

EUT⁺

EUROPEAN UNIVERSITY OF TECHNOLOGY

Deliverable 42

D4.1.3a Creation of graduate schools

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Foreword to deliverable 42

Task 4.1 of work package 4 named "Graduate schools for education inside the research" is aimed at restructuring research and formation within the European University of Technology (EUT+) in graduate schools, involving researchers, students, and also stakeholders in order to form knowledge creating teams around defined research topic areas. Such a structuring as labs or institutes, respectively, allows for a better integration of research and education at all levels, benefiting both researchers and students.

This deliverable represents the third deliverable of this task and documents the activities undertaken and results achieved since the beginning of EUT+ and the works reported in the first and second deliverables on the subject of the design of graduate schools and a graduate curriculum.

It comprises the in-depth survey analysis results and inference of a development pathway for the creation of a postgraduate research school office and the graduate school development in the research institutes in accordance with the insights gained.

The deliverable envisaged Graduate Research Schools inside the European Research Institutes (ERI's) established. However, as most of these ERI's have not been formally established as yet, a revised approach is the creation of the EUT+ Graduate Research School (EGRS) as a central structure that can prepare for the next steps and eventually schools within the ERIs.

1 Activity Implementation Design and Realisation

1.1 Background

Previous works within this task included the definition of the structuration strategy for postgraduate research enablement within EUT+ and contributed to the development of the EUT+ Memorandum of Agreement for the creation of European Research Institutes, the Related EUT+ Graduate Research School and Supporting Research Office (as reported in D41/4.1.1). This MoA anchors the activities of the task at hand in relation to the parallel executed research-related works in the other tasks within the work package dedicated to research and research-oriented knowledge creation where this task is a part of while also linking them to the activities within the EUT+ initiative as a whole.

For the curriculum development for post graduate research the survey of the partners' structures and regulations conducted (as reported in D41/4.1.2) delivered the basis to allow for setting the sequence of activities for the continuation of the works in the task given here. Thereby, the general overall implementation plan of EUT+ for the establishment of the EUT+ European Research Institutes (ERI) foresees the forming of transversal as well as topic specific institutes as reported previously. Accordingly, for forming the graduate schools within them, specifics according to each institute's theme and subsequently emerging research program have to be taking into account.

Thus, for supporting the works of the ERIs in their forming within this task the support for forming a graduate school within an ERI is devised as to facilitate a common basis for the definition and setting into force of a graduate school within such an institute. Defining and setting-up a sequence of activities for accompanying the creation has been undertaken and in this an offer for a general guideline is provided. However, a graduate school within an ERI is requiring various considerations for its forming closely related to the topic at hand, as domain specific differences are notably given. Hence, as a structural element, the establishment of a coordinating office to this respect has been deemed meaningful as a hub and linking point.

Furthermore, for the structuring of graduate research and formation within EUT+ in graduate schools for education inside the research institutes the pathway developed has been guided by the current developments in EUT+ against the

background of the given conditions within the partners as determined by the survey reported on previously.

1.2 Creation of a Basis for Common Activities

For designing decisions regarding the competencies and responsibilities of research-oriented education within EUT+ an analysis of the potential is of importance. The survey of the partners' structures and regulations has revealed the determining factors. These potentially reflect back into an ERI's potential for its composition, participation, research agenda and the structuring of its post graduate research and consequently the possibilities and offer of the ERI's graduate school.

In general, a EUT+ European Research Institute (ERI) is envisioned to organize and mutualize all research and transfer activities within the EUT+ alliance in a structuring approach and in connection with research training aspects in the form of pan-European research laboratories and knowledge creating teams. An ERI is a platform for building research strengths of all EUT+ members enabling researchers to join forces and team up for joint projects. These efforts are supported by capacity building measure and implementation of best practices together with the creation of possibilities to share resources and infrastructures. In this, an institute complements the existing structures of alliance partners and enables lively exchange and mobility. Accordingly, the minimum number of partners for an ERI is three, to up to all partners of EUT+.

