TAH **Policy Agenda**

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R&D, Innovation
Industry
Culture

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The Key to Future Innovation

Supporting Transdisciplinary Collaboration between New Technologies, Art, Humanities, and Social Sciences

TAH - Centre for Innovations in Technology, Art, and Humanities

Summary

People and society are facing complex challenges associated with climate change, loss of competitiveness, and the rise of artificial intelligence. Addressing these challenges requires not only interdisciplinary collaboration but also long-term support. To enhance quality of life and competitiveness, it is essential to fully leverage the knowledge and creativity present in the academic and artistic spheres, which are today's strategic resources. This policy brief presents a framework for fostering innovation through the strategic integration of new technologies (T), arts (A), and humanities and social sciences (H), enabling us to create more comprehensive, responsible, and effective solutions while ensuring that innovations serve society's needs and preserve environmental and cultural values. This transdisciplinary approach not only addresses current challenges but also strengthens our capacity for sustainable innovation and competitive advantage in the global knowledge economy. Through this document, the TAH Center presents recommendations to support the use of interdisciplinary and transdisciplinary potential by combining new technologies, art, social sciences, and humanities to drive innovations with positive impacts on society, cultural assets, the economy, and the environment.

Options for Removing Barriers to Transdisciplinary Research

01 **Establishing an analytical data base for transdisciplinary innovations,** providing key foundations for effective public policy making and strengthening innovations in the economy and society.

02 **Strategic support for long-term transdisciplinary approaches,** with an emphasis on developing experimentation and entrepreneurship, will enable the full potential of innovations across disciplines and sectors.

03 **Support for artistic research** focused on social and technological innovations will yield projects with aesthetic, functional, and sustainable benefits.

04 **Expanded Definition of R&D and Application of Responsible Research and Innovation (RRI)** will focus research activities on the needs of society.

05 **New evaluation frameworks for interdisciplinary projects** will help better recognize the added value of synergy between fields and increase the impact of science and art on the economy and society.

06 **Support for education in transdisciplinary skills (STEAM)** will connect technological, creative, and socially responsible competencies with practice.

07 **The development of careers and investments** in creative and transdisciplinary fields will ensure stable support for talent, and impact investment will enhance competitiveness.

08 **Securing funding for research infrastructures** in the fields of art, social sciences, and humanities will enable the full utilization of their potential.

09 **Support for international or global collaboration** and sharing of best practices will strengthen solutions to challenges impacting both the world and us.

10 **Support for inclusive communication, accessible language, and public engagement** on transdisciplinary research will strengthen understanding across disciplines and enhance societal impact.

Introduction

The challenges we face today are both local and global, driven by climate change as well as culture wars, the rise of artificial intelligence, and decreasing competitiveness. These are complex issues that require interdisciplinary collaboration to solve. To enhance quality of life in a sustainable way, we must urgently find ways to fully harness all available potential. Knowledge and creativity—key resources of our time—are rooted in people and largely cultivated through education and academic pursuits. To fully harness their potential requires not only access to quality education and a well-developed academic sector, but also collaboration between the public, private, and nonprofit sectors, with an emphasis on the contributions of the arts, humanities, and social sciences within science, research, and creative work. By combining these fields with new technologies and other sciences, we can better address societal challenges and harness opportunities with positive impacts on society, the economy, and the environment.

Transformative Potential of New Technologies

New technological capabilities (T)—from artificial intelligence and cognitive enhancement to robotics, blockchain and other digital technologies—offer innovative solutions to complex environmental, economic, and technological challenges. However, their application also raises new questions regarding social and environmental impacts. When combined with the arts and the humanities or social sciences, these technologies open new possibilities for responsible and creative use. This synergy fosters solutions that impact not only technological advancement but also business, healthcare, design, culture, cultural heritage, education, ecology, policy, law, or the environment.

Addressing Challenges through Creativity

Art (A) plays a crucial role not only as a creative force within the cultural practices of society but also as an incubator for innovations that can challenge the status quo and offer new approaches to social issues. Today, artistic research spans traditional fields like visual arts and music, as well as new technological directions such as digital art, interactive media, and the use of generative artificial intelligence. Architecture creates resilient, adaptable, and sustainable ecosystems that reflect the technological, cultural, and social context of homes, cities, and communities. Design ensures not only functionality and aesthetic value but also the meaningfulness of products, services, and systems, enhancing their usability and accessibