

# E<sup>3</sup>UDRES<sup>2</sup>

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

## D4.2 E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence (CoEs) progress report & approved strategy for further development Work Package 4 March 2026

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*\* MATE did not receive any funding from E<sup>3</sup>UDRES<sup>2</sup> 2.0 for the establishment of this deliverable*



Co-funded by  
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## Overview

Deliverable nr.	Deliverable name	Person responsible	Corresponding HEI
D4.2	E <sup>3</sup> UDRES <sup>2</sup> Applied Research Centres of Excellence (CoEs) – progress report & approved strategy for further development	Raquel Barreira	IPS

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## Executive Summary

*The E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence (CoEs) are designed to foster transnational high-quality, collaborative research within one (or more) of the E<sup>3</sup>UDRES<sup>2</sup> focus areas, currently: Creative Industries for Region's Identity, Digital Solutions and (Applied) Deep Tech for Regions, Health, Wellbeing & Social Inclusion for Regions, and Resilient Economy and Innovation for Regions.*

*This document describes the concept for the CoEs, including the criteria and methodology for their establishment, as well as the expected tasks and overall impact, drawing on lessons from piloting phases and capacity mapping. Key areas include evaluation processes, collaboration structures, funding and sustainability, integration with education, and outreach.*

*The insights and recommendations provided serve as a roadmap to ensure the CoEs achieve high impact, adaptability, and long-term success.*

## List of concepts

**Executive Board** – Presidents and Rectors of E<sup>3</sup>UDRES<sup>2</sup> partner universities.

**E<sup>3</sup>UDRES<sup>2</sup> Focus Areas** – the areas in which E<sup>3</sup>UDRES<sup>2</sup> focus, 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

**E<sup>3</sup>UDRES<sup>2</sup> research supporting team** – currently, Work Package 4 – “Research and Knowledge Serving Users” team.

**E<sup>3</sup>UDRES<sup>2</sup> Scientific Council** – the relevant body for academic and strategic aspects of research activities in E<sup>3</sup>UDRES<sup>2</sup>. It was established in May 2024 and it is composed of senior researchers/scientists from all partners.

## 1 Introduction

E<sup>3</sup>UDRES<sup>2</sup>, the Engaged and Entrepreneurial European University as Driver for European Smart and Sustainable Regions<sup>1</sup>, a European University alliance established in October 2020, promotes the development of small and medium-sized cities and their rural environments into smart and sustainable European regions and shapes a prosperous future with the best possible quality of life for self-determined people in a progressive European society.

Regarding the specific challenges, opportunities and assets of the regions, E<sup>3</sup>UDRES<sup>2</sup> builds research collaborations related to the Focus Areas, which are currently four, as follows:

- 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

The E<sup>3</sup>UDRES<sup>2</sup> Research Strategy<sup>2</sup>, approved by the Scientific Council and the Executive Board in December 2024, defines, as one of the strategic pillars, the establishment of E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence (CoEs).

The aim of this document is to report the progress for establishing the CoEs and outline a strategy for the development of the selected CoEs, drawing on insights from the piloting phases, capacity mapping, and initial evaluations. It provides guidance on evaluation processes, collaboration structures, funding, sustainability, and integration with education and talent development, while highlighting lessons learned and best practices to support the successful implementation of the Centres.

## 2 E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence – concept

### 2.1 Definition

The E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence (CoEs) **connect researchers** from the E<sup>3</sup>UDRES<sup>2</sup> European University alliance who jointly develop **outstanding fundamental and applied research**, which supports and is interlinked with innovation, services and higher education, in a specific field, **within at least one of the E<sup>3</sup>UDRES<sup>2</sup> Focus Areas**. These CoEs serve as a **catalyst for regional development** in that field.

The CoEs ensure that excellence efforts in research are best combined and competitiveness and critical mass in research on a European level are achieved.

The CoEs are committed to promote attractive and sustainable research careers of young researchers and doctoral students.

The CoEs are managed according to high levels of efficiency and positive leadership ensuring their continued and self-sustaining operation over time.

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<sup>1</sup> <http://eudres.eu/>

<sup>1</sup> [https://eudres.eu/assets/files/deliverables\\_phase\\_2/eudres\\_ms13\\_research\\_strategy.pdf](https://eudres.eu/assets/files/deliverables_phase_2/eudres_ms13_research_strategy.pdf)

## 2.2 Compulsory criteria for establishment of a E<sup>3</sup>UDRES<sup>2</sup> CoE

These are the basic compulsory criteria any E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centre of Excellence should meet:

### a) Team:

- i) Participation of researchers from at least three E<sup>3</sup>UDRES<sup>2</sup> partner universities.
- ii) Participation of at least five acknowledged senior researchers<sup>3</sup> with track-record that shows expertise in coordination of European research projects or at least some of its work packages.

### b) Research plan:

- i) The research plan should align with, at least, one of the E<sup>3</sup>UDRES<sup>2</sup> focus areas.

## 2.3 Scope of support of CoE under project E<sup>3</sup>UDRES<sup>2</sup> 2.0

Under the ongoing Erasmus+ project for the further development of the E<sup>3</sup>UDRES<sup>2</sup> alliance (E<sup>3</sup>UDRES<sup>2</sup> 2.0, 2023–2027), some pilots of the E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres are selected for further support on development. This support will consist of capacity building, networking opportunities, guidance from high-ranking representatives of the various E<sup>3</sup>UDRES<sup>2</sup> boards and visibility, using E<sup>3</sup>UDRES<sup>2</sup> website and the alliance's communication channels. Moreover, they can benefit from the strategy for development of CoE as described in this document.

The E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres are committed to seek external sources of support and to plan their financial sustainability in the long run and only external funds will be used for research activities.

## 3 Mapping the capacity and expertise

### 3.1 The piloting phases

During the first funding phase of the E<sup>3</sup>UDRES<sup>2</sup> Alliance (October 2020–September 2023), research was organised in three focus areas. When starting the current phase of funding, with new focus areas and three new partners. As a first step, the mapping of existing capacity and expertise was updated and expanded.

The E<sup>3</sup>UDRES<sup>2</sup> Executive Board took the initiative of launching an open call, in December 2023, reflecting the urgency of piloting some key activities. Setting up the CoEs was one of them. This has been taken as an opportunity to develop the concept of the CoE along with the learnings from the selected proposals. This experience helped shaping the Milestone 15, reporting on the concept for the CoEs.

However, that open call came too early in the funding period and some research groups had difficulties identifying suitable cooperations including the new partners. Therefore, a second call was launched in November 2025, from which 6 proposals have been selected in February 2026.

The groups selected from both piloting phases, called “prospective E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence” (pCoEs), will be invited to an evaluation by the end of 2026 (Figure 1), according to the methodology described in section 4.

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<sup>3</sup> R3 and/or R4 according to the research career stage established by the European Commission; the descriptors can be found at <https://euraxess.ec.europa.eu/career-development/researchers#research-profiles-descriptors>

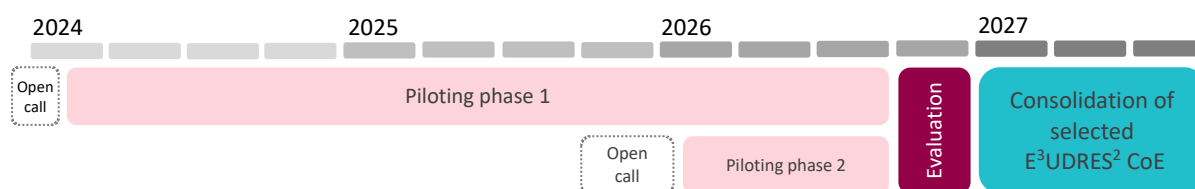


Figure 1 - Roadmap for establishing the E³UDRES² CoEs

The two piloting phases are described in more detail in the next two subsections.

### 3.2 First piloting phase

The first piloting phase was started from an open call (Appendix A) launched in December 2023, an initiative from the E³UDRES² Executive Board.

The selection criteria used for that open call were:

- i) to be within one of the E³UDRES² focus areas;
- ii) engagement of at least 5 acknowledged senior researchers;
- iii) involvement of at least 3 E³UDRES² partners;
- iv) experience with European research projects;
- v) at least one of the partners with the right to offer doctoral programmes.

For promoting matchmaking, a set of online info sessions were set and broadly disseminated and a Padlet platform has been made available.

The pre-selection of all submissions was performed by the WP4 lead and co-leads, later validated by the Executive Board. It should be noted that, at the time of evaluation, the E³UDRES² Scientific Council was not yet established<sup>4</sup>. This was the reason this body was not involved in this process.

From a total of 20 submitted proposals, four pilots have been selected, in March 2024, for further support:

Table 1 - List of selected pilot CoE in March 2024, sorted by application timestamp

Designation	Lead researcher	Lead partner	Other partners	Focus area(s)
Emerging Technologies of Experience Design in Arts & Culture	Sibylle Moser	USTP	UPT, ViA	Creative Industries for Regions' Identity
Business Modelling for Managing Sustainability in a Circular and Climate Neutral Economy: Creating opportunities for Smart and Sustainable Regions	Timber Haaker	SAXION	All E³UDRES² partners	Resilient Economy and Innovation for Regions
I²RS: Intelligent Integral Robotic Systems	Abeje Y. Mersha	SAXION	IPS, UPT, UCLL	Resilient Economy and Innovation for Regions
European Centre for Digital Health and Social Innovation (ECDHSI)	Vanessa Leung <sup>(*)</sup>	USTP	JAMK, IPS, UCLL, ViA	Health, wellbeing and social inclusion for regions + Digital Solutions and (Applied) Deep Tech for Regions

(\*) Lead researcher at time of application and until January 2026; researcher Eva Turk, from the same university is currently the lead researcher.

<sup>4</sup> The E³UDRES² Scientific Council was only established in May 2024

After being selected, some pCoEs invited some researchers from other E<sup>3</sup>UDRES<sup>2</sup> partner universities<sup>5</sup>.

As the overarching concept for the E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence had not yet been fully developed at the time of the call, each pCoE was granted the autonomy to establish its own internal structures and define its respective activities.

For some of the pCoEs, encouraging signs emerged, including the preparation of proposals for external funding, contributions to academic conferences, the development of joint publications, and the creation of an online collaboration framework that may serve as a model for adoption by other pCoEs.

The pCoEs have been invited to present their progress, on-site, at the E<sup>3</sup>UDRES<sup>2</sup> General Assemblies held in Fulda (Autumn 2024) and in Enschede (Spring 2025) through a poster exhibition, which served also as an opportunity to bring together critical mass to their own groups.

All four pCoEs submitted interim progress reports to the Executive Board, which were reviewed and discussed during the on-site meeting held during the General Assembly in Setúbal (September 2025). The pCoEs were invited to present in those reports both an overview of their activities and a reflection on their developmental progress. The reports revealed significant variation in the scope and intensity of joint activities across the pCoEs reflecting a combination of structural, institutional, and contextual factors.

### 3.3 Second piloting phase

A second open call (Appendix B) was launched in November 2025. This second call was prepared by the research supporting team after consultation with the E<sup>3</sup>UDRES<sup>2</sup> Scientific Council and was based on the Milestone Document 15<sup>6</sup>, describing the concept for the CoEs and the criteria and methodology for establishing the CoEs. It also benefited from the lessons learned from the first open call, which are described in sub-section 3.4.

The proposals were assessed by the E<sup>3</sup>UDRES<sup>2</sup> Scientific Council and results were communicated on February 27, 2026.

From a total of 10 proposals submitted, 6 proposals have been selected for further development. The new pCoEs are described in the next table:

Table 2 - List of selected pilot CoE in February 2026, sorted by application timestamp

Designation	Lead researcher	Lead partner	Other partners	Focus area(s)
Research Centre of Excellence in Cyber Security and Resilience	Tuomo Sipola	JAMK	USTP, ViA	Digital Solutions and (Applied) Deep Tech for Regions
One Health Applied Research Centre of Excellence for Regional Wellbeing and Sustainability	Julija Chichaeva	JAMK	HFD, MATE, UCLL	Health, wellbeing and social inclusion for regions + Resilient Economy and Innovation for Regions
Learning where Higher Education meets Industry in the Age of AI	Sirpa Laitinen-Väänänen	JAMK	UCLL, USTP	Digital Solutions and (Applied) Deep Tech for Regions
Centre for Circular Materials, Innovation and Education	Corina Sosdean	UPT	IPS, USTP	Resilient Economy and Innovation for Regions

<sup>5</sup> For the most up to date composition of the pCoE: <https://eudres.eu/research-centres>

<sup>6</sup> [https://eudres.eu/assets/files/deliverables\\_phase\\_2/eudres\\_ms15\\_centres\\_of\\_excellence.pdf](https://eudres.eu/assets/files/deliverables_phase_2/eudres_ms15_centres_of_excellence.pdf)

Regional Socio-Technical Innovation and Intelligence Centre	Oskars Java	ViA	IPS, Saxion, UPT, USTP	Digital Solutions and (Applied) Deep Tech for Regions + Resilient Economy and Innovation for Regions
Aquatic Biotechnology, Environment & Energy Technologies	Ricardo Salgado	IPS	MATE, UPT, USTP, ViA	Resilient Economy and Innovation for Regions

### 3.4 Learnings from the piloting phases

The learnings reported in this sub-section result from the interim progress reports presented by all four pCoEs from the first piloting phase (see sub-section 3.2) and from informal exchanges between the pCoE leads and the WP4 team.

