ENHANCE
European Universities of Technology Alliance

WP4	
D 4.11	Name: Toolkit on how to offer opportunities to bachelor and master students to take part in research projects and innovation ecosystems at other universities developed

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Description Task 4.3 Students in Science and innovation

Develop concepts to offer opportunities to bachelor and master students to take part in research and innovation ecosystems at other universities.

D.4.11 Toolkit on how to offer opportunities to bachelor and master students to take part in research projects and innovation ecosystems at other universities

1. Introduction

1.1. Objectives

This report will describe the concept of a database for research opportunities for students at Bachelor and Master-level at all the universities that are members of the ENHANCE Alliance.

1.2. Overview of the layout of the report

The toolkit is built up as a checklist for academics and students to use, in order to be able to offer research opportunities to students in a simple, comprehensive, and coherent manner. This report includes a short description of the background to introduce the toolkit, examples of how research opportunities are offered to students at the various member universities today as well as an overview of the points to be considered for the development of a joint database for research opportunities.

1.3. Definitions

Research opportunity: In general, research may be referred to as the creation of new knowledge and/or the use of existing knowledge in a new and creative way to generate new concepts, methodologies, and understandings. This could include synthesis and analysis of previous knowledge, which may lead to new and creative outcomes. Academic research involves a thorough investigation into what is known about a given topic. Any research may entail both theoretical and practical work, depending on the field of study, level, and duration.

In this context, we define a research opportunity for a student as the opportunity to conduct research of some kind in an academic setting at a university. The research may be virtual, physical, or hybrid and may comprise shorter or longer terms of physical attendance at the host university. The research conducted may be of theoretical or practical nature or a combination. A student engaged in a research placement at a university will usually be supervised by an academic within his/her field, and, in many cases, a co-supervisor will also be appointed at the university where the student is enrolled.

Internship: A professional learning experience that offers meaningful, practical work related to a student's field of study or career interest. It has also been described as "*a period of time during which a student works for a company or organization in order to get experience of a particular type of work*"[1]*.* Internships may be virtual, hybrid, or physical and are not specified in terms of duration. In some cases, students will receive some form of salary for an internship, but it is also common for internships to be that unpaid.

Practice: In this context, practice is defined as practical work placement as part of a study program, as opposed to theoretical studies, plans, ideas, or thoughts**.**

Exchange student: A degree student who spends some time during their studies at a university (usually) in another country to study or perform research. Traditionally, an exchange will last from approx. 2 to 12 months. The studies/research undertaken at the university they are visiting will be recognized and accepted as part of their degree at their home university.

1.4. Background

In the European Strategy for Universities, which was published in January 2022, two of the main objectives state that "*European universities should strengthen the European dimension in higher education and research*" and "*European universities should function as lighthouses of our European way of life*"[2]. Inherent in these objectives are the concepts of transnational cooperation in both education and research and flexible academic careers. The green and digital transitions in modern society also lead to a need for a future workforce that has both academic and practical skills and a genuine knowledge of the links between education and research. Students should therefore be offered the opportunity to take part in actual research and solve real-life challenges during their studies. All the universities in the ENHANCE Alliance offer excellent technological education on all levels, but our students are to varying degrees offered practical research opportunities as described above.

It is possible for students to take part in research activities at all the universities in the alliance, but this is based on individual contact between a student and a professor at the institution in question. There is currently no joint overview of research placements that students from all ENHANCE universities can sign up for.

Current practice summed up:

1. An exchange student looks for a supervisor and relevant project/research opportunity, for instance by checking with their home university for any existing internship agreements. Such agreements exist between the ENHANCE universities on an individual level.
2. Clarify whether the project/thesis work will be graded at the home institution or at the institution where the student is on an exchange.
3. Apply through regular channels for exchange (procedures vary from university to university)
4. Have the research activity recognized as part of a degree

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[1] The Cambridge Business English Dictionary (2022)
[2] The European Strategy for Universities (18 January 2022)

1.5. Some examples of local initiatives at the member universities

The examples mentioned here are mainly intended as opportunities for local (national) students.

