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DRAFT MEASURES TO ESTABLISH AN ENHANCE PLATFORM ON TRANSDISCIPLINARY RESEARCH

//ABSTRACT

The report refers to Task 7.2: *Preparation of a common platform for European transdisciplinary research within ENHANCE*. In order to strengthen and expand transdisciplinary research and Open Science in terms of content, methodology and structure, this task included the preparation of a platform for a transdisciplinary European network. In our conception, the prepared solution consists of two parts - a static website and an interactive communication channel. The website acts as a central repository for information and resources, which is essential to ensure consistency and accessibility. It centralises resources such as documents, guidelines, methodologies and case studies related to transdisciplinary research and Open Science across the ENHANCE Alliance. As a service and a joint tool it helps to institutionalise knowledge about transdisciplinarity and make it easily accessible to researchers from different disciplines. It also highlights good practice, such as showcasing examples of successful transdisciplinary projects, institutional exchanges and methodologies that have worked in different cultural contexts and universities governance and policies, in line with the aim of recognising the diversity of approaches across the Alliance. The interactive channel enhances the dynamic aspect of transdisciplinary work, where collaboration, mutual learning and knowledge sharing are key. It also supports networking by connecting researchers across institutions to share methods, experiences and structures, fostering a sense of community and collaboration. This strengthens the network and contributes to the development of strategies for anchoring the transdisciplinary approach of the ENHANCE Alliance. In this two-part solution, we deliver the value expected from a digital platform for scientific collaboration.

TABLE OF CONTENT

// INTRODUCTION

The report refers to Task 7.2: *Prepare a common platform for European transdisciplinary research within ENHANCE*. To strengthen and expand transdisciplinary research and Open Science in terms of content, methodology and structure, this task includes the preparation of a platform for a transdisciplinary European network. As a future perspective, this network aims to support institutional exchange on mainstreaming transdisciplinarity by strengthening the network and building capacity in methods and structures and stimulating future joint transdisciplinary projects. As a vision, the network also aims to provide long-term support for the development of transdisciplinary structures and approaches in European universities, considering cultural differences and the diversity of the Alliance's approaches. It also aims to formulate transferable workshop concepts on how to develop questions or research ideas together with social stakeholders and scientists.

A digital platform in the context of scientific collaboration is an online environment that integrates different tools and resources to promote collaborative research, knowledge sharing and capacity building (Lorenz & Martinková, 2021)[1]. These platforms enable participants to engage in networked research activities, enhance interdisciplinary collaboration, support the co-development of research projects and facilitate communication across institutional and geographical boundaries. Good examples of how digital environments facilitate collaborative research across disciplines and geographies and support the development of innovative, interdisciplinary projects can be found among others at:

https://itd-alliance.org/ - the purpose of the Global Alliance for Inter- and Transdisciplinarity (ITD Alliance) is to strengthen and to promote the global capacity and the calibre of collaborative modes of boundary-crossing research and practice. Among other things, the platform helps to address complex problems and societal needs, connects actors and scales to promote collaborative modes of research and education, increases the visibility and integration of work currently dispersed across continents, and builds capacity for inter- and transdisciplinary research and education.

https://www.td-academy.org/en/home/ - tdAcademy platform is part of a larger initiative to support transdisciplinary research by providing a space where researchers can collaborate on societal challenges. It facilitates empirical research and helps coordinate different research communities. By bringing together academic and non-academic stakeholders, tdAcademy aims to enhance capacity building and innovation in addressing real-world problems.

https://transdisciplinarity.ch - the td-net addresses the concerns of researchers and research funders in the field of inter- and transdisciplinary research and teaching. As a platform, td-net promotes mutual learning between interdisciplinary and transdisciplinary researchers and teachers across disciplinary, linguistic and national borders, thus contributing to the development of a professional community. As a centre of excellence, td-net has expertise, methods and tools for the co-production of knowledge. With these competences, it supports inter- and transdisciplinary research and teaching projects and leads them to success. The td-net supports the Swiss Academies of Arts and Sciences in promoting exchange and cooperation among disciplines and between science and society.

https://www.nwo.nl/en/knowledge-platform-for-interdisciplinary-and-transdisciplinary-research - The knowledge platform for interdisciplinary and transdisciplinary research develops knowledge on

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[1] Lorenz, M., & Martinková, P. (2021). Towards research infrastructure: digital platforms and data cultures. *Knižničná a informačná veda XXIX: Library and Information Science XXIX*, 60-75.

