E³UDRES²

Engaged and Entrepreneurial European University as Driver for European Smart and Sustainable Regions

E³UDRES² doctoral studies concept & policy

Work Package 4

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Overview

Milestone nr.	Deliverable name	Person responsible	Corresponding HEI
MS16	E³UDRES² Doctoral studies concept & policy	Radu Vasiu	UPT

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Executive summary

This document presents the main strategic goals related to the joint E³UDRES² concept & policy for doctoral studies in the scope to organize joint P(h)D schools or programmes involving different E³UDRES² partners, based on shared values, principles, methodologies, and co-operation across the alliance, including also experts from universities without P(h)D awarding power.
The concept and policy has the intention to:

- *map the situation and doctoral study programmes conditions across partners' national systems*
- *map partners' experience & capacity*
- *establish: criteria, characteristics, model & rules, variable scope of partners' support and engagement, including financing and mobility model*
- *identify feasible fields within the focus areas, agreements on lead universities and other partners' engagement*
- *set-up a framework for the development of concrete programmes*

According to the mapping exercise, the documents presents a number of suggestions considered feasible for the E³UDRES² alliance in order to implement joint doctoral research:

- *Joint coordination of P(h)D thesis in co-supervision*
- *Joint participation to international Jurys for P(h)D thesis defense*
- *Joint offer for specialized topics in doctoral research*
- *Development of Joint P(h)D programmes*
- *Development of Joint P(h)D schools*

The document will be revised / updated / expanded to reflect the developments of the project in terms of relevant concepts and policies for joint research.

List of concepts and abbreviations

Cooperative Doctoral Programme – Involves joint supervision and collaboration between a university (or another institution with doctoral degree-awarding authority) and a university of applied sciences (or a similar institution). In this model, a doctoral candidate's research is supervised by faculty from both institutions, and the doctoral degree is awarded by the university with the authority to do so. The doctoral candidate's research may be conducted at the university of applied sciences or the cooperating institution. This is an additional option for doctoral students at Universities of Applied Sciences (UAS) in Germany / the Federal State of Hesse to obtain a doctoral degree, if there is a cooperation of the UAS supervisor / department with a (traditional) research university and a supervisor there.

Doctoral education – overarching institutional structures and processes geared towards the completion of a doctoral degree (primarily the PhD, but also including professional doctorates, industrial doctorates, etc.)

Doctoral programme – set of related doctoral activities that lead to a doctoral degree upon completion

Doctoral school – An organisational structure that groups and coordinates research teams, coordinates training activities for doctoral candidates and prepares them for their professional career.

E³UDRES² Applied Research Centers of Excellence – a number of 2-4 joint-research centers established between minimum three E³UDRES² partners, based on their proved capacity to provide excellence in research on specific topics

E³UDRES² Bank of Researchers (BoR) – a shared pool of scientists, pools of already existing expertise within multinational research networks in order to further expand knowledge and experience

E³UDRES² Executive Board – consists of one high-ranking representative (president, rector, vice-rector, executive director) per E³UDRES² partner and the chair of the E³UDRES² board of student representatives. The E³UDRES² Executive Board takes strategic decisions inside the alliance.

E³UDRES² Focus Areas – the priority areas established within E³UDRES², that integrates not only research but also education and innovation activities, on specific thematic fields based on the needs of the regions. The areas in which E³UDRES² focuses, are currently:

- Creative Industries for Regions' Identity
- Digital Solutions and (Applied) Deep Tech for Regions
- Health, Wellbeing and Social Inclusion for Regions
- Resilient Economy & Innovation for Regions

E³UDRES² researcher – a researcher from any of the partner universities or from the associated partners, that is registered in the Bank of Researchers constituting the Research Networks

E³UDRES² Research Networks – promotes an innovative approach to co-ideate and co-create mission-oriented research, challenge-based, human-centered innovation, open and engaged knowledge exchange; they also motivate, encourage, and strengthen (young) researchers as well as learners, innovators, entrepreneurs and other stakeholders to participate in European collaborations.
E³UDRES² research team – currently, Work Package 4 – "Research and Knowledge Serving Users" team
E³UDRES² Scientific Council - the relevant body for academic and strategic aspects of research activities in E³UDRES², established in May 2024 and composed of senior researchers/scientists from all partner universities
ECTS – European Credit Transfer and Accumulation System
EEA – European Education Area, Fosters collaboration among European Union Member States to build more resilient and inclusive national education and training systems. The aim of building the EEA is to ensure that everyone in the EU has access to quality education and training by 2025.
ERA – European Research Area, the vision to create a single, borderless market for research, innovation and technology across the EU
EUA – European University Association
Joint degree programme – Refers to a joint programme leading to a joint degree
Joint programme – Refers to an integrated curriculum coordinated and offered jointly by different higher education institutions, leading to double/multiple degrees or a joint degree
Micro-credentials – Records of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes have been assessed against transparent and clearly defined criteria. Learning experiences leading to micro-credentials are designed to provide the learner with specific knowledge, skills and competencies that respond to societal, personal, cultural or labour market needs. Micro-credentials are owned by the learner, can be shared and are portable. They may be stand-alone or combined into larger credentials. They are underpinned by quality assurance following agreed standards in the relevant sector or area of activity.
Open education – A way of carrying out education, often using digital technologies. Its aim is to widen access and participation to everyone by removing barriers and making learning accessible, abundant, and customisable for all. It offers multiple ways of teaching and learning, building and sharing knowledge. It also provides a variety of access routes to formal and non-formal education, and connects.
Open science – research approach based on open cooperative work that emphasises the sharing of knowledge, results, and tools as early and widely as possible by using digital technologies and new collaborative tools.
PD – Stands for Professional Doctorate, and is a type of doctoral degree that focuses on the application of knowledge and skills to practical problems in a specific field. Unlike a PhD, which often emphasizes research and contributing to new knowledge,

a PD is designed for working professionals who want to advance their careers and leadership skills by applying their existing experience to solve real-world issues.
P(h)D – Term used within this report in order to address both PhD and PD types of doctoral research supported by the E³UDRES² alliance
PhD – Stands for Doctor of Philosophy, and is the highest academic degree in most fields and typically requires original research and a dissertation. It's a prestigious qualification demonstrating a high level of expertise and a deep understanding of a specific area of study. PhD holders often pursue careers in academia, research, or other specialized fields.
PhD dissertation – is a substantial, original piece of scholarly research that doctoral students (PhD candidates) undertake as the culmination of their doctoral program. It demonstrates the candidate's ability to conduct independent research and make a significant contribution to their field of study.
PhD dissertation defense – Is a formal oral examination where a candidate presents their research and defends it before a committee of experts. It's a crucial step in completing the doctoral degree, demonstrating the candidate's knowledge, independence, and ability to engage in scholarly discussion. The defense typically involves a presentation followed by a question-and-answer session.
Physical, blended, or virtual mobility – Different modes through which students and staff can engage in cross-border learning, teaching, and research activities among higher education institutions in the European Union.
UAS – Universities of Applied Sciences
UNICA – Network of Universities from the Capitals of Europe

1. Introduction

E³UDRES², the Engaged and Entrepreneurial European University as Driver for European Smart and Sustainable Regions[1], a European University alliance, promotes Smart and Sustainable Regions (S²-Regions) to shape a peaceful and prosperous European future for responsible citizens as a pioneering full-fledged Engaged and Entrepreneurial European University (E³-University).

As stated in the E³UDRES² research strategy developed by the WP4 team, the alliance aims to develop motivating framework conditions for academic careers, in line with the European Research Area[2], with the Recommendation on Attractive and Sustainable Careers in Higher Education[3], and with the principles of the European Charter for Researchers[4]. Joint doctoral programmes can make a significant contribution to this. These joint programmes, each of which should be thematically related to the focus areas, offer on the one hand the expansion of P(h)D offers for

[1] https://eudres.eu/
[2] https://european-research-area.ec.europa.eu/
[3] https://www.consilium.europa.eu/en/press/press-releases/2024/11/25/council-adopts-recommendation-on-attractive-and-sustainable-careers-in-higher-education/
[4] https://euraxess.ec.europa.eu/hrexcellenceaward/european-charter-researchers

those partners who are already allowed to award P(h)Ds. Above all, however, they also enable those young researchers who do not have the opportunity to complete a P(h)D programme at their home university, mainly due to national legal restrictions, to gain access to this advanced scientific training.

The offer of joint doctoral programmes should include both the opening of existing courses for doctoral students within the E³UDRES² Alliance and considerations for the establishment of concrete new joint innovative programmes.

The objective assumed by the E³UDRES² alliance is to establish 2-4 joint P(h)D schools / programmes based on E³UDRES² shared values, principles, methodologies and co-operation across the alliance.

2. Previous activities and experiences

According to the findings from the development of the Common E³UDRES² research strategy, the actual situation in the field of P(h)D studies varies between the E³UDRES² partners. There are **three types of partners in the alliance:**

- Partners that already hold the legal right to award PhD and/or Professional Doctorate PD titles (UPT, MATE, ViA, HFD Fulda, Saxion)
- Partners that currently do not have the right to award P(h)D titles, but have a potential pile of P(h)D supervisors as habilitated professors, and/or experienced supervisors, and who would like to obtain the legal status for awarding PhD titles or Professional Doctorate (STPUAS, IPS, JAMK);
- Partners that are only running bachelor level courses. They cannot organize their own or joint P(h)D schools, but might be interested in offering P(h)D possibilities for their staff and might also contribute to developing general training courses for P(h)D students (UCLL).

The starting point for reaching the assumed objective is to map the situation and doctoral study programmes conditions across partners' national systems, partners' experience & capacity and then to establishing a common E³UDRES² doctoral studies concept & policy (criteria, characteristics, model & rules, variable scope of partners' support and engagement, including financing and mobility model), also including experts from universities without P(h)D awarding power at this moment.

According to the shared vision of the E³UDRES² alliance, a priority is the identification of feasible fields within the E³UDRES² focus areas, agreements on lead universities and other partners' engagement to develop concrete programmes, to look for internal E³UDRES² approval and where needed, national (or international, based on the European Approach) recognition in order to start promotion and enrolment of students across the alliance as soon as possible.

This will ensure the continuation of research cooperation and research excellence for the future.

The strategy for establishing joint P(h)D schools/programmes inside the E³UDRES² alliance will be developed by including framework conditions and provisions for setting up Joint Doctoral Programmes (conditions for the partners and the programmes); joint methodologies, mobility models, conditions for enrolling the candidates etc.

At the moment of developing the Common research strategy, the research team of E³UDRES² proposed the development of joint general training courses for actual or future enrolled P(h)D students at the level of the alliance, in fields like: research methodologies, academic writing, research data analysis, bibliographic research, research ethics, science popularization etc. This is going to be further investigated according to the situation in all our partner universities.

Joint doctoral programmes are seen by the E³UDRES² Alliance as the main pillar to develop and regenerate the human resources involved in Research & Innovation by attracting the young generation towards an academic or research career.

3. E³UDRES² focus areas for research & innovation

E³UDRES² doctoral research should be done in the context of the general E³UDRES² research strategy but should also take into consideration all national legislation requirements as well as the institutional regulations in the field.

E³UDRES² envisions to integrate challenge-based education, mission-oriented research, human-centered innovation as well as open and engaged knowledge exchange as interrelated core areas and to establish an exemplary multi-university campus across Europe as stated in the E³UDRES² long-term vision and mission statement.

With the overarching themes of "Smart and Sustainable Regions" as well as "Future Universities", the E³UDRES² alliance aims to support European regions in making them innovative, future-proof places for all. In connection to these themes, E³UDRES² is concentrating on four focus areas, as described in the E³UDRES² proposal:

- Health, Wellbeing and Social Inclusion for Regions;

Many urgent societal challenges arise from an ageing society, rural exodus and migration, as well as from substantial gaps between urban areas and rural regions. Technologies and innovation contribute to and serve the European values and their realisation in people's life, ideally empowering and strengthening democracy. E³UDRES² aims to support in developing, highlighting and sharing good practices from its regions, addressing forms of neighbourhood support and the resiliency of small communities.

- Digital Solutions and (Applied) Deep Tech for Regions;

In line with the European Commission's priority for "A Europe fit for the digital age", this focus area deals with enabling and developing frameworks for several regional

challenges. The development and deployment of these technologies in real products and services for society and economy, as well as the skills needed for people to use, implement and further explore them, are the key to overcoming regional challenges.

- Resilient Economy and Innovation for Regions;

In line with the European Commission's priorities for "A European Green Deal" and "An economy that works for people", this focus area addresses the challenges of developing and implementing infrastructures, living and working environments, manufacturing, transportation, agriculture and food production which are resilient, sustainable, green, innovative, supported and enhanced by digitalisation, attractive for people, and strongly connected in a path of regional development. The full potential of the green and digital transition can only be exploited by designing and developing the future of different economic sectors with a strongly connected, overarching, interdisciplinary and intersectoral approach to education, research and innovation.

- Creative Industries for Region's Identity.

In line with current European flagship activities like the New European Bauhaus, this topic reflects the fact that creativity is one of the most important key competencies of our time. Moreover, the role of cultural and creative spillovers as cross-sectorial innovation motors is widely acknowledged as a stimulant in society and the wider economy. Creative industries are not only important for region's identity and the preservation of their cultural heritage, but they have been one of the first to experiment and adopt digital technologies as well. The particularly high number of self-employed people and SMEs in this sector, as well as the high affinity for remote work, co-working and other approaches of New Work offers numerous opportunities for S²-regions to strengthen innovation capacity and create future-oriented jobs.

