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Abstract:	The HBP will implement a trans-disciplinary Education Programme (EP) to teach neuroscience, medicine and ICT subjects to young HBP researchers, along with complementary subjects such as research ethics and intellectual property rights. The EP will focus on introductory-level education & training for non-specialists. It will prioritise HBP users over external audiences and its primary tools will be the HBP Platforms and MOOC-type Internet Webinars, which should allow "on demand" education. The EP will create a Student Community to foster the exchange of ideas and allow student representation on the HBP Board of Directors. It will also provide specific support for young female HBP researchers. Its main focus in the HBP Ramp-Up Phase will be preparation for implementation in the Operational Phase.

Keywords:	Curriculum, MOOC, Summer School, Syllabuses, Trans-Disciplinary Education, Webinar, Workshop

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Executive Summary

The Human Brain Project (HBP) is a ten-year research project, funded by the European Commission (EC), with a goal of laying the foundations for a new approach to brain research. The convergence between neuroscience, medicine and ICT makes the HBP approach possible, but scientists with trans-disciplinary education across these fields are rare. The HBP will therefore implement a trans-disciplinary Education Programme (EP), which will teach these subjects to HBP Students (defined as HBP personnel studying for a PhD). The EP will also teach them complementary subjects such as research ethics and intellectual property rights, and also exposing them to the HBP Platforms. The EP will create a Student Community to foster the exchange of ideas and allow student representation on the HBP Board of Directors. It will also provide specific support for young female HBP researchers.

When the Framework Partnership Agreement (FPA) enters force in the Operational Phase, the EP will have to cater for an increased number of HBP Students, drawn from both Core and Partnering Projects. Because of various constraints, the EP Strategy is based on a number of important choices. The most important of these are that the EP will focus on introductory-level education for non-specialists, that it will prioritise HBP Students over external audiences and that its primary tools will be the HBP Platforms and MOOC-type Internet Webinars. The combination of Platforms and Webinars should make it possible to offer "on demand" education.

Creating the EP syllabuses will be complex, ground-breaking work, and may require more resources than foreseen in the EP budget for the Ramp-Up Phase. The EP will be implemented in two phases. The first is the HBP Ramp-Up Phase, from October 2013 to March 2016. In this period, the main activity will be the preparation of the EP Curriculum (comprising the Syllabuses for the 5 EP Subjects identified in Tables 1a and 1b below) and the putting in place of the resources, human and material, needed to teach these Subjects and create a Student Community. Key actions will be identifying Syllabus leaders and teaching staff, and setting up the EP Website. Limited teaching will be also provided during the Ramp-Up Phase, via three "Workshops" (each of c.2 days' duration) and two "Schools" (each of c. 1 week's duration).

The 5 EP Subject Syllabuses will be taught in the HBP's Operational Phase, which will start in April 2016 and last for 7½ years. This phase will see each of these Syllabuses being taught once per year, primarily via Internet Webinars, although each Syllabus will culminate in a 2-day "face-to-face" Workshop. Three of these Syllabuses will teach HBP Sciences for Non-Specialists and expose students to the HBP Platforms, while two more will teach HBP complementary subjects, such as ethics and intellectual property rights. Feedback and suggestions will be sought from students and researchers across the HBP. HBP researchers will also be encouraged to propose and teach new subjects via pilot webinars.

Forward-looking education and intellectual stimulation will be provided via an annual one-week Summer School, focused on a specific HBP science. A separate annual Workshop will be conducted specifically for female HBP scientists. The EP Student Community will foster the exchange of ideas and allow student representation on the HBP Board of Directors.

An Education Programme Office (EPO) will coordinate implementation of the EP, assisted by an EP Advisory Committee. The EPO forms part of the European Research Programme Office (WP13.4), which is headed by the HBP's Chief Relations Officer.

1. Introduction

1.1 The HBP and the convergence between science and ICT

The Human Brain Project (HBP) is a ten-year research project, funded by the European Commission (EC), with a goal of laying the foundations for a new approach to brain research. The fields of neuroscience, medicine and information technology each have important roles to play in addressing this challenge, but their contributions are currently very fragmented. The HBP is driving integration of these different inputs and catalysing a community effort to achieve a new understanding of the brain, new treatments for brain disease and new brain-like computing technologies.

To support this effort, the HBP is creating an integrated system of Information and Communication Technology (ICT) Platforms, which it will share with neuroscientists, clinical researchers, information technology developers and roboticists. These Platforms are supported by other Subprojects that focus on filling critical gaps in physical brain data and in our theoretical understanding of the structure and functioning of the brain. To achieve its goals, the HBP has put together a consortium of more than 100 Partners, mostly in Europe, but also in the Americas and Asia. An overview of the HBP and its component Subprojects can be found in Annex A.

The convergence between neuroscience, medicine and ICT makes the HBP approach possible. It can be seen, for example, in the application of computer technology to help construct accurate brain models from limited sets of physical data. Future progress in neuroscience and medicine will be increasingly dependent on ICT. Leadership of these fields will be assumed by scientists who have an understanding of computer science and how it can be harnessed to help advance their own disciplines. ICT specialists who have an insight into brain science or medicine are better placed to contribute to such work than ones who do not.

However, people with such trans-disciplinary education are still rare and this scarcity is a constraint for the HBP. The HBP has therefore included in its Management Subproject (SP13) a specific Task (Task 13.4.3 Education Programme coordination) to develop and implement:

> "a programme of trans-disciplinary education, training young European scientists to exploit the convergence between ICT and neuroscience…"

More specifically, the HBP Education Programme (EP) will focus on providing trans-disciplinary education to HBP Students, defined as HBP personnel who are studying for a PhD. As well as extending this approach to include HBP Students in the field of brain medicine, the EP will also address some other trans-disciplinary training and educational needs. These include providing HBP Students with an insight into ethical considerations, as well as intellectual property rights and the exploitation of research results.

The Internet makes it easier to provide education, especially across an international project of the size and scope of the HBP, and it will be the principal channel for the distribution of HBP EP teaching content. The HBP EP will also use the Internet to facilitate discussion between students, teachers, other researchers and the EPO, which can shape future modification of the EP, to keep it in line with emerging knowledge needs. The use

of innovative approaches, such as the HBP Platforms and Webinars, should make it possible for the EP to offer "on demand" education.

The Framework Partnership Agreement (FPA), which will shape the HBP in its Operational Phase, envisages the expansion of the HBP to include both Core Projects (CPs) and Partnering Projects (PPs). The EP described in this document will prioritise HBP Students in both CPs and PPs.

1.2 The purpose of this document

The purpose of this document is:

- To define the strategy for the EP over the duration of the HBP
- To describe the operational EP actions to be undertaken in the HBP Ramp-Up Phase (October 2013 to March 2016)
- To describe the preparatory EP actions to be undertaken in the HBP Ramp-Up Phase (October 2013 to March 2016)
- To outline the EP that will be implemented in the HBP Operational Phase (which will start in April 2016 and last for 7½ years).

1.3 The structure of this document

The document is divided into the following main sections:

- The Objectives of the HBP Education Programme
- The EP Strategy
- Subjects to be covered in the EP Curriculum
- EP Target Audiences and their needs
- The EP Plan for the Ramp-Up Phase
- EP Organisation
- Annexes

2. The Objectives of the HBP Education Programme

The objectives of the HBP EP are set out the HBP's Description of Work (DoW) and can be summarised as follows:

Objective 1: Teach HBP Sciences for Non-Specialists to HBP researchers

To provide young HBP scientists who have an academic background in neuroscience, medicine or ICT with an appropriate introductory education in one of disciplines, other than their own.

Objective 2: Teach complementary topics to HBP researchers

To provide young HBP scientists with complementary education in research ethics, societal impact of research, intellectual property rights (IPRs), and the translation and exploitation of research results.

Objective 3: Make HBP education available outside the HBP

To make the trans-disciplinary and complementary education developed for young HBP scientists available to the broader scientific community and general public.

Note: The DoW specified that the EP was responsible for training HBP Platform users, but it was subsequently decided that it would be more practical for the Platforms to be responsible for training their own users (see Section 3.2.3 below).

3. EP Strategy

3.1 Outline

The EP will be implemented in two phases. The first is the HBP Ramp-Up Phase, from October 2013 to March 2016. In this period, the main activity will be the preparation of the EP Curriculum (comprising the Syllabuses for the 5 EP Subjects identified in Tables 1a and 1b below) and the putting in place of the resources, human and material, needed to teach these Subjects and create a Student Community. Key actions will be identifying Syllabus leaders and teaching staff, and setting up the EP Website. Limited teaching will be also provided during the Ramp-Up Phase, via three "Workshops" (each of c.2 days' duration) and two "Schools" (each of c. 1 week's duration).

The 5 EP Subject Syllabuses will be taught in the HBP's Operational Phase, which will start in April 2016 and last for 7½ years. This phase will see each Syllabus being taught once per year, primarily via Internet Webinars, although each Syllabus will culminate in a 2-day "face-to-face" Workshop. Three Syllabuses will teach HBP Sciences for Non-Specialists and expose students to the HBP Platforms. Two more Syllabuses will teach HBP complementary subjects, such as ethics and intellectual property rights.

Forward-looking education and intellectual stimulation will be provided via an annual one-week Summer School, focused on a specific HBP science. A separate annual Workshop will be conducted specifically for female HBP scientists. The EP Student Community will foster the exchange of ideas and allow student representation on the HBP Board of Directors.

An Education Programme Office (EPO) will coordinate implementation of the EP and help adapt the EP's offering to address emerging learning needs. The use of innovative approaches, such as the HBP Platforms and Webinars, should make it possible for the EP to offer "on demand" education. The EPO forms part of the European Research Programme Office (WP13.4), and is assisted by an EP Advisory Committee. The EPO is part of WP 13.4, which is headed by the HBP's Chief Relations Officer.

3.2 Strategic Choices

The EP Strategy provides a framework for a realistic, achievable EP. It is based on a set of strategic choices made after reviewing the constraints that influence the HBP and its EP. These strategic choices, which are examined in more detail below, are:

- The EP will focus primarily on introductory-level education & training for non-specialists
- The EP will prioritise HBP Students over external audiences
- The HBP Platforms are responsible for training platform users
- The EP's primary tools will be MOOC-type Internet Webinars and the HBP Platforms
- Each EP Syllabus must include a Workshop to complement the Webinars
- The EP can only make limited demands on students & teachers
- HBP Subprojects will be both EP beneficiaries and providers
- In the Ramp-Up Phase, the EP will focus on preparation for the Operational Phase

3.2.1 The EP will focus primarily on introductory-level education & training for non-specialists

The EP's primary aim in the DoW is to provide trans-disciplinary education. This means, for example, providing neuroscientists with an insight into ICT, or giving ICT developers a basic understanding of neuroscience. As such, this education must restrict itself to teaching basic concepts. Neuroscientists do not need to understand every nuance of cutting edge computing developments; indeed, trying to teach them this is likely to be counterproductive. However, they could benefit substantially if they could gain just enough understanding of ICT for them to see clearly how it can help them in their own work. This is largely uncharted territory. We will therefore exploit the experience of one of the few universities already offering a trans-disciplinary curriculum in HBP sciences, namely the Sagol School of Neuroscience in Tel Aviv, Israel.

On the Platform User Training side, it also makes sense to aim to provide users with just enough theoretical background and practical knowledge for them to be able to conduct their experiments efficiently – and no more. Trying to provide a higher level of understanding would impose a heavier burden on limited Subproject resources, and could reduce the number of users trained.

Although the main focus of the EP will be on introductory-level trans-disciplinary teaching and Platform User Training, it will also provide higher-level academic stimulation in the form of an annual "Summer School". Each of these will provide a forum for learning and sharing insights into cutting edge research issues within a specific HBP discipline. So, while the HBP science for non-specialists Syllabuses will provide HBP Students with an insight into other disciplines, the HBP Summer Schools will help to bring them right up to date in their own disciplines.

3.2.2 The EP will prioritise HBP Students over external audiences

Funding is a major constraint on the EP. While education is an overall HBP objective, it is not as important as the HBP's scientific objectives and it is only right and proper that the latter have priority for limited funds. A conservative budget projection suggests that, if the same funding intensity (i.e. EUR / year) for the EP in the Ramp-Up Phase is maintained in the Operational Phase, it would only be sufficient to support a relatively modest and highly focused programme (this analysis can be found in Annex B).

