

European Master for High Performance Computing

Johnatan Pecero Sanchez
University of Luxembourg

Teratec Forum 2022



Paris, France | June 14 -15

21 Participant Countries

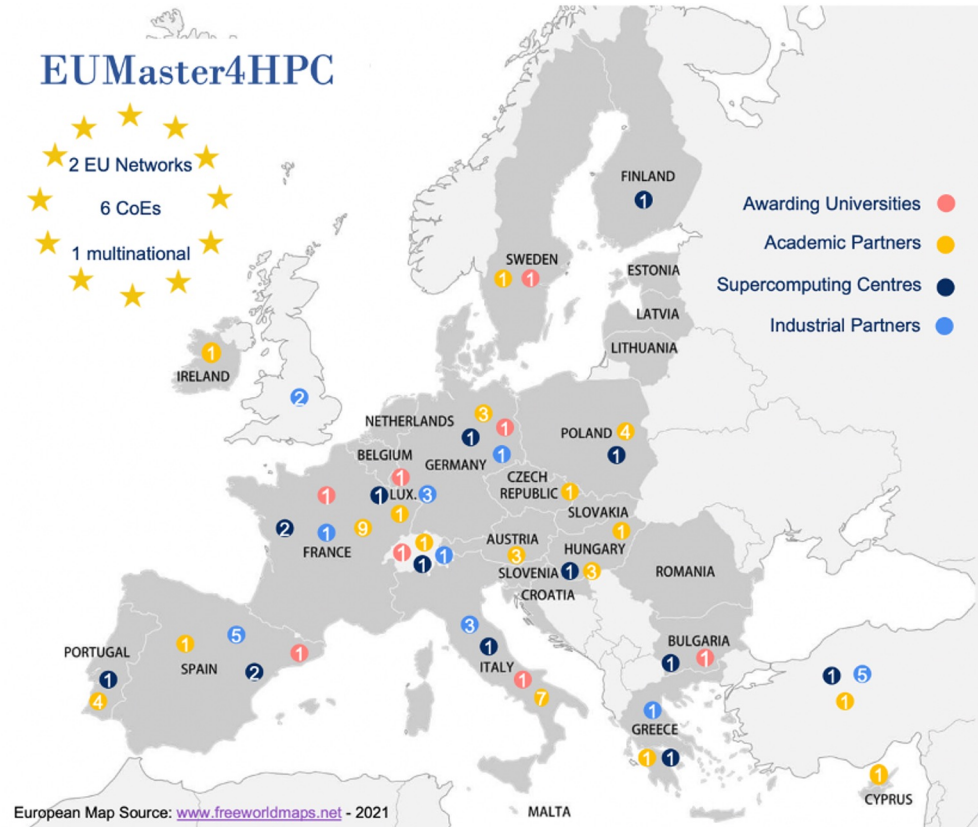
7 Meuros over 4 years

Start date : January 1st 2022

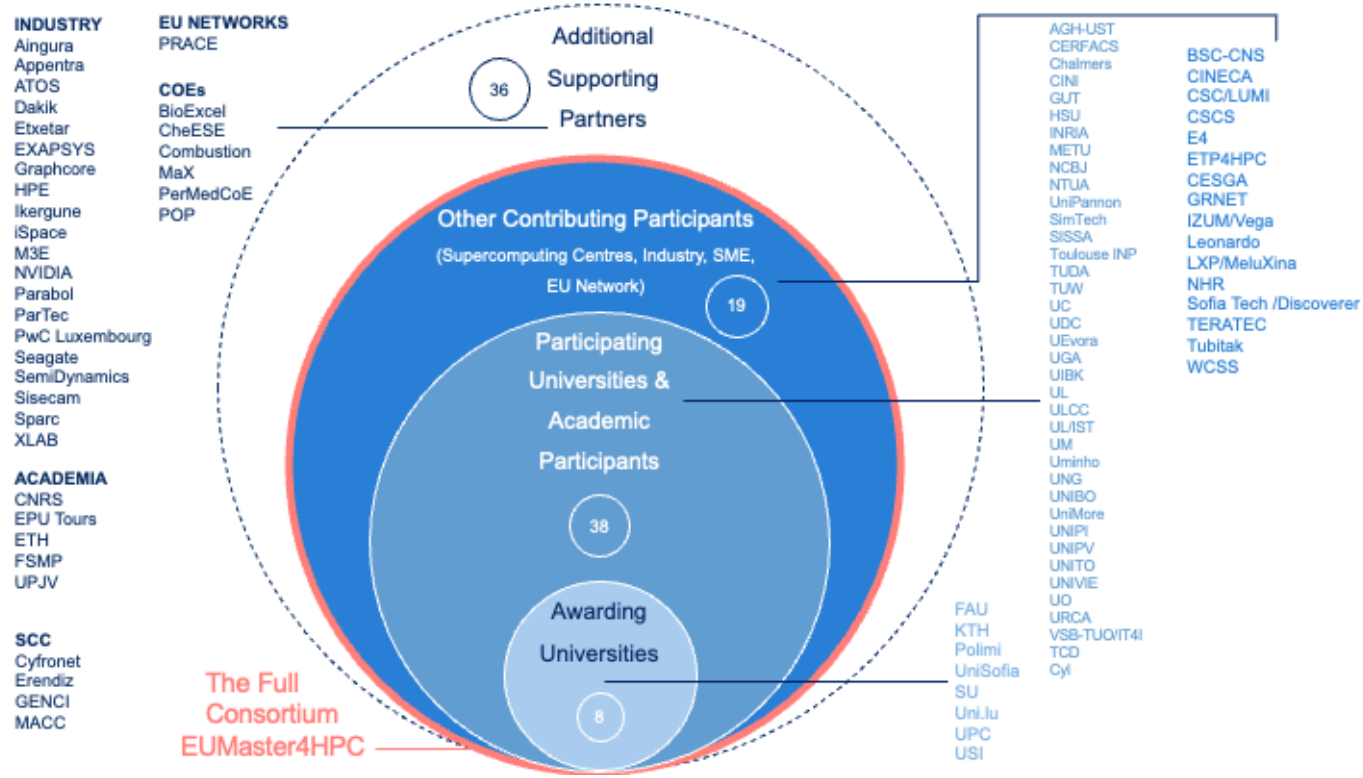
Start of the first cohorte: September 2022

