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Deliverable D3.4 Annual Portfolio of Flagships' activities – 2nd report

Univerzita Karlova

UNIVERSITÄT HEIDELBERG ZUKUNFT SEIT 1386

SORBONNE UNIVERSITÉ

KØBENHAVNS UNIVERSITET

UNIVERSITÉ DE GENÈVE

UNIVERSITÀ DEGLI STUDI DI MILANO

UNIWERSYTET WARSZAWSKI

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HISTORY

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SUMMARY

The document aims to provide a detailed overview of the recent developments and progress of the 4EU+ Flagships during the period from November 2023 to October 2024. The 4EU+ Flagships are thematic areas that form the basis for interdisciplinary cooperation in research, teaching, and innovation between the eight member universities. The Flagships initiate and realize a wide range of activities within the Alliance, including joint research projects, joint study programmes, academic conferences, courses for students and doctoral candidates, as well as summer and winter schools. The four Flagships focus on issues that play a key role in finding solutions for topical global challenges.

The deliverable is organized into chapters, each dedicated to a specific Flagship and following a similar structure. Each chapter begins by introducing the Flagship, its thematic focus, social relevance, and objectives. This is followed by a brief summary of its governance, organizational structure, and any changes over the past year. The document then outlines the strategies for enhancing student engagement, involving external partners or other stakeholders, and describes how the Flagship community is being developed. The section on Flagship development discusses the sustainability of existing activities and explores new initiatives and directions. Additional sections highlight the research and educational aspects of the Flagships, showcasing examples and activities that contribute to the research-based educational offer, joint degree programs, that also unlocks research potential.

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Abbreviations of individual universities used in the text:

Charles University (CU)

Heidelberg University (UHD)

Sorbonne University (SU)

University of Copenhagen (UCPH)

University of Geneva (UniGe)

University of Milan (UniMi)

University of Warsaw (UW)

OBJECTIVES

This Annual Portfolio of Flagship Activities – presents an overview of the development and achievements of the 4EU+ Flagships within the framework of the Erasmus+ 1CORE project.

It highlights 1CORE's educational mission, founded on research-based learning, and shows how collaboration between research teams and educators drives innovation in curricula and enhances student learning. To interpret this report correctly, it is important to note that 1CORE funding primarily supports coordination, management, and human resource capacities that enable these educational activities. The Flagships' individual courses, workshops, and mobilities may be financed from other sources (mostly universities internal co-funding to 1CORE), but their implementation, coherence, and sustainability rely on the structures and staff supported by 1CORE. The report provides a concise overview of the four 4EU+ Flagships, outlining their structure, leadership, and contributions to education, with active involvement of students and doctoral candidates.

As a product of 1CORE, the Portfolio serves both as an accountability tool and as a strategic instrument for planning future development. It also demonstrates the broader impact and lasting value of 1CORE funding, which underpins capacity building and sustainability across the Alliance. Finally, the report offers a summary of key initiatives and joint activities carried out during the second year of 1CORE implementation. The Portfolio itself therefore represents a key 1CORE deliverable: a tangible product that synthesizes and coordinates Flagship activities across the Alliance, rather than merely listing them.

INTRODUCTION

The "Annual Portfolio of Flagship Activities – 2nd Report" provides a comprehensive overview of the dynamic developments within the 4EU+ Flagships during the second year of 1CORE project. As the 4EU+ Flagships represent the core strengths of our Alliance, this report highlights the valuable progress made and collaboration across borders. By showcasing these activities, we aim to demonstrate to the 4EU+ community, external stakeholders, and partners the depth and significance of the work being undertaken. The Annual Portfolio of Flagship Activities as such, in terms of its structure, is the product of the 1CORE project, and its goal is to tackle all aspects of Flagships activities and development responding to the growing need for a comprehensive account of the progress made within the 4EU+ Flagships. In this sense, the Annual Portfolio should not be read as a collection of directly 1CORE-funded activities but as evidence of how 1CORE enables and integrates the Flagships through the human and organisational capacity it builds.

This portfolio will not only serve as a repository of innovative efforts within the Flagships but also as a vital resource for other groups in the 4EU+ Alliance, helping shape future development (e.g., 1CORE WP6). Additionally, it will act as showcase material for internal use, allowing students and academics across departments and faculties to see first-hand the benefits of internationalization that the 4EU+ Alliance enables. This second report underscores the Flagships as a core strength of the Alliance, reflecting our shared commitment to creating a sustainable, collaborative, and forward-looking academic network.

Operational Synergies Between 4EU+ Schemes and the 1CORE Project

The 4EU+ Flagships offer a unified thematic framework that empowers academics to jointly develop interdisciplinary education and research initiatives across member universities. By facilitating collaborative teaching formats, shared academic events, and integrated research-based learning, the Flagships create meaningful links between research and education. These synergies directly contribute to the core mission and objectives of the 1CORE project, strengthening the integration of teaching, research, and innovation in a European context, and building a truly connected academic community. It is essential to stress that 1CORE's focus on research-based education positions education at the centre of its mission. References to research in this document serve to demonstrate how research enhances educational quality, not to shift the emphasis away from education.

The 4EU+ internal schemes such as SEED4EU+ or mini-grants provided by Charles University, as part of the broader 4EU+ Alliance framework, supports innovative academic initiatives that align with the Alliance's Flagship programmes. These projects not only deepen interdisciplinary collaboration and connect research with teaching but also contribute meaningfully to the creation of a vibrant, inclusive academic environment. Within this context, the projects supported by 4EU+ internal schemes have proven to be instrumental in advancing the aims and objectives of the 1CORE project, particularly by reinforcing cross-institutional cooperation, enhancing research-based education, and cultivating opportunities for PhD candidates. By integrating education, research, and innovation across the member universities, SEED4EU+ and mini-grants initiatives form a crucial foundation for the long-term sustainability and impact of 1CORE project.

While internal 4EU+ schemes are publicly visible through calls and collaborative outputs, their smooth implementation often relies on less visible but critical support structures. A significant part of the operational and strategic work behind these schemes is made possible through human resources financed by the 1CORE project. Staff members supported by 1CORE contribute substantially to planning, coordination, communication, and institutional capacity building across the Alliance while internal co-funding sources are there to support mobilities of students, academics and staff.

This embedded support ensures continuity and coherence between flagship initiatives and the broader goals of institutional transformation. It reflects a deep structural synergy between 4EU+ initiatives and the objectives of 1CORE — not only in outcomes but in the shared infrastructure and personnel that make those outcomes possible.

FLAGSHIP 1: URBAN HEALTH AND DEMOGRAPHIC CHANGE

Flagship 1 "Urban Health and Demographic Change" addresses the interconnected challenges of health, well-being, demographic shifts, and urban transformation. These pressing issues are reflected in global agendas such as those of the United Nations, the European Union, and national governments. Modern society faces significant challenges in urban health, stemming from changes in lifestyle, dietary habits, chemical exposure, and the impacts of increasing life expectancy and population aging. These health-related issues are further shaped by urban living conditions, including the quality and affordability of housing and transport, access to healthcare and education, and the availability of green spaces.

Effectively addressing these challenges demands a comprehensive, cross-sector approach that integrates preventive health measures, accessible healthcare, and health education. Equally important is the development of urban environments that promote healthy living through sustainable and resilient planning.

An interdisciplinary, international group of academics has been collaborating on these issues under Flagship 1, drawing on expertise from fields such as physiology, oncology, psychology, global health, urban studies, demography, human geography, and economics. Flagship 1 has also developed educational programs covering a wide range of related topics. These initiatives emphasize 4EU+ core values, such as critical thinking, social engagement, data literacy, entrepreneurship, and multilingualism, while employing innovative pedagogies like the ABC Learning Design method, which focuses on active learning and research-based education.

In the past year, the core group of Flagship 1 placed a special focus on two key areas: global health and disability. This emphasis aligns with the growing need to address health disparities and the impact of disability within the context of urban environments and demographic changes. By concentrating on these topics, the Flagship contributes to a deeper understanding of how urban and demographic factors shape health outcomes on a global scale, ensuring inclusive approaches to health and well-being for all populations.

FLAGSHIP GOVERNANCE AND COMMUNITY BUILDING

Leading the Flagship

The leadership of the Flagship remains consistent and active, with no recent changes in structure or roles. Regular meetings are held by the three Flagship leaders and their assistants through online calls, supplemented by additional meetings as necessary. Flagship 1 meets regularly through online calls that include both the Programme Committee members and the broader community. Recently, three in-person meetings were held: one during the Annual Meetings in Milano and in Warsaw and a two-day workshop in Prague in January 2024. All leaders and assistants actively participate in various 4EU+ meetings, sharing insights and knowledge gained from these events. The team is further enriched by the inclusion of two new representatives (Simon Porcher and Benoît Apollis) from the University of Paris Panthéon-Assas, who have joined the Flagship 1.

Flagship 1 meeting in Prague

The Flagship leaders aim at building a strong and wide FS1 community. This includes disseminating information about 4EU+ activities and calls, inviting colleagues to community meetings and supporting them in their projects in the 4EU+ context. Another task is to find interested colleagues for new activities and thus to broaden the network. Two online community meetings were held during the last year. The organisation of events as the PhD workshop in Milan made it necessary to approach new colleagues and to familiarise them with the activities of Flagship 1. The 4EU+ calls Seed4EU+ and 4EU+Visiting Professorship were circulated among the community offering support with the application process. The Flagship leaders presented the activities in various contexts. For example, the Flagship was introduced at the students' night at Heidelberg University. The Flagship is involved in several 4EU+Allliance processes. Thus, there are contact into the Working Groups Education and Mobility where the activities were presented. Furthermore, social channels as LinkedIn were used to spread information about Flagship 1 activities. The Flagship is visible at the websites of the institutes of the Flagship leaders.

COLLABORATION IN EDUCATION: FLAGSHIP 1'S WAY TO ADDRESSING GLOBAL CHALLENGES

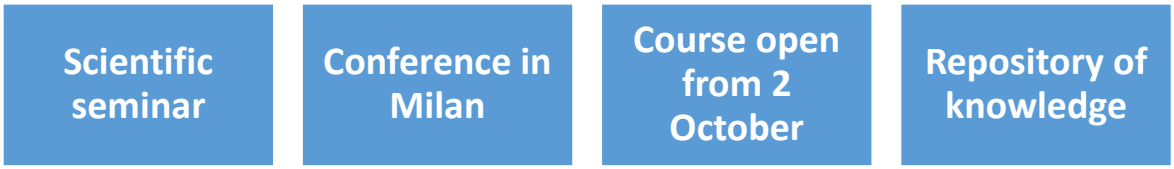
Flagship 1 is committed to keep offering the diverse educational activities in areas such as physiology, cancer, psychology, global health studies, urban studies, demography, geography, and economics. The focus is on offering individual courses, seminars, and summer schools that students can integrate into their existing study programs. This approach aims to incorporate innovative educational activities into partner universities' curricula, addressing key social challenges related to health and demographic changes in urban settings. The primary goal of Flagship 1 is to provide high-quality, research-based education that promotes shared values, skills, and competencies. Innovative organizational and technical solutions support both on-site and online learning. All the Flagship 1 activities involve at least three 4EU+ universities, reflecting a commitment to interdisciplinary and international collaboration and the sharing of diverse perspectives and expertise. The activities utilize a mix of online, blended, and in-person formats, catering to various learning preferences and logistical needs. Most of the educational offerings are already integrated into the permanent curricula of partner universities, providing ECTS credits to students. Courses are optional or elective, with only one mandatory course in medicine at the University of Heidelberg. The number of ECTS credits varies between courses and universities. Various activities address current global issues such as health, urban resilience, emphasizing the relevance and applicability of the educational offerings. And, the Flagship 1 is committed to long-term educational goals, to develop joint study programmes and prepare for comprehensive educational pathways illustrate a dedication to sustainable and impactful education within the 4EU+ Alliance.