We summarise the learnings in four key learnings:

#### i) Capacity Building is Key

Building the network required actively identifying and engaging partners across the alliance. Through workshops, events, and informal outreach, a diverse team of researchers was formed and is actively stimulated. The main potential lies in developing a strong transnational research network, while the key challenge is maintaining long-term partner commitment. Especially in the setting where no funding at alliance level has been allocated to the pCoEs, apart from some capacity building activities.

#### ii) Joint project proposals are multi-purpose.

Submitting joint proposals helped build shared understanding, refine focal points, and integrate competencies across institutions. Proposal development acted as a testing ground for collaboration and knowledge exchange. The potential lies in creating reusable proposal components; challenges include managing interdisciplinary differences and balancing fundamental and applied research. In the near future, it would be very beneficial for the development of the pCoE to have central support at alliance level for identifying the most promising calls for each group.

#### iii) Development requires institutional commitment

Sustaining the network and competing for European funding demands upfront investment and strong institutional backing. The key potential is long-term alliance development, while the challenge is unequal resource capacities among partners. Not all researchers currently have the opportunity to devote time to collaborative project development at their university, and it can be difficult to integrate these activities with the day-to-day business of research and teaching.

#### iv) Development requires adequate tools for supporting collaboration and dissemination

Conducting transnational activities within a large group without a proper underlying tool and framework to support has been reported as another challenge. Dissemination of the activities is another one.

#### v) Communication and transparency

The pCoEs emerged as part of a broader strategic effort to build an alliance operating across multiple dimensions, including research. The first call was launched at the outset of the current Erasmus+ funding period, at a time when several core concepts—including the framework for the E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence—were still under development. As a result, certain

expectations, support structures, and procedural elements had not yet been fully defined. This led, in some instances, to a perceived lack of communication and transparency. However, the feedback received from the leads of the pCoEs proved extremely valuable, provided critical insights that directly integrated into the current deliverable, clarified expectations, and significantly strengthened the design and dissemination of the second open call.

Results from the second open call were only known at the time of completion of the present document, and therefore there are no learnings from the pCoEs to report yet. But it is important to highlight that the number of proposals submitted in the second open call shows that there are many more researchers in the alliance willing to cooperate in this setting, reinforcing that there was a need for a second round of the call.

## **4 Methodology for establishing E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence – beyond the piloting phases**

The pCoEs were selected from both piloting phases described earlier. These phases allowed researchers to get to know each other, understand the consortium's strengths and weaknesses as a whole, recognise their differing views on research, and assess their specific contexts at host universities. This foundation will enable the groups to develop a stronger research plan and proposed collaboration model and create a roadmap for financial sustainability. These more robust plans of the pCoEs will undergo an evaluation by the end of 2026 from which the E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence (CoEs) will finally be selected.

For this evaluation, the evaluation committees, the assessment criteria and the proposed timeline are described in the following sub-sections.

### **4.1 Evaluation committees**

The evaluation committees may include representatives from:

- E<sup>3</sup>UDRES<sup>2</sup> Work Package 4 (WP4)
- E<sup>3</sup>UDRES<sup>2</sup> Scientific Council<sup>7</sup>
- E<sup>3</sup>UDRES<sup>2</sup> Advisory Board
- E<sup>3</sup>UDRES<sup>2</sup> Associated universities, invited by the Scientific Council (if needed)
- Other external research experts, invited by the Scientific Council (if needed)

At least four thematic evaluation committees will be established, one for each focus area.

For each focus area, an evaluation committee of three members will be appointed by the Scientific Council. Evaluation committee members should belong to the Scientific Council and have expertise relevant to the focus area. The Scientific Council can invite members from the Advisory Board to participate in the evaluation committees, depending on the focus area and individual expertise of the Advisory Board members.

To ensure an evaluation procedure according to Good Academic Practices and Good Research Practice and to meet European standards and comply with legal regulations on conflict of interests, evaluation committee members should have no conflict of interest (i.e., they must not be directly involved in the proposal). They should not be affiliated with any of the partner universities participating in the respective proposal, if possible. If it is not possible to form an evaluation committee meeting these criteria, the Scientific Council will invite an additional expert (or several) with relevant expertise,

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<sup>7</sup> <https://eudres.eu/scientific-council>

preferably from a E<sup>3</sup>UDRES<sup>2</sup> university not involved in the respective proposal, a E<sup>3</sup>UDRES<sup>2</sup> associated university or, if necessary, from outside the partnership. Members from the Scientific Council can nominate a substitute expert with corresponding academic standing and expertise to replace them temporarily.

Once the individual proposals have been evaluated by their respective evaluation committees, the full Scientific Council will take note of the final results from the evaluation committees.

A representative from WP4, designated by the WP4 lead, will act as the facilitator of the evaluation process. This person will receive the applications from the E<sup>3</sup>UDRES<sup>2</sup> Head Office and make them available to the Scientific Council, oversee the evaluation procedure to ensure it is completed on time, and collect and forward the final results to the Head Office.

## 4.2 Evaluation criteria

The E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centre of Excellence are evaluated using the following (weighted) criteria: T

	Criterion	Weight(%)
A. Team (25%)	1. Quality of the core team (5 key researchers) Overall quality, European relevance, prior experience leading European R&D&I international projects or at least some of its work packages, prior experience supervising PhD students, practical expertise to guarantee results / outcomes that can be used by the societal stakeholders	15
	2. Gender balance (of the whole team)	5
	3. Career stage balance (of the whole team)	5
B. Strategy (45%)	1. Timeliness and relevance of the research field/topic	10
	2. Potential of financial sustainability	10
	3. Potential of European added value	5
	4. Proposed collaboration structure of the future CoE	5
	5. Innovativeness	5
	6. Plans for embracing Open Science	5
	7. Level of alignment with the selected main E <sup>3</sup> UDRES <sup>2</sup> Focus Area(s)	5
C. Research plan (30%)	1. Proposed outputs (academic and applied research) that generate high regional impact and targeted knowledge transfer	10
	2. Feasibility of the research plan	10
	3. Translation into education	5
	4. Plans for training new researchers	5

Each criterion will be scored in the scale 1-5.

These criteria follow both the E<sup>3</sup>UDRES<sup>2</sup> Research Strategy and the European research and policy trends, including the principles of CoARA<sup>8</sup> as described in its Agreement on Reforming Research Assessment, and therefore should steer the pCoEs into the path of being prepared for applying to external funding opportunities.

<sup>8</sup> <https://coara.eu/agreement/the-agreement-full-text/>

### 4.3 Timeline for the evaluation

To ensure the evaluation of the pCoEs occurs one year prior to the end of the current Erasmus+ funding phase, so those that will continue may have still some time to consolidate, benefitting from the support from E<sup>3</sup>UDRES<sup>2</sup>, this is the foreseen timeline:

Month/Year	Activity
April 2026	WP4 communicates to the pCoEs the evaluation procedure, including the submission template and the assessment criteria
By October 16 2026	The pCoEs submit the documentation, the proper template, to the Head Office via email (office@eudres.eu)
By October 19 2026	The Head Office sends all proposals to the WP4 appointed representative for the evaluation
By October 21 2026	The WP4 appointed representative checks if all requirements are met to proceed for the evaluation and sends the proposals to the chairperson of the Scientific Council
By the end of October 2026	The Scientific Council appoints the evaluation committees and the WP4 representative shares the respective(s) proposal(s) with each committee
By the end of November 2026	Each evaluation committee evaluates its/their allocated proposal(s) and submit the evaluation to the WP4 appointed representative and the chairperson of the Scientific Council
By December 1 2026	The WP4 appointed representative share the results with the Head Office
December 2026	Executive Board takes decision on which pCoEs to be established as CoEs based on the evaluation received from the Evaluation Committees

### 4.4 Number of CoE to be established

According to the Grant Agreement of Erasmus+ funding, a minimum of two CoE should be established.

There is no foreseen maximum number of CoE to be established. Those prospective CoE that achieve an average of at least 3 in each of the main criteria (A, B and C) and an overall score of 3.5, will be proposed to the Executive Board for being established as E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence.

### 4.5 Periodic evaluation of the CoEs

To ensure that the CoEs maintain high standards of scientific quality, operational efficiency, societal relevance and alignment with E<sup>3</sup>UDRES<sup>2</sup> vision and mission, it is essential to establish a system of periodic evaluation. Regular assessments allow the CoE to demonstrate accountability, measure progress against strategic objectives, and identify areas where improvements or adjustments may be needed. These evaluations should review the CoE research outputs, governance practices, resource management, and regional and European impact. Such mechanism is essential for safeguarding the long-term relevance, credibility, and sustainability of the CoE. Although such evaluation mechanisms are not yet defined within the current E<sup>3</sup>UDRES<sup>2</sup> 2.0, they will be systematically developed and implemented in the future and communicated timely to the CoEs.

## **5 Strategy for the development of the CoEs**

### **5.1 Collaboration structure**

Future CoEs are encouraged to adopt a transparent and robust collaboration structure that supports scientific excellence, inclusivity, Good Research Practice, regional impact and accountability.

Even though it is up to each CoE to set their own governance model, some guidelines and best practices are recommended below.

#### **i) Governance body**

Each centre should establish an executive governance body composed of at least one representative from each partner institution. To promote diversity and early-career involvement, the body should respect gender-balance targets (e.g., a 40/60 minimum distribution) and ensure that a defined proportion of its members are early-stage researchers.

#### **ii) Leadership Structure**

The CoE should be led by one Director, supported by one or two Deputy Directors. The number of deputies may vary depending on the size of the centre and the number of research groups or thematic areas it encompasses. Geographic and gender balances should also be respected at leadership level.

#### **iii) Decision-Making Processes**

Clear procedures should be established outlining how decisions are taken within the governance body and leadership team. These procedures should specify voting mechanisms, quorum requirements, and the types of decisions that require majority approval or consensus.

#### **iv) Membership Admission**

CoEs should define transparent criteria and procedures for admitting new members. This includes specifying who is responsible for evaluating applications, who formally approves new admissions, and what standards candidates are expected to meet.

#### **v) Scientific Body**

A dedicated scientific body should be constituted to provide strategic scientific advice, support long-term research planning, and ensure alignment between the centre's mission and its scientific activities.

#### **vi) External Advisory Board**

CoEs should establish an External Advisory Board composed of leading researchers from well-established European research institutions. To enhance societal relevance and regional impact, the board should ideally also include representatives of regional stakeholders.

#### **vii) Reporting and evaluation**

Robust accountability mechanisms should be in place to ensure integrity, quality and continuous improvement. This includes the preparation of annual activity and performance reports. CoEs may also undergo independent evaluations or other forms of external assessment. For keeping the status of a E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centre of Excellence, compliance to E<sup>3</sup>UDRES<sup>2</sup> evaluation mechanisms, which should be communicated timely to all CoEs, is mandatory. CoEs should also be committed to the European Code of Conduct for Research Integrity.

## 5.2 Funding and sustainability

Ensuring long-term financial sustainability is essential for all E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence. While initial support within the E<sup>3</sup>UDRES<sup>2</sup> 2.0 framework focuses on building capacity, networks, and developing strategies, each CoE must create their financial model that allows them to operate independently after the project funding period is over. This involves finding and securing various funding sources that match the long-term research priorities, and capabilities of the participating universities and research groups.

A sustainable funding strategy aims to mix external competitive funding, institutional commitments, and strategic partnerships:

### i) External funding

CoEs should actively seek European and international research programs and projects, such as Horizon Europe, Digital Europe, Interreg, Creative Europe, and Erasmus+, as well as national and regional innovation project calls. These resources not only offer financial support but also increase visibility, competitiveness, and collaboration opportunities.

### ii) Institutional or in-house support

Partner universities are encouraged to contribute internal resources like research infrastructure, access to laboratories and facilities, administrative support, or allocation of researcher time. Such commitments strengthen the CoE's stability and show long-term institutional involvement.

### iii) Collaboration with industry and regional partners

Due to the applied nature of the CoEs, engaging with businesses, public sector organisations, and regional development agencies can create additional funding opportunities. This can include contract research, shared PhD or postdoctoral positions, service agreements, and co-funded innovation programmes. These partnerships also ensure research activities meet local needs.

## 5.3 Valorisation

In general, research projects are expected to respond to the specific challenges faced within the E<sup>3</sup>UDRES<sup>2</sup> regions. This means that the work carried out does not exist in isolation but meaningfully contributes to solve problems. To support this aim, each project must include a valorisation section that clearly outlines how the knowledge, results or innovations produced will be transferred to and used by relevant regional stakeholders. This requirement is particularly important in the context of projects operating at higher Technology Readiness Levels (TRLs), where the focus shifts from conceptual development toward demonstrable, real-world applications. By articulating how results will be implemented, adopted or scaled within the region, the valorisation section helps to ensure that participating regions can evolve into future-proof environments capable of meeting economic, technological and societal challenges.

For projects that have a clearly applied or practical orientation – typically projects that occupy the mid and higher positions on the TRL scale – additional expectations must be met. The first element is the use of co-creation with regional stakeholders. This approach is seen as a valuable research methodology because it ensures that businesses, organisations and (local) governments who will benefit from the project's outcomes are engaged throughout the process. Their involvement helps to keep the research grounded, relevant and aligned with real-world needs. At higher TRLs, where

prototypes, demonstrators or validated solutions are being developed, stakeholder involvement is not only beneficial but often necessary. Their input ensures that the solution aligns with user needs, operational constraints, regulatory contexts and market expectations. Co-creation serves as a mechanism for reducing uncertainty and accelerating the transition from concept to practical implementation. Another essential component for these applied projects is the establishment of user committees. These committees help to safeguard the practical relevance of the research output by providing guidance, feedback and oversight from the perspective of end users or practitioners. Their input helps to ensure that results are not only theoretically sound but also workable and beneficial in day-to-day practice. Finally, applied and practically oriented projects offer the opportunity to function as sandboxes, viz. safe, controlled environments in which new concepts and applications can be tested. Acting in this capacity allows projects to explore innovative solutions, identify potential obstacles and refine ideas before broader implementation. This experimental role is critical for fostering innovation while managing risk, giving regions the opportunity to pilot approaches that could later be scaled or adapted to meet evolving regional needs.