When the EP was defined in the DoW, the only HBP Partners were the 80 institutions and companies that were members of the HBP Consortium (CPs). Since then, the Consortium has grown and the EC has refined its vision for the Operational Phase of the HBP to include a second category of Partner: the Partnering Projects (PPs). The EP Strategy will assume that these PPs should be considered as HBP Partners in the context of the EP. This will significantly increase the number of students eligible to receive education in EP Syllabus Subjects, which may have resource implications. As a consequence, the EPO will need to use the Ramp-Up Phase to confirm likely total demand for places on EP Subject Syllabuses in the Operational Phase.

Under these circumstances, we will not have the resources to do everything suggested in the DoW. Rather than trying to do everything and risk doing it all badly, the EP Strategy explicitly chooses to prioritise the provision of education to HBP Students over serving external audiences. More specifically, we will focus most of our limited resources on providing a high-quality, interactive learning experience to these priority audiences. External audiences will still be catered for, but with a lower level of service: we will simply make available to them - in recorded form - the teaching material delivered to our priority audiences. In other words, the education we provide to the broader scientific community and general public will be "read only".

3.2.3 The HBP Platforms are responsible for training platform users

The text in the DoW that described the Education Programme included the provision of training to users of the six HBP Platforms (Neuroinformatics, Brain Simulation, High Performance Computing, Medical Informatics, Neuromorphic Computing and Neurorobotics). However, the Platforms themselves are better placed to provide such training than the Education Programme, having both the necessary technical expertise and a far better insight into users' learning needs. On 22 May 2014, the HBP Executive Committee confirmed that the Platforms are responsible for training their own users. However, the Platforms must report their training activities to the EPO, so that all HBP education and training activities are reported collectively to the EC. This report will be compiled by the EPO. The EPO will ensure that the Platforms are promoted and explained appropriately in EP Syllabuses, Schools and Pilot Webinars.

3.2.4 The EP's primary tools will be the HBP Platforms and MOOC-type Internet Webinars

The DoW specifically calls for the Education Programme to provide "innovative forms of education that bridge the gap between ICT and the life sciences". This is inspired, by the 6 highly innovative ICT Platforms being developed by the HBP, as well as the consolidation of the Internet as an established medium of communication. Practical considerations also encourage the EP to use the internet as its primary channel, on the "Massive Open On-line Course" (MOOC) model. This will allow us to provide specialist education to a student population that will be spread across more than 100 institutions, in 20+ countries, over several continents, and to do so cost effectively. While the Internet lends itself to making available passive "read only" content, which students can access at their convenience, modern technology also allows it to deliver interactive and live content, which is far more stimulating.

The EP Strategy is therefore based on using Internet Webinars as the primary teaching vehicle. This approach allows delivery of live teaching content, with the possibility of real-time interaction between teacher and students. It also allows the teacher to be taken to the students in a virtual manner, which is far more efficient that physically taking the students to the teacher. The live aspect imposes a timetable for Webinars, which will give courses a sense of structure.

Technology also permits different types of access to teaching material, with different rights. For example, HBP students will have full read-write-hear-speak rights, allowing them active participation in Webinars, while external audiences could have read-hear access, allowing them to follow the training, but not to interact. In this way, the teacher can focus his or her attention on the priority audience, while allowing others to benefit as well, albeit to a lesser extent. The Webinars can also be made available online afterwards in recorded form, allowing the EP to provide educational material to a wider audience.

Some adjustments are necessary to the MOOC model. In particular, it is not yet possible to provide on-line testing which is reliably resistant to cheating. A "face-to-face" Workshop is included in each Syllabus (see Section 3.2.4 below) and this will provide a venue in which students can be tested reliably.

The DoW also identified a need for the EP to certify individual universities to deliver EP content, which implies a decentralised approach. One consequence of the decision to opt for a centralised MOOC-based teaching approach is to do away with the need for such certification of individual universities. A measure of distribution will be retained, because both students and teaching staff will be drawn from different universities across the HBP Consortium. Centralised implementation via the Internet is not only more efficient, but it also simplifies the EPO's task, notably with regard to quality control.

3.2.5 Each EP Syllabus will Include a Workshop to complement the Webinars

While it offers various advantages, live interaction over the Internet is not as stimulating as face-to-face contact between teachers and students, and between students. The EP Strategy therefore adopts the principle that each Syllabus will conclude with a live, face-to-face Workshop, as an important adjunct to the web-based teaching. The Workshop will provide a tangible culmination to the course, helping it to finish on an intellectual and emotional high note. A physical gathering of students at a Workshop will also help to address a notable shortcoming of the Internet for education purposes: its inability to provide a reliable environment for testing students. Even if physical attendance at Workshops is restricted to priority students, the sessions can be broadcast live to a wider audience via streaming video and/or made available afterwards in recorded form.

The inclusion of the Workshop in the Syllabus imposes a limit of around 30 persons on the number of students following a particular Syllabus at any given time. This is to ensure that Workshops are small enough to allow adequate interaction between participants; everyone should be able to have their say. A limit of 30 students per Syllabus will also help to keep live online interactions during Webinars at a manageable level.

3.2.6 The EP can only make limited demands on students & teachers

All students undertaking an EP Syllabus will do so as an adjunct to their normal work, whether they are a medical researcher doing a neuroscience for non-specialists course, or a neuroscientist outside the HBP who has been authorised to do a neurorobotics experiment on the HBP's Neurorobotics Platform. Therefore, all EP studies will be undertaken in addition to the student's normal workload. To avoid overloading students, Syllabuses must therefore be kept as compact as possible. Every element in each Syllabus must be evaluated and its potential benefit weighed against the extra burden it imposes on the student. This implies that extra care will have to be taken during the creation of the Syllabuses in the Ramp-Up Phase. However, smaller Syllabuses will impose less of a teaching burden on Subproject leaders and senior staff when it comes to implementation in the Operational Phase.

To keep the demands on students' and teaching staff's time within manageable limits, the EP Strategy adopts a working basis of one Webinar every two weeks during the first two trimesters of each calendar year. This translates into a Syllabus which comprises roughly 8 working sessions of between one and two hours each, plus a 1½ - 2 day Workshop, which can take place at the beginning of the Summer vacation period. To avoid overloading Subproject staff who would teach the content, it is proposed to teach each Syllabus only once per year. The only EP-related burdens on Subproject staff in the second half of the year would be participation in a Summer School, and helping to review and update Syllabus teaching material for delivery in the following year.

A PhD course of study typically lasts around three years, so the EP Strategy has to be able to deliver a balanced package of education and training within this time period. At the rate of one Syllabus per year, this would allow a typical HBP PhD-level Student to complete three HBP EP Syllabuses during his or her three-year PhD With the HBP Syllabuses spread across three distinct areas. This time frame would permit HBP students to complete one Science for Non-Specialists Syllabus, one Complementary Topic Syllabus and one HBP Platform User Training Syllabus, which makes for a well-balanced package.

However, to insist on each student completing three Syllabuses would be too inflexible. The EP Strategy therefore regards completion of three Syllabuses as a desirable planning goal, but not an obligatory requirement. As a consequence, students will be recognised for completing individual Syllabuses.

An implication of this is that demand for each Syllabus will need to be verified, and capacity may have to be adjusted. For example, it may turn out that Brain Medicine for Non-Specialists can be taught once every two years, while demand for ICT for Non-Specialists may be higher than can be accommodated with one Syllabus per year.

3.2.7 HBP Subprojects will be both EP Beneficiaries and Providers

During the Ramp-Up Phase, the EP will depend heavily on expert advice and inputs from the scientific Subprojects (1 through 12), to help determine the trans-disciplinary learning needs of their PhD-level Students and also the training needs of the Students who will use the HBP Platforms. The EP will also need substantial help from the same Subprojects to help create the Subject Syllabuses and the related teaching material. In particular, the Subprojects will need to provide suitably qualified people to act as Syllabus Leaders for each of the 5 EP Subjects.

The EP will continue to need significant assistance from the Subprojects during the Operational Phase. The biggest need will be for Subproject staff members to deliver teaching and training. A second requirement will be to help in the updating of Syllabuses and teaching material to meet evolving learning needs.

The EP-related tasks asked of these individuals will be in addition to their normal work. The EP Strategy and subsequent implementation efforts therefore need to signal as clearly as possible to the Subprojects what is expected of them. The formal documents underpinning the HBP should be written or amended to mention explicitly that Partners' employees may be required to provide teaching services, and to position teaching within the EP as fully equivalent to contributing to any other HBP Task (see Section 6.2.3 below). It is also important that the HBP Board of Directors are properly briefed on the EP Strategy as set out in this document and support it. Without the active support of Subproject leaders and senior staff members, the EP is not a viable proposition.

3.2.8 In the Ramp-Up Phase, the EP will focus on preparation for the Operational Phase

For the EP, both time and money are constrained in the Ramp-Up Phase. The limited budget has already been mentioned, but the time factor is also significant. This is because the EP has to create, largely from scratch, a curriculum to meet currently unmet needs. This will need to cover much new ground, over a wide range of subjects. In the HBP Science areas, no one has previously tried to teach, say, ICT to neuroscientists. We need to establish appropriate learning needs for each subject that we will teach. It's not obvious how much ICT, or which aspects of ICT, a neuroscientist needs to know in order to gain a professional benefit. On the HBP Platform side, the Platforms do not exist at present and will only become operational at the end of the Ramp-Up Phase, so devising suitable training for users also poses some real challenges.

These factors greatly complicate the business of putting together the EP. Creating detailed Syllabuses for HBP Science for Non-Specialists and Complementary subjects and for HBP Platform User Training will require extensive consultation with the leaders of the HBP Subprojects, which are both users and suppliers. While the EP will provide some education via a small number of Workshops and Schools during the Ramp-Up Phase, its most important activity during this period will be the definition of the detailed Syllabuses for each of its 5 subjects, spread across three subject areas (see below), and the preparation of the related teaching material. The standard HBP EP Syllabuses developed during the Ramp-Up Phase will be taught for the first time at the beginning of the Operational Phase.

4. Subjects to be covered in the EP Curriculum

The EPO, assisted by the EP Advisory Committee and HBP Subproject staff, will shape a trans-disciplinary Curriculum to meet the educational and training goals set out above. To initiate this process, the EPO has identified all the topics covered by the HBP and the scientists who are authorities in those fields (see Annex C).

The next stage will be to extract from this very full list a Curriculum that responds to the trans-disciplinary challenge – i.e. to provide students with a basic grounding in disciplines that are not their specialist field, but which are increasingly complementary to it. This will require distilling basic learning requirements from the array of "cutting edge" topics covered by the HBP. It will also mean deliberately limiting the amount of knowledge selected so as to make it teachable in a limited amount of time, without placing an excessive burden on either teachers or students.

To cater for its primary target audience of PhD students within the HBP, the EP Curriculum will cover three principal areas, each of which will cover a number of separate subjects. These are identified below, along with the SPs that are expected to provide the Syllabus Leader and teacher (Providers) and the discipline(s) that are expected to be interested in studying the subject concerned (Beneficiaries).

4.1 HBP Science for Non-Specialists

Area	Subject	Providers	Beneficiaries
HBP Science for Non-Specialists	ICT for Non-Specialists	SP 6, SP 7, SP 9, SP 10	Medical Researchers Neuroscientists
HBP Science for Non-Specialists	Brain Medicine for Non-Specialists	SP 8	ICT Developers Neuroscientists
HBP Science For Non-Specialists	Neuroscience for Non-Specialists	SP 1, SP 2, SP 3, SP 4, SP 5, SP 6	ICT Developers Medical Researchers

Table 1a: HBP Science for Non-Specialists: Subjects, Providers and Beneficiaries

4.2 HBP Complementary Topics

Area	Subject	Providers	Audience
HBP Complementary Topics	Research Ethics Societal Impact	SP 12	ICT Developers Medical Researchers Neuroscientists
HBP Complementary Topics	Intellectual Property Rights (IPRs) Translation & exploitation of research	T 13.3.4 (IP & TT Manager) & T 13.4.4 (Industry Manager)	ICT Developers Medical Researchers Neuroscientists

Table 1b: HBP Complementary Topics: Subjects, Providers and Beneficiaries

4.3 HBP Syllabus Updating and Future Additional Topics

The scientific and technological fields that the HBP works in are evolving rapidly. The HBP EP will need to be able to adapt its "basic" Syllabuses, proposed above, to address new

learning needs. In addition to providing a mechanism to monitor students' evolving needs, it would be useful if the EP could also consult researchers who are defining the frontiers of knowledge and research methodology, and get their ideas and proposals for potential new topics. The EPO, assisted by the EP Advisory Committee, will facilitate these interactions and help to test new ideas.

To this end, the EPO will provide the following "on demand" education services:

4.3.1 Support for modifications and additions to the current curriculum

The EPO will incorporate in the EP website a forum in which HBP students, teachers and other researchers can propose modifications to the 5 basic EP Syllabuses, as well as new topics. At lease once a year, the EPO will also directly request all members of the HBP internal audience for their suggestions. The EPO will document all suggestions and periodically review them with the EP Advisory Committee, to identify the ideas that are worth implementing.