Most of the money goes to students
Most of the efforts are in kind

Broad European inclusion of major players and stakeholders of HPC in Europe.



The Consortium and Partners



Target and Sizing

120 ECTS Master on 2 years - Joint Curriculum across Europe

- Defining the body of knowledge, producing course content, bringing together the EU community
- Defining the country specific specialities, running the 2 first cohorts of the joint master curriculum
- First cohort of 50 students, second cohort of 100 students
- The first cohort will run on existing masters (Sep 2022), the second one on the to-be-defined curriculum (Sep 2023)

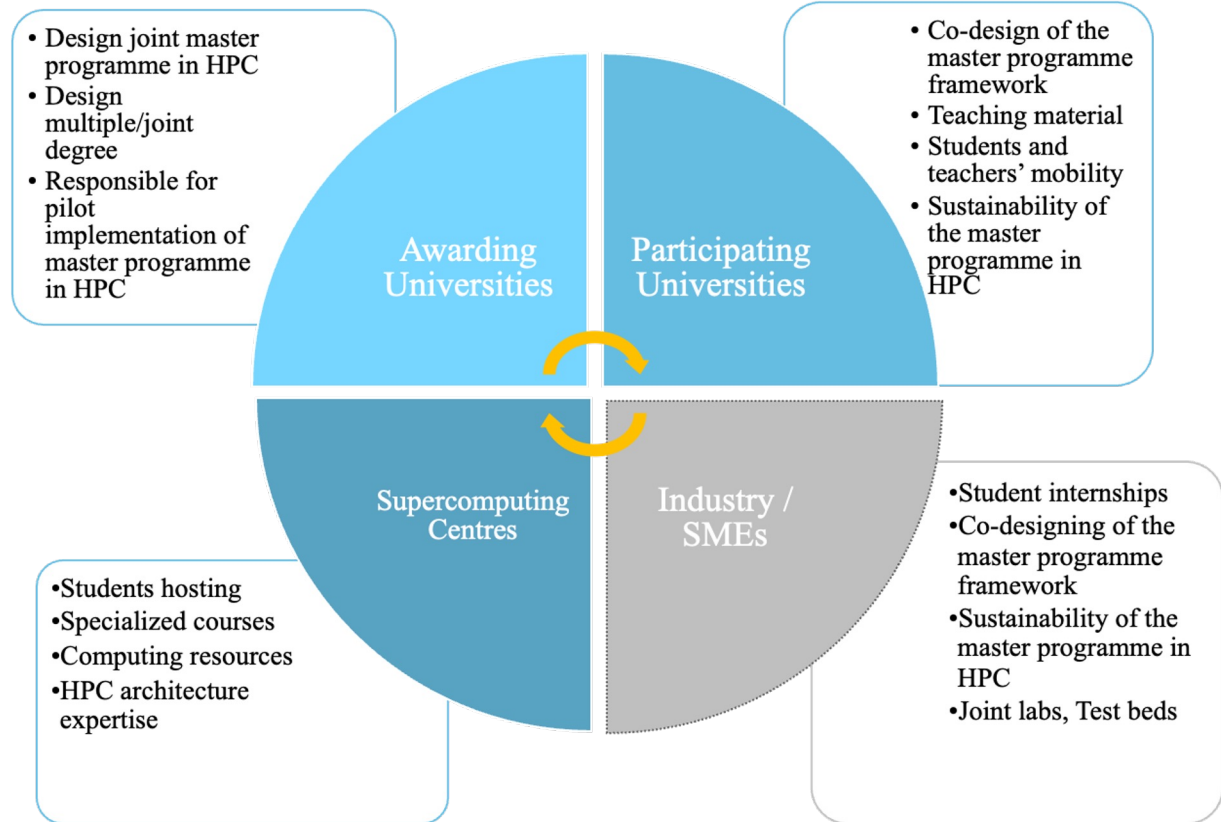


Project Objectives

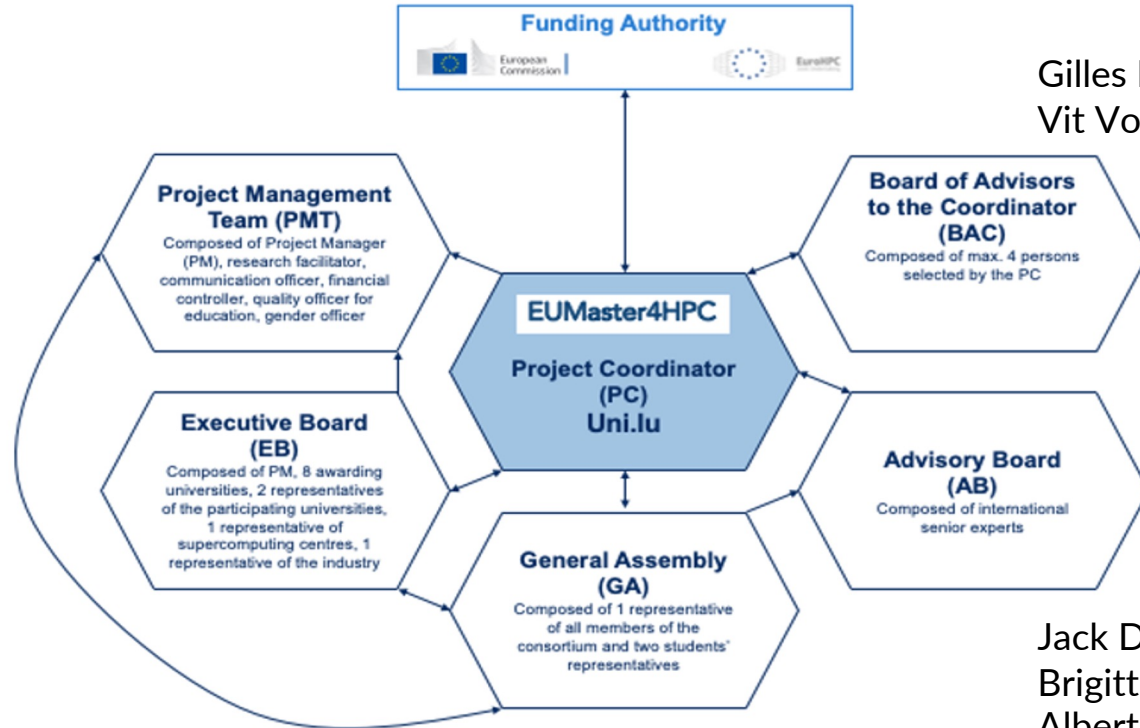
- O1: Design a common EU MSc curriculum in HPC
- O2: Implement a pilot program
- O3: Develop and share new educational content, materials and methodologies in HPC
- O4: Increase HPC-adoption by industry
- O5: Design and put specific collaboration mechanisms in place
- O6: Create a sustainable network of different stakeholders
- O7: Ensure sustainability of the master beyond the two cohorts and financial continuity



