



EURO

The European Master Program in HPC - EUMaster4HPC

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21-22.11.2022, Hotel Expo, Sofia

Objective

High Performance Computing (HPC) is a strategic resource for Europe and a *key investment* priority in the next long-term EU Multiannual Financial Framework (2021-2027).

The European Commission (EC) has proposed substantial investments to consolidate Europe's digital capacity and infrastructure and support the digital single market.

However, to properly seize HPC's opportunities, there is a strong need for increased education and training.

EUMaster4HPC brings together major players in HPC education in Europe and mobilises them to unify existing programs into a common curriculum; emphasizes on collaboration across Europe with innovative teaching paradigms including co-teaching and cooperative development of new content



This project has received funding from the European High-Performance Computing Joint Undertaking under grant agreement No 101051997.



EUMaster4HPC





EUMaster4HPC

21 Participant Countries

7 MEuros over 4 years

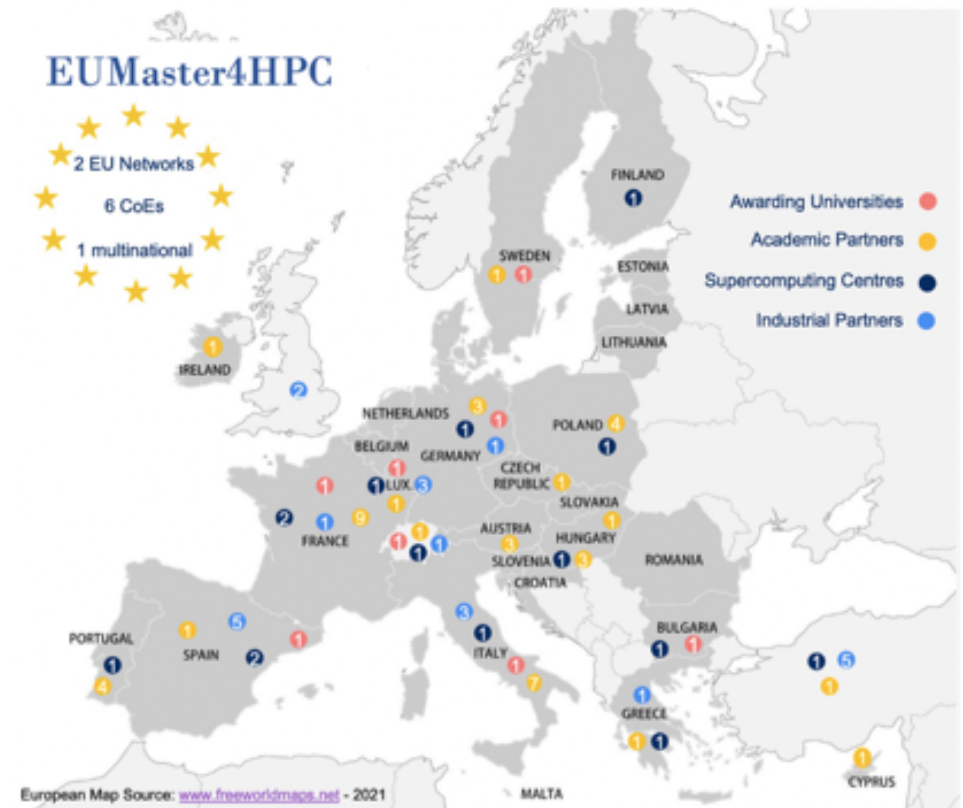
Start date : 01.01.2022

Most of the funds go to students

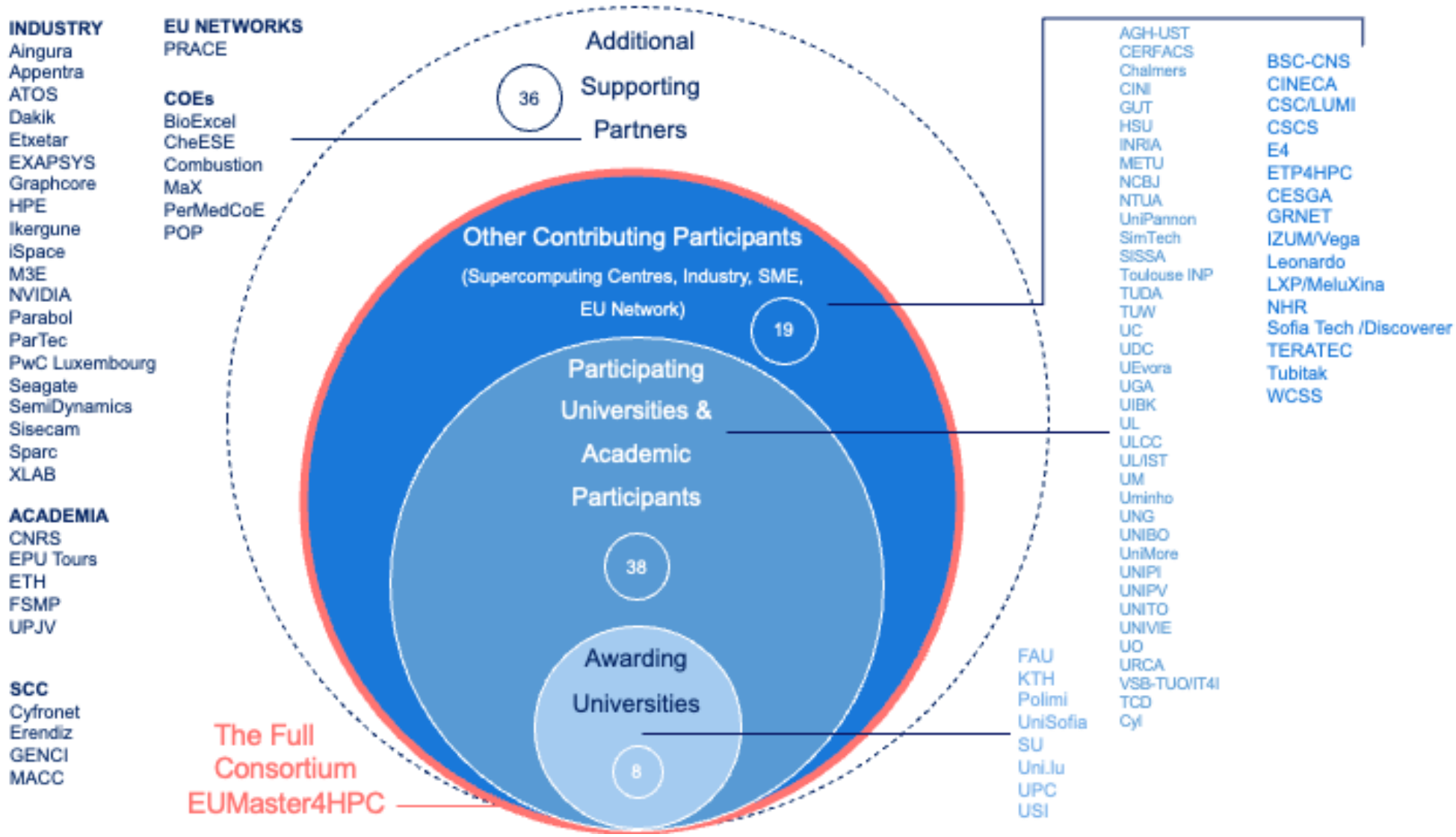
Most of the efforts are in-kind

Funding from the European
High Performance Computing

Joint Undertaking (JU)
under grant agreement
No 101051997 (H2020)



Consortium





Roles of Partners

The **“awarding” universities** will award a joint or multiple degree for the pilot European master programme in HPC.

Together with the contributing universities, industry and academia, a new European curriculum will be designed.



Roles of Partners

The “**contributing**” participants, coming from *academia* or the *industry* landscape, are the backbone of this consortium. They will co-design all tasks of the project and collaborate strongly with the awarding universities.

+ A set of **supporting** partners from both the industry and academia will enrich the proposal and contribute in-kind to various tasks of this pilot. These partners will advise on emerging best practices for building-up an own education program for HPC.