PROJECT or ACTIVITY	Name of the PI	TYPES OF EDUCATIONAL ACTIVITIES / TEACHING FORMATS	Participating universities (leading in bold)
The development of the European Master's program in epilepsy	Premysl Jiruska	Fully online course.	**CU**, SU, UW, UniMi, UniGe (TBC)
Resilient Cities: challenges, risks and response	Ludek Sykora	Blended course + on-site workshop	**CU**, SU, UHD
Perineal Trauma Prevention, Evaluation, Education, Repair and Scanning Blended Learning (PEERS+)	Khaled Ismail	Two courses + two on-site workshops	**CU**, SU, UniMi
Comprehensive and integrative educational program in oncology	Ahmed Idbaih	Summer school and Master program preparation.	CU, **SU**, UniMi, UW
4EU+ Urban Health Case Challenge (UHCC)	Rotating	Online lectures + on-site case challenge	All 4EU+ partners, UniGe and PPA TBC
Development of an integrated 4EU+ Pharmacoepidemiology educational program	Julien Kirchgesner	Joint master's programme development. **(Complementary with SEED project DETERMINANT)**	**SU**, UCPH, UniMi, UHD (CU, UW, UniGe TBC)
Understanding and Supporting Caregiver-Child Interactions	Sabina Pauen		**UHD**, UCPH, UMI, UW
Urban Regulations and Political Memory: Towards understanding Spatio-Temporal aspects of Urban Development	Karolina Wojciechowska	Online lectures and workshops, on-site conference **(Complementary with SEED project UNREAD+)**	SU, CU, UniMi, **UW**, UHD
Course: Designing, implementing, & analyzing online questionnaires on career development during the COVID-19 pandemic	Christoph Korn	In-person workshops	SU (TBC), **UHD**, UniMi -

During the past period, coordinated by 1CORE support team, the Flagship 1 focused on implementing five SEED4EU+ projects affiliated, aiming to stimulate innovative collaborations within the 4EU+ Alliance. Two projects address medicine and healthcare topics, one focuses on health and migration, and two explore urban studies. Several of these projects were submitted by members of the Flagship 1, building on and extending previous collaborations, four of them contribute to the educational development of the Flagship 1. As we move forward, preparations for the second edition of SEED4EU+ are underway, with the application deadline on 30 September 2024, aiming to continue nurturing innovative collaborations and expanding the impact of the 4EU+ Alliance. Expected start date of new projects is 1 January 2025.

SEED4EU+ project	**Name of the PI**	**Activities**	**Participating universities (leading in bold)**
MOOC on migration and health	Karl Blanchet	MOOC	CU, **UniGe**, UniMi, UW
NECTAR	Premysl Jiruska	Research oriented	**CU**, UHD, SU, UCPH, UW
DETERMINANT	Julien Kirchgesner	Joint study programme development	**SU**, CU, UHD, UCPH, UniMi
UNREAD+	Karolina Wojciechowska	Workshops and seminars	CU, SU, UniMi, **UW**
ICRR	Kristin Veel	Summer course	UHD, SU, **UCPH**, UniGe, UW

UNREAD+ on spotlight



Scientific seminar

The "Urban Planning and Development: Looking for the Bridge Between Science and Practice" seminar took place online on 21 February 2024, from 13:15 to 14:45. Organized by the "Urban Regulations and Political Memory: Towards Understanding Spatio-Temporal Aspects of Urban Development PLUS" project team within the framework of the 4EU+ Alliance, the event aimed to stimulate dialogue between academics and local government representatives to bridge the gap between scientific and practical application in urban planning and development.

The seminar focused on exploring spatial planning from geographical and legal perspectives across three countries: Czechia, Italy, and Poland, addressing metropolitan areas, decision-making processes, and the legal foundations for spatial planning.

The seminar successfully brought together diverse perspectives on urban planning and development, highlighting the need for interdisciplinary collaboration to address the complex challenges of urbanization.

The recording of the seminar is available on the 4EU+ Alliance's YouTube channel, providing an accessible resource for those interested in urban planning and development.

Conference in Milan

The three-day UNREAD conference, held from 13 to 15 March 2024 at the University of Milan, focused on urban studies perspectives and sustainability. It featured a range of sessions including keynote speeches, group presentations, and round table discussions with topics ranging from urban regulations and city space redevelopment to comparative studies of urban infrastructure across various cities. Participants were welcomed by the Antonella Baldi, Vice-Rector for Internationalization and member of the 4EU+ Management Committee. Students and academics from several 4EU+ universities actively contributed to the success of the conference. The conference also included a social interactive programme like campus and city tours.

Course open from 2 October

„Urban Regulations and Political Memory: Towards Understanding Spatio-Temporal Aspects of Urban Development" is an international, interdisciplinary course organised by five 4EU+ member universities: University of Warsaw, University of Milan, Charles University, Sorbonne University, and Heidelberg University as part of the 4EU+ joint educational offer during the academic year 2024/2025.

Key topics of the course are the driving forces of urban changes, development of smart cities and interdisciplinary methodologies of urban studies. The course is developed as part of an educational project which addresses changes in the conditions of the urban development of smart cities in Poland, Italy, Czechia and Germany, according to three dimensions: past (history), present (law) and future (geography). Emphasis is put on an integrated and interdisciplinary approach to help students understand the complexity of new urban centres in which real estate development must coexist with the protection of the environment and with the history and heritage of the local community. The course is conducted by an interdisciplinary team of historians, lawyers, geographers and educational sciences specialists.

Repository of knowledge

The project's repository of knowledge can be used as a comprehensive resource for accessing past research findings, methodologies, and insights, enabling team members and stakeholders to make informed decisions and drive future innovations.

Compatibility of Curricula in Geography and Geo Sciences

In a process on the Compatibility of Curricula in Geography and Geosciences, 13 plug-in modules were developed by the five participating universities. The basic idea is that students are given the opportunity for short-term mobility and can study at another university in the 4EU+ Alliance for a period of 2-4 months. A pilot semester was held in the winter semester 2023/24. Eight students took part. They were partly funded via ERASMUS. The participating students were enthusiastic about the new offer and gave a lot of positive feedback.

At the same time, important lessons were learnt from the students' feedback to make this offer sustainable. Different timetables at the universities proved to be a major challenge. In addition, the processes deviated from the usual procedures, making it difficult to enrol and find accommodation. It proved necessary to adapt the procedures for the winter semester 2024/25 more closely to the ERASMUS procedures, as otherwise the implementation would be too time-consuming and require too much supervision. An important lesson learnt from this is that the Alliance needs new joint processes to enable short-term mobility of 2-4 months in addition to ERASMUS.

RESEARCH

The Flagship 1 community has benefited from multiple research mini-grants or SEED4EU+ projects. New edition of Charles University mini-grants is giving the opportunity for collaboration of four teams on four projects. Two of them are based on already existing collaboration, two support new collaborations.

There is already a fruitful collaboration of "4EU+ BLOOD-GAS" workgroup between the three universities in the field of acid-base physiology - three papers were published in Q1/Q2 journals and several other are under the preparation. Also, the team from "FROM FETAL TO LIFELONG HEALTH" is building upon the previous year's 4EU+ project, aiming to explore a range of conditions common to pregnancy complications, with a shared focus on the placenta as a mediator. Collaborations among European research units in placental physiology and metabolism, developmental biology, and computational and RNA biology will be fostered. An essential part of the team´s initiative was the organization of the European Placenta Group meeting in spring 2024. Through strategic partnerships and diverse funding, the project aspires to leave a lasting impact on research and cooperation between European universities and researchers.

CU Mini-grant Project	Name of the PI	Activities	Participating universities (leading in bold)
4EU+ BLOOD-GAS Workgroup: International Initiative for Education and Research in Clinical Physiology of Acid-Base and Homeostasis	František Duška	3rd edition of Summer School of Clinical Acid-Base and Homeostasis, an event where leading international experts share their expertise with medical students and young physicians.	**CU**, UCPH, UniMi University of Amsterdam
Exploring the Potential of Cell-Free small RNA as a Non-Invasive Biomarker in Lung Cancer Patients.	Dattatrya Shetti	Research collaboration.	**CU**, UHD, UW
4GLOBAL+	Khaled Mostafa Kamel Ismail	Three workshops, involving PhD students and stakeholders, aiming to promote education and research collaboration in Global Health.	**CU**, UHD, SU, UniGe, UniMi, UW
FROM FETAL TO LIFELONG HEALTH: DYNAMIC MATERNAL ENVIRONMENTS AND IMPACT OF THE PLACENTA	Lukáš Červený	Research collaboration.	**CU**, UCPH, UniGe

4GLOBAL+ on spotlight

Global health: Synergies with Flagship 1 portfolio

Research-based Education in Global Health

Stakeholders meeting

The aim of this initiative is to develop an educational and research program in Global Health building on the current strength of the 4EU+ partners in this field. The focus will be on intersections between existing Global Health strategies in partner universities and the a priori set Flagship 1 portfolio and mission statement.

Once future collaborative projects are determined as part of this mini-grant work, the team will aim to apply for large competitive grants from Key Global Health funders within the European Commission and international like the Gates foundation.

The project is focused on organising three interdisciplinary workshops involving Flagship 1 members and different global health stakeholders.

Workshop 1: Global health (GH) Synergies with Flagship 1 portfolio (Core team)

Prague, 9-10 September 2024

The aim of this workshop was to explore and identify intersections between existing GH strategies in partner universities and the a priori set Flagship 1 portfolio and 4EU+ mission statement. The analysis of the specificities, expertise and areas of interest characterizing each partner University led to the identification of a set of priority topics, that will be developed in research and educational programs. This will enable alignment and streamlining of our future work with 4EU+ values and vision.

Workshop 2: Research-based Education in GH (Core team and PhD students)

Prague, 11 September 2024

At the end of this workshop and based on outcomes from the first workshop, the team prioritized potential study programs addressed to undergraduate, graduate and PhD students (including Microcredentials and summer schools). In addition, the potential synergies with educational initiatives already developed by the other Flagships were explored. As concerns activities addressed to PhD students, the identification of experts in each member institution who could support research projects focused on the prioritized topics will facilitate the establishment of Cotutelle pairings.

Workshop 3: Stakeholder's meeting (core group and stakeholders)

Geneva, 22 November 2024

This workshop will focus on enhancing engagement with stakeholders linked to GH. Stakeholders will include universities policy makers, Flagships leaders, 4EU+ policy makers, the WHO Department of Migration and the International Office of Migration (both settled in Geneva), funding bodies including European Commission, 4EU+ GSS members. An additional outcome of this workshop is to finalise the plans for the first 4Global+ conference planned to take place in the second half of 2025.