All E³UDRES² doctoral research activities have to be designed in line with this general vision and assumed mission of the alliance.

4. Mapping the situation and doctoral study programmes conditions across partners' national systems

In the following analysis, it is intended that either the regulations at national level in the countries of the E³UDRES² partners are considered (incl. those partners not yet able to award P(h)Ds on their own), or the institutional regulations of the individual partners (due for example to national legislation requiring them to define some aspects at institutional level). The E³UDRES² partners understand that the first steps will have to be implemented in the already existing national and institutional frameworks (especially in order to have the first P(h)D students soon enrolling in new / shared / joint programmes), but that long-term changes are possible, at the national as well as at the institutional level and should be pursued as needed.

4.1. General national regulations: duration, ECTS, types of programmes

From the questionnaires run in all partner countries, resulted that the general duration of doctoral studies is from 3 to 4 years, with some exceptions or possible extensions allowing up to 6 years in most countries:

Austria	At least 3 years based in traditional universities
Belgium	4 years; extension possible, some students might be able to conclude in less than 4 years
Finland	No definition of the duration by law
Germany	3-3,5 years; no strict limit, extension possible (no formal requirement)
Hungary	4 years; after the absolutorium, students have 3 years to complete the final defense
Latvia	3 years; with a possible extension of 2 years
Netherlands	3 years fulltime (or 0,75 FTE in 4 years, or 0,5 FTE in 6 years)
Portugal	3 years; but students might be able to conclude their doctoral studies in 2 years or extend the duration to 4 years.
Romania	4 years; with a possible extension of 2 years

The general requirements consist of 180 to 240 ECTS for the full program (including courses as well as the doctoral thesis defense), with some differences in the approach. E.g. Finland requires a doctoral thesis/dissertation and 30-60 ECTS in courses, therefore this number of ECTS cannot be directly compared to the overall requirement of other countries. A similar approach is followed in the first development at Saxion (30 ECTS in courses). In some countries, the national legislation does not impose a specific number of ECTS for a P(h)D (e.g. Germany and Austria):

Austria	No specific number of ECTS required by the law
Belgium	Doctoral dissertation + 30 ECTS in courses
Finland	240 ECTS (Doctoral dissertation + 30-60 ECTS in courses)
Germany	No specific number of ECTS required by the law
Hungary	240 ECTS (incl. courses and doctoral dissertation)
Latvia	180 ECTS (incl. courses and doctoral dissertation)
Netherlands	Doctoral dissertation + 30 ECTS in courses
Portugal	180 ECTS (incl. courses and doctoral dissertation)
Romania	240 ECTS (incl. courses and doctoral dissertation)

While it is generally understood in all countries that PhDs mainly focus on scientific approaches, methods, competences, a number of European (and non-European, e.g. Australia) countries already introduced PhDs with a specific orientation, for example industrial or professional, referred as PDs. At Saxion, only professional PDs

are awarded, for the moment in the pilot stage running between 2023-2027. They are as well defined in the Portuguese legislation. Beside scientific PhDs, industrial PDs are available at ViA and at HFD, while they are currently under consideration at UPT, otherwise awarding scientific PhDs. In Austria, industrial PDs do not exist as a separate category (yet), but there are for example specific funding schemes (for traditional universities) for exactly this kind of PD. Additionally, combined master + doctoral studies are possible after the Austrian law, as well as artistic PDs. Beside Austria, also in Romania and Finland traditional universities only award scientific PhDs at the moment:

Austria	The legislation defines scientific PhDs and artistic PDs, as well as combined master + doctoral studies. The notion of industry-near PDs exist in national funding schemes
Belgium	The legislation defines scientific PhDs and artistic PDs
Finland	The legislation only defines scientific PhDs
Germany	HFD awards scientific doctorates, cooperative doctorates and industrial doctorates
Hungary	MATE awards scientific PhDs
Netherlands	Saxion awards professional PDs
Portugal	The legislation defines scientific PhDs as well as professional PDs
Romania	UPT awards scientific PhDs (industrial PDs are under consideration)

4.2. National conditions to access a doctoral programme

Concerning the access to a doctoral programme, conditions apply on the one hand to the individual candidates (requirements), on the other hand to the overall process and framework conditions. Starting with the individual requirements, beside a Master Degree or equivalent the following conditions apply:

Austria	A Master Degree (with at least 120 ECTS) or equivalent is mandatory, whereas Master or MBA from continuing education programmes with at least 120 ECTS are also possible; Doctoral programmes can define additional qualitative conditions to be met by students to access the programme. Combined master + doctoral programmes must define additional qualitative conditions.
Belgium	To obtain funded doctoral positions or scholarships, summa or maxima cum laude master's degree is de facto required
Finland	Eligible applicants for PhD studies must have a master's degree from a university or a university of applied sciences or an equivalent higher education degree from a recognized university. Each university may have additional criteria.
Germany	There are no national regulations on the access to doctoral programmes, but there are regulations at the level of the individual federal states / or university / Doctoral Research Centre level

	respectively, in conformity with European standards. Generally, for doctoral studies in a UAS (as HFD) you need a degree of completed studies at a university with at least 300 ECTS (Diplom, Magister, Master) and a grade of 2.0 or better, an equivalent state examination or a Master's degree at a university of applied sciences. The decision on admission is taken by the Doctoral Committee of the respective Doctoral Research Centre. For cooperative doctoral studies, the decision on admission is taken by the cooperating university.
Hungary	In general, a Master degree is needed. Although the new legal regulations now allow someone with an excellent BA degree to apply, so they can do an MA and a PhD at the same time.
Latvia	A Master Degree in the respective area is required. No additional conditions.
Netherlands	For Netherlands' PD, the proposals are assessed on 3 points: content quality, candidate quality and supervisory team quality. Master is a requirement for the candidate, and also a requirement within the supervisory team. Relevant practical experience in a professional environment is additionally required to access Professional Doctorate programmes
Portugal	In general, a Master's degree is required. However, admission to a doctoral program may also be granted to candidates with an outstanding Bachelor's degree and a highly relevant academic background or to those with an academic or professional career recognized by the University as demonstrating the capability to successfully complete the program.
Romania	BSc (bachelor degree) and MSc (master degree) are required, with minimum 300 ECTS. Admission exam organized at the university level by the Doctoral School, based on previous achievements and an interview, criteria are established at university level, same for all the PhD programmes. Separate admission committees for each PhD programme

This shows a relatively homogenous situation which does not impose major additional constraints when designing doctoral programmes in the alliance, but may require fine-tuning depending on the specific partners involved and the Faculties / Departments / Doctoral Schools involved in the individual institutions (based on the research areas), which could be solved through qualitative definitions. Only the requirement on professional experience for Professional Doctorates with Saxion could be a problem for some candidates, this needs to be taken into account in the profile of the offer, its curricula and of course in the selection of the candidates.

Shifting the focus on the institutional framework conditions for the access to the doctoral programmes, the analysis shows the following situation:

Austria	Access to doctoral programmes (and to combined master+doctoral programmes) is allowed at any time of the year/semester. Limitations on the maximum total number of doctoral students for a specific doctoral programme can only be imposed by the Rectorate of a university for doctoral programmes offered in a language other than German or in very specific disciplinary areas (which are not relevant for the areas covered by E³UDRES² at the moment)
Belgium	No additional constraints.
Finland	Each of the 14 Finnish universities that offer doctoral programmes has its own annual number of positions for its doctoral students. It varies yearly, by faculty and field of study.
Germany	No maximum total number of doctoral students enrolled. No universal doctoral study admission calendar (except for administrative procedural timeline and specific application deadlines of the individual Doctoral Research Centres, usually 2-4 dates per year)
Hungary	The number of self-funded places is not limited, the strict total number of funded doctoral student places is determined by the government. Application deadlines are in May and December.
Netherlands	Professional Doctorates are in a pilot phase in the Netherlands. Saxion participates in 5 of the 7 Dutch domains and has a total of 17 places spread across these 5 domains. This amounts to an average of 4 positions per year, but everyone is free to submit a proposal at one of the four deadlines that are offered each year spread over the year. Important: last deadlines for submission are in 2026, after which all places must be filled. Timeline from start to admission is about 0,5 years.
Portugal	No additional restrictions apply. While doctoral candidates are typically expected to apply by late August or early September each year, applications may be submitted at any time throughout the year or semester.
Romania	Total number of available doctoral student positions is about 80 financed by the government + paid studies (no limitation in numbers). Timeline for the admission is July and September (if the available positions are not taken in July)

It seems that the number of doctoral positions that can be made available will strongly depend on the involved E³UDRES² partners. In all cases, preparations for admission have to be made well ahead of time, even in those institutions offering

several application periods in one year. This confirms national and international experiences, as not only administrative aspects have to be taken into account, but most importantly the possible fit between the research interests and profile of the candidate and the research interests and availability of supervisors (and possibly projects or other funding possibilities) have to be screened and discussed well in advance.

4.3. National conditions for doctoral programmes curricula, including requirements for the doctoral thesis/dissertation

This subchapter focuses on the national regulation of doctoral programmes themselves, summarizing sometimes complex requirements on:

- Compulsory phase, meaning the courses, examinations, programmes that the P(h)D candidates have to absolve as students of the respective university, usually during the initial phase of their P(h)D, including for example aspects of scientific integrity, or ethics in research, research methodologies specific to the discipline etc. This has the aim to support and ensure quality of the scientific work during the P(h)D.
- Research phase being the core of the P(h)D programme, including the original research activities performed by the candidate under supervision, be it in a research project and team or on their own, based on an agreed-upon research topic, plan, timeline.
- The last phase of thesis / dissertation preparation includes all tasks required to finalize the research work taken out by the P(h)D candidate during the research phase in order to fulfill the formal requirements, including the final review and grading of the thesis / dissertation by the different roles involved.

Country	Compulsory phase	Research phase	Thesis / dissertation preparation
Austria	Curricula is defined by the University in the framework of its institutional QMS and regulations. Ex. of the PhD program Visual Heritage: 18 ECTS for courses (6 ECTS fundamental part, 6 ECTS complementary education and 6 ECTS chosen from a given list as specialization. But there are different structures depending	Ex. of the PhD program: 162 ECTS for research and dissertation. Regulations are provided by the individual University or study programme in the framework of its institutional QMS and regulations.	Regulations are provided by the individual University or study programme in the framework of its institutional QMS and regulations.

	on the cooperation (ie TU Wien, University Krems)		
Belgium	No compulsory parts.	There are differences between universities and faculties. Often approval is needed to submit the thesis. After submission, there is a public defense before a jury consisting of internal and external members, all holding a PhD The only formal exam is the defense of the thesis.	There are two variants: PhD thesis or collected published articles, plus an abstract.
Finland	Finnish universities are autonomous, but they still operate within the framework of national legislation. Each university defines the curriculum for its doctoral education. There are also joint doctoral programmes shared by multiple universities in Finland. The are 30-60 ECTS credits depending on the faculty and field of study. The assessment of these compulsory studies varies by faculty and discipline, some may include exams, written assignments, or similar evaluations.	The number of publications required for a Finnish doctoral dissertation varies by university and field of study, but generally, an article-based dissertation typically includes 3-5 peer-reviewed scientific articles. The peer-reviewed articles are published in international, high-quality scholarly journals. In addition to the required articles, a summary must also be written as part of the doctoral dissertation. This summary typically ranges from approximately 50 to 100 pages in length.	There are no common national requirements for a Finnish doctoral dissertation. To complete a doctoral degree a student must prepare a dissertation and defend it in public or give other public demonstrations of study and skills as prescribed by the university. The accepted form of the doctoral dissertation is an article-based dissertation or a monograph. Article-based dissertation is the most used form, but monograph is still in use as an accepted form of doctoral dissertation in some faculties and fields of study. Most doctoral dissertations are published in English.
Germany	No national regulation on access to doctoral programmes, regulated in individual federal states / at university / Doctoral	Just one exam: defense of the thesis	No standardised requirements for Doctoral thesis, very specific for individual research disciplines (length, level). Plagiarism checks apply.

	Research Centre level respectively, therefore no curricula, no compulsory phases, but at some doctoral research centres e.g. mandatory qualification programmes (evaluated, but not yet assigned with ECTS)		Requirements for defence of thesis (time, procedure, assessment) are defined, e.g.: 30 minutes presentation of thesis, 60-90 minutes defense/discussion, rules for calculating the final grade of the defense. Doctoral thesis (monography) must be published.
Hungary	First phase is 2 years, a complex exam is needed to pass the first phase. It consists of an oral exam from two subjects and a presentation of the obtained research results.	Second two years the student focus on research. The number of needed publications depend on the doctoral school, usually min. 2 IF or Q-ranked papers are needed.	Plagiarism is checked using Turnitin. Minimal requirement: 240 ETCs, absolutorium exam and required number of papers). The home defense consists of the evaluation by two reviewers and a defense in front of a committee. After the home defense, students can have their final defense, where two additional reviewers need to review the thesis and students need to defend it against a jury of experts.
Latvia	There is a compulsory part or theoretical part which is 20% from the total amount of ECTS. 80% is for writing PhD Thesis. A doctoral student needs to pass the compulsory exams related to its field of study. Curricula is established by the PhD programme director.	A doctoral student needs to pass exams on research methods and promotional (progress) exam. Number of exams varies between 3 and 5. During their studies, doctoral students each year need to submit progress or research reports (2-3 in total). Minimum number of publications is 3 and two of them should be indexed in Scopus/Web of Science data bases.	There is a certain structure for PhD Thesis as well as suggested volume (number of pages). The legal act provides three types of the Thesis: - Dissertation (around 150 pages) - set of thematic articles - scientific monography The University has plagiarism and AI detection system CAPS, and each doctoral thesis should be checked using this system.

