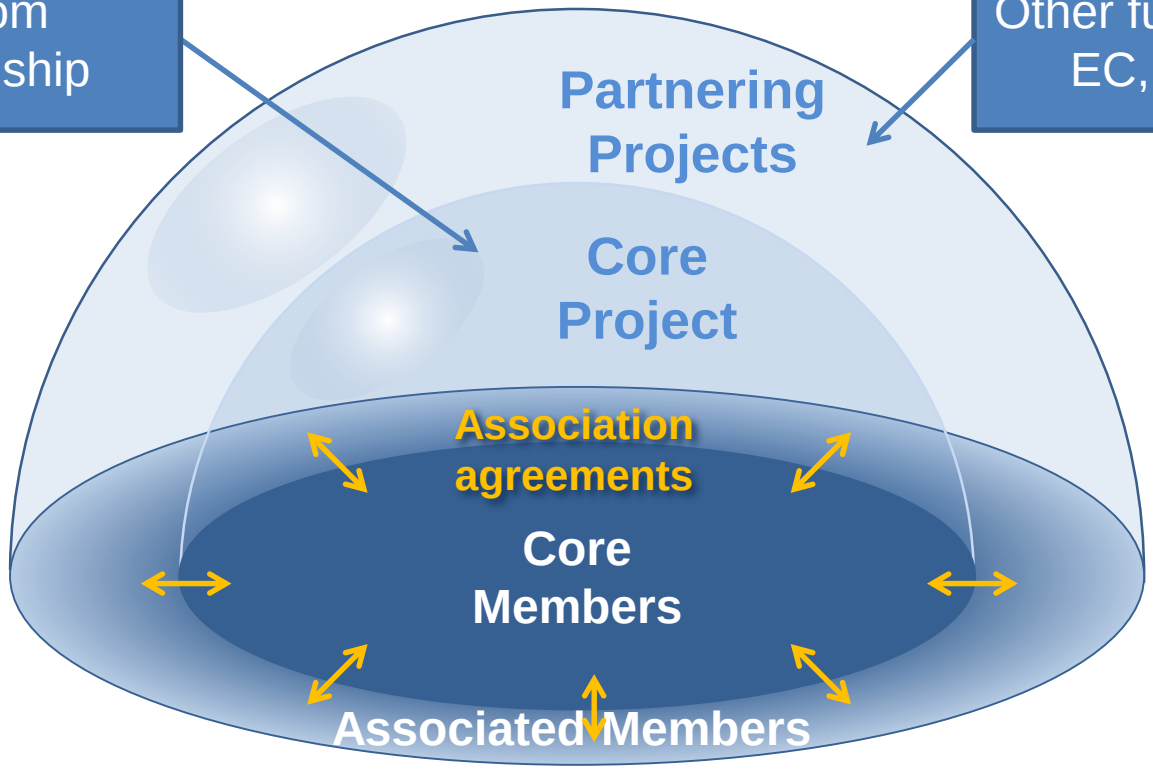
FLAG-ERA

# The FET Flagship Partnering model

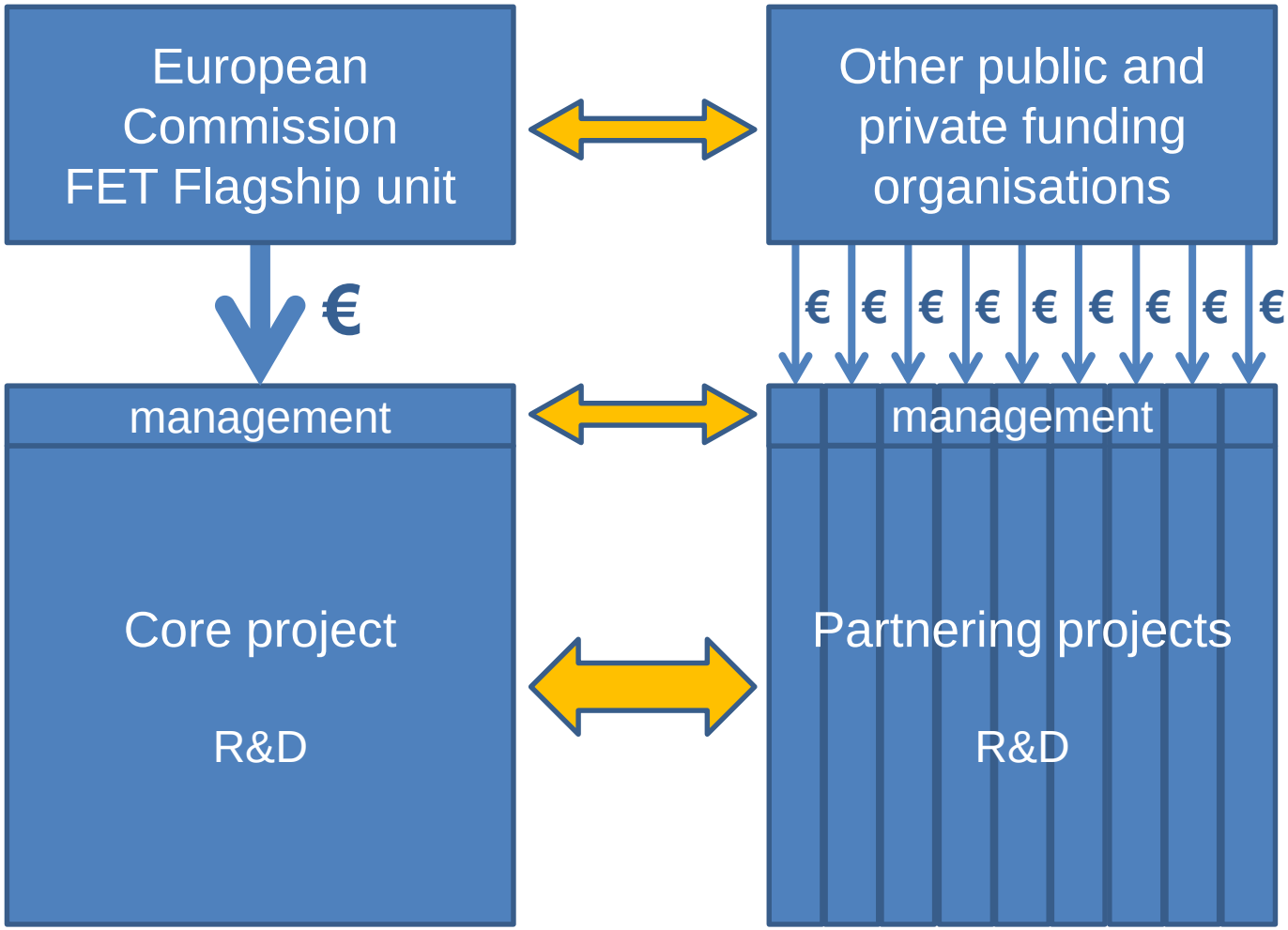
## Combining efforts from multiple sources of funding

