



EUMaster4HPC

European Master for High Performance Computing

Virtual Kick-off Meeting

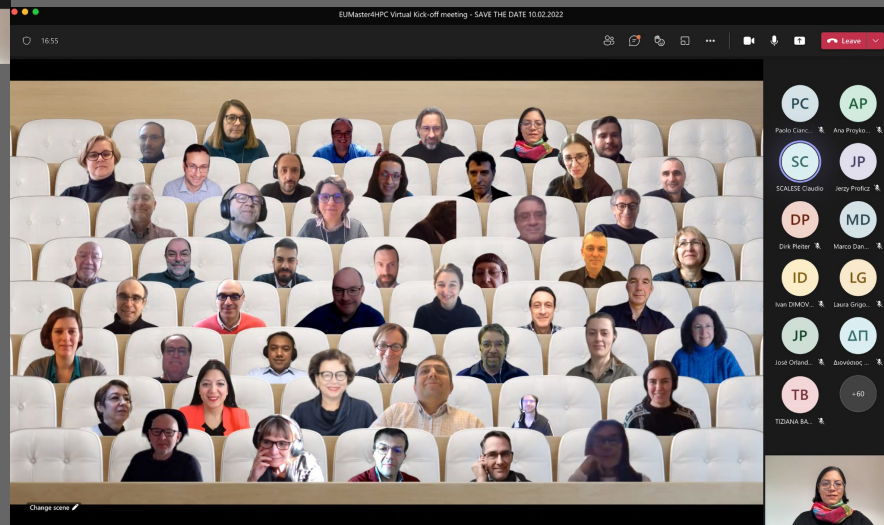
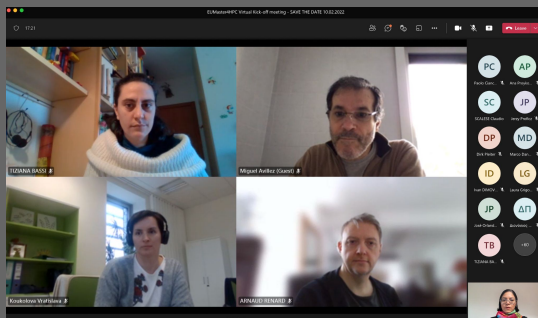
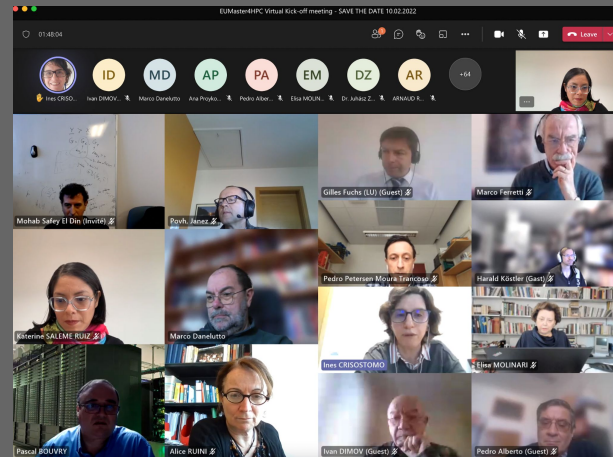
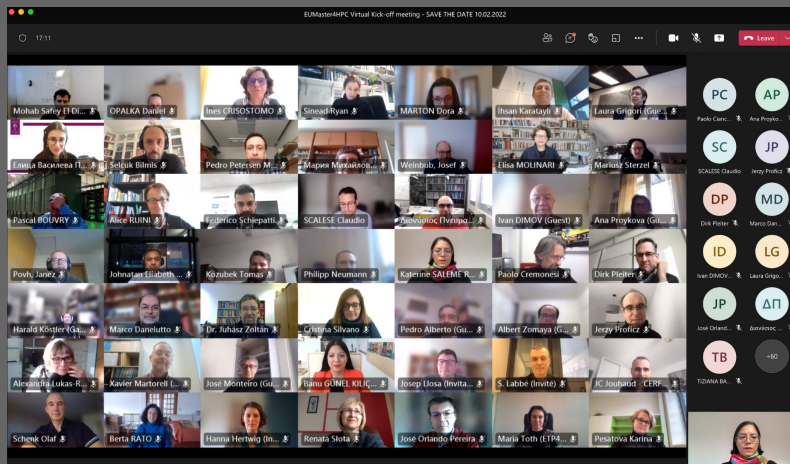
February 10th, 2022



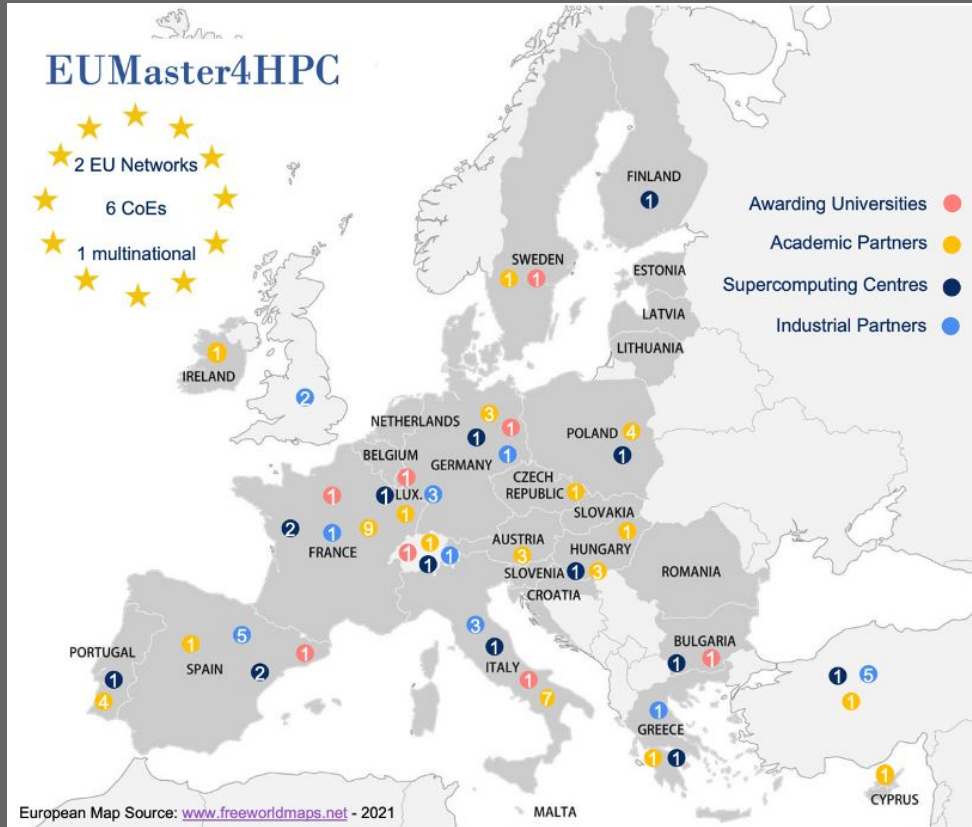
AGENDA

1. Group Picture
2. Welcome
3. Introduction of the Project Officer
4. Grant Agreement status update
5. Work Packages roadmap
6. Website presentation
7. Conclusion