By explicitly linking these requirements to higher TRL values, the framework ensures that applied research not only generates knowledge but also delivers solutions that are viable, validated and ready for adoption within the region. Through valorisation planning, stakeholder co-creation, user committee oversight and sandbox experimentation, projects are positioned to move efficiently and responsibly along the TRL continuum, ultimately contributing to the resilience and future readiness of the regions they are designed to support.

## **5.4 Integration with education and talent development**

### **i) Education**

Integrating E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence (CoEs) activities such as ongoing research and obtained study results with education in HEIs is essential for building resilient knowledge ecosystem that integrates research, education, and staff and students' skills development. This two-way integration improves teaching by utilising real-world data, while simultaneously offering researchers fresh local insights from the region's students and staff. This integration also equips higher education students with research-informed knowledge and fosters a deeper understanding of real-world challenges addressed by current research projects. For the teaching staff, this offers an opportunity to develop their research competence and keep the curricula up to date. At the same time, it helps build a community that brings together research and teaching. In addition, researchers get research topics from staff and students based on the region's most burning needs and problems, which can then be further developed into research projects. E<sup>3</sup>UDRES<sup>2</sup> CoEs should ultimately act as key drivers for educational innovation and talent development.

The CoEs can employ various approaches to integrate the activities of the research centre with education, and vice versa. For example, they can establish systematic mechanisms for teachers to collaborate with research centres to update teaching content and methods. Moreover, learning environments can be created where researchers and educators co-develop study modules addressing each E<sup>3</sup>UDRES<sup>2</sup> partner higher education institution's regional and national challenges.

To boost student involvement in CoEs, co-supervision models where academic supervisors and CoE researchers guide theses together are worth building. Offering research internships, for instance for Master's and PhD students, organizing pedagogical workshops and translating new research into teaching practices could also be fruitful activities to build bridges between CoEs and education.

In addition, CoEs can use the E<sup>3</sup>UDRES<sup>2</sup> Talent Funnel to foster education and talent development by mapping their research output to the four stages of the pathways—Inspire, Connect, Create, Grow—through short, modular, challenge-based formats that anyone can enter at any point. This means curating real problem statements from service providers, communities, SMEs, and startups, then routing learners and researchers through fast experiences (from meetups and bootcamps to labs) that convert curiosity into hands-on work and impact. In practical terms this means inspire with open research briefings and “methods tastings” tied to CoE themes and connect via cross-university learner research teams and cross-border mentoring. CoEs could also create by embedding hackathons, iLivingLabs, and challenge sprints into CoE research stream development; and grow through micro internships and real assignments inside CoE labs or with partner organisations, with outputs credited as ECTS and captured in learner portfolios. Matching opportunities can be supported by the Talent App (values-driven, AI-assisted), ensuring the right people join the right challenges at the right time.

Overall, integrating CoEs with education creates a feedback loop in which research informs teaching, teaching inspires new research, and both foster institutional innovation and talent development.

## ii) Talent Development

Securing young, talented researchers is important for the future of the European Research Area (ERA). These researchers can bring the fresh digital and interdisciplinary approaches needed to tackle complex societal challenges regionally and nationally. Therefore, CoEs should prioritise the recruitment and retention of early-career researchers who drive innovation and ensure institutional continuity. This can be realized by CoEs through activities such as structured mentorship programmes, collaborative research project involvement, targeted methodological skills training and active integration into professional networks for doctoral students and young researchers.

## 5.5 Partnerships and outreach

CoE should build strong partnerships with local/regional governments, businesses, schools, the healthcare sector, cultural and creative industry, regional NGOs and reach out to citizens and specialised target groups to contribute to the alliance’s overarching goals in the focus areas and in line with E<sup>3</sup>UDRES<sup>2</sup>’s research strategy:

“E<sup>3</sup>UDRES<sup>2</sup> aims to prioritize research that addresses pressing local and global societal challenges, especially those posed by the twin green and digital transition. It seeks for strategic alignment with ERA (European Research Area) priorities, most importantly by adhering to Open Science Principles, addressing the twin green and digital transition, promoting gender equality and inclusiveness as well as empowering and including citizens and local communities.” (E<sup>3</sup>UDRES<sup>2</sup> Research Strategy, p. 11).

CoE should strive for unleashing the Potential of European added value at an excellent level, considering the own regional strategies for Research & Innovation (RIS) and their own local expectations (see also E<sup>3</sup>UDRES<sup>2</sup> Research Strategy, p. 11). By engaging closely with regional and local stakeholders and non-academic research and knowledge communities, CoE can increase the potential regional impact of their research and will be able to produce output that generates science-based applied research solutions for local and regional challenges. Thus, CoE are agents of targeted knowledge transfer, especially when including projects and activities of science communication and citizen science.

CoE are supposed to plan the use and promotion of Open Science, Open Access, Open Publishing approaches and tools, collaborating with university publishing houses, repositories, university and public libraries and learning from E<sup>3</sup>UDRES<sup>2</sup> partners that already have advanced in these fields.

## 5.6 Current individual strategies for the prospective CoE

The individual strategies from all the prospective CoE are presented in Appendix C.

For this collection, pCoE selected from the first call were invited to revise the initial plans submitted at the application stage. For the pCoE selected from the second call, given their strategies were submitted only two months prior to this deliverable, and that the results were known only one month prior to the deliverable due date, the strategies were considered up to date.

All pCoE are expected to revise their strategies after dissemination of the current document and submit them for evaluation according to the methodology described in section 4.

## 6 The CoEs as a community of practice

The researchers engaged in the E<sup>3</sup>UDRES<sup>2</sup> Centres of Excellence constitute a strong foundation for the development of a structured community of practice at European level. By facilitating regular exchange, peer learning, and joint reflection on methodologies, infrastructures, and societal engagement, this community will enhance coherence across institutions while preserving disciplinary diversity. Such a framework will move collaboration beyond project-based interactions towards sustained knowledge integration, reinforcing research excellence and strengthening the alliance's contribution to the European Research Area.

The further development and operationalisation of this community of practice will be addressed in detail in the forthcoming revision of the E<sup>3</sup>UDRES<sup>2</sup> Research Networks Policy<sup>9</sup>.

## 7 Conclusion

The E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence represent a strategic initiative to strengthen transnational collaboration, innovation, and knowledge transfer across the alliance. Beginning with the piloting phases, a bottom-up approach for mapping existing capacity and expertise, allowed for iterative learning and refinement of both concept and methodology.

Clear definitions, compulsory establishment criteria, and the outlined scope of support provide a structured foundation for the CoEs, while the piloting phases have highlighted both the potential and the practical challenges of implementing them. Lessons learned from these initial phases have directly informed the methodology for future CoE establishment, including evaluation processes, criteria, and timelines.

The strategy for CoE development emphasises robust collaboration structures, sustainable funding, valorisation of research outputs, integration with education and talent development, and proactive partnerships and outreach. By aligning individual CoE strategies with these broader objectives, the initiative ensures coherence while allowing flexibility to accommodate disciplinary diversity and institutional contexts.

The framework established in this document provides both a roadmap for implementation and a basis for ongoing evaluation, ensuring that the CoEs can grow sustainably, respond to evolving challenges, and maximize their contribution to the alliance's mission.

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<sup>9</sup> [https://eudres.eu/assets/files/deliverables\\_phase\\_2/eudres\\_ms14\\_research\\_networks\\_policy.pdf](https://eudres.eu/assets/files/deliverables_phase_2/eudres_ms14_research_networks_policy.pdf)

## Appendix A First open call

Open call launched in December 2023 (excerpt of the sections related to the Centres of Excellence).

E<sup>3</sup>UDRES<sup>2</sup>

### 1. E<sup>3</sup>UDRES<sup>2</sup> Open Call for Proposals: Potential Pilots

In October 2023 our European University Alliance E<sup>3</sup>UDRES<sup>2</sup> started its second funding period. E<sup>3</sup>UDRES<sup>2</sup> intends to **pool expertise and resources** for and with its members<sup>1</sup> within **four future-guiding Focus Areas**:

- 1) **Health, Wellbeing and Social Inclusion for Regions**
- 2) **Digital Solutions and (Applied) Deep Tech for Regions**
- 3) **Resilient Economy and Innovation for Regions**
- 4) **Creative Industries for Region's Identity**

E<sup>3</sup>UDRES<sup>2</sup> builds on the complementary strengths of full and associated partners, further deepens, intensifies and expands collaboration with members and related stakeholders, enhances the transformation processes towards a fully-fledged European University Alliance and demonstrates progress towards the alliance's long-term vision.

The following **five strategic core objectives** guide the 2<sup>nd</sup> stage of E<sup>3</sup>UDRES<sup>2</sup> 2.0:

- 1) **Enable Smart Learners to unfold talents**
- 2) **Serve as a platform for collaborative innovation to connect entrepreneurial minds**
- 3) **Engage in regional communities to contribute to a peaceful and prosperous society**
- 4) **Empower Ent-r-e-novators (entrepreneurs, researchers, educators and innovators) to accelerate future universities**
- 5) **Shift to a fully-fledged European university to ensure excellent quality.**

The E<sup>3</sup>UDRES<sup>2</sup> 2.0 Erasmus+ project calls for a wider participation of students and staff, scaling up and more systemic approach towards joint learning, research and innovation activities, supported by relevant work packages. The E<sup>3</sup>UDRES<sup>2</sup> Executive Board reflects on the urgency of initial steps and piloting some key profiling activities which will be aligned with and supported by systemic arrangements of the project.

Therefore, **E<sup>3</sup>UDRES<sup>2</sup> invites all colleagues affiliated with one of its members** to propose ideas and first drafts within the following **three open calls** for:

- Co-Teaching activities with/for partners from the E<sup>3</sup>UDRES<sup>2</sup> alliance
- Promising content-areas for Joint E<sup>3</sup>UDRES<sup>2</sup> Associate, Bachelor and/or Master Degrees
- E<sup>3</sup>UDRES<sup>2</sup> Research Centres of Excellence

<sup>1</sup> St. Pölten University of Applied Sciences, Fulda-University of Applied Sciences, Instituto Politecnico de Sétubal, JAMK University of Applied Sciences, UC Leuven-Limburg UAS, Saxion University of Applied Sciences, Universitatea Politehnica Timisoara, Vidzeme University of Applied Sciences, Hungarian University of Agriculture and Life Sciences (associated member) and 36 associated partners (including 6 Higher Education Institutions from Ukraine and Western Balkans)

#### 4. Call III: E<sup>3</sup>UDRES<sup>2</sup> Research Centres of Excellence. Pilot Phase

E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence were proposed within the E<sup>3</sup>UDRES<sup>2</sup> 2.0 project as a step to strengthening the research capacity of the E<sup>3</sup>UDRES<sup>2</sup> partnership, yet building upon the clear mission and values of the alliance, the expertise of individual higher education institutions, benefitting from possible synergies of shared capacity, achievement of critical mass.

Proposals for the pilot Joint Research Centres of Excellence should connect at least **five acknowledged senior researchers** (incl. Postdoc with relevant track-records) from research groups from at least **three E<sup>3</sup>UDRES<sup>2</sup> members**, with some record of **experience with European research projects** in order to strengthen their European visibility and to enhance their capacity for research projects funded under Horizon Europe (or similar). In the view of activities foreseen in the field of doctoral studies it is preferable should at **least one of the involved E<sup>3</sup>UDRES<sup>2</sup> member universities** involved have a **right to offer doctoral programmes**<sup>6</sup> in the relevant field. The proposed research agenda has to correspond to one of the **E<sup>3</sup>UDRES<sup>2</sup> focus areas** and to ensure first **joint proposals for Horizon Europe** proposals upcoming in **late 2024 (or early 2025)** as well as **joint research activities** (e.g. joint presentations at relevant international conferences, joint scientific papers in peer-reviewed conference proceedings or journals, joint proposals to calls in Erasmus+ or any other funding-programs) within about 12 months after selection for the pilot phase.

Selected pilot Joint Research Centres of Excellence will contribute to shaping the E<sup>3</sup>UDRES<sup>2</sup> frameworks for ongoing and upcoming (research) activities. They will be connected and supported by the ongoing Erasmus+ project for the further development of the E<sup>3</sup>UDRES<sup>2</sup> alliance (E<sup>3</sup>UDRES<sup>2</sup> 2.0), highlighted on E<sup>3</sup>UDRES<sup>2</sup> website and social media channels as well as promoted and consulted by high-ranking representatives of the various E<sup>3</sup>UDRES<sup>2</sup> boards. Relevant specific needs, opportunities and challenges will be discussed with members of the E<sup>3</sup>UDRES<sup>2</sup> Management Board.

Pilot Research Centres of Excellence selected for the first pilot phase will be evaluated about 24 months after selection. The E<sup>3</sup>UDRES<sup>2</sup> Executive Board will decide about continuation based on the results of this evaluation.

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<sup>6</sup> The E<sup>3</sup>UDRES<sup>2</sup> 2.0 project includes a goal of launching at least 2 doctoral schools / study programmes and enrolment of at least 30 doctoral students. Identification and development of such programmes is a matter of further discussion, yet these should naturally correspond to the E<sup>3</sup>UDRES<sup>2</sup> research capacities.