Main Objective

120 ECTS Master (2 years) - Joint Curriculum across Europe

- Defining the body of knowledge, producing **course content**, bringing together the EU Community
- Defining the **country specific specialities**

Implementation

- training 2 cohorts via a master pilot program
First cohort of 50 students , second cohort of 100 students
- The first cohort run on **existing masters (Sep 2022)**
- **the second one on the to-be defined curriculum (Sep 2023)**



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Project Objectives

O1: Design a common EU MSc curriculum in HPC

O2: Implement a pilot program

O3: Develop and share new educational content, materials and methodologies in HPC

O4: Increase HPC-adoption by industry

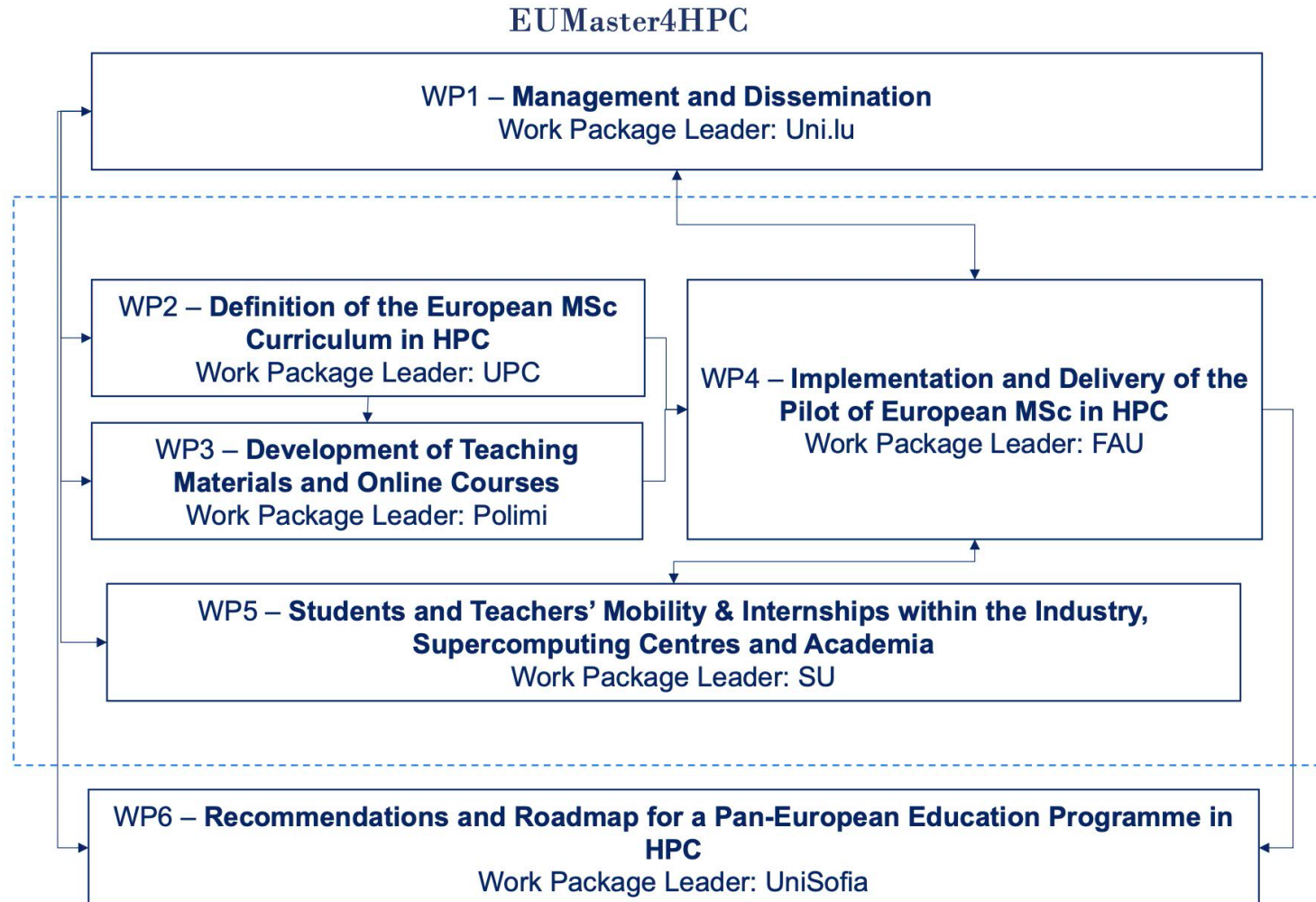
O5: Design and put specific collaboration mechanisms in place