1CORE Flagship 1 PhD Workshop

Multidisciplinary perspectives on Disability: towards an inclusive European society
7-8 October 2024, University of Milano

Flagship 1 core themes revolve around urban health and demographic changes. Within this field, relevant topics are the promotion of health, well-being and a good quality of life for all citizens, community cohesion and inclusion, and the development of sustainable and resilient urban contexts. Within this general perspective, this two-day workshop open to PhD students is aimed at identifying core problems and potential solutions to disability related challenges, at the individual, family and community levels and across disciplinary areas. The topic of disability was selected as it is a very relevant issue, at both the global level and specifically in Europe, where over 101 million persons (25% of the European adult population) live with disabilities; even more relevant is the fact that almost one third of these persons are aged below 34. Disability poses multiple challenges to individual daily functioning and quality of life across all life stages: school dropout, unemployment, poor economic resources, unequal access to care, barriers to social participation, marginalization. Family caregivers – 85% of them represented by women – experience relevant psychophysical and social burden. The need to address these challenges is aligned with UN Sustainable Development Goals, in particular Health and Well-being for All (SDG 3), Quality Education (SDG 4), Gender Equality (SDG 5), Decent Work and Equitable Economic Growth (SDG 8), Reduction of Inequalities (SDG 10), and Sustainable Cities and Communities (SDG 11).

Participants belong to all the 4EU+ partner universities; they include 13 PhD students addressing the issue of disability in their own doctoral project, and 14 researchers (most of them PhD project supervisors) actively involved in disability related studies from different disciplines – from epidemiology to neurology, from clinical psychology to bioethics, from law to political sciences, from rehabilitation to education. The workshop will be an opportunity to share knowledge on the most recent advancements in research, practice and policy implementation, and to design joint research and intervention projects to be submitted to European and international agencies. The primary goal is to start one or more stable 4EU+ collaborative groups, working on the topic of disability from different disciplinary perspectives, and focused on the promotion of an inclusive European Research University, in the context of an inclusive European society.

Visiting Professorship

Under the 4EU+ Visiting Professorships initiative, 9 candidates were selected from among 22 applications. Two of them contributed to the development of new educational frameworks and areas of expertise, promoting the exchange of skills across our universities, affiliated to the Flagship 1 areas.

Tomáš Zima (Charles University – University of Milan)

The 4EU+ Visiting Professorship project submitted by Prof. Tomas Zima, former Rector of Charles University, brings together the Institute of Medical Biochemistry and Laboratory Diagnostics at Charles University and the Department of Biomedical Sciences for Health at the University of Milano. This collaborative endeavour aims to advance knowledge in the field of cardiometabolic diseases through lectures and seminars on laboratory medicine topics, as well as joint publications. An integral part of the project is the establishment of an inter-university centre dedicated to "Biomarkers of Organ Diseases." With activities encompassing teaching comparisons, research discussions, and the preparation of future educational programmes, the project is expected to have a profound impact on the educational and research landscape of all involved entities.

Creating new networks between universities

Professor Tomas Zima on the Visiting Professorship programme

What has the VP programme given you?

For me, this programme has provided the opportunity to teach at a foreign university – University of Milan, engaging with students from various study programs and discussing diverse topics with them. Alongside my colleagues, we have been preparing research projects in experimental cardiology and metabolism and have finalized one of our joint research publications.

Why would you recommend applying to the VP programme?

I recommend this program for the opportunity it offers to learn more about our partners, their different study curricula, and the chance to share research knowledge with the possibility of preparing joint research projects. You should ask your partners or find institutes that will be fruitful for cooperation.

Why is it worth to get involved? What is the added value?

The added value lies in creating new networks between universities or strengthening cooperation that existed before.

In the second edition of the 4EU+ Visiting Professorships call, 11 candidates were selected from among 34 applications received from across the universities, reflecting the vibrant interest in collaborative research and educational activities. These academics will embark on a 2–3-month journey at another 4EU+ university, engaging in joint collaboration, developing innovative educational frameworks, and contributing to scientific workshops and conferences in 2025.On the border between Flagship 1 and 2, one candidate is affiliated to the Flagship 1.

Maria Cristina Paganoni (University of Milan – Charles University)

Her project will explore how tourism can promote peace, transnational understanding, and sustainability. It aims to develop the concept of peace-sensitive tourism, with significant contributions to peace promotion and public engagement.

FLAGSHIP 2: EUROPEANNESS: MULTILINGUALISM, PLURALITIES, CITIZENSHIP

INTRODUCTION

Flagship 2's motto could well be 'unity through diversity,' as it centres on the understanding of European identity through multidisciplinary perspectives. It is broad in scope, covering a wide range of scientific and scholarly interests. This includes researchers from disciplines within the humanities and social sciences, such as cultural studies, linguistics, pedagogy, history, law, sociology, and many others. The multidisciplinary approach allows for a comprehensive investigation into the cultural, linguistic, legal, social, and political aspects of Europe.

In light of the current profound global crises, such as the war in Ukraine and the accelerating climate emergency, understanding Europeanness has become more important than ever. By examining the shared values and diverse identities within Europe, looking at commonalities and differences we can achieve a deeper understanding of Europe and Europeanness, which is essential for resolving conflicts both within Europe and outside of it.

The main topics in Flagship 2 revolve around three central themes, which also serve as the titles of the learning pathways within the initiative: multilingualism, pluralities, and European citizenship. These topics are explored both through educational and research projects within Flagship 2.

The aim of the **multilingualism** pathway and also of research projects related to it is to examine how Europeans communicate and share their ideas across languages. It deals, among other things, with multilingual cognition and language acquisition, language distribution, migration, and minority languages within multilingual communities, translation and interpreting. The objective here is enhancing the understanding of language interactions and cultural exchanges.

The **European citizenship** pathway aims to investigate through educational collaboration and research the key themes such as citizens' fundamental rights and freedoms, governance, regulation and justice, collective identities and memories, historical dynamics, societal diversity, and cultural heritage.

In addressing pluralism within **pluralities** pathway, Flagship 2 examines the coexistence of different cultures, traditions, and values within Europe. This exploration provides insights into how these diversities contribute to a broader European narrative while also encouraging dialogue and integration across national and cultural borders.

The education and research projects within Flagship 2 view diversity in terms of legal solutions, multilingualism and cultural plurality as resources that shape both individual and collective identities and that strengthen Europeanness, which also means Europe's ability to address global challenges.

FLAGSHIP GOVERNANCE AND COMMUNITY BUILDING

In general, the governance structure of Flagship 2 remains the same as in earlier years. Flagship 2 activities are coordinated by its two co-coordinators (Kamila Miłkowska-Samul and Morten Rasmussen) and the program committee that consists of members from each member university, among which the three learning pathways' coordinators.

The only minor changes are due to the relatively recent addition of a new university to the Alliance - Paris-Panthéon-Assas. Moreover, some universities have introduced new representatives for their institutions.

Issues and decisions concerning Flagship 2 activities are discussed and made during regular meetings of the Flagship 2 program committee conducted via Zoom. If necessary, meetings in smaller groups are organized, such as meetings of the two Flagship co-coordinators, or those dedicated to onboarding new partners or preparing for the Annual Meeting of the 4EU+ Alliance.

Also, in-person meetings were possible: one Flagship meeting was held during the Annual Meeting in 2023 in Milan, plus some of the program committee members met during events organized by Flagship 2 at the University of Warsaw (a conference in December 2023 and a PhD workshop in June 2024).

Flagship coordinators and the Flagship assistant also participate in meetings of various 4EU+ groups. Strengthening the community among representatives of the 4EU+ partner universities is crucial for the effective functioning of the Alliance. That is why Flagship 2 had supported the idea of an inter-Flagship meeting, which gathers all four Flagships, and participated in the first one during the Annual Meeting in Milan. Another meeting of all Flagships is planned for September 2024 in Warsaw during the Annual Meeting.

FLAGSHIP DEVELOPMENT

Flagship 2 were behind three major initiatives in the 4EU+ Alliance in 2023-2024. Firstly, it helped provide the impetus behind the development of a strategic input from the Flagships to facilitate the making of an overall strategy of the 4EU+ Alliance. Secondly, it launched a new Global Outreach project: META United Nations. Thirdly, a joint master's degree program *Migration Studies and New Societies* has been launched. It is led by Chiara Ragni from the University of Milan and involves three universities: University of Milan, Charles University, University of Warsaw.

In 2023 the entire 4EU+ Alliance was engaged in devising a new overall strategy with clear objectives for the future. In this context Flagship 2 took the initiative to device a common strategic input for the four Flagships to the broader effort of the Alliance. A *Coordinating Committee of Flagships* were set up between the Flagship coordinators in early 2024 to co-write the '***The Flagship contribution to the strategy of the 4EU+ Alliance***'. The document was afterwards endorsed by the assemblies of the four Flagships and ultimately presented to the Management Committee of the Alliance. Among the key recommendations were to increase awareness of the extent to which constitute the **interface and key link** between the Alliance and the researchers at the partner universities. The Flagships argued that it was important to facilitate their work with predictable administration (budget and calls) and returning grants that could be promoted to researchers at the partner universities. In the field of teaching, the Flagships highlighted the need to continue to fund bottom-up initiatives and try to solve the outstanding problems related to the Learning pathways that several of the Flagships had worked on for the last several years. With regard to research, the Flagships argued that it was important to consider the educational side of the research Communities that the Alliance intends to build. '*The Flagship contribution to the strategy of the 4EU+ Alliance*' was presented by Morten

Rasmussen on behalf of the four Flagships in the management committee that welcomed the input and the proposed ideas and proposals.

In addition to this initiative, in collaboration with 1CORE Associated Partner, Flagship 2 also proposed a Global Outreach project entitled **META United Nations (META UN)** to the management committee of the Alliance in February 2024. The proposal was accepted, and META UN has now been established with an independent steering group with representatives from all 4EU+ universities, including Flagship 2 coordinator Morten Rasmussen.

The **META-UN** Global Outreach Project is designed for researchers and students from primarily the social science, humanities and law to enter a science-policy exchange with the UN. The project includes a range of themes from the history and historical heritage of the UN, contemporary challenges to global governance related to policy development and sustainable development goals, and finally discussions about reform of UN decision-making and international law. While the other Global Outreach Projects launched by the 4EU+ Alliance address concrete policy fields, META-UN offers a much-needed space for **meta-reflection about the UN** itself. The aim is to organise **scientific and educational meetings** between the most prominent scientific experts on the UN as well as junior researchers and students and relevant staff, agencies and institutions of the UN. In this manner it will be possible to disseminate new scientific and educational results, while at the same time new research and educational ideas are nurtured relevant to the challenges of the UN. By hosting a continuous exchange between the 4EU+ Alliance and the UN, META-UN thus offers the necessary framework for genuine scientific and policy innovation. The scientific committee will together with relevant UN partners plan and organise conferences, public and research seminars, PhD summer schools, student trips for educational purposes, student internships among other formats. This broad range of activities will be financed from a variety of sources. A planned Launch conference will be held at the United Nations in Geneva on 6-7 February 2025.

Finally, Flagship 2 has launched a new joint master's degree program ***Migration Studies and New Societies***. For a report on this please see below.

RESEARCH

Researchers in disciplines related to Flagship 2 greatly benefit from the diverse collaboration and funding opportunities provided by the 4EU+ Alliance. These include mini-grants from Charles University that support joint projects, as well as SEED4EU+ and Visiting Professorship initiatives aimed at creating and maintaining cross-institutional research and teaching partnerships. These opportunities not only promote innovative research but also contribute to the development of research-based education in the form of shared courses, educational programs, further strengthening the 4EU+ network.