			Draft of the final thesis should be approved by the Doctoral guidance committee. After that PhD thesis is sent to the reviewer and if the review is positive PhD Thesis defence is organised.
Netherlands	30 ECTS course work (no details on the content yet, as the development is part of the pilot that is running). After 1 year there is a go/no go evaluation.	Supervised research, up to the 3 years period. The student needs to deliver a portfolio of products (peer-reviewed publications, other professional products (such as presentations, posters, professional publications, media contributions, training/educational modules, demo's). The UAS PD programme is a vocational training that trains highly qualified research professionals who 'learn to intervene in complex practices'. PD candidates learn to develop action knowledge, processes and products for the realisation and validation of interventions in complex issues. During the programme, the candidate has four roles: professional, change agent, innovator and researcher.	There is no final thesis, but a portfolio of products to demonstrate that the candidate has reached the intended learning outcomes. The assessment committee consists of a member from the community of lecturers within the relevant domain and three members who are nominated by the supervisory committee and who represent the stakeholders in the supervisory committee.
Portugal	Two distinct pathways for a doctoral program. a) Coursework pathway requires mandatory attendance in curricular units (courses) during the	A doctoral program without coursework involves only the preparation and defence of a thesis or research work, with no research training curricular units required. However, it may	The standard process for completing a doctoral degree involves preparing and publicly defending a dissertation or providing other approved demonstrations of academic competence,

	first year of academic study. b) Without Coursework pathway, structured solely around the development of the thesis project from start to finish. The Scientific Council may require or suggest participation in individual curricular units when accepting the application. If required, doctoral exams cannot be requested without prior approval in these curricular units.	include coursework if the Scientific Council, exceptionally, waives its attendance requirement. This applies to candidates with a highly relevant academic or scientific background, recognised by the Scientific Council of the responsible Organic Unit, that demonstrates the ability to pursue this doctoral study cycle.	as outlined by the University. The dissertation may be submitted either as a scientific monograph or in an article-based format, typically consisting of at least three scientific papers published in reputable journals within the relevant field. The University uses plagiarism and AI detection systems to ensure academic integrity. The Doctoral Guidance Committee or Scientific Council must approve the final draft of the thesis. Once approved, the thesis is sent for external review, and if the evaluation is positive, the PhD defence is formally organized.
Romania	The curricula is established at the university level. First year: general preparation for one semester based on a transversal course (ethics and other general topics in research) and two courses at specialization level (established by the coordinator). A research report is also required during the first year (normally bibliographic research).	Supervised research for the next 3 years. 3 PhD research reports are needed. Each PhD domain has ist own standards, specified at national level. UPT has its own requirements, ie min 2 WoS publications at this moment.	The structure is defined for each PhD domain. Similarity check is required (by Ithenticate or Turnitin). Minimal standards defined for each PhD domain at the national level. Doctoral thesis is published by the University Publishing House and deposited in different national libraries. Also available as an Open publishing book.

It is apparent that the set of regulations is very heterogeneous, not only at the national level but also depending on specific requirements by Faculties / Departments / Schools based on disciplines and traditions, and while some of these

regulations can be adapted on the long term, their adaptation can be very complex (for example subject to external quality assurance either at the level of the institution or at the level of individual programmes, based on the national legislation).

Most of the similarities can be found in the compulsory phase, where an approach based on a set of courses to be accomplished with an amount of at least 30 ECTS would cover the requirements of most partners in the alliance.

The research phase and the thesis / dissertation preparation do not seem to offer many similarities at a first glance, meaning that a future team of E³UDRES² faculty members designing a Joint P(h)D Programme will first have to clarify at their own institutional and national level which parts of the requirements can be handled in a more flexible way in order to investigate possible compromise solutions.

4.4. National requirements for doctoral programmes organization

Additional to the regulations about curricula, at most national and almost all institutional levels criteria are specified for P(h)D supervisors, co-supervisors, some form of doctoral guidance committee (strongly depending on national practices) and different kinds of jury members reviewing and evaluating the thesis / dissertation before or based on a (mostly public) defense. The following table exemplifies the regulations in order to provide an overview, as some definitions may be very specific and depending on procedural issues (for example, who may decide about an expert acting as supervisor).

Country	Thesis supervisors / coordinators	Doctoral Co-supervisors	Doctoral guidance committee	Jury for thesis / dissertation defense
Austria	Regulations are by law to be provided by the individual University or study programme in the framework of its institutional QMS and regulations. No pre- or re-evaluation at national level, no additional recognition of the awarded degrees needed at national level.	Regulations are to be provided by the individual University or study programme in the framework of its institutional QMS and regulations Co-supervisors are often foreseen (but not mandatory) and usually not required to fulfill the same	Regulations are to be provided by the individual University or study programme in the framework of its institutional QMS and regulations	

	Usually, habilitation is required, but equivalent qualifications and experiences may be deemed sufficient (e.g. in the national funding scheme doc.funds.connect for cooperative doctoral programmes).	conditions as the supervisors (e.g. co-supervisor without habilitation, especially when cooperations with other research institutions or companies are in place)		
Belgium	Depends on the university and the faculty Supervisor has to be full or assistant professor at university	Co-supervisor has to detain PhD	Differences between universities and faculties	Public defense before jury consisting of internal and external members all detaining PhD
Finland	Generally, a supervisor must meet the following criteria: The main supervisor is usually required to hold a doctoral degree and have expertise in the dissertation's field. Universities often require that the main supervisor is a docent (adjunct professor) or has an equivalent level of scientific expertise. Some universities may accept an experienced PhD holder as a supervisor even if they do not hold the title of docent.	Co-supervisor should work as a professor or an associate professor in the university or as a professor of some other Finnish or foreign university, whom the faculty has for special reasons appointed to share, together with the supervising professor. A co-supervisor must meet the same qualification requirements as the main supervisor.	Finnish doctoral candidates have a follow-up group or similar academic body to monitor their progress. The group usually consists of 2-5 experts, supports the candidate and ensures research progresses as planned. It may include professors, docents, and external experts, such as researchers or industry professionals. The group's composition varies	The evaluation of a doctoral dissertation is a multi-stage process: 1) dissertation goes through internal evaluation by supervisors and experts, 2) independent pre-examiners (docents) assess its scientific quality and ethical compliance, 3) dissertation undergoes a public defense, where 1-2 external opponents critically evaluate it and provide a written statement on whether it should be accepted, 4) final decision is made by the

			between universities and faculties.	university examination board. Plagiarism detection software is used to check dissertations.
Germany	No national regulation, different regulations in individual federal states and universities / doctoral research centres.	Regulations may depend on the Doctoral Research Centre Professor with doctoral degree or Researcher with doctoral degree at another university or university of applied sciences or at a research institute	Regulations may depend on the Doctoral Research Centre	At least 2 reviewers: Professors with doctoral degree at Doctoral Research, not supervisor or co-supervisor Co-reviewer: Usually (external) lecturer from a university / UAS not belonging to the Doctoral Research Centre Additional reviewers (professors with doctoral degree) can be nominated
Hungary	Doctoral supervisor can be someone who has a PhD obtained in the relevant field of study. External supervisors can lead students only as co-supervisors. Doctoral School gives authorization and a registration on an official system (www.doktori.hu) is needed Re-evaluation is needed yearly	Co-supervisors need to be accepted by the doctoral school and need to have a PhD in the relevant field of study	No need for doctoral guidance committee	(Home) defense: evaluation of two reviewers and defense in front of a committee. Results of home defense are evaluated by the doctoral school Final defense: two additional reviewers + defense against a committee Results of the final defense are evaluated by the doctoral school and by the doctoral school.
Latvia	A supervisor needs to hold a PhD	It is allowed to have a co-	Doctoral guidance	The doctoral guidance

	degree and usually should be an associate professor or professor Doctoral programme board approves topic of PhD thesis and a supervisor Re-evaluation of the supervisor is not needed	supervisor, especially if the topic is interdisciplinary. In some PhD programmes (eg. Socio-technical Systems Engineering) having co-supervisor and not from the same institution will be mandatory. For co-supervisors: same requirements as for supervisors	committee is necessary, as it monitors progress of doctoral students There are 5 people in the committee which includes director of the study programme and professors in respective field	committee evaluates the doctoral students during their promotional exam. PhD Thesis Defense Council consists of 5 members.
Netherlands	Supervision is provided by a supervisory committee, chaired by a lecturer with a degree at EQF level 8. This person acts as supervisor. Daily supervision can be provided by the lecturer or a member of the research group with a PD or doctorate degree. In addition, two external professionals from the field are members of the supervisory committee. They are directly involved in the practical issue, have a PhD or PD or a comparable work and thinking level and act as 'critical friend'. Supervision is intensive	Supervision is done by 2 or more professors, and a number (typically 1, 2 or 3) professionals from the workfield	Graduate Committee, consisting of (now) 6 professors from participating UASs, and 2 external members from the workfield	The assessment committee consists of a member from the community of lecturers within the relevant domain and three members who are nominated by the supervisory committee and who represent the stakeholders in the supervisory committee. For the moment it is not decided at national / institutional level if the defense will be public or not.

	(approximately 30-40 man-days per year for the entire team) and starts immediately at the beginning of the PD trajectory. The supervision can be only done by a full professor.			
Portugal	Conditions by national legislation: doctoral degree or its legal equivalent; relevant scientific curriculum recognised by the Scientific Council. Recognition based on specific criteria, among others: • Doctorate in the field of Specialisation or related Specialisation; • Affiliation with a Research Unit recognised by a scientific agency; • Conducting research in a Laboratory / Research Center within the relevant disciplinary field; • Assessment of supervisory experience based on specific criteria; • Assessment of research experience, based on specific criteria.	The dissertation or project work and the internship are carried out under the supervision of a PhD holder or a recognized expert, as approved by the University's relevant scientific authority, whether national or international. Supervision may also be conducted under a co-supervision arrangement, involving either national supervisors or a combination of national and international supervisors.	Information is lacking at the moment.	Once the first stage of submission is completed (i.e., the approval of the final thesis draft), a doctoral jury must be formally proposed and approved by the University's Scientific Council. The jury comprises the rector, who presides or may delegate this role to a representative, and at least four doctoral-level members. This includes the supervisor and at least one external professor from the relevant scientific field.
Romania	Conditions: • having passed the habilitation exam,	Co-supervision is allowed.	It is required for each individual PhD student.	The final jury for thesis defense is

	• or being acknowledged before 2011 (when habilitation exam was introduced) Authorization is given by CNATDCU, a council of the Ministry of Education. Re-evaluation is done after five years.	Co-supervisors should hold the same conditions as the main supervisor For co-supervision between universities, an agreement is required.	Formed by 3 members, one from outside the university. They are coordinating the PhD student, including participation at the examinations or evaluation oft he research reports.	formed by 5 members: • President: nominated by the Doctoral School • Main supervisor • At least 2 members from outside the university • Co-supervisors can be part of the jury • All should be PhD supervisors, or at least having the position of Associate Professor.

From a general point of view, the conditions for the main supervisor seem to present the most similarities among countries, institutions and Doctoral Schools. Besides the formal process of nomination / recognition / registration (and in some cases its regular re-evaluation, e.g. Hungary and Romania), all countries require at least a PhD on the side of the supervisor, as well as relevant research experience in the field. Some countries (e.g. Romania, Austria) also require additionally habilitation on the side of the supervisor, although this may be skipped in some specific settings (e.g. funding schemes) if the potential supervisor has significant experience as co-supervisor. The supervisor has to belong to the institution awarding the PhD title (typically a professor, in some cases associate / adjunct professor). External supervisors are not allowed as main supervisors.

For co-supervisors, usually similar but sometimes less restrictive rules apply, also allowing for example external co-supervisors (not affiliated with the HEI awarding the P(h)D title), or from international universities, or directly from the relevant workfield. Beside the national rules, specific agreements are stipulated either with the institutions of the co-supervisors or individually, defining criteria, roles and responsibilities. In some countries, not only one co-supervisor, but (small) supervision teams can be established, especially if the research topic is interdisciplinary and also when partners from the industry are involved.

Need, composition and role of a doctoral guidance committee vary significantly between countries and also inside the individual institutions, as well as the composition of reviewers or jury for the final evaluation of the thesis / dissertation. Here are also major differences in the procedures (for example, in the kind of

defense, in the evaluation needed before or even after the defense, etc.). In most cases, committee and jury are required to be composed of experts not including the supervisor himself/herself. In some cases, external experts are mandatory. The size of the guidance committee varies from 2-3 to 5-6, sometimes with additional experts from the workfield. Often 2 reviewers are required (for an evaluation of the thesis / dissertation before the defense), while the final jury consists of a larger jury / committee often including external roles and up to 5 members.

5. Mapping E³UDRES² partners' experience & capacity

5.1. Accredited doctoral areas

From the questionnaires that have been running to all partner universities, it has been realised that the doctoral domains / areas in which the P(h)D titles are awarded are defined very differently from one university to another. Only Politehnica University of Timisoara, that is running doctoral progammes in practically all technical fields is using the general domains defined at European level. Generally, universities that are running only a limited number of doctoral programmes, are mainly using the name of the doctoral program instead of the broader domain. Following the discussions between all involved partners, it has been decided to use in our survey the classification given by the Erasmus codes for different learning domains. Wherever possible, we tried to present both the name of the doctoral programme that is running and the Erasmus learning domain, in order to make it easier for those interested to find a good match for possible common P(h)D joint programmes.