Chalmers: *Tracks*[3] is a centralized educational initiative consisting of electives that have been designed to cater to more flexible education, giving students from different study programs the opportunity to choose interdisciplinary courses where they will be working together regardless of the study program. The Tracks-courses include some research and problem-solving and have been given their own makerspace at Chalmers Campus Johanneberg.

In addition, some departments at Chalmers employ Master's students as part-time research assistants or for specific projects, but this is not a centralized offer open to all students and the availability of such opportunities varies according to department and educational program.

UPV: The project *Generacion Espontanea*[4] which assists student groups with a particular idea to drive their project forward is available, as well as the incubator/accelerator for business projects. Moreover, the Institute *IDEAS*[5] promotes the entrepreneur culture at UPV. To this end, *IDEAS* provides business assessment, training, and challenges and boosts the Start Ups ecosystem at UPV. UPV-students may also participate in internships or contracts on research projects at UPV, supported by Research Institutes, or in internships via Business Chairs, supported by private companies or public authorities. There are also some internships available that are supported by central or local government, such as the *Ministerio de Educacion y Formacion Profesional*.

TUB: *Ide3a*[6] offers scholarships for joint theses and publishes a call for applications twice a year.

NTNU: *Experts in Teamwork (EiT)*[7] is a mandatory module for all Master's students at NTNU, carrying a workload of 7.5ECTS. In EiT, students from all faculties are placed together in interdisciplinary teams, cooperating on solving relevant problems from working life or society. The learning method in EiT is experience-based, and students are expected to develop their reflective and collaborative skills.

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[3] https://student.portal.chalmers.se/en/chalmersstudies/tracks/Pages/Tracks.aspx
[4] https://generacionespontanea.upv.es/
[5] https://www.ideas.upv.es/
[6] https://ide3a.net/
[7] https://www.ntnu.no/eit

2. Proposal

At all the ENHANCE universities, there are always several research projects going on of varying scopes and within different fields. ENHANCE would like to be able to offer the option to take part in various research projects to all our students on both Bachelor's and Master's levels.
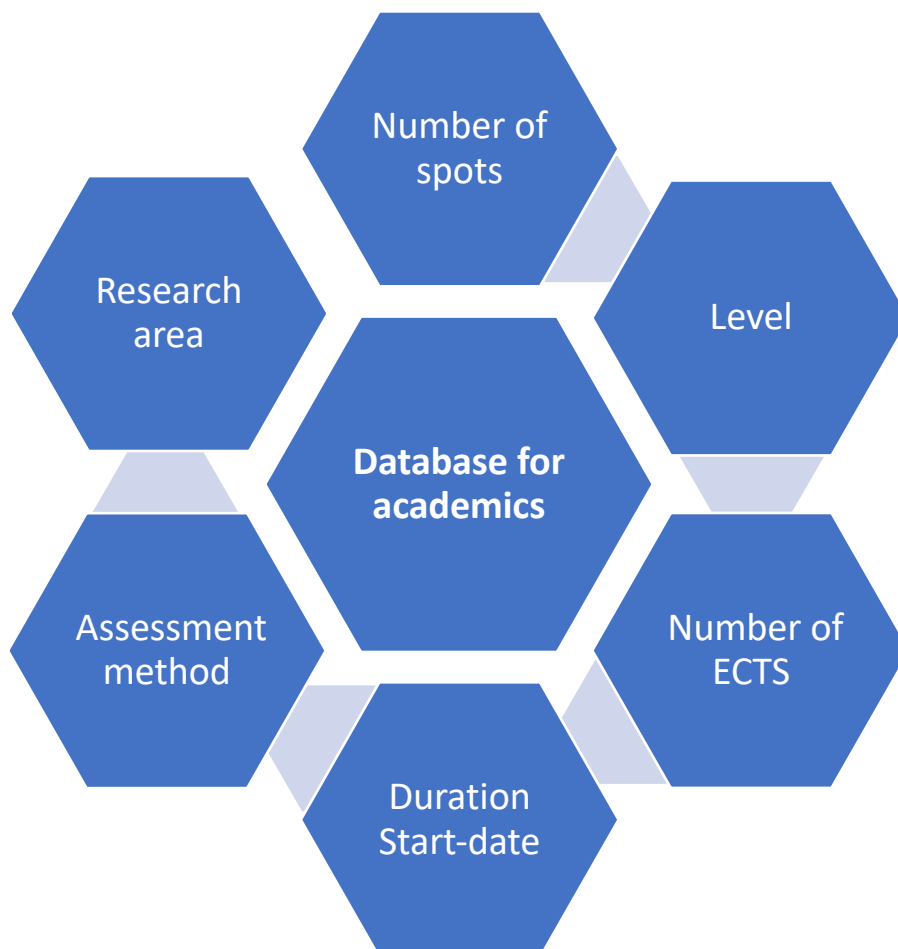
The concept is to offer available research opportunities at all the ENHANCE universities to students who are interested in taking part in a research project, an internship, or similar at one of our member universities. The student should be able to easily find a display of such opportunities and sign up for their project of interest in a simple and effortless manner. Similarly, academics should be able to easily advertise any research opportunities to students on the same platform. Administrative staff also need access to the platform in order to facilitate registration and other practical matters.