Participant's Contributions



Governance



Gilles Fuchs
Vit Vondrak

Jack Dongarra
Brigitte Plateau
Albert Zomaya



Awarding Universities

Université du
Luxembourg

Luxembourg



Universitat Politècnica
de Catalunya

Spain



Sorbonne Université

France



Sofia University St.
Kliment Ohridski

Bulgaria

SOFIA UNIVERSITY
ST. KLIMENT OHRIDSKI



Politecnico di Milano

Italy



POLITECNICO
MILANO 1863

Friedrich-Alexander-
Universität Erlangen-
Nürnberg

Germany



Friedrich-Alexander-Universität
Erlangen-Nürnberg

Università della Svizzera
Italiana

Switzerland



Kungliga Tekniska
Högskolan

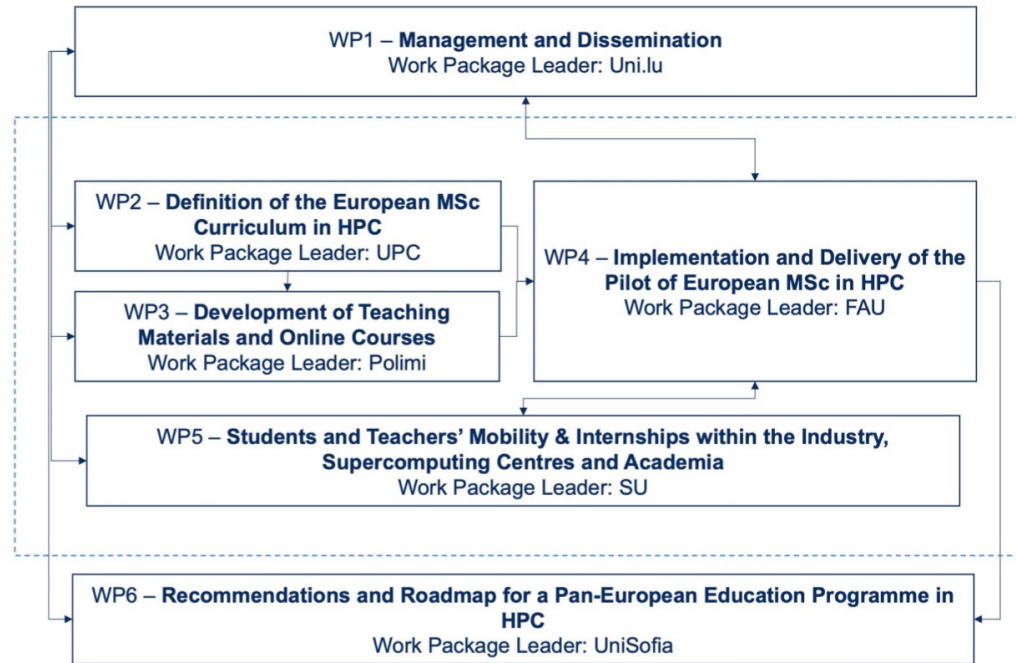
Sweden



Complementarity at the EUMaster4HPC

Disciplines	Uni.Lu	Sofia	Polimi	FAU	Sorbonne	KTH	USI	UPC
Applied Math			√	√	√	√	√	
Applications			√	√	√	√	√	
Parallel/Het. Prog.	√	√	√	√		√		√
Distributed/Cloud	√	√	√	√		√	√	√
DevOps		√						
Big Data/HPDA	√	√			√		√	√
AI	√	√	√		√	√	√	√
Comp. Architecture								√
Transversal skills	√							√

Structure of the Project



Evaluation of future needs of the EU job market (Work in progress)

- Collection of inputs from companies for designing the joint curriculum for the EUMaster4HPC
- The methodology started by collecting a set of jobs profiles and associated skill sets as a basis for designing and conducting a questionnaire and structured interviews
- The preliminary results is a set of skills, that will allow the EUMaster4HPC to assess how well it prepares students for the job market



Evaluation of future needs of the EU scientific areas (Work in progress)