programming, conducting and evaluating interdisciplinary and transdisciplinary research, and it consolidates existing knowledge and experience. The knowledge developed by the platform will enable to optimise the processes around interdisciplinary and transdisciplinary research, help researchers design and conduct this research, and work towards embedding interdisciplinary and transdisciplinary research in the science system.

https://open-research-europe.ec.europa.eu/ - Open Research Europe provides an open access platform for publishing scientific research, promoting transparency and interdisciplinary collaboration. Researchers from different disciplines can publish their work, share data and engage in peer review in an open environment, helping to foster transdisciplinary approaches to complex global challenges.

https://futureearth.org/ - Future Earth is a global research platform focused on sustainability science. It supports transdisciplinary projects by bringing together scientists, policymakers and stakeholders to co-design solutions to global environmental challenges. Through its networks, such as the Knowledge Action Networks, it fosters collaboration across sectors and disciplines.

The key features of a digital platform for scientific collaboration that we identified during the research, taking into consideration the case study analysis and literature sources (Jeon et al. 2020[2]; Neto & Chiarini, 2023[3]; Wegner et al., 2024[4]), are as follows:

− collaborative framework - platforms provide tools that allow multiple users to collaborate in real-time, sharing research data, methodologies, and findings,
− capacity building and training - they offer resources for training and capacity building, including webinars, online courses, shared research protocols, and knowledge repositories to improve participants' skills and methodologies,
− open access and shared resources - they often promote open access to scientific resources such as databases, software, publications, and research infrastructure, fostering transparency and shared progress,
− interdisciplinary and cross-institutional interaction - platforms promote collaboration across different scientific disciplines and institutions, enabling researchers from various fields to contribute to joint research initiatives,
− project development support - digital platforms support joint project development, from the planning stage to execution and monitoring, by offering project management tools, communication channels, and funding opportunity alerts,
− data and method sharing - users of the platform can share datasets, tools, and research methodologies, ensuring reproducibility and encouraging the use of common protocols across research teams,

[2] Jeon, Y. H., Fargo, K., Smith, A., Langbaum, J. B., Nosheny, R. L., Zwan, M. D., & Rossor, M. N. (2020). Comparison of digital platforms for participant recruitment in dementia research: lessons and future directions from a global collaborative: epidemiology/innovative methods in epidemiology (ie, assessment methods, design, recruitment strategies, statistical methods, etc.). *Alzheimer's & Dementia*, *16*, e046401.

[3] da Silva Neto, V. J., & Chiarini, T. (2023). The platformization of science: Towards a scientific digital platform taxonomy. *Minerva*, *61*(1), 1-29.

[4] Wegner, D., da Silveira, A. B., Marconatto, D., & Mitrega, M. (2024). A systematic review of collaborative digital platforms: structuring the domain and research agenda. *Review of Managerial Science*, 18, 2663–2695.

- virtual networking and community building - platforms facilitate virtual networking, allowing researchers to find and connect with peers, form working groups, and engage in discussions that lead to collaborative publications and research outputs,
- integrated communication tools - they often feature a variety of communication tools like discussion forums, real-time chats, virtual meetings, and document collaboration tools, making it easier for participants to coordinate their research,
- stimulating innovation and joint projects - the platform encourages the formation of new collaborations and joint projects by providing networking opportunities, idea exchange forums, and access to funding opportunities,
- monitoring and evaluation of research impact - some platforms offer tools to monitor and evaluate the progress and impact of collaborative research projects, ensuring accountability and continuous improvement.

We have taken the above characteristics as basic assumptions of the prepared solutions in two parts - static website and interactive communication channel. By structuring the platform in this way, the solution ensures both the dissemination of structured information (static part) and the facilitation of active, real-time collaboration (interactive part), which is well aligned with the task's vision of promoting transdisciplinary research and Open Science across Europe.

The website acts as a central repository for information and resources, which is essential to ensure consistency and accessibility. It centralises resources such as documents, guidelines, methodologies and case studies related to transdisciplinary research and Open Science across the ENHANCE Alliance. This helps to institutionalise knowledge and make it easily accessible to researchers from different disciplines. It also highlights good practice, such as showcasing examples of successful transdisciplinary projects, institutional exchanges and methodologies that have worked in different cultural contexts, in line with the aim of recognising the diversity of approaches across the Alliance. In the future, the website may also develop into a long-term resource, with content continually updated as new projects are added, providing lasting support for future initiatives and collaborations.