## Appendix B Second open call

# E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence

## Second open call for prospective centres

### 1. Introduction

This is the second open call for proposals for **prospective** E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence (pCoE) which is open to all researchers from a E<sup>3</sup>UDRES<sup>2</sup> partner university, including the associated partners from Western Balkans and Ukraine<sup>10</sup>.

The pCoE should aim at evolving into E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centre of Excellence.

From the E<sup>3</sup>UDRES<sup>2</sup> Research Strategy, approved by the Executive Board in December 2024, the concept for such Centres is the following:

*“The E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence (CoE) contribute to shape the E<sup>3</sup>UDRES<sup>2</sup> framework for ongoing and upcoming (research) activities. They shall ensure, that excellence efforts in research are best combined and competitiveness and critical mass in research on European level are achieved.*

*They connect researchers from the E<sup>3</sup>UDRES<sup>2</sup> European University alliance who jointly develop outstanding fundamental and applied research, which support and is interlinked with innovation, services and education, in a specific field, within one of E<sup>3</sup>UDRES<sup>2</sup> Focus Areas, to serve as a catalyst for regional development in that field. They are managed according to high levels of efficiency and positive leadership and show financial viability.*

*The CoE will be encouraged to include as many E<sup>3</sup>UDRES<sup>2</sup> partners and associated partners as possible, as well as external partners, to strengthen their European visibility and to enhance their capacity. Not only academic partners, but also local industry partners should be involved in the projects to provide researchers with real-life challenges and ensure knowledge transfer and innovation implementation. They should build on each partner's strengths, looking for an ideal balance between basic research and applied research to unleash their full potential.*

*The concept for the CoE should be developed following the European research and policy trends, to enhance their capacity to operate and be competitive at the European level.*

*The CoE should be continuously committed to promote attractive and sustainable research careers of young researchers. Based on their collaboration in the CoE, the researchers shall stimulate the creation of joint master's and doctorate programmes as well as microcredentials and other training and innovation activities.”*

The concept was further developed in [Milestone 15](#), approved in June 2025 by the E<sup>3</sup>UDRES<sup>2</sup> Executive Board.

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<sup>10</sup> Bohdan Khmelnytskyi National University of Cherkasy (Ukraine): <http://cdu.edu.ua/en/home-en/>  
Cherkasy State Business College (Ukraine): <http://csbc.edu.ua/>  
Sumy State University (Ukraine): <https://int.sumdu.edu.ua/en/>  
Luigj Gurakuqi University of Shkodër (Albania): <https://unishk.edu.al>  
Aleksandër Moisiu University of Durrës (Albania): <https://uamd.edu.al>  
University of Applied Sciences in Ferizaj (Kosovo): <https://ushaf.net/?lang=en>

## 2. Scope of support under project E<sup>3</sup>UDRES<sup>2</sup> 2.0

Selected proposals will benefit from strategic and developmental support designed to strengthen their research excellence and collaborative capacity. The support will include capacity-building activities, tailored networking and matchmaking opportunities, mentoring from senior representatives across E<sup>3</sup>UDRES<sup>2</sup> bodies, and enhanced visibility and promotion through the alliance's digital platforms and communication channels.

The selected proposals are expected to seek external sources of funding support and to plan their financial sustainability in the long run.

## 3. Timeline for the development of the prospective CoE

This is the second call for prospective CoEs.

For a list of the selected prospective CoEs from the first call, please consult <https://eudres.eu/research-centres>.

Prospective CoEs selected from both calls are evaluated by the end of 2026, according to the methodology described in the [Milestone 15](#), approved by the Executive Board of E<sup>3</sup>UDRES<sup>2</sup> in June 2025 and further detailed in the Deliverable 4.2, currently under development, due in March 2026.

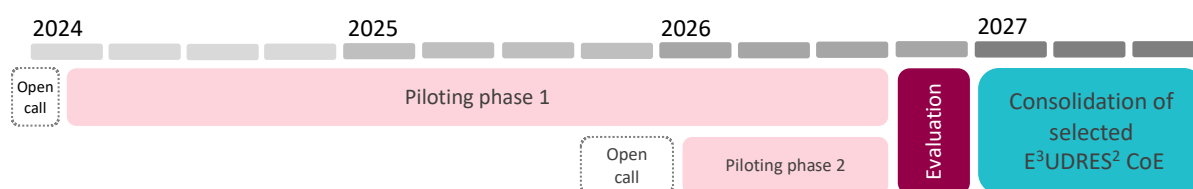


Figure 2 - Timeline for the development of the prospective CoE (from Milestone 15)

## 4. Proposal requirements

For a proposal to be eligible for assessment, these are the following minimum requirements:

- 1) **Team**
  - a) Must include researchers from at least three E<sup>3</sup>UDRES<sup>2</sup> partner universities;
  - b) Must include at least five acknowledged senior researchers (R3 and/or R4 according to the research career stage<sup>11</sup> established by the European Commission).
- 2) **Research plan**
  - a) The research plan should align with, at least, one of the E<sup>3</sup>UDRES<sup>2</sup> focus areas<sup>12</sup> and describe how the prospective CoE's proposed applied research can boost the development of the regions where the participating universities are located.
- 3) **Endorsement from the universities**
  - a) For at least 3 of the universities in the proposal, a letter of internal endorsement should be attached to the form. These letters should be signed by a designated person at each university (*see table in Section 10 for a list of the designated person at each university and the suggested template made available along with the submission form*).

## 5. How to apply

<sup>11</sup> The descriptors can be found at <https://euraxess.ec.europa.eu/career-development/researchers#research-profiles-descriptors>

Submit the Application Form together with the Letters of Endorsement to [office@eudres.eu](mailto:office@eudres.eu).

## 6. Evaluation timeline

The proposals should be submitted by **January 25<sup>th</sup>, 2026**.

Results of the evaluation of the proposals should be communicated by February 27<sup>th</sup>, 2026.

## 7. Evaluation

The evaluation focuses on the potential to evolve into a CoE.

The proposals will be assessed against the following criteria:

- i) **[40%] Merit of the core team**  
Core team of 5 researchers (R3 or R4), from at least 3 partners, showing diversity, complementary expertise and capacity for high level research collaboration.
- ii) **[40%] Feasibility of the research plan**  
The proposal should present a well-structured plan, with clear objectives and methodology, feasible given the expertise of the core team, past collaboration - if any - and the research infrastructure already available at the university level.
- iii) **[20%] Potential of regional impact and European added value at an excellent level**  
The proposal should demonstrate that the research will be innovative and likely to achieve societal and regional impact and measurable outcomes that strengthen competitiveness at European level.

In the table depicted in **Figure 3**, a correspondence between each proposal requirement and each criterion and the section from the submission form from where data will be collected is presented.

<b>Proposal requirements</b> (proposals not meeting these requirements will be excluded)		Section(s) from the application form where information for evaluation can be extracted
Team - at least 5 acknowledged senior researchers (R3 or R4) from at least 3 partner universities		2 (Description of the partnership), 3.1 (Key researchers)
Research plan - aligned with at least one of the E <sup>2</sup> UDRES <sup>2</sup> focus areas		1.4 (EUDRES focus areas) + 1.7 (Vision and mission) + 4 (Research plan)
Research plan - how the prospective CoE's applied research can boost the development of the regions where the prospective CoE's universities are located		4 (Research plan)
Endorsement letters		Should be submitted endorsement letters from at least 3 of the full partner universities

Evaluation criteria	<b>Merit of the core team (scored 1-5)</b>	<b>40%</b>	Section(s) from the application form where information for evaluation can be extracted
	Key researchers showing diversity and complementary expertise, capacity for high level collaboration		3.1 (Key researchers) + 3.3 (Most impactful contributions) + 3.4 (relevant publications)
	<b>Feasibility of the research plan (scored 1-5)</b>	<b>40%</b>	Section(s) from the application form where information for evaluation can be extracted
	Well-structured plan, with clear objectives and methodology, feasible given the expertise of the core team, past collaboration - if any - and the research infrastructure already available at the university level.		4 (Research plan) + 3.5 (joint past collaboration - OPTIONAL) + 5 (Infrastructures - OPTIONAL)
	<b>Potential of regional impact and European added value (scored 1-5)</b>	<b>20%</b>	Section(s) from the application form where information for evaluation can be extracted
	Expected societal and regional impact and expected measurable outcomes that can strengthen competitiveness and show European added value		4 (Research plan)

Figure 3 - Proposal requirements and evaluation criteria alongside with the sections from the submission form from which data will be collected

Each criterion will be scored from 1 to 5 according to the table presented in **Figure 4**.

Criterion	Score				
	1	2	3	4	5
<b>Merit of the core team (40%)</b>	Team lacks required partners and senior researchers	Minimal compliance; limited diversity or expertise	Meets basic requirements; moderate experience	Strong team with complementary expertise and experience	Outstanding team; highly experienced in EU projects
<b>Feasibility of the research plan (40%)</b>	Poor quality; unclear objectives	Limited innovation; weak methodology.	Adequate plan; some innovation.	High-quality plan; clear innovation	Exceptional well structured plan with a very clear demonstration of its feasibility
<b>Potential of regional impact and European added value at an excellent level (20%)</b>	Little or no relevance to regional or societal needs, minimal potential for impact	Limited relevance to regional and societal needs, some potential for impact but remains a bit unclear.	Moderate relevance and potential impact and some concrete plans for knowledge transfer or implementation of study results.	Strong regional/societal relevance and clear and achievable impact plan. Active engagement with stakeholders in the region.	Outstanding regional and societal relevance. Well-defined, effective plan for implementation and dissemination. Strong stakeholder engagement regionally and in European level.

*Figure 4 - Scoring table for the evaluation criteria*

## 8. Number of selected proposals and minimum scores

The selection of the prospective CoEs will be done based upon meeting the proposal requirements and the quality of the proposal. There is no maximum number of selected proposals, but successful proposals need to meet minimum scores as given below.

The proposals that reach a score of at least 3 in each of the criteria and a final weighted score of at least 3.5 will be selected.

For the detailed criteria, please see Section 7.

## 9. Evaluation committee

The proposals will be assessed by the E<sup>3</sup>UDRES<sup>2</sup> Scientific Council<sup>13</sup>.

## 10. Designated person to sign endorsement letters

Partner university	Name	Position
HFD	Martina Ritter	Vice President for Research and Transfer
IPS	Luísa Carvalho	Vice-President for Research, Innovation, Internationalisation and Entrepreneurship
JAMK	Mika Karjalainen	Vice-Rector
MATE	István Szabó	Vice-Rector

<sup>13</sup> <https://eudres.eu/scientific-council>

Saxion	Inge Grimm	Chairman of the Executive Board
UCLL	Pieter Willems	Director R&E
UPT	Liviu Marsavina	
USTP	Hannes Raffaseder	CEO
ViA	Andris Klepers	Director of the ViA Research Institute

## **Appendix C Individual strategies**

We will present the individual strategies of the prospective CoEs sorted by timestamp of application.

For an overview of the prospective CoEs selected from the first call see Table 1.

For an overview of the prospective CoEs selected from the second open call see Table 2

# Emerging Technologies of Experience Design in Arts & Culture

Original version march 2024

## Vision and mission

### Mission

The centre develops digital technologies to create engaging experiences for cultural audiences in analog, digital and virtual spaces with an overall thrust towards participation and engagement. Its research focus lies on the study of diversity in meaning making, the utilization of European data spaces, and the study of cultural userexperience in different target groups and regions.

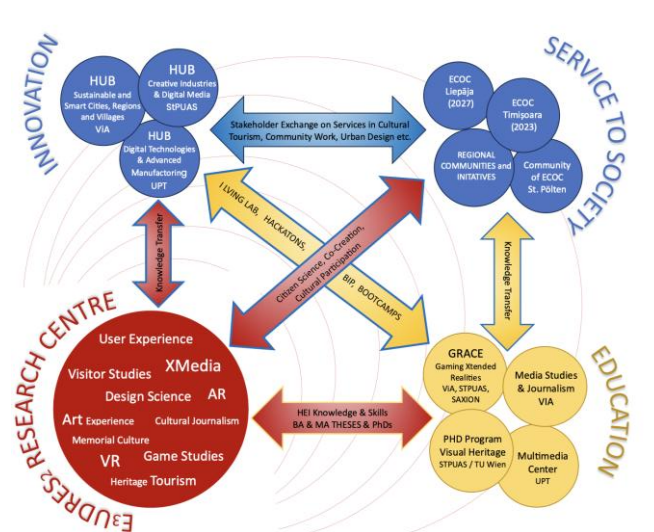
### Vision

The centre’s research will enable and enhance cultural experiences through the study and co-design of digital applications in cultural heritage, contemporary art, festival culture, memorial sites, and landscapes. Audiences and cultural professionals will co-ideate challenging stories and content features and co-create digital technologies such as serious games along well investigated technological, social and cognitive requirements (AR, VR, XR). In doing so, the centre will foster regional development through value creation in cultural organizations, urban design, sustainable tourism, and the creative industries. It will furthermore contribute to education, diversity of expression, civic participation, and community building.

The collaboration is also expected to start a joint or a double master’s degree in Emerging Technologies for Creative Industries.

## Research plan

The research centre shall figure as the academic corner stone in a “Knowledge Square”(European Commission) which connects partners in Education and Research with stakeholders in Innovation and Service to Society!