4.3.2 Help to modify syllabuses and set up "on demand" pilot webinar courses

The EPO will help the teaching staff to incorporate appropriate new material in the 5 "basic" Syllabuses and to adjust the teaching staff, where necessary. The EPO will also work with researchers proposing interesting new subjects that do not fall within the basic EP Syllabuses. For these, the EPO will help the proposer(s) to test their idea with real students by running pilot webinars, which are promoted and made available through the regular EP on-line teaching infrastructure.

4.3.3 Review "on demand" pilot webinars

The EPO and EP Advisory Committee will work with the proposer(s) of pilot courses to review feedback from their students and refine their course material. Pilot courses that are well received will be candidates for eventual inclusion as a basis Syllabus. The EP and EP Advisory Committee will decide which pilots courses are worthy of being formalised in this way, and will work with the proposer(s) to create viable packages of an appropriate size and quality, capable of generating academic credits.

5. EP Target Audiences and Their Needs

5.1 EP Student Categories

5.1.1 HBP Students

People employed by an HBP Partner (CP or PP), working on an HBP Task, studying to obtain a PhD, who register on the EP Website.

5.1.2 External Students

Anyone who is not an HBP Student.

5.1.3 Services offered to HBP and External Students

Each category of students will be able to access a defined list of services:

Service	HBP Students	External Students
Access Syllabus Reading List (via EP Website)	YES	YES
Interactive participation in live Webinars	YES	NO
Access recorded Webinars (via EP Website)	YES	YES
Attend Syllabus Workshop	YES	NO
Access recorded Workshops (via EP Website)	YES	YES
Testing of knowledge of Syllabus	YES	NO
Certificate for passing Syllabus	YES	NO
Academic credit for passing Syllabus	YES	NO
Participate in moderated Syllabus forum	YES	NO
Participate in moderated female forum	YES (if female)	NO
Participate in un-moderated public forum	YES	YES
Apply for Lab Visit	YES	NO
Apply for EP Summer School	YES	YES
Access EP Library (via EP Website)	YES	YES

Table 2: Services offered by EP to each Category of Student

Each of the above audiences can be subdivided by the student's primary specialisation: ITC Developers, Medical Researchers and Neuroscientists. This is an important factor, as not all subjects will interest all students. Because the EP Science subjects are for non-specialists, they will not be appropriate for students who already have a formal background in that

subject. For example, the EP's ICT for Non-Specialists subject is designed to cater for students with a background in medicine or neuroscience; it will be of little value to experienced ICT developers.

5.2 From Students' Learning Needs, to Syllabuses, to Teaching Material

The most important activity to be undertaken by the EP during the HBP's Ramp-Up Phase will be to identify what a student studying each of the subjects listed in Table 1 above needs to learn. Once this has been decided, the learning needs for each subject will have to be translated into a detailed Syllabus, which will then have to be transformed into suitable teaching material.

This will require extensive consultation between the EPO, the HBP Subprojects in which knowledge of the subject is concentrated (the "providers") and the HBP Subprojects whose PhD students would benefit from exposure to the subject matter (the "beneficiaries").

The following steps will need to be undertaken for each of the 5 EP subjects:

- The EPO prepares a draft Student Learning Needs
- The Subprojects comment on draft Student Learning Needs (as beneficiaries/providers)
- The EPO prepares revised Student Learning Needs
- The EPO identifies and recruits a Syllabus Leader
- The EPO confirms Student Learning Needs with the Syllabus Leader
- The EPO confirms Student Learning Needs with the EP Advisory Committee
- The EPO helps the Syllabus Leader to prepare the Syllabus
- The EPO helps the Syllabus Leader to identify and recruit Teachers for each lesson
- The Syllabus Leader tasks Teachers to prepare Teaching Material for individual lessons
- Review of Teaching Material:
  - By the Syllabus Leader
  - By the EPO
  - By the EP Advisory Committee

In addition, after teaching starts in the Operational Phase:

- Teachers, Syllabus Leaders, the EPO and the EP Advisory Committee will need to review the Syllabuses and Teaching Material each year, and update them.

This will be a very substantial activity, requiring significant contributions from many people, drawn from different Subprojects across the HBP. Their work to lay the foundations for the EP Syllabuses will require extensive reflection and creative thinking. This process should not be hurried, especially because it will be in addition to their regular work. The EPO and EP Advisory Committee will need to monitor progress closely, and to provide support and encouragement to Syllabus Leaders and Teachers to ensure that Teaching Material is ready in time and is of the required standard. The EPO also needs to ensure that the requirement for SPs to contribute to the preparation and teaching of Syllabuses is clearly stated in the formal documents underpinning the HBP Consortium (see Section 6.2.3 below)

Some examples of Learning Needs can be found in Annex D.

5.3 The Syllabus for IPRs, translation and exploitation of research

As indicated in Sections 4.1–4.3 above, four of the five Syllabuses cover topics that are either the subject matter of one or more Subprojects, or part of their basic skillset. However, there is one Syllabus that is an exception to this. IPRs, translation and exploitation of research are not the subject of a Subproject, nor are they a common skillset within the HBP. The HBP's expertise in these areas is located in SP13, but it is limited to two persons in the group headed by the Chief Relations Officer.

The Intellectual Property and Technology Transfer (IP & TT) Manager is the obvious choice to act as Syllabus Leader for the IP component of this Syllabus. The IP & TT Manager is aided by an Innovation and Technology Transfer Committee, which currently has four members. This should be sufficient for the preparatory work in the Ramp-Up Phase: identification of learning needs, formalisation of a Syllabus and creation of teaching material.

The Industry Manager is the logical candidate for Syllabus Leader for the Translation and Exploitation of Research part of this Syllabus. However, the Industry Manager has no supporting committee to draw on and the subject matter is not so well defined as the IP component. External resources may be needed to help with the preparatory work in the Ramp-Up Phase, but none are currently budgeted for. The EPO should quickly confirm with the Industry Manager what additional resources might be needed for this task, so these can be included in any supplementary budget that the EPO might need to request for the Ramp-Up Phase (see Section 6.4 below).

5.4 Other Student Needs

Additional HBP Student needs were identified, some in the HBP DoW and others in the Appendices to the DoW. The latter, which are marked with an asterisk (*) below, need to be catered for only in the Operational Phase.

5.4.1 Registration of Eligible HBP PhD-level Students

The DoW mentions that all PhD-level Students working on the HBP at an HBP Partner would be automatically enrolled in the HBP Education Programme. Although the HBP will be expanded in the Operational Phase to add many PPs to the existing CPs, enrolment will be open to all PhD-level Students working for both CPs and PPs. Enrolment can only be achieved by close cooperation between the EPO and Partners.

During the Ramp-Up Phase, the EPO will put in place the infrastructure needed to maintain regular contact with HBP Partners regarding student registration. It will also set up a centralised, web-based registration system and send Partners periodic reminders to ensure they keep the EPO informed of new staff members who are eligible to receive EP services.

5.4.2 Student Representation on the Board of Directors & EP Advisory Committee (*)

The DoW specifies that the HBP Board of Directors will include one, non-voting representative of students enrolled in the HBP Education Programme, and that this person will take their place on the Board in Month 13 (November 2014).

Because this deadline falls before the first EP Subject Syllabuses will start, the election of the first student representative to the board will be deferred until the beginning of the

Operational Phase. The first election will take place in the Summer of 2016, so that the elected representative can take his or her seat in time for the HBP General Assembly in the autumn of 2016.

The Student Representative on the Board of Directors will also serve as student representative on the EP Advisory Committee.

5.4.3 Measures to Encourage Female Scientists

Under the heading "Gender Aspects", the DoW specifies that the EP must put in place the following measures to encourage young female scientists within the HBP:

- Coaching & mentoring programme for young female scientists within the EP
- Special forums for female scientists on the HBP web site
- Special sessions for female students in HBP student Workshops

The coaching and mentoring programme aims to provide every female HBP Student with a coach, who should be an experienced scientist, preferably female. The special forum for female scientists will be located within the EP Website (not the HBP site) and will be open to all female scientists working for an HBP CP or PP. The last of the three measures proposed, the special sessions in Workshops, is not an ideal solution, as it creates an issue of what to do with male students during the female-only session. Instead, the EP will organise a separate Workshop, especially for female scientists. This will be open to all female scientists working for an HBP CP or PP.

During the Ramp-Up Phase, the EPO will ensure that the resources and infrastructure needed to implement the above measures are in place ahead of the Operational Phase. This should include identification of a female "lead coach" to oversee the coaching and mentoring programme for your female scientists.

5.4.4 Student Community (*)

The EP will create a Student Community in which any HBP Student (see Section 5.1 above) is automatically enrolled upon his or her registration via the EP Website. According to the DoW, the Student Community should offer the following advantages:

- Recognition of special rights (privileged access to HBP tools and data; privileged channels of communication to HBP researchers)
- Privileged access to information on the HBP
- Participation in an annual HBP student conference
- Participation in online forums
- Access to a career service, providing them with information and advice on open positions in academia and industry
- Formal representation in the HBP General Assembly

A full package of advantages will be worked out in detail by the EPO during the Ramp-Up Phase. It could include features such as:

- Members receive a copy of the HBP Blue Book on registration, and subsequent updates. The Blue Book identifies the leaders of every HBP Subproject, Work Package and Task, and provides their e-mail addresses.

- An annual HBP student conference could be staged in conjunction with the annual HBP Summit and General Assembly. This would also coincide with a meeting of the EP Advisory Committee to review the Syllabuses for the following year.
- The EPO could ask the ERPO's Industry Relations function to request the companies that it is in contact with to post their vacancy notices for scientifically qualified persons on the EP Website careers section.

5.4.5 Lab Visits (*)

The DoW Appendices specify that the EP should allow HBP Students to undertake lab visits of one to six months duration. For these, the HBP will fund student's travel and living expenses but not pay salaries. While the EP we will prioritise visits to labs inside the Consortium, it will also provide visits to other labs, as funding permits.

During the Ramp-Up Phase, the EPO will work with HBP CPs and PPs to identify lab visit hosting possibilities. It will then put in place a web-based lab visit application system to match students' requests for lab visits with vacancies. The EPO will also investigate alternative sources of funding, with a view to minimising the call on HBP funds to support HBP Student mobility. In particular, it will look to see if EP Lab Visits can be funded separately from the HBP within a Horizon 2020-Marie Curie ITN framework.

5.4.6 Countries not currently represented in the HBP, Studentships and Fellowships (*)

The DoW identifies a risk of attracting insufficient students from Countries not currently represented in the HBP, citing the example of Eastern Europe. It calls on the HBP's European Research Programme Office to make a special effort:

> "…to recruit students from these countries for the HBP education programme. The European Programme Office will work with national funding agencies to identify new ways of involving their scientists and students. This may include the use of a range of funding instruments including EU structural funds and the Marie Curie Programme."

Separately, the DoW Appendices mention that, in the Operational Phase, the EP should offer the following funding opportunities for individual scientists:

- **Studentships for PhD students.** Starting in the second (Operational) phase of the project, the HBP will provide a certain number of three-year studentships for students wishing to pursue a PhD in one of the Partner institutions, on a topic defined in the HBP work plan.
- **Postdoctoral Fellowships.** Again in the second (Operational) phase of the project, the HBP will provide two-year post-doctoral fellowships for advanced researchers (researchers who have received their PhD within the previous four years) wishing to pursue post-doctoral research in one of the Partner institutions, on a topic defined in the HBP work plan.
- **Visiting Fellowships.** The HBP will provide a certain number of fellowships for senior scientists wishing to carry out original research projects using the facilities provided by one or more of the HBP Platforms and/or the European Institute of Theoretical Neuroscience.

The EP will use the above three types of award to bring into the HBP scientists from countries not currently represented in the HBP. In this context, these are interpreted as countries that do not host an HBP Partner (a list of countries which currently host at least one HBP Partner can be found in Annex E). HBP Studentships, Postdoctoral Fellowships and Visiting Fellowships will be only available to individuals who are citizens of and studying at

a university in a country other than those listed in Annex E. Priority for receipt of these funding opportunities will be given to individuals who are citizens of and studying at a university in a country which is a member of the European Union or the European Economic Area.

However, EC rules do not currently allow the HBP to fund studentships and fellowships from its own budget. Inclusion of these items in the EP is therefore conditional on the EPO being able to identify and secure additional, *ad hoc* funding for this activity, such as from the EC's Marie Curie programme. During the Ramp-Up Phase, the EPO will work with the HBP ERPO to investigate alternative external sources of funding to support HBP Studentship and Fellowships. The EPO will then propose a Studentship/Fellowship scheme, funded by an appropriate mix of HBP and non-HBP budgets, for approval by the Chief Relations Officer and the EP Advisory Committee.