1. Group pictures



2. Welcome

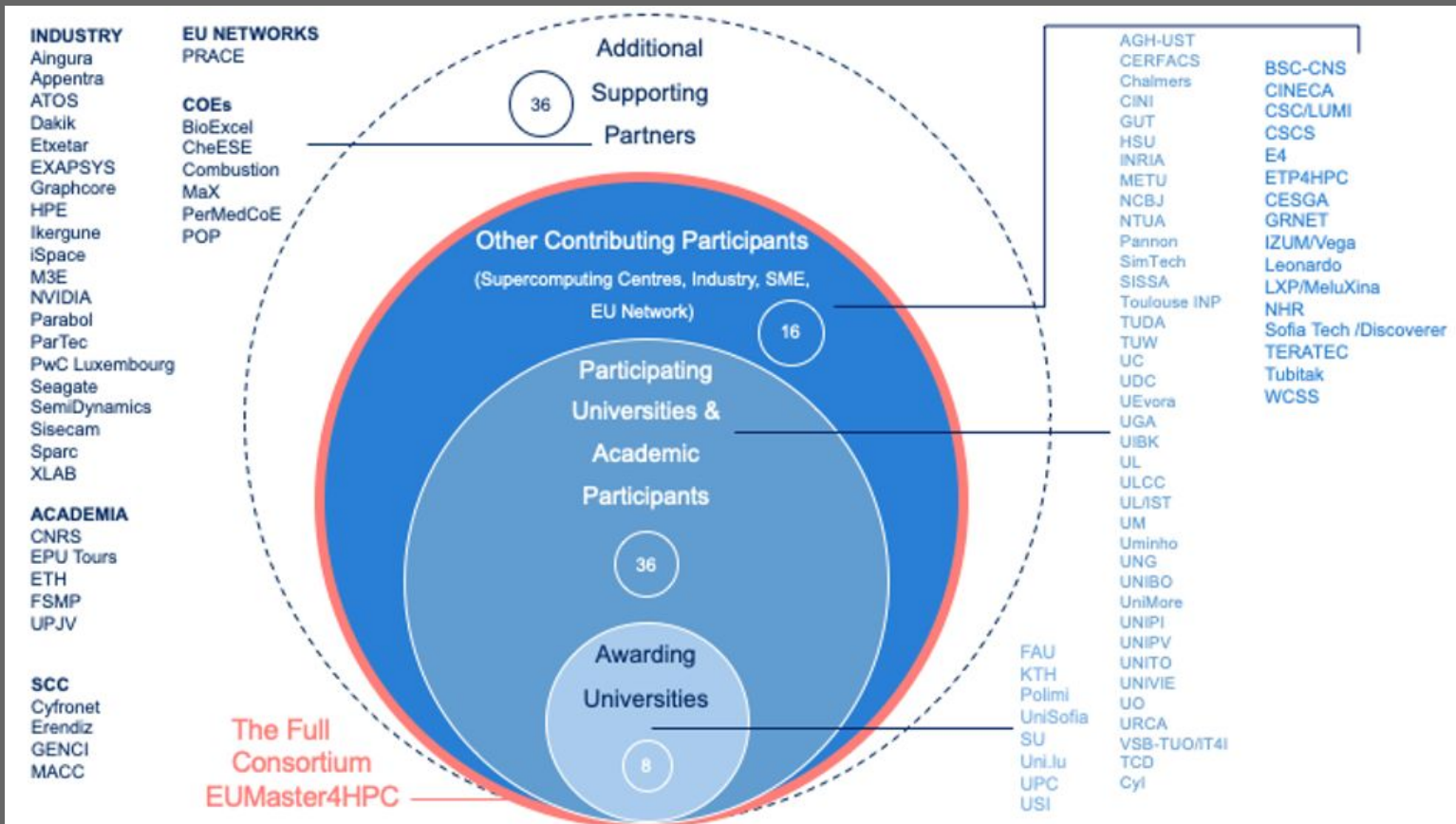


7 Meuros over 4 years
Start date : January 1st 2022
Start of the first cohorte:
September 2022

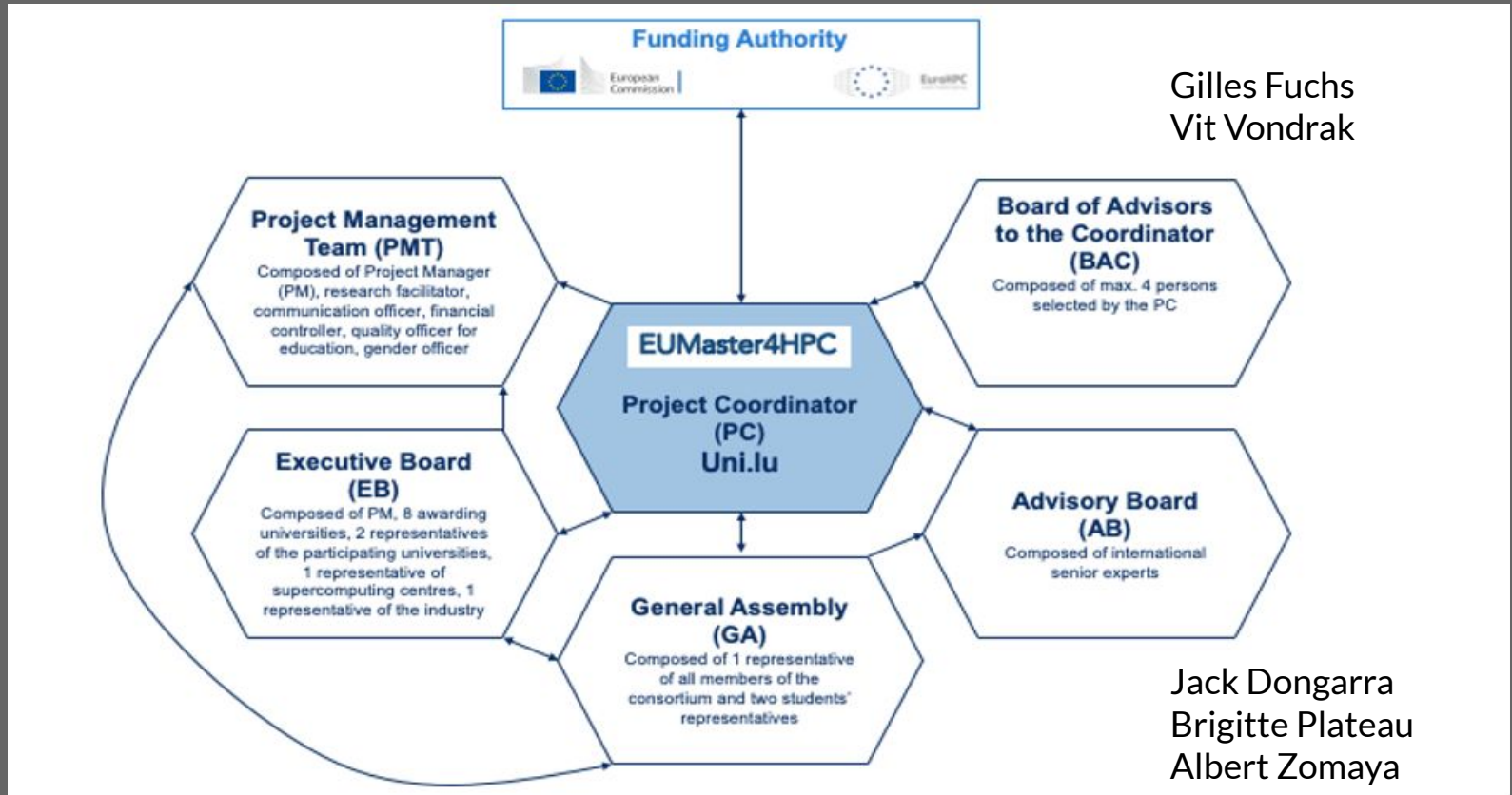
Most of the money goes to students
Most of the efforts are in kind

19 countries is a starting point

2. Welcome: The Consortium and partners



2. Welcome: Governance





2. Welcome : Target and sizing

Main Objective of the project:

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)