Funding from EC FET Flagship

Other funding (MS&AC, EC, int'l, private)



# Flagship funding structure




FLAG-ERA

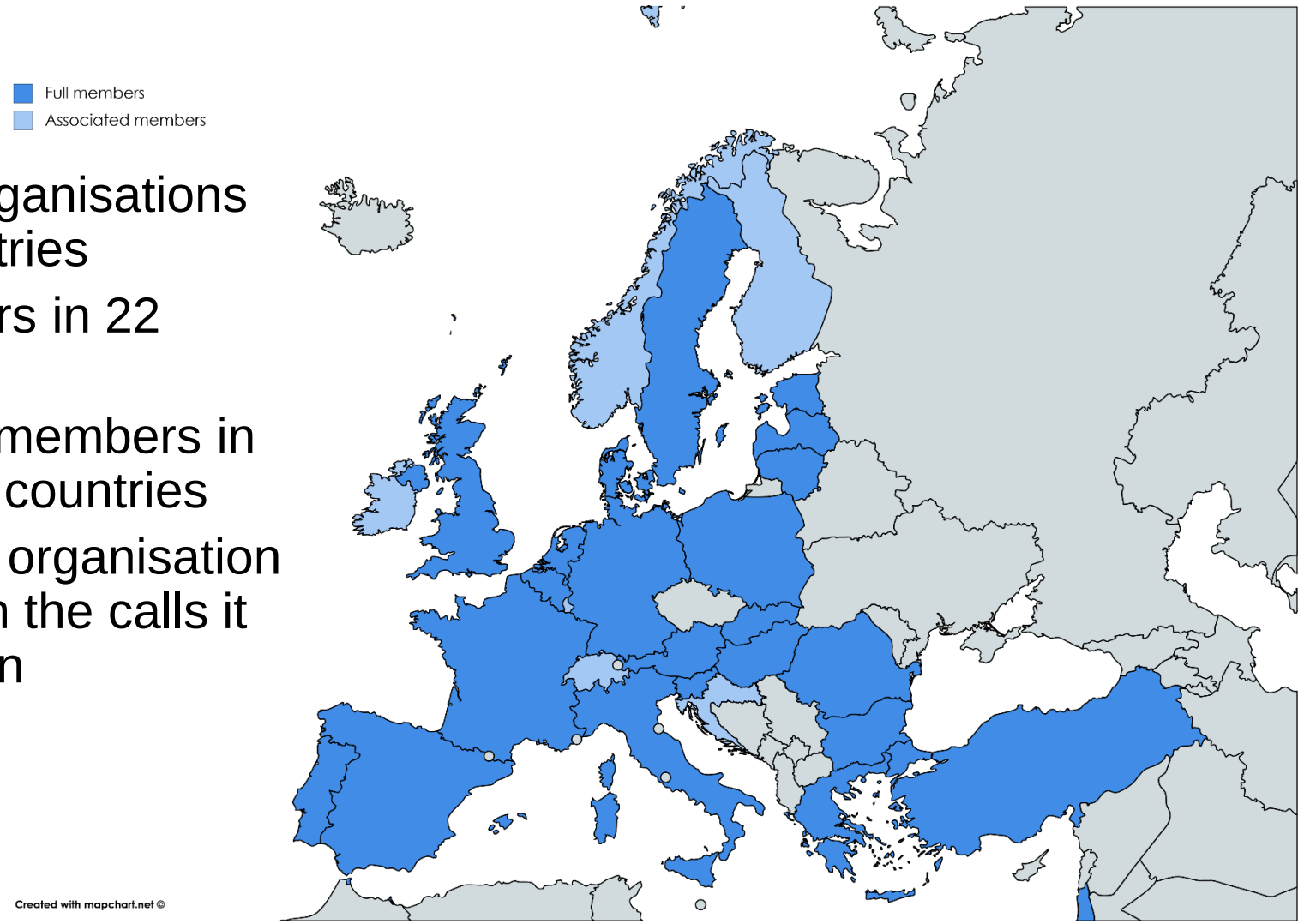
# FLAG-ERA: The Flagship ERA-NET

- A network of National and Regional Funding Organisations (NRFOs) in Europe and beyond
- Supporting the FET Flagship initiatives, in collaboration with the European Commission
- Funding research complementing the Flagship Core Projects:
  - Through the use of existing national, regional and transnational calls, which can be combined with the Flagship association mechanisms

  or

  - Through dedicated calls
    - FLAG-ERA JTC 2015
    - FLAG-ERA JTC 2017
    - **FLAG-ERA JTC 2019**

# FLAG-ERA Consortium




40 funding organisations from 28 countries

- Full members in 22 countries
- Associated members in 6 additional countries

Each funding organisation participates in the calls it is interested in

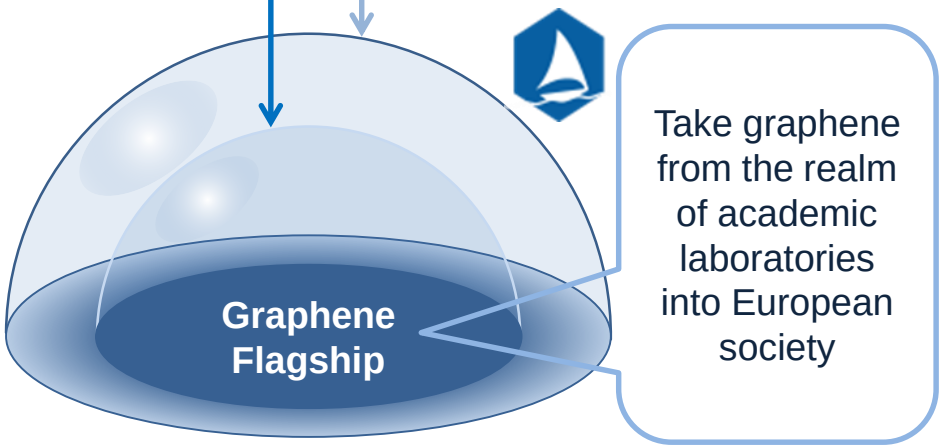
FLAG-ERA

# FLAG-ERA and its environment

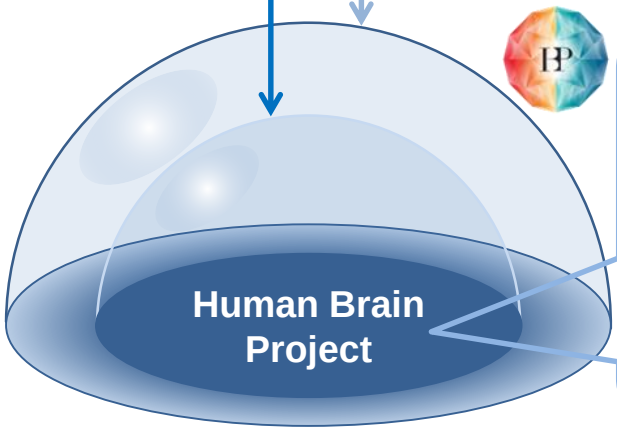
FET Flagship programme

EC FET Flagship Unit

FLAG-ERA members




Take graphene from the realm of academic laboratories into European society




Build a research infrastructure to help advance neuroscience, medicine and computing

