Board of Funders
Brussels, 22nd March 2019

Human Brain Project Flagship
State of play

Flagship Unit
DG Connect, European Commission
HBP - administrative status
March 2019

SGA2 at mid-term
• Review foreseen in June in Brussels

SGA3 preparation – 150M€, 3 years
• Third and last Horizon 2020 HBP Grant
• Covering Mar 2020 - Feb 2023
• As part of SGA2, first orientations assessed in Feb 2019 with external experts (specific issues review)
• Target proposal submission by summer 2019 (tbc, depending on SGA3 preparation and governance progress)
HBP - preparing for SGA3 (1)

General principle: 
maximise science & infrastructure delivery by 2023

→ Restructuration of the activity ongoing around aspects essential for:
  - progressing neurosciences
  - developing a Research Infrastructure for neurosciences (EBRAINS)

→ Not all the S&T paths of SGA2 will continue in the Core Project.

Openness

• The Flagship to organise open calls to partly adjust the Consortium to the SGA3 objectives
Science in SGA3

S&T topics currently considered:

i. The human multi-scale brain connectome

ii. Networks underlying brain cognition and consciousness

iii. Learning networks: developing a cognitive architecture for AI, neuromorphic computing and neuro-robotics
HBP - preparing for SGA3 (3)

Infrastructure

- Platform developments result in **tools and services**, which will be joined and integrated into coherent workflows in EBRAINS
- Use of base infrastructure such as HPC/Fenix/ICEI
- Tools and services, still under discussion, will possibly cover some of these aspects:
  - Atlases/Neuro-informatics
  - Medical-informatics
  - Neuro-robotics
  - Neuromorphic
  - Brain simulation

- **ESFRI roadmap application** foreseen as part of SGA3
In the context of preparing the sustainability of EBRAINS, HBP is moving forward to establish a governing Legal Entity. As a first step, it is targeted to have it fully operational as the coordinator of the HBP Grants by the start of SGA3. This requires a shift of coordination workforce from Geneva to Brussels.

The Legal Entity will have also to prepare the application to the ESFRI roadmap for the future of EBRAINS and on the longer term, the possible creation of an ERIC.
HBP – Legal Entity creation

An AISBL based in Brussels

Concrete progresses in the creation of the AISBL:

- Finalisation of the AISBL statutes & financial guarantee mechanisms
- Identification of institutions willing to become **founders** (max 1 per country)
- Estimation of **costing** (personnel, building) and **revenues** scenario (EU grant, members’ contribution)

Next steps:

- Creation/registration of the entity
- Recruitment of the CEO (to become the HBP Director General) + of key staff
HBP state of play (1)

Partnering Projects
- 6 projects from FLAG-ERA 2 are now HBP Partnering Projects, contributing to the implementation of the HBP roadmap.
- 29 proposals from FLAG-ERA 3 are being evaluated.

HLST (High Level Support Team) established
→ Researchers who wish to access the HBP's data and computational systems can receive support and advice on how to do so via the HLST

Example of HLST services:
- Extended data curation support
- Jupyter notebook user support
- Functional data analysis workflow support
- Brain simulation functionality and deep integration support
- Medical informatics community management and deep integration support
- Neuromorphic computing advanced user support
- Neurorobotics documenter and community management
- Simulation and data analytics workflow support
HBP state of play (2)
Infrastructure Voucher Programme

- **Voucher Programme**
  - Addressed to **users** and groups/communities outside HBP
  - Gives **access** to the HBP Platform and its **engineering teams**, to **solve specific problem of users**

- Funding direct to HBP Platform engineering teams **to implement the requested features coming from users**

- Total budget **1.23 Mio EUR** (budget actual projects between 40 and 140K EUR)

- 32 voucher proposals have been submitted. **15 have been selected** which cover a broad spectrum of applications from different user communities

**Example:** Voucher for European Reference Network for rare and complex epilepsies (EpiCARE)
**Objective:** To enable a large scale implementation of the HBP medical informatic platform within EpiCARE, to share high quality clinical data in the field of epilepsy across Europe.
# HBP state of play (3)