2. Welcome : 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

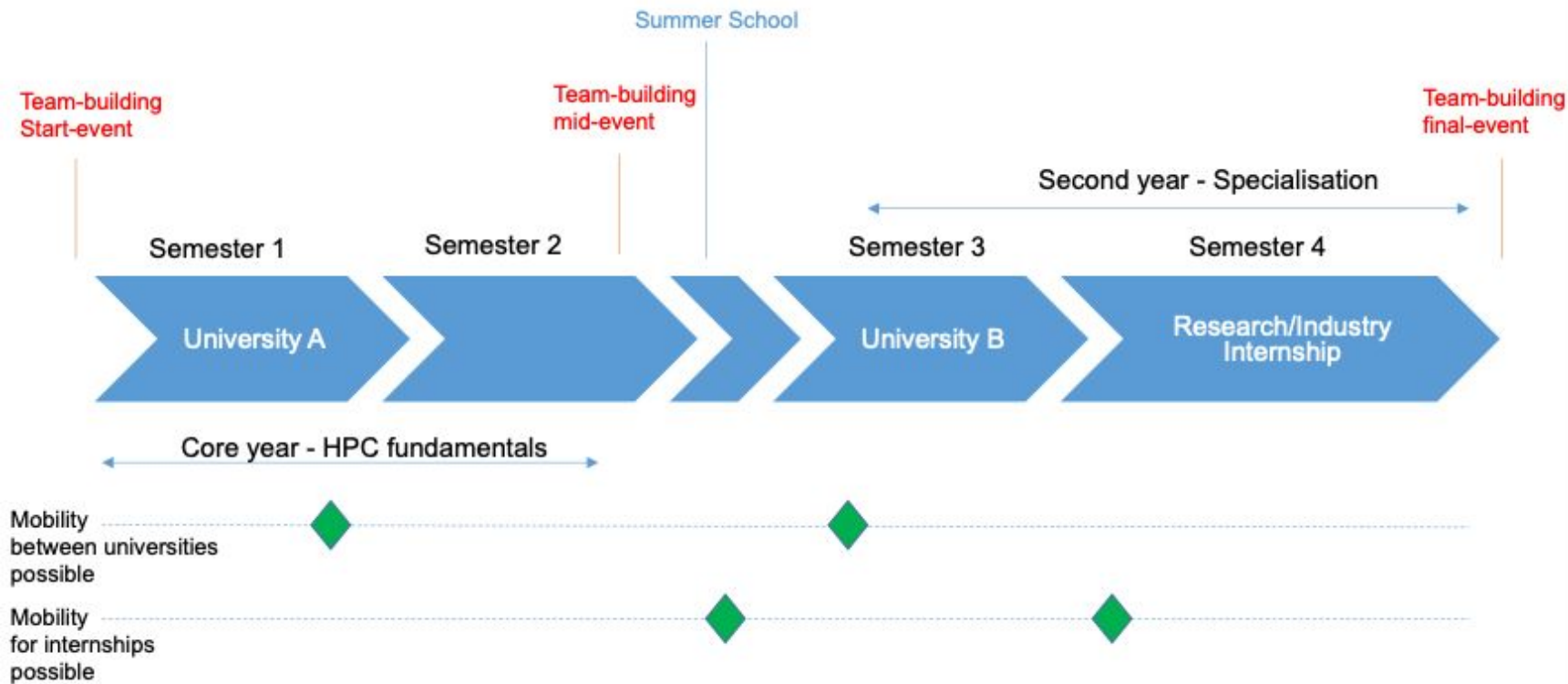
O4: Increase HPC-adoption by industry

O5: Design and put specific collaboration mechanisms in place

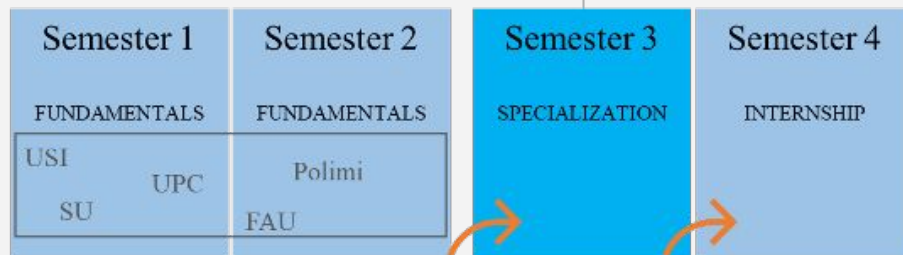
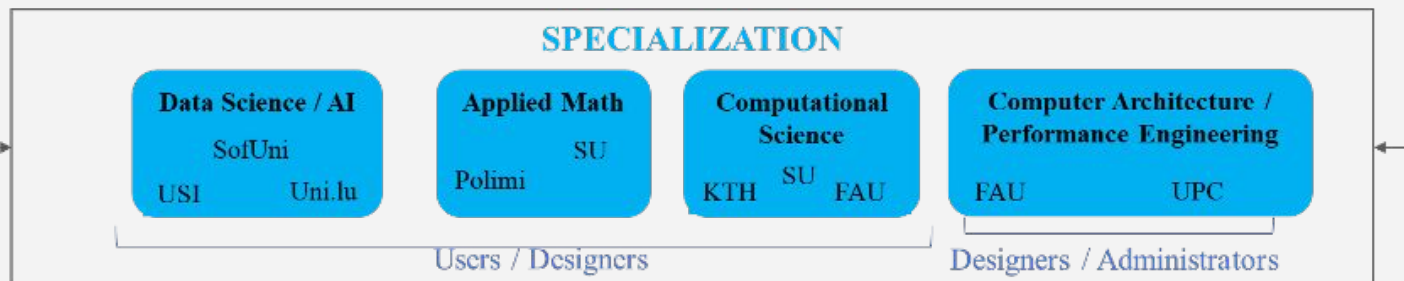
O6: Create a sustainable network of different stakeholders

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

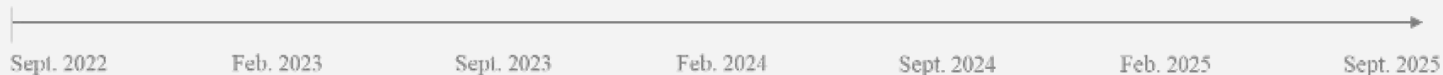
2. Welcome : Academic Journey



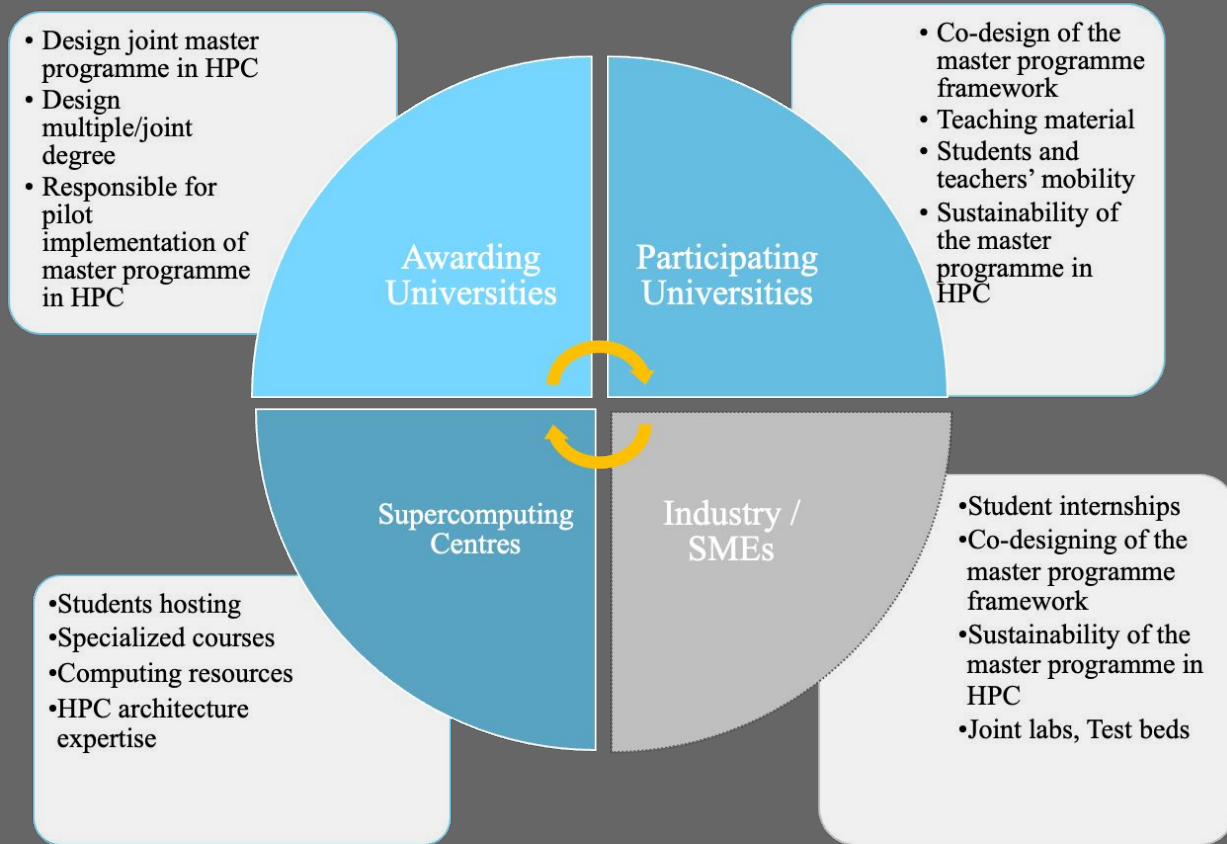
EU Master4HPC



- First cohort
- Second cohort
- ➔ Students' mobility



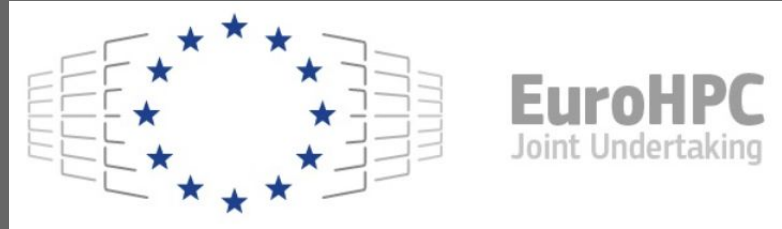
2. Welcome : Participant's contributions