- FLAG-ERA main objectives: Support the Flagship programme and in particular the first two Flagships through
  - Dedicated Joint Transnational Calls (JTC 2015, JTC 2017, JTC 2019)
  - Support to partnering projects and to their integration into the Flagship

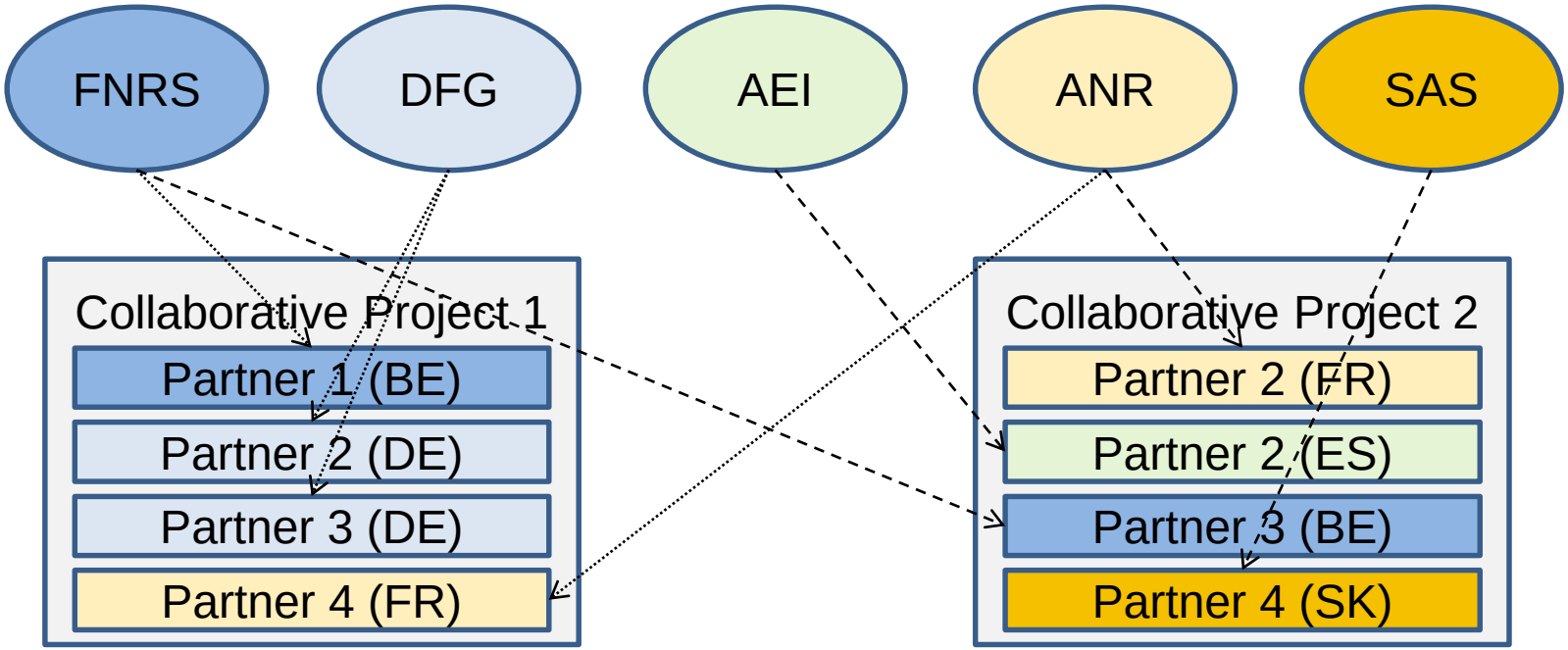
FLAG-ERA

# The FLAG-ERA Joint Transnational Calls: ERA-NET calls tuned for the Flagships

- Balance between the goal of supporting projects in synergy with the Flagships and the need for independence
  - Scope defined together with the Flagships
  - Information about foreseen synergies embedded in the submission
  - Independent Scientific Evaluation Panel
  - Formal association process after publication of results
- A transnational collaboration context provided by the Flagship
  - 3-country rule adapted to offer the possibility to request funding in only two countries while partnering with a Flagship Core Project member from a third one

# Reminder on ERA-NET funding

- Each project partner is funded by its respective funding agency
- All national regulations apply (forms, reports etc.), possibly with modified/additional procedures for the ERA-NET case



# Calls for transnational projects…

## Rationale

- FLAG-ERA is an ERA-NET. The FLAG-ERA calls are modelled after typical ERA-NET calls
- While such calls generally require consortia requesting funding from at least 3 different countries, flexibility has been introduced by allowing one country to be represented by a Core Project partner not requesting funding

## Rules

- Consortia must be international. They must involve at least
  - 3 partners requesting funding from 3 participating countries, or
  - 2 partners requesting funding from 2 participating countries and a partner from another country securing its own funding as a Flagship Core Project partner
- The consortium coordinator must be funded through the call
- Consortia must be balanced
  - Requested funding in a given country should not exceed 60% of the total requested funding (75% if funding is requested in 2 countries)

# … in synergy with the Flagships

## Rationale

- FLAG-ERA aims at supporting the Flagships and expects to take advantage of the synergies they offer
- In order to ensure a smooth integration of the selected projects, information about the association should be documented in the proposals in a way that is ready to use for the association
  - Discussions between Flagship members and non members are expected to take place during the proposal preparation

## Rules

- Submission must include a description of the foreseen Flagship partnership using the Flagship partnership proposal form
- Partners in selected projects are invited to proceed with the association
  - The project is labelled as a partnering project
  - Partners not already in the Flagship become Associated Members