The interactive channel enhances the dynamic aspect of transdisciplinary work, where collaboration and real-time exchange are key. It enables ongoing communication between researchers, stakeholders and institutions across Europe. This could take the form of discussion forums, webinars or workshops, stimulating new ideas and encouraging feedback. By creating spaces for open conversation and live interaction, the platform helps participants to co-create research ideas and proposals, directly addressing the objective of developing questions or research ideas with societal stakeholders. It also supports networking by connecting researchers across institutions to share methods, experiences and structures, fostering a sense of community and collaboration. This strengthens the network and contributes to the development of the transdisciplinary approach of the ENHANCE alliance.

In this context, the structure of the report includes the following two sections - one related to the ENHANCERIA website (ENHANCERIA - ENHANCE Alliance) and the other to the ENHANCERIA communication channel (ENHANCE Transdisciplinarity Channel).

// PART I. ENHANCERIA website

The ENHANCERIA project website ([ENHANCERIA - ENHANCE Alliance](#)) is part of the website of ENHANCE - The European Universities of Technology Alliance ([University ENHANCE](#)). The structure of the website includes four sub-pages corresponding to the four focus areas of the project (Fig.1):

– [Sustainable Development through Transdisciplinary Research - ENHANCE Alliance](#)
– [Sustainable development - ENHANCE Alliance](#)
– [Joint human resources dev - ENHANCE Alliance](#)
– [Strengthening research infs - ENHANCE Alliance](#)

and additionally

– [Transdisciplinary Project Catalyst - ENHANCE Alliance](#)

Figure 1. Focus areas corresponding to the internal structure of the ENHANCERIA website

In terms of Task 7.2, the most important are [Sustainable Development through Transdisciplinary Research - ENHANCE Alliance](#) and [Transdisciplinary Project Catalyst - ENHANCE Alliance](#). However, the others also contain valuable information that can contribute to the popularisation and dissemination of the ENHANCE Alliance approach.

SUSTAINABLE DEVELOPMENT THROUGH TRANSDISCIPLINARY RESEARCH

This sub-page is the main place to publish the results of the ENHANCERIA project, which aims to create an approach for implementing and developing the institutionalisation of transdisciplinary research in the ENHANCE Alliance universities. The deliverables published on the website disseminate the achievements developed in the project to a wide social audience. The contact details for the focus area leader on the page provide an opportunity to establish a direct relationship and initiate collaboration and discussion (Fig.2).

In terms of the characteristics of digital platforms for scholarly collaboration identified earlier (Introduction section), the sub-site provides open access to knowledge and resources. Among other things, it provides access to good practices, supporting tools, strategies and appropriate examples of collaboration in transdisciplinary projects developed by partner universities. In this way, it can inspire the launch of new projects and activities, while providing a space for international collaboration and the formation of international project teams.

Deliverables

- Sample of institutional supporting structures and case studies
- Comparison and Analysis of Transdisciplinary approaches at ENHANCE partner universities
- Catalogue of joint advice for supporting transdisciplinary research
- Publication on lessons learned from transdisciplinary research in ENHANCE (Abstract)
- Publication on lessons learned from transdisciplinary research in ENHANCE (Full publication)

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Figure 2. Details on the Sustainable Development Through Transdisciplinary Research sub-page

TRANSDISCIPLINARY PROJECT CATALYST

This sub-page is part of the ENHANCE project (not the ENHANCERIA project) but is also linked to the popularisation, development and dissemination of the transdisciplinary approach at the ENHANCE University and should therefore be seen as complementary to Task 7.2. The ENHANCE Transdisciplinary Project Catalyst builds knowledge-creating teams bringing together academics, students and societal stakeholders engaged in transdisciplinary research in the three ENHANCE pilot topics:

- Digitalisation and Artificial Intelligence
- Smart and Sustainable Cities and Communities
- Climate Action

The catalyst is a series of experiments which seeks to generate the highest levels of community innovation. Through peer-exchange, the working group explores platforms, spaces, and arenas for transdisciplinary projects and science. They develop a joint understanding of cross-disciplinary and cross-sectoral approaches and co-creation with society, share local best practices, and initiate new project proposals.

The catalyst enhances the involvement of students in transdisciplinary research and addresses the Sustainable Development Goal (SDG) 11 (Sustainable Cities and Communities) and SDG 13 (Climate Action). The catalyst fosters new transdisciplinary research projects between master students, PhD candidates, and senior researchers. In the long term, we aim to address other grand challenges by upscaling the catalyst methodology, to develop peer-learning and new project ideas in transdisciplinary science and co-creation with societal stakeholders on a European level.