3. Introduction of the Project Officer



Dr Daniel OPALKA
Programme Officer R&I

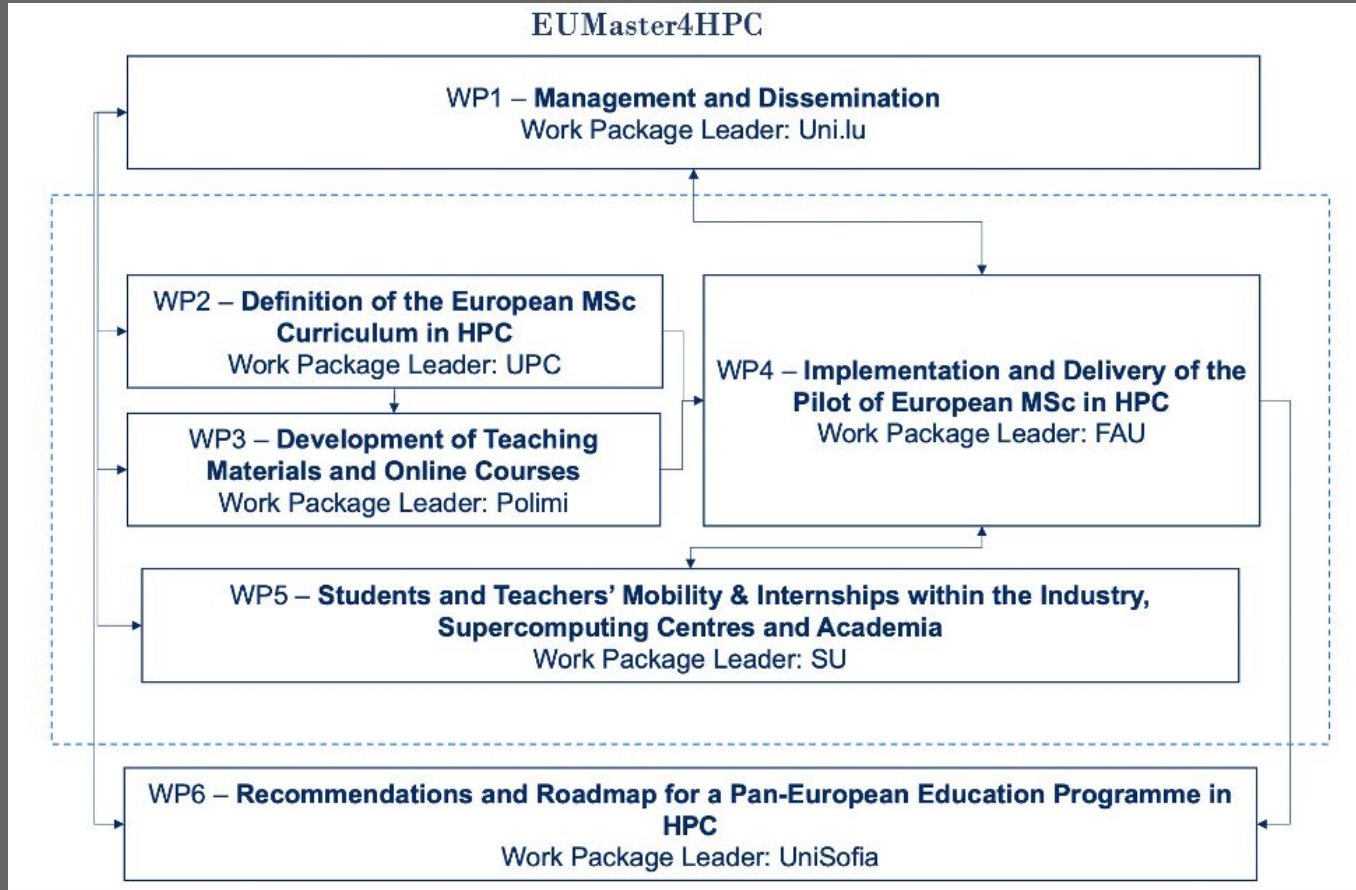


European High-Performance Computing Joint Undertaking



4. Grant Agreement status update

5. WPs roadmaps





WP1: Management and Dissemination

WP1 Overview

Coordination

Management

Controlling

Communication & Dissemination

Goals

- Facilitate communication flow
- Establish the governance
- Interaction with external networks
- Facilitate best practices and expertise sharing

- Manage administrative and financial matters
- Respect contractual obligations
- Monitor project development
- Monitor use of resources

- Perform quality control of all matters related to the project
- Measure project performance
- Implement the quality management plan

- Communicate and disseminate activities and results of the project to different target audiences

Strategy

- Set up of a collaborative work plan
- Regular general and 1-1 meetings
- Seek regular feedback from participants
- Compliance with EuroHPC JU policies

- Dedicated team from the coordinator
- Synchronization with financial controllers from all partners

- Follow-up with all partners financial controllers

- Working groups with task leaders and communication representatives from each partner

Deliverables & Milestones

- Project Kick-off
- Launch collaborative work platform
- Launch project website
- Launch Master in HPC website
- Open social media accounts

- Consortium agreement
- Annual technical and financial reports

- Data management plan
- Quality plan

- Communication and Dissemination plans
- Websites up to date
- Social accounts active

Stakeholders

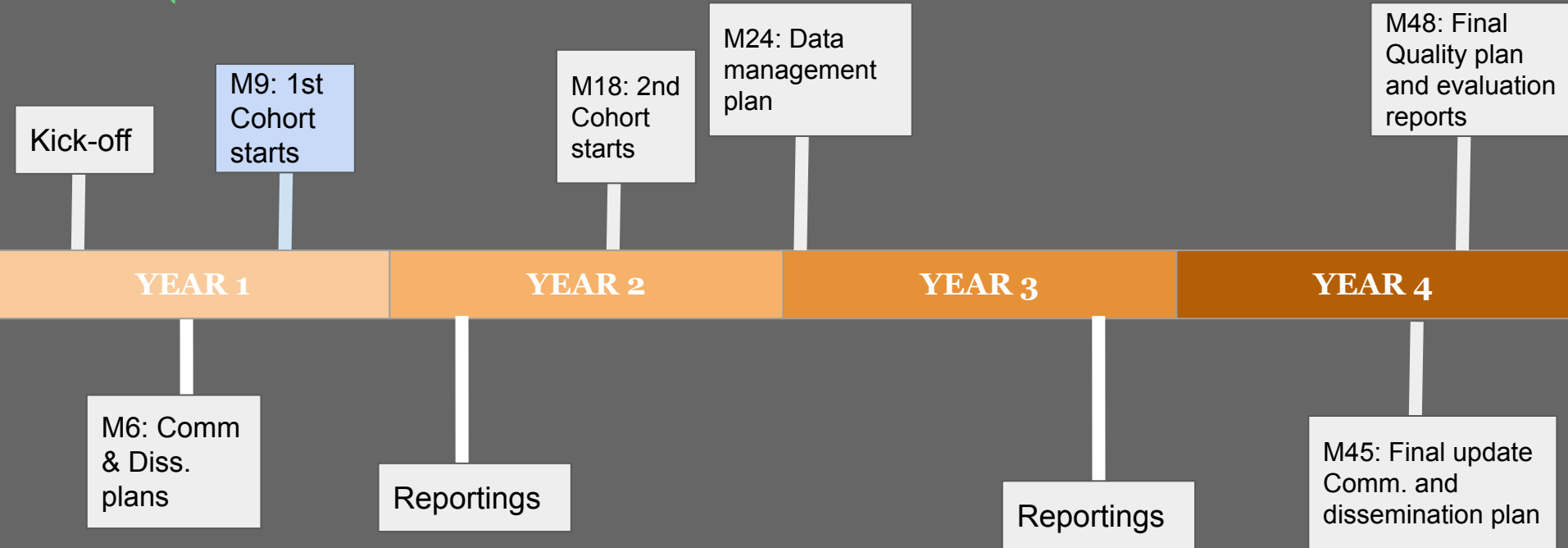
All participants

All participants

WP leaders

Uni.lu, UPC, Polimi, FAU, SU, UniSofia, USI, KTH, VSB-TUO/IT4I, ET4HPC, CINECA, UniPannon, UL

WP1 roadmap





WP1 roadmap

- Preparation for Grant Agreement
- Project website
- Management plan
 - Periodic meetings with administrative and financial contact points
- Meeting's organization
 - 1-1 meetings with WP leaders
 - General meetings with WP
 - With PO
 - Communication strategy with Task leaders and their communication contact points
 - Kick-off
- Preparation of the communication strategy with focus working groups according to target audiences
- Coordination with Financial controllers from each partner
- Close collaboration with the Communication office of EuroHPC JU



WP2: Definition of the European MSc curriculum in HPC and its applications

WP2 Overview

Stakeholder and science communities requirements

Framework and structure of the EU MSc programme

Academic content Fundamentals and Specialization

Diversity/Inclusion/gender bias & Curriculum common Vision

Goals

- Analyse and document of the required HPC skill profiles to serve the needs of stakeholders and scientific communities

- Define the structure and learning outcomes of the HPC MSc curriculum
- Identify the scientific disciplines and the main HPC specializations

- Define academic content and skills for Fundamentals and Specializations of HPC
- Propose modularization
- Identify synergies with other related areas

- Guarantee all-inclusive educational program
- Integrate and document a common vision from a general curriculum for a HPC MSc