SEED Funding

Among 17 projects selected for funding in the 2023 SEED call, three projects from Flagship 2 were chosen and implemented in the recent time:

Naming for othering in a diversified Europe across selected European languages (NODE)

Charles University, Heidelberg University, University of Warsaw

The project investigates the concept of *othering* by analysing referential and discursive strategies used in public discourse in Polish, German, Czech, and Croatian. Its goal is to categorize strategies that exclude, marginalize, delegitimize, or denigrate groups or individuals, focusing on terms related to immigrants, refugees, political opponents, national stereotypes, and minority groups. By examining language, the project aims to understand how perceptions and prejudices, based on ideology or ethnicity, are shaped. Using cognitive semantics and critical discourse analysis, the research will employ corpus methods for data collection and analysis. The results were shared at a conference in Warsaw that was held in June, 7, 2024.

Knowledge for teaching upper-secondary mathematics: comparison and benchmarking across Europe (KTUM)

Charles University, Sorbonne University, University of Milan, University of Copenhagen

The project aims to create a shared framework for the education of upper-secondary mathematics teachers by developing collaboration among researchers within the 4EU+ community. Its objectives include: (1) building a research community, (2) recognizing teaching practices at participating universities, (3) developing tools to compare students' mathematics pedagogical content knowledge (MPCK), and (4) conducting a feasibility study to establish common, research-based teaching practices in Teacher Education programs. The project will map different European qualification pathways for mathematics teachers, identifying similarities and differences to design assessment tools for comparing MPCK across programs. Involving research-oriented students will also promote internationalization and assess the feasibility of shared educational activities and large-scale research in European Teacher Education.

Raising accessibility in tertiary education: 3D teaching and learning aids in the multisensory approach (3MultiAccess)

Charles University, Heidelberg University, University of Copenhagen, University of Warsaw

The project focuses on developing innovative teaching methods and research-based materials for language education, particularly in phonetics, phonology, and pronunciation at the tertiary level. It aims to enhance learning experiences by integrating accessible education principles and multimodality, using 3D technology. The project will investigate how a multisensory approach—combining visual, auditory, kinesthetic, and tactile modes—affects university students' learning in these areas. This initiative builds on a collaboration between the Faculty of Modern Languages at the University of Warsaw and its Office for Persons with Disabilities, which previously created 3D materials for English phonetics to assist a blind student.

The workshop "Raising Accessibility in Tertiary Education: 3D Teaching and Learning Aids in the Multisensory Approach" is organized on 27 -28 September 2024 at the University of Warsaw.

Visiting Professorships

In the first call in 2023 9 candidates were selected a two- to three-month stays at another 4EU+ university, among whom two academics affiliated with Flagship 2.

One was Katinka Sewing from Heidelberg University invited to the University of Warsaw and the other was Vadym Zheltovskyy from to the University of Warsaw who used his stay at the University of Milan to co-teach a course on EU law, offer seminars on EU leadership and policy changes following Russia's invasion of Ukraine, and participate in ongoing research.

Gaining new insights and sharing expertise in EU studies

Vadym Zheltovskyy's journey in the 4EU+ VP programme

'The added value of the fellowship was the opportunity to regularly cooperate with colleagues from the University of Milan and participate in their teaching and research activities as well as present my own research. That created a favourable ground for us to exchange our views on teaching and studying the European Union studies. In this way, the 4EU+ Visiting Professorship has given me a unique chance to get new international experience and broaden my network of research contacts for future joint projects. Therefore, I highly recommend the programme for everybody who wants to gain new insights and share expertise in their field with colleagues from partner university.'

In the second edition of the 4EU+ Visiting Professorships call there were 11 candidates selected, some of these academics who will have an opportunity to take part in another 4EU+ university research and teaching are affiliated with Flagship 2. For example:

Ewa Żebrowska (University of Warsaw - University of Milan)
The project "Communicating in Multilingual Digital Europe" focuses on the significance of multilingualism in fostering a common European identity. It involves analysing social discourse on multilingualism and developing digital tools to enhance multilingual potential, aiming to promote linguistic diversity and inclusivity.

Bartosz Wołodkiewicz (University of Warsaw - University of Milan)
This project focuses on the codification of European Civil Procedure, analysing regulations and their backgrounds. It aims to facilitate judicial actions and develop a culture of civil procedure law in Europe, with significant potential for further research projects.

Záviš Šuman (Charles University - Sorbonne University)
Combining scientific and teaching components, this project focuses on French literature from the 17th century and French as a foreign language. It aims to enhance comprehension of European literary traditions and stimulate research-based education, with outcomes such as shared teaching materials and a joint MA programme.

Xavier Galmiche (Sorbonne University - Charles University)
This project focuses on Czech language and literature, aiming to involve about 80 students from three member universities in an interdisciplinary exploration of literary modernity, ecolingualism, and the cultural dynamics of the early twentieth century.

Agnieszka Leńko-Szymańska (University of Warsaw - Charles University)
Combining scientific and pedagogical components, this project seeks to expand the studied corpus to the linguistic contexts of all member countries. It aims to analyse fluency features, lexical features, and teacher attitudes in the English Teacher Corpus, offering valuable insights for improving teacher training programs.

Charles University 4EU+ Mini-Grants for Flagship 2

In the recent period there are 9 projects:

Project title	Project leader	Participating Universities
Multimodality, Memory, and Cultural Shift in Contemporary Politics	Jiří Kocián	**CU**, UniMi, UW
Democracy and Reflection on European Elections	Michal Říha	**CU**, Paris-Panthéon-Assas, UniMi, UW
Reframing communication in the European public sphere: an interdisciplinary approach	Tereza Klabíková Rábová	**CU**, UniMi, UW
RESONANT 2024 RESearch cOllaboration in the area of iNstitutional trANslator Training	Tomáš Svoboda	**CU**, UCPH, UniGe, UW University of Warsaw External Partner: Ionian University, Greece
FLEurope: Linguistic and Cultural Bridges Through French	Radka Mudrochová	**CU**, UHD, SU, UniMi, UW University Paul Valéry, Montpellier III
The Texture of Hope: Dialogue in the Age of Conflicting Worldviews	Pavol Bargár	**CU**, UHD, UCPH, UniGe, UniMi
Strengthening citizenship through sport	Irena Slepičková	**CU**, UHD, UCPH, UniMi
REPRESENTING SAME-SEX DESIRE: LOCAL CONTEXTS, GLOBAL CIRCULATIONS IN EUROPEAN LITERARY CULTURES	Josef Šebek	**CU**, SU, UCPH, UniMi, UW CEFRES
Heritage language education in Europe: Legislative and educational challenges	Andrea Hudousková	**CU**, UHD, SU, UCPH, UniGe, UW Czech University of Life Sciences (Department of Law, Faculty of Economics and Management) and University of Iceland (School of Education, Faculty of Education and Pedagogy)

Flagship 2 Conference at the University of Warsaw – 04-05 December 2023

The Flagship 2 Conference, titled "Citizenship, Multilingualism, and Pluralities: Challenges and Opportunities for Europe in the 21st Century," took place at the University of Warsaw from December 4 to 5, 2023.

The event brought together scholars from 4EU+ partner universities to discuss issues surrounding multilingualism, citizenship, and cultural plurality, which are main themes of Flagship 2. The conference was also a valuable opportunity for local researchers and students from Warsaw to engage with the latest research in these areas from Copenhagen, Milan, Heidelberg, Sorbonne and Prague.

The opening session, preceded by welcome from University of Warsaw Vice-Rector Sambor Grucza, as well as Flagship 2 coordinators (Kamila Miłkowska-Samul and Morten Rasmussen) and Pluralities Pathway coordinator (Agata Bareja-Starzyńska) began with a presentation by Bogdan Babych and Vahram Atayan on the analysis of emotion and moralization in European discourse, followed by Marie Boccou Kestřánková's work on educating heritage language learners and second language students. These sessions offered insight into how multilingualism and education intersect with societal dynamics in Europe.

Agata S. Nalborczyk's presentation focused on the religious plurality of Buddhism and Islam in Europe, and Adeline Desbois-Ientile and Adeline Lionetto delved into the role of Renaissance poetry in shaping European national identities. Other cultural contributions included Adeline Desbois-Ientile's and Adeline Lionetto's analysis of Renaissance poetry and its role in shaping national identities. These presentations shed light on how literary and religious pluralities have historically shaped European cultural landscapes.

Afterwards, legal and social issues were addressed. Ginevra Greco explored the intersection of citizenship and residence rights for third-country nationals in light of European Court of Justice rulings. Daniele Mandrioli discussed how new technologies impact search and rescue operations at sea. Anna Helena Alexandra Krakus gave a presentation on how museums function as markers and makers of national identity, exploring the role of cultural institutions in defining European identity. Chiara Ragni emphasized the importance of a European approach to migration studies, arguing for more integration in this critical field and presenting a 4EU+ joint master's degree programme in Migration Studies and New Societies.

On the second day, a workshop led by Marta Jaworska-Oknińska was organised on navigating joint academic programmes.

The conference offered a program that not only advanced academic dialogue but also was useful for building the academic community in Flagship 2.

Picture 1: Participants of the Flagship 2 Conference at the University of Warsaw, December 2024

EDUCATION: FROM EDUCATIONAL PROJECTS TO SUSTAINABLE LEARNING PATHWAYS

Flagship 2 Joint Master in Migration Studies and New Societies

The master's degree in Migration Studies and New Societies is a unique joint programme, co-developed within the framework of the "4EU+ European University Alliance" by the University of Milan, the Charles University of Prague and the University of Warsaw.

The final objectives of Migration Studies and New Societies is to provide students with an in-depth understanding of social and political opportunities and challenges posed by global and intra-EU migration and to enable them to acquire competences and analytical tools for interpreting complex political or socio-economic phenomena in a critical way and for appraising their normative, social, political and anthropological implications.

On the basis of the knowledge acquired during the training course, the graduated students will be therefore able (i) to contribute to the actions of international and national governmental and non-governmental organisations and bodies, (ii) to handle tasks and functions concerning the management of migration flows and the integration of migrants, with particular expertise in the European scenario (thus, in full coherence with the objectives of the degree in European Studies).

Accordingly, the programme supports the acquisition of methodological tools for examining empirical phenomena, for explaining their dynamics, and for anticipating their evolution as well as the reinforcement of logic and argumentative skills. The interaction between lecturers and students coming from different European countries aims at promoting educational learning pathways based on dialogue between subjects with different nationality, experience and background.

The teaching activities of the master's degree in Migration Studies and New Societies are mainly organised in seminars and they are designed to follow a student-centred approach, by using innovative teaching methods (e.g.: flipped classroom, laboratory teaching, clinics, case-studies, etc.), in full accordance with the guidelines issued by the "4 EU+ European University Alliance" programme.

At the end of their studies, the students will obtain a single diploma for the three universities, which will indicate, for each country, the degree class of reference (for the University of Milan LM-90 Studi europei, for the Charles University: Master's Degree in Social Sciences; for the University of Warsaw: Master's Degree in Artes Liberales).

Although the Master's programme in Migration Studies and New Societies is funded through the Erasmus scheme, its very creation and design would not have been possible without the structural foundation laid by the 1CORE project. Thanks to the work and support provided within 1CORE, the programme could be developed into a joint initiative that now brings together expertise and resources from across partner universities.

Picture 2: Chiara Ragni and students of the Migration Studies and New Societies programme.

1CORE PhD Workshop in Warsaw – 10-11 June 2024

The first of a series of PhD workshops organized by the 4EU+ Flagships was the Flagship 2 event titled "Challenges for Europeanness in Times of Global Crises: Initiatives for a Responsible Open and Progressive Europe in the 21st Century" that took place at the University of Warsaw on June 10-11, 2024. It marked the start of a events for PhD candidates aimed at encouraging interdisciplinary dialogue among junior and senior researchers from the 4EU+ Alliance universities. The event provided a platform for PhD students to present and discuss research on Europeanness, particularly in the context of global crises such as war, political conflicts, and health emergencies.