5.4.7 Workshops (*)

The DoW Appendices specify that the HBP will offer the following:

- **Multidisciplinary Workshops on HBP-related research topics.** Each year, the HBP will organise a series of at least six multidisciplinary Workshops on specific research topics relevant to the HBP. The Workshops, each hosted by one of the HBP Partners, each lasting between one and two days,

The EP will fulfil this requirement by providing one trans-disciplinary Workshop per EP Syllabus course (HBP Science for non-specialists and HBP Complementary Topics). These Workshops will be an integral part of their "parent" Syllabuses. The first Workshops that are integral to EP Syllabuses will take place in 2017.

During the Ramp-Up Phase, the EP will stage three Workshops, one in 2014 and two more in 2015 or early 2016. These will be less specific in focus than the Syllabus-related Workshops that will take place later, during the Operational Phase.

The EP will not directly fund fellowships, but EPO will seek funding for them from other EU programmes, national funds and private sponsors.

For preliminary Guidelines for EP Workshops, see Annex G below.

5.4.8 Summer Schools (*)

The DoW Appendices specify that: "Each year, the HBP will organise and fund a Summer School dedicated to a specific theme of HBP research. The length (up to two weeks) will be adapted to the subject under discussion. Each School will involve a mix of speakers from inside and outside the HBP. Participants, roughly 50% from inside and 50% from outside the HBP, will be selected by peer review and will receive full funding for their food and accommodation."

The EP will implement this requirement by organising one Summer School per year. The first such School, scheduled to take place in Alpbach, Austria, 8-14 September 2014, will be multidisciplinary, covering a wide range of HBP-related topics. Schools in subsequent years will be more narrowly focused, in line with the vision set out in the DoW. The Schools will rotate through a three-year cycle of topics: ICT, medical research and neuroscience. The first such "single topic" School will take place in the summer of 2015.

The EPO will also investigate alternative sources of funding, with a view to minimising the call on HBP funds to support HBP Student mobility. In particular, it will look to see if HBP Student participation in Summer Schools can be funded separately from the HBP within a Horizon 2020-Marie Curie ITN framework.

For preliminary Guidelines for EP Summer Schools, see Annex H below.

5.4.9 Annual Student Conference (*)

The DoW Appendices specify that:

> "Each year, the HBP will fund an annual HBP student conference open to all HBP students from inside and outside the HBP Consortium. Participants will cover their own costs. The HBP will work with third party organisations to offer travel grants to a limited number of participants."

The HBP Student Conference should take place immediately before, during or immediately after the annual HBP Summit and General Assembly. During the Ramp-Up Phase, the EPO will work with the HBP ERPO to investigate alternative external sources of funding to support HBP Students participation in an annual HBP Student Conference. The EPO will then propose a plan for HBP Student Conferences, funded by an appropriate mix of HBP and non-HBP budgets, for approval by the Chief Relations Officer and the EP Advisory Committee. The first HBP Student Conference will take place around the HBP Summit in the autumn of 2016.

The EPO might seek the help of the ERPO's Industry Relations function to seek suitably qualified industry speakers to make presentations at HBP Student Conferences, notably with a view to providing alternative career perspectives.

5.4.10 HBP Student Prize (*)

The DoW Appendices state that:

> "Every year the HBP will provide a prize of EUR 5,000 for the best PhD thesis by a student in the HBP programme for Early Stage Researchers. The first awards will be made when these students complete their theses, probably in year four or five."

While the Prize will not need to be awarded before the 3rd year of the Operational Phase, it will need to be incorporated in EP planning and budgeting for the Operational Phase. For this reason, during the Ramp-Up Phase, the EPO will develop a plan for the HBP Student Prize. The Award should be presented during the annual HBP Summit.

5.4.11 Academic Credit (*)

Although the DoW does not mention academic credit, the attractiveness of EP Syllabuses would be increased if students were able to receive academic credit for following these courses. The EPO will ascertain whether or not completion of EP Syllabuses can be translated into ECTS credits, according to international standards.

6. The EP Plan for the Ramp-Up Phase

The EP Plan for the Ramp-Up Phase comprises four main components:

1) **Operational Actions:** These are activities that will actually deliver education to appropriate target audiences during the Ramp-Up Phase. The EP Website is included in this category, although it will serve administrative functions as well as making learning material available. Also included is the implementation of the EP Advisory Committee, as this will play a key role in shaping EP activities.

Preparatory Actions – Syllabuses, Schools & Teaching Infrastructure: These actions will ensure that the EP is ready to implement its 5 Syllabus courses (the main EP teaching vehicle) in the Operational Phase.

2) **Preparatory Actions – Other Student Needs:** These actions will ensure that the EP is ready to provide the other (non-teaching) services to students in the Operational Phase.

3) **Preparatory Actions – Budget for Operational Phase:** This will identify the resources requires to implement the EP in the Operational Phase.

IMPORTANT: All Actions listed in the EP Plan for the Ramp-Up Phase must be reported by the EPO to the CRO by the date specified, citing the corresponding action number. Supporting documents and reports related to these actions should be submitted at the same time to the SRO and copied to the members of the EP Advisory Committee. Where appropriate, these actions should also be recorded in EMDESK.

6.1 Operational Actions

6.1.1 EP Workshops

The EP will conduct three Workshops during the Ramp-Up Phase, each of which will last between one and two days. The EPO will submit a brief after-action report following each Workshop.

EP-001: The first EP Workshop, which will take place in June 2014, is designed to generate a better understanding of trans-disciplinary educational needs in HBP-related scientific disciplines. Details of the first EP Workshop can be found in Annex I.

EP-002: A second EP Workshop, on future medicine, will take place in March 2015.

EP-003: A third EP Workshop is tentatively scheduled to take place in late 2015 or early 2016.

6.1.2 EP Summer Schools

The EP will conduct two Summer Schools during the Ramp-Up Phase, each of which will last around one week.

EP-004: The first EP Summer School will take place in Alpbach, Austria, 8-16 September 2014 and will cover a broad range of HBP Science topics. Details of this School can be found in Annex J.

EP-005: The second EP Summer School will take place in 2015 and will focus on one of the three main HPB Science areas (ICT, Medical Research or Neuroscience).

6.1.3 EP Website and e-Library

EP-006: The EP will have an initial version of the EP Website operational by 31 June 2014. The key elements in this initial version can be found in Annex K. The EP Website will be updated, refined and expanded during the remainder of the Ramp-Up Phase.

EP-007: A key feature in the EP Website will be the EP e-Library. This should ultimately comprise a comprehensive collection of more than 1,000 links online articles and other information resources. It will include introductory material via the reading lists for individual Syllabuses, plus more advanced topics. Visitors need to be clearly advised that click through on links will work only if the visitor's parent institution has the necessary licence. An initial version of the EP e-Library should be operational by 31 December 2014.

6.1.4 EP Advisory Committee

EP-008: By 30 June 2014, the EP will have conducted an initial meeting of the EP Advisory Committee, during which the Committee members will be briefed on the EP Strategy and the actions planned for the Ramp-Up Phase, with particular attention being paid to highlight the inputs that will be sought from the Committee. A list of EP Advisory Committee members can be found in Annex L.

6.2 Preparatory Actions – Syllabuses, Schools & Teaching Infrastructure

6.2.1 EP Syllabus & Workshop Preparation

The most important task that the EPO must accomplish in the Ramp-Up Phase is to ensure that everything is in place to teach the 5 EP Syllabuses as soon as the Operational Phase begins. Each Syllabus will include one Workshop, and the contents of the Workshop form an integral part of the Syllabus and its Teaching Material. To prepare each Syllabus, a number of specific tasks will need to be accomplished, according to the following timetable:

EP Action	Subject	Syllabus Leader recruited	Learning Needs identified	Syllabus Teachers recruited	Syllabus approved	Teaching Material approved
	(Completion Date)	31 Jul 2014	31 Jan 2015	31 Mar 2015	30 Sep 2015	31 Mar 2016
EP-009	ICT for Non-Specialists	**EP-009a**	**EP-009b**	**EP-009c**	**EP-009d**	**EP-009e**
EP-010	Brain Medicine for Non-Specialists	**EP-010a**	**EP-010b**	**EP-010c**	**EP-010d**	**EP-010e**
EP-011	Neuroscience for Non-Specialists	**EP-011a**	**EP-011b**	**EP-011c**	**EP-011d**	**EP-011e**
EP-012	Research Ethics Societal Impact	**EP-012a**	**EP-012b**	**EP-012c**	**EP-012d**	**EP-012e**
EP-013	Intellectual Property Rights (IPRs) Translation & exploitation of research	**EP-013a**	**EP-013b**	**EP-013c**	**EP-013d**	**EP-013e**

Table 3: Timetable for EP Syllabus preparation

On each of the dates specified in Table 3 above, the EPO should report completion/non-completion to the CRO and the EP Advisory Committee. When all five steps for a Syllabus are completed, the Syllabus is considered prepared.

In addition, the EPO must propose:

EP-014: Written guidelines, developed in conjunction with Syllabus Leaders, setting out the requirements, quality standards and templates for EP training material.

EP-015: Eligibility criteria and admission procedures for HBP Students wishing to study EP Syllabuses. These must specify how places will be allocated when demand exceeds supply. By 31 December 2014,

EP-016: A policy document setting out the accommodation and other expenses that the EP will cover for students and teachers participating in Workshops. By 31 December 2014.

6.2.2 EP Summer Schools Preparation

EP-017: The EPO will present, by 31 December 2014, a plan for annual EP Summer Schools, specifying:

- A detailed plan for the Summer Schools in 2015 and 2016
- An annual planning cycle that will ensure timely preparation of future Schools in the Operational Phase (see section 5.3.7 above). This must include a process for getting HBP Board of Directors input on topics and speakers.
- Participant eligibility criteria and admission procedures. These must specify how places will be allocated when demand exceeds supply.
- The accommodation and other expenses that the EP will cover for students and speaker attending Summer Schools, both in the Ramp-Up Phase and the Operational Phase.

6.2.3 EP Teaching Infrastructure

The EPO must ensure that the following infrastructure is operational by the dates specified:

6.2.3.1 Webinars

EP-018: Webinar software/service providers are evaluated and selected by 31 October 2015.

EP-019: Suitable Webinar teaching locations are verified and confirmed for each teacher for each Syllabus, by 31 October 2015.

EP-020: Suitable Webinar infrastructure (notably video & sound capture systems) is installed and operational at all Webinar teaching locations, by no later than 30 September 2016.

6.2.3.2 EP Website

EP-021: An EP Internet sub-site for managing Syllabus, Lab Visit and School vacancies and registration is operational by 30 July 2015.

EP-022: EP Syllabus Internet sub-sites for reading lists, closed forums, recorded lectures and slides are operational by 31 December 2015.

EP-023: An EP Schools Internet sub-site for recorded lectures and slides is operational by no later than July 2015.

EP-024: An EP Internet sub-site for an open, un-moderated forum is operational by no later than 31 January 2015.

6.2.3.3 Modifications to HBP contractual documents

The Framework Partnership Agreement (FPA) Proposal will formally define the structure and broad objective for the HBP in the Operational Phase. The requirement for senior scientists working on the HBP to teach EP Syllabuses is mentioned in the FPA Proposal.

The HBP Consortium Agreement is the formal contractual document that HBP Partners have to sign. A new Consortium Agreement may have to be concluded for the first Specific Grant Agreement in the Operational Phase. If so, it should contain a formal requirement for Partners' personnel to help prepare and teach the Syllabuses and other EP activities, as requested by the EPO. The EPO should work closely with the Chief Governance Officer of the HBP to ensure the necessary adjustments are made.

6.3 Preparatory Actions - Other Student Needs

6.3.1 Registration of Eligible HBP PhD-level Students

EP-025: The EPO will present, by 31 December 2014:

- A list of all HBP Students currently registered in the EP Website
- A list of all female scientists in HBP Partner organisations (e.g. the membership of the HBP Female Scientist Forum)
- An estimate of annual demand for Student places for each of the 5 Syllabuses, with supporting evidence.

EP-026: The EPO will present, by 30 September 2016:

- Lists of the HBP Students who will participate in each of the first 5 Syllabuses in 2017.

6.3.2 Student Representative to Board of Directors

EP-027: The EP will present the following by 31 March 2016:

- The process for electing the representative
- The representative's term of office
- The representative's responsibilities
- The representative's chargeable expenses

EP-028: Full details of the preceding item are to be published on the EP Website by 30 April 2016.