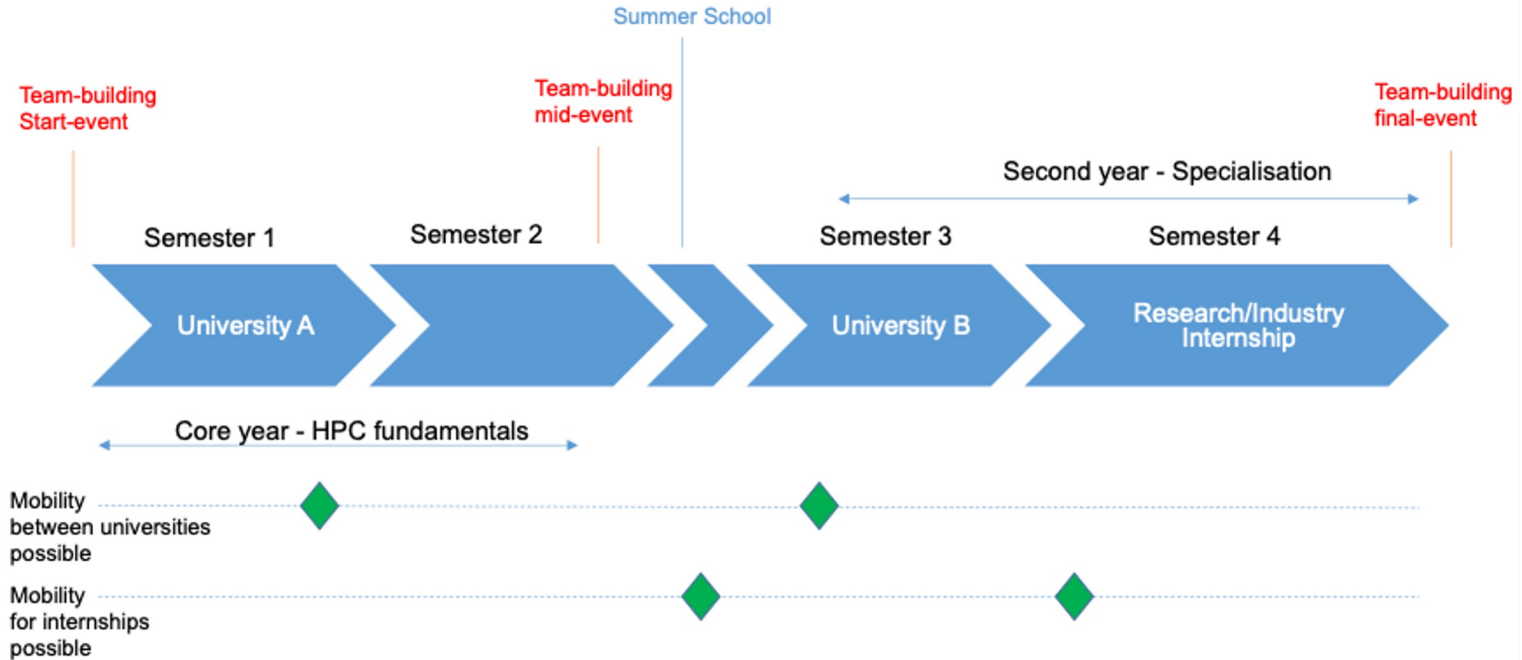
- The methodology started by collecting a set of jobs profiles/offers and associated skill sets
- The job offers in the academic sector were classified according to area and subareas
- Hard and soft skills were identified
- The initial study was discussed in a workshop with a WG, some inputs were collected

The offer for the students

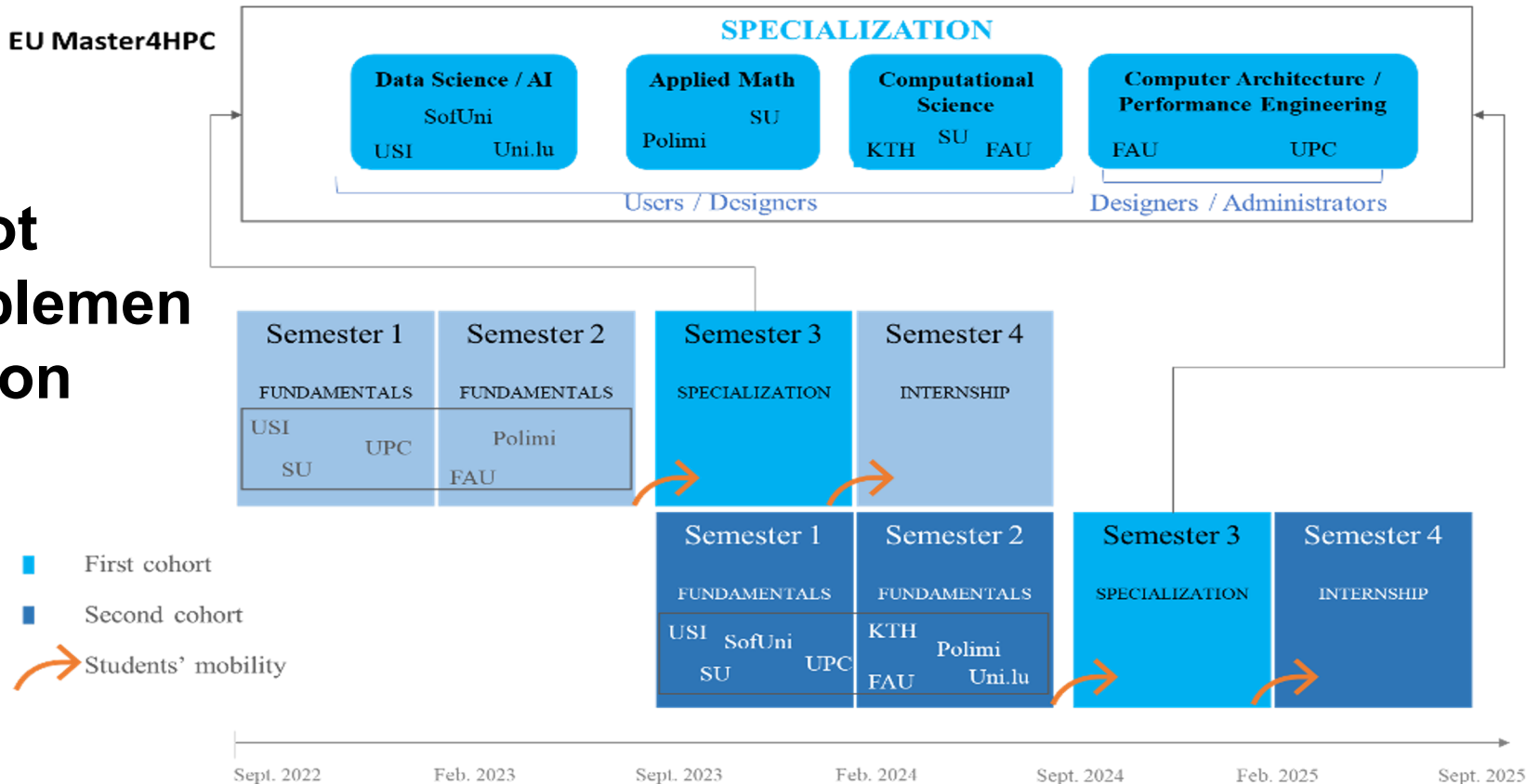
- A quality-controlled educational master programme for HPC and industrial applications in HPC
- Expected and needed expertise that will enhance and develop student's technical and transversal skills
- A broader range of competencies sought by employers at the European and international level
- A sustainable network of different stakeholder involving universities, research centres, supercomputing centres, private organisations, industry experts, centres of Excellences
- A mobility scheme to encourage cross-fertilisation, studying across several European countries
- Joint and/or dual degrees from the eight awarding universities
- Opportunity to do an internship at one of the industrial partners of the EUMaster4HPC consortium
- Several events