O6: Create a sustainable network of different stakeholders

O7: Ensure sustainability of the master beyond the two cohorts and financial continuity

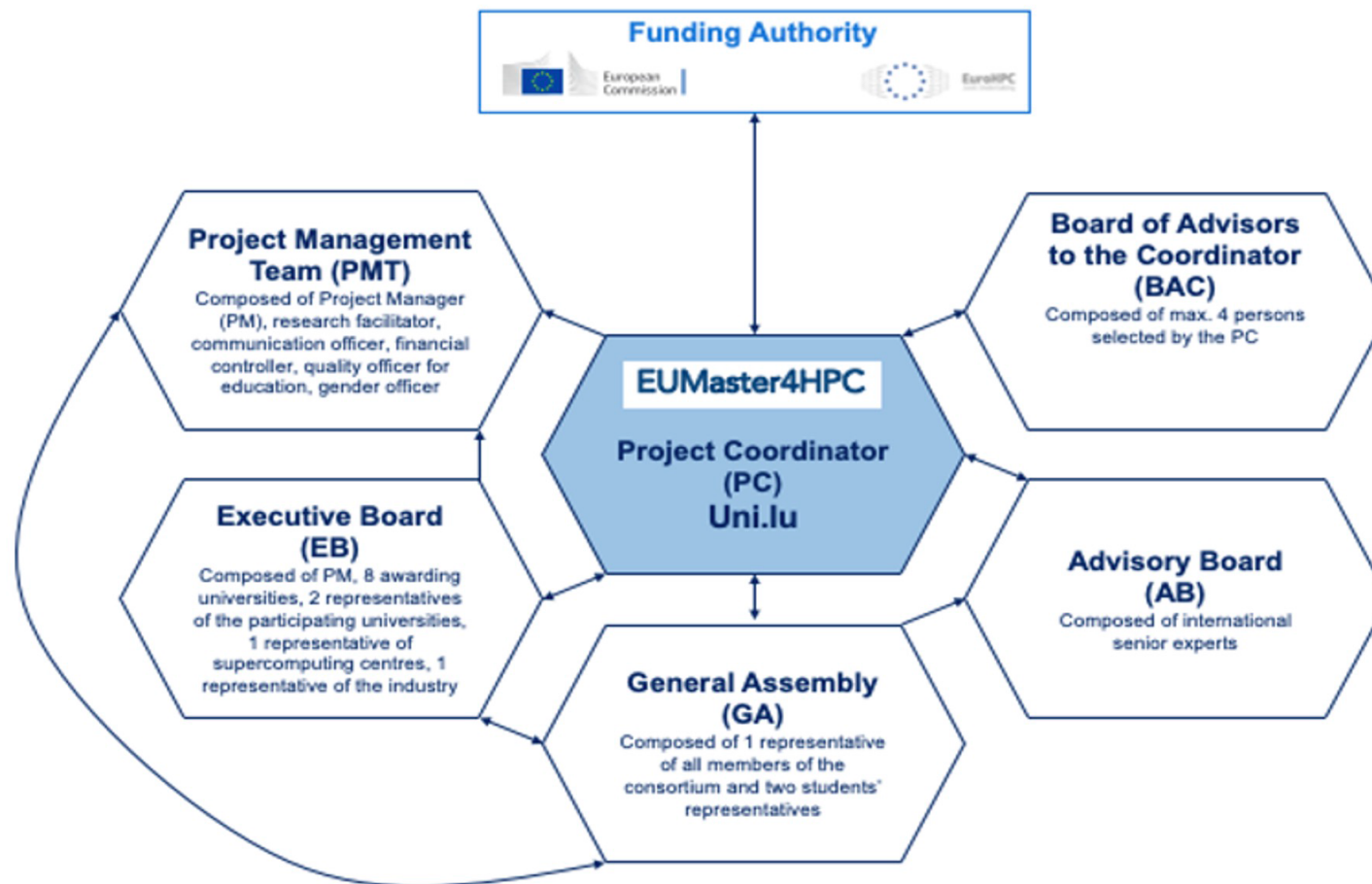


EUMaster4HPC





Governance





Executive Board Members (Awarding Universities)