The naming of an ERI thereby may vary according to the topic and academic culture of the given research area. The works in the research-related work package have so far shown the preparation and first forming of several major movements:

- The EUT+ Sustainability Lab is intended to structure transversal research across disciplines in order to tackle global societal challenges whereby the grand societal challenges, such as climate change, evolving mobility, energy sources and management are the first topics defined. Presently the forming of the Sustainability Lab considers to potentially overarche a possible mobility lab and/or energy lab as subsumed groups;
- The European culture and technology Laboratory "ECT Lab+" focusses on discovering a transdisciplinary perspective on technology through the articulation of philosophy, social sciences, art and humanities, and

engineering sciences. In this the ECTLab+ is a flag ship of EUT+ and an indispensable part of the alliance that has been set-up from the beginning of the initiative in order to accompany the works taking place;

- Through pooling technological research strengths at the EUT+ level the identification of thematic networks prefiguring research institutes allows for mutualizing research and creating synergies by either complementing or extending existing expertise of the partners to foster fruitful research collaborations at the EUT+ level and beyond. Mapping the given research competencies has so far led to the identification of a potential future EUT+ European Institute on of Nanomaterials and Nanotechnologies (EUTINN) and a EUT+ Data Science Lab.

It is conceptualized that within an institute a graduate school for education is created. The motivation thereby is to enable knowledge creation in EUT+ as the result and the start of educating students by connecting them to research as a motor for knowledge gain to the benefit of society as a whole.

Towards this background of a joint trajectory of convergence of EUT+ towards common research institutes across Europe, the scope for the support of postgraduate students training and creating European degrees on the doctoral level as well as master-by-research degrees has been set.

The EUT+ research institutes are intended to provide training and support related to their specific research work. Furthermore, the institutes will form part of the overall EUT+ structure and governance. The central EUT+ governance structure brings together the partner institutions and their communities on all levels. At the beginning these governance structures are lean and as minimal as possible in order to encourage experimentation, bottom-up input and increase stabilisation. In support of this approach within EUT+ coordination offices are to be placed for the delegation of parts of the decision making in order to ensure suitable reactivity and enable new initiatives to emerge. Among these coordination offices the establishment of a graduate research school office has been foreseen in general. The office is to complement and is embedded into the existing structures of the partner universities to serve as a coordination and liaison hub between all ERIs, the further supporting EUT+ offices and all partner universities, partner's doctoral and/or graduate schools as given and each partner's local administration. The main goal is to support researchers as a European graduate school upon developing and later on providing training and supervision of doctoral students and masters-by-research-students and the creation of joint European degrees in these areas.

However, the further works led to the insight that defining the coordination intended needs to be elaborated on and detailed further.

1.3 EUT+ Supporting Structural Elements

Next to joining efforts and infrastructures in the EUT+ European Research Institutes and the supporting graduate research school, in the alliance further supporting transversal entities besides the ERIs can contribute to the emergence of joint research-oriented education within the institutes.

The Research Committee comprises the vice presidents or rectors, respectively, for research from all alliance members for steering and enabling. In the MoA concluded this board was named Steering Board Research (SBR). As the graduate research school office focuses on the education on research this board serves as the anchoring and connection point within EUT+.

The EUT+ European Research Office (ERO) provides support to the ERIs through research management, administration and capacity building, supports for grant applications and grant administration for the funding to the ERIs, collects the data for reporting, and provides capacity building in a transformative way. Here the connection is given through participation support for funding application of PhD positions in the institutes.

The EUT+ European Innovation and Technology Transfer Office (EITTO) works for the exploitation of research results as a newly devised unit. Here the connection is given by the possibility for the supports of contract research, IP management and technology transfer development and links to questions of entrepreneurship.

The Erasmus Common Office (ECO) has been created to support the mobility of researchers and students. Here it links closely to the works of the ERIs and in particular the arranging of mobility for post-graduate students.

1.4 Incorporation of Existing Structures for Joint Post-Graduate Research Education

Anchoring the graduate research school of EUT+ and paving the way for the creation of common support structures requires the mapping of internal structures given within EUT+ and of the member institutions for benchmarking, designing and implementing a transformation plan towards joint research-oriented education for students on master and doctoral level in the ERIs in forming. An analysis of the given

competences, requirements and also understanding of procedures and habits shall provide the ground for the precise definition of this graduate research school and the best way for its operation.

1.4.1 ALLIANCE MEMBER STRUCTURES

Linking the national or regional structure arising from the laws and regulations in place, respectively, shows the conditions as to how the present realities locally can be complemented on a European level and how the design for European degree is to be anchored.