Strategy

- Specific working group WG1
- Profile's classification
- Survey development
- 1st session of a general workshop

- Specific working group WG2
- Analysis the existing master curricula

- Specific working groups WG3 & WG4
-

- Specific working group WG5 for Diversity, inclusion & gender bias
- Creation of different WG
- Assign work to each WG
- General workshops for the common vision

Deliverables & Milestones

- Evaluation of future needs (HPC job market & scientific areas)
- Skill profiles

- Structure and learning outcomes
- Main HPC specializations

- Academic content and modules for Fundamentals and for Specializations

- Proposal for activities that will address Diversity/Inclusion/Gender Bias
- Proposal of a general curriculum for HPC MSc

Stakeholders

ET4HPC, VSB-TUO/IT4I, BSC-CNS, PRACE, NETU, NCCs, CoEs

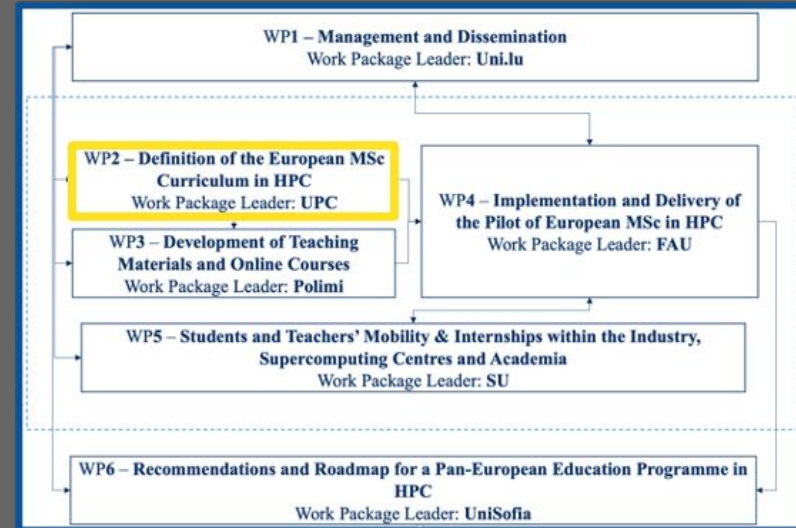
Awarding universities

Polimi, KTH, FAU, UPC, NTUA, UniPannon, TUW, UC, UDC, Chalmers, UL, CINI, GUT, UL/IST, Uminho

WP2 task leaders, Polimi, uni.lu, METU, UniPannon, UL, CINI

WP2 in EUMaster4HPC

Direct contribution to project objective O1: The design of a common European master reference curriculum in HPC and its applications with a holistic view, including technical and transversal skills, like ethics awareness and entrepreneurship spirit.





WP2 in EUMaster4HPC

What to be delivered? curriculum designed in a modular structure to facilitate full or partial adoption of the modules into new or existing MSc programmes, responding to identified skill profiles and requirements and needs of relevant European industry players.

Who contributes? Awarding universities with long experience in implementing joint and multiple degrees will administrate the joint HPC study programme design. Participating universities will co-create the study programme with the awarding universities. Research/supercomputing centres will also contribute to the design of the master programme.



WP2 in EUMaster4HPC

Specific Working Groups (SWG) will develop proposals focusing on specific aspects of the general curriculum. At least five:

- SWG1 Stakeholders requirements, HPC applications, usage profiles
- SWG2 Framework, and master programme structure and learning outcomes. Scientific disciplines and main specialisations
- SWG3 Academic content and modules for fundamentals
- SWG4 Academic content and modules for specialisations
- SWG5 Advanced skills, ethics, diversity, inclusion, gender/unconscious bias – recommendations.

General Workshops (GW) will progressively agree on a shared vision for the European Master programme in HPC.

Tasks in WP2

Task 1 Stakeholders requirements, HPC applications and usage profiles. **Task Leader: KTH.** Participants: ETP4HPC, VSB-TUO/IT4I, BSC-CNS, PRACE, NCCs, METU. **M1-M5**

Task 2: Science Communities requirements. **Task Leader: BSC-CNS.** Participants: KTH, CINECA, VSB-TUO/IT4I, UniMore, METU. **M1-M5**

Task 3: Framework and structure of a European master programme and its learning outcomes. **Task Leader: UPC.** Participants: Awarding Universities. **M2-M10**

Task 4: Academic content and modules for Fundamentals. **Task Leader: SU.** Participants: Polimi, KTH, FAU, UPC, NTUA, Pannon, TUW, UC, UDC, Chalmers, UL, CINI, GUT, UL/IST, Uminho. **M10-M18**

Task 5: Academic content and modules for Specialisations. **Task Leader: VSB-TUO/IT4I.** Participants: Awarding Universities, NTUA, Pannon, TUW, UNIVIE, UC, METU, Chalmers, UDC, CINECA, UL, CINI, GUT, UL/IST, Uminho. **M16-M21**

Task 6: Advanced Skills, diversity, inclusion and gender bias. **Task Leader: UniSofia.** Participants: Polimi, Uni.lu, METU, Pannon, UL, CINI. **M10-M18**

Task 7: WP2 common vision for a general curriculum for a master programme for HPC and industrial applications. **Task Leader: UPC.** Participants: all WP2 task leaders. **M4-M45**

List of participants to each task to be updated to include new partners in the consortium. Please email us!

Deliverables associated with WP2

First year tasks

D2.1 Evaluation of future needs of the European HPC job market (M5). Contributions from Task 1. **Lead: KTH**

D2.2 Evaluation of future needs of the European HPC scientific areas (M5). Contributions from Task 2. **Lead: BSC-CNS**

D2.3 Skill profiles for European HPC experts (M5). Contributions from Tasks 1 and 2. **Lead: BSC-CNS**

D2.4 Structure and learning outcomes of a general curriculum for a master programme for HPC and its industrial applications (M10). Contributions from Task 3. **Lead: UPC**

D2.5 Main HPC Specialisations for a master programme for HPC and its industrial applications (M10). Contributions from Task 3. **Lead: UPC**

D2.6 Academic content and modules for Fundamentals of a master programme for HPC and its industrial applications (M15). Contributions from Task 4. **Lead: SU**

D2.7 Academic content and modules for Specialisation of a master programme for HPC and its industrial applications (M20). Contributions from Task 5. **Lead: VSB-TUO/IT4I**

D2.8 Proposal for specific activities of the MSC curriculum that will address diversity and inclusion as well as Gender/unconscious bias (M15). Contributions from Task 6. **Lead: UniSofia**

D2.9-D2.11 Proposal of a general curriculum for a master programme on the design of HPC platforms, HPC adoption in industry, expertise in HPC environments and applications using HPC (M21, M33, M45). Contributions from Task 7. **Lead: UPC**

WP2 timeline

Tasks in WP 2	Jan 22 (1-3)	Apr 22 (4-6)	Jul 22 (7-9)	Oct 22 (10-12)	Jan 23 (13-15)	Apr 23 (16-18)	Jul 23 (19-21)	Oct 23 (22-24)	Jan 24 (25-27)	Apr 24 (28-30)	Jul 24 (31-33)	Oct 24 (34-36)	Jan 25 (37-39)	Apr 25 (40-42)	Jul 25 (43-45)	Oct 25 (46-48)
Task 1: Stakeholders requirements, HPC applications and usage profiles	M1 - M5	D2.1, D2.3														
Task 2: Science Communities requirements	M1 - M5	D2.1, D2.3														
Task 3: Framework and structure of a European master programme and its	M2-10			D2.4, D2.5												
Task 4: Academic content and modules for Fundamentals				M10-18	D2.6 (I)	D2.6 (II)										
Task 5: Academic content and modules for Specialisations						M16-21	D2.7									
Task 6: Advanced Skills, diversity, inclusion and gender bias				M10-18	D2.8 (I)	D2.8(II)										
Task 7: WP2 common vision for a general curriculum for a master programme for HPC and industrial		M4-45					D2.9(I)				D2.9(II)					D2.9(III)
Cohorts				Starting				Starting				Graduation of				Graduation of
				1st Cohort				2nd Cohort				the 1st Cohort				the 2nd Cohort

Actions done until now

- Although Tasks 1 and 2 have different targets we could design a quite common strategy to address them and get requirements.”
- Reaction: meeting between KTH and BSC-CNS (tentative timeline to propose to tasks participants)

Identify topics to be discussed in working groups and organize a GW (General Workshop) with representatives of diverse HPC scientific communities (CoE)

GW (hybrid F2F and online)

- Working groups discussions
- Public presentation of outcomes

Step	Deadline
Prepare a set of sample skill profiles based on review on recent job advertisements	2022-02-21
Preliminary list of profiles with a set of skills for each profile	2022-02-28
Prepare structured interview with a diverse set of relevant stakeholders from academia and industry: <ul style="list-style-type: none">- Interview guideline including a set of questions and sample skill profiles- Collect list of possible interview partners	2022-03-07
Interviews completed	2022-04-04
Prepare final draft of deliverables	2022-05-02

Actions done until now

- Although Task 3 starts in M4, we should start collecting current master programs in the awarding universities, and probably other participating universities. With that we could start thinking about the structure of the master, identify scientific disciplines involved, and identify the specializations to answer the needs of the stakeholders, according to the needs discussions in Tasks 1 and 2.
- Action: Send mail to awarding universities to start with activities in Task 3
- Also: UPC, KTH, FAU and Polimi have been studying their current master degrees to define possible joint degrees for first cohort, thus contributing to first steps in Task 3. SU joining in following days.