NB: Partners requesting funding may be Flagship Core Project members

# Main eligibility rules

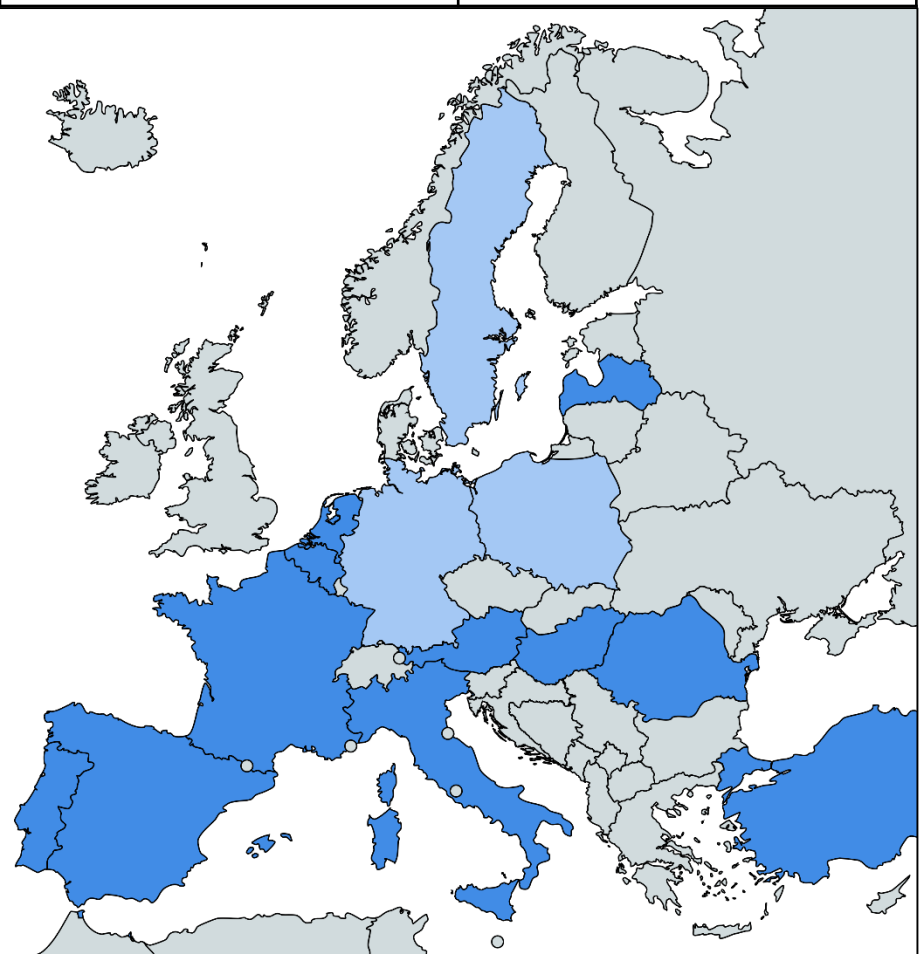
- International consortia involving at least
  - 3 partners requesting funding from 3 participating countries, or
  - 2 partners requesting funding from 2 participating countries and a partner from another country securing its own funding as a Flagship Core Project partner
- In both cases, partners requesting funding may be Flagship Core Project members
- The coordinator must be funded through the call
- The consortium must be balanced
  - Requested funding in a given country should not exceed 60% of the total requested funding (75% if funding is requested in 2 countries)
- Researchers who are not eligible for funding can participate in a project if they secure their own funding
- Project duration: up to 3 years and according to individual funding organisation regulations

# Comparison with national calls

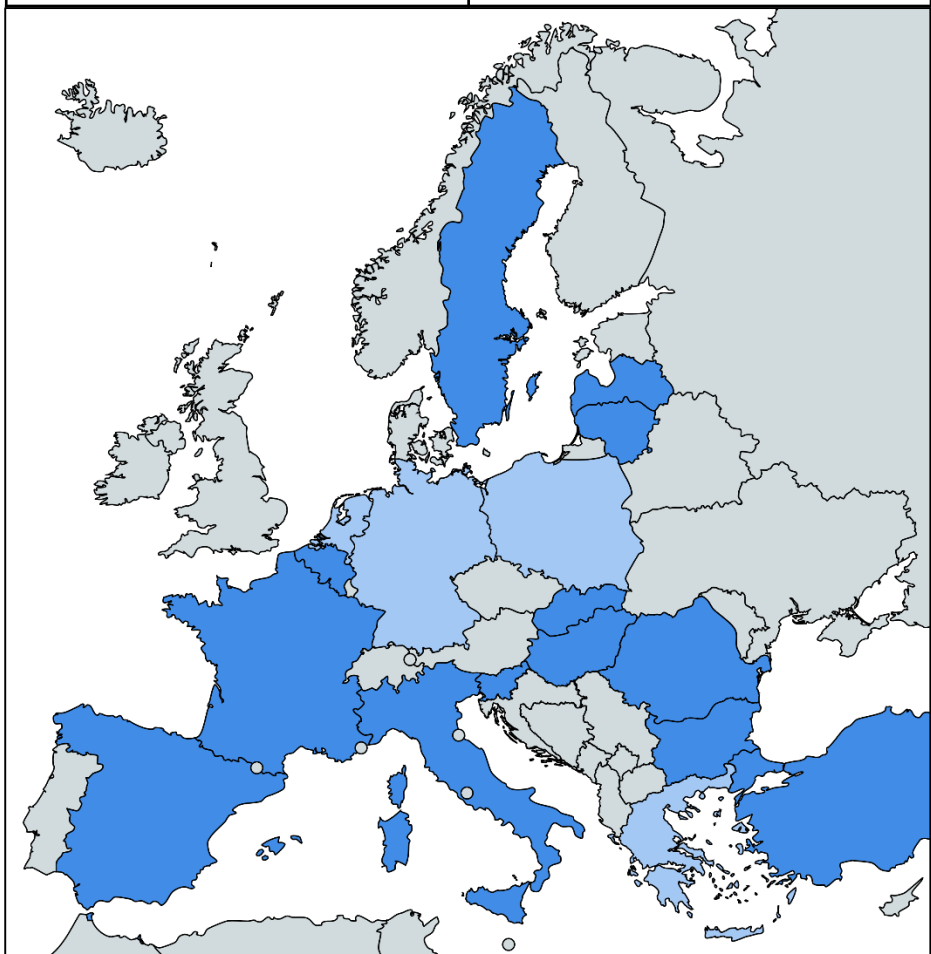
| FLAG-ERA calls | National and regional calls |
|---|---|
| Scope defined together with the Flagships | Scope defined independently of the Flagships |
| Synergy with the Flagship is expected | Synergy with the Flagship can be a plus for the evaluation |
| Funding requested in 2+ countries | Funding requested in 1 country |
| Not all countries participate | All countries have calls |
| Smaller budgets | Larger budgets overall |
| Compete only with proposals fitting the JTC constraints | Compete with all proposals in the domain |

# JTC 2015 & 2017 country participation

| 2015 | Graphene: 14 |
|---|---|
| | HBP: 11 |



| 2017 | Graphene: 17 |
|---|---|
| | HBP: 13 |



# JTC 2015 & 2017 outcome

| | 2015 | | 2017 | |
|---|---|---|---|---|
| | **Graphene** | **HBP** | **Graphene** | **HBP** |
| Participating countries | 14 | 11 | 17 | 13 |
| Submitted proposals | 78 | 30 | 52 | 17 |
| Selected projects | 13 | 6 | 17 | 6 |
| **Selection rate** | **17%** | **20%** | **33%** | **35%** |
| **Granted funding** | **9.4 M€** | **3.6 M€** | **11.2 M€** | **3.1 M€** |
| Funding countries | 12 | 6 | 15 | 6 |
| Other countries | 3 | 2 | 1 | 4 |