The website includes announcements of joint projects, workshops and conferences that directly contribute to the development of transdisciplinarity at ENHANCE University (Fig.3).

Figure 3. Invitation to the Gdansk 2023 Summit

In terms of seeking the value of the ENHANCE transdisciplinary platform, this sub-site aims to stimulate innovation and collaborative projects as well as capacity building and training. Bringing together different stakeholder groups (students, doctoral candidates, researchers, community stakeholders) in a common inter- and transdisciplinary environment is also a very important element. In addition to initiating new projects and activities, this helps to build a culture of transdisciplinarity both inside and outside the university.

// PART II. ENHANCE Transdisciplinarity Channel

In cooperation with the science communication platform Te.Ma we opened a channel for discussing relevant components for the institutionalization of transdisciplinarity in an university alliance. It remains a major challenge how transdisciplinary work can be better enabled, supported and promoted by universities. Given the diversity of transdisciplinary approaches in the Alliance, we discuss how these can be systematically developed into a common approach. We outline what transdisciplinary research is, how we have created an environment of mutual learning and what criteria need to be considered as examples of knowledge transfer with society.

Te.Ma is an open, digital knowledge platform that promotes qualitative exchange between citizens and scientists and enables informed debate on pressing societal developments. In different thematic channels, the interdisciplinary team presents key contributions from research and practice and makes complex issues accessible to different social groups. The concept of te.ma is based on the experience of the science-oriented Eastern Europe portal dekoder.org (winner of the Grimme Online Award 2016 and 2021 as well as the Special Award 2021 of the Federal Foundation for Reappraisal). Both projects were developed by philosopher and media expert Martin Krohs.

Te.Ma works with universities, research groups, think tanks and other institutions to showcase diverse and relevant research discourses and help them achieve greater social impact. The team of journalists and academics provides expert support to the project partners. All published materials are also formatted for social media and distributed via newsletters by the communications team. Beyond the platform, Te.Ma provides relevant and well-founded content for interested citizens, educators, content creators, students and many other target groups through various channels.

The purpose of using the Te.Ma channel (Fig.4) was to create a discussion forum around three key themes for the focus area, which are:

- How is transdisciplinarity institutionalised?

- How are stakeholders involved in transdisciplinarity?

- Why does transdisciplinarity matter for sustainable development?

Figure 4. ENHANCE Transdisciplinarity Channel

The internal structure of the channel (Fig.5) includes a website, a discussion forum and a database of resources (articles, documents, recordings, etc.).

Figure 5. Information panel on the channel's front page

Identifying who is responsible for the material published in a channel (Fig.5) increases its transparency and helps to build a network of contacts.

For each of the three main topics (Fig.4), several (2 or 3) introductory articles have been developed to present the ENHANCE University perspective on the problem under discussion, with references to primary sources of knowledge and the results of the ENHANCERIA project. These articles are structured as follows:

- How is transdisciplinarity institutionalised?

    o An integrative process for a mutual learning environment - the article presents the creation of a mutual learning environment by the ENHANCE integrative process of knowledge exchange about sustainable development through transdisciplinary research. This was achieved step-by-step: by integrating different levels of experience with transdisciplinarity, by developing a joint knowledge base, and by generating recommendations for institutional change.

    o The ENHANCE Walk & Talk format - this article presents guidelines to help universities plan and run future Walk & Talks. The Walk & Talk format was developed by the TU Berlin Office for Science and Society and further developed within the ENHANCE alliance to help researchers and other relevant staff to become familiar with local research projects that facilitate knowledge exchange between science and society. It also aims to increase understanding of the policies and structures at ENHANCE member universities that support these projects. This format complements inclusive processes of mapping and analysis of transdisciplinary initiatives and ongoing inter-university exchanges on this topic.

    o The concept of good practices - the article presents the idea of good practice in the context of ENHANCE transdisciplinary research. The concept of 'good practice', rather than 'best practice', aims to be more responsive to the realities of academic work, including the challenges, barriers and triggers for creating an enabling institutional environment for transdisciplinary research. The ENHANCE good practices have been identified and selected as key initiatives. They illustrate how different types of transdisciplinary initiatives can be successfully developed at different university levels between policy, research and education, how they are interlinked and how they contribute to the institutionalisation of transdisciplinarity.