The key objective of the workshop was to promote the visibility and impact of 4EU+ Alliance activities, focusing on Europeanness and its multidisciplinary aspects. Presentations covered various disciplines including legal, cultural, linguistic, and social perspectives. The event featured keynote lectures, individual presentations, workshops, and panel discussions, with significant contributions from senior researchers and keynote speakers such as Prof. Manlio Frigo, who discussed EU policy on cultural property conservation and other researchers from 4EU+ institutions: Tomasz Gackowski (UW), Karolina Brylska (UW), Pablo Porten-Cheé (UHD), Vahram Atayan (UHD), Dorota Heidrich (UW), Anna Krakus (UCPH), Agata de Laforcade (ISIT), Angela Lupone (UniMi) together with organizers Agata Bareja-Starzyńska (UW) and Kamila Miłkowska-Samul (UW).

The workshop was divided into several thematic sessions, including:

- Discourse and Identity – Exploring postmodern identity, European narratives, and migration discourses.
- Political and Socio-Cultural Dimensions of Europeanness – Addressing sovereignty, political ideology, and European identity amidst crises.
- European Trade, Investment, Environment, and Healthcare – Tackling challenges in international law and climate change policy.

The workshop emphasized the necessity of interdisciplinary approaches in exploring Europeanness, but also set the stage for future workshops, with participants receiving valuable feedback and networking opportunities.

Picture 3: Participants of the PhD Workshop at the University of Warsaw, June 2024

FLAGSHIP 3: DIGITISATION - MODELLING - TRANSFORMATION

INTRODUCTION: THEMATIC BACKGROUND AND GOALS

In Flagship 3, we use mathematical and computational methods to solve challenges related to both engineering and societal problems. Our goal is to contribute to solutions that aim not only to take technology to an unprecedented level, but also to support the transformation of society into the digital/AI age. This transformation will have a significant impact on issues such as quality of life through learning healthcare systems, Industry 4.0, and the digital transformation in society. It is also the key to tackling climate change and to using technology to achieve the EU's Green Deal targets. Students and the next generation of researchers are being trained in these technologies to be even better equipped to fulfil their societal responsibility as scientists.

Digital data, combined with intelligent analysis thereof, is the foundation of most – perhaps, in the future, all scientific disciplines. As universities of excellence in both education and research, our participating 4EU+ members are and must be at the forefront of this development. By pooling our expertise and ambitions, Flagship 3 aims to provide a wider and broader platform with a greater variety of educational pathways and opportunities, thereby increasing the potential and opportunities for both our researchers and students. We work in our core disciplines of Computer Science and Mathematics as well as in various fields of application, such as Medicine, Physics, Chemistry, Biology, and Economics. We also more generally support any activity that involves the manipulation of models, data, and transformations. Our aims are put into practice through our projects listed below.

With projects for Bachelor level students, two Master's degree programmes currently in development, and an annual Summer School for PhD and Master's students, Flagship 3 spans all levels of higher education. Our annual 'Integrative Think Tank (ITT)' connects advanced Master's students and PhD candidates with industry representatives, confronting them with real-world challenges and putting their research into practice on a societal level. Our 'Thinking AI' project brings computational research methods further into traditionally more analogue fields, while our 'Data Literacy' project is aimed at the public and at empowering individuals to make more informed decisions about their digital behaviour.

FLAGSHIP COORDINATION AND BUILDING THE COMMUNITY

Coordination and communication

Flagship 3 is co-led by Heidelberg University and the University of Copenhagen. In 2024, there has been a change in the coordination of the Flagship. Jürgen Hesser (UHD) steps down from the Flagship due to other obligations. Michael Winckler replaces him as the Flagship Coordinator at UHD. Jürgen Hesser remains active in Flagship projects, such as the newly-founded Marie Curie Doctoral Network for AI in Particle Physics (AIPHY, see below).

Other changes in the Programme Committee (PC) that have occurred since November 2023 are:

- Assas: Claudine Desrieux joins as new PC member
- SU: Glenn Roe replaces Mathieu Salanne as PC member
- UCPH: Alessandra Camplani returns as PC member

- UniMi: Davide Rocchesso replaces Vincenzo Piuri as PC member
- UW: Anna Zatorska-Goldstein replaces Krzysztof Turzynski as PC member
- UHD: Anna Marciniak-Czochra joins as new PC member

List of the current Flagship representatives (by university and alphabetically):

Name	University	Function
Kuboň, Vladislav	Charles University	PC member
Tůma, Miroslav	Charles University	PC member
Marciniak-Czochra, Anna	Heidelberg University	PC member
Queisser, Angela	Heidelberg University	Flagship Administrator
Winckler, Michael	Heidelberg University	Flagship Lead, PC member
Desrieux, Claudine	Paris-Panthéon-Assas University	PC member
Biau, Gérard	Sorbonne University	PC member
Fresquet, Xavier	Sorbonne University	Academic staff SU
Patel, Rakhee	Sorbonne University	Administrative staff SU
Roe, Glenn	Sorbonne University	PC member
Camplani, Alesssandra	University of Copenhagen	PC member
Pazuki, Fabien	University of Copenhagen	Flagship Lead, PC member
Sander Johannsen, Katja	University of Copenhagen	Administrative staff UCPH
Di Marzo Serugendo, Giovanna	University of Geneva	PC member
Rocchesso, Davide	University of Milan	PC member
Vistoli, Giulio	University of Milan	PC member
Miasojedow, Błażej	University of Warsaw	PC member
Zatorska-Goldstein, Anna	University of Warsaw	PC member

The Flagship holds monthly online PC meetings to discuss the progress and developments of the Flagship projects, as well as current topics. Individual onboarding meetings for new PC members, led by the Flagship leads and Flagship administration, are held when there are changes in the committee. Additionally, the Flagship sees in-person meetings as instrumental for community building and strategic development. To save resources and to enable all members to join, in-person Flagship meetings are scheduled during other in-person meetings such as the Annual Meeting, when possible, and/or remote participation is made available. Several in-person PC meetings have been held since the last portfolio, or are scheduled:

November 2023, Milan

As part of the Annual Meeting 2023 in Milan, this PC meeting focused on challenges and possibilities in recruiting more researchers for Flagship projects. In preparation for the subsequent meeting between the Flagship Coordinators and the Governing Board and Management Committee, Andreas Dreuw (Vice-Rector for Research, UHD) and Philippe Agard (Vice-Dean for Research, Innovation, and International, Faculty of Science & Engineering, SU) joined as guests and gave their input.

February 2024, Copenhagen

This two-day meeting in Copenhagen focused on the (further) development of existing and potential Flagship projects, mainly in the domain of education. Other important topics were cross-Flagship activities and the PhD experience within 4EU+. Guests from among the local faculty who have been part of 4EU+ projects, e.g. through the SEED4EU+ call 2023, joined to discuss their projects. The outcomes of the meeting include the decisions to pursue the Quant4EU+ project as a new key project for UCPH, and to create a MOOC on GenAI Literacy, a sequel to the MOOC on Data Literacy.

Picture 4: Flagship 3 strategic meeting in Copenhagen, February 2024

September 2024: Warsaw

During the Annual Meeting in Warsaw, a Flagship PC meeting was held to discuss the future of the Flagship educational pathways. Although the current plans for the pathways are double degree (in 4EU+ referred to as dual degree) Master programs in Artificial Intelligence and Applied Mathematics, the Flagship sees educational pathways as a broader education experience ranging from undergraduate to postgraduate and even life-long learning. It was decided to keep the Master programs as central elements of the pathways and to conduct comparison of curricula workshop for both programs to facilitate development. Other projects included PhD education and industry partnerships. Vincent Viollain from SU joined as a guest to discuss the 4EU+ University Diploma Entrepreneurial and intrapreneurial project management.

Picture 5: Flagship 3 members at the Annual Meeting 2024 in Warsaw

November 2024: Assas, Paris

This meeting serves to fully onboard Assas and for the rest of the Flagship to gain first-hand experience of the local structures. Other aims are to identify existing projects that can be brought to the Alliance, to create visibility for 4EU+ within the local research and student community, and to possibly recruit other colleagues to join the Flagship committee. Local faculty members will be invited to join. Preceding the meeting at Assas, the Flagship representatives are invited for a tour of the Sorbonne Center for Artificial Intelligence (SCAI) and a presentation of the PhD program (follow-up on the PhD experience discussed during the Copenhagen meeting in February).

Communication within 4EU+

The Flagship representatives keep in contact with the 4EU+ community on a larger scale through regular local meetings at the member universities. Some Flagship representatives are also members of other committees and 1CORE work packages. Rakhee Patel (SU) is a member of the Academic Council, Katja Sander Johannsen (UCPH) is a member of 1CORE Work Package 3, and Angela Queisser (UHD) is a member of 1CORE Work Package 5. Various Flagship representatives regularly attend Alliance meetings such as the 1CORE Quarterly Review Workshop, cross-Flagship meetings, and information sessions.

Facilitating students' engagement

The Flagship aims to get students of all levels (Bachelor, Master, PhD) involved mainly by designing relevant and appealing educational projects such as BMST, summer schools, and challenge workshops. These opportunities are actively advertised to the relevant target groups via different channels (websites, social media, email, and information sessions). Wherever possible, recognition of credits and funding opportunities such as 4EU+ student mobilities are explicitly mentioned during advertising to ensure low-threshold access for the students. The Flagship asks participants of 4EU+ activities to submit testimonials, so future students get a peer perspective on the opportunities.

EDUCATION IN FLAGSHIP 3: PATHWAYS FOR BA AND MA STUDENTS, DOCTORAL AND POSTDOCTORAL TRAINING

In 2023/2024, some central projects are (please see below for details):

- Integrative Think Tank (ITT) (November 2023, Geneva)
- The 4EU+ Network of Bioinformatics Master Programs (2023/2024)
- Bachelor in Mathematics Student Task (BMST) (February-June 2024, decentral)
- Applications of deep-learning in life sciences (DeepLife) (March-June 2024, decentral)
- Quantum information and quantum many-body theory (QuantEU+) (March-June 2024 Copenhagen)
- Flagship Summer School (September 2024, Paris)

Educational projects: progress, achievements, and new projects

Flagship Summer School (key project)

- Participating: all partners (lead: UW, organizer and host 2024 SU, co-organizer 2024 UHD)
- Aim(s): Teach young scientists advanced methods to broaden their perspective and enhance their toolbox, explore innovative ideas to transform the traditional format of a summer school into a sustainable long-term event, and build scientist networks within 4EU+ for future project applications in education and research.
- Current developments: After editions in Heidelberg, Warsaw, Milan, and Copenhagen, the 2024 Flagship Summer School took place in Paris 11-13 September. The topic was AI in Medicine: Optimised Trials with Machine Learning. This event was co-organized by UHD and co-financed through Deutsch-Französische Hochschule (DFH)/ L'Université franco-allemande. 30 participants from UCPH (5), UW (2), CU (3), UniMi (2), UHD (9), and SU (5), as well as from other universities attended. Conference proceedings will be published via UHD's document repository.

A testimonial from a Heidelberg PhD student is online on Instagram. Additionally, Sorbonne Master's student Erivan Inan prepared the following testimonial about the Summer School 2024. Here, we focus on the impact of 4EU+ activities on the local student and research community:

"As a local student, participating in the "AI in Medicine" summer school was truly an enriching experience. I found the mix of international professors and participants particularly relevant. Additionally, the industry speakers provided a practical dimension, offering insights into how research institutes and industry collaborate to optimize clinical trials.