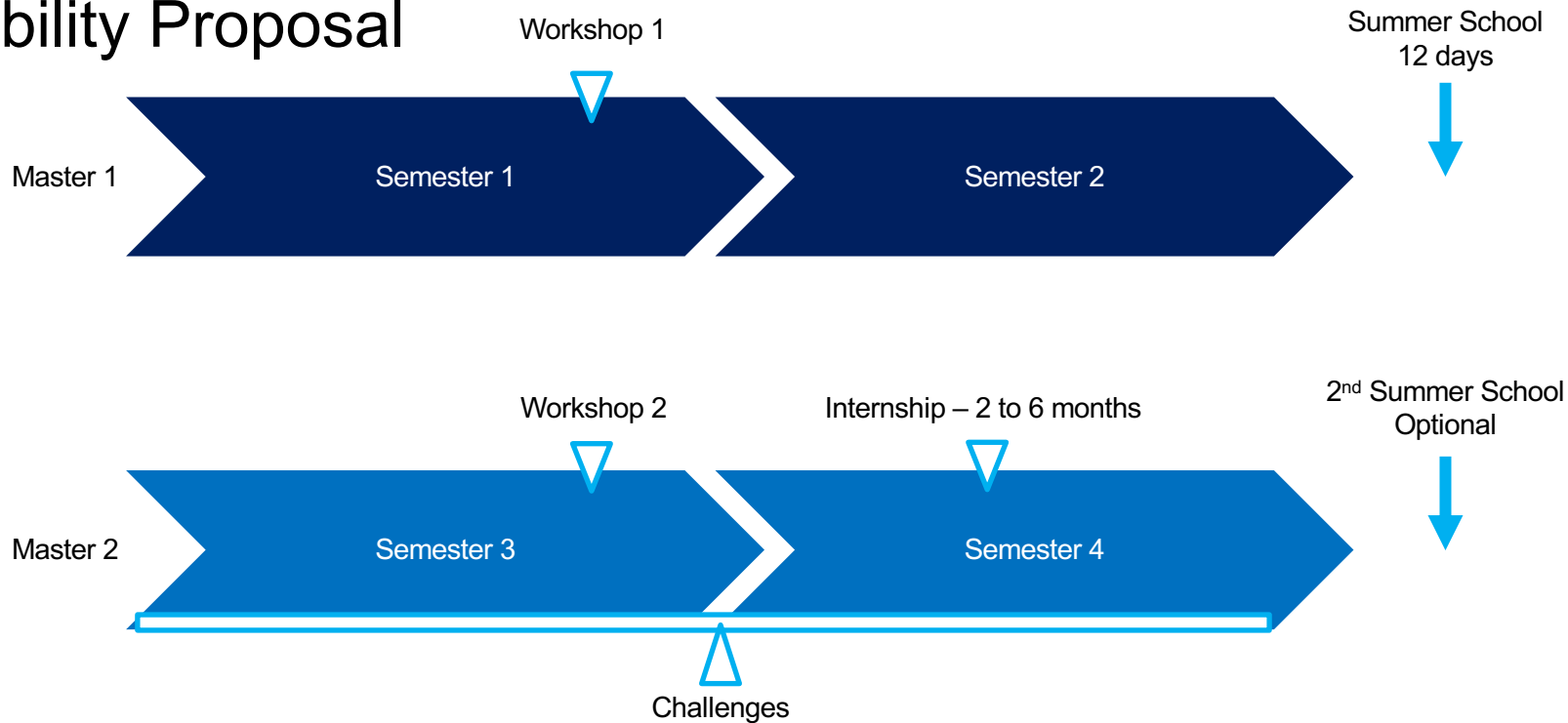
Academic Journey – Master Timeline



Pilot Implementation



Mobility Proposal



Calls (open or) to be launched

- 1: “Challenges” which will be explored by students and then will conclude with summer schools hosted by some of the awarding universities
- 2: Workshops (short events – few days, two occasions)
- 3: Internships – hosted by mostly companies

All are compulsory for all students.



1st EUMaster4HPC Summer School (Open Call)

- The Summer School is organized between the second and third semester of the master programme
- This event aims to
 - Create a dynamic environment to enhance group cohesion
 - Give students the leys to dive into their speciality topic for the third semester
 - Allow students to get connected with companies and supercomputing centres
 - Allow companies to exchange with students and create links for internships and/or future recruitments



1st EUMaster4HPC Summer School – Specifications and Requirements

- Provide two weeks of intensive and high level lectures, project work and collaboration, company cases on a specific chosen HPC thematic