Master-by-research programmes next to taught master programmes are offered by half of the members. Thereby, a master degree by research is a study programme to equip students with research work skills and offer a postgraduate research degree as a possibility to prepare for doctoral research. Such master degree programmes focus and emphasis on research projects carried out by the student and comprise less taught modules for obtaining the qualification than in taught master's degrees.

Degree	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
Offer of master degrees programmes as master by research	yes	no	no	yes	no	yes	yes	no
Area	Applied and engineering physics, Risk and environmental transition, Complex systems engineering			In all disciplines (MPhil)		Agronomics, Economy, ICT, Civil Engineering, Industrial Engineering	In all bachelor fields there a least master by research programme	

Table 1. Offer of master-by-research degrees by the EUT+ members

As a consequence, the design of one or several a joint master-by-research degree programmes could result in the need of a pathway between the concept of mobility maps for enabling student mobility as pursued in work package 3 of the EUT+ initiative concentrating on education and the creation of a novel approach to research-oriented education for some partners as programmes next to taught master programmes. Nevertheless, the design options need to be adaptable to the ERIs specifics given by their research fields.

With respect to the doctoral education, also here differences need to be taken into account for the development of joint programmes as some of the alliance members have unrestricted doctoral degree awarding rights in all fields represented in teaching and research while some can award doctoral degrees in certain areas. There it might be of the essence within any of the EUT+ research institutes in the forming process presently to then after completion of the institute establishment to determine the topic fields for joint programme development foreseeing options and degrees for adaptation regarding the differences at hand.

Degree	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
Doctoral degree awarding rights	partial rights	partial rights	all fields	all fields	all fields	partial rights	partial rights	all fields
Area	Science for Engineers	Applied Informatics, Sustainability Sciences, Social Work					The accredited domains/ doctoral schools	

Table 2. Doctoral degree awarding rights of the EUT+ members

The rights to awarding these degree is regulated by each partner's national, or in the case of Germany, state law, and is awarded by delegation or mandate. Thereby, the awarding rights in some of the countries concerned are at institutional level as given in Ireland and Germany (Hessen) while in other countries the awarding rights are lying with the departments or faculties.

However, in most cases the awarding is based on the requirement of fulfilment of prerequisites after applying for the awarding rights. In Cyprus and Romania in addition a quality assurance and accreditation is necessary as well.

The analysis of the landscape shows that accordingly the organisational setup regarding the allocation of master-by-research degrees and doctoral degree awarding is handled differently.

Degree	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
MbR	central	n/a	n/a	decentral	n/a	central	central	n/a
Doctoral	central	central	central	central	decentral	central	central	decentral

Table 3. Organisation of postgraduate research-related degree awarding at the EUT+ members

A further differentiation is given through the distinguishing between doctoral and graduate schools. Even though the naming and meaning of these terms varies, as an approach towards a common understanding, the distinction here is made based on the slightly generalised and in this simplified definition of a doctoral school being an educational structure for providing doctoral students with structured doctoral training in a disciplinary field while a graduate school provides for postgraduate programmes for master-by-research as well as doctoral students. This generalised and hence rather roughly sketched analysis of the situation is done here solely for the purpose of comparison purposes. In the long term, it shows the requirement for the approximation and development of a common understanding and acknowledging the need for a mutual terminology and subsequent design of post graduate training in EUT+ as the differences in the backgrounds are intricately while at the same time forming the expectations and interpretation of the participants involved in designing joint possibilities.

Schools for post graduate research	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
Distinguish doctoral & graduate schools	yes	no	yes	not terminological	no	yes	yes	n/a

Central graduate school or office	yes	yes	yes	yes	no	yes	yes	no
Central unit set-up	Four graduate schools included in a central doctoral school	Graduate School for cooperation with the doctoral centers and partners	International doctoral students registered through the Department of International Cooperation and Studies (DICS)	Centralised Graduate School of Postgraduate education for quality assurance of all doctoral education; decentralised Graduate Schools per faculty	Doctoral handling and awarding at department level	International Doctoral School with administrative staff and a steering committee	Doctoral school office	Doctoral handling at the faculties and two PhD students schools

Table 4. Organisation of doctoral and graduate schools at the EUT+ members

Based on this analysis it becomes evident that for the development of graduate schools within the ERIs the possibilities for joint activities ranging from starting with joint supervision up to potential joint degree awarding for doctoral students the conceptual design needs to be fine-tuned in detail in a situative manner according to the individual ERI's properties and circumstances ultimately allowing for a suitable conduction of the individual doctoral projects according to the given conditions. Thereby, not only differing rights and regulations could influence the forming of joint programmes in a graduate school in an ERI, but also the connecting of the relevant bodies and their responsibilities and competences when concerned with the handling in accordance to the topic field or domain given. This might also be of major importance for creating cotutelles and joint programmes for the conduction of interdisciplinary research questions.