Engaging with experts from various European universities gave me new perspectives on the ethical and technical challenges of applying AI in medicine, especially within a European context.

Beyond the presentations, the informal discussions were equally valuable, thanks to the diverse backgrounds of the participants.

Being part of the 4EU+ Alliance network added even more value to the experience. Events like this enrich us, local students, by fostering collaboration across institutions, allowing us to engage with diverse ideas and methodologies, and bringing the benefits of international exchange directly into our academic environment.

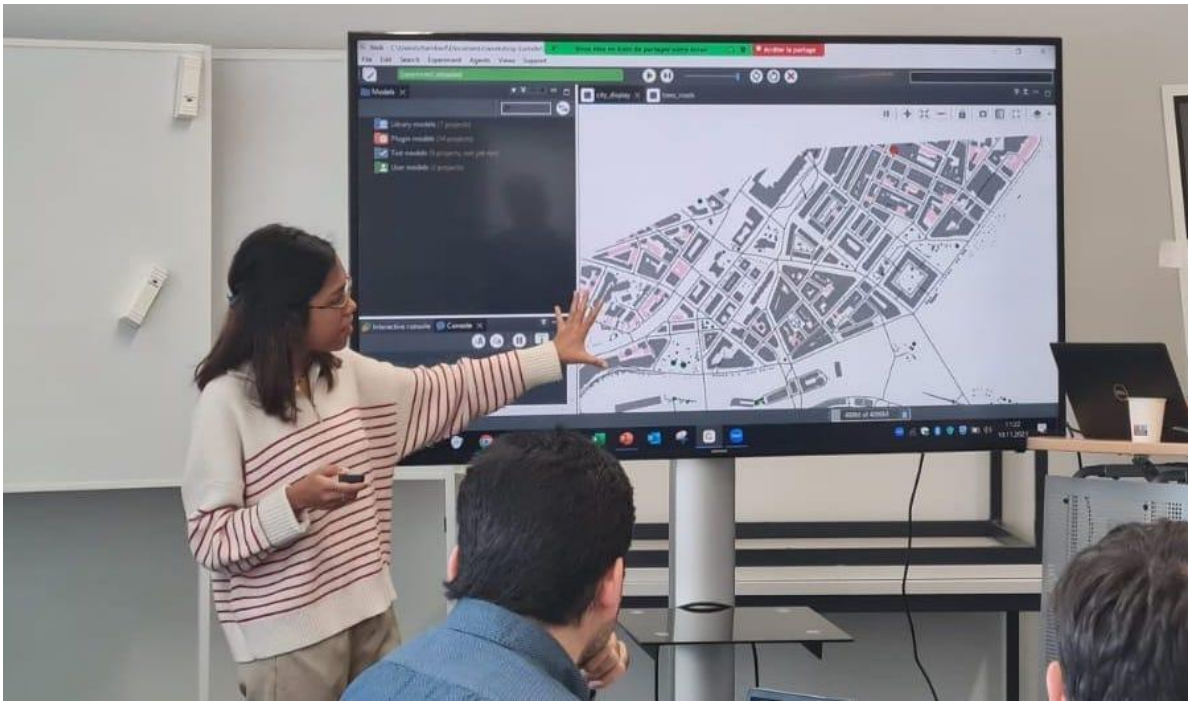
Picture 6: Group photo from the Flagship 3 Summer School 2024, September 2024

Integrative Think Tank (ITT) (key project)

- Participating: all partners (lead: UHD, organizer and host November 2023 UniGe)
- Aim(s): Connect advanced MA students and PhD students with the industry to translate real-world challenges into research questions for PhD and MSc theses.
- Current developments: The 2023 edition took place in Geneva 06-10 November with the Canton Geneva as a partner. The topic was Designing a sustainable future, related to the Geneva 2050 initiative. Students from UniGe, UHD, and CU participated.

A student from Heidelberg prepared the following testimonial about the ITT 2023:

"Hello there, I'm Nida, currently pursuing my master's in Scientific Computing at Heidelberg University. Beyond the books, I've always been passionate about blending my tech skills with my desire to create positive change. That's exactly what I got to do at the Integrative Think Tank workshop hosted by the University of Geneva in collaboration with the 4EU+ Alliance.



Picture 7: Student Nida Murad (and her group) presenting at the ITT, November 2023

Last year, I teamed up with some incredible people from the Ministry of Geneva for the Geneva 2050 initiative. We were on a mission to shape a sustainable future for Geneva by 2050, tackling key areas like quality of life, security, and mobility. During the workshop, my team and I dove headfirst into creating an exciting new agent-based model.

Our goal? To map out how walkable Geneva's Canton could become, and brainstorming ways to make it even better. It was an incredible experience all around! Huge thanks to Heidelberg Graduate School of Mathematics and Computing and the 4EU+ Alliance for their support throughout."

Bachelor in Mathematics Student Task (BMST)

- Participating: UCPH (lead), CU, UHD, SU, UniGe, UniMi, UW
- Aim(s): Involve Bachelor students to create targeted wiki articles from students for students. We form transversal groups of students, guided by a mentor, to study a topic in mathematics. In the final week, the students travel to the mentor's university.
- Current developments: The course took place from February to April 2024 with all participating universities (except UHD, who will join again next time).

Picture 8: Mentors of the BMST 2024, representing UCPH, UniGe, UniMi, SU, CU, and UW

- Feedback from students was gathered through an anonymous evaluation. Key points mentioned include being exposed to new topics and methods and interacting in a truly international group. These are some excerpts taken from the survey without editing:
    - *Working together with students from other EU universities as well as getting to know new people. Working with tools that are different than what I'm used to and having to learn how to use it. Getting to meet the students you worked with at the end of the project.*
    - *The freedom that was given to us enhanced our ability to do maths in the best way possible, and exploring new subjects that we liked. I also loved to have the opportunity to learn maths in English, and to attend a lecture in English.*
    - *Everything; first of all, I have learned something new and useful (I was a part of the project in Geneva) and I had so much fun with it. I really enjoyed the process of creating a simulation and then seeing that it actually does something. And when we could not find out how to do something, our mentors really helped us, so that was awesome. Moreover, it was so nice to meet new people with similar interests that were facing a similar challenge. It was really interesting to compare how we dealt with some challenges, but more importantly - it was just awesome to talk about everything; since we were from different countries, there was a lot to talk about. Finally, the final event, when we met each other and spent some amazing*

time together - with other students, but also with mentors, who, as I said, were really nice people - was so sweet and I really enjoyed it. Also, it was nice to visit Geneva (which is something I really wanted to do anyways) and see how things work there.

Picture 9: BMST group in Geneva. Supervisor: Giovanna Di Marzo Serugendo, June 2024

Thinking AI (key project)

- Participating: SU (lead), UCPH, UniMi
- Aim(s): Invite people to learn about the ethical, sociological, and legal implications of AI technologies. This project is designed specifically as a service to society.
- Current developments: The Thinking AI courses are still available online to all, 800+ users have enrolled (updated: August 2024). The procedure allowing ECTS to be awarded is in progress. A follow-up workshop for PhD students was held in May 2023 at SU. The online course is currently being updated as its topic is in a fast-developing field. For instance, the course does not yet cover generative AI. Adrien Tallent, a PhD student at SU, has been tasked with updating the course content. The contributors have been identified. A workshop with the contributors to plan the updates is planned.

Quantum Mechanics (key project)

- Participating: UCPH (lead), UniMi, UW (first and second editions), UniGe, CU, SU, and UHD (second edition)
- Aim(s): The main objective is to offer PhDs and Master's students the possibility to learn about quantum technologies in an interdisciplinary and inter-European manner and to discuss with experts in the field irrespective of their home institution.
- Current developments: The project received funding from the SEED4EU+ call. The course took place March-June 2024 under the title Quantum Information and Quantum Many-Body Theory. See more information below. The project was upgraded to UCPH's key project.

Data Literacy & GenAI Literacy

- Participating: Data Literacy: UCPH (lead), UW, SU, UniMi, CU; GenAI Literacy: SU (lead), other participating members to be determined.
- Aim(s): The aim of these two projects has been to support the development of digital and data and generative AI literacy for university students at the 4EU+ universities as well as the public.
- Current developments: A MOOC in Data Literacy has been developed and is available on Coursera (7400+ enrolments, average review 4.7/5 based on 95 reviews (updated: September 2024). A second instalment of the MOOC is planned. The topic will be GenAI Literacy. Currently, the search for collaborators to provide content for the new MOOC and discussions about the exact content are ongoing.

FabLab Hub

- Participating: UniGe (lead), SU, UHD, UCPH
- Aim(s): Connect existing and new fablabs to learn from each other, exchange best practices, and implement projects such as online courses (e.g., 3D printer driving license) and high school transfer projects.
- Current developments: In February 2024, a kick-off meeting took place in Copenhagen right after the Flagship in-person meeting. Another in-person workshop is planned for 2024/2025, at the lab at UniGe. At UHD, the preparations for the newly founded fablab are underway. It is expected to open in winter 2024 or spring 2025.

The 4EU+ Network of Bioinformatics Master Programs

- Participating: SU (lead), CU, UHD, UniMi, UW
- Aim(s): The network is aimed at establishing permanent exchanges between the 4EU+ bioinformatics master programs and constructing new student curricula based on the programs' complementarities. A shared bioinformatics course (Meet-EU) is organized every year in which the students are subdivided into groups and involved in a small research project focused on a defined topic.
- Current developments: The 2023/24 edition of the Meet-EU course was focused on the in-silico identification of inhibitors for the Sars-Cov-2 Helicase enzyme. This involved about 50 students subdivided into 13 groups and ended with a workshop in Prague on 2nd February 2024 during which all groups discussed the obtained results.

Flagship 3 Learning Pathways

Although the current plans for the pathways are double degree (in 4EU+ referred to as dual degree) Master programs in Artificial Intelligence and Applied Mathematics, the Flagship sees educational pathways as a broader education experience ranging from undergraduate to postgraduate and even life-long learning. The Flagship will most likely adapt its plans for the pathways in the coming year to better reflect this stance.

Master Applied Mathematics (key project)

- Participating: CU (lead), UHD, SU, UW
- Aim(s): Provide a 4EU+ joint program OR double degree pathway on master's level, allowing students to pursue a program that best fits their educational goals.
- Current developments: CU, the lead university for this project, favors a joint program over the so-far proposed double degree pathway. The program was renamed from Mathematical Modelling to Applied Mathematics. The other participating universities are still interested in starting the program, but a clear outline of the structure is needed. The next step will be the preparation of an outline by the CU project representatives. This outline will then be discussed within the other participating universities as the change of the program structure (to a joint program) may have an impact on the feasibility, e.g. regarding the accreditation status of the program at the individual universities. An update is expected in October 2024.

Master Artificial Intelligence (key project)

- Participating: UniMi (lead), CU, UHD, SU, UCPH, UniGe
- Aim(s): This Master's Degree Pathway aims at creating experts in artificial intelligence and machine learning, capable of translating theoretical knowledge into practical applications by promoting industry innovation and building innovative solutions for the citizens.
- Current developments: It has been difficult to establish a network agreement and to start mapping courses. During the Annual Meeting in Warsaw (September 2024), further steps will be discussed.