- How are stakeholders involved in transdisciplinarity?

    o Levels of societal engagement - this article presents the conclusions of the qualitative exploratory research conducted by the ENHANCE Alliance universities, which suggest that a higher level of societal engagement in scientific research has a positive impact on societal transformation towards sustainability. This research is also a first step towards making transdisciplinary research at universities, especially technical universities, more visible and transparent in order to provide better support and create a mutual learning environment for discussing and continuously developing strategies for organisational change.

    o The Living Lab format - the article presents three ENHANCE examples of format support and development: the Living Labs Incubator at RWTH Aachen University, the Stadtmanufaktur Berlin at the Technical University of Berlin (TUB) and the Universitat Politècnica de València (UPV) Living Lab. Their great value in the context of a transdisciplinary approach lies in the fact that Living Labs are an innovative research format that fosters collaboration between researchers, stakeholders and end-users in real-life settings. By promoting co-creation and co-design, they address complex societal challenges by integrating different perspectives and expertise. Living Labs develop, test

and refine experimental solutions on the ground and play a crucial role in transdisciplinary research and sustainable development for societal change, which requires new support methods and tools.

- Why does transdisciplinarity matter for sustainable development?

  o A broad shared understanding of transdisciplinarity - transdisciplinarity means bridging the gap between science and society. Faced with the complex challenges of transformation and the development of solutions for sustainable development, transdisciplinarity is increasingly recognised in academic institutions as a research principle for generating new integrated knowledge and promoting transformation in science and society. The article therefore poses key questions for the development of public discussion - what is transdisciplinarity as a research mode, how do we understand it, and how does it relate to sustainable development? With a common understanding in the ENHANCE Alliance, we have created a framework for transdisciplinary research processes and integrated knowledge exchange between science and society. As the ENHANCE universities each have their own organisational structure and culture, a common and broad understanding of transdisciplinarity is key to promoting the institutionalisation of transdisciplinarity.

  o A glossary on transdisciplinarity - this article presents The Glossary Living Document as a summary of ENHANCE research efforts to understand the meaning and correlative elements of the concept of transdisciplinarity within the Alliance. The aim was to develop this glossary structure, to spread and improve knowledge, and to raise awareness of transdisciplinary approaches in research, projects and collaborations to a wider audience. We propose an open, expandable, adaptable and updatable glossary as a space for the continuous collection of experiences, knowledge, competences and skills for transdisciplinary activities.

  o Societal impact - this article addresses the crucial issue of societal impact in transdisciplinary activities. Societal impact is a fundamental way in which transdisciplinary projects drive change and social transformation. In the ENHANCE Alliance we are exploring ways in which transdisciplinary projects, initiatives and activities generate societal impact at different levels of their institutionalisation. We have also identified the need to define social impact metrics and find effective ways to measure them on an ongoing and reliable basis as a challenge and task for further collaboration within the ENHANCE Alliance.

To summarise the importance of the Te.Ma channel for the ENHANCE transdisciplinary platform project, key features such as interdisciplinary and cross-institutional interaction and virtual networking and community building should be highlighted. At the same time, the interactive functionalities of this channel (especially the discussion forum) complement the website, which is an open and accessible source of knowledge developed in the project.

// SUMMARY

In line with Task 7.2, we have prepared web-based solutions that will form the basis for building a transdisciplinary network within the ENHANCE Alliance. Our solutions will be continued and developed within the ENHANCE+ project. We also hope that, over time, independent transdisciplinary activities will emerge within the ENHANCE Alliance, involving a wide range of stakeholders well beyond ENHANCE University and the communities around ENHANCE University.

Limitations of our work:

As we can read on the Te.Ma website: *Te.Ma has been inactive since 1 August 2024 until further notice and is in archive mode. All publications are still available. However, the comments section will be shut down. Existing user accounts will remain accessible until 31 July 2025, but no new accounts can be created. Our newsletter will no longer be updated*. The interactive function of the channel has been lost due to this situation. We are currently looking for a solution to restore it. The restriction does not affect access to the material presented on the channel, including direct contact with the authors, which is also an opportunity to start a broad public discussion. We will also build on this content to extend the ENHANCE platform in the ENHANCE+ project as a service facility for knowledge sharing, capacity building and training. It is therefore necessary to consider the implementation of this task as a starting point for the next version of the transdisciplinary communication and cooperation platform, which is one of the targets for the further operation of the ENHANCE Alliance.