**FENIX Infrastructure: ICEI SGA**

## 2019 offering:

<table>
<thead>
<tr>
<th>Availability by end 2019</th>
<th>CS CS (CH)</th>
<th>JSC (DE)</th>
<th>CEA (FR)</th>
<th>CINECA (IT)</th>
<th>BSC (ES)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scalable computing nodes</strong></td>
<td>250</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Interactive computing nodes</strong></td>
<td>400</td>
<td>175</td>
<td>60</td>
<td>350</td>
<td>6</td>
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<tr>
<td><strong>Virtual Machines nodes</strong></td>
<td>35</td>
<td>25</td>
<td>20</td>
<td>84</td>
<td></td>
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<tr>
<td><strong>Archival data repositories</strong></td>
<td>4000 TB*</td>
<td>7000 TB</td>
<td>5000 TB</td>
<td>6000 TB</td>
<td></td>
</tr>
<tr>
<td><strong>Active data repositories</strong></td>
<td>80 TB</td>
<td>1000 TB</td>
<td>800 TB</td>
<td>350 TB</td>
<td>70 TB</td>
</tr>
</tbody>
</table>

* TeraBytes

## ICEI continues building the Fenix infrastructure

- Tenders for **equipment** (data storage, interactive and cloud computing hardware) published by JUELICH (Dec 2018), CEA (Jan 2019), CINECA (Spring 2019), and BSC (July 2019)
- Tenders for **R&D services** expected to be published by BSC in July 2019
- Collaboration with GEANT for the HBP/Fenix **Authentication and Authorization Infrastructure** (AAI) with the goal of being compatible with the European Open Science Cloud (EOSC)

## Fenix serving HBP

- Resources allocation process: submission of proposals and HBP Directorate decisions
- 11 proposals accepted by February 2019

## Fenix serving others

- PRACE resources allocation: 6-monthly Tier-0 calls now include the option of using Fenix:
  - Call 18 closed in October 2018
  - Call 19 closing in April 2019
Molecular level simulations using the HBP platforms, combined with experimental data, lead to the discovery of effective (allosteric) modulators and help to design new drugs with enhanced selectivity and reduced off-target effects.

Two patents in drug research filed:
1. First-ever selective inhibitor for an oncogenic kinase (e.g., glioblastomas brain cancer)
2. Novel therapeutics for the treatment of PolyQ diseases, including Huntington disease.
HBP state of play (5)

Ethics: Opinion on Dual Use of Neuroscience and Neurotechnology

HBP experts provide recommendations to help researchers and policy makers address emerging ethical issue

“Opinion on ‘Responsible Dual Use’. Political, Security, Intelligence and Military Research of Concern in Neuroscience and Neurotechnology’.

Edited by the SP12 subproject “Ethics and Society” in collaboration with the services of DG RTD dealing with ethics and RRI.

• To promote awareness of the issue
• To encourage responsible practice among those involved in the research and in the development of technologies.

HBP state of play (6)

Education & Talent Management

Develop new talents and new skills: nurturing creativity and talent; attracting the best minds; helping educate and train a new generation of skillful researchers. Launched by the HBP Gender Advisory Committee

- Workshops: 14
- HBP Schools: 8
- Online courses: 10
- Lab exchange
- Education events: 26
- Financed PhD students: 130
- Online lectures: 404

HBP Mentoring Project for early career stage scientists and managers of science launched on March 8, 2019

- Fostering young talents
- Improving gender balance in all disciplines contributing to the success of the HBP

https://www.convelop.at/humanbrainproject/mentoring/
HBP state of play (7) Event Highlights* & INCO

3rd HBP Student Conference on Interdisciplinary Brain Research, Ghent, Belgium, 6-7 February 2019

Symposium at the European Committee of Regions, Bruxelles, 6 March 2019 (co-organized by HBP)

Workshop and Young Researchers Competition, Cetraro, Italy, July 5-19 2019

International cooperation. IBI Coordinating Body Meeting Shanghai, China, March 19-20, 2019. Participation of HBP.

*Among 721 dissemination activities registered since April 2018