SEED4EU+ Educational Activities

Applications of deep-learning in life sciences (DeepLife)

DeepLife is a comprehensive and application-oriented teaching project aimed at introducing students to advanced algorithms and applications of deep learning in life sciences. The project builds on existing complementarities between the bioinformatics master programs of five universities (CU, UW, UniMi, SU, UHD) and offers a new and comprehensive course covering various aspects of deep learning approaches in life sciences.

The course was conducted in a hybrid mode from February to June 2024, with online lectures by teachers from different institutions and on-site practical exercises in the form of Q&A sessions in smaller groups. 70-90 students from all five member universities participated in the online sessions. The course culminated in a 2-day on-site hackathon in Heidelberg where mixed teams worked on small implementation projects related to selected topics of deep learning. 51 students

attended the on-site workshop: CU (6), SU (13), UW (16), UniMi (7), UHD (9). 1-2 supervisors also joined. The course materials for the sessions are available online as a repository for future teaching.

Picture 10: Students and supervisors at the DeepLife hackathon in Heidelberg, June 2024

Quantum information and quantum many-body theory (QuantEU+)

Quant4EU+ aims to provide Master's and PhD students from participating 4EU+ universities with an opportunity to learn about quantum technologies in an interdisciplinary and inter-European manner. The project seeks to offer students access to the forefront of technological developments and research in quantum technologies, to facilitate the expansion of professional networks for both students and partners involved, and to promote collaborative education among partner universities by exploring innovative approaches to lecture organization.

The course took place from March to June 2024 with participants from UCPH, UniMi, UW, UniGe, UHD, SU, and CU. The course followed the structure of a blended intensive program (BIP), with an initial online course followed by a week-long on-site workshop in Copenhagen. 99 students from 4EU+ member universities as well as other universities completed the online course by making a poster (assignment), working in 18 groups. Most of them also attended the

in-person workshop in Copenhagen. Most of the participants was from 4EU+ member universities.

Picture 11: Quant4EU+ students and supervisors in Copenhagen, June 2024

Mini-grants associated with Flagship 3

Symplectic dynamics: frontiers, numerics and applications (CU, UHD, SU)

The main aim of the project is to develop common research interests between the scientists at Charles University, University of Sorbonne and University of Heidelberg.

Digital labor practices and gig economy in digital game cultures (CU, UCPH, UniMi)

The aim of this project is to explore new approaches and methods for big data collection and analysis to study digital labour practices in the context of emergent technologies in the digital games industry, such as crypto currencies.

Charting the course towards a new legal framework for smart cities (CU, UCPH, UniGe, UniMi)

The aim of this project is to address current challenges for deployment of smart cities from the viewpoint of law. The proposed project aims to (i) create an opportunity for academic discussion on smart cities among the academicians from participating universities, (ii) provide the doctoral students an opportunity to write a comprehensive part of their dissertation and (iii) establish a platform for discussion at an international workshop, which will be held in Prague

PROJECT OVERVIEW

This simplified overview is taken from the 'Digital Flagships' presentation given at the Annual Meeting 2024 in Warsaw. It illustrates how the Flagship projects engage different stakeholders and which domains of the Alliance they are associated with.

	Undergrad	Postgrad	Staff	Partners	Society	Education	Research/ Innovation	Outreach
MOOCs	X	X	X		X	X		X
BMST	X					X		
ITT		X	X	X	X	X	X	X
Schools		X				X		
Workshops		X				X	X	
FabLab Hub	X	X	X	X	X	X	X	X
Quant4EU+		X				X		
MSc		X				X		
Supervision		X	X			X	X	
Marie Curie		X		X		X	X	X

Picture 12: Flagship 3 project overview (simplified). Additional explanation: MSc = double degree Master programs in development; Supervision = joint supervision of Master and PhD theses; Marie Curie = Marie Curie doctoral network AIPHY.

FLAGSHIP 4: ENVIRONMENTAL TRANSITIONS

THEMATIC FOCUS AND SOCIAL RELEVANCE

An ever-increasing demand on resources and serious disruptions from climate change are topics that must be efficiently addressed by contemporary science, and which must be based on deep understanding of the underlying processes and principles. Adequate education of future specialists in the field of natural sciences, social sciences and humanities must be based on high-quality research, while long-term maintenance of the research community cannot exist without top quality education of new generations of researchers.

The Flagship 4 Environmental transitions (former: Biodiversity and sustainable development), is dedicated to research-based education that will ensure to find solutions to our sustainable development needs. Thus, the Flagship 4 pursues the following topics:

• Research in the life, earth, chemical, environmental sciences, biology of organisms, ecology, biodiversity, evolutionary biology, climate change and impacts, environmental protection, environmental policy and economy, geoscience, crop science, environmental law, environmental sciences, economic and social sciences, climate arts and humanities, resilience sciences, thus providing a sound basis for multidisciplinary research.

• Construct an inspiring, multidisciplinary environment for students, with shared expertise in science: teaching-through-research, resources and infrastructures, including well-tailored joint master programmes, exchange semesters, summer schools, and short intense joint courses.

• Contribute to the environmental education of society, in Europe and across the globe, including suggestions and solutions that would address complex relationships between society, economy and the environment and the communication of these solutions to a diverse audience.

FLAGSHIP GOVERNANCE AND ORGANISATIONAL STRUCTURE

During the 2023-2024 year, the Flagship 4 (FG4) management strategy focused on evaluating our resources and facilitating cooperation within the FG4. FG4 concentrated on developing the Flagship community and established connections with the UniC network at Laval University, which has provided valuable insights into strengthening collaboration within our framework.

Additionally, FG4 initiated a SWOT analysis to identify opportunities for further cooperation and collaboration. This analysis will allow to streamline the efforts and better position the Flagship for future projects and partnerships.

Flagship community building

The Flagship 4 committee is in contact with the various communities which represent the many themes concerning environmental transitions. Each partner has established a methodology to disseminate information within these communities and to obtain information if necessary. Specific workshops have thus been organised in the past to discuss emerging teaching projects ahead of a call for proposals from the Alliance.

This year, Flagship 4 has also initiated contact with the UniC Network (International Student Network on Climate) from the university's community. UniC is a global platform that connects university students to collaborate on climate-related projects. Through bilingual (French and English) discussions, scheduled activities, and collective projects, students advocate for climate action by sharing innovative ideas and collaborating across disciplines. The UniC Network's focus includes education on sustainability, climate advocacy, and promoting interdisciplinary action in both local and international contexts. This partnership could enhance the engagement of students in climate-related activities and supports Flagship 4's aim to strenghten interdisciplinary collaboration across the Alliance.

FLAGSHIP'S DEVELOPMENT

A budget of 25,000 euros for 2023 was provided by the 4EU+ Association to each Flagship. This budget came in response to a request to fill the absence of financial support to 1CORE project and for the sustainability of selected Flagships activities.

During the FG4 meetings, we decided to launch a Flagship 4 call for projects to strengthen collaboration between 4EU+ universities on environmental transition issues and to develop and expand the Flagship 4 community. As this call is also open to existing projects, it provides additional support for 4EU+ activities and their development within eight 4U+ universities.
Another part of the funds is earmarked for the development of the F4Share platform, which aims to help identify possible collaborations within the 4EU+ Alliance.
The final part of the Flagship 4 budget is earmarked for the mobility of Flagship members to enable them to participate in person in certain 4EU activities.

RESEARCH

The SEED 4EU+ call 2023 has enabled initiation of four new research projects within the Flagship 4:

Designing behavioural field Interventions in Europe to lower air pollution exposure and damages (DFIELD) (UHD, CU, UW)

The postdoc network in agricultural, climate, and environmental economics (PoNACEE); (CU, UHD, UCPH, UniGe, UniMi, UW):

Novel and sustainable food systems: understanding and driving the required change in research and communication (SUFORECO), (CU, UCPH, UniGe, UniMi):

Ribosome Emergence: role of CHARGE, sequence, and structure of nucleic acids and peptides in phase behaviour and activity (RECHARGE) (CU, SU, UniGe, UniMi):

Charles University's Mini-grants 2024 call resulted in the continuation of four existing projects for Flagship 4. These projects have a research and education dimension:

Physical Geography Field Course: (CU, UHD, UniMi)

This research and education project is continuation of established joint field courses organized by Charles University (Dpt. Physical Geography and Geoecology), Heidelberg University (Geographisches Institut) and University of Milano (Dipartimento di Scienze della Terra "A. Desio"). In 2024, the 6th edition of the course will be organized (first three were only on bilateral basis between CU and Uni Heidelberg).
The project aims to teach students advanced field methods of natural hazards prospecting ranging from UAV-based remote sensing, geophysical methods, dendrochronological methods, hydrometric methods and paleosoil investigation. Poster presentations of students' work will be created as an output.

Remote sensing for vegetation studies: deepening research collaboration and networking in the framework of 4EU+ Alliance: (CU, UHD, UCPH, UniGe, UW)

This project involving the universities of Heidelberg, Copenhagen, de Geneva and of Warsaw. We have developed very good collaboration, and a core team jointly prepared a manuscript of a review article dealing with land abandonment (in acceptance process), our bachelor student Daniela Dančejová finalized her bachelor thesis on the topic of "Remote sensing for classification of new wilderness vegetation in the hinterland of Kutná Hora". The thesis won the Dean's Award for Outstanding Final Thesis in the Bachelor's Programme in Geography in December 2023.

Practical course on analysing the diversity of microbial eukaryotes in environments: (CU, UW, SU)

This project aims to create a new practical block course, which will become part of the curriculum of the Protistology Master's program at Charles University. The course will target MSc and PhD students and will be held for 10 days in November 2024 in the research infrastructure BIOCEV and led by teachers from three European universities - Sorbonne, Warsaw and Prague. The students will be hands-on with the metabarcoding method to assess diversity in samples from freshwater, soil and intestinal content. It will include the steps from DNA isolation to sequence data analysis and interpretation of results.

Remote Sensing of the Cryosphere Dynamics under the Influence of Climate Change: (CU, UHD, UniMi, Humboldt University)

The project will also apply repeat photography to document glacier changes over the past 100 years. By comparing historical and current images, we will track glacier retreat and advance, providing valuable insights into climate impacts.

As part of the **outreach activities** supported by the university of Geneva, Associated partner to 1CORE project, the first event has been initiated within the Flagship 4 in cooperation between the Geneva Science-Policy Interface (GSPI) and the Institute of Environmental Sciences at the University of Geneva:

2024 International Geneva Study Trip: Environmental Governance

The Geneva Science-Policy Interface (GSPI), in partnership with the Institute of Environmental Sciences at the University of Geneva, is organizing the 2024 International Geneva Study Trip: Environmental Governance from October 8 to 10, 2024. This initiative aims to provide researchers from 4EU+ member universities with immersive experience in Geneva's global environmental governance ecosystem.
The programme includes virtual pre-sessions in September to introduce participants to the science-policy interface and Geneva's multilateral landscape. Over the course of three days, participants will engage with key international decision-making bodies, explore science-policy engagement mechanisms, and interact with organizations such as UNEP and IISD. The trip will conclude with discussions led by experienced researchers in science-policy collaboration. A follow-up virtual session will take place six months later to assess the implementation of acquired skills.
This project aims to enhance researchers' capacities in international environmental governance and promote interdisciplinary exchange within the 4EU+ community.