The main findings for the questionnaires are summarized in the next table:

Partner	Doctoral area/field	Since year	No. of accredited P(h)D supervisors	No. of enrolled P(h)D students at the moment
STPUAS	Joint PhD programme: • Visual Computing (with TU Wien in doc.funds.connect). The title is awarded by TU Wien. Doctoral field: Computer Science	2024	4 (co-) supervisors	5 (enrolled at TU Wien)
	Joint PhD programme: • Technology, Innovation and Cohesive Societies (with UWK – University for Continuing Education Krems). The title is awarded by UWK.	2023	1 (co-) supervisor	1 (enrolled at UWK)

	Doctoral field: Communication and Information Sciences			
UCLL	No accreditation.			
JAMK	No accreditation.			
HFD	Applied Computer Science (with 3 other UAS in the federal state of Hesse)	2017	7	15
	Public Health	2017	15	20
	Social Work (with 3 other UAS in the federal state of Hesse)	2017	13	33
	Social Sciences (through Fulda Graduate Centre of Social Sciences)	2016	18	51
	Mobility and Logistics (with 2 other UAS in the federal state of Hesse)	2020	17	1
MATE	Agricultural engineering	2000	55	93
	Animal husbandry science	2000	67	79
	Biology sciences	2000	37	41
	Food sciences	2000	63	84
	Economic and management sciences	2000	110	199
	Environmental sciences	2000	63	70
	Plant and horticultural sciences	2000	121	144
	Regional sciences	2000	10	30
ViA	Economics and Business Administration	2020	10	12
	Socio-Technical Systems Engineering Doctoral field: Electrical engineering, Electronics, Information and Communication Technologies	2006	10	5
Saxion	Energy and Sustainability	2023	36 (no accreditation needed)	7
	Health and Wellbeing			
	Leisure, Tourism and Hospitality			
	Learning and Professionalization			
	Technology and Sustainability			
IPS	IPS is not yet accredited to offer doctoral programmes, but the legal national framework allows it as long as the proposed programmes are within one of the R&D units with a minimum mark of "Very good" Potential research areas: the ones that are covered by one of the R&D units that received the minimum evaluation of "Very Good", for example Software Engineering, Information Systems, Computing and Information Technology, Marine and Environmental Sciences, Sport Physical activity and Health research, Structural Chemistry.			
	Architecture	2023	7	15

UPT	Systems engineering	Before 1990	8	16
	Computers and Information Technology	Before 1990	21	76
	Geodesical engineering	2023	4	2
	Civil engineering and installation	Before 1990	25	89
	Chemical engineering	Before 1990	13	41
	Materials engineering	Before 1990	9	24
	Electrical engineering	Before 1990	8	16
	Energy engineering	Before 1990	6	27
	Electronic engineering, Telecommunications and Information Technologies	Before 1990	15	52
	Engineering and Management	1996	8	41
	Mechanical engineering	1935	25	89
	Industrial engineering	1996	7	26

An overview of the accredited doctoral areas across E³UDRES² partner universities highlights a significant diversity in structure, maturity, and experience. Partners like Politehnica University of Timișoara (UPT) and Hungarian University of Agriculture and Life Sciences (MATE) reveal extensive doctoral offerings with numerous technical and scientific domains. UPT is focusing on engineering topics (e.g., mechanical, electrical, civil, computer science), and MATE on agricultural and biological sciences, having hundreds of enrolled PhD students and supervisors. In contrast, institutions such as JAMK and UCLL lack doctoral accreditation entirely, while others like STPUAS and Saxion have only recently initiated joint or domain-specific doctoral programmes.

The classification using Erasmus learning domains allows better cross-institutional comparison and collaboration potential, especially for universities with narrow doctoral research fields. Several institutions operate in consortia, sharing PhD programmes and supervision responsibilities, exemplifying collaborative strategies to overcome individual limitations. The non-uniform distribution of accredited fields and experience levels signals both the opportunity and the challenge of harmonizing doctoral education within the E³UDRES² alliance.

5.2. Legal requirements for the accreditation of doctoral areas

As already noted, there is a great diversity of defining the P(h)D doctoral areas inside the E³UDRES² alliance. Consequently, the next step is to see what the legal possibilities and limitations in different countries are to extend the range of doctoral

areas, in order to facilitate joint collaboration in developing joint P(h)D programmes or schools.

The findings are summarized below:

Partner	Evaluation and accreditation	Validity of accreditation	Introducing new doctoral areas/fields
STPUAS	No external evaluation and accreditation possible at the moment in Austria (this may change based on the programme of the government established in 2025), because of legal constraints. For dissertation cooperations (e.g. based on co-supervisions) agreements are legally possible without an additional evaluation / accreditation in Austria.		
UCLL	No info available, as UCLL cannot participate.		
JAMK	Doctoral education in Finland is based on universities' own requirements and practices such as universities' internal quality assurance systems and international evaluations, and, as far as we know, there are no separate accreditations for doctoral degrees in use. In Finland, accreditations are mainly granted for bachelor's and master's level programs.		
HFD	Done in each individual federal state, for HFD (State of Hesse) by Hessen State Ministry of Higher Education, Research and the Arts (HMWK) and Evaluation Committee. Criteria: (individual) research experience, publications, acquired third-party funding, experience in supervising doctoral theses.		New application necessary.
MATE	The accredtitation is done by Hungarian Accreditation Committee.	The accreditation is valid for a	

		maximum of five-years, after which it must be reassessed.	
ViA	Licensed and accredited by the Academic Information Quality Agency (AIKA)	Valid for 6 years, then should be re-accredited	A new area can be introduced if it matches ViA Strategy as well as specialisation directions approved by the Ministry of Education and Science of the Republic of Latvia.
Saxion	In the Netherlands, the Ministry of Education, Culture and Science (OCW) is the competent authority overseeing and funding the pilot phase of the Professional Doctorate (PD) at universities of applied sciences. The implementation of the pilot is carried out in collaboration with the Netherlands Association of Universities of Applied Sciences (Vereniging Hogescholen) and the Regieorgaan SIA (part of the Dutch Research Council, NWO), which is responsible for practice-based research. These organizations are jointly responsible for the development, quality assurance, and approval of PD programmes during the pilot phase.		The pilot phase of the Professional Doctorate (PD) in the Netherlands began in 2023 and will run until the end of 2027. During this period, universities of applied sciences are experimenting with the structure, content, and quality assurance of PD programmes. The goal is to evaluate and potentially integrate this new form of practice-based doctoral education into the Dutch higher education system on a permanent basis. After the pilot phase of the Professional Doctorate (PD) in the Netherlands concludes in 2027, the following developments are planned or under consideration: • *Legal Recognition*: As of now, the PD does not yet have a legally protected status. This means that graduates currently do not receive an official academic degree or title. However, the Ministry of Education, Culture and Science (OCW) is actively exploring options to legally embed the PD in Dutch higher education law.

			• *Transition Arrangements*: If legal recognition is established after 2027, there is an intention to create transitional arrangements for candidates who started their PD during the pilot phase. This would allow them to potentially receive a formal degree or title retroactively. *Evaluation and Decision*: The pilot will be evaluated to determine whether the PD should become a permanent part of the Dutch higher education system, including decisions on accreditation procedures, quality assurance, and degree-granting rights for universities of applied sciences.
IPS	Done by the Portuguese Agency for Assessment and Accreditation of Higher Education (A3ES), the entity responsible for the accreditation of doctoral programs in Portugal, ensuring that they meet legal and quality requirements.	The accreditation is valid for six years, after which it must be reassessed.	
UPT	Done by the Romanian Agency for accreditation of the university programs (BSc, MSc, PhD) ARACIS	Valid for 5 Years, then it should be re-evaluated	A new area can be introduced with a new Application to ARACIS. There is a set of criteria, specified at the national level.

The legal frameworks and accreditation procedures for doctoral education within the E³UDRES² partner institutions reveal substantial differences shaped by different national legislationa. Countries like Romania (UPT), Portugal (IPS), Latvia (ViA), and Hungary (MATE) rely on national accreditation agencies, with accreditation typically valid for 5 to 6 years, after which re-evaluation is required. These systems follow formal application procedures and adhere to established national criteria for introducing new doctoral areas.

On the other hand, some countries adopt more flexible or decentralized models. For instance, Finland (JAMK) does not have a separate doctoral accreditation system, instead depending on internal university quality mechanisms. Austria (STPUAS) faces legal constraints that currently prevent external accreditation for doctoral programs, although co-supervised dissertation agreements are allowed.

A notable case is the Netherlands (Saxion), which is running a pilot for Professional Doctorate (PD) model between 2023 until 2027, under the oversight of multiple national bodies. This initiative represents a novel approach to practice-based doctoral education, with discussions underway to grant a legal status and formal degree recognition.

Overall, the analysis reveals a spectrum of accreditation maturity and legal autonomy, ranging from highly regulated systems to experimental or decentralized frameworks, with implications for joint doctoral programs and cross-border collaboration.

5.3. Legal requirements for national / international joint doctoral programmes

The legal frameworks and practices related to national and international joint doctoral programmes, particularly co-supervision (cotutelle) systems, across the E³UDRES² partner institutions was analyzed. The main goal was to see where the E³UDRES² universities are having feasible possibilities to enhance their collaboration in joint doctoral programmes by involving P(h)D co-supervisors from different institutions.

We believe that this could finally take to the increase of the number of experienced doctoral co-supervisors, especially in institutions that do not hold at the moment the right to award P(h)D degrees.

This is why, we considered important to know in which countries co-supervision is allowed and what are the minimum criteria for a researcher to act as a doctoral co-supervisor in each of the E³UDRES² partner universities.

Partner	Co-supervision (co-tutelle) system	Minimum requirements
STPUAS	There is no additional requirement on doctoral cooperations and/or joint programmes at the national level.	There is no additional requirement on doctoral cooperations and/or joint programmes at the national level.
UCLL	No info available, as UCLL cannot participate.	
JAMK	No legal requirements for national / international joint doctoral programmes.	

HFD	International Doctoral / Cotutelle Recommendations by German scientific organisations: German Rectors' Conference (HRK) Cotutelle, UniWiND / GUAT (German University Association of Advanced Graduate Training), European Council for Doctoral Education (EUA – CDE), Presentation at UniWiND Heidelberg Symposion 2 October 2024: Advancing International Perspectives for Early-Career Researchers, Dr Schwarzkopf (Jena), Dr. Schwanemann (Hannover); UniWiND / GUAT (2015): Doctoral Supervision. Recommendations and good practice for universities and doctoral supervisors, Freiburg; UniWiND / GUAT (2019): Diversity through cooperation: Recommendations of the UniWiND board on procedures for doctoral qualifications with partner institutions (www.uniwind.org)	No national regulation in Germany, different regulations in individual federal states and universities / doctoral research centres. At HFD doctoral degree regulations at several doctoral research centres already contain "opening clauses" for international cooperation / co-tutelle schemes.
MATE	There is no additional requirement on doctoral cooperations at national level. Co-supervision is permitted in Hungary.	In general a framework agreement must be concluded at the institutional level for universities to provide co-supervision doctoral training for certain students.
ViA	Co-supervision is allowed. Co-supervisor should be approved by the PhD study programme committee.	Co-supervisor should also hold a PhD or at least Master degree and solid professional experience.
Saxion	The international partner must contribute substantively to the research and/or professional development of the candidate. The collaboration must be transparent and demonstrable in the project proposal, including agreements on: - Guidance and supervision - Ownership of results - Intellectual property Language and accessibility of the final portfolio	International collaboration within a PD trajectory is permitted, provided that it contributes substantively and structurally to the practice-oriented research and development of the PD candidate. This may involve collaboration with a foreign knowledge institution, company or social organisation. The Dutch university of applied sciences remains ultimately responsible for the trajectory, including quality assurance, supervision and assessment. The PD candidate must demonstrably be active in Dutch professional practice,

		even if parts of the research take place abroad. The application must meet the financing conditions of Regieorgaan SIA, including co-financing and the use of lecturers.
IPS	Co-supervision is permitted in Portugal, particularly for interdisciplinary doctoral research. A typical arrangement includes one main supervisor and one co-supervisor, with at least one of them affiliated with the host university.	In most cases, a memorandum of understanding between the participating institutions may be required. All co-supervisors must be qualified to supervise the PhD research.
UPT	Co-supervision is allowed in UPT, especially for interdisciplinary subjects for the doctoral research. One main supervisor, plus 1 co-supervisor.	Memorandum of understanding between the involved universities. Co-supervisors should be habilitated for conducting PhD research.

A common conclusion is that most countries allow co-supervision, though the degree of formality and regulation varies widely.

In countries like Germany (HFD), co-supervision is defined by institutional and federal state policies rather than national legislation, with guidance coming from academic associations such as UniWiND and EUA. Portugal (IPS), Romania (UPT), Latvia (ViA), and Hungary (MATE) permit co-supervision, usually underpinned by Agreement of institutional colaboration and formal eligibility requirements for supervisors. These systems emphasize flexibility while maintaining academic oversight.

Countries such as Finland (JAMK) and Austria (STPUAS) report no additional national requirements, which suggests institutional autonomy in forming doctoral partnerships. The Netherlands (Saxion) takes a structured approach under the Professional Doctorate (PD) framework, emphasizing transparency, intellectual property agreements, and demonstrable engagement with Dutch professional practice.