Actions done until now

- The other tasks could still wait to start, but it would be good to discuss the overall strategy and planning for WP2.
- Action: to plan periodic meetings for tasks leaders in WP2 (monthly?)



Next steps

- Continue activities in Tasks 1 and 2 regarding requirements and skills: interviews and General Workshop organization
- Start activities in Task 3 collecting information about current degrees at awarding universities and participating universities



WP3: Development of teaching materials, placeholders and online courses of the pilot master program in HPC

WP3 Overview

Selection of courses

Goals

- Identify high-potential course contents
- Define course selection criteria

Strategy

- Synchronization meeting with WP2 leader
- Focus on courses to fill the gap for students with other backgrounds
- Take into accounts study plans from all universities

Deliverables & Milestones

- Provide list of selected courses

Stakeholders

Polimi, UniPannon, VSB-TUO/IT41, uni.lu, SU, UniSofia, UPC, BCS-CNS, CINECA, AGH-UST, TUW, UIBK, TUBITAK

Teaching materials and online modules

- Development of teaching materials and online modules

- Internal call to select course developers: 1) High-level experience in the area, 2) skills in the specific topic, 3) Able to balance across participants
- Use of MOOC platform

- Slides, lecture notes, exercise sessions and instructions for laboratories
- Online courses with online tools and materials for practice sessions
- All materials will be published in the Master website

AGH-UST/Polimi, UniSofia, SU, UPC

New teaching paradigms

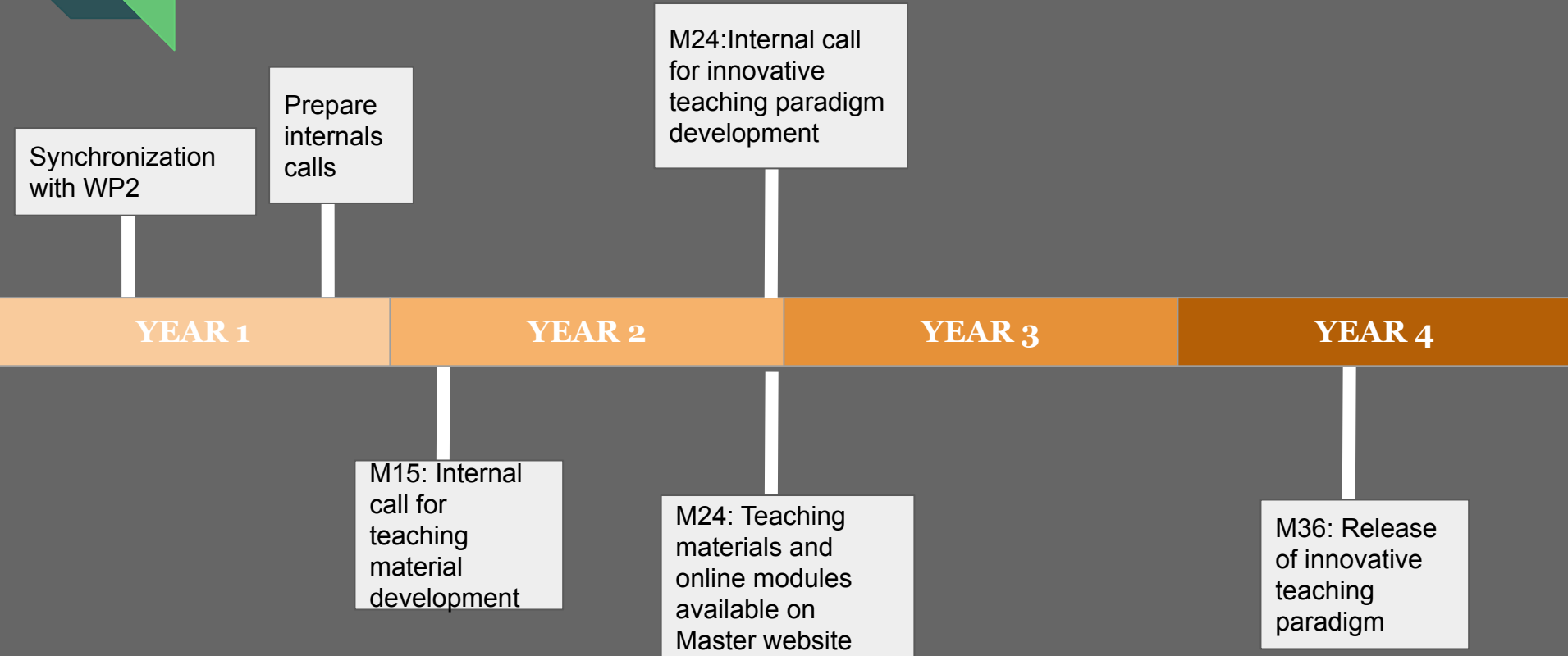
- Investigate new teaching paradigms suitable for HPC and related domains

- Internal call for the assignment of the development of innovative teaching paradigms
- Co-teaching

- Definition and release of innovative teaching paradigms

Polimi, TUW, CINECA, SU, UPC, BSC-CNS, Uni.lu, KTH, USI, UL, Chalmers, UniPannon

WP3 roadmap





**WP4: Implementation and delivery of
pilot for European MSc programmes
in HPC**

WP4 Overview

Students' Recruitment Process

Mentorship of students

Degrees

1st and 2nd cohorts

Goals

- Define student's admission process and admission criteria
- Ensure diversity in the recruitment of students

- Provide students with general support for organizing their studies and prepare for internships

- Award the MSc degree by the 8 awarding universities for 1st and 2nd cohorts

- Start the 1st Cohort in Sep 2022 with a curriculum based on existing master programmes
- Start the 2nd cohort with a common curriculum developed by WP2

Strategy

- Build Application Website
- Two stages admission process, each one lead by two different committees
- Focus subgroup

- Install individual mentorship program
- Assign a dedicated scientific advisor to each student
- Assign an industrial advisor to each student in the 2nd year

- Installation of both joint and multiple degrees agreements

- Synchronization with all WP leaders

Deliverables & Milestones

- Launch application website
- Report on best practices for recruitment and selection processes, and admission criteria

- Mentorship plan

- Degree agreements

- 1st and 2nd cohort reports

Stakeholders

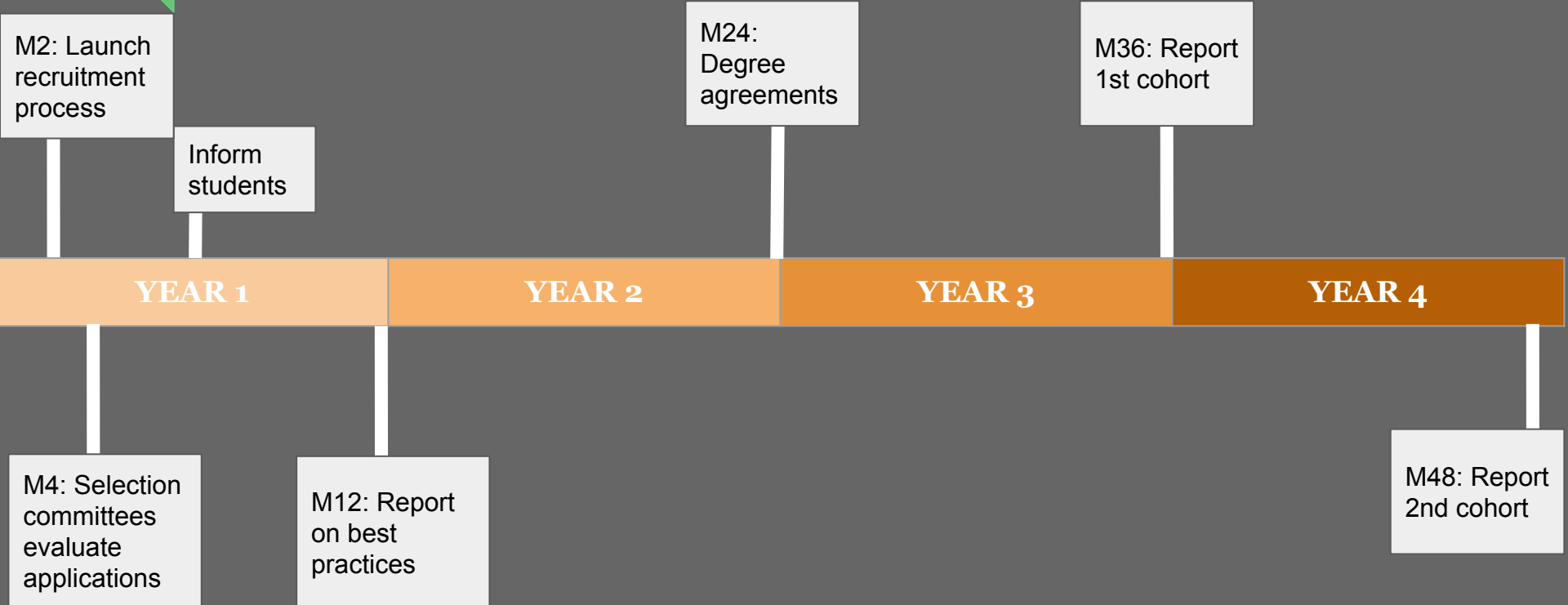
FAU, USI, KTH, Uni.lu, Polimi, UniSofia, SU, UPC