The working group assigned to this task identified the following points that must be further developed to realize the concept:

- A **portal/database** for the posting of available research opportunities must be designed. The portal must be easily accessible for academics, administrative staff, and students, i.e. not require a lot of effort to use. **The database should function as a digital noticeboard**.

- Through the portal, the students should be able to contact the academic who is offering the opportunity or sign up for projects they are interested in. The portal should be interactive, to make contact between students and professors simple. All the research opportunities must include an indication of the number of spots available for students and a description of the skills necessary to take part and contribute.

- The projects may be of varying nature and duration. It should be possible to include short-term opportunities as well as longer research placements that may last for up to 6 months. Flexibility is a key notion in order to make the concept work for all parties.

- There should be an indication for each project of the number of ECTS granted (if any) and whether the student's work will be graded.

- The projects listed must be clearly defined in terms of subject, academic pre-requisites if any, and for which academic fields they would be relevant.

- The idea is to start on a small scale with projects within our pilot areas, then expand to more subject areas after having gained some experience.

- After a student has signed up for a project at a university, there should be a link to the university's website for registration for exchange students to facilitate the necessary arrangements in terms of registering and getting practical matters such as accommodation, etc. done.

3. Toolkit

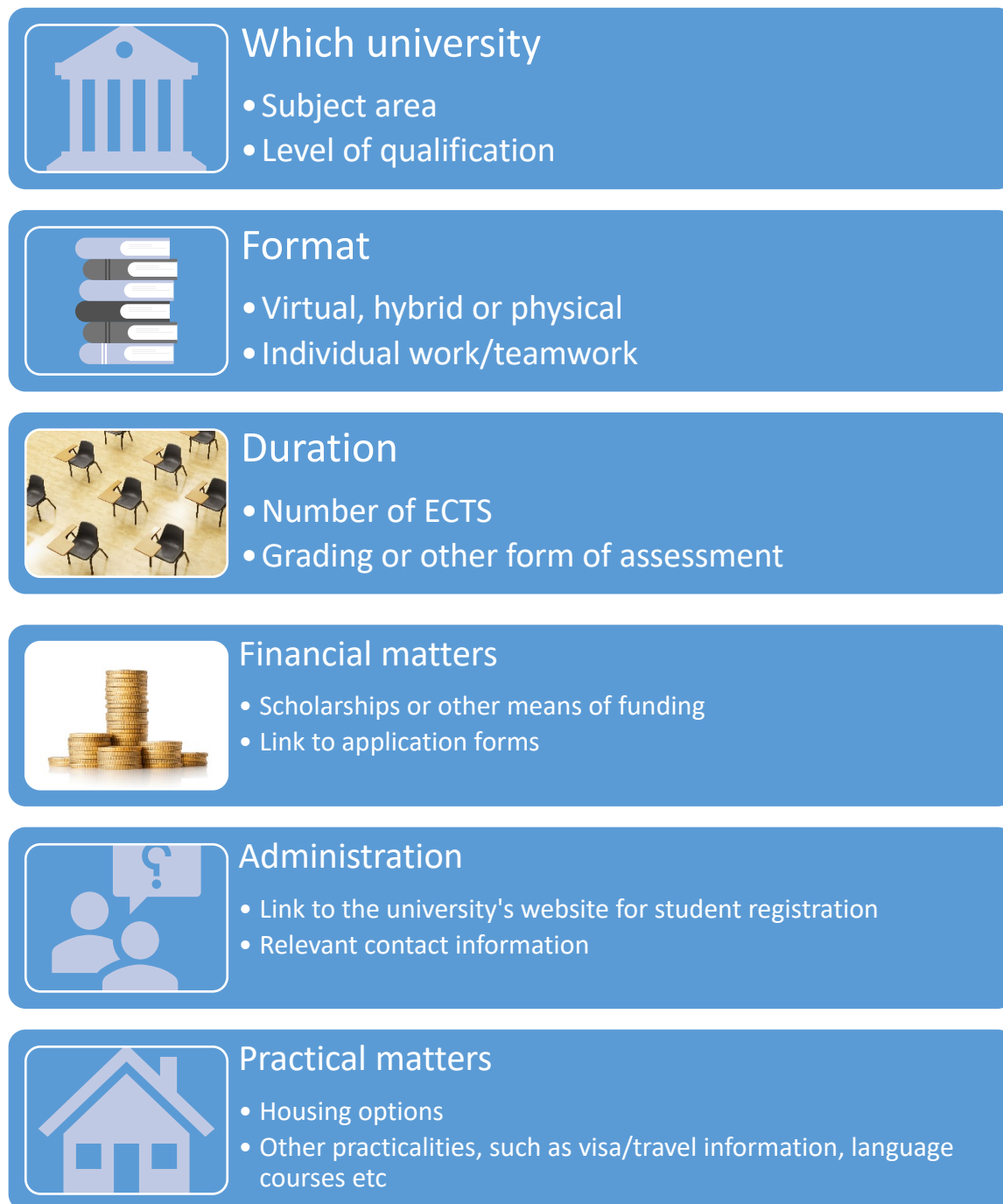**Fig.1 Information that academics need to supply for advertising a research opportunity/internship**

3.1.   Definitions and points to remember:

- <u>Research area</u>: Within which field is the research conducted? For students of which subjects/fields would the research be interesting, and what kind of students would be valuable for the research project? It is important here to include all fields that may be relevant to ensure diversity and to open up to various education areas where this is possible. Make a note of any necessary background knowledge that the students should have.