## INNOVATION

### Regional Innovation Hubs

The centre shall be developed in close knowledge exchange with the projected Open Innovation Hubs in the E<sup>3</sup>UDRES<sup>2</sup> network, such as the Creative Industries and Digital Media (USTP). Exemplary knowledge transfer has, for example, been undertaken during the hackathon OpenGlam, which introduced young entrepreneurs in the field of AR in museums. Further connections to emerging entrepreneurship might be established through the Open Innovation Hub Smart and Sustainable Cities, Regions and Villages (ViA) and Digital Technologies & Advanced Manufacturing (UTP).

Extending the corner of innovation might involve researchers with expertise on entrepreneurial culture, marketing, etc. in the cultural sector.

An economically oriented research field might complement the centre's focus, e.g. in a separate research group, which is embedding the investigated "core service" – experience design for specified cultural content – with studies on the "context of production" such as marketing or entrepreneurial engagement.

#### SERVICE TO SOCIETY

##### European Capitals of Culture (ECOCs)

The ECOC initiative connects professionals from arts & culture, tourism, civil society, and the creative industries who introduce a wide range of knowledge and skills to urban and regional development. Utilizing these networks and the respective expertise will be highly beneficial for the development and realization of the research centre's objectives.

#### RESEARCH

**Citizen Scientists:** The centre's rationale bears a strong connection to the focus on citizen science in the E<sup>3</sup>UDRES<sup>2</sup> agenda. Engaging individuals and initiatives in the field of culture, social inclusion and tourism bears great potential for the collection of experiential data and the co-creation of sustainable technologies in the creative sector. Involving users in co-creation overlaps with topics such as the personalization and accessibility of technologies.

**Academic Researchers:** Research exchange on regional development, culture and technologies of digital experience design might be furthermore established with regional partners such as, for example

##### Partners Austria

- Ilse Arlt Institute of Social Inclusion, USTP

Participatory Research with audiences of local cultural activities such as Festival Tangente (Katharina Auer-Voigtländer, BA MA; Dr. Michaela Moser; Dr. Johannes Pfliegerl collaborated with a network of museums in the region of St. Pölten)

- Study Program Museum Studies, Central European University, Vienna
- Study Program Tourism and Leisure Management, IMC Krems
- Fluxguide, Inc. , Vienna (Dr. Kasra Seirafi,)

##### Partners Latvia

- RIXC Centre for New Media Culture
- High School students at Jaņa Rozentāla College of Art
- Art Academy of Latvia, students at the Audio-Visual Media Art Department

Master level students at the Faculty of Audiovisual Arts, Kharkiv State Academy of Culture (Ukraine)

- RISEBA / Riga Technical University doctoral level students of new media art
- Students at Valmiera High School of Design and Art

Further cooperations might be established with partners in the E<sup>3</sup>UDRES<sup>2</sup> network which could contribute expertise to the centre's focus on regional development such as, for example, interested members of the Faculty of Architecture and Urban Planning, UPT, or the Research Area "Sustainable Tourism", JAMK.

## EDUCATION

### Study Programs in the E<sup>3</sup>UDRES<sup>2</sup> Network

Knowledge transfer from the centre to the involved regions will be closely aligned with selected study programs and students respectively. Accordingly, research of the centre should be closely aligned with the future design of curricula. Students will be engaged in mixed co-design teams collaborating with stakeholders from the respective audience/user groups, creative enterprises, and public institutions. Students will furthermore transfer skills into the regions through formats of co-creation in the framework of the Open Innovation Hubs (Hackatons, etc.) and innovative teaching formats such as "i Living Labs".

A number of study programs might be addressed through the centre's agenda, such as for example:

- GRACE

Joined development by USTP, SAXION and VIA

Study Program on Gamification of Extended Realities in the framework of ERASMUS

Mundus.

- PhD Program Visual Heritage, USTP

Platform for predoc researchers at the intersection of media computation, heritage and media creation, supervised by ICMT researchers (Prof. Markus Seidl, Prof. Franziska Bruckner, Dr. Wolfgang Aigner, Prof. Matthias Zeppelzauer)

- Digital Media Production, USTP
- Media design - Rippl-Rónai Institute of Arts and Theatre, MATE, Kaposvár
- Creative Media and Game Technologies, SAXION
- Urban Development - Urban Design, SAXION
- Bachelor study program Media studies and Journalism, VIA
- Bachelor study program Communication and Public Relation VIA

Based on its research the centre might furthermore start a joint master's degree in Emerging Technologies in the Creative Industries, which could be developed step by step out of smaller formats such as teaching exchanges or a summer school.

# Business Modelling for Managing Sustainability in a Circular and Climate-Neutral Economy (BM)

(Updated early 2026)

## Vision

“Together, we are unique” is our guiding motto. Our diversity—in partners, perspectives, disciplines, and countries—creates value in research, education, networks, and innovation. This benefits students, regions, society, partner institutions, and stakeholders, contributing to excellence in knowledge and outcomes.

## Mission

Our mission is to adopt a value-based (economic, environmental, and social) perspective to develop sustainable business models for smart and resilient regions. We do this through:

- collaborative innovation and value co-creation,
- practice-oriented research with real-life cases involving local, regional, and national organizations (B2B, B2G, B2C, B2Co),
- and the enrichment of education and talent development through curriculum development and knowledge exchange among partners and stakeholders.

The core value contributions use four E<sup>3</sup>UDRES<sup>2</sup> pillars related to the community as outlined below:

E <sup>3</sup> UDRES <sup>2</sup> Pillars	Key Offering to the Community
I-Research	Cross-disciplinary networks focusing on "Resilient Economy and Innovation."
I-Education	Shared modules and electives centred on sustainable value creation.
I-Innovation	Strategic roadmaps for regional businesses to transition to climate neutrality.
I-Exchange	Open-access knowledge and events (like the International Engagement Circus).

## Objectives

Objectives are organized around two main clusters:

### Cluster 1 – Sustainable Business Model Thinking

Key drivers:

- business model development
- cross-disciplinary and cross-sectoral collaboration
- regional/national collaborative innovation
- ecosystem validation
- performance and impact measurement

### Cluster 2 – Capacity Building & Knowledge Transfer

Key drivers:

- training programs
- real-life cases and BM database repository

- joint BM lab
- network-of-networks collaboration
- joint research/education communication tool (CoE BM Carousel)

These clusters are integrated as follows:

<b>E<sup>3</sup>UDRES<sup>2</sup> Pillars</b>	<b>CoE Activity Integration</b>	<b>Value for the Community</b>
<b>I-Research</b>	Joint Research and Impact Measurement	High-impact publications and data-driven sustainability reports.
<b>I-Education</b>	Training Programs and Real-Life Cases	Hands-on experience for students solving actual regional SME problems.
<b>I-Innovation</b>	Ecosystem Validation and Joint BM Lab	Faster "Time-to-Market" for green startups within the alliance.
<b>I-Exchange</b>	COE BM Carousel and Network of Networks	Increased visibility of E <sup>3</sup> UDRES <sup>2</sup> as a leader in the Circular Economy.

### **Expertise**

The essence of CoE BM expertise lies in each partner contributing its own strengths and sharing them through collaborative research and education. Together, the nine partners form a strong foundation of knowledge and skills.

Our strategy focuses on:

- establishing **subclusters of expertise** in domains where researchers are strong (e.g., green supply chains, collaborative business models),
- encouraging student research expertise by creating an **impulse for publishing and dissemination**, aiming to increase publication output across partners.

One of the operational components of this strategy is an **annual online conference**.

### **Governance**

COE BM applies a **hybrid governance model** (centralized and federated). A central Project Lead (PL) coordinates joint activities and key decisions, while each partner may lead its own initiatives within the agreed COE scope.

- The consortium consists of the heads of research from each partner and is the central decision-making body.
- The PL is appointed for two years, with the possibility of renewal.
- All researchers from each institution form an additional group, and together with the consortium, they form the CoE BM Community.

Our strategy is to maintain this **balanced, open governance structure** through active/proactive coordination.

### **Funding and Network Durability**

Our funding strategy aligns with EU priorities (e.g., circular economy, sustainable regions) and major funding sources (Erasmus+, Horizon Europe, Interreg, and national/regional funds).

Partners meet regularly to explore funding opportunities using a **systematic approach to research calls**. To strengthen this position, further operationalization of the CoE BM collaboration platform is essential.

Our strategy is to fully activate research opportunities by using the digital tool developed for this purpose: <https://freeburn113.github.io/eudres-carousel/>

### **Transnational Research Strategy**

As a transnational consortium, we can address EU and national calls together. Our content strategy is to **focus on our strongest research lines**, such as circular business models and resilience in material transitions.

We strengthen collaboration by **building a broad range of dissemination and impact tools**, using each partner's natural strengths (e.g., UPT for academic book coordination, Saxion for podcasts).

Maintaining momentum through:

- monthly COE meetings
- a monthly newsletter

is essential to ensuring effective communication and ongoing collaboration.

### **Integration with Education and Talent Development**

Our education and talent development strategy aligns closely with our research strategy. Collaboration opportunities in education are **systematically discussed during monthly meetings**.

We aim to maximize the impact of existing E<sup>3</sup>UDRES<sup>2</sup> initiatives (e.g., Live Lecture Day) and to develop or share new programs (e.g., the Master of Sustainable Transitions).

### **Partnerships and Outreach**

With all E<sup>3</sup>UDRES<sup>2</sup> partners already part of CoE BM, collaboration and outreach are both natural and effective.

Short-term strategy (1–2 years):

- strengthen transnational partnerships
- continue building on research and education outputs

Long-term strategy (3–5 years):

- expand the network through “partners of partners”
- create momentum for CoE BM flagship outputs (e.g., Weconomy Transition Canvas)

### **Communication**

Our communication strategy focuses on **clarity and continuity**:

- Monthly online meetings with a core group of 10–12 researchers
- Monthly digital newsletter to maintain focus and momentum
- Hybrid meetings twice per year during E<sup>3</sup>UDRES<sup>2</sup> summits
- Email communication for regular updates

- A shared team environment to archive documents and meeting recordings
- A WhatsApp group for rapid communication

This strategy will be further strengthened once the digital tool becomes fully operational.

### **Research and Education Operationalization**

Our digital tool aims to **facilitate collaboration** by simplifying access to research calls and educational opportunities.

Features include:

- a user-friendly input template for project ideas
- an automated email alert system linked to the researchers database
- visualization of partner connections and outputs

Our strategy is to use this platform to **accelerate collaboration**, and we aim to integrate it into the E<sup>3</sup>UDRES<sup>2</sup> Arena as soon as possible.

### **Research/Education Output**

We continue to rely on our collective strengths to submit research calls and publish high-quality academic and non-academic articles.

We promote the dissemination of research through:

- an annual online research conference
- a portfolio of educational programs, including micro-credentials and the Master on Sustainable Transitions

Several joint academic articles are currently under development, and a two-volume book with Springer has been accepted, featuring contributions from most partners.

### **Recommendations**

To support these strategies and sustain momentum, we recommend:

- implementing the research/education web platform in the E<sup>3</sup>UDRES<sup>2</sup> Arena environment as soon as possible
- receiving support from E<sup>3</sup>UDRES<sup>2</sup> under its Capacity & Direct Support objectives (capacity building, concept support from relevant WPs, financial and staff support, communication and visibility)

# Centre for Intelligent Integral Robotic Systems (I<sup>2</sup>RS)

(Updated Strategic Framework 2026–2030)

## 1. Introduction

The Intelligent Integral Robotic Systems (I<sup>2</sup>RS) Prospective Centre of Excellence (pCoE) is one of the collaborative research structures established within the E<sup>3</sup>UDRES<sup>2</sup> alliance. It brings together research groups from four partner institutions—Saxion University of Applied Sciences, Politehnica University of Timisoara (UPT), Polytechnic Institute of Setúbal (IPS), and University College Leuven-Limburg (UCLL)—to jointly advance applied research, innovation capacity, and talent development in the field of intelligent robotics.

The pCoE operates as a shared E<sup>3</sup>UDRES<sup>2</sup> initiative, coordinated by Saxion on behalf of the consortium, and driven by a distributed team of senior researchers across all partner institutions. This Strategy Update aligns with insights from the first year of operations as described in the Interim Progress Report (2025), reflecting both the progress achieved and the collective ambition to strengthen I<sup>2</sup>RS as a future-leading Centre of Excellence in Europe.

## 2. Vision

**To become a leading applied European Centre of Excellence in intelligent robotics, fostering innovation, human potential, and regional resilience through transnational collaboration.**

This vision is rooted in the original I<sup>2</sup>RS proposal and is consistent with the broader E<sup>3</sup>UDRES<sup>2</sup> commitment to societal impact, innovation for regions, and collaborative excellence.

## 3. Mission

**To jointly advance applied research and innovation in intelligent robotic systems through transnational collaboration, integrated talent development, and strong engagement with regional ecosystems, SMEs, and societal partners.**

This mission incorporates:

- accelerating innovation via shared expertise and infrastructures
- strengthening education through international and interdisciplinary collaboration
- supporting regional and societal transitions through responsible robotics and AI

## 4. Core Objectives

### 4.1 Applied Research Excellence

The I<sup>2</sup>RS pCoE aims to progress state-of-the-art development in:

- autonomous and adaptive robots
- cognitive mechatronics
- human-robot interaction
- intelligent AI-driven systems

These research lines will evolve into distinct research subclusters collaboratively led by different partner institutions. To achieve this, we strive to actively expand the current consortium.

### 4.2 Strengthened Transnational Collaboration

The pCoE will deepen collaboration by:

- establishing structured knowledge exchange activities
- developing a shared roadmap for short-, medium-, and long-term objectives
- expanding involvement of additional research groups within partner institutions

### **4.3 Ecosystem Engagement & Innovation Support**

The pCoE builds on successful early-stage partnerships with regional stakeholders, including research labs and innovation networks. Future efforts will strengthen ties with:

- regional robotic clusters and digital innovation hubs
- municipalities and regional governments
- European and global research institutions

This engagement ensures that applied research is contextually relevant and contributes to societal and industrial innovation.