# FLAG-ERA JTC 2019 Overview

- **Joint call for transnational research proposals in synergy with the two FET Flagships**
  - **Graphene Flagship**
  - **Human Brain Project**
- Funding both Flagship Core Project partners and new partners (expected to become Associated Members of the Flagship)
- 22 funding organisations from 18 countries
- Indicative budget: 20 M€
- Two-step evaluation process
- **Pre-proposal deadline: February 19th, 2019, 17:00 CET**

# Research Areas - Graphene

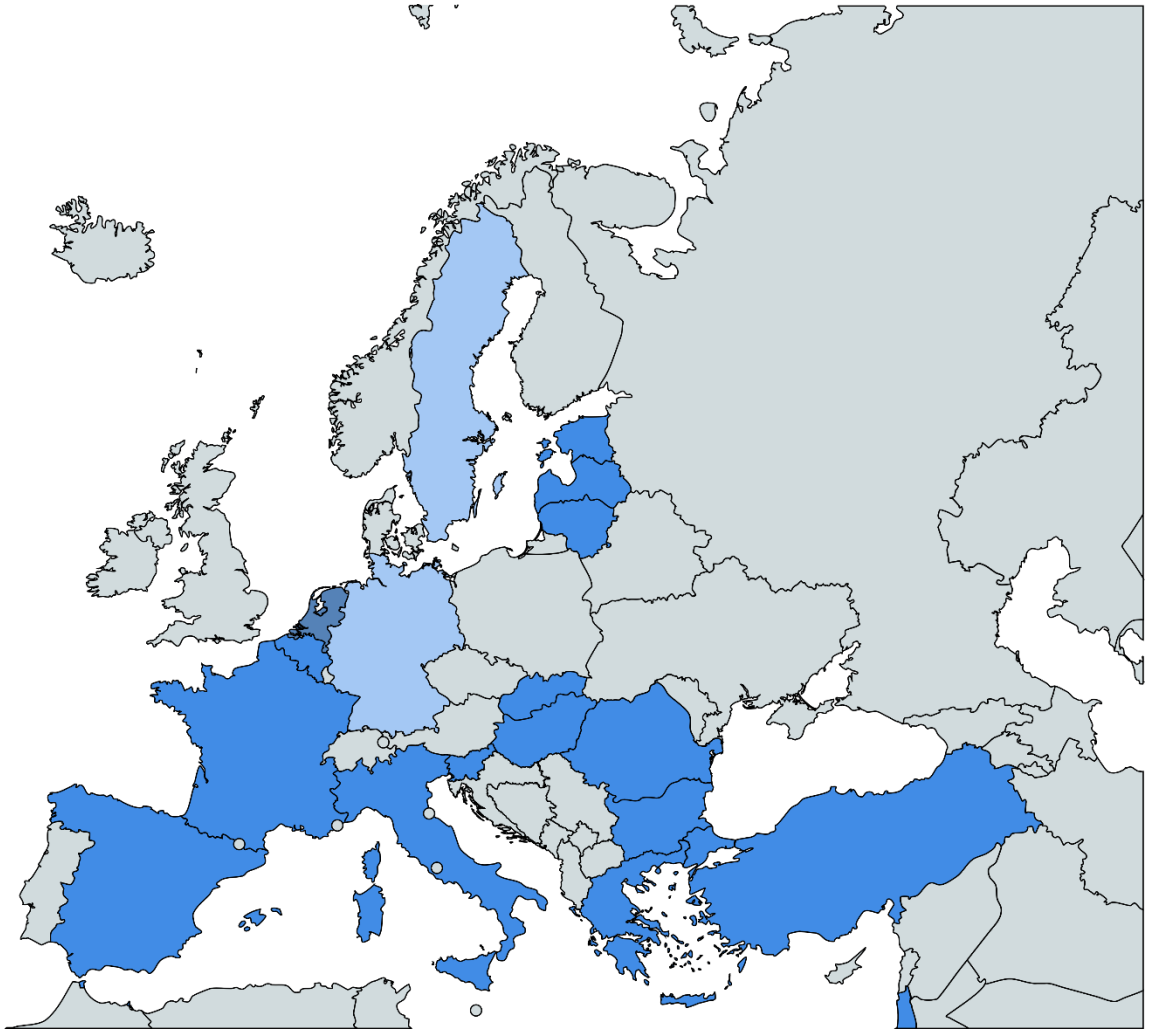
1. Synthesis and characterization of layered materials beyond graphene
2. Graphene and related materials (GRMs) for Quantum Technologies
3. Optimized GRM-based tunnel barriers for efficient spin injection and detection into graphene under operational conditions
4. Spin torque and layered-materials-based memory building block
5. Synthesis of monolayers of non-layered compounds
6. Bacterial degradation of GRMs
7. Osteoinductivity and immunisation capacity of GRMs
8. Soft graphene-based materials for tissue engineering
9. GRM-based large-area light emitters and arrays
10. Low temperature growth of layered semiconductors for flexible applications
11. Nanofluidics based on GRMs
12. CVD growth of graphene on insulators
13. Sensors from GRMs and their heterostructures
14. Passive components for radio frequency electronics based on GRMs
15. Infrared photodetectors based on GRMs and their heterostructures
16. LIDAR based on GRMs for autonomous vehicles
17. Moore's law continued through GRMs
18. GRM-based tandem solar modules
19. Graphene-based cathode materials for Li-ion batteries
20. Re-usable templates for graphene production

# Research Areas – HBP

1. Development and maturation of cognitive processes and multisensory integration at micro- and macro-scales
2. The role of neurotransmitter systems in human cognition
3. Subcortical structures: from cognition to action
4. The neuroscience of decision-making
5. Studies on biological deep learning and combined declarative and working memory
6. Disease modelling and simulation
7. Single cell RNA sequencing of human and mouse brain
8. Predictive neuroinformatics: A trans-species approach
9. Testing neuronal models at multiple scales
10. Automated construction and analysis of models of neurons and networks
11. Reconstruction of neuronal morphology from microscopic image data
12. Neuron data format standardization

# Participating countries

| Graphene 17 | HBP 16 |
|---|---|
| BE | BE |
| BG | BG |
| DE | |
| EE | EE |
| ES | ES |
| FR | FR |
| GR | GR |
| HU | HU |
| IL | IL |
| IT | IT |
| LT | LT |
| LV | LV |
| | NL |
| RO | RO |
| SE | |
| SI | SI |
| SK | SK |
| TR | TR |

