Board of Funders

Brussels, 22nd March 2019
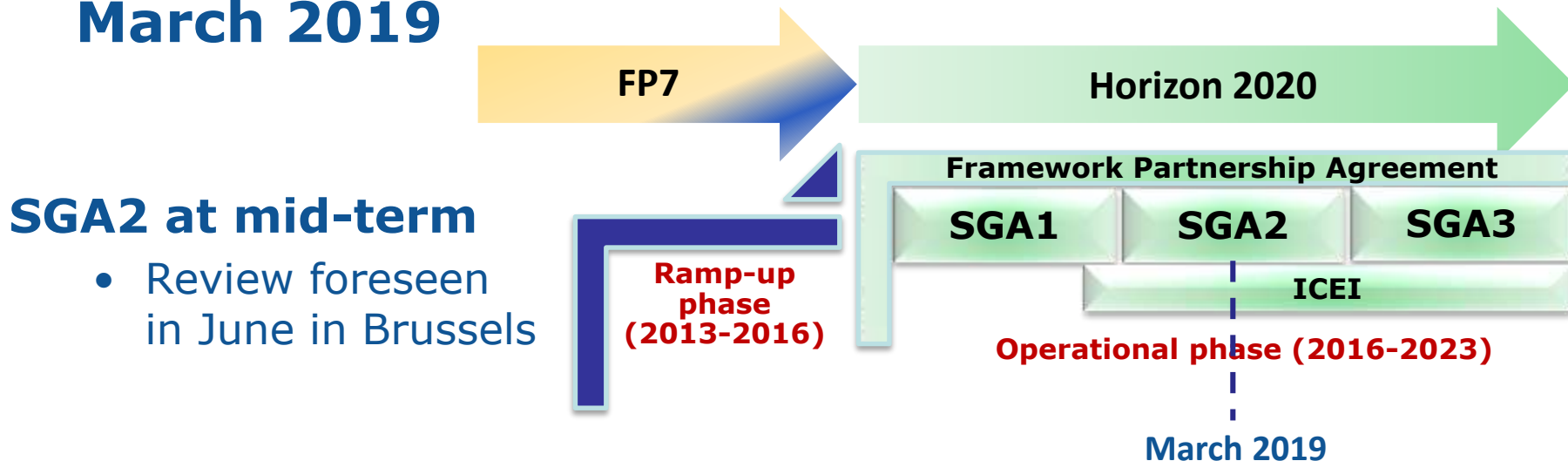
Human Brain Project Flagship
State of play

Flagship Unit

DG Connect, European Commission

HBP - administrative status
March 2019

FP7

Horizon 2020

Framework Partnership Agreement

| SGA1 | SGA2 | SGA3 |

ICEI

Ramp-up phase (2013-2016)

Operational phase (2016-2023)

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)

European Commission

HBP - preparing for SGA3 (1)

WORK IN PROGRESS

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

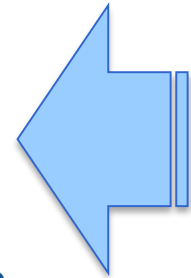- The Flagship to organise **open calls** to partly adjust the Consortium to the SGA3 objectives

European Commission

HBP - preparing for SGA3 (2)

WORK IN PROGRESS

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 Unique Impacts for Communities

Neuroscience

Brain Medicine

Future ICT

HBP - preparing for SGA3 (3)

WORK IN PROGRESS

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

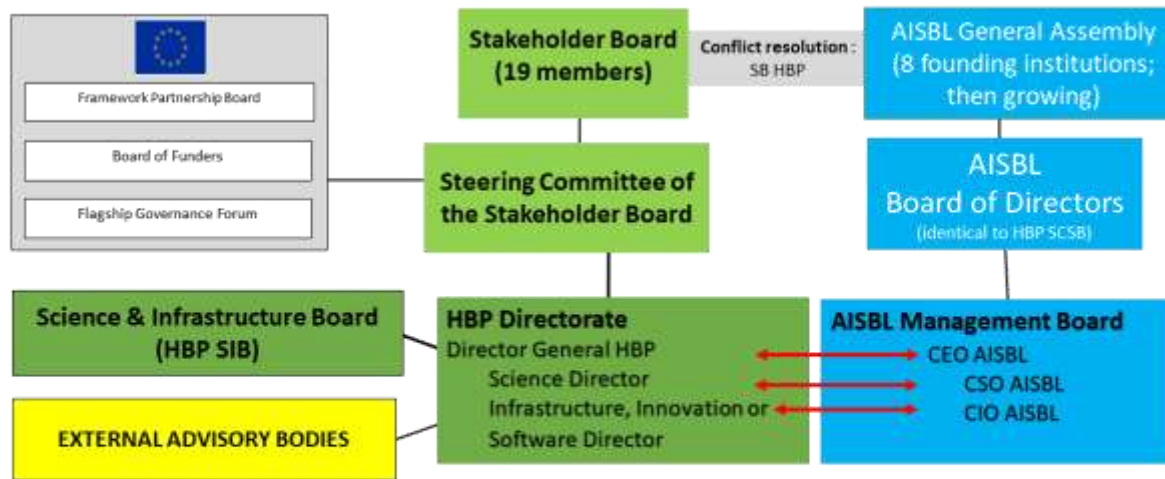- **ESFRI roadmap application** foreseen as part of SGA3

European Commission

HBP - governance

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.