- <u>Number of spots</u>: For most projects or internships, there will be limitations with regard to the number of available places for students. Note any relevant selection criteria if applicable.

- <u>Level:</u> Is the research opportunity intended for students on Bachelor's, , or even PhD level?

- <u>Number of ECTS</u>: Does the project or internship award ECTS, and if so, how many? This is important for exchange students who need to have the project or internship recognized and approved as part of their studies at their home university.

- <u>Duration</u>: Include information about the expected duration of the project and start/end dates. The database should include projects varying in duration, from two months up to a year, and should indicate whether the project requires physical attendance, is hybrid, or is digital.

- <u>Assessment method</u>: Does the project end with a report, an exam, or any other form of assessment? Is the project based on individual work or teamwork?

In addition, the platform should be implemented with the possibility for students to propose their own ideas for research or internships, so that teachers/academics could easily collect these ideas and potentially develop them into opportunities for mutual collaboration. In this way, the platform will work in a bidirectional way and the student will be able to act as a promoter of proposals as well as a collector.

Fig. 2. Information for the student looking for a research opportunity:

Which university
- Subject area
- Level of qualification

Format
- Virtual, hybrid or physical
- Individual work/teamwork

Duration
- Number of ECTS
- Grading or other form of assessment

Financial matters
- Scholarships or other means of funding
- Link to application forms

Administration
- Link to the university's website for student registration
- Relevant contact information

Practical matters
- Housing options
- Other practicalities, such as visa/travel information, language courses etc

3.2. Definitions and points to remember:

- Which university: An exchange student looking for a research opportunity or internship may have an interest in a particular university within the alliance and should therefore be able to search the database according to opportunities offered at that institution. An easily accessible/searchable overview of subject areas and research fields, in addition to the necessary qualification level, is also necessary. The database should have a search engine that makes it possible for the student to search either by university or by research area.