6.3.3 Measures to Encourage Female Scientists

EP-029: The EPO will present, by 30 June 2015, a plan specifying:

- The eligibility criteria and admission process for young female HBP Students
- The female scientist "lead coach", plus the experienced scientists (preferably female) who can provide the female coaching and mentoring services
- The details of the services to be provided under the coaching and mentoring programme for young female HBP Students
- Details of the EP Website forum for female HBP scientists, including responsibilities for management of content and of access rights

- The arrangements for the Female Scientist Workshop, including who has management responsibility, the process for content planning and preparation, the duration and location of the event, the numbers of participants & speakers, and the related budget

6.3.4 Student Community

EP-030: The EPO will present, by 31 December 2015, a plan for implementing the HBP Student Community, which specifies:

- Members' privileged access rights to HBP tools, data and information.
- Members' privileged channels of communication to HBP researchers.
- Annual HBP student conference arrangements, including organisational responsibilities and reimbursement of participants' accommodation and travel expenses.
- Online forum(s) (in addition to those related to individual Syllabuses).

EP-031: Full details of the above item to be published on the EP Website by 31 January 2016.

6.3.5 Lab Visits

EP-032: The EPO will present, by 31 March 2015, a report documenting HBP Partners' capacity to host lab visits.

EP-033: The EPO will present, by 31 December 2014, a report documenting alternative sources of funding for Lab Visits.

EP-034: The EPO will put in place, by 30 September 2015, an operational online Lab Visit management system, hosted on the EP Website.

6.3.6 Countries not represented in the HBP, Studentships and Fellowships

EP-035: The EPO, assisted by the ERPO, will present, by 31 March 2015, a review of all EU and national funding possibilities for international higher education indicating which are suitable for HBP use.

EP-036: The EPO will present, by 31 December 2015, a detailed proposal for a fully funded scheme for three types of award (HBP Studentship, HBP Postdoctoral Fellowship, HBP Visiting Fellowship) over the duration of the Operational Phase of the HBP (see section 5.3.5 above). The proposal should cover:

- The number of Studentships and Fellowships to be offered
- Their duration
- The monetary value of each award
- The expenses that are and are not covered by each award
- The disciplines and subject areas covered
- The potential host Partners for each award
- Any "*quid pro quo*" requirements expected from recipients (e.g. public speaking obligations, commitment to give media interviews, etc.), to be validated with the HBP Chief Communications Officer.

6.3.7 Workshops

Initial Guidelines for EP Workshops are set out in Annex G below.

Operational actions relating to Workshops to be staged during the Ramp-Up Phase are covered under Section 6.1.1 above.

Preparatory actions relating to Workshops to be staged during the Operational Phase are covered under Section 6.2.1 below.

6.3.8 Summer Schools

Initial Guidelines for EP Summer Schools are set out in Annex H below.

Operational actions relating to Summer Schools to be staged during the Ramp-Up Phase are covered under Section 6.1.2 above.

Preparatory actions relating to Summer Schools to be staged during the Operational Phase are covered under Section 6.2.2 above.

6.3.9 HBP Student Conferences

EP-037: The EPO will present, by 31 December 2015, a plan for annual HBP Student Conference, specifying:

- Participant eligibility criteria and admission procedures
- Travel and accommodation funding arrangements for participants and speakers
- A process for implementing a student conference planning committee, defining the respective roles of student representatives and the EPO
- An annual planning cycle that will ensure timely preparation of future student conferences (see section 5.3.8 above).

6.3.10 HBP Student Prize

EP-038: The EPO will present, by 31 December 2015, a plan for an annual HBP Student Prize, to be implemented for the first time in 2018 (see Section 5.3.9 above). The plan must specify:

- Eligibility criteria
- Jury selection process
- Judging criteria
- Timeframe for submissions & judging
- Any "Quid pro quo" requirements expected of winners (e.g. speaking engagements, media interviews, etc.), validated with the HBP Chief Communications Officer.

6.3.11 Academic Credit

EP-039: The EPO will present, by 31 December 2015, a report on whether or not the EP will be able to offer academic credit to Students who successfully complete its Syllabuses.

6.3.12 Support for curriculum modification and augmentation

EP-040: The EPO will, by 30 June 2016, put in place a web forum on the EP internet site, inviting suggestions for modification to existing syllabuses, along with proposals for new courses.

6.4 EP Budget for Operational Phase

EP-040: The EPO must present to the HBP Chief Administrative Officer, by 31 December 2014, a draft EP Budget for the Operational Phase of the HBP, that specifies:

- The cost of Preparatory Actions in Ramp-Up Phase, over and above those currently budgeted.
- The annual operating budget for the EP in the Operational Phase, including:
  - Cost of Syllabus execution (Webinar support, Website support, venue hire, travel and accommodation expenses, entertainment)
  - Cost of Summer School execution (Webinar support, Website support, venue hire, travel and accommodation expenses, entertainment)
  - Cost of Lab Visits execution (travel and accommodation expenses)
- Funding Sources:
  - HBP Core budget
  - HBP Partnering Projects budgets (e.g. FLAG-ERA, etc.)
  - Other EU budgets (Marie Curie, etc.)
  - Non-EU sources

EP-041: In order to secure the availability of key personnel from the various Subprojects to prepare and teach the Syllabuses and other EP activities, it may be necessary for the EP to provide budgetary compensation to the SPs. If so, this would have significant consequences for the EP budget. The EPO should therefore raise this question with SP leaders and conclude a written agreement to specify the services SPs are to provide and any compensation that the EP might have to provide. This should be done by 30 June 2015.

7. EP Organisation

7.1 The Education Programme Office (EPO)

The Education Programme Office is working under the direction of Prof. Alois Saria from Innsbruck Medical University, Austria. Prof. Sylvie Renaud (CNRS Bordeaux, France) and Prof. Kirsty Grant (CNRS Paris, France) act as scientific advisors. Ms Christiane Riedl (Project Manager) and Ms Elisabeth Wintersteller (Project Assistant) carry out the managing and administrative work at Innsbruck Medical University (IMU).

7.2 The Chief Relations Officer

The EP is Task 13.4.3 within the HBP structure. It forms part of Work Package 13.4 (The European Research Programme Office) and reports to the WP 13.4 leader, the HBP's Chief Relations Officer (CRO), Ms Annika Hjelm.

All Actions listed in the EP Plan for the Ramp-Up Phase (see Section 6. Above) must be reported by the EPO to the CRO by the date specified. Supporting documents and reports related to these actions should be submitted at the same time to the SRO and copied to the members of the EP Advisory Committee.

In the interests of streamlining administrative arrangements, the CRO should be formally admitted as a member of the EP Advisory Committee (see below).

7.3 The EP Advisory Committee

The Education Programme Committee acts as advisory board to the Education Programme Office. It will provide advice on sites chosen for Summer Schools in the Ramp-Up Phase and selection of topics for Schools and Workshops. Members assist in identifying and inviting scientists to act as tutors, approve guidelines for Syllabuses, Workshops and Summer Schools and selection of participants. In addition, they provide input for the definition of the EP Curriculum for postgraduate students and on the content of online education material. Subproject leaders and associates have been approached for nominations of scientists in order to cover all scientific fields of the HBP research areas.

The current composition of the Education Programme Committee and the Subprojects they are associated with is listed in Annex L. We will approach Subproject leaders who have not yet decided on a representative again to ensure that all research disciplines are represented in the committee.

--- ENDS ---

Annex A: HBP Subprojects and Platforms

SP	Title	Objective
SP1	Strategic Mouse Brain Data	"To generate strategic data to complement and complete existing data on the structure of the mouse brain and to facilitate mouse-human comparisons…"
SP2	Strategic Human Brain Data	"To generate strategic multi-level data for humans that parallels the data collected for mouse and facilitates the use of mouse data to predict human data…"
SP3	Cognitive Architectures	"To select well-defined cognitive tasks, already partially studied by cognitive neuroscience… to apply standardised stimulation protocols (localisers) and to dissect associated patterns of brain activation and response dynamics…"
SP4	Theoretical Neuroscience	"To produce simplified models of complex brain structures and dynamics; rules linking learning and memory to synaptic plasticity; large-scale models creating a bridge between "high-level" behavioural and imaging data; and mathematical descriptions of neural computation at different levels of brain organisation…"
SP5	Neuroinformatics Platform	"To make it easier for neuroscientists to organise and access the massive volumes of heterogeneous data, knowledge and tools produced by the international neuroscience community…"
SP6	Brain Simulation Platform	"To deliver an Internet-accessible collaborative platform for data-driven predictive reconstruction and simulation of brain models."
SP7	High Performance Computing Platform	"To provide… supercomputing, Big Data and Cloud capabilities at the exascale, as well as the system software, middleware, interactive computational steering and visualisation support necessary to create and simulate multi-scale brain models and to address the hard-scaling challenges of whole brain modelling."
SP8	Medical Informatics Platform	"To build the tools to federate clinical data… to recruit hospitals to use the system… (and) to develop tools… to extract unique biological signatures of disease… making it possible to develop a new, comprehensive classification of brain diseases…"
SP9	Neuromorphic Computing Platform	"A Neuromorphic Computing Platform that allows non- expert neuroscientists and engineers to perform experiments with configurable Neuromorphic Computing Systems (NCS) implementing simplified versions of brain models…"
SP10	Neurorobotics Platform	"To develop the Neurorobotics Platform v1 which will allow researchers to design and run simple experiments in cognitive neuroscience using simulated robots and simulated environments linked to simplified versions of HBP brain models."
SP11	Applications	"To test and refine the pre-release versions of the ICT Platforms, to provide early, small-scale demonstrations of their potential for research in neuroscience, medicine and computing and to prepare for more ambitious research in the Operational Phase…"
SP12	Ethics and Society	"…to explore the project's social, ethical and philosophical implications, promoting engagement with decision-makers and the general public, fostering responsible research and innovation by raising social and ethical awareness among project participants, and ensuring that the project is governed in a way that ensures full compliance with relevant legal and ethical norms."

Annex B: EP Funding per Student-Day of Teaching

Estimate of EP Budget for Operational Phase

	HBP Total (EC)	EP (EC)	EP as % of HBP Total	No. of Years	EP Budget / Year
Ramp-Up Phase	€54,000,000	€624,966	1.16%	2.5	€249,986
Operational Phase	€446,000'000	€5,161,756	1.16%	7.5	€688,234

Ramp-Up Phase Teaching (per year)

Event	No. of Participants	No. of Days	No. Of Student-Days	EP Budget / Year	EP Budget / Student-Day
School 1 (2014)	50	7	350		
School 2 (2015)	50	7	350		
Workshop 1 (2014)	30	2	60		
Workshop 2 (2015)	30	2	60		
Workshop 3 (2016)	30	2	60		
TOTAL (2.5 years)			880		
TOTAL per year			352	€249,986	€710

Operational Phase Teaching (per year)

Event	No. of Participants	No. of Days	No. of Student-Days	EP Budget / Year	EP Budget / Student-Day
School 1	50	7	350		
Workshop 1	30	2	60		
Workshop 2	30	2	60		
Workshop 3	30	2	60		
Workshop 4	30	2	60		
Workshop 5	30	2	60		
Female Workshop 1	50	2	100		
Lab Visits	25	20	60		
Webinars	150	2	300		
Student Conference	150	2	300		
TOTAL per year			1,550	€688,234	€444

The EP budget in the Ramp-Up Phase allows just over EUR 700 per student-day of teaching. Assuming that, in the Operational Phase, the EP budget remains at 1.16% of the total HBP budget, gives a figure of EUR 444 per student-day of teaching. This implies that the EP budget for the Operational Phase needs to be increased by 50 – 60%.