1.4.2 ALLIANCE MEMBERS REQUIREMENTS AND CONDITIONS

For the members within an ERI presently the given local regulations presently apply. However, for all member institutions of the alliance the rule applies that a supervisor and/or examiner can take over the supervision and participate in the examination only for a degree that he or she him- or herself has successfully completed. Furthermore, for quality assurance at all members the tasks of supervision and review and examination of the doctoral student is separated for the execution of the tasks by different persons. However, different rules for obtaining the right to supervise doctoral candidates apply.

	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
Number of scientific publications	yes	yes	yes	yes	./.	yes	./.	./.
Amount of third-party funds raised	yes	yes	no	./.	./.	no	./.	./.
Supervision experience	yes	yes	yes	yes	./.	yes	./.	./.
Other	Qualification as full or associate professor with habilitation	Professor with doctoral degree, fulfilling specified criteria regarding research-strengths; member of a doctoral center for first supervisor and have supervised a doctoral student to		PhD, at first time mentoring by an experienced co-supervisor; demonstration of being research active through research outputs	PhD and elected member of the academic staff; for non-tenure staff a co-supervisor or is required	./.	Habilitation and fulfilment of domain specific criteria for an university professorship	Supervision by leading scientist

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Table 5. Rules for doctoral supervision at the EUT+ members

The relationship between supervisor and doctoral candidate is regulated at all members to a certain extent, mostly by way of a supervisory agreement.

Doctoral supervisory agreement	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
Requirement	yes	yes	yes	yes	no	yes	yes	n/a
State	mandatory	mandatory	Study agreement, and separate decision on supervision	mandatory	./.			

Table 6. Rules for doctoral supervisory agreements at the EUT+ members

Similarly to the rules for supervision, different rules apply for the right to review and/or examine doctoral candidates.

	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
Number of scientific publications	yes	yes	no	./.	./.	yes	./.	./.
Amount of third-party funds raised	yes	no	no	./.	./.	no	./.	./.
Reviewer / examiner experience	yes	yes	yes	./.	./.	no	./.	./.

Other	Full professor or habilitated for reviewer; further jury members need recognised research experience	One reviewer member of a doctoral center and having examined a doctoral candidate, one external reviewer with doctoral degree from a university		Internal examiner and external examiner from outside of the university. Internal examiner with qualification of PhD and actively supervising / or having examined PhDs; External must have supervised a PhD to completion and have examined a PhD	Two internal and one external examiner from outside of the university having proven experience in PhD supervision and examination	Number of supervisions in the last six years	Academic degree of professor or associate professor with a scientific background in the doctoral thesis domain	./.
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Table 7. Rules for doctoral examination at the EUT+ members

Having analysed the background of the emerging common research institutes envisioned as a group of researchers and academics from the EUT+ partner universities either in an inter- or transdisciplinary topic field or in a concentrated domain specific research area and research agenda coming from different traditions and also differing rules and regulations in place locally, the need for linking and mediating the joint creation in the coordination structure of the sketched EUT+ European Graduate Research School can create the hub for facilitating the translation, possible alignment and in this a basis for the curriculum and programme creation in the institutes.

1.5 Development of Common Programmes

For the creation of joint programmes within each institutes for the beginning an alignment with local requirements such as forms and procedures will determine the feasibility of finding common pathways, as well as the viability of implementing them. At the same time, the chance for interdisciplinarity and internationality in training of early career stage researchers is to be included into joint research work and joint supervision among the members. For the goal of creating full courses and curricula for each graduate schools, along with collaborative research projects in a formation through research approach, as a starting point for potential passes the rules applying at the members can be compared.

As shown above, the possibility for master-by-research programmes is to be tackled separately from the question of joint training by the graduate schools in the ERIs on doctoral level.

Between the alliance members the doctoral procedures differ regarding the availability of doctoral programmes and assignment of credit points as per ECTS.