SU, KTH, uni.lu, Polimi, UniSofia, UPC, FAU, ET4HPC

Uni.lu, FAU, USI, KTH, UPC, Polimi, UniSofia, SU

All awarding universities


WP4 roadmap





WP4 roadmap

- Application opens on 15.02.22
- Selection process: Two stages
 - Two Selection Committees:
 1. Academia, industry, supercomputing centers & EuroHPC JU Observer
 2. Awarding universities



**WP5: Student's and teacher's
mobility, industrial internships,
research/supercomputing centres
internships (including EuroHPC SC)**

WP5 Overview

Mobility

Goals

- Design student's and teacher's mobility paths between EU universities, research centres and industry

Strategy

- Student's management: travel of students, local non-professional activities, local workshops, summer schools

Deliverables & Milestones

- Student's workshop programme and participants
- 1st and 2nd summer school programme and participants

Stakeholders

All awarding universities

Industrial internships & User groups

- Selection of internship topics
- Develop the dispatching of students plan
- Manage user groups

- Define a work plan
- Identify personal supervisor at the internship host institution per student
- Set up internship committee

- Selection of industry internships of the 1st and 2nd cohorts
- Build user groups and a forum for community building

CINI, NHR, NTUA, UniPannon, UL

Research/SC internships

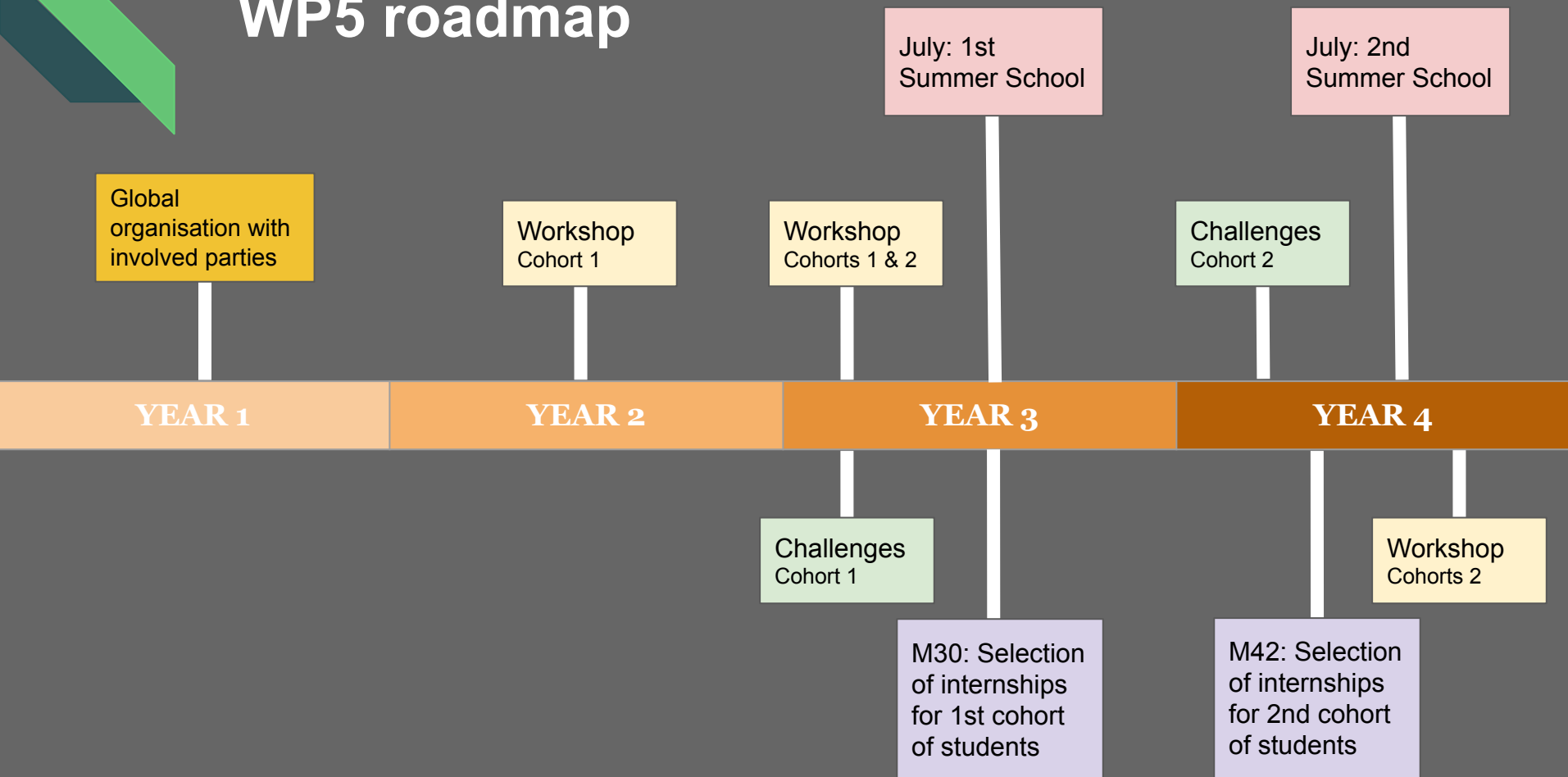
- Define and select internship topics
- Define and select group projects and participation to thematic school
- Organize call for student's internships
- Define students' selection process

- Each Research/SC and CoEs will be allowed to propose a 4-months internship
- A selection committee will select the topics
- Internal call for internships proposals
- Dedicate webpage for submission of proposals

- Selection of research and SC internships of the 1st and 2nd cohorts

CINECA, URCA, NHR, BSC-CNS, LXP, VSB-TUO/IT4I, METU, TUW

WP5 roadmap





WP5 roadmap

- Management of student's mobility and scholarships
- Workshops and Summer School
 - Call for proposals for these events open to all participating universities
 - Workshops are local, each student will participate to one workshop per year
- Internships
 - Joint organisation with TERATEC and ETP4HPC (diffusion, search)
 - Selection of subjects by committee involving TERATEC, ETP4HPC and involved industries
- Challenges
 - Joint organisation with HPC-centers, involved industries and universities



**WP6: Develop recommendations and
roadmap of a pan-European education
curriculum in HPC**

WP6 Overview

Updated definition of the EU HPC MSc

Goals

- Collect and analyse lessons learned.
- Deliver recommendations for the design of the pan-European curriculum
- Propose adjusted curriculum

Strategy

- Organise a working group composed of all awarding universities
- Organize a final general workshop

Deliverables & Milestones

- Consolidated lessons
- Proposal of the EU MSc curriculum in HPC

Stakeholders

UPC, awarding universities, tasks leaders

Sustainability

- Define solutions supporting the sustainability if this EuroHPC MSc

- Problem-oriented and project-based learning (POPBL) as an innovative learning strategy for sustainable

- Sustainability plan and roadmap
- Map of the network created during this pilot

UL, all awarding universities, VSB-TUO/IT4I

Bridges with EuroHPC and other related MSc programs

- Design bridges between this EuroHPC and related programs
- Identify concrete inter-program synergies

- Develop an action plan to connect HPC courses in various PC related programs

- Recommendations of HPC courses and synergies activities

UniMore, TUW, UL, KTH, UniPannon, METU, UNIVIE

Awareness plan and Recommendations

- Propose awareness activities across Europe
- Provide recommendations on the administrative and accreditation sides

- Support participant countries to meet administrative criteria
- Target countries where HPC adoption is low