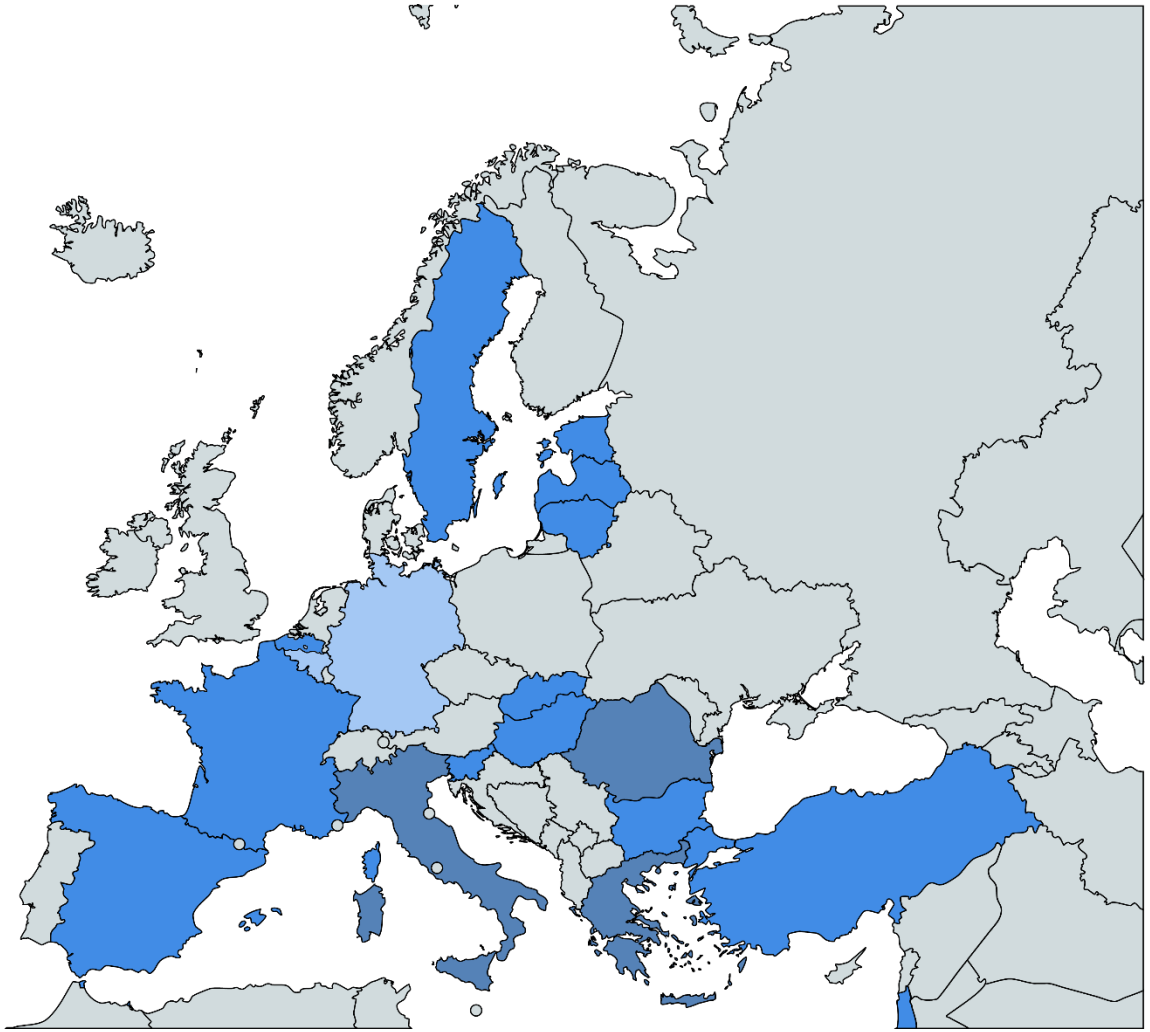


Created with mapchart.net ©

FLAG-ERA

# Participation in the graphene sub-calls

| TRL ≤ 4<br>15 | TRL ≥ 5<br>14 |
|---|---|
| BE/FRE | |
| BE/VLA | BE/VLA |
| BG | BG |
| DE | |
| EE | EE |
| ES | ES |
| FR | FR |
| | GR |
| HU | HU |
| IL | IL |
| | IT |
| LT | LT |
| LV | LV |
| | RO |
| SE | SE |
| SI | SI |
| SK | SK |
| TR | TR |