Overall, while joint supervision is broadly supported, the specific mechanisms differ, ranging from informal institutional arrangements to structured national pilot programmes. These variations highlight both the opportunities and administrative challenges in establishing transnational doctoral education under the E³UDRES² alliance.

5.4. Legal requirements for joint doctoral schools

The following section of the questionnaire is dedicated to realizing a mapping of the E³UDRES² partner institutions in terms of the legal national or internal regulations for developing joint P(h)D schools inside the consortium.

It was expected from the beginning to have quite a big diversity of regulations, as it is known from different studies that the situation at the European level is not clearly regulated. It is to mention here at least two reports:

- The EUA Council for Doctoral Education survey *"Doctoral education in Europe: current developments and trends"*[5], from April 2022
- The EUA Council for Doctoral Education Thematic Peer Group Report *"Co-tutelles in European universities: concept, aims and implementation"*[6], from May 2022
- The EUA Council for Doctoral Education report *"Building the Foundations of Research. A Vision for the Future of Doctoral Education in Europe"*[7], from June 2022
- The EUA Council for Doctoral Education survey *"Doctoral education in Europe today: achievements, policies and emerging trends"*[8], from March 2025
- The 2025 European Commission *"Report on the outcomes and transformational potential of the European Universities initiative"*[9]

The results of the E³UDRES² partner institutions mapping are presented in the following table:

Partner	Organisation on P(h)D Schools	Minimum criteria for a P(h)D School	Internal recognition of joint P(h)D Schools
STPUAS	At the national level, there is no necessity for PhD schools, this is not required (and there are no national regulations on PhD schools as such)	No national regulations for PhD schools	No additional recognition required. At the national level, there is no such recognition. At the institutional level, jointly awarded PhD-titles and jointly installed PhD-schools do not require further recognition.
UCLL	No info available, as UCLL cannot participate.		
JAMK	No legal requirements for joint doctoral schools.	No legal requirements for joint doctoral schools.	No legal requirements for joint doctoral schools.
HFD	There are no national regulations, different	There are no national regulations, different	At HFD doctoral degree regulations at several

[5] https://www.eua.eu/publications/reports/doctoral-education-in-europe-current-developments-and-trends.html
[6] https://www.eua.eu/publications/reports/co-tutelles-in-european-universities-concept-aims-and-implementation.html
[7] https://www.eua.eu/downloads/publications/web_cde_position%20paper_june%202022_fin2.pdf
[8] https://www.eua.eu/our-work/get-involved/call-for-participation-2025-eua-cde-survey-doctoral-education-in-europe-today-achievements-policies-and-emerging-trends.html
[9] https://op.europa.eu/en/publication-detail/-/publication/db43f6ca-da14-11ef-be2a-01aa75ed71a1/language-en

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	regulations in individual federal states and universities / doctoral research centres. For HFD (State of Hesse) regulated by Hessen State Ministry of Higher Education, Research and the Arts (HMWK) and Evaluation Committee.	regulations in individual federal states and universities / doctoral research centres. Criteria: (individual) research experience, publications, acquired third-party funding, experience in supervising doctoral theses.	doctoral research centres contain "opening clauses" for international cooperation / co-tutelle schemes. o national regulation, different regulations in individual federal states and universities / doctoral research centres.
MATE	According to Hungarian legislation, a Doctoral School can be established by several higher education institutions. An agreement must specify which institution is the coordinating institution and which is or are the partner higher education institutions. Students of have a student relationship with the coordinating higher education institution, and the scientific degree is awarded to them by the coordinating higher education institution, with the partner higher education institution or institutions also being indicated.	Both joint institution must meet the quality standards of Hungarian higher education legislation.	No additional requirements.
ViA	One single PhD School for both PhD programmes.	There should be at least one accredited PhD programme in order to form a PhD school.	There is an internal regulation for ViA PhD School as well as description of duties for PhD School director. There are not yet regulations about the joint PhD schools.

Saxion	*The following describes the Dutch situation on PhD.* A joint doctorate is a formal collaboration between a Dutch university and one or more foreign (or Dutch) institutions, resulting in a jointly awarded doctoral degree. The Dutch university must obtain prior approval from its Board for the Conferral of Doctoral Degrees before entering into any commitments. Joint doctorates are typically part of a structured programme, not one-off collaborations. They are intended to support long-term, high-quality institutional partnerships. The programme must include: - Joint supervision - Coordinated training and research A shared doctoral agreement outlining responsibilities and procedures	The joint programme must meet the quality standards of the Dutch Accreditation Organisation (NVAO). The partner institution(s) must have a strong academic reputation and be approved by the Dutch university's doctoral board. A framework agreement must be signed, including: - Admission and assessment procedures - Supervision structure - Intellectual property arrangements - Language of the dissertation and defense The programme should involve at least three universities offering PhD to qualify as a joint doctoral school (exceptions may apply in EU-funded programmes like Marie Curie networks).	Joint doctorates are recognized under Article 7.18(6) of the Dutch Higher Education and Research Act, which allows Dutch universities to award a doctorate jointly with foreign institutions. The resulting degree is equivalent in value to a regular Dutch PhD. If the joint degree is awarded as a single diploma, it typically bears the logos and signatures of both institutions. The degree is internationally recognized, especially when the partner institution is located in a country that is party to the Lisbon Recognition Convention or similar agreements.
IPS	No legal requirements for joint doctoral schools.	No legal requirements for joint doctoral schools.	There are currently no formal internal regulations in place for joint PhD Schools. However, IPS is considering establishing a Doctoral School to support PhD candidates by assisting with administrative matters, accommodation, and applications for

			scholarships or other educational funding opportunities.
UPT	One single PhD School at UPT level, in Engineering, all areas/fields are included there.	Minimum 3 persons habilitated to conduct PhD research in the same area/field assumed by the PhD School.	No formal internal regulations for joint PhD Schools yet. Joint doctoral programs are allowed, in accordance with the national legislation, but without a specific methodology.

In conclusion, although the E³UDRES² alliance plans to implement both joint P(h)D programmes and joint P(h)D schools simultaneously, ensuring flexibility and alignment with research areas and institutional constraints, the second approach is less appropriate considering the large dispersion among the E³UDRES² partners regarding national legislations and internal regulations, existing doctoral programs in different doctoral fields, experience, maturity or size of their existing doctoral facilities. Consequently, it is reasonable to expect that this approach might be a long-term objective.

6. Study cases

6.1. Examples of good practices from previous E³UDRES² initiatives

6.1.1. E³UDRES² and Ent-r-e-novators PhD Summer Schools

E³UDRES² – Ent-r-e-novators - Cooperating for excellence and impact in research and innovation is a Horizon-Widera project accessed in 2021 by the initial six partners of the E³UDRES² alliance. One of the goals of the project is to accelerate embracing open science, open innovation and open education by the involved institutions. In order to do that, the project proposed the development of programmes and action plans for delivering pilot webinars / workshops / Summer schools in OS/OI/OE to students, Early Stage Researchers, experienced researchers, professors and other stakeholders in the E³UDRES² R&I ecosystem, both on site or online (with the development of a MOOC for training in OS/OI/OE).

The first PhD Summer School is organized by the E³UDRES² – Ent-r-e-novators project, the European Universities Alliance E³UDRES² and the Politehnica University of Timișoara in June 2025 and offers students and early stage researchers a unique opportunity to enhance understanding and skills in Open Policies.

Through interactive workshops, expert-led sessions, and hands-on activities, students will learn how to develop and apply open policies that enhance accessibility, collaboration, and innovation in academia. This modular program combines lectures and hands-on activities, equipping early-stage researchers with

the knowledge and practical skills to develop and implement effective open policies within their respective fields.

The PhD Summer School on Open Practices in Higher Education 2025 marks the inaugural edition of this intensive 5-day program designed for early-stage researchers (Master's and PhD students) and researchers eager to explore the landscape of Open Education (OE), Open Access (OA), Open Science (OS), and Open Innovation (OI).

The summer school program covers Open policies' core principles and practical applications across various domains. Participants will explore key concepts, analyze real-world case studies, and engage in hands-on activities to develop their open policy frameworks and everyday practices. PhD students will have the possibility to present their research and gain insights into how open access and open science can help and support them.

The program will consist of 3 hours of sessions in the morning, each featuring a presentation by a speaker followed by 3 hours of afternoon interactive, hands-on activities. The curriculum is structured around the following key topics:

- Open Education;
- Open Education resources pedagogies and practices;
- OERs production;
- Open Science;
- Ethical Aspects in Open Science;
- Open publishing
- Open Data;
- Open Innovation;
- Open Innovation practices;
- Open Innovation Tools;
- FAIR – Findable, Accessible, Interoperable, and Reusable data

This year's Summer School features a lineup of specialists and thought leaders sharing insights and experiences on Open practices, offering extensive knowledge from academia, research, and policy while providing participants with a unique opportunity to learn from the best in the field. The speakers of the 2025 edition are:

- Diana Andone – Politehnica University Timisoara, Romania, *The use of AI in Open Education, OER production, AI use in research and Science*
- Sílvia Couvaneiro – Polytechnic University of Setúbal, Portugal, *Open Education pedagogies and practices*
- Agnese Davidsone – Vidzeme University of Applied Sciences, Latvia, *Ethical Aspects in Open Science*
- Sara Gilissen – UC Leuven-Limburg University of Applied Sciences, Belgium, *Open Innovation*
- Tassillo Pelegrini – St. Pölten University of Applied Sciences, Austria, *Open Data*

- Klaudia Polgar – Hungarian University of Agriculture and Life Sciences, Hungary, *Open data & FAIR*
- Silviu Vert – Politehnica University Timisoara, Romania, *Open Science, Open Innovation Tools*
- Vlad Mihaescu – Politehnica University Timisoara, Romania, *MOOCs*
- Radu Vasiu – Politehnica University Timisoara, Romania, *Open Publishing*

Participation is open to all E³UDRES² partner institution, which are encouraged to send Master's students, PhD students, researchers, and academic staff, free of charge. The Summer School is also open to participants from other universities from EU countries.

Since 2026, the organization of the annual PhD Summer School will be organized solely by the E³UDRES² consortium, as the Ent-r-e-novators project will come to its end.

It is also expected that other similar PhD Summer Schools on research topics will be organized by the E³UDRES² 2.0 alliance.

6.1.2. ViA involvement in Joint doctoral programmes at national level and collaboration with STPUAS and IPS

Vidzeme University currently has joint doctoral programme on national level in economics and business administration together with two other regional universities of applied sciences. Another doctoral study programme "Socio-technical Systems Engineering" currently is a joint PhD programme on national level; however, it is now going through re-building and as soon as all necessary documentation will be submitted and the licence will be received, this programme will become an international joint PhD programme together with E³UDRES² partners from St. Polten, Austria and Portugal. In parallel there will be cooperation between the doctoral schools of all parties involved.

The goal of the joint doctoral programme "International programme in Socio-technical Systems Engineering" is to promote the development of the electrical engineering, electronics, information and communication technology industry and to raise a new internationally competitive generation of scientists who are able to introduce the latest scientific findings of system engineering into the national economy, increasing the efficiency and reliability of the industry, as well as achieving production and service quality improvements.

The implementation of the study program corresponds to the area "Information and Communication Technologies" defined in the Smart Specialization Strategy of Latvia.

The programme gives opportunities to write and defend a doctoral thesis in order to obtain a PhD degree in electrical engineering, electronics, information and communication technologies.

The main task of the doctoral programme is to prepare scientists in the sub-field of system analysis, modelling and design of electrical engineering, electronics, information and communication technologies and to promote the application of students' theoretical knowledge, cognitive and research skills, as well as research results in the following environments:

- human-computer / human-machine interaction;
- simulation modelling technology;
- business modelling;
- systemic planning of regional development;
- data science / data intelligence;
- data driven decision making;
- smart manufacturing;
- digital education technologies;
- signal processing and transmission;
- media technology and creative industries;
- Artificial Intelligence (AI) technologies;
- Human-centered technologies?
- cybersecurity and system resilience;
- immersive technologies.

Learning outcomes of the doctoral programme are as follows:

1. Knowledge of the state of art in science and technology of the field of thesis topic;
2. Ability to manage, evaluate and apply appropriate research methodology and modern research methods;
3. Competence to contribute to the development of technologies and to give new understanding to existing knowledge, as well as its application in practice by developing original research solutions (doctoral thesis), part of which is included in international peer-reviewed publications;
4. Ability to perform independent critical literature analysis, evaluation and synthesis, in order to propose important and innovative research directions;
5. Competence to propose a research idea, to plan, and structure scientific research projects;
6. Ability to take responsibility for ethical aspects of research activity;
7. Ability to communicate orally and in writing about the area of research within the own and other scientific communities and society in general;
8. Demonstrate the competence to independently advance one's own scientific qualification to develop a professional career path.

The doctoral programme "International programme in Socio-technical Systems Engineering" has been developed in accordance with the Law on Higher Education Institutions of the Republic of Latvia, the Law on Scientific Activities, and the Cabinet Regulations of the Republic of Latvia. The programme is practically implemented

together with Ventspils University of Applied Sciences, as well as St. Pölten University of Applied Sciences and Polytechnic University of Setubal. As part of the study process, the following will be jointly organized: seminars for doctoral students and exchange of academic staff, as well as joint work in the promotion council.