	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
CP awarded	yes	no	yes	yes	yes	no	yes	no
Total number of CPs	180		288	360	240		180	
The doctoral text/thesis	168		225	290				
The final exam			included	30				
Courses accompanying the doctoral procedure	12	voluntary attendance	54	40			30	
Other	n/a		9 for free choice	Structured programme with cps for discipline specific and transferable skill for modules accepted by	Depending on the programme in the departments		150 for research project, four scientific reports (120 CPs)	

				the Graduate Research School				
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Table 8. CPs of doctoral programmes at the EUT+ members

However, offers by the alliance members to their post-graduate students may also play a role in designing joint activities within the ERIs.

1.5.1 GRADUATE STUDIES

Some of the alliance members have a central office that offers students in master-by-research programmes courses to support them in their studies.

UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
yes	no	no	yes	no	no	no	no

Table 9. Availability of course offers for master-by-research students by a central office at the EUT+ members

For supporting doctoral students through a central office that offers doctoral students courses to support them in their doctoral studies the situation is a bit different.

UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
yes	yes	yes	yes	no	yes	no	no

Table 10. Availability of course offers for doctoral students by a central office at the EUT+ members

The offer for doctoral education in general is designed in different ways.

Offers place	in	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS

Rules for course attendance	yes		yes	yes	yes	yes		
Structured doctoral programmes with a specific curriculum with mandatory credits points	yes		yes	yes	yes	yes		

As the span of possibilities range from having no requirements in place to a fully structured programme, a potential path at integrating might most likely include various steps in order to enable first experiences in joint training on different levels. Further next steps as outlined below may before this background focus on bringing forward the Europeanisation and trajectory towards a common path.

1.6 Joint Doctoral Research and Joint Supervision

For connecting and bringing together researchers and candidates the need for linking is of the essence for acquainting and extending existing doctoral works as a beginning and enabler for future doctoral students.

As the doctoral regulations of each alliance member foresees the possibility for joint supervision and so-called cooperative doctorates with a supervisory team composed of supervisors from the university and a partner university with the degree issued by the university the doctoral student is accepted at.

Hereby, the minimum configuration is the research conduction at the university with the possibility of mobility to the university of the external supervisor, but being admitted, enrolled and in the end defending and being awarded the title by one university according the applicable national regulations. As these regulations are given and in place, separate arrangement are not needed. Hence the search and placement of supervisors and reviewers can be supported through the graduate research school in EUT+ starting at the moment of full operation begin of the ERIs. Upon the definition of a joint doctoral project, the expected duration of a doctorate needs to be considered as well.

	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
Average in years in fulltime	3	4	4	4	6	4	3	3

Table 11. Duration of doctoral programmes at the EUT+ members

At the same time for obtained grants and research projects recruitment announcement and job posting might support the ERIs in forming and ultimately deciding on their post graduate research training by combining the varying experiences the researchers bring into the discussion from their individual background and local given procedures.

1.7 Cotutelles Arrangements

Joint supervision agreements are often called “cotutelle des these”. Hereby, the configuration is that the research conduction takes place at both universities for alternate periods (preferably of equivalent duration and not less than six month at one partner) under the joint supervision of the two supervisors, one from each university. For this the doctoral student is being admitted and enrolled at both universities. In the end the thesis is defended usually at one of the universities before a committee composed of members from both partner universities in a language defined by agreement. The doctoral degree is awarded in both countries, either a single degree conferred jointly by the 2 institutions as a joint degree or by means of two separate degrees from each institution as a dual or double degree according to the given applicable national regulations. However, for example in Romania the need for a double defence is given.

Thereby, the benefits of a cotutelle lies in the doctoral student’s experience in working on a European level and enlarged environment, the cooperation and potential further cooperation of the researchers involved as supervisors as well as an increased attractiveness of the ERI and in this EUT+ offers to potential candidates.

A joint supervision or cotutelage of a doctoral thesis is usually operated within the framework of an agreement signed between the participating partner universities, sometimes extended by an individual agreement for each candidate. These are always bilateral and individual case-based agreements to regulate:

- the application and admission,
- enrolment, tuition fees, duration, possible extension, name of the doctoral programme at each institution,
- research field, doctoral thesis topic, research work arrangements, language of thesis and defence, funding of studies, supervisors, mobility scheduling,
- thesis review and evaluation, examination board, defence, degree(s) awarded, diploma(s) issued.