Annex C: EP Curriculum - HBP topics that could be included

SP 1 - Strategic Mouse Brain Data

Subject	Scientist(s)
Morphological analysis of neurons and glia	Tamas Freund (IEM HAS, HUNGARY) Yun Wang (Wenzhou, CHINA)
Whole brain cell distribution	Francesco Pavone (LENS, ITALY)
Principles of axonal projections	Francisco Clasca (UPM, SPAIN)
Numbers and distributions of excitatory and inhibitory neurons and glia	Javier DeFelipe (UPM, SPAIN)
Synapse Map of the Mouse Brain	Javier DeFelipe (UPM, SPAIN)
Deposit data in the HBP mouse brain atlas	Javier DeFelipe (UPM, SPAIN)
Detailed anatomical map of brain vasculature	Bruno Weber (Zürich, SWITZERLAND)
The cellular and synaptic proteome	Seth Grant (Edinburgh, UK)
Deposit data in the HBP mouse brain atlas	Douglas Armstrong (Edinburgh, UK)
Data sources and tools for molecular and cellular informatics	Douglas Armstrong (Edinburgh, UK)
Profiling the transcriptome of different cell types	Chris Ponting (Oxford, UK)
Cell-type expressing transgenic mice	Robert Williams (Tennessee, USA)

SP 2 - Strategic Human Brain Data

Subject	Scientists
Connections between brain regions	Jean-François Mangin (CEA, FRANCE) Simon Eickhoff (Düsseldorf, GERMANY) Markus Axer (Juelich, GERMANY)
Standardised techniques, tools and data management	Jean-François Mangin (CEA, FRANCE) Stanislas Dehaene (CEA, FRANCE)
Anatomical and functional organisation of the human brain	Philippe Pinel (CEA, FRANCE) Bertrand Thirion (INRIA, FRANCE)
Numbers and distributions of neurons and glia in the human brain	Katrin Amunts (Düsseldorf, GERMANY) Javier DeFelipe (UPM, SPAIN)
Deposition of Human Brain data in the HBP Brain Atlas and Brainpedia	Katrin Amunts (Düsseldorf, GERMANY)
Distribution of receptors in the human cerebral cortex	Karl Zilles (Juelich, GERMANY)
Morphologies of human neurons in different brain regions	Huibert Mansvelder (Amsterdam, NL)

SP 3 - Cognitive Architectures

Subject	Scientists
The social brain – representing the self in relation to others	Riitta Hari (Aalto, FINLAND) Lauri Parkkonen (Aalto, FINLAND)
Neural correlates of unimodal perception and self-organisation of internal knowledge in mammalian primary cortical areas	Yves Frégnac (CNRS, FRANCE)
Neural correlates of unimodal and multi-modal perception in mammalian primary sensory areas	Yves Frégnac (CNRS, FRANCE)
Linguistic and non-linguistic nested structures	Stanislas Dehaene (CEA, FRANCE) Christophe Pallier (CEA, FRANCE) Naotaka Fujii (Riken, JAPAN)
Mapping and understanding the neuronal circuits involved in decision making, confidence and error correction	Mariano Sigman (CEA, FRANCE) Zachary Mainen (Champalimaud, PORTUGAL) Rui Costa (Champalimaud, PORTUGAL)
Study of the circuits involved in non-conscious and conscious mechanisms of visual recognition	Stanislas Dehaene (CEA, FRANCE) Pascal Fries (ESI, GERMANY) Rafael Malach (Weizmann, ISRAEL)
Understanding the circuits linking perceptions to actions	Martin Giese (EKIT, GERMANY)
Symbols and their manipulation	Andreas Nieder (EKIT, GERMANY)
Memory for facts and events	Jan Born (EKIT, GERMANY) Yadin Dudai (Weizmann, ISRAEL) Rony Paz (Weizmann, ISRAEL)
Understanding how body perception becomes a reference point for the sense of self	Olaf Blanke (EPFL, SWITZERLAND) Mel Slater (Barcelona, SPAIN)
Mapping and understanding the neuronal circuits involved in motivation, emotion and reward	Mathias Pessiglione (ICM, FRANCE)
Working memory	Lars Nyberg (Umeå, SWEDEN)
Identifying and analysing the multi-modal circuits for spatial navigation and spatial memory	Neil Burgess (UCL, UK)
Skills and habits	Avi Karni (Haifa, ISRAEL)

SP 4 - Theoretical Neuroscience

Subject	Scientists
Modelling brain signals at different scales, from intracellular, local field potentials, VSD up to EEG and MEG signals	Alain Destexhe (CNRS, FRANCE) Gaute Einevoll (UMB, NORWAY)
Models of biologically realistic network states; wakefulness & sleep	Alain Destexhe (CNRS, FRANCE) Abigail Morrison (Juelich, GERMANY) Gustavo Deco (UPF, SPAIN)
Derive simplified neuron and neural circuit models from biophysically morphologically detailed models	Alain Destexhe (CNRS, FRANCE) Wulfram Gerstner (EPFL, SWITZERLAND) Idan Segev (HUJ, ISRAEL)
Principles of computation in single neurons and neural microcircuits	Alain Destexhe (CNRS, FRANCE) Henry Markram (EPFL, SWITZERLAND) Idan Segev (HUJ, ISRAEL) Wolfgang Maass (TUG, AUSTRIA)
Derive learning rules from biophysical synapse models	Wulfram Gerstner (EPFL, SWITZERLAND) Walter Senn (Bern, SWITZERLAND) Misha Tsodyks (Weizmann, ISRAEL)
Unsupervised learning rules and emergent connectivity	Wulfram Gerstner (EPFL, SWITZERLAND)
Models for perception-action	Olivier Faugeras (INRIA, FRANCE) Neil Burgess (UCL; UK) Gustavo Deco (UPF, SPAIN)
Novel computing systems inspired by biology	Wolfgang Maass (TUG, AUSTRIA) Benjamin Schrauwen (Gent, BELGIUM)
Models of working memory and the effects of attention	Misha Tsodyks (Weizmann, ISRAEL)

SP 5 - Neuroinformatics

Subject	Scientists
Cell Analysis	Andrew Davison (CNRS, FRANCE)
Data mining	Sean Hill (EPFL, SWITZERLAND)
3D Brain Atlas Builder	Sean Hill (EPFL, SWITZERLAND) Karl Zilles (Juelich, GERMANY) Katrin Amunts (Juelich, GERMANY) Jan Bjaalie (Oslo, NORWAY)
The Human Brain Atlas	Katrin Amunts (Juelich, GERMANY)
Population Analysis	Sonja Grün (Juelich, GERMANY)
Shared data space	Sten Grillner (KI, SWEDEN)
Ontologies	Sten Grillner (KI, SWEDEN) Maryann Martone (UCAL, USA)
Data standards	Sten Grillner (KI, SWEDEN)
Brainpedia	Sten Grillner (KI, SWEDEN)
Neuronal addressing system	Paul Tiesinga (SKU, NL)
Neuronal structural design and predictions	Pedro Larranaga (UPM, SPAIN)
The Mouse Brain Atlas	Jan Bjaalie (Oslo, NORWAY)

SP 6 - Brain Simulation Platform

Subject	Scientists
Atomistic and coarse-grained model simulations	Richard Lavery (CNRS, FRANCE)
Molecular-level models of synaptic plasticity, homeostatic mechanisms and neuromodulation	Antoine Triller (ENS, FRANCE)
The Brain Builder	Henry Markram (EPFL, SWITZERLAND)
The Brain Atlas embedding module	Henry Markram (EPFL, SWITZERLAND)
Support for closed loop experiments	Marc-Oliver Gewaltig (EPFL, SWITZERLAND)
Configuring & deploying simulations on supercomputers	Felix Schürmann (EPFL, SWITZERLAND)
The Molecular Simulator	Felix Schürmann (EPFL, SWITZERLAND) Erik De Schutter (OKINAWA, JAPAN)
The Cellular Simulator	Felix Schürmann (EPFL, SWITZERLAND) Michael Hines (Yale, USA)
Molecular models of neuro-vascular-glial coupling	Pierre Magistretti (EPFL, SWITZERLAND)
Cellular models of brain regions	Henry Markram (EPFL, SWITZERLAND) Egidio D'Angelo (Pavia, ITALY) Alex Thomson (UCL, UK)
Brain simulation documentation and training	Felix Schürmann (EPFL, SWITZERLAND)
Hybrid QM/MM MD methods and atomistic MD	Paolo Carloni (GRS, GERMANY)
An automated method for 17modelling the electrical diversity of neurons	Idan Segev (HUJ, ISRAEL)
Brownian Dynamics (BD)	Rebecca Wade (HITS, GERMANY)
The Network Simulator	Markus Diesmann (Juelich, GERMANY)
Cellular-level models of whole brain	Sten Grillner (KI, SWEDEN)
Molecular-level models of neurons, glia and synapses	Jeanette Hellgren-Kotaleski (KTH, SWEDEN)
Cellular models of neural microcircuits	Alex Thomson (UCL, UK)

SP 7 - High Performance Computing Platform

Subject	Scientists
Parallel programming models for interactive brain modelling and brain simulation	Jesus Labarta (BSC, SPAIN)
Workflow and distributed programming models for brain modelling	Rosa M. Badia (BSC, SPAIN)
Middleware for resource and I/O management	Jesus Labarta (BSC, SPAIN)
The HBP supercomputer for molecular dynamics	Javier Bartolome (BSC, SPAIN)
Numerical algorithms for neuroscientific high performance computing	Andreas Frommer (BUW, GERMANY) Michael Griebel (Fraunhofer, GERMANY) Gabriel Wittum (Frankfurt, GERMANY)
Array-based data processing models	Martin Kersten (CWI, NL)
The HBP supercomputer for massive data analytics	Giovanni Erbacci (CINECA, ITALY)
Visualisation and analysis component execution framework	Felix Schürmann (EPFL, SWITZERLAND) John Biddiscombe (ETHZ, SWITZERLAND)
Scalable querying of peta to exascale data sets	Anastasia Ailamaki (EPFL, SWITZERLAND)
Analysis of HBP requirements	Thomas Schulthess (ETHZ, SWITZERLAND)
Tools for performance analysis and prediction	Bernd Mohr (Juelich, GERMANY)
The HBP Supercomputer for brain modelling and simulation	Klaus Wolkersdorfer (Juelich, GERMANY)
Supporting infrastructure - networking, storage and monitoring	Ralph Niederberger (Juelich, GERMANY)
Integrative visualisation and analysis tools for the HBP cockpits	Torsten Kuhlen (Aachen, GERMANY)
Exascale data analytics	Minos Garofalakis (Crete, GREECE)
Hardware technology, benchmarking and optimisation for visualisation and rendering towards the exascale	Vicente Martin (UPM, SPAIN)
Neuroscience-specific visualisation and interfaces	Luis Pastor URJC, SPAIN)
Data provenance and preservation	Peter Buneman (Edinburgh, UK)

SP 8 - Medical Informatics Platform

Subject	Scientists
Data provenance, preservation and integration	Vasilis Vassalos (Athens, GREECE)
Use of historical longitudinal databases for epidemiology and proof of principle studies in neurodegenerative disease	Ferath Kherif (CHUV, SWITZERLAND) Art Toga (UCAL, USA)
Enabling the acquisition of data from prospective studies	Ferath Kharif (CHUV, SWITZERLAND)
In-situ distributed database querying	Anastasia Ailamaki (EPFL, SWITZERLAND)
Data privacy	Anastasia Ailamaki (EPFL, SWITZERLAND)
Novel mathematical tools for the characterisation and classification of neurological and psychiatric disease	Mira Marcus-Kalish (Tel Aviv, ISRAEL)
Advanced topographical methods for brain referencing and normalisation	John Ashburner (UCL, UK)
Ethical and regulatory issues	Katinka Evers (Uppsala, SWEDEN)

SP 9 - Neuromorphic Computing Platform

Subject	Scientists
Simplifying brain models	Andrew Davison (CNRS, FRANCE) Karlheinz Meier (Heidelberg, GERMANY)
Mapping and routing of imported circuits to the NCS	Andrew Davison (CNRS, FRANCE) Erwin Laure (KTH, SWEDEN) Karlheinz Meier (Heidelberg, GERMANY) Rene Schüffny (Dresden, GERMANY) Steve Furber (Manchester, UK)
Executable System Specification for the neuromorphic circuits developed	Andrew Davison (CNRS, FRANCE) Karlheinz Meier (Heidelberg, GERMANY) Rene Schüffny (Dresden, GERMANY) David Lester (Manchester, UK)
Software for Neuromorphic Computing Systems and for configuring Neuromorphic Computing Systems	Andrew Davison (CNRS, FRANCE) Anders Lansner (KTH, SWEDEN) Karlheinz Meier (Heidelberg, GERMANY) Steve Furber (Manchester, UK)
Development and Implementation of neuromorphic systems-on-chip (SOCs)	Yusuf Leblebici (EPLF, SWITZERLAND) Karlheinz Meier (Heidelberg, GERMANY) Volkan Ozguz (Sabanci, TURKEY)
Design and implementation of digital many-core processor systems for neuromorphic computation	Yusuf Leblebici (EPLF, SWITZERLAND) Volkan Ozguz (Sabanci, TURKEY) Sebastian Höppner (Dresden, GERMANY) Steve Furber (Manchester, UK)
Design and implementation of digital networks for communication between neurons	Yusuf Leblebici (EPLF, SWITZERLAND) Sebastian Höppner (Dresden, GERMANY) Steve Furber (Manchester, UK)
High density connection technologies for the integration of silicon substrates with PCB technologies	Oswin Ehrmann (Fraunhofer, GERMANY)
Programming models for digital many-core neuromorphic systems	Enrico Macii (Torino, ITALY) Steve Furber (Manchester, UK)
Computer aided design (CAD) methodologies for neuromorphic VLSI circuits	Enrico Macii (Torino, ITALY)
Development and implementation of VLSI circuits emulating neurons and synapses	Karlheinz Meier (Heidelberg, GERMANY)
Development and implementation of high density configurable VLSI spike communication networks	Karlheinz Meier (Heidelberg, GERMANY) Rene Schüffny (Dresden, GERMANY)
Integration of the neuromorphic SOCs into the NCS framework	Karlheinz Meier (Heidelberg, GERMANY) Ulrich Brüning (Heidelberg, GERMANY) Rene Schüffny (Dresden, GERMANY)
Development of low level software and firmware for the neuromorphic system	Karlheinz Meier (Heidelberg, GERMANY) Rene Schüffny (Dresden, GERMANY)
Development of the specification for the Neuromorphic Computing System	Karlheinz Meier (Heidelberg, GERMANY) Steve Furber (Manchester, UK)
Neuromorphic Computing Systems – component acquisition, production and manufacturing	Karlheinz Meier (Heidelberg, GERMANY) Volkan Ozguz
Neuromorphic Computing Systems – assembly, operation & maintenance	Karlheinz Meier (Heidelberg, GERMANY)