EDUCATION

Joint Master Programs

MERGED

The MERGED program is a joint Erasmus Mundus Master's Degree offered by the University of Copenhagen (UCPH), University of Warsaw (UW), and Università degli Studi di Milano (UniMi), with a focus on renewable natural resource management. The first year is held at UCPH, while students can choose to complete their second year at either UniMi or UW. The program equips graduates with interdisciplinary knowledge, practical field experience, and specialised skills in sustainability, preparing them for careers in private and public sectors, I/NGOs, government bodies, and research institutions.

Aiming to develop globally competitive professionals, MERGED addresses critical environmental and societal challenges, developing innovative solutions for sustainable development. It is also unique as the first-ever joint degree across the partner universities and

the 4EU+ European University Alliance, enhancing teaching quality and international collaboration.

M3EP: Master in European Environmental Economics & Policy
This master programme is a collaborative effort between five universities in the 4EU+ Alliance, initiated within the 4EU+Educational projects call in 2020/21. The aim is to train experts in environmental economics and policy who can effectively deal with complex environmental challenges and will play a crucial role in achieving the European Union's vision of a European Green Deal and the EU Environmental Action Programme's objective of sustainable living within planetary boundaries.
Application for Erasmus Mundus Joint Master has been submitted on Feb. 15, 2024
Lead applicant: University of Copenhagen. Partners: Heidelberg University, Charles University, University of Milan, University of Warsaw.
Outcome: Positive funding decision (€4.9 million)
Start: September 2025

BioMS:
The Erasmus Mundus Joint Master in Biodiversity (BioMS) project brings together five European universities (UW, UC, UPCH, UniMi, and UniGe) from the 4EU+ European University Alliance with the shared objective of designing and implementing an innovative international Joint Master's Program in Biodiversity.
The BioMS program will mitigate current limitations by bringing together competencies in studying biodiversity in space and over time with modern digital skills needed for big data integration, analysis and modelling. To achieve this, the BioMS Consortium is going to foster the development of students' research skills through project design and hands-on lab and field experience, enabling them to contribute to the advancement of biodiversity studies, as well as encouraging collaboration between students, academics, and European institutions, while promoting a diverse and global perspective. With this new joint innovative programme, Consortium Partners will aim to educate biodiversity researchers and future employees, as well as support policymakers and other stakeholders, on common biodiversity monitoring standards and using modern tools beyond the national borders, profiting from existing national research excellence in an international environment.
Application for Erasmus Mundus Design Measures has been submitted on Feb. 15, 2024.
Outcome: Positive funding decision (60.000€)
Start: November 2024

Joint courses - M.Sc. level:

Extension of Competences and Knowledge-Based Education of Natural Hazards and Environmental Change

Led by Charles University (CU), this project focuses on enhancing competences and providing education related to natural hazards and environmental change. Although there is a Memorandum of Understanding (MoU) in place, there are plans to explore long-term

educational cooperation, potentially in the form of a dual degree, joint programme, or PhD school. However, no permanent integration into the existing educational offers has been established yet. The participating universities include Charles University (CU), University of Milano (UniMi), and the University of Heidelberg (UHD).

MOVE — Manage and Organize Virtual Excursions

This project, led by Sorbonne-University, involves joint field courses and online excursions as part of a collaborative educational programme. The field-based activities are designed to enhance practical learning in geological sciences. This initiative aims to create a comprehensive educational portfolio for geological excursions, including joint virtual excursions, a dedicated website, and educational films. These materials are intended to be part of a future joint Master's programme or curriculum, complementing the ongoing SEED project MOVE. This project is already integrated into the local educational offers, with Charles University (CU) awarding 4 ECTS, while Sorbonne University (SU) and University of Genoa (UniGe) offer 3 ECTS, with an additional 3 as a supplementary option. The participating universities include SU, CU, and UniGe (TBC).

ABC in Biodiversity

Led by the University of Warsaw (UW), this project offers joint and shared on-site courses focused on biodiversity. It is already integrated into the permanent educational offers at several participating institutions. Courses include "Biodiversity around-the-corner," available as an optional course at SU and UW (4 ECTS); "Biodiversity in Cultural Landscapes: Mazury," offered at UW (3 ECTS); and "Biodiversity and Ecotoxicology in Mediterranean Ecosystems," offered at both SU and UW (6 ECTS). Participating universities in this project include CU, SU, and UW. The "Biodiversity and Ecotoxicology in Mediterranean Ecosystems," has been included in master program Ecophysiology and Ecotoxicology of the master biodiversity ecology and evolution of SU.

Biodiversity, Sustainability in the Agro-Food System — 4EU+ Microcredentials (MICROBS)

Led by the University of Milano (UniMi), the MICROBS project focuses on biodiversity and sustainability within the agro-food system. This initiative is part of the 4EU+ microcredentials programme and is designed to provide students with specialized knowledge on these critical topics. The course is already integrated into the educational offerings at UniMi, where it is offered as an optional course worth 4 ECTS. The project aims to expand its reach across the 4EU+ Alliance, with participation from Charles University (CU), UniMi, University of Copenhagen (UCPH), and Sorbonne University (SU, TBC).

Summer school: From Fungal Morphology to Genotype

This project combines research and education to address fungal diversity, a key factor in nature conservation, environmental impact assessments, and monitoring surveys. Its goal is to teach students how to use both phenotypic and molecular data for fungal identification. Since 2020,

the Summer School has been organized regularly as a 4EU+ joint activity and has proven this concept of combined methods in fungal research. The participating institutions included CU, UW, UCPH and UHD as well as external Universities (Tartu and Frankfurt); the coordination was at CU or UW. While having Charles Mini-grants funding in the past, this year the participants have been supported by Erasmus+ short-term mobilities, or University funds allocated to 4EU+; local project funds were used to support the experiments. The Summer School took place in Skryje, Czechia from September 1 – 7 with the participation of UW, CU and UHD. The course is part of the Flagship4 Learning Pathway *Biodiversity, Ecology and Evolution* and part of the double-degree master programme in biodiversity, currently in preparation (UW/UCPH).

Joint courses, PhD level and LLL:

Collegio Futuro — A College for Future Leaders of a Sustainable European Future

Under the leadership of Heidelberg University (UHD), Collegio Futuro is designed to train future leaders committed to sustainable development in Europe and focuses on interdisciplinary collaboration and science communication to society. The program is dedicated to doctoral candidates of all disciplines and includes several online workshops and meetings, supplemented by a 1-week winter or spring school on site. Currently, five 4EU+Alliance Universities collaborate on this project (UHD, SU, CU, UniMi and UW). Although it is not yet locally integrated into the permanent educational offers, the program is regularly offered within the local graduate schools and there is potential for this activity to be included as an option within the existing teaching units at Sorbonne University (SU).

The second edition of the course has been running from November 2023 to January 2024 as Erasmus+ Blended Intensive program (BIP). For one of the topics (*Adaptation of cities to climate change*), a successful cooperation has been established with the Flagship 1. In addition, the external partners have been involved (City of Heidelberg, NIVA - Norwegian Institute for Water research and UNESCO geo-nature park Bergstrasse-Odenwald). The group of doctoral students gathered around the topic "*Ecosystem restoration on marginal land*" continued to work together beyond the course and applied successfully for a Charles Student Mini-grants (project "*Post-mining sites: the green gold rush*"; https://4euplus.eu/4EU-816.html?).

4EU+ Summer school in international business law (IBLA) (Lifelong Learning)

Led by the University of Copenhagen (UCPH), the IBLA project offers a summer school focused on lifelong learning (LLL). The IBLA project is a lifelong learning initiative that aims to share knowledge and provide high-level skills training in socially responsible international business law to legal and business professionals. Participating universities include CU, UCPH, and UW.

Apart from the external funding acquired in Flagship 4 (EMDM, EMJM, BIP), both 4EU+ funding schemes, the SEED4EU+ call and Charles Mini-grants made it possible to strengthen existing

educational activities and create new ones. An overview of educational projects' funding is presented in the table below:

Overview of **educational projects** in 2023/24:

Project	**Participating 4EU+ Universities**
MERGED: Erasmus Mundus Joint Master in Global Environment and Development	**UCPH** (lead), UniMi, UW,
M3EP: Master in European Environmental Economics & policy	**UCPH** (lead), CU, UHD, UniMi, UW
BioMS: Joint Master in Biodiversity	**UW** (lead), CU, UCPH, UniGe, UniMi,
Collegio Futuro — A College for Future Leaders of a Sustainable European Future; PhD level	**UHD** (lead), CU, SU, UniMi, UW
Mycology summer school: From Fungal Morphology to Genotype	**CU**, UW, UHD
Manage and organize virtual excursions (**MOVE**)	**SU** (lead), CU, UniGe
4EU+ Summer school in international business law (**IBLA**); lifelong learning	**UCPH** (lead), CU, UW
Developing the Joint Master programme in European environmental economics and policy (**DevelopM3EP**)	**UCPH** (lead), CU, UHD, UniMi, UW
Physical Geography Field Course	**CU**, UHD, UniMi
Remote sensing for vegetation studies: deepening research collaboration and networking in the framework of 4EU+ Alliance	**CU**, UHD, UCPH, UniGe, UW
Practical course on analysing the diversity of microbial eukaryotes in environments	**CU**, UW, SU
Remote Sensing of the Cryosphere Dynamics under the Influence of Climate Change	**CU**, UHD, UniMi
Extension of Competences and Knowledge-Based Education of Natural Hazards and Environmental Change	**CU** (lead), UHD, UniMi
ABC in Biodiversity	**UW** (lead), CU, SU
Biodiversity, Sustainability in the Agro-Food System — 4EU+ Microcredentials (**MICROBS**)	**UniMi** (lead), CU, SU, UCPH

Flagship 4 Learning Pathway

Biodiversity, Ecology and Evolution:

We have launched the Biodiversity, Ecology and Evolution learning pathway which starts now:

The Biodiversity, Ecology, and Evolution learning pathway is part of the educational offer of the 4EU+ Alliance, with the aim to mitigate current limitations. By promoting data literacy, critical thinking and entrepreneurship, we want to educate biodiversity researchers and policymakers for the future on common biodiversity monitoring standards that transcend national borders. Through innovative teaching and learning methods, we intend to benefit from a wide range of experts in specific taxonomic groups from different universities. This approach utilizes modern analytical tools that often require an interdisciplinary approach, within an international environment.

Upon completion of an educational pathway, students will receive a certification in the form of the Letter of Attendance with a supplement listing the skills and abilities they have acquired. The Letter of Attendance is issued on behalf of the 4EU+ European University Alliance.

CONCLUSION

The "Annual Portfolio of Flagship Activities – 2nd Report" offers a comprehensive overview of the past year's achievements within the four 4EU+ Flagships, underlining their critical role as pillars of strength within the 4EU+ Alliance. Given the Flagships' importance, this document provides a detailed account that extends beyond the 1CORE project, covering every aspect of Flagship activities and growth. The report underscores the 4EU+ Alliance's dedication to deepening cross-border collaboration, reflecting the value these Flagships bring to our collective vision.

This portfolio serves multiple purposes: it acts as a record of innovation, a resource for future planning, and a tool for communication within the 4EU+ community and beyond. By documenting these advancements, the portfolio allows stakeholders, including departments, faculties, and external partners, to appreciate the transformative impact of the Flagships and the ongoing efforts to create a sustainable, collaborative, and forward-thinking academic ecosystem. This second report highlights the Flagships as a core strength and a testament to the Alliance's commitment to internationalization and impactful academic cooperation. Ultimately, the main output of 1CORE lies in the establishment of durable structures and professional capacities that make such international collaboration possible. Through its people, coordination, and strategic alignment, 1CORE provides the sustainable framework within which Flagships can develop and deliver their educational mission.