- Success stories
- List possible new partners
- Analysis and summary of recommendations

VSB-TUO/IT4I, KTH, UniMore, METU

WP6 roadmap

Synchronization
with WP2 and
WP4

YEAR 1

Synchronization
with WP2 and
WP4

M24: 1st list of
selected MSc
programs in
HPC-related
domains

YEAR 2

M38: Map of
the network
created during
the pilot

YEAR 3

M36:
Sustainability
plan & roadmap

M48: proposal
of the EU MSc
in HPC

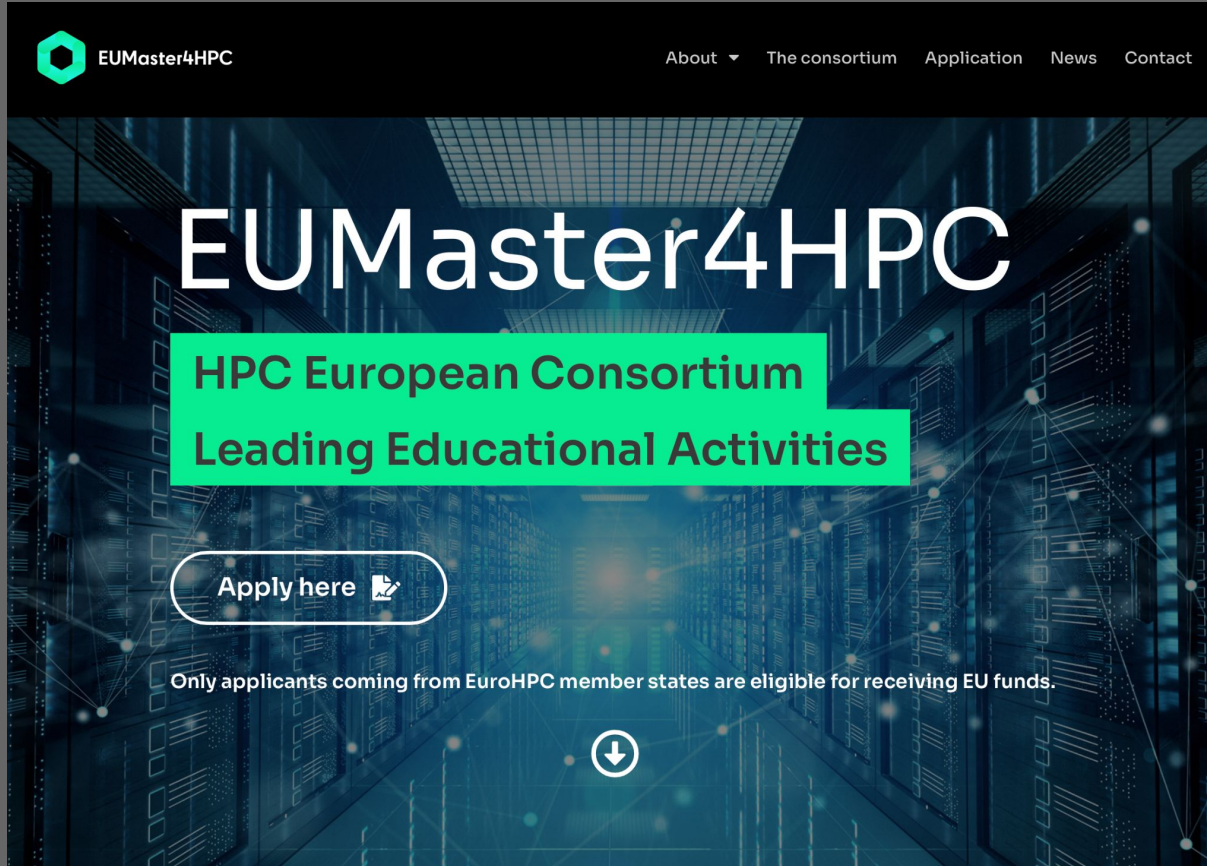
YEAR 4




WP6 roadmap

- Collect successful MSc programs in HPC, analyze the outputs, provide concrete recommendations, synchronized with WP2 & WP4
- A roadmap of a pan-European HPC master curriculum
- Synergies study of the impact on HPC education across MSCi courses in other disciplines - design bridges
- Develop a sustainable plan of the HPC master program - planned specialization in:
 - Data Science/AI
 - Applied Mathematics
 - Computational Science
 - Computer Architecture

6. Website presentation




 EUMaster4HPC


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EUMaster4HPC

HPC European Consortium
Leading Educational Activities

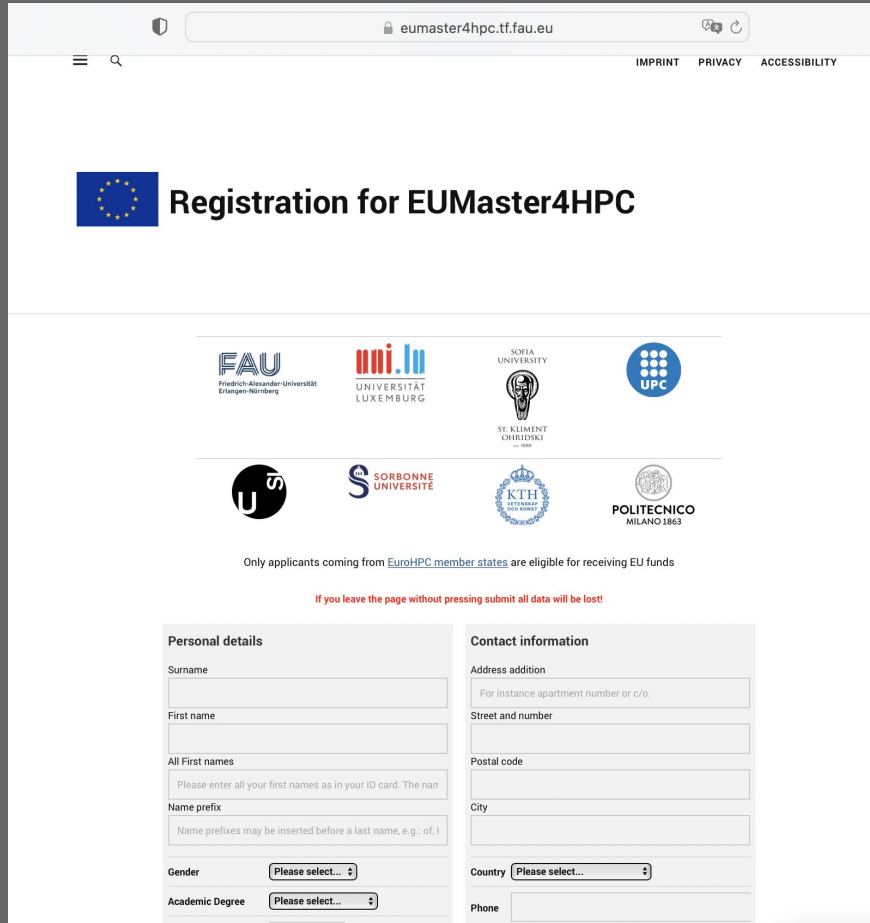
[Apply here](#) 

Only applicants coming from EuroHPC member states are eligible for receiving EU funds.



<https://eumaster4hpc.uni.lu>

6. Website presentation: Application page



The screenshot shows a web browser at the URL [eumaster4hpc.tf.fau.eu](https://www.eumaster4hpc.tf.fau.eu). The page features a navigation bar with a search icon, a menu icon, and links for IMPRINT, PRIVACY, and ACCESSIBILITY. The main heading is "Registration for EUMaster4HPC" next to the European Union flag. Below this, there is a grid of logos for partner universities: FAU (Friedrich-Alexander-Universität Erlangen-Nürnberg), uni.lu (UNIVERSITÄT LUXEMBURG), Sofia University, UPC, U3, Sorbonne Université, KTH (KTHNÄRVARO), and Politecnico Milano 1863. A note states: "Only applicants coming from [EuroHPC member states](#) are eligible for receiving EU funds." A warning message reads: "If you leave the page without pressing submit all data will be lost!". The registration form is divided into two columns: "Personal details" and "Contact information".

Personal details

Surname

First name

All First names
Please enter all your first names as in your ID card. The name

Name prefix
Name prefixes may be inserted before a last name, e.g.: of, I

Gender

Academic Degree

Contact information

Address addition
For instance apartment number or c/o.

Street and number

Postal code

City

Country

Phone

<https://www.eumaster4hpc.tf.fau.eu>



7. Conclusion

- Now we just have to do it :)
- We need to promote and find the best students
- We start working on the curriculum
- We will promote and boost initiatives
 - Bi-lateral agreements will be needed as a kick-off
- We encourage partners to contribute from Day 1
- Climb and stay on board
- Additional funding will be needed to sustain and extend the effort