For determining the potential for concluding cotutelle agreements within the EUT+ alliance, an analysis of the possibilities at the partners shows the potential as foreseen by the regulations is shown below.

Possibility for	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
Conclusion of cotutelle agreements	yes	no	yes	no	yes	yes	yes	no
Awarding of joint doctoral degrees	yes	no	yes	yes	no	yes	no	yes
Awarding of double doctoral degrees	yes	no	no	yes	no	yes	no	no

Table 12. Possibilities for cotutelle arrangements at the EUT+ members

Nevertheless, as a European University with a focus on societal challenges and challenges-based learning approaches, the connection with industry is of importance. Therefore the potential inclusion of industry engagement into research is analysed. This might benefit the set-up of supervisor engagement in cotutelle arrangement together with potential expertise inclusion stemming from research projects in the ERIs. The alliance members partly foresee such doctorates in cooperation with partners in practice in their doctoral regulations.

Possibility for	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
Industrial (professional) doctorate	yes	yes	yes	yes	no	yes	no	no
Employees of the industry partner with a doctorate acting as supervisors	Yes (as co-supervisors)	No (as mentors without formal rights)	yes	yes	no	yes	no	yes
Employees of the industry partner with a doctorate acting as reviewers or examiners	Yes (with habilitation)	no	yes	no	no	yes	yes	no

Table 13. Possibilities for industrial doctorates at the EUT+ members

Ultimately, the needs for aligned procedures may benefit the ERI for their daily management.

1.8 Coordination at EUT+ level

The analysis above has further revealed that the formal responsibilities can vary from university to university as well as the details for processing and administration. As shown above, the organization in doctoral and graduate schools varies and a central graduate school for management and administration is not given at each alliance partners. As a result, procedures differ as well. The acceptance of a doctoral application is handled rather differently.

Decision taken by	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
The supervisor(s)	yes			yes				
A doctoral committee	yes				yes			

of the department								
The department			yes					yes
An overarching Academic Board	yes	yes	no	yes		yes		
Other	The advisor proposes candidates, an ad hoc committee examines the candidate and allows for examination by the Doctoral School Council	Each doctoral center has its academic board					A doctoral committee formed by the supervisor and two other members that have the academic title of associate or full professor	

Table 14. Acceptance procedures of doctoral application at the EUT+ members

Notably, in France for example, part of the application process also foresees the verification of the fulfilment of the PhD study conditions established by the Doctoral School with regard to the salary of the candidate and the availability of funding secured for the duration of the doctoral studies.

Upon applying the candidate may choose between a doctorate in part or fulltime at all alliance members. Enrolment is mandatory for doctoral students except at the German member, where this can be done optionally.

Regarding quality assurance all alliance members have defined criteria for theses and specific measures in place to ensure quality control, academic probity and a certain standard of content together with rules regarding the thesis format or a template and rules regarding the form of examination or defence. As to the

supervision in effect, differences in handling can be noted regarding the possibility for doctoral candidates to start the research work before acceptance as a doctoral candidate.

UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
no	yes	yes	no	yes	yes	no	no

Table 15. Possibility to start the research works before acceptance as a doctoral candidate at the EUT+ members

For the awarding of the title the doctoral regulations include different measures.

Doctoral regulations include	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
Examination scores	yes	yes				yes		
Recommendation for title awarding		yes	yes		yes		yes	Yes
Specific rules for awarding «cum laude»	no	yes				yes	yes	

Table 16. Measures for awarding of the doctoral title at the EUT+ members

Concerning the research results, during the process of obtaining as well as for the management after the defence and publication of the thesis, different rules are in place.

	UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
non-disclosure agreements	yes	yes	yes		Yes	optionally	Yes	
for patents arising	yes	yes	yes	yes	Yes	No	Yes	

from theses								
intellectual property rights	yes	no	yes		Yes	No	Yes	
technology transfer	yes	no			yes	no	yes	

Also, some of the member universities have rules for prize awarding or further mentions in place.

UTT	h_da	RTU	TU Dublin	CUT	UPCT	UTCN	TUS
yes	no	yes	no	no	yes	no	yes

Table 17. University rules for prize awarding of doctoral theses at the EUT+ members

The analysis shows how within the alliance members the formal responsibilities vary between the universities. In order to support the arrangement of joint activities in the ERIs the linking and provision of information on pathways needs to be facilitated. For creating joint offers and for concluding agreements for cotutelles clarification of the possibilities has to be obtained and brought together.