### **4.4 Talent Development & Education Innovation**

The I<sup>2</sup>RS pCoE will contribute to the development of the next generation of robotics professionals by:

- establishing international mobility pathways for students and staff
- integrating real-life applied research cases into curricula
- organizing workshops, mentorship opportunities, and innovation challenges

### **4.5 Societal Impact & Ethical Robotics**

By promoting responsible use of robotics and AI, the pCoE aims to:

- contribute to improved safety, healthcare, sustainability, and inclusion
- foster community engagement through events and public demonstrations
- support ethical considerations in technology adoption

## **5. Governance & Operational Structure**

### **5.1 Consortium-Based Governance**

The I<sup>2</sup>RS pCoE operates as a joint E<sup>3</sup>UDRES<sup>2</sup> centre, coordinated by Saxion but co-created and co-implemented by all four partner institutions, and eventually by additional (new) members.

This structure ensures:

- coordinated leadership through a central pCoE Coordinator
- distributed responsibility through partner leads in each institution
- shared decision-making and transparent communication channels

This hybrid structure supports balanced ownership and equitable participation across the consortium.

### **5.2 Community & Communication**

The I<sup>2</sup>RS community includes all participating researchers and technologists from partner institutions. To support collaboration, the pCoE will:

- maintain monthly coordination meetings
- organize structured workshops and partner visits
- strengthen documentation, communication, and transparency practices

## **6. Strategic Roadmap (2026–2030)**

### **Phase I: Consolidation & Alignment (2026–2027)**

- Establish research subclusters and co-leads across partners
- Develop the shared I<sup>2</sup>RS roadmap in full detail

- Conduct at least 2 online workshops and 1 partner visits per year• Strengthen partner engagement and visibility
- Expand the consortium by involving other relevant E<sup>3</sup>UDRES<sup>2</sup> members

### **Phase 2: Expansion & Capacity Building (2027–2028)**

- Initiate large-scale joint project proposals
- Develop new joint educational formats and microcredentials
- Enhance mobility opportunities for researchers and students
- Engage new European and global research partners

### **Phase 3: Leadership & Impact (2028–2030)**

- Establish I<sup>2</sup>RS as a recognized European hub for applied robotics
- Launch an annual I<sup>2</sup>RS conference and thematic publications
- Expand collaboration with industry and public-sector partners
- Demonstrate measurable societal and regional innovation outcomes
- Expand the consortium by involving other relevant members outside E<sup>3</sup>UDRES<sup>2</sup>

## **7. Lessons Learned and Improvements**

### Successes to Build On

- well-received workshops at the E<sup>3</sup>UDRES<sup>2</sup> Spring Summit
- increased visibility through keynote and lab tours
- strong foundational collaboration between partners

### Areas for Strengthening

- improve communication and transparency in decision-making
- further re-align collaborative activities after funding distribution adjustments
- reinforce the shared mission and balanced execution among partners

## **8. Strategic Recommendations**

1. Strengthen central coordination while maintaining distributed partner ownership.
2. Develop digital tools for collaboration, matchmaking, and knowledge sharing.
3. Enhance partner involvement and cross-institutional research activities.
4. Expand international networks to elevate the pCoE's visibility and impact.
5. Focus on applied robotics solutions with clear societal benefits.

## **9. Conclusion**

The I<sup>2</sup>RS pCoE has laid a strong foundation during its initial phase and is now positioned to grow into a leading applied robotics centre within Europe. By enhancing collaboration, strengthening research capacity, and deepening engagement with regional and international partners, the pCoE will contribute to innovation, education, and societal transformation across the E<sup>3</sup>UDRES<sup>2</sup> alliance.



## Research Centre of Excellence in Cyber Security and Resilience (RCOECSR)

### Vision and mission

The envisioned Centre of Excellence in Cyber Security and Resilience aims to become an essential research centre in the European landscape of cyber security research. By uniting the research of alliance partners and by identifying emerging technologies, we envision creating a strong and competitive research institute that facilitate organisations to protect themselves against cyber threats and to be equipped with skills to face emerging technologies.

The Centre of Excellence focuses on contributing in the areas of cyber security and resilience, emerging cyber security technologies, governance, risk, and compliance, and cyber security training and education.

Strategic collaboration and knowledge exchange between partners should enhance the competitiveness of the Centre of Excellence in European funding programs and enable the development of new products and solutions to combat cyber risks, shaping cyber security within the regions of the alliance.

### Research plan

The prospective E<sup>3</sup>UDRES<sup>2</sup> Centre of Excellence in Cyber Security and Resilience aims to address modern challenges in cyber security by establishing a collaborative, distributed, and multi-site research environment across the E<sup>3</sup>UDRES<sup>2</sup> partner universities. Building on the foundation of ongoing collaboration within the alliance, the centre will integrate technical and socio-technical competences to create a unique European hub for applied research, capacity building, and innovation in cyber resilience.

The overarching objective is to establish an internationally recognised research centre that promotes secure digital transformation, contributes to regional innovation, and strengthens Europe's resilience capacities. The centre will advance both fundamental and applied research, support educational innovation and research career development, and engage actively with regional stakeholders, including public authorities, SMEs, and relevant industry clusters.

The CoE aims to (1) perform high-quality applied research addressing technical, socio-technical, and human factors of cybersecurity, (2) to support European regions in strengthening their digital resilience and innovation capabilities, (3) to advance researcher careers with research exchanges, and shared training programmes, and (4) to promote knowledge transfer and real-world impact through regional co-creation with industry and society.

The CoE aims to create a holistic, multi-layered approach to cyber resilience that integrates technical research with human, societal, organisational, and governance perspectives. The centre will organise its activities around four research topics:

1. Cyber Security and Resilience
2. Emerging Cyber Security Technologies
3. Governance, Risk, and Compliance (GRC)
4. Cyber Security Training, Education, and Digital Literacy

The CoE envisions the following actions to reach its objectives:

1. Joint submissions to European funding programmes, targeting Horizon Europe, Digital Europe, Interreg and EDF.
2. Joint peer-reviewed publications resulting from interdisciplinary research.
3. Researcher exchange opportunities, including short stays, visiting periods, and PhD pathways.
4. Exploitation of research infrastructures and joint capacity-building actions.
5. Workshops in international venues such as ARES.

# One Health Applied Research Centre of Excellence for Regional Wellbeing and Sustainability (OHARCE)

## Vision and mission

The vision of OHARCE is to enhance human, environmental, animal, and societal wellbeing by advancing an integrated One Health approach and transforming it into scalable, evidence-based solutions. Through inter- and transdisciplinary collaboration, the Centre promotes sustainable health, wellbeing, social inclusion, and community resilience, while supporting the green transition across regional and European contexts.

The mission of the Centre is to conduct high-impact, practice-driven research bridging human, animal, and environmental health while accelerating sustainable regional development. Its research and innovation activities advance wellbeing across the life course, strengthen resilient regional economies, and drive green transition in health and social care, agriculture, food systems, and work and living environments. It focuses on designing, testing, and scaling interventions, sustainable nutrition and food system innovations, business models, and biodiversity-based solutions.

## Research plan

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## Learning where Higher Education meets Industry in the Age of AI (LEIA)

### Vision and mission

We envision a future where higher education and industry collaborate to shape innovative learning and innovation ecosystems in an AI-mediated world. LEIA stands for a Centre of Excellence that bridges academic inquiry, real-world challenges, and responsible artificial intelligence to strengthen future skills, regional innovation, and European competitiveness.

Our mission is to co-create and research AI-enhanced learning and collaboration practices at the intersection of higher education and industry. LEIA develops and evaluates evidence-based learning formats, models, and governance approaches that integrate artificial intelligence into curricula, organisational practice, and regional innovation ecosystems, in close partnership with educators, learners, and industry stakeholders.

### Research plan

#### AIM AND RATIONALE

Evidence-based innovation emerges through co-creation and collaborative learning, particularly through cooperation between higher education (HE) and industry. Despite well-documented benefits, such collaboration has remained limited. E<sup>3</sup>UDRES<sup>2</sup> addresses this gap by strengthening cooperation with regional stakeholders, reflecting the increasing importance of pedagogy-focused collaboration in the context of digital transformation.

Alongside traditional HE-industry connecting learning practices (e.g., Internships, thesis), E<sup>3</sup>UDRES<sup>2</sup> has introduced industry-centred collaborative learning models. However, their effectiveness and relevance require further empirical investigation.

LEIA -Learning where Higher Education meets Industry in the Age of AI- is a prospective E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centre of Excellence (CoE) rooted in the mission of UASes to deliver practice-oriented research with direct regional impact. Positioned within the E<sup>3</sup>UDRES<sup>2</sup> focus area Digital Solutions and (Applied) Deep Tech for Regions, LEIA brings together practitioners and researchers in a shared ecosystem to develop research-based collaborative learning practices that integrate students, HE experts, and regional and international industry partners. Through joint projects, mobility of researchers, teachers, and students, co-working practices, and expanded partnerships within E<sup>3</sup>UDRES<sup>2</sup>, LEIA facilitates knowledge transfer, capacity building, and the scaling of proven solutions.

LEIA advances AI-enhanced work-integrated learning and dual study formats for HE-industry collaboration, with a strong emphasis on feasibility and measurable outcomes. Through partnerships with regional companies and public actors, LEIA supports responsible AI integration through human-in-the-loop approaches that strengthen SME competitiveness, workforce skills, and sustainable regional development, simultaneously enhancing learning environments.

By integrating applied research, education, and knowledge transfer, LEIA contributes to regional innovation ecosystems and EU competitiveness. It provides a foundation for joint UAS-driven educational offerings, including micro-credentials, master's and doctoral pathways, while promoting research careers. In this way, LEIA demonstrates strong potential to evolve into a robust E<sup>3</sup>UDRES<sup>2</sup> CoE.

#### RESEARCH OBJECTIVES & KEY QUESTIONS

The research objectives will be integrated into proposals for international research calls and aligned with the development of transferable, evidence-based outputs, including reference models, design frameworks, and practical toolkits.

#### Research Objectives

RO1-Analyse how HE-Industry learning formats transform through AI, focusing on teaching, learning, and assessment, and on where AI enables pedagogical and organisational innovation.

RO2-Identify and formalise design requirements for AI-enhanced work-integrated learning, including pedagogical, structural, ethical, and governance-related needs, to move beyond tool-based AI usage and support reflective learning and responsible understanding of AI systems in real workplace contexts.

RO3-Define competencies, roles, and AI literacy for learners and educators, including critical judgement, ethical decision-making, and human agency, and examine how professional roles evolve in AI-mediated contexts.

RO4-Evaluate stakeholder value, collaboration, and inclusion in AI-enhanced learning by assessing educational, organisational, and regional benefits, analysing collaboration dynamics, and examining whether AI-supported formats expand participation without reinforcing inequalities.

#### Core Pillars

Pillar 1:HE-Industry learning through AI. Investigating how AI reshapes learning formats, including adaptive pathways, data-driven assessment, personalised feedback, and work-integrated study programmes across institutional and regional settings.

Pillar 2:Design and governance of AI-enhanced learning. Exploring structural, pedagogical, ethical, and governance-related needs for AI-supported formats, with an emphasis on reflection, problem-solving, and responsible understanding of AI systems.

Pillar 3:Competencies, roles, and stakeholder value. Analysing evolving roles, required competencies, and collaboration patterns, and evaluating the potential of AI-enhanced formats to foster inclusion, participation, and regional innovation.

#### CONCEPTUAL FRAMEWORK, METHODOLOGY & CORE TEAM

LEIA conceptualises the HE-Industry interface as a dynamic socio-technical learning ecosystem rather than a linear transfer of knowledge.

Drawing on Socio-Technical Systems Theory and Boundary Crossing, this framework models a tripartite boundary where learners navigate academic inquiry (theory/evidence), industrial practice (value/constraints), and algorithmic logic (pattern-based). Mastery in this space requires epistemic fluency and auditing competence—the ability to evaluate AI outputs against human values and organizational needs.

#### Methodology

LEIA employs Design-Based Research (DBR), an iterative approach that bridges pedagogical design and empirical inquiry through the Map-Evaluate-Develop cycles.

· Mapping Phase: Systematically specifies problems and classifies existing formats based on cooperation levels and AI integration.

- Evaluation Phase: Uses mixed-methods (surveys, interviews, learning analytics) to ground design decisions in empirical evidence and assess educational effectiveness.
- Development Phase: Co-designs and pilots AI-enhanced interventions in authentic settings to generate scalable, transferable design principles.

#### Core Team

The consortium partners synergise four pivotal roles to ensure the theory and practice integration:

- Deep-Tech Researchers & Practitioners providing use-cases and industry collaboration expertise.
- AI R&D Specialists driving technical innovation.
- Teaching, Learning Researchers & Experts focus on curriculum and pedagogical development.
- Connectors & Innovators mediating contextualising AI outputs, and auditing for bias to ensure validity.

#### OUTCOMES, IMPACT, DISSEMINATION & EXPLOITATION

##### Outcomes

##### Scientific Outcomes

- Six peer-reviewed publications in international journals and conferences within three years.
  - o Three research reports aligned with project phases and made available to the E<sup>3</sup>UDRES<sup>2</sup> community: 1-Mapping Report: Conceptual model for classifying HE–industry educational formats in the age of AI; 2-Evaluation Report: Evaluation model applied to E<sup>3</sup>UDRES<sup>2</sup> activities and partner institutions; 3-Development Report: Criteria and recommendations future HE–industry cooperative educational formats
- An edited academic volume (2028–2029) presenting research outcomes and practical examples in HE innovation.