The purpose of the doctoral programme is to provide an opportunity for those students who have obtained a master's degree in information technology, or Computer Science, as well as in other STEM sciences, to deepen their knowledge in system engineering and continue writing their doctoral thesis in accordance with the sub-field of science and the application environment.

Graduates of the doctoral study program have the opportunity to work not only for Vidzeme University of Applied Sciences and Ventspils University of Applied Sciences as lecturers and/or researchers and for cooperating universities St. Pölten Applied Sciences and Polytechnic University of Setubal, but also for any other university or institute that provides studies and research in the field of information technology, as well as in any other higher education institution or training centre where a teacher with knowledge and skills in this field is needed. After completing doctoral studies, graduates have possibilities to write and participate in a postdoctoral grant, as well as write and conduct other research projects. Wide employment opportunities are available within the framework of Horizon 2020 and Europe projects, both at cooperation partner universities and in industry companies, where the science and research component are one of the priorities. Due to globalization tendencies and exchange of workforce and experience, new doctors have also ample opportunities to engage professionally in a post-doctoral research project abroad, and such offers are made to both current and future graduates.

Vidzeme University can offer a draft on basic documentation regarding joint international doctoral programme.

6.1.3. UPT involvement in Joint doctoral programmes at national and international level

As one of the oldest universities in Romania that is awarding PhD titles (since 1935), Politehnica University of Timisoara has an extensive national and international experience in collaboration in the field of doctoral education. This experience embraces several aspects, according to the actual national legislation:

1. *Doctoral thesis co-supervision*

At this moment, in 2025, UPT is running 21 thesis in national or international co-supervision, with UPT professors acting as main supervisor or as co-supervisor. The collaborating universities at this moment are:

- University of Salerno, Italy
- Université de Limoges, France

- Université du Quebec à Trois-Rivieres, Canada
- Technical University of Cluj-Napoca, Romania
- Technical University "Gheorghe Asachi" Iasi, Romania
- Politehnica University of Bucharest, Romania
- University of West, Timisoara, Romania
- University of Oradea, Romania
- "Valahia" University of Targoviste, Romania
- University of Medecine and Pharmacology "Carol Davila" Bucharest
- University of Medecine and Pharmacology "Victor Babes" Timisoara

The corresponding doctoral fields of study are:

- Electronics engineering, telecommunications and information technology
- Mechanical engineering
- Materials engineerin
- Civil engineering and installation
- Chemical engineering
- Industrial engineering
- Engineering and management
- Medicine
- Pharmacy
- Dental medecine

Until now, UPT registered 16 PhD thesis finalized in international co-supervision, in partnership with the following universities:

- University of Glasgow, Scotland, UK
- University Telecom Bretagne, France
- Ecole des Mines de Douai, France
- Universite d'Artois, Bethune, France
- Universite de Saint-Etienne, France
- Universite de Lyon, France
- Universite de Limoges, France
- University of Ghent, Belgium
- University of Applied Sciences Gelsenkirchen, Germany
- University of Applied Sciences Karlsruhe, Germany
- University of Eastern Finland, Kuopio, Finland
- University of Belgrade, Serbia

2. *Participation of international experts as referees in international jury for PhD defense of thesis realized in UPT*

UPT opened the international collaboration for the participation of professors from other European or non-European universities in the juries for the public defense of the thesis realized in UPT. The main universities from which the jury members came were:

- Technical University Munchen, Germany

- University of Stuttgart, Germany
- Technical University Dresden, Germany
- University of Applied Sciences Gelsenkirchen, Germany
- Westphalian University Gelsenkirchen, Germany
- University of Applied Sciences Hof, Germany
- RWTH University Aachen, Germany
- University of Applied Sciences Karlsruhe, Germany
- University of Applied Sciences Wilhelmshaven, Germany
- Dublin City University, Ireland
- Universite de Lyon, France
- Universite de Limoges, France
- Universite de Bourgogne, France
- University of Coimbra, Portugal
- University of Lisbon, Portugal
- Universidate Aberta, Portugal
- University of Aveiro, Portugal
- Politecnico di Torino, Italy
- Politecnico di Milano, Italy
- Federico II University of Napoli, Italy
- University of Granada, Spain
- National Technical University of Athens, Greece
- Universite de Liege, Belgium
- University of Tampere, Finland
- Hungarian University of Agriculture and Life Sciences (MATE) Godollo, Hungary
- University of Szeged, Hungary
- Wroclaw University of Environmental and Life Sciences, Poland
- University of Zilina, Slovakia
- Wageningen Food & Biobased Research, Wageningen, the Netherlands
- University of Belgrade, Serbia
- University of Minnesota, USA
- Oregon State University, USA
- Columbia University, USA
- Nagoya Institute of Technology, Japan
- Yildiz Technical University, Turkey

There are other ongoing collaborations in PhD research that are envisaged to be finalised through international experts as members of the thesis defense juries.
Some UPT professors were also appointed as members of thesis defense juries organized by the UPT's partner universities.

6.1.4. STPUAS working initiatives in P(h)D collaboration

STPUAS already has experience with PhD cooperations at the national level with other Austrian (traditional) universities, as only universities – not universities of applied sciences – are allowed at the moment after the Austrian law to award PhD titles. In the upcoming months, this situation could change as the programme of the new national government (installed in March 2025) foresees initiatives to involve UASs in PhD programmes as well (no further details defined yet).

At the institutional level, two PhD cooperations have been developed and started during the last years:

1. Together with the Universität für Weiterbildung Krems (UWK), a joint PhD programme in the field of Technology, Innovation and Cohesive Societies was started in 2024. The first student is already enrolled (as of March 2025), with one co-supervisor on STPUAS-side. Enrollment and award of the PhD title are on the side of UWK, as this is the only possibility based on the current national law. A cooperation agreement defines the shared roles and responsibilities as well as requirements for the two institutional partners.
2. Together with TU Wien, a joint PhD programme was established in 2023 in the field of Visual Computing (Title: Visual Heritage: Visual Analytics and Computer Vision Meet Cultural Heritage). The initiative is based on a competitive national funding scheme for doctoral cooperations (doc. funds.connect), as of March 2025, 5 doctoral students are enrolled and 4 (co-)supervisors are involved on STPUAS-side. Also in this case, enrollment and award of the PhD title have to be on the side of TU Wien based on the national law. A cooperation agreement defines the shared roles and responsibilities as well as requirements for the two institutional partners. A group of faculty members is defined on both sides, the requirements from the national funding scheme being that the (co-)supervisors either have a habilitation or have a proven experience of mentoring PhD students.

Beside these already existing institutional PhD cooperations, STPUAS is involved with ViA and IPS in the adaptation of one of the already existing joint PhD programmes at ViA to include STPUAS and IPS as further partners, as explained in 6.1.2.

6.1.5. HFD initiatives in joint P(h)D programmes

HFD has quite some experience with awarding doctoral degrees and with the internationalisation of doctoral studies and doctoral programmes. This applies to all Doctoral Research Centres (Promotionszentren) and departments with the right to award doctoral degrees. Currently (as of December 2024), more than 200 doctoral students are enrolled at HFD. 120 follow a scientific doctoral programme at HFD (right to award a doctoral degree at HFD), some 84 a cooperative doctoral programme in cooperation with a traditional research university. More than 50

doctoral students at HFD are international students (about 20 in doctoral research centres and about 30 in cooperative doctoral programmes).

HFD has already successfully established the legal framework for joint P(h)D programmes, more specifically Co-tutelle agreements in the doctoral degree regulations at three Doctoral Research Centres, for example at the Doctoral Research Centre Graduate Center of Social Work.

Furthermore, HFD has implemented a Co-tutelle scheme with the University of Toulouse (France) already for several years at Fulda Graduate Centre of Social Sciences (FGCSS). In Co-tutelle Doctoral Degrees, a Doctoral Certificate is awarded by each one of both universities, the two doctoral certificate documents are combined/bound together according to legal requirements for official documents, refer to each other and are only valid together.

HFD has also experience in doctoral students/graduate qualification programmes. These do not only include online and on-site training courses and classes, but also (international) autumn schools.

For example, Fulda Graduate Centre of Social Sciences (FGCSS) has been organising for 4 years an Autumn School for Doctoral students together with partner universities from USA, Jordan, France, Palestinian Territories, financially supported by national programme for the internationalisation of universities of applied sciences (Funding Scheme “HaW International” by German Academic Exchange Service DAAD).

The Graduate Center of Social Work has been a member institution of the "Inter University Centre Dubrovnik" (IUC) for several years. IUC is an international independent network of universities that offers short, intensive academic programmes for students, professors and scholars. Members regularly offer courses in which doctoral candidates from the Graduate Center of Social Work meet doctoral candidates from other international universities. In doing so, the courses stimulate academic collaboration.

The legal framework, the practical experience and positive examples of international cooperation in the field of doctoral programmes and doctoral procedures at HFD can serve as a very good basis for setting up joint initiatives and advancing P(h)D programmes in the E³UDRES² Alliance.

6.1.6. Saxion initiatives in joint P(h)D programmes

For the moment, Saxion University of Applied Sciences does not award any PhD degree. It is involved in the pilot project running in the Netherlands between 2023 – 2027, on the goal that the Universities of Applied Sciences will be granted the right to organise and offer PD - Professional Doctorate titles after the end of the pilot.

As about the pilot phase, the PD is a joint effort between, Saxion UAS, Hogeschool Utrecht, Hanzehogeschool Groningen, Hogeschool van Arnhem en Nijmegen,

Hogeschool Inholland, Avans Hogeschool, Hogeschool van Amsterdam, Hogeschool Rotterdam, Fontys, HZ UAS, De Haagse Hogeschool, Hogeschool Leiden, Christelijke Hogeschool Ede, NHL Stenden, Zuyd Hogeschool, Breda UAS, Hotelschool The Hague, Aeres Hogeschool, Marnix Academie, Hogeschool KPZ.

PD is set up in the Netherlands in domains (transcending universities). Nationally 7 domains, Saxion participates in 5 of the 7. The domains in which Saxion participates are; Energy and Sustainability, Health and Wellbeing, Leasure, Tourism and Hospitality, Learning and Professionalization, Technology and Sustainability.

In each domain there are multiple universities and most PD candidates are supervised by multiple universities within the domain. The university where the PD candidate is appointed (where the 1st supervising professor is also located) is the one that will award the diploma.

6.1.7. JAMK initiatives in joint P(h)D programmes

In Finland, there is an ongoing discussion about granting universities of applied sciences the right to award professional doctoral degrees. Twelve Finnish universities of applied sciences, including Jamk University of Applied Sciences (JAMK), are jointly developing a pilot for professional doctoral education. The universities of applied sciences propose a professional doctoral degree as part of the Ministry of Education and Culture's Vision for higher education and research for 2040, and hope that the degree or pilot could be implemented, for example, during the next government term. The doctoral degree would be on the same level as the corresponding university degree but would be implemented in an applied manner, in strong cooperation with businesses and other industrial sectors. The aim is to strengthen Finland's competitiveness and furthermore align with European developments by enabling professional doctorates. The group of 12 university of applied sciences is led by Vice Rector of Häme University of Applied Sciences (HAMK), Ms. Heidi Ahokallio-Leppälä, with Jamk represented by Vice President of Education Minna-Maaria Hiekkataipale. Jamk has also formed an internal group to contribute to national discussions and support student and staff participation in doctoral education through partner networks, for example E³UDRES² alliance.

6.2. Examples of good practices from other European Universities alliances

Almost all alliances are publishing their individual offers for doctoral studies and the contact for their PhD and PostDoc Support Offices. Big universities are using the opportunity to attract new research staff (PhD students, young researchers, postdoctoral students with grants from the European Universities Alliance project), many times for the specific activities of the Alliances.

They organize webinars, workshops and trainings for prospective PhD students, for young researchers and PostDoc students, as well as staff development courses.

Individual universities are publishing the support they are offering to researchers including: research management guidance, funding opportunities, administrative support.

Almost all alliances are committed to Open Science and Open Practices, supporting connection to OpenAIRE and offering support for OA publishing and for free search into open publication databases.