2 Discussion and next steps

Overall, at the alliance members the paths of post-graduate management and offers are in general comparable, even though the possibilities differ considerably in detail. On this foundation of the in-depth-analysis conducted and complemented with discussions regarding details, the structures and instruments required for facilitating the next steps could be identified. Based on these observations a potential development pathway for the creation of graduate schools in the institutes has been conceived. Thereby, various circumstances influenced the forming.

At the time of developing the path for creating graduate schools inside the EUT+ research institutes it became evident that the institutes are in involved and at the point in time of their initial forming phase at an early stage. In this first phase the

linking and joint development of researchers interested in a certain topic field and the discussions for the potential creation of an institute are taking place. Ultimately, the establishment of a research institute within EUT+ requires an internal application describing the mission, i.e. the motivation and the lines of research that are covered by the institute and how it is complementing the EUT+ research profile together with the proposal for the ERI research school for postgraduate master, master-by-research and doctoral students with training and secondment provision. Thereby, the description of the research programme, strategic plan, activities for the first five years, an institutional sustainability plan together with a budget plan are an essential part. This is work in progress at the time of the writing of this deliverable given here. The activities around the institute formings concentrate on determining the relevant research fields and subsequent research agenda of an institute. Accordingly, the creation of graduate schools could not yet been executed as intended. Once the forming phase of an institutes is concluded, the mission statement including the description of the research area and design of the graduate school within will provide the information and details required to start developing offers for post-graduate students in the institute. The activities for establishing the institutes in EUT+ are handled within the tasks 4.2, 4.3 and 4.5 of work package 4.

However, for accompanying the EUT+ research institutes during their creation and coming into being within the task 4.1 discussed here it was decided for offer support along the way. As a first step the establishment of a central linking hub to support the researchers in finding possibilities for their post-graduate students has been deemed meaningful. Establishing an office dedicated to serving post-graduate students and researchers as a structural element in EUT+ allows to link information for management purposes. Such an office is ideally available in the alliance with a long live span so that in parallel to the activities surrounding the institutes' development support can be created. Next to serving as an information point, enabling matchmaking and connections may create a working environment for the researchers and postgraduate research student with the goal of establishing common cotutelle agreements and putting suitable mobility schemes in place.

Furthermore, supporting the development of fitting curricula and the creation of support offers for ultimately developing joint European doctoral and joint European master-by-research programmes and degrees this office may serve as connection and reference point between the ERIs. Presently the preparation and development of master-by-research programmes and degrees is constrained due to partner's national law and availability of such type of degrees as shown above. As a result, concentrating on the activity of preparing supporting offers and implementing the first pilots allows to gather experiences and be prepared for the ERIs upon their

establishment to proceed with the establishment of their graduate schools in a fitting manner to each ERI's field of work and setup once this becomes clear.

3 Conclusion

The proposal of the establishment of a central office as described above differs slightly from the aim described in the project description. This general structuration proposition is an additional outcome next to the defined task activities and is intended to support their achievement. During the time the ERIs are not yet defined and in operation, the creation of an environment for support offering and curriculum development together with pilot testing is to be seen as a deviation. But as the creation of graduate schools in the research institutes depends on their existence and their having a defined research programme and roadmap, which is not yet fully given, so far no individual graduate schools in the institutes yet exist.

However, as described, this time lag can be mitigated with the establishment of the EUT+ Graduate Research School (EGRS) as structural element preparing and serving the next steps. Working as an office and in this concentration point, sharing knowledge and experiences between the ERIs and the EGRS may ease the graduate schools creation as they are arising. The value envisioned of bridging the ERI's prephases and linking and supporting efforts from a central perspective led to the decision to additionally establish the EGRS for supra-disciplinary and transversal support while at the same time enabling the development of the pilot programme foreseen in the field of sustainability sciences. With this step the task objective is proactively and agile adapted to given situation for ensuring support and linking of graduate school activities meaningfully as intended and enabling continuous strong support for the emergence of the intended outcomes for the alliance over the coming time.

The next step along this way it is to jointly create and finalise the concept for the structure of the joint EUT+ Graduate Research School (EGRS) and concluding of the agreement between the alliance members for its establishment.