Universitat Politècnica de Catalunya – Prof. Maria-Ribera Sancho

Friedrich-Alexander-Universität Erlangen-Nürnberg –

Prof. Harald Köstler

Sorbonne Université – Prof. Laura Grigori

Sofia University St. Kliment Ohridski – Prof. Ana Proykova

Università della Svizzera Italiana – Assoc. Prof. Aryan Eftekhari

Kungliga Tekniska Högskolan – Prof. Dirk Pleiter

University of Luxembourg – Prof. Pascal Bouvry



SOFIA UNIVERSITY
ST. KLIMENT OHRIDSKI



EuroHPC
Joint Undertaking

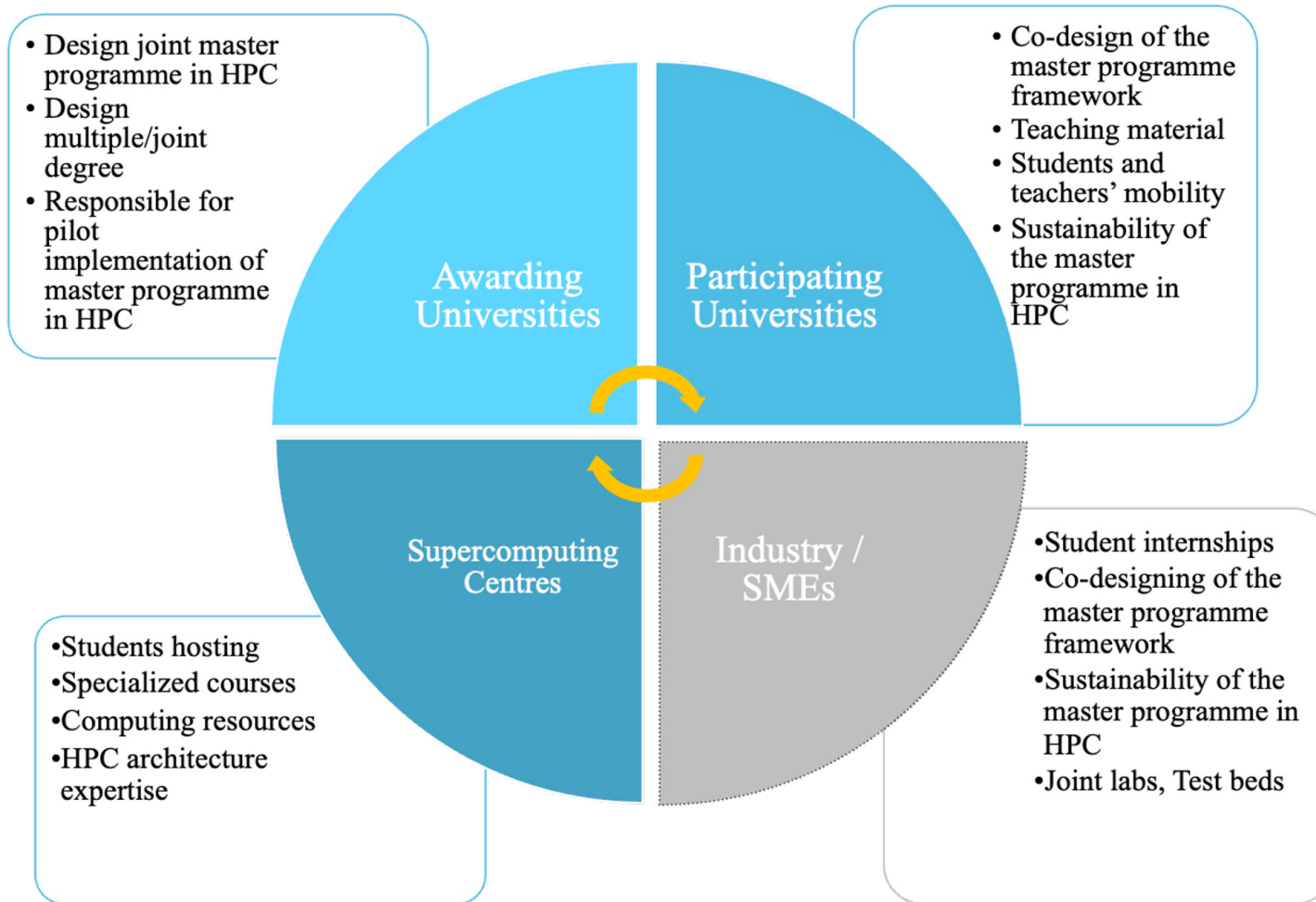
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8 awarding universities