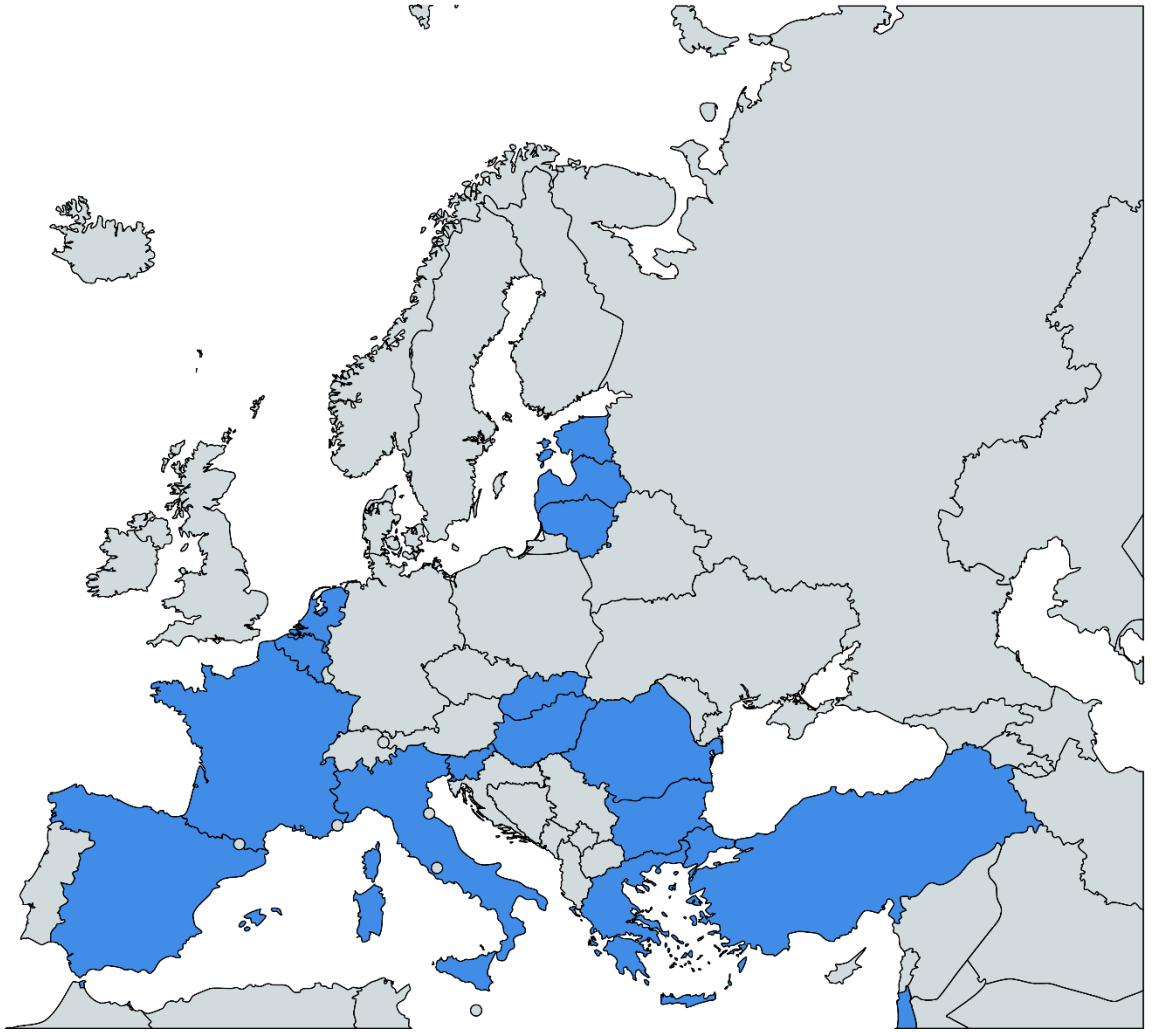


Created with mapchart.net ©

FLAG-ERA

# Participation in the HBP sub-call

| HBP 16 |
|---|
| BE |
| BG |
| EE |
| ES |
| FR |
| GR |
| HU |
| IL |
| IT |
| LT |
| LV |
| NL |
| RO |
| SI |
| SK |
| TR |



Created with mapchart.net ©

FLAG-ERA

# HBP-specific support for identification of collaboration opportunities

- In parallel to the evaluation 1st step, except for applicants who would opt out of this possibility, a feedback from Flagship representatives about potential areas of further collaboration is provided on the basis of the Flagship partnership forms included in the pre-proposals
- Applicants invited to the evaluation 2nd step can take advantage of this information to improve their proposal
- The information is not forwarded to the SEP and it is up to the applicants to exploit it.

# Indicative Budgets per country (k€)

| Country | | Funding organisation | Graphene (k€) | | HBP (k€) | Anticipated nb of fundable research groups |
|---|---|---|---|---|---|---|
| | | | Basic research | Applied research and innovation | Basic and applied research | |
| BE | Belgium | FNRS | 200 | | 200 | 2-3 |
| | | FWO | 350 | | 350 | 2-3 |
| BG | Bulgaria | BNSF | 100 | | | 2-3 |
| DE | Germany | DFG | 2 000 | | | 10-12 |
| EE | Estonia | ETAg | 100 | | 100 | 2 |
| ES | Spain | AEI | 700 | | | 5-7 |
| | | IDEPA | 200 | | | 1-2 |
| | | ISCIII | | | 500 | 3-4 |
| FR | France | ANR | 1 000 | | 1 000 | 8-10 |
| GR | Greece | GSRT | | 900 | 700 | 7-9 |
| HU | Hungary | NKFIH | 300 | | 300 | 4-6 |
| IL | Israel | InnovationAuth | 500 | | 500 | 3-5 |
| IT | Italy | MIUR | | 300 | 300 | 4-6 |
| LT | Lithuania | LMT | 100 | | 100 | 2-3 |
| LV | Latvia | VIAA | 300 | | | 2-3 |
| NL | Netherlands | NWO | | | 700 | 3 |
| RO | Romania | UEFISCDI | | 250 | 250 | 3-4 |
| SE | Sweden | VINNOVA | | 750 | | 2-4 |
| | | VR | 750 | | | 2-4 |
| SI | Slovenia | MIZS | 420 | | 210 | 3 |
| SK | Slovakia | SAS | 120 | | 120 | 2 |
| TR | Turkey | TUBITAK | 2 500 | | | 10-15 |

FLAG-ERA

# Table of links – Graphene

**FLAG-ERA JTC 2019 Graphene topic:**
**Related Divisions and Work Packages per JTC research area**

The present document is provided to facilitate contacts with the Graphene Flagship. The table is indicative and appropriate contacts may depend on each specific proposal.

| | Division 1 Enabling Science and Materials | | | Division 2 Health, Medicine and Sensors | | | Division 3 Electronics and Photonics Integration | | | | Division 4 Large-Scale Technologies | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WP1 Enabling Research | WP2 Spintronics | WP3 Enabling Materials | WP4 Health and Environment | WP5 Biomedical Technologies | WP6 Sensors | WP7 Electronic Devices | WP8 Photonics and Optoelectronics | WP9 Flexible Electronics | WP10 Wafer-Scale System Integration | WP11 Energy Generation | WP12 Energy Storage | WP13 Functional Foams and Coatings | WP14 Polymer Composites | WP15 Production |
| 1 Synthesis and characterization of layered materials beyond graphene | X | | | | | | | | | | | | | | |
| 2 Graphene and related materials (GRMs) for Quantum Technologies | X | | | | | | | X | | | | | | | |
| 3 Optimized GRM-based tunnel barriers for efficient spin injection and detection into graphene under operational conditions | | X | | | | | | | | | | | | | |
| 4 Spin torque and layered-materials-based memory building block | | X | | | | | | | | X | | | | | |
| 5 Synthesis of monolayers of non-layered compounds | | | X | | | | | | | | | | | | |
| 6 Bacterial degradation of GRMs | | | | X | | | | | | | | | | | |
| 7 Osteoinductivity and immunisation capacity of GRMs | | | | X | X | | | | | | | | | | |
| 8 Soft graphene-based materials for tissue engineering | | | | X | X | | | | | | | | X | X | |
| 9 GRM-based large-area light emitters and arrays | | | | | | | | X | | | | | | | |
| 10 Low temperature growth of layered semiconductors for flexible applications | | | | | | | | | X | | | | | | |
| 11 Nanofluidics based on GRMs | X | | | | | | | | | | | | | | |
| 12 CVD growth of graphene on insulators | | | X | | | | | | | | | | | | |
| 13 Sensors from GRMs and their heterostructures | | | | | | X | | | | | | | | | |
| 14 Passive components for radio frequency electronics based on GRMs | | | | | | | X | | | | | | | | |
| 15 Infrared photodetectors based on GRMs and their heterostructures | | | | | | | | X | | | | | | | |
| 16 LIDAR based on GRMs for autonomous vehicles | | | | | | | | X | | X | | | | | |
| 17 Moore's law continued through GRMs | | | | | | | | | | X | | | | | |
| 18 GRM-based tandem solar modules | | | | | | | | | | | X | | | | |
| 19 Graphene-based cathode materials for Li-ion batteries | | | | | | | | | | | | X | | | |
| 20 Re-usable templates for graphene production | | | | | | | | | | | | | | | X |