- Format: How will the research be conducted? Is the whole project done virtually, does it require physical presence, or will there be a hybrid solution? Will the student work individually or in groups/teams? Are they expected to work independently or in close cooperation with a supervisor?

- Duration: How long will the project take and is it restricted to certain dates, or is there some flexibility in terms of start and end dates? Many exchange students have narrow windows for possible internships/projects during their studies, so this is crucial information that they need before selecting a potential project. The same goes for the number of ECTS, which is important in terms of how the project is recognized and approved as part of their degree at their home university. For the student it is also important to know how the project is assessed, again to be able to give as detailed information to their home university as possible, making it easier to get easy recognition.

- Financial matters: Most students need to know how they can finance their exchange studies, so it is important that the database contains a clear link to where they can find this kind of information. In most cases, students will get funding through Erasmus+, and all ENHANCE universities have information about how students can obtain such support on their websites. Links to any other sources of financing should also be easily accessible.

- Administration: When the student has found a project that they are qualified for and that would be beneficial to their studies, they need to sign up via the database and contact the relevant university for registration. There must be a link to the registration website in the database to ensure that the process runs as smoothly as possible. It would also be a good idea to include in the database an overview of relevant contact persons, both academic and administrative, to facilitate the administrative procedures for the students.

- Practical matters: It is important for international exchange students that practical matters are taken care of in a simple manner, and that they are informed at an early stage about how to solve issues such as finding a place to stay during their research project, organizing travels, signing up for a language course (if applicable), etc. Websites with information of this kind should therefore be linked from the database.

4. Practical use of the database

The Database for European Research Placements is intended to be used throughout the alliance, for all fields of study, and for academics and students at all levels. This toolkit is meant as a guide of general relevance and is not restricted to a certain area or field, although it should be tested out on a small scale to start with in order to identify possible areas of improvement. After it has been implemented and tested, innovation ideas and ecosystems should be gradually included in addition to research projects and internships, to further increase the exchange of students and ideas across the alliance.

4.1. Synergies with other work packages and tasks

WP2.1: The European Education Pathways. Research placements/projects are also a form of mobility and could be included in the EEP, as an option available to choose for future exchange students along the same lines as choosing courses.

WP4.1: One of the deliverables in WP4.1 is 14 joint Master's projects within the field of Sustainable Cities, which would make a good arena for testing out this toolkit. As soon as these Master's projects have been defined, the academics involved will be contacted and asked to advertise the projects using this report as a guideline. Students within the field will be able to see the advertised projects and choose whatever is relevant to their particular field of study.

WP5: Co-supervised PhD-projects and jointly supervised student projects

WP7: The ENHANCE Virtual Maker's Space, which is intended as a platform where open educational resources produced by ENHANCE as well as ENHANCE toolkits should be made accessible. Communication and dissemination of the database should be done via the ENHANCE website, but also on each University's own websites designed as information sites for exchange students.

5. Summary

This toolkit is a description of how all the ENHANCE partner universities can advertise available research opportunities and internships to the students in an accessible manner, making use of a digital platform that academic staff, students, and administrative staff have access to. Similarly, students can access the platform and look for opportunities, or even launch their own ideas for research in order for an academic at a partner university to enter into a collaboration. The platform should be intuitive, easy to use, and interactive and should work as a digital noticeboard for research opportunities.

The toolkit lists the most important points to remember for academics when posting on the platform, such as subject area, level, number of ECTS, duration, etc. as well as points for the students to remember, namely format, duration, and practical matters such as financing and accommodation.

The description above also notes that the digital noticeboard should be available and advertised throughout the alliance and at all levels and mentions some possible synergies with other work packages.

The toolkit is published on the ENHANCE official website along with the database, which is under construction: https://enhanceuniversity.eu/toolkit/