The main findings are summarized in the following table:

Alliance	Website	Main results on doctoral activities
ECIU	https://www.eciu.eu	• ECIU is one of the leading international consortiums of research intensive universities, with collective emphasis on innovation, creativity and societal impact, driving the development of a knowledge-based economy • ECIU developed the XR Campus University in virtual reality. The Virtual Campus is a milestone for the European educational community as it provides instant collaboration opportunities throughout Europe. See: https://www.eciu.eu/news/xr-campus-virtual-reality-for-instant-collaboration-shared-understanding-and-focus • Hard work on micro-courses, micro-credentials and Open Science, which are considered the "new normal" • Supporting interdisciplinary and challenge-based research. They consider co-supervision of PhD thesis as a granted reality. They offer travel grants up to 5.000 Euro per stay to encourage inter-institutional collaboration, including for PhD candidates. See: https://www.eciu.eu/researchers-mobility-fund
CIVIS	https://civis.eu/en	• Info on EU funding apportunities: MSCA Doctoral Networks and MSCA-DN Infodays https://civis.eu/en/teach-and-research/opportunities/fellowships/msca-doctoral-networks • Focus on postdoc cooperation: MSCA - Marie Sklodowska-Curie Postdoctoral Fellowships,

		developed the CIVIS Supervisors Database, available public at https://civis.opendatasoft.com/explore/dataset/msca-supervisors/table/ • Publish research job opportunities at CIVIS member universities https://civis.eu/en/teach-and-research/opportunities/research-careers-networks-and-projects
4EU+	https://4euplus.eu/4EU-1.html	Only offers guidance for attracting and enrolling doctoral candidates in the alliance, https://4euplus.eu/4EU-486.html
ARQUS	https://arqus-alliance.eu/	Only publish all university's offers https://arqus-alliance.eu/research/phd-portal/doctoral-studies-in-arqus/
CHARM-EU	https://charm-eu.eu/	Doctoral Researcher Summer Schools https://charm-eu.eu/learning/educational-offer/doctoral-researcher-summer-school-2025-developing-transdisciplinary-practice-to-tackle-complex-challenges/
CIVICA	https://www.civica.eu/	• Offers for postdoctoral researchers for one year in another CIVICA partner institution https://www.civica.eu/education/researchers-and-faculty/mobility/civica-post-doctoral-fellowship-programme • Offers for PhD positions in a database that can only be accessed internally by the alliance members https://my.civica.eu/en-gb/login • Envisions the creation of a European Doctoral school for social sciences, including joint supervision and shared campus access between alliance partners.
EU-CONEXUS	https://www.eu-conexus.eu/en/	Fully funded PhD positions offered in an internationally co-supervised PhD programme *Digital twins for sustainable coastal environments* https://www.instagram.com/p/DJJ6btZtuo1/
EDUC	https://www.educalliance.eu/	Offers research internships in a European Laboratory https://www.educalliance.eu/calls/research-internship-in-a-european-laboratory-with-educ

		based on the EDUC Course Catalogue https://courses.educalliance.eu/
EPICUR	https://epicur.edu.eu	• One goal is to create a *virtual inter-university EPICUR campus environment* to broaden the opportunities for virtual mobility and the development of new courses, testing a learning platform based on gamification • They developed an online Course catalogue, freely available at https://register.epicur.auth.gr/assets/courses/catalogue/#/index, that also offers doctoral studies possibilities, according to each of the universities own availabilities https://register.epicur.auth.gr/assets/courses/catalogue/#/studyPrograms/EPID?target=EPID&classStatus=20&priorityArea=EUV&priorityArea=SUT&priorityArea=GLO&priorityArea=FUI&priorityArea=TRS, without specific co-supervision arrangements
EU4Art	https://eu4art.eu/	Offer flexible curriculum in fine arts, but are also looking to raise their research profiles https://eu4art.eu/objectives/
EUGLOH	https://www.eugloh.eu/	European University Alliance for Global Health, with extensive expertise in research and innovation in global healths and related fields. They offer joint doctoral supervision https://www.eugloh.eu/research-innovation/phd-portal/cotutelle-joint-doctoral-supervision/ and developed a well designed EUGLOH Cotutelle Handbook, available at https://www.eugloh.eu/fileadmin/EUGLOH/Documents/Cotutelle/EUGLOH_-_Co-tutelle_Handbook_FINAL.pdf
EUTOPIA	https://eutopia-university.eu/	They offer the EUTOPIA Health Research Map https://www.partneringtool.eutopia-university.eu/ and they use Zenodo as an open tool for collecting research publications https://zenodo.org/communities/eutopia/records?q=&l=list&p=1&s=10&sort=newest

RUN-EU	https://run-eu.eu/	• They offer collaborative PhD programmes in areas such as Digitalisation Engeneering, Tourism, Social Sciences, Biotechnology Design, Sustainable Polymers and Entrepreneurschip • Research candidates may register on collaborative master's by Research (MEng/MSc) programmes which allow them an opportunity to progress to PhD studies. Each individual research programme represents a collaboration between two or more RUN-EU partners, in partnership with regional organisations, and with academia-business cooperation mechanisms. The supervisory team for each programme includes co-supervision from two or more of the regional partners, in collaboration with an industry advisor as appropriate. • Offers promovendi a mentoring program for research skills (fast track) with online and onsite training. Available for one candidate per partner per year.
STARS EU	https://starseu.org/	• The Strategic Alliance for Regional Transition • Is a mix of Research Universities and Universities of Applied Sciences • They offer PhD degrees in Engineering and Informatics, in Life Science and in Economics, through the partner universities that are already holding the right to award PhD degrees
UNA Europa	https://www.una-europa.eu/	UNA Europa has launched a PhD in Cultural Heritage with joint supervision by professors from at least two alliance partners and seamless mobility opportunities.

From the experience of those European Universities Alliances, some conclusion can be drawn in the field of doctoral research activities:

- Almost all universities are considering joint research as a priority, including doctoral research
- The big universities focusing mostly on research are using the opportunity for attracting new young staff: PhD students, youg doctors, postdoctoral researchers
- Many of them are using EU funding, complemented by their own resources, in order to fund doctoral positions in their university

- The young staff attracted through those funds are most of the time employed to work on the alliance activities
- Most of the universities are connecting their research interests as a form of Distributed Virtual Research Centres
- Most of the time they are using virtual and blended mobilities to acquire the expected results
- Almost all universities are using co-supervision as a model for joint doctoral research implemented, some of them declaring that they are considering those as granted
- There are just a few trials to integrate doctoral premises in joint doctoral schools, and there is no evidence of succesfull experiments.

7. Possible future options for the implementation of joint P(h)D schools or programmes within the E³UDRES² alliance

7.1. General information

Implementing joint doctoral programmes within the E³UDRES² alliance represents a significant strategic step in strengthening transnational collaboration, advancing research excellence, and fostering innovation ecosystems that respond to current and future societal challenges. From a high-level perspective, two fundamental doctoral training models are envisaged: the Professional Doctorate (PD) and the Scientific Doctorate (PhD). While distinct in structure and purpose, both paths can be addressed within the framework of a joint P(h)D programme, focusing on research excellence, interdisciplinary collaboration, and knowledge transfer.

Strategic Aims	Benefits and Impact for the Alliance
• Strengthen cooperation among E³UDRES² members by sharing academic resources, harmonising doctoral regulations, and promoting cross-border supervision and training. • Provide doctoral candidates with a structured pathway to develop their academic and professional careers closely connected with industry and innovation ecosystems. • Create a dynamic framework where industrial partners can suggest real-world challenges to be addressed through doctoral research, enhancing	• Enable new institutions to gradually acquire the legal status to confer P(h)D degrees, thus expanding research capacity across the alliance. • Contribute to the internationalisation of doctoral education by increasing the number of international doctoral candidates. • Support human capital development by increasing the number of doctoral title holders among academic staff. • Foster the growth of a new generation of researchers well-equipped to drive innovation in academia, industry, and society.

technology transfer and innovation generation. • Promote proactive learning methodologies and the integration of interdisciplinary approaches, supporting researchers in addressing complex, global challenges.	• Enhance teaching and research mobility, foster co-supervision practices, and build pathways towards creating a Centre of Excellence (CoE) focused on applied, interdisciplinary research. • Contribute to the increase of the number of international students in the alliance • Contribute to the increase of the number of young researchers in the alliance

7.2. Joint coordination of P(h)D thesis in co-supervision

Co-supervised P(h)D theses are key to fostering long-term cooperation, as they:

- Bridge research capacities of multiple institutions, combining complementary expertise.
- Strengthen the scientific quality and relevance of the research through diverse supervision perspectives.
- Promote **institutional alignment on doctoral standards**, facilitating mutual recognition of degrees and establishing a path for future joint doctorates.

This practice encourages **deep engagement between faculty members**, nurtures a collaborative research ecosystem, and reinforces E³UDRES²'s academic integration.

Additionally, promoting scientific publications in co-authorship with P(h)D students should be seen as a powerful strategy to enhance the quality and impact of research within the E³UDRES² alliance. It fosters the active engagement of P(h)D candidates in cutting-edge research projects, positioning them as integral contributors rather than isolated learners. This practice might accelerate their academic development and embed them in interdisciplinary research teams, often comprising supervisors and researchers from different partner institutions. Such collaboration strengthens institutional ties and builds a shared scientific agenda, which enhances the international visibility and coherence of the alliance's research efforts. Furthermore, students gain essential experience in writing, reviewing, and disseminating scientific work, skills that are critical for academic and professional advancement.

These outcomes are further reinforced by structured initiatives such as joint thesis supervision, summer schools, doctoral consortiums, and interdisciplinary training modules. These formats encourage early-stage collaborative research and create natural opportunities for co-authorship. They support a seamless integration of

applied research into the doctoral curriculum while aligning with the innovation agendas of industry partners. Ultimately, this approach nurtures a robust research culture and a dynamic Centre of Excellence, in which the production of high-quality, collaborative publications becomes both a goal and a catalyst for knowledge exchange and societal impact.

According to the findings in chapter 5.3, in all E³UDRES² participating countries there is a legal possibility to provide co-supervision for doctoral students. This is why, we recommend that option as the first priority when developing E³UDRES² joint doctoral activities.

7.3. Joint participation to International Jurys for P(h)D thesis defense

Establishing international juries for P(h)D thesis defence within the E³UDRES² alliance requires careful regulatory coordination and strategic academic collaboration. One of the most effective mechanisms for achieving this is the formation of interdisciplinary "PhD Schools", composed of members from 3 to 4 alliance institutions. These structures support the alignment of supervision, evaluation, and defence procedures across diverse national and institutional contexts. They also facilitate the standardisation of academic practices, particularly in fields where joint doctoral programmes are under development, while promoting capacity building in emerging research areas.

For associate partners participating in the joint P(h)D programme, particularly those without the legal right to award P(h)D degrees, active involvement in international juries presents both opportunities and responsibilities. These partners can contribute meaningfully by engaging in co-supervision, recommending qualified jury members, and participating in defense juries, provided that the institutional and national regulations of the awarding university permit such involvement. Formal co-supervision agreements and predefined research clusters should be developed to enable this. These agreements clarify roles and expectations while promoting interdisciplinary collaboration and increasing the academic exposure of doctoral candidates.

The composition of international thesis juries must reflect academic rigor, diversity, and impartiality. Typically, a jury includes the primary supervisor, possibly some co-supervisors, and at least two external experts from another E³UDRES² partners or international institutions. Generally, jury members should hold a doctoral degree and meet the academic qualifications required by their respective institutions, such as Associate / Full Professor status or habilitated researcher. At least one up to three jury members should have no prior involvement with the candidate's work, ensuring unbiased evaluation. The awarding institution appoints a representative to chair the jury or delegate this role, maintaining academic oversight and procedural integrity.

To implement this framework effectively, E³UDRES² members should pursue mutual recognition of supervision and evaluation activities through Memorandum of Understanding (MoUs) and shared procedural templates. These include standardised models for jury composition, evaluation criteria, and defense protocols. Additionally, agreement on the language of defense, remote participation policies, and common digital platforms for document exchange is essential. By adopting these practices, the alliance can ensure that all doctoral defenses uphold high academic standards while fostering deeper collaboration, broader visibility, and increased coherence in its joint research and training ecosystem.

7.4. Joint offer for specialized topics in doctoral research

All doctoral programmes offered by the E³UDRES² alliance should ensure consistent quality and coherence by integrating a core curriculum that includes modules in research methodology, academic writing, digital research tools, research ethics, and project management. These courses can be delivered jointly by alliance partners, either as regular semester courses or through P(h)D summer schools and intensive training formats. A modular course structure facilitates flexible ECTS accumulation and recognition. A target of 180-240 ECTS over a 3- to 6-year period ensures academic depth and adaptability to various national systems while allowing sufficient time for dissertation work and participation in research activities. The applied focus, whether under a professional or scientific P(h)D, reinforces E³UDRES²'s mission to connect academia and regional innovation ecosystems.

For partners that do not yet hold the legal right to award P(h)Ds, key contributions can be made by offering specialised topics in their fields of expertise and actively engaging in course delivery, co-supervision, and participation in research teams. These partners should ensure that their proposed topics align with the alliance's strategic focus areas and meet the academic standards of the joint programme. To be effective contributors, those partners must coordinate closely with awarding institutions to validate the recognition of their contributions and adhere to jointly defined academic frameworks. Their role in contributing specialised knowledge and regional relevance strengthens the alliance's capacity to deliver interdisciplinary and application-oriented doctoral training.

The alliance could also start developing and offering a set of joint courses for E³UDRES² researchers in the compulsory phase of their P(h)D, which could be then recognized by the individual institutions as part of the required courses / ECTS in the national and institutional settings. This could be started anytime beside / while developing Joint PhD Programmes, as it will be needed anyway and would also address the need for capacity building at the alliance level in the research area. These joint courses could then be accessed also by P(h)D students of the E³UDRES² partners who are not directly involved / enrolled in the first specific Joint P(h)D Programmes.

Some components that should be considered to achieve the collaborative goals for doctoral research within the E³UDRES² alliance are:

Training Courses

Jointly developed training courses across partner institutions allow for harmonising research methodologies and domain-specific competencies (e.g., incorporation of AI in the study program, digital transformation and digital twins, sustainable and emerging technologies). These courses can be:

- Modular and offered in hybrid or online formats, ensuring accessibility across countries.
- Aligned with industrial needs and technological trends, supporting knowledge transfer from academia to industry.
- Designed to promote transversal skills (e.g., scientific writing, ethics, project management, intellectual property), fostering well-rounded P(h)D candidates.
- Co-taught by faculty and industry professionals, encouraging cross-sectoral exposure.

Such courses promote teaching innovation by integrating case-based learning, flipped classrooms, and project-driven modules, helping P(h)D candidates to engage in hands-on problem-solving.

The E³UDRES² digital application Arena could be the main driver for hosting and delivering such training.