**Division and Work Package leaders and deputies with email addresses**

| | | | |
|---|---|---|---|
| Division 1 - Enabling Science and Materials | Vladimir Falko (vladimir.falko@manchester.ac.uk)<br>Alberto Morpurgo (alberto.morpurgo@unige.ch) | WP1 - Enabling Research | Vladimir Falko (vladimir.falko@manchester.ac.uk); Alberto Morpurgo (alberto.morpurgo@unige.ch) |
| | | WP2 - Spintronics | Kevin Garello (kevin.garello@imec.be); Stephan Roche (sroche@icn.cat) |
| | | WP3 - Enabling Materials | Mar Garcia Hernandez (cipreses29@gmail.com); Jonathan Coleman (colemaj@tcd.ie) |
| Division 2 - Health, Medicine and Sensors | Kostas Kostarelos (kostas.kostarelos@manchester.ac.uk)<br>Maurizio Prato (prato@units.it) | WP4 - Health and Environment | Maurizio Prato (prato@units.it); Alberto Bianco (a.bianco@ibmc-cnrs.unistra.fr) |
| | | WP5 - Biomedical Technologies | Kostas Kostarelos (kostas.kostarelos@manchester.ac.uk); Jose Garrido (joseantonio.garrido@icn2.cat) |
| | | WP6 - Sensors | Peter Steeneken (p.g.steeneken@tudelft.nl); Sanna Arpiainen (sanna.arpiainen@vtt.fi) |
| Division 3 - Electronics and Photonics Integration | Daniel Neumaier (neumaier@amo.de)<br>Henrik Sandberg (henrik.sandberg@vtt.fi) | WP7 - Electronic Devices | Daniel Neumaier (neumaier@amo.de); Herbert Zirath (herbert.zirath@chalmers.se ) |
| | | WP8 - Photonics and Optoelectronics | Frank Koppens (frank.koppens@icfo.es); Andrea C. Ferrari (acf26@eng.cam.ac.uk) |
| | | WP9 - Flexible Electronics | Henrik Sandberg (henrik.sandberg@vtt.fi); Matteo Bruna (matteo.bruna@nokia.com) |
| | | WP10 - Wafer-Scale System Integration | Marco Romagnoli (mromagnoli@cnit.it); Cedric Huyghebaert (cedric.huyghebaert@imec.be) |
| Division 4 - Energy, Composites and Production | Vittorio Pellegrini (vittorio.pellegrini@iit.it)<br>Xinliang Feng (xinliang.feng@tu-dresden.de) | WP11 - Energy Generation | Gerard Gebel (gerard.gebel@cea.fr); Emmanuel Kymakis (kymakis@staff.teicrete.gr) |
| | | WP12 - Energy Storage | Vittorio Pellegrini (vittorio.pellegrini@iit.it); Teofilo Rojo (trojo@cicenergigune.com) |
| | | WP13 - Functional Foams and Coatings | Xinliang Feng (xinliang.feng@tu-dresden.de); Paolo Samori (samori@unistra.fr) |
| | | WP14 - Composites | Costas Galiotis (c.galiotis@iceht.forth.gr); Ian Kinloch (ian.kinloch@manchester.ac.uk) |
| | | WP15 - Production | Alex Jouvray (a.jouvray@aixtron.com); Tamara Blanco (tamara.blanco@airbus.com) |

FLAG-ERA

Table available on the call page

# Table of links – HBP

**FLAG-ERA JTC 2019**
**Related Subprojects per HBP research area**

The present document is provided to facilitate contacts with the HBP. The table is indicative and appropriate contacts may depend on each specific proposal.

| | Neuroscience research and strategic data generation | | | | Platforms | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **SP1** Mouse Brain Organisation | **SP2** Human Brain Organisation | **SP3** Systems and Cognitive Neuroscience | **SP4** Theoretical Neuroscience | **SP5** Neuroinformatics Platform | **SP6** Brain Simulation Platform | **SP7** High Performance Analytics and Computing Platform | **SP8** Medical Informatics Platform | **SP9** Neuromorphic Computing Platform | **SP10** Neurorobotics Platform |
| 1 Development and maturation of cognitive processes and multisensory integration at micro- and macro-scales | X | X | X | X | X | X | X | X | X | X |
| 2 The role of neurotransmitter systems in human cognition | | X | X | X | | X | | X | | |
| 3 Subcortical structures: from cognition to action | | X | X | X | | X | | X | | |
| 4 The neuroscience of decision-making | | | X | X | | X | | X | X | |
| 5 Studies on biological deep learning and combined declarative and working memory | | | X | X | | X | | | X | X |
| 6 Disease modelling and simulation | | X | X | X | X | X | | X | | |
| 7 Single Cell RNA sequencing of human and mouse brain | X | X | | | X | X | | | | |
| 8 Predictive Neuroinformatics: A trans-species approach | X | X | X | | X | | | X | | |
| 9 Testing neuronal models at multiple scales | X | X | X | X | | X | | | | |
| 10 Automated Construction and Analysis of Models of Neurons and Networks | | X | X | | X | X | X | X | | |
| 11 Reconstruction of neuronal morphology from microscopic image data | X | X | | | X | X | | | | |
| 12 Neuron Data Format Standardization | | | | | X | X | X | X | X | X |

NB: The 'Ethics and Society' Subproject can be relevant to all call research areas.

**The Subproject leaders and their contact information are provided on the HBP web site (https://www.humanbrainproject.eu/en/about/project-structure/subprojects/).**

FLAG-ERA

Table available on the call page

# Evaluation criteria

- The usual criteria for European projects are used
  - Excellence: Scientific and/or technological quality
  - Implementation: Quality and efficiency of the implementation and management
  - Impact: Potential impact through the development, dissemination and exploitation of results
- The criteria weights depend on the sub-call

| | Graphene | | HBP |
|---|---|---|---|
| | Basic research | Applied research and innovation | Basic and applied research |
| Excellence | 50% | 30% | 40% |
| Implementation | 30% | 30% | 30% |
| Impact | 20% | 40% | 30% |

# Main steps after submission

- Proposals are assessed by an independent international Scientific Evaluation Panel (SEP)
- The list of project recommended for funding is established on the basis of this assessment and on the available funding
- Timeline
  - May 2019: Notification of accepted short proposals
  - July 2019: Full proposal submission deadline
  - November 2019: Notification of accepted full proposals
  - December 2019 – March 2020: Project start (up to 3 years)

# Important documents

- Call Announcement
  - Eligibility rules at the transnational and national levels (cf. Annex II on National requirements)
- Pre-proposal and Flagship partnership proposal forms
- Submission guidelines
- Flagship contact information
- Call presentations and flyers

**http://www.flagera.eu/flag-era-calls/jtc-2019/**

# Further information

National and regional contact points:

Cf. Call Announcement (Annex II)

Joint Call Secretariat:

**serguei.fedortchenko@agencerecherche.fr**

Graphene Flagship
Point of Contact:
**graphene-eu@esf.org**

Human Brain Project
Point of Contact:
**partnering@humanbrainproject.eu**