- To allow students to discover the career opportunities of future leaders in HPC technologies and applications to enhance their knowledge on a specific HPC thematic with a clear overview of industry and research
- To include technical lectures; teamwork and mentoring/project work
- Non-lecturing activities; team-building sessions and social events



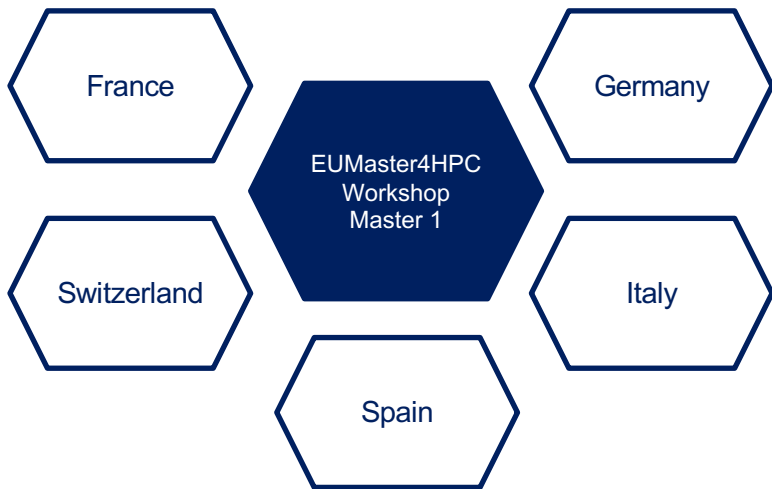
Information on the organisation of the EUMaster4HPC's internships (first cohort)

Institution	Duration	Exact period	ECTS with thesis	Gratification	Internship Offer Period
FAU-USI-POLIMI- UPC-UniLux- UNISOFIA-SU	2-6 months	4th semester: February-August 2024	10-30	No-1000 €/month	July-January

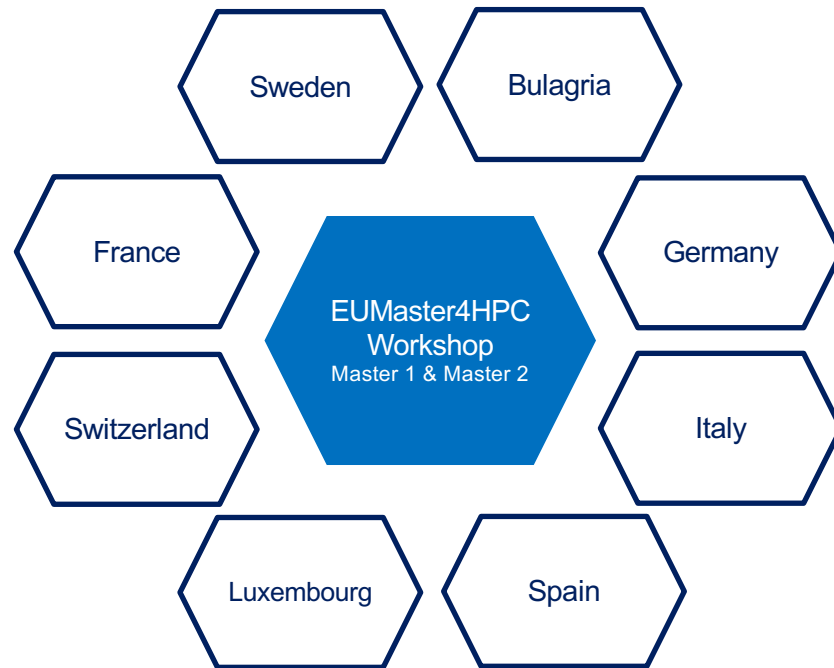
- The duration of the internships should be from 3 to 6 months
- Internships will take place in the second semester of the Master 2nd year, between February and the end of August 2024
- Internships are credited with between 10 and 30 ECTS (including the internship thesis)
- The compensation should generally be between 500 and 1000 €
- Internships are expected to be offered between July and January