Governance of AISBL for the duration of HBP

Legend : AISBL HBP

European Commission

HBP – Legal Entity creation

An AISBL based in Brussels

WORK IN PROGRESS

Concrete progresses in the creation of the AISBL:

- Finalisation of the AISBL statutes & financial guarantee mechanisms

- Identification of institutions willing to become **founding members** (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

European Commission

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

European Commission

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.

European Commission

HBP state of play (3)
FENIX Infrastructure: ICEI SGA

2019 offering:

Availability by end 2019	CSCS (CH)	JSC (DE)	CEA (FR)	CINECA (IT)	BSC (ES)
Scalable computing nodes	250				
Interactive computing nodes	400	175	60	350	6
Virtual Machines nodes	35	25	20		84
Archival data repositories	4000 TB*		7000 TB	5000 TB	6000 TB
Active data repositories	80 TB	1000 TB	800 TB	350 TB	70 TB

* 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:
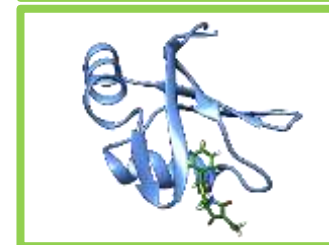 - Call 18 closed in October 2018
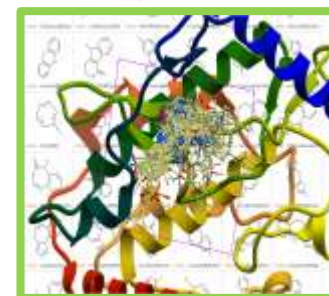 - Call 19 closing in April 2019

European Commission

HBP state of play (4)
Science: Computational drug discovery (CDP6)

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.

European Commission
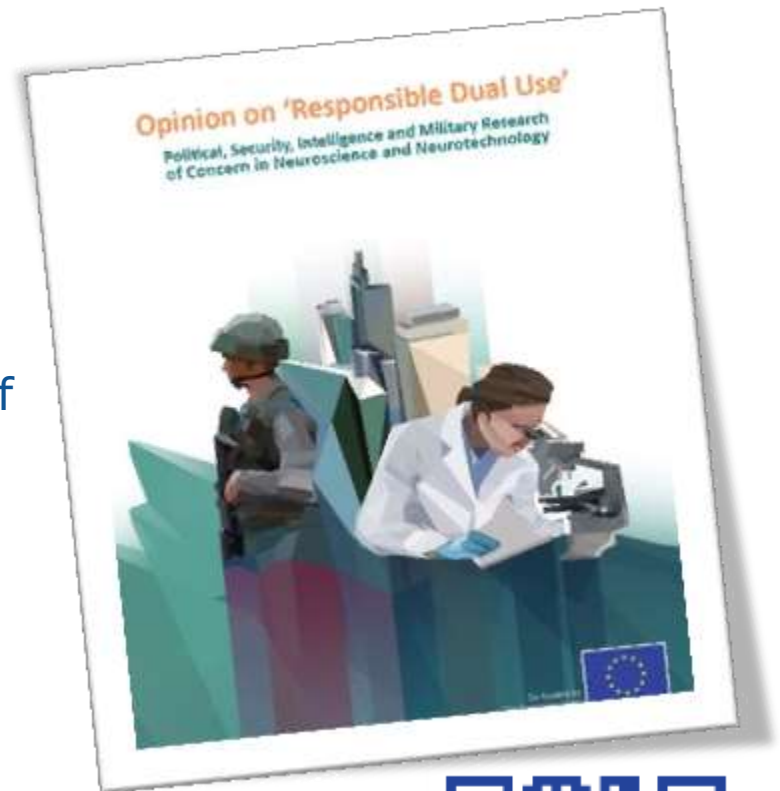
HBP state of play (5)
Ethics: Opinion on Dual Use of Neuroscience and Neurotechnology

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.

https://www.humanbrainproject.eu/en/follow-hbp/news/human-brain-project-publishes-opinion-on-dual-use-of-neuroscience-and-neurotechnology/

European Commission

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/

European Commission

HBP state of play (7)
Event Highlights* & INCO

BrainComp
Workshop on
Brain-Inspired Computing

Brain Research & Tech
How can Horizon Europe improve human brain health and performance?
A contribution to a major European challenge

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

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

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

July 2019

HBP SCHOOL
THE HUMAN BRAIN ATLAS:
NEUROSCIENTIFIC BASIS, TOOLS AND APPLICATIONS
1-7 SEPTEMBER 2018
DÜSSELDORF/JÜLICH, GERMANY
MAASTRICHT, NETHERLANDS

March 2019

HBP International Conference
Understanding Consciousness
A scientific quest for the 21st century

2018

www.hbp-ic.com

INCO

IBI INTERNATIONAL BRAIN INITIATIVE

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

European Commission