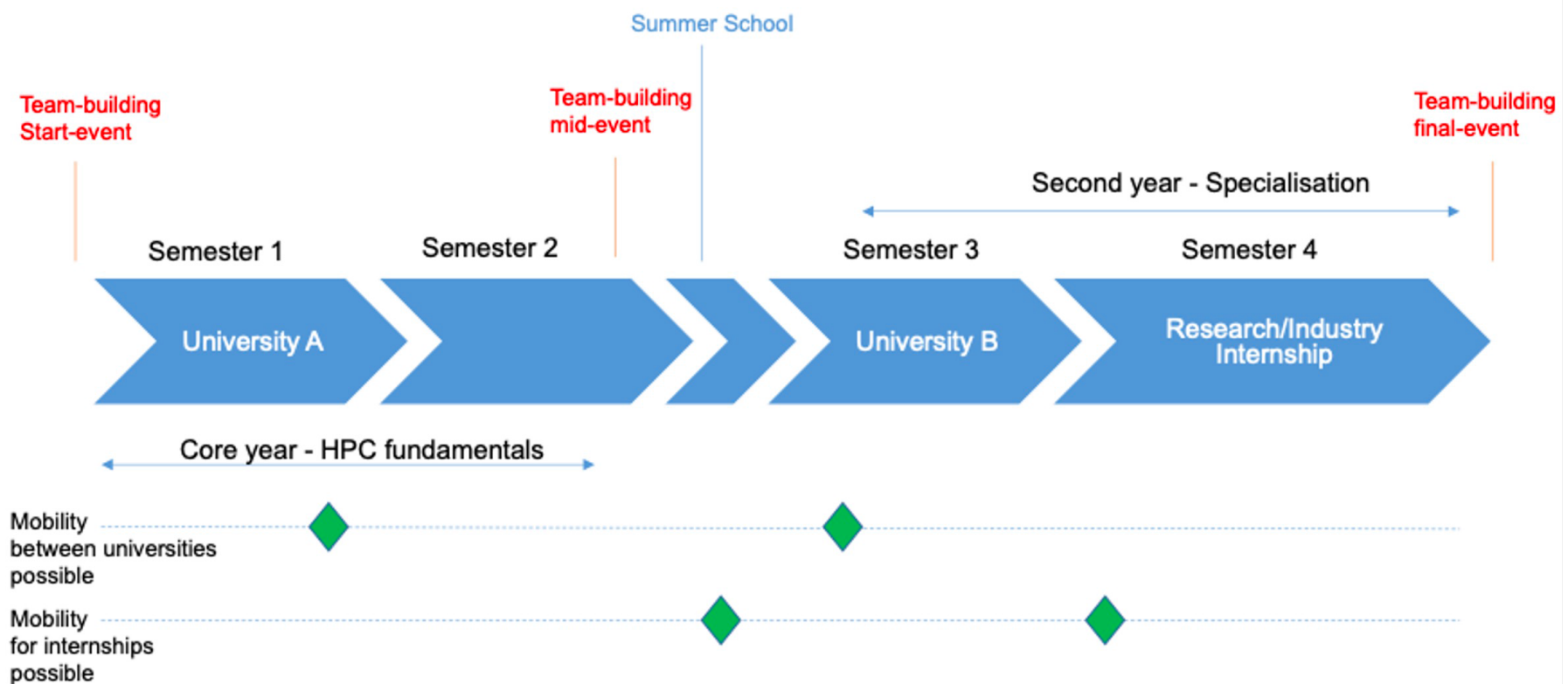


Participant's Contributions





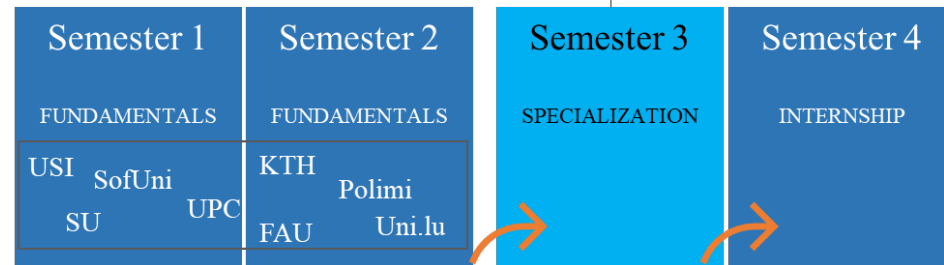
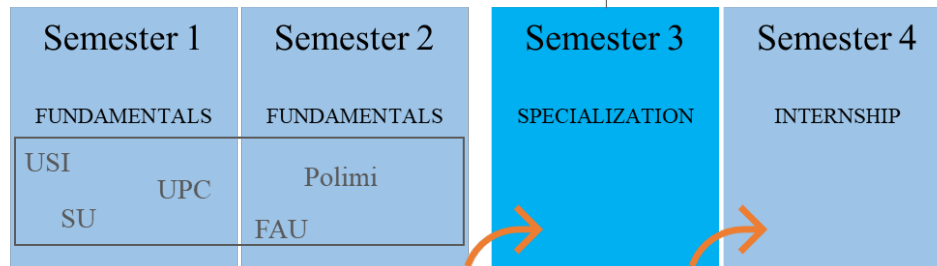
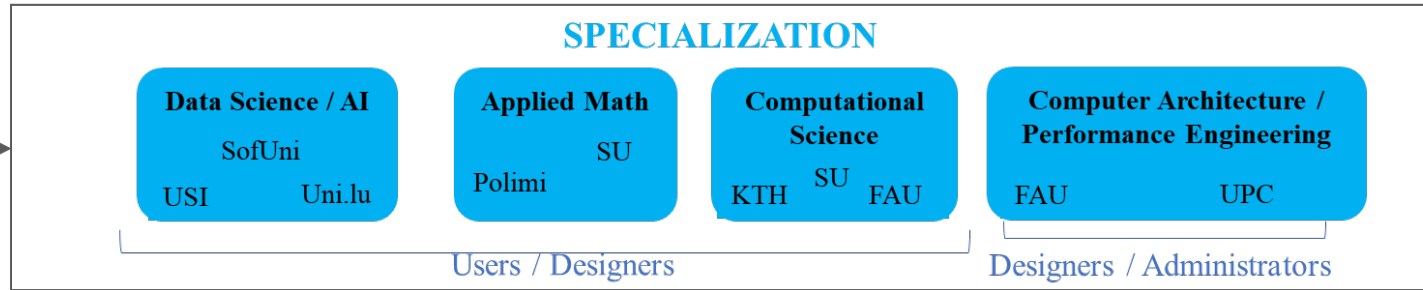
Academic Journey





EU Master4HPC

EU Master4HPC



- First cohort
- Second cohort
- ➔ Students' mobility





Student Selection (within WP4, FAU)

Commission I (ETP4HPC,...)

Commission II (all awarding universities)

Forthcoming opening: 1.12.2022 /15.12.2022

Candidates – B level proficiency in English

Bachelors in computer science, mathematics,
informatics and related disciplines



Concerning students who are not citizens of an EU member

From the proposal:

Explain which measures will be implemented to ensure that only students who are nationals of EU or Participating States may receive financial benefits by the programme.

“The admission criteria for the two cohorts supported by EUMaster4HPC foresee that an applicant has to be citizen of an EU member and/or EuroHPC participating state. For details see the description of Task T4.1.”

From WP4-Task 1 Recruitment of student, selection process, admission criteria

- ensure a diversity by recruiting students from different sources, undergraduate programs running at awarding or contributing universities, and external students attracted by the advertisement of the master programme (see WP1). Applicants that are not citizens of an EU member and/or EuroHPC participating state will be not funded, but can be accepted as self-payers.