Workshop localisations in 2022



Workshops localisations from 2023 onward



Workshop

- 1 to 2 days
- One in each Awarding University country in fall 2022
- In a selected partner university or calculator center or research center
- Around 30 students
- Working on a topic defined in partnership with local companies or research centers

Responsibility of the National Node / Awarding University

- Workshop organization
- Logistic and welcoming of students
- Teachers' mobility
- Interaction with Companies
- Topics identification

What we need from companies and research centers

- Specific topics in connection with industrial and technological key challenges for Europe
- Present industrial needs and realization in specific HPC / HPDA fields research domain
- Founding support

Opportunity for companies and research centers

- Exchange with students on critical HPC topics
- Create connections and attract talents
- Interact with world-class level teachers and researchers



Acknowledgements



EuroHPC
Joint Undertaking



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de l'Économie

Teratec Forum – Atelier 1 2022



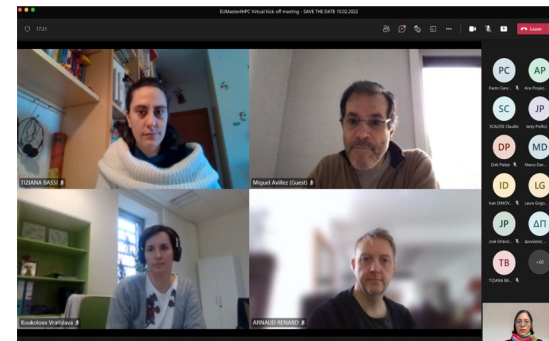
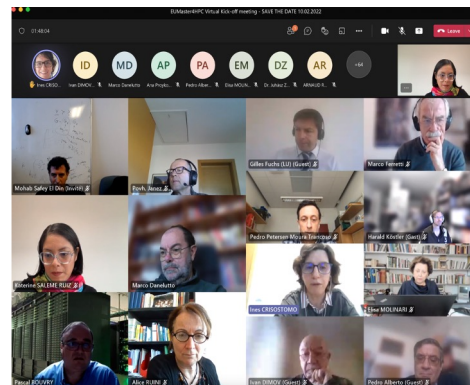
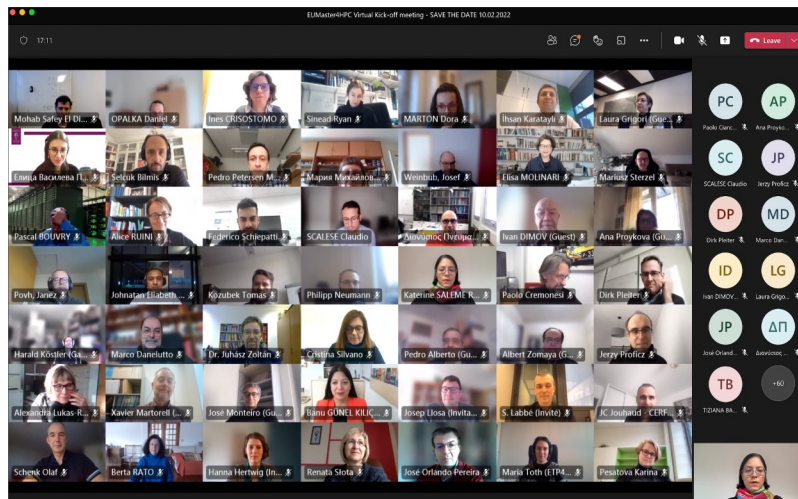
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Student Recruitment Strategy

- To rely on the partners of the strong consortium (e.g participating universities, industry/SMEs) by recruiting students from different sources, undergraduates programs running at awarding or contributing universities
- Promote the expertise of European HEIs in the EU to attract excellent and talented students
- Highlight the employability/career prospect - connected with the industrial and SMEs partners
- The creation of a communication task force from participating universities and act as key contributors to attract talented students



Project Virtual Kick-off



The EUMaster4HPC project is funded by the European Union's Horizon 2020 – EuroHPC Training and Education on High performance Computing programme under Grant Agreement 101051997

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