SP 10 - Neurorobotics Platform

Subject	Scientists
Closed-loop Engine	Marc-Oliver Gewaltig (EPFL,SWITZERLAND)
Virtual Robots	Alois Knoll (TUM, GERMANY)
Virtual Environments	Gudrun Klinker (TUM, GERMANY)
The Neurorobotics Platform: integration and operation	Alois Knoll (TUM, GERMANY)

SP 11 - Applications

Subject	Scientists
Biological signatures of diseases	Ferath Kharif (CHUV, SWITZERLAND)
Psychophysics of perception: the Weber-Fechner law	Michael Herzog (EPFL,SWITZERLAND) Eduardo Ros (Granada, SPAIN)
Neuromorphic data mining systems	Frank Gottfried (SAP AG, GERMANY)
Integrated brain-body control benchmarks	Alois Knoll (TUM, GERMANY)

SP 12 - Ethics and Society

Subject	Scientists
Ethical and Social Perceptions in the HBP	Bernd C. Stahl (DMU, UK)
European citizens' Conventions	Lars Klüver (FT, DENMARK)
The concept of human brain simulation	Kathinka Evers (Uppsala, SWEDEN) Yadin Dudai (Weizmann, ISRAEL)
Brain-mind relationships	Kathinka Evers (Uppsala, SWEDEN)

Annex D: Examples of HBP Student Learning Needs

The examples below are intended purely to stimulate the process of identifying Learning Needs for the 5 EP Subject Syllabuses. They are not comprehensive and have not been appropriately validated with providers and beneficiaries.

Example 1: Learning Needs for HBP ICT (Science for Non-Specialists) Syllabus

HBP medical researchers and neuroscientists completing the HBP ICT Science for Non-Specialists Syllabus should:

- Know the different approaches to computer modelling and simulation of the brain.
- Understand the different levels/scales of computer models and simulations available (e.g. whole brain, down to molecular level).
- Be familiar with the HBP Brain Builder.
- Have an overview of the six HBP Platforms.

Example 2: Learning Needs for HBP Complementary Syllabus: IPRs, translation & exploitation of research

HBP ICT developers, medical researchers and neuroscientists completing the HBP Complementary Syllabus in Intellectual Property Rights (IPRs), translation and exploitation of research should:

- Understand the different forms of IPRs, their characteristics and costs.
- Understand how IPRs are typically managed in academic institutions.
- Have a basic knowledge for the main steps in the process of commercialising an invention.
- Understand the different sources of finance available to fund start-ups.
- Know how to write and present a business plan.

Annex E: Countries Hosting One or More HBP Partners

Austria
Belgium
Canada
China
Cyprus
Finland
France
Germany
Greece
Hungary
Israel
Italy
Japan
Netherlands
Norway
Portugal
Slovenia
Spain
Sweden
Switzerland
Turkey
UK
USA

List updated 12 April 2014, to include countries added as a result of the new Partners invited to join the HBP on 1 April 2014, following the Competitive Call launched in 2013.

Annex F: Guidelines for EP Syllabuses

- Syllabus Leader: the EPO must recruit a Syllabus leader for each Syllabus. In conjunction with the EPO, this person will oversee the process of defining learning needs, the Syllabus and the teaching material, plus topics for student projects and testing material and determining responsibilities for marking. He or she will work with the EPO to recruit additional teaching staff for the Syllabus.
- HBP Subprojects must be consulted about learning needs, which are relevant to their areas of work.
- Capacity: c.30 students per Syllabus (maximum that permits discussion and testing during Workshop).
- Number of Webinars per Syllabus: c.8
- Initial kick-off Webinar x 1: prepared and delivered by an SP leader or equivalent, to provide an overview of subject, fire up enthusiasm.
- Main content Webinars x 7: Aim to involve multiple teachers over the duration of the course.
- Webinar duration: Each should comprise c. 1 hour live online teaching, with a further 30 minutes for live online discussion between students and teacher(s).
- Schedule: Webinars should take place each year in the period January – June.
- Timing: Ideally, the Webinars should take place outside normal working hours, to minimise interference with participants' regular activities
- Participation in person: Ideally, students working at the same institution as the teacher should be able to participate face-to-face with the teacher.
- EP Website: Past Webinars accessible in recorded format (slides, streaming video).
- Reading list: List of articles & textbook entries, recommended by Syllabus leader
- Closed online discussion forum, moderated by Syllabus leader (or nominated deputy).
- Lab visit: Students can request this via EP Website. The EPO to involve Syllabus leader in allocating places.
- Workshop: Each Syllabus concludes with a face-to-face Workshop, which is an integral part of the Syllabus. Guidelines for Workshops are given below.

Annex G: Guidelines for EP Workshops

- Each EP Syllabus culminates in a 1-2 days face-to-face Workshop. All the Syllabus Webinars should have taken place prior to the Workshop.
- The Workshop provides an opportunity for the students to meet their Syllabus leader & teachers in the person.
- Students following the Syllabus present their projects and are tested during the Workshop.
- The Syllabus Workshop is organised by the EPO, in consultation with the Syllabus leader.
- Workshop locations should be chosen to facilitate quick and cheap travel by students. It may make sense for the EPO to establish a dedicated central infrastructure for Workshops.
- The Syllabus leader, in conjunction with other Syllabus teachers and the EPO, determines the Workshop content. The Workshop content forms an integral part of the Syllabus.
- The Workshop programme will comprise lectures, time for formal discussion, presentations of projects by students, the students' test, Syllabus feedback session and a social event.
- All students following a Syllabus must attend the Workshop. If a student is unable to attend for any reason, he or she must travel at their own expense to the home institution of the Syllabus leader, to present their project and be tested.
- Workshop sessions will be recorded. Videos and slides will be made available via the EP Website.
- Metrics (Operational Phase):
  - Number of Workshops conducted in a year / number of Syllabuses taught (Target: 100%)
  - Number of students attending a Workshop / number of students taking the corresponding Syllabus (Target: 100%)
  - Participant feedback on Workshop quality, via Syllabus feedback questionnaire (Target: average overall rating of 4 / 5).

Annex H: Guidelines for EP Summer Schools

- HBP Summer Schools are high-profile education events, focused on the cutting edge of a single HBP subject area (ICT, medical research or neuroscience).
- The subject area will rotate as follows: Year A – ICT; Year B – Medical Research; Year C – Neuroscience. Exceptionally, the first School (in 2014) will cover all three subject areas.
- Unlike the EP Syllabuses, which are designed for non-specialists, the Summer Schools are designed to cater for specialists and advanced practitioners in the subject matter.
- Lecturers should be leading scientists in their fields from within the HBP, and should remain on-site for the duration of the School.
- Each School should include at least one distinguished guest speaker from outside the HBP.
- One Summer School will be held per year, in the same location, at the same time of year, to help build a strong brand image.
- Schools are organised by the EPO, in conjunction with the HBP Executive Committee member in the academic field that is the subject of the School concerned:
  - ICT – Karlheinz Meier
  - Medical Research – Richard Fracowiak
  - Neuroscience - Henry Markram
- School lectures will be recorded. Videos and slides will be made available via the EP Website.
- Duration: 5-7 days
- Teaching staff: max. 15
- Students: max. 50 (including some external students)
- Student registration: via EP Website. The EPO to define selection criteria and mechanism. Selection criteria to include gender.
- Scientific lectures: Each lecture will have the length of one hour, followed by a discussion.
- General interest lectures and trans-disciplinary issues: The programme of the HBP School should include subjects of general interest such as e.g. ethics, gender topics, and current European legislation on animals in research.
- Lecture chairs: A number of students act as chair of a lecture i.e. selected students will give a short (2-3 minute) introduction of the assigned speaker and act as chair during the talk and the discussion.
- Poster sessions and/or oral presentations: These presentations by students facilitate informal interactions between faculty and students.
- Complementary skills: The programme of the HBP School should include skills like group works, lab equipment and software demonstrations, grant writing and communication skills.
- School programme should conclude with a formal social event.

- Requirements for the HBP School venue
  - Remote but still well accessible venue that creates a congenial atmosphere for maximum social and scientific interaction between faculty and students
  - Top technical infrastructure such as up-to-date presentation facilities, fast internet connection, video-recording options
  - Space for poster sessions
  - Space for small group discussions/Workshops
  - Space for exhibition and/or lab demonstrations
  - Budget accommodation for students at or in vicinity of the HBP School venue
  - Availability of recreational activities, which facilitate interactions between students and faculty
- Metrics (Operational Phase):
  - Number of student applicants (Target: >30 qualified applicants)
  - Number of student participants (Target: 30)
  - Number of female student participant (Target 7)
  - Participant feedback on the quality of service, from questionnaires (Target average overall rating of 4 / 5)

Annex I: Preliminary Plan for HBP Workshop 1

The purpose of this Workshop is to teach new frontiers in neuroscience and to discuss the methods for teaching emerging trans-disciplinary subjects and innovative approaches in educating the next generation of neuroscientists in view of new directions in brain research and development.

Key elements of the coordination of HBP Workshop 1

Element	Description
Content	Theoretical and practical training aspects of HBP research areas Trans-disciplinary requirements for HBP students
Target Group	1. Postgraduate students and early stage researchers that are employed and paid by HBP 2. Postgraduate students and early stage researchers that work under a PI working in HBP but who are not directly employed and paid by HBP 3. Postgraduate students and early stage researchers outside HBP from a discipline represented in HBP
Faculty (invited)	PIs from HBP research areas Alois Saria (HBP Education Programme Director) Representatives from Sagol School of Neuroscience Tel Aviv: Idan Segev, Aylon Vadia (ELSC) Yadin Dudai (Weizmann Institute) Delegates from scientific societies representing HBP research areas with mission in education and training Delegates from European universities involved in curriculum design Delegate(s) from The Open University
Organisation / Administration	Alois Saria (IMU) Education Programme Office Innsbruck Uri Asheri (Sagol School of Neuroscience Israel) Mira Marcus-Kalish (HBP and Tel Aviv University)
Education Methods	Lectures, round table and panel discussions, poster presentations, multimedia recordings for dissemination through the Education Website
Recruitment Methods	Registration of HBP students through the Education Website, invitation for student nominations to individual scientists and scientific organisations
KPIs (target values)	Number of participants (>50) Participant feedback on quality of education service (questionnaires, average score > 4 of 5)
Event start date and place	June 18th 2014, Tel Aviv University
Duration	3 days

Tentative programme of the HBP Workshop 1

June 18th First day

Morning

9:00-9:25 **Opening**

Alois Saria (HBP Education Programme Director)

Karlheinz Meier (Co-Director of the EU Human Brain Flagship Project)

Mira Marcus-Kalish (HBP, Medical Informatics)

Representative of Israeli Government (to be defined)

President / Vice Rector (Tel Aviv University)

Opening lectures

9:25-9:55 **The Human Brain Project: From dream to reality**. Idan Segev (HUJ)

9:55-10:10 **Educating the next generation of neuroscientists**: Uri Ashery (The Sagol School of Neuroscience)

First session (tentative speakers) - **Neuroscience and education**

10:10-10:35 Cellular and Molecular Neuroscience – Oded Rechavi

10:35-11:00 Cognitive Neuroscience – Galit Yovel

11:00-11:25 System Neuroscience – Pablo Blinder

11:25-11:50 Behavioural Neuroscience - Yossi Yuvel

11:50-12:15 Brain Imaging – Yaniv Assaf

12:15-13:45 **Lunch break + Poster session**

Second session (tentative speakers) - **New frontiers in neuroscience**

13:45 -14:15 Cognitive Neuroscience – Rafi Malach

14:15 -14:45 Clinical Neuroscience – Izhak Fried

14:45 -15:15 Ethics in Neuroscience – Yadin Dudai

15:15 -15:45 Theoretical Neuroscience – Prof. Karlheinz Meier

15:45 -16:15 Medical Informatics and Data mining – Yoav Binjamini

16:15 -16:45 Coffee break

16:45 -18:30 **New horizons in neuroscience Workshops**

Round table discussions in small groups lead by the speakers on the new frontiers in neuroscience.