##### Project Development & Funding Outcomes

- Submission of at least three project proposals by the LEIA consortium to EU or national funding programmes.
- Submission of at least three additional applications by individual LEIA researchers on LEIA-related topics.

##### Impact

##### HE and E<sup>3</sup>UDRES<sup>2</sup> Alliance

- Strengthening evidence-based design, planning, and evaluation of educational activities at the HE–industry interface in an AI-driven environment.
- Providing inputs for the next Erasmus+ calls.

## Industry and Regional Innovation Ecosystems

- Supporting AI-related strategies and collaborative innovation formats, particularly for SMEs.
- Increasing regional capacity to attract, develop, and retain talent.

## Societal and Educational Impact

- Promoting challenge-based, practice-oriented, and learner-centred approaches for an AI-intensive labour market.
- Strengthening regional innovation cultures through structured collaboration.

## Dissemination

### Target Audiences

- E<sup>3</sup>UDRES<sup>2</sup> community: students, lecturers, researchers, innovation staff.
- HE institutions and policymakers.
- Companies engaged in HE–industry cooperation, especially SMEs.
- Regional innovation actors and networks.
- EU platforms focused on HE innovation and collaboration.

### Channels and Formats

- Regional non-peer-reviewed publications in local languages.
- Capacity-building workshops and contributions to E<sup>3</sup>UDRES<sup>2</sup> events.
- Stakeholder workshops for companies and educational partners.

### Exploitation

- Embedding conceptual and evaluation models into E<sup>3</sup>UDRES<sup>2</sup> educational development processes.
- Integrating mapping and development frameworks into institutional HE–industry collaboration strategies.
- Using scientific outputs and project reports as a foundation for future funding applications.
- Ensuring uptake through training materials, open-access models, institutional partnerships, and collaboration with EU networks.

## RISKS, ETHICS, OPEN SCIENCE & SUSTAINABILITY

### Risks

LEIA addresses risks through DBR's iterative development cycles. Variations in HE–industry practices and rapid AI evolution may affect comparability and relevance. These are mitigated through a shared research framework, continuous partner collaboration, and adaptive design. Ethical, legal, and data-related risks are managed through institutional guidelines, GDPR-compliant practices, and regular reflection on AI use.

### Ethics and Open Science

LEIA foresees:

- Compliance with the European Code of Conduct for Research Integrity (ALLEA) and institutional guidelines.
- Voluntary participation with transparent communication of research aims, data use, and withdrawal rights.
- Cooperation with institutional DPOs and compliance with the UNESCO

Recommendation on the Ethics of AI.

- AI risk assessment aligned with the EU AI Act and OECD AI Principles.
- Adherence to OpenAIRE guidance and standardised data processing agreements (DPA).

#### Sustainability

LEIA builds a research community within the E<sup>3</sup>UDRES<sup>2</sup> alliance to advance HE–industry collaboration. The initiative aligns with the alliance’s focus on AI and contributes to the Talent Funnel and innovative learning activities. The team will strengthen joint applications for national and EU funding and progressively expand from Digitalisation and Deep Tech toward social and health–care sciences.

## Centre for Circular Materials, Innovation and Education (CIRCULATE)

### Vision and mission

Drive the transition to a circular economy by transforming waste into valuable, sustainable materials that reduce environmental impact and strengthen regional economies. Through research-driven education and lifelong learning, CIRCULATE will equip the next generation with the skills needed to design, assess, and implement circular solutions—making circularity a driver of innovation, jobs, and long-term impact.

### Research plan

#### 1. Objectives and ambition

The project aims to establish a visible and competitive European Centre of Excellence (CoE) in waste materials and circular valorisation, delivering strong regional impact, advancing education and skills, and promoting sustainable research careers in line with ERA objectives. It applies an interdisciplinary approach combining research, digital technologies, sustainability assessment, education, and innovation services to ensure relevance and measurable impact.

#### 2. Specific objectives

##### 2.1. Scientific objectives:

- Map underutilised waste and bio-residual streams in Romania, Austria, and Portugal.
- Generate new knowledge on waste-based material properties and transformation pathways.
- Develop and validate circular waste-based materials and composites.
- Establish harmonised methods for material characterisation, safety screening, and life cycle assessment (LCA).

##### 2.2. Innovation and service objectives:

- Translate research into innovation-ready solutions and services.
- Support SMEs and public authorities through testing and advisory services.
- Enable knowledge transfer, standardisation, certification, and investment readiness

##### 2.3. Education and research career objectives:

- Promote attractive research careers for early-stage researchers.
- Develop joint Master's and Doctoral programmes.
- Deliver micro-credentials and lifelong learning programmes.

##### 2.4. Regional development objectives:

- Strengthen regional innovation ecosystems and economic resilience

#### 3. Concept and approach

To achieve its main objective, the project transforms underutilised waste and bio-residual streams into high-value, circular, and climate-neutral materials through three integrated pillars:

Pillar 1 – Research and Material Development (covering fundamental and applied research on waste materials)

Pillar 2 – Digitalisation, Sustainability and Systems Analysis (integrating digital tools and data infrastructures with sustainability, resilience, and systems assessment)

Pillar 3 – Innovation, Education and Regional Engagement (combining innovation services, regional collaboration, and education, skills development, and training outcomes)

Feasibility and implementation logic. This unique consortium combines complementary expertise in materials science and engineering, waste valorisation and processing, environmental and socio-economic assessment (LCA/TEA/S-LCA), digital infrastructures for traceability and data sharing, and stakeholder engagement and skills development. Work will build on available laboratory (where available) and pilot-scale facilities at partner institutions (material characterisation and performance testing, prototyping and validation setups, and digital platforms), complemented by shared protocols and cross-access arrangements to ensure comparability of data across countries. The research plan follows a staged progression from mapping and screening to material development, validation, demonstrators, and standardisation/certification preparation, ensuring scientific robustness and feasible delivery within the project duration.

## 4. Methodology

### 4.1. Research and Material Development

Pillar 1 applies a structured interdisciplinary R&D approach combining fundamental and applied research on waste and bio-residual materials. It includes mapping underutilised waste streams in Romania, Austria, and Portugal using harmonised screening criteria, followed by comprehensive material characterisation and comparable datasets. Material development is guided by life-cycle thinking, supported by iterative experimentation, DoE optimisation, prototyping, and validation, enabling progression from laboratory results to application-oriented demonstrators with scale-up and certification readiness.

### 4.2. Digitalisation, Sustainability and Systems Analysis

Pillar 2 applies a digital-by-design, systems-based methodology integrating digital infrastructures with sustainability and resilience assessment. FAIR-compliant tools enable traceability, data sharing, and digital product information across material life cycles, while LCA and techno-economic and social analyses assess environmental, economic, and social impacts. Systems analysis evaluates supply-chain vulnerabilities and resilience, ensuring interoperable, validated tools suitable for real industrial and regional contexts.

### 4.3. Innovation, Education and Regional Engagement

Pillar 3 applies a co-creation, place-based innovation approach linking research with education, innovation services, and regional ecosystems. SMEs, public authorities, students, and citizens are engaged through co-design workshops, living labs, pilots, and advisory services. Education and skills development are embedded via joint Master's and Doctoral programmes, micro-credentials, and lifelong learning, supported by continuous feedback, open science, and strong knowledge transfer to ensure regional uptake and European visibility.

Risk management (summary). Key risks include variability/contamination of waste streams, performance shortfalls, regulatory constraints, limited SME uptake, and digital interoperability challenges. Mitigation measures include harmonised acceptance and pre-treatment protocols,

alternative formulation pathways and DoE optimisation, early regulatory mapping and safety testing, stakeholder co-design with service incentives and pilots, and interoperability-by-design.

## 5. Regional impact and European added value

European visibility and competitiveness will be ensured through a focused research and innovation agenda delivering high-quality circular solutions aligned with the European Green Deal, the Circular Economy Action Plan, and decarbonisation goals. By integrating research, digital tools, sustainability assessment, education, and innovation support in a coherent framework, the project builds critical mass and reduces fragmentation. Results will be disseminated through peer-reviewed publications, European conferences, open-access platforms, and awareness actions. FAIR-compliant, interoperable digital platforms will position the CoE as a European reference point, further strengthened through participation in communities of practice, contributions to standardisation and certification, and capacity-building actions ensuring long-term impact.

### Education and Attractive Research Careers

Education and research careers are core to the CoE. The project will develop joint Master's and Doctoral programmes in waste valorisation, circular materials, sustainability, and digital lifecycle management, supported by co-supervision, international mobility, and active involvement of early-stage researchers in research and innovation activities. Complementary micro-credentials, short courses, and modular training will address scientific and transversal skills, supporting attractive and sustainable research careers across academia, industry, and the public sector.

### Foreseen Tangible Results:

- Peer-reviewed publications, conference papers, and policy or industry briefs on waste-based materials and circular value chains.
- Harmonised datasets and maps of waste and bio-residual streams, and FAIR-compliant material property databases.
- Validated waste-based materials, composites, and application-oriented demonstrators benchmarked against relevant standards.
- Open and interoperable digital tools enabling traceability, digital product information, and integrated LCA/TEA assessment.
- Joint MSc and PhD theses, micro-credentials, and lifelong learning modules.
- Innovation and advisory services for SMEs and public authorities (testing, validation, sustainability assessment, feasibility studies).
- Where appropriate, intellectual property, invention disclosures, and contributions to standardisation and certification pathways.

### High Regional Impact and Stakeholder Engagement

High regional impact will be achieved through a place-based, co-creative approach tailored to the socio-economic and innovation contexts of Romania, Portugal, and Austria. Research, education, and innovation activities are directly linked to regional waste streams and industrial ecosystems, ensuring relevance and applicability.

In Romania, the project strengthens research and innovation capacity by connecting academia with local waste streams, SMEs, and public authorities, supporting skills development and emerging

circular value chains. In Portugal, strong links between research institutions, innovation ecosystems, and regional authorities enable applied circular solutions, with a focus on SME engagement and workforce upskilling in coastal and rural regions. In Austria, advanced circular economy practices support high-quality, replicable solutions, with emphasis on sustainability assessment, digital tools, and scalability.

Across all regions, SMEs, public authorities, innovation agencies, and citizens are actively engaged through co-design, pilots, training, advisory services, and living labs, lowering barriers to uptake, strengthening innovation ecosystems, and increasing societal participation in the circular economy transition.

#### European–Regional Synergies

The project creates two-way synergies between European excellence and regional implementation: regional pilots and demonstrators serve as European showcases, while European research results, digital tools, and training formats are replicated across regions. Progress is monitored through a KPI framework covering scientific outputs, datasets and software, demonstrators, stakeholder engagement, and education outcomes. This integrated approach positions the project as both a European centre of excellence and a driver of sustainable regional transformation.

## Regional Socio-Technical Innovation and Intelligence Centre (RESONANCE)

### Vision and mission

#### Vision

To enable inclusive and sustainable regional innovation by transforming data into socio-technical solutions that empower communities and strengthen regional ecosystems.

#### Mission

To design, develop, and deploy data-driven socio-technical solutions by integrating technology, human insight, fostering collaboration among stakeholders, and supporting evidence-based decision-making for regional growth and resilience.

Specifically, this CoE supports the transition to digital autonomy, by supporting data democracy and by using the current technical innovation around AI, digital twins and socio-technical solutions.

The approach is grounded in human-centred principles values and strengthened through close collaboration with stakeholders.

### Research plan

Operating reality: The Centre of Excellence (CoE) has no fixed core budget. Its activity level depends on success in competitive funding. The research plan therefore combines (i) an ambitious European agenda with (ii) a resilient operating model that preserves continuity and credibility even in periods without funded projects.

#### 1. Horizon Europe fit and European relevance

Primary alignment: Horizon Europe Pillar II, with strongest alignment to:

- Cluster 4 (Digital, Industry and Space): AI, data engineering, digital twins, trustworthy digital technologies.
- Cluster 2 (Culture, Creativity and Inclusive Society): inclusion, participation, evidence-based governance, socio-technical adoption.

Secondary impact alignment:

- Cluster 3 (Civil Security for Society): cybersecurity, system resilience, trusted data sharing.
- Cluster 5 (Climate, Energy and Mobility): scenario-based regional planning, adaptation and optimisation enabled by twins and decision intelligence.

European added value: The CoE reduces fragmentation by producing replicable methods and assets (architectures, governance templates, evaluation protocols) that allow other regions to adopt proven socio-technical solutions faster and at lower cost.

#### 2. Research agenda

The CoE builds on two research areas—Simulation Modelling & Simulation

Engineering and Intelligent Systems in Socio-Technical Contexts— implemented through four integrated programmes.

Programme A – Digital Twins for Regions (Simulation Engineering in practice)

Goal: Deliver “twin-to-decision” pipelines for regional systems (public services, mobility, energy, land use, resilience).

Outputs: reference architectures, hybrid modelling (physics + data), validation and uncertainty protocols, deployable demonstrators integrated into real planning workflows.

#### Programme B – Decision Intelligence for Evidence-Based Governance

Goal: Provide transparent decision support for public authorities and SMEs (forecasting, causal inference, optimisation, multi-criteria decision analysis), designed for non-technical decision-makers.

Outputs: explainable human-in-the-loop workflows, decision logs, model documentation practices suited to policy/SME contexts, measurable improvements in decision quality and cycle time.

#### Programme C – Trusted Data Ecosystems / Data Spaces (Data democracy by design)

Goal: Enable governed, interoperable, secure data sharing among municipalities, SMEs, utilities, universities, and civil society.