Master programs – existing at the Sofia University

Artificial Intelligence

Distributed Systems and Mobile Technologies

Information Extraction and Knowledge Discovery



Artificial Intelligence - example courses

- Knowledge Representation and Engineering (*designer, developer*) – 6 ECTS

The course introduces the basic principles of functioning and the modern methods for creation of knowledge-based systems. Special attention is paid to the problems of domain analysis and the conceptualization of domain knowledge. The most important theoretical and practical aspects of a set of classical and modern methods for knowledge representation and reasoning are discussed.

- Machine Learning (*designer, developer, user*) – 6 ECTS

The course is providing a broad introduction to machine learning algorithms and techniques. The main topics which it includes are supervised and unsupervised learning, experiment design and evaluation, reinforcement learning, recommender systems and deep learning.



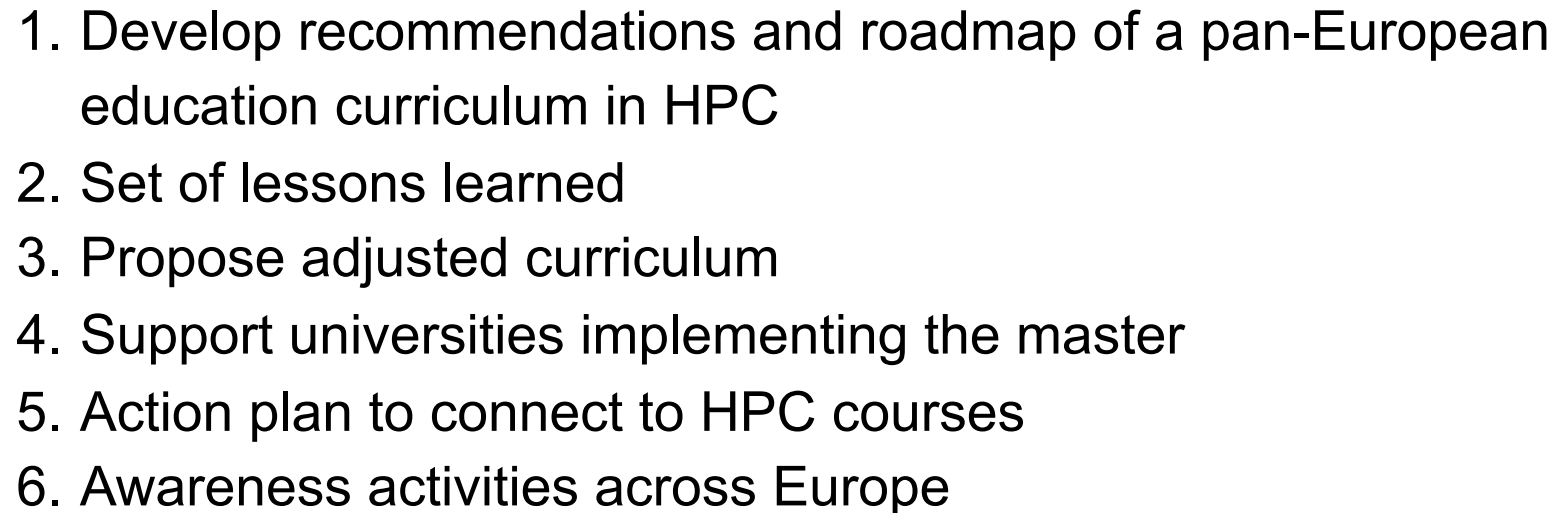


EUMaster4HPC Road map: WP6

WP Leader: UniSofia
Task Leaders: UPC, UL, UniMore/TUW, VSB-TUO/IT4I





1. Main Points and status of WP6 Road map

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1. Develop recommendations and roadmap of a pan-European education curriculum in HPC
 2. Set of lessons learned
 3. Propose adjusted curriculum
 4. Support universities implementing the master
 5. Action plan to connect to HPC courses
 6. Awareness activities across Europe
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EUMaster4HPC

In Progress

A new HPC Master Program (FMI – Sofia University, 4.6 Informatics and Computer Science) to meet the requirement 4 semesters

Double degree agreements



Thank you for your attention!