Suggested groups: Cellular and molecular neuroscience, psychobiology and neurobiology, computational biology and data analysis, engineering and biophysics, philosophy & biology, behavioural neuroscience

19:00: Get together, reception

June 19th Second day

Education in neuroscience in the 21st century:

Morning panels

A chairperson will lead each panel and 3-4 panel speakers present keynotes (15 min each) followed by an open discussion.

Topics:

9:00-10:30 **Panel A: Academic programmes & career development: Undergraduate and graduate programmes and what next?**

This panel will focus on shaping the next generation of neuroscientists, based on existing interdisciplinary programme and new tailored ones.

10:30-12:00 **Panel B: On line educational tools and public involvement**

This panel will discuss the on-line educational approach and existing Platforms including the large-scale involvement of the public.

12:00-13:30 Lunch Break + **Poster session**

13:30-15:00 **Panel C: Industry-academy education: What should be done to enhance such collaboration**?

This panel will include example of several modes of operation to increase industry and academy collaboration and integration of courses aimed at providing complementary skills for students such as: Patent issuing, IP management, FDA and CE regulation and ethics.

16:00-16:30 Coffee break

16:30 – 18:30: 6-7 short oral students presentation

June 20th Third day

Open public session: 9:00-12:30: 3-4 talks open for public

Panel D: Exposing neuroscience activity with the public: Museums, high School, excellent pupils programme

This panel will include on going example for exposing and integrating neuroscience to the public via special activities and high Schools.

Annex J: Key elements of HBP School 1, Alpbach, 2014

Element	Description
Content	The HBP School Alpbach will provide a platform for reviewing and discussing new developments regarding the research areas in the HBP representing the fields of: • Strategic Mouse Brain Data • Strategic Human Brain Data • Cognitive Architectures • Theoretical Neuroscience • Neuroinformatics Platform • Brain Simulation Platform • High Performance Computing Platform • Medical Informatics Platform • Neuromorphic Computing Platform • Neurorobotics Platform • Applications • Ethics and Society The HBP School will start on Monday, September 8th 2014, with a get-together programme and will extend to the evening of Saturday, September 13th 2014. Sunday, September 14th is departure day. A series of lectures are planned in the programme during the day with one free slot for a social programme. Participants will present all oral contributions in a lecture hall at the congress centre Alpbach. Extensive discussion time enables participants to contribute comments to research and tutorial lectures and interact with the faculty. Participating students will present a poster of their current research work.
Target Group	1. Postgraduate students and early stage researchers that are employed and paid by HBP 2. Postgraduate students and early stage researchers that work under a PI working in HBP but who are not directly employed and paid by HBP 3. Postgraduate students and early stage researchers outside HBP from a discipline represented in HBP

Element	Description
Faculty (invited)	**Francesco Pavone (IT)** Optical Imaging **Simon Eickhoff (DE)** Meta-analyses and activation databases **Sonja Grün (DE)** Analysis of parallel electrophysiological data **Markus Diesmann (DE)** Simulation of brain-scale neuronal networks at cellular and synaptic resolution **Sergi Girona (ES)** High performance computing **Richard Frackowiak (CH)** Medical informatics Platform **Mihai Petrovici (DE)** Neuromorphic Computing **David Lester (UK)** The Spinnaker System **Abdul Mohammed (SE)** Ethics & society Kirsty Grant (F) tba
Organisation / Administration	Alois Saria (IMU), Education Programme Office
Education Methods	Lectures, practical group works, panel discussion(s), poster presentations, multimedia recordings for dissemination through Education Website
Recruitment Methods	Call for applications of HBP students via the HBP Education Website, open call through public channels and scientific societies, selection on a competitive basis by the Education Programme Committee
KPIs (target values)	Number of participants (50) Number of HBP students - (>30) Participant feedback on quality of education service (questionnaires, average score > 4 of 5)
Event start date and place	September 8th 2014, Alpbach, Austria
Duration	6 days

Annex K: Key elements of the EP Website (Summer 2014)

Element	Description
Content	About: Basic site information Courses: List and description of courses (Schools and Workshops) Documents: (multimedia) education material Forums: Student exchange forum; forum for female scientists only Members: Registered HBP students Course application section Frequently asked questions
Target Group	Postgraduate students and early stage researchers that are employed and paid by HBP Postgraduate students and early stage researchers that work under a PI working in HBP but who are not directly employed and paid by HBP
Faculty	HBP PIs providing online material
Organisation/Administration	Programming: IT department at EPFL, Education Programme Office with LifeRay content management system
Education Methods	Text files, multimedia products
Recruitment Methods	Online registration of students through call to PIs, approved by PIs
KPIs (target values)	Number of universities providing material for programme (15) Number of universities with students participating in programme (60% of Partner universities) Number of participants in online education programmes (60% of registered students)
Event start date	n/a
Duration	n/a

Annex L: Education Programme Advisory Committee

Subproject	Members	Affiliation	Subproject Title
SP 01	Francesco Pavone	LENS	Strategic Mouse Brain Data
SP 01	Javier DeFelipe	UPM	Strategic Mouse Brain Data
SP 01	Robert Williams	UTHSC	Strategic Mouse Brain Data
SP 02	Simon Eickhoff	UDUS	Strategic Human Brain Data
SP 03	Florent Meyniel	CEA	Cognitive Architectures
SP 05	Sonja Grün	FZJ	Neuroinformatics Platform
SP 06	Markus Diesmann	FZJ	Brain Simulation Platform
SP 06	Egidio D'Angelo	KTH	Brain Simulation Platform
SP 06	Jeanette Hellgren-Kotaleski	UNIPV	Brain Simulation Platform
SP 07	Sergi Girona	BSC	High Performance Computing
SP 08	Giovanni Frisoni	HUG	Medical Informatics Platform
SP 09	Karlheinz Meier	UHEI	Neuromorphic Computing Platforms
SP 09	David Lester	UMAN	Neuromorphic Computing Platforms
SP 11	Giovanni Frisoni	HUG	Applications
SP 12	Kevin Grimes	KI	Ethics and Society
SP 13	Alois Saria	IMU	Management
SP 13	Kirsty Grant	CNRS Paris	Management
SP 13	Sylvie Renaud	CNRS Bordeaux	Management

Annex M: HBP EP - Key Performance Indicators (KPIs)

KPIs for operational actions

	EP Workshops	Month	9	12	18	24	30
EP-001	First EP Workshop		x				
EP-002	Second EP Workshop				x		
EP-003	Third EP Workshop						x
	EP Summer Schools	**Month**	**6**	**12**	**18**	**24**	**30**
EP-004	First EP Summer School			x			
EP-005	Second EP Summer School					x	
	EP Website and e-Library	**Month**	**9**	**15**	**18**	**24**	**30**
EP-006	EP Website operational		x				
EP-007	Initial version of e-Library operational			x			
	EP Advisory Committee	**Month**	**9**	**12**	**18**	**24**	**30**
EP-008	Initial meeting of the EP Advisory Committee		x				

KPIs for preparatory actions for the 5 Syllabuses

	Syllabus	Month	10	16	18	24	30
EP-009a	ICT for Non-Specialists	Syllabus Leader recruited	x				
EP-009b		Learning Needs identified		x			
EP-009c		Syllabus Teachers recruited			x		
EP-009d		Syllabus approved				x	
EP-009e		Teaching Material approved					x
EP-010a	Brain Medicine for Non-Specialists	Syllabus Leader recruited	x				
EP-010b		Learning Needs identified		x			
EP-010c		Syllabus Teachers recruited			x		
EP-010d		Syllabus approved				x	
EP-010e		Teaching Material approved					x
EP-011a	Neuroscience for Non-Specialists	Syllabus Leader recruited	x				
EP-011b		Learning Needs		x			

		identified					
EP-011c		Syllabus Teachers recruited			x		
EP-011d		Syllabus approved				x	
EP-011e		Teaching Material approved					x
EP-012a	Research Ethics Societal Impact	Syllabus Leader recruited	x				
EP-012b		Learning Needs identified		x			
EP-012c		Syllabus Teachers recruited			x		
EP-012d		Syllabus approved				x	
EP-012e		Teaching Material approved					x
EP-013a	Intellectual property Rights IPR, translation & exploitation	Syllabus Leader recruited	x				
EP-013b		Learning Needs identified		x			
EP-013c		Syllabus Teachers recruited			x		
EP-013d		Syllabus approved				x	
EP-013e		Teaching Material approved					x

	Additional Requirements	**Month**	**10**	**15**	**18**	**24**	**30**
EP-014	Training material: general guidelines, templates, and quality standards elaborated			x			
EP-015	Admission procedures for HBP Students to access training material defined: eligibility criteria			x			
EP-016	Policy setting out the accommodation and other expenses that the EP will cover for students and teachers participating in Workshops			x			

KPIs for Summer Schools Preparation

		Month	**10**	**15**	**18**	**25**	**30**
EP-017	Plan for 2015 and 2016			x			
	An annual planning cycle for operational phase defined			x			
	Participant eligibility criteria and admission procedures defined			x			
	Calculation of expenses that the EP will cover for students and speaker attending Summer Schools			x			

KPIs for the Teaching Infrastructure

	Webinars	Month	10	15	22	25	36
EP-018	Webinar software/service providers are evaluated and selected					x	
EP-019	Suitable Webinar teaching locations are verified and confirmed for each teacher for each Syllabus					x	
EP-020	Suitable Webinar infrastructure (notably video & sound capture systems) is installed and operational at all Webinar teaching locations						x

	EP Website	Month	10	16	22	27	30
EP-024	Sub-site for an open, un-moderated forum is operational			x			
EP-021	Registration is operational				x		
EP-023	Sub-site for recorded lectures and slides is operational				x		
EP-022	Syllabus sub-sites for reading lists, closed forums, recorded lectures and slides are operational					x	

KPIs for Preparatory Actions – Other Student Needs

	Registration of Eligible HBP PhD-level Students	Month	10	15	22	25	36
EP-025	Lists for registered students, female students and estimate of annual demand on places			x			
EP-026	List of students for first 5 syllabuses in 2017						x

	Student Representative to Board of Directors	Month	10	15	22	30	31
EP-027	Procedure defined					x	
EP-028	Procedure published						x

	Measures to Encourage Female Scientists	Month	10	15	21	24	30
EP-029	Eligibility criteria, lead coach identified, coaching service defined, website forum maintenance defined, arrangement for Female Scientist Workshop in place				x		

	Student Community	Month	10	15	21	27	28
EP-030	Plan for student community presented					x	
EP-031	Full details published on EP website						x

	Lab visits	Month	10	15	18	24	30
EP-033	Report documenting alternative sources of funding for Lab Visits			x			
EP-032	Report documenting HBP Partners' capacity to host lab visits				x		
EP-034	Online Lab Visit management system operational					x	

	Countries not represented in the HBP, Studentships and Fellowships	Month	10	15	18	27	30
EP-035	Review of all EU and national funding possibilities for international higher education suitable for HBP				x		
EP-036	Proposal for a fully funded scheme for three types of award (HBP Studentship, HBP Postdoctoral Fellowship, HBP Visiting Fellowship)					x	

	HBP Student Conferences	Month	10	15	18	27	30
EP-037	Plan for annual HBP Student Conference					x	

	HBP Student Prize	Month	10	15	18	27	30
EP-038	Plan for an annual HBP Student Prize					x	

	Academic Credit	Month	10	15	18	27	30
EP-039	Report on whether or not the EP will be able to offer academic credit					x	

	EP Budget for Operational Phase	Month	10	15	18	21	30
EP-040	EP Budget for the Operational Phase			x			
EP-041	Document on services SPs are to provide and any compensation that the EP might have to provide					x	

NOTE: Although this document covers the period of the Ramp-Up Phase, many of the actions described in it are preparations for the Operational Phase. In some cases, these actions can only be validated once the Operational Phase has started. For that reason, there are a few KPIs with due dates of Month 31 or later. These exceptions are highlighted with a pink background.