Outputs: governance charter and stewardship roles, interoperable data products (catalogue/APIs/data contracts), privacy-preserving and secure exchange patterns, cross-organisation use cases.

#### Programme D – Responsible AI in Socio-Technical Contexts (Trust, safety, adoption)

Goal: Embed responsible and explainable AI engineering into delivery to ensure inclusive, safe, accountable systems in real environments.

Outputs: risk assessment and monitoring pipelines, bias/testing and robustness practices, accountability and traceability mechanisms, security and resilience-by-design for deployed solutions.

### 3. Regional impact model

The CoE achieves regional impact through living labs and enabling replication so that the impact could be transferred to other European regions.

Living labs: permanent co-creation environments with municipalities, communities, and SMEs that produce operational services and decision workflows. This CoE supports mutual assistance in national projects by providing quick access to experienced discussion partners.

Replication (European transfer): a Replicable Regional Innovation Kit including:

- reference architecture (data space connectors + decision intelligence + digital twins),
- governance templates (agreements, roles, compliance-ready patterns),
- co-creation and participatory modelling scripts,
- evaluation protocol and KPI definitions to compare results across regions.

Impact KPIs: adoption (active users; usage frequency), decision performance (cycle time; forecast quality; scenario throughput), data ecosystem maturity (data products; sharing agreements; exchange volume), inclusion (participation diversity; accessibility; trust/satisfaction), replication (regions adopting kit; time-to-replication).

### 4. Funding-dependent operating model (resilience under uncertainty)

Because the CoE has no core budget, it operates as a grant-powered and asset-driven Centre. The plan is intentionally designed to remain meaningful even if proposal success is limited by building on previous and current knowledge and projects of partners.

#### 4.1 Minimum Viable CoE (maintained with in-kind effort)

When funding is low, the CoE sustains a lean baseline to preserve continuity and readiness:

- Governance: small steering group for programme coherence and proposal prioritisation; external advisory links for credibility and partner access (the proposal of the RESONANCE CoE is developed in a joint collaboration by the core team representing all partnering institutions, which will be officially established as a Steering Group after CoE is approved by the evaluation committee).
- Partner network: lightweight living lab charter and framework cooperation agreements so pilots can start quickly when funding arrives.
- Core assets: maintained and versioned reference architectures, governance templates, evaluation protocols, and demonstrator documentation.

#### 4.2 Scaling rule (projects add capacity; assets prevent reset)

Every funded project must contribute to the shared asset base (architectures, templates, reusable components, evaluation evidence). This prevents “starting from zero” after each project and steadily increases competitiveness for subsequent calls. Building on previous results we strive for excellence, thus becoming more competitive in the European research area.

#### 4.3 De-risking the ‘luck factor’

The CoE reduces dependence on chance by:

- running a structured proposal pipeline (rolling 12–18 months),
- reusing a standard package (impact logic model, exploitation plan, ethics/responsible AI, living lab methodology),
- maintaining a partner “CRM” and repeatable consortium roles (WP lead, demonstrator lead, evaluation lead),
- diversifying targets (Horizon Europe clusters, WIDERA, Interreg/regional programmes, national bridge funding).

#### 5. PhD programme as the talent and delivery engine

The PhD programme in Socio-Technical Systems Engineering is integrated into the CoE’s project-based model. Doctoral candidates are hired under funded projects when available, enabling international, hands-on research experience in real environments.

Implementation principles:- Each PhD is anchored to one programme (A–D), one living lab context, and one consortium environment with international secondments where feasible.

- PhD outputs must strengthen CoE continuity: publishable methods plus reusable artefacts (modules, protocols, validated datasets or synthetic data, deployment/evaluation documentation).

A training spine ensures coherence: responsible AI, data governance/data spaces, digital twin engineering, decision intelligence, cybersecurity/resilience, stakeholder engagement, and impact evaluation.

The other way around the PhD programme can benefit from the larger pool of professors potentially becoming a PhD supervisor or joining the Promotion Council.

#### 6. Implementation roadmap (adaptive to funding outcomes)

Baseline (no/low funding): maintain Minimum Viable CoE; strengthen partnerships; curate assets; publish targeted outputs; prepare competitive proposals.

Growth (one or more funded projects): run pilots in living labs; deliver demonstrators and evaluations; release versioned replication kit modules; embed doctoral researchers in delivery.

Scale (portfolio of projects): multi-region comparative pilots; interoperable data products; measurable Europe-wide replication; lead/co-lead roles in consortia; sustainable operating models for deployed services.

## 7. Governance and principles

The CoE is human-centred by design: stakeholder collaboration, transparency, and accountable technology deployment are mandatory.

Responsible AI, security, and resilience are embedded across programmes.

Data governance is stewardship-driven and interoperability-first.

Evaluation is standardised to prove outcomes and enable replication.

Core values:

Open Science and Open Source by Default – The CoE adopts open-by-default

practices: results, data, models, and software are made available under FAIR (Findable, Accessible, Interoperable, Reusable) and open-source licenses whenever possible. Publications follow Open Access principles in line with Horizon Europe. All shared outputs include persistent identifiers (DOIs, ORCIDs, software registries) and version control through public repositories (e.g., GitHub, Zenodo, OpenAIRE).

Ethics, Academic Integrity, and Gender Equity by Design – The CoE embeds ethics, integrity, and gender equity across all activities: research and deployments follow Horizon Europe requirements and applicable regulations (including GDPR), use auditable and reproducible practices (clear authorship, proper citation, transparent data/model provenance), and apply inclusive recruitment, leadership, and gender-sensitive co-creation and evaluation to prevent bias and ensure fair societal impact.

# Aquatic Biotechnology, Environment & Energy Technologies (AQUA-TECH)

## Vision and mission

Vision:

The Centre aims to become a reference Centre of Excellence in Applied Aquatic Biotechnology, Environment, and Energy, promoting innovative and sustainable solutions for aquatic systems and contributing to the blue economy and energy transition.

Mission:

To advance applied research, innovation, and technology transfer in aquatic biotech, environmental sciences, and aquatic-based energy systems. It addresses major challenges such as ecosystem degradation, climate change, sustainable aquaculture, resource efficiency, and renewable energy. Through interdisciplinary research, it promotes the sustainable management of marine, estuarine, and freshwater ecosystems, develops solutions to address the circular bioeconomy, and supports clean energy technologies linked to aquatic environments. Collaboration with industry, public authorities, and international research networks, together with advanced training strengthens the role as drivers of innovation and sustainable development.

## Research plan

### 1. Vision and Objectives

The proposed E<sup>3</sup>UDRES<sup>2</sup> Applied Research Centres of Excellence (CoE) aims to position itself as a leading European hub for interdisciplinary research at the intersection of aquatic biotechnology, environmental sustainability, and energy technologies. The CoE will focus on innovative solutions addressing climate change, circular economy, renewable energy, and sustainable aquaculture, leveraging the complementary expertise of the different universities of Applied Science associated. The AQUA-TECH CoE aligns with the European Green Deal, the Bioeconomy Strategy and Horizon Europe by fostering sustainable innovation, energy transition and strong regional impact. These universities are complementary by combining applied engineering, aquatic biotechnology, environmental sciences, energy technologies and digital solutions. Together they cover the full innovation chain, linking scientific research, technology development, and regional and industrial impact aligned with European priorities.

The CoE is structured around two research lines: RL1 - Environmental and Aquatic Technologies, and RL2 - Sustainable Energy.

Key objectives:

1. Advance cutting-edge research in aquatic biotechnology, environmental monitoring, and renewable energy.
2. Strengthen European-level visibility through high-impact publications, participation in Horizon Europe projects, and strategic partnerships with EU networks.
3. Foster regional innovation ecosystems and citizen engagement to translate research into tangible socio-economic benefits.

### 2. Research Strategy and Competitiveness

The CoE will adopt a thematic, interdisciplinary, and application-oriented research strategy of the research line in aquatic biotechnology by developing bio-based products, bioremediation

approaches, and sustainable aquaculture techniques in fresh, estuarine and coastal waters and in the environmental technology applied to water quality monitoring, ecosystem modelling, and pollution mitigation are in the scope of the CoE. In the other research line, the energy technology and sustainability explores bioenergy production, the integration of renewable energy sources and the storage of thermal and electrical energy, and the optimization of energy efficiency applied to aquatic environments, particularly coastal and riverside cities. Across both lines, Life Cycle Assessment (LCA) will be integrated to evaluate the environmental impacts and sustainability of technologies and practices, ensuring that innovations in bio-based solutions, ecosystem management, and energy applications are both efficient and ecologically responsible as well as resource efficiency analysis, sustainability assessments, and energy economics.

To become visible and competitive at the European level, the CoE will target high-impact journals and EU-level conferences, participate actively in Horizon Europe consortia and EU joint programming initiatives and building strong collaborations with European research networks such as EERA (European Energy Research Alliance) and European Technology Platforms (ETPs) and AquaBioTech clusters. CoE-branded events, workshops, I-Living-Labs, and summer schools to attract international researchers will address inside the association as result of project proposals to apply for funding. It also launch a CoE website and increase its visibility in social media highlighting projects, publications, and innovation outcomes. It will also promote projects and activities based on citizen science and will adopt all the principles of open science.

### 3. Research Infrastructure and Capacity Building

The CoE will integrate existing infrastructure from partner universities, supplemented by targeted investments in laboratory facilities for biotechnology, environment and analytical chemistry and pilot-scale systems for aquaculture and water treatment to support the RL1, and bioenergy experiments and data analytics and modelling platforms for environmental and energy research to support RL2. The infrastructure will allow the capacity building measures joint PhD and postdoctoral programs across partner institutions and the mobility of students, staff and researchers.

### 4. Regional Impact Strategy

The CoE aims to achieve substantial regional impact by actively engaging stakeholders and citizens in all phases of research and innovation. It includes the establishment of a Regional

Advisory Boards in the different countries of the association including local authorities, industry representatives, and NGOs by co-developing applied research projects aligned with regional environmental and energy priorities. It will offer consulting and pilot services for local aquaculture, water management, and energy firms. It will have a citizen involvement strategy launching citizen science programs in aquatic systems literacy. Organizing public lectures, school visits, I-Living Labs, summer schools and interactive workshops to raise awareness of sustainable energy and aquatic ecosystems is under the scope of the CoE. As result of the research, innovation hubs incubators in partner regions promote the creation of start-ups in bioenergy, aquaculture, and environmental technologies to facilitate technology transfer agreements and patent applications to stimulate local economic growth.

### 4. Governance and Collaboration Model

The CoE will operate as a distributed European research hub with shared governance in a steering committee representing all partner institutions to set research priorities and monitor performance and working groups with cross-partner leadership and Integrate project management to ensure alignment with European funding opportunities, regional priorities, and societal impact.

An advisory committee will also be formed, composed of relevant and diverse stakeholders from each region.

#### 5. Evaluation and Sustainability

To ensure competitiveness and long-term sustainability, the CoE will conduct annual scientific performance reviews based on publications, patents, and EU project participation, to regularly assess the impact of regional engagement activities, and develop a strategic plan for international collaborations to enhance global visibility.

A Quality Assurance and Risk Management Plan will be developed, which will be reviewed and updated annually. This plan will include a Monitoring and Evaluation System in which activity indicators are defined and regularly monitored across the different actions implemented by the CoE.

#### 6. Expected Outcomes

The CoE is expected to become a high-profile centre with strong European visibility, delivering breakthroughs in sustainable aquaculture, environmental monitoring, and renewable energy technologies, while enhancing regional socio-economic development through stakeholder collaboration and citizen engagement.

#### 7. SWOT analysis

##### Strengths:

- Complementary expertise across partners covering aquatic biotechnology, environmental sciences, energy systems, engineering, agriculture, and digital technologies
- Strong applied research profile aligned with the mission of Universities of Applied Sciences
- Access to diverse regional ecosystems (rivers, lakes, freshwater and coastal areas) supporting applied research in agriculture, fisheries and industry, and enabling testing and pilot projects in real-world settings.
- Established experience in international cooperation, applied projects, and stakeholder engagement
- Agreement with the research development strategy of the E<sup>3</sup>UDRES<sup>2</sup> alliance as defined in the E<sup>3</sup>UDRES<sup>2</sup> 2.0 and E<sup>3</sup>UDRES<sup>2</sup> Ent-r-e-novators projects.

##### Weaknesses

- Heterogeneity in research capacity and infrastructure among partner institutions
- Limited global visibility compared to research-intensive universities
- Coordination complexity across countries and institutional frameworks
- Dependence on competitive European and national funding sources

##### Opportunities

- Strong alignment with European Green Deal, Bioeconomy Strategy, Horizon Europe and

##### Mission-oriented research

- Increased EU support for Widening countries, Centres of Excellence and applied innovation
- Growing societal demand for sustainable water, energy and bio-based solutions

- Potential to become a European reference hub for applied research and regional impact

#### Threats

- Competition from established European research centres and networks
- Administrative and regulatory differences across partner countries
- Risk of fragmented research efforts without strong governance
- Challenges in attracting and retaining highly qualified researchers

#### Conclusion

By integrating multidisciplinary research, strategic European visibility efforts, and strong regional engagement, the proposed CoE will become a recognized European centre of excellence. It will generate high-impact research outputs while fostering sustainable development in its partner regions and beyond. The combined expertise of Polytechnic University of Setúbal, Vidzeme University, University of Applied Sciences St. Pölten, Hungarian University of Agriculture and Life Sciences, and Polytechnic University of Timișoara ensures a strong foundation for long-term success and competitiveness in the European research landscape