P(h)D Summer Schools

Summer schools offer an intensive, collaborative, and interdisciplinary learning format, creating synergies between research groups from different institutions. Key benefits include:

- Thematic focus on pressing societal challenges aligned with the E³UDRES² research agenda.
- Opportunities for student mobility and intercultural exchange, strengthening international collaboration.
- Practical workshops on research tools, software platforms, or lab techniques, helping students adopt new methods.
- Networking with peers and mentors, potentially catalysing co-authored papers or co-supervised research.

Summer schools can also serve as platforms to test and pilot new teaching methodologies, such as challenge-based learning or design sprints.

As described in chapter 6.1.1. the E³UDRES² alliance plans to organise such Summer schools each year, the first one being organised in Timisoara in June 2025 in collaboration with the E³UDRES² Ent-r-e-novators project.

Doctoral Consortiums

Doctoral consortiums provide a structured environment for early-stage researchers to:

- Present their research to an international audience, gaining feedback from experts across disciplines.
- Engage in thematic sessions with keynote speakers, often from both academia and industry.
- Join roundtable discussions on emerging research trends and interdisciplinary integration.

These forums encourage research visibility, early collaboration, and knowledge transfer, fostering a research culture that aligns with the CoE's interdisciplinary focus.

7.5. Development of Joint P(h)D programmes

One of the first tasks in developing a joint doctoral programme involves mapping the institutional capacity across the alliance. In this domain, a distinction is made between institutions that already hold the legal right to award doctoral degrees and those that will participate as non-degree-awarding partners, contributing through research supervision, teaching, and infrastructure. The goal is to develop highly qualified researchers who will engage in doctoral research that bridges disciplinary knowledge and real-world applications.

The content of the study programme should be designed around advanced scientific areas covered by the participating entities. These modules must reflect current scientific and industry trends, aligning with international frameworks, research priorities, and labour market demands. Compliance with national and European regulatory requirements will be assured, including involving scientific committees, quality assurance, and structured supervision models. The curriculum should promote the following:

- Deep engagement with cutting-edge research methodologies.
- Interconnection between theoretical courses and applied research projects.
- Exposure to transdisciplinary collaboration and entrepreneurial thinking.
- A strong link between industry challenges and societal needs.

Developing a joint offer for doctoral research topics within a P(h)D programme under the E³UDRES² alliance requires a strategic and flexible framework considering institutional strengths and national regulatory environments.

Two complementary approaches can be pursued depending on the context and capacity of the involved partners.

a) **Cooperation within the existing P(h)D Framework**: Using an existing P(h)D program at one of the partner institutions as a basis and establishing

collaboration agreements for joint supervision, research topics, and coursework.

One approach builds upon existing P(h)D programmes at institutions such as UPT, MATE, ViA or HFD, using them as a foundation for cooperative doctoral training. Partners can contribute to supervision through formal cooperation agreements, define joint research topics, and offer shared courses. This model leverages already accredited programmes, allowing partners without the right to award P(h)Ds to actively engage while complying with the regulations of the leading institution.

b) **New Joint P(h)D Programs**: Developed by multiple partners, with at least one institution having the authority to award PhD titles. These programs must adhere to national regulations and minimum requirements while fostering collaboration.

The second approach involves the creation of entirely new joint P(h)D programmes developed by at least two or three alliance members, including at least one institution legally authorised to award doctoral degrees. In this scenario, all partners collaborate on the design of the programme structure, curriculum, supervision arrangements, and governance. The framework must satisfy the most stringent national requirements among the awarding institutions. While this approach is more demanding in terms of alignment, it offers a powerful mechanism to create interdisciplinary and transnational programmes aligned with E³UDRES²'s applied research orientation, focusing on innovation, societal impact, and regional development.

Implementing long-term cooperation in a joint P(h)D program across the E³UDRES² alliance can be enhanced through structured academic and research-driven initiatives. These elements are instrumental in building academic excellence and strengthening the foundation for CoE in applied and interdisciplinary research.

The joint programme's strategy aims to focus on strengthening cooperation among E³UDRES² members by sharing academic resources, harmonising doctoral regulations, and encouraging cross-border supervision and training. It aims to provide doctoral candidates with a structured academic and professional development pathway closely aligned with industry and innovation ecosystems. The programme enhances technology transfer and fosters innovation by creating a dynamic framework that allows industrial partners to propose real-world challenges for doctoral research. Additionally, it promotes proactive learning methodologies and interdisciplinary approaches to support researchers in tackling complex global challenges. The establishment of joint P(h)D programmes will generate wide-ranging benefits for the E³UDRES² alliance.

The E³UDRES² alliance will proceed with both ways in parallel, depending on the research area and on the involved institutions among the partners. From a general point of view, based on the mapping above, if not required differently because of

the national legislation of the "lead" partner awarding the P(h)D title, frameworks are preferred with:

At least 3 years duration, with possibilities for flexible extension to 4 or up to 6 years;

At least 180 ECTS, including the doctoral dissertation as well as the courses, or at least 30 ECTS if only the courses are considered. In this case, solutions have to be looked for, allowing partners with national legislation requiring a total amount of ECTS including doctoral dissertation to come up with a sound definition and coverage of ECTS.

Where possible, depending on the research area and on the involved partners, professional PDs will be developed. In any case, even where scientific PhDs are awarded, the partners will adhere to the profile of the alliance focusing on applied research mainly with a strong focus on the regions and their needs, according to E³UDRES² long-term vision and mission statement.

The key objectives for the E³UDRES² collaboration in doctoral research are:

- Collaboration & Integration: Strengthening partnerships between institutions through co-supervision and shared coursework.
- Flexibility in PhD Structure: Allowing extensions and adapting ECTS requirements to different national regulations.
- Professional & Applied Research Focus: Preference for research addressing regional needs.
- Capacity Building: Expanding doctoral education opportunities for institutions without PhD-awarding rights.
- Standardization & Governance: Defining clear agreements to ensure consistency across institutions.

The proposed framework aims to increase the number of PhD students, researchers, and faculty with doctoral degrees while reinforcing the alliance's academic and institutional development.

7.6. Development of Joint P(h)D schools

The development of Joint P(h)D schools is certainly the most demanding option for integrating all E³UDRES² partners efforts in the field of P(h)D research.

Although the alliance plans to implement both joint P(h)D programmes and joint P(h)D schools simultaneously, ensuring flexibility and alignment with research areas and institutional constraints, the second approach is less appropriate considering the large dispersion among the E³UDRES² partners regarding national legislations and internal regulations, existing doctoral programs in different doctoral fields, experience, maturity or size of their existing doctoral facilities.

Consequently, it is reasonable to expect that this approach might be a long-term objective.

In fact this also was the finding of the European Commission when assessing the results of the existing alliances in the study *"Report on the outcomes and transformational potential of the European Universities initiative"*[10] published in January 2025 (see page 161).

We consider that the implementation of the options presented in chapters 7.2 to 7.5 are feasible and could be developed with no further delay.

We should also take into consideration that, according to the above mentionned report, the integration of Doctoral programmes is less challenging than Bachelor's or Master's degrees since joint supervision and mobility of Doctoral researchers does not require simultaneous enrolment at multiple institutions.

8. Funding and mobility model proposed

According to the survey made between the E³UDRES² partners, the costs related to a doctoral student is as follows:

Partner	Cost description
STPUAS	No information available.
UCLL	In Belgium, the first enrolment in the PhD program and the enrolment in the year defending the thesis a fee of 470 Euro has to be paid. The intermediate years enrolment is free.
JAMK	In Finland, there are no tuition fees for doctoral students, but PhD student must finance they own living expenses.
HFD	There are no tuition fees. Doctoral students at HFD who are HFD's graduates can apply for an HFD doctoral scholarship (1.350 Euro/month, with children 1.600 Euro/month, up to 3 years), also applications for financial support for the participation in conferences or for publications linked to doctoral studies are possible (up to 1.500 Euro in total). HFD can give advice on other institutions that also offer scholarships for doctoral students with their own specific criteria.
MATE	The costs of doctoral studies in Hungary vary by institution and program. In general, the following costs apply: Tuition fees: range from 2.000 to 6.000 Euro per semester for international students. Degree fee: 1.000 Euro, application fee: 100 Euro.
ViA	In Latvia there is a limited number of the state financed study places in PhD programmes. The tuition fees in doctoral

[10] https://op.europa.eu/en/publication-detail/-/publication/db43f6ca-da14-11ef-be2a-01aa75ed71a1/language-en

	programmes are as follows: 6.163 Euro per year for students studying in Economics and Business doctoral programme and 10.085 Euro for students studying in Sociotechnical system engineering doctoral programme.
Saxion	The PD candidate is not a student, but will be employed by the institution during the PD trajectory. The PD candidate - as an employee of the institution - receives a salary. For the pilot period, the Ministry of Education, Culture and Science has allocated resources to cover the costs of the pilot. First, resources have been allocated to SIA, for which SIA provides a grant program for PD candidates (50% of the standard wage costs + a reimbursement for travel & study costs). In addition, universities of applied sciences receive additional resources in the government contribution for practice-oriented research, with one of the spending objectives being the PD pilot.
IPS	The cost of enrolling in a doctoral program in Portugal varies depending on the institution and the specific program, but it generally includes application fees and annual tuition fees. The overall cost of a PhD is associated with registration, tuition, and other expenses related to attending the program, which differ across higher education institutions. In Portugal, doctoral program submissions must be formally submitted to the Agency for Assessment and Accreditation of Higher Education (A3ES), the authority responsible for accrediting such programmes. The estimated cost for each submission is a minimum of 15.000 Euro. The competent governing bodies of each institution set tuition fees for PhD programs. In general, the following costs apply: • Application fee: typically ranges from 100 Euro to 200 Euro • Tuition: annual fees usually range from 2.000 Euro to 3.500 Euro for European students and from 3.000 Euro to 8.500 Euro for international students.
UPT	In Romania there is a certain number of PhD positions financed by the Ministry of Education. UPT has 80 positions available each year. The eligible applications for these positions are from EU applicants (including Romanian), Switzerland and EEA countries. In addition, there are positions with tuition fees, that means approximately 1.000 Euro / year for EU applicants (including Romanians), Switzerland and EEA. In the case of non-EU candidates the tuition fees is 4.440 Euro / year for Architecture and 3.480 Euro / year for the rest of the PhD domains.

	The admission fees are 60 Euro for EU applicants (including Romanians), Switzerland and EEA and 100 Euro for non-EU candidates. Financial support for the participation in conferences or for publications in journals, linked to doctoral studies, are available from the university's own financial sources.

The implicit way of funding doctoral programmes inside the E³UDRES² alliance is:

- Consider the studies as the third level of higher education studies and to follow registration procedures from the university that is legally entitled to award the P(h)D degree (called main university). This includes the financing model for the student (by the state, by grant, etc)
- The doctoral student will consequently be enrolled in a single university (the one who issues the diploma), even if the studies are provided by a joint developed P(h)D programme
- Tuition costs should be covered by the main university according to its general regulations
- Costs for developing joint courses or course modules could be covered through the E³UDRES² project as staff costs
- Costs for providing co-supervision could be covered through the E³UDRES² project as staff costs
- Costs of co-supervisors mobilities between partner universities could be covered through the E³UDRES² project as travel costs
- Costs of doctoral students mobilities between partner universities related to their joint research could be covered through: existing Erasmus mobilities agreements between the E³UDRES² partners, other existing mobility projects or funds from the research center where the student is working
- As mobility models for students, we recommend a mixture of physical, blended, or virtual mobility
- For participation into joint juries for the thesis/dissertation defense we recommend virtual mobilities
- All details regarding financial arrangements and mobility models will be addressed into a specific Memorandum of Understanding or Agreement between the partners developing a joint doctoral programme.

Other existing funding models could be analyzed in the future, depending on the chosen setting for the joint PhD activities, to understand if and to what extent they can support the PhDs or at least the related mobility. Besides the classic Erasmus+ schemes, COST Actions could offer some benefit in specific areas. From a broader perspective, the MSCA schemes and in particular the Doctoral Networks could offer

an interesting framework, potentially also involving companies and other business partners that are suitable to the application-oriented profile of the P(h)Ds.

9. Conclusion

The present document represents the Milestone MS16 of WP4 – Research and Knowledge Serving Users of the E³UDRES² project.

It establishes a joint E³UDRES² concept & policy for doctoral studies in the scope to organize joint P(h)D schools or programmes involving different E³UDRES² partners, based on shared values, principles, methodologies, and co-operation across the alliance. It is based on experts from universities that already hold the legal right to award P(h)D degrees, but also involves experts from universities without P(h)D awarding power, with the scope to help them qrowing and to obtain this accreditation.

The concept and policy is:

- mapping the situation and doctoral study programmes conditions across partners' national systems;
- mapping partners' experience & capacity to organise and implement doctoral studies;
- establishing criteria, characteristics, models & rules, including variable scope of partners' support and engagement;
- suggesting possible financing support;
- suggesting possible mobility models;
- identifying feasible fields within the focus areas and agreements on lead universities and other partners' engagement;
- setting-up a framework for the development of concrete programmes.

According to the mapping exercise, the document presents a number of suggestions considered feasible for the E³UDRES² alliance in order to implement joint doctoral research:

- Joint coordination of P(h)D thesis in co-supervision;
- Joint participation to international Jurys for P(h)D thesis defense;
- Joint offer for specialized topics in doctoral research;
- Development of Joint P(h)D programmes;
- Development of Joint P(h)D schools.

The content of the document should be revised / updated / expanded to reflect the developments of the project in terms of relevant concepts and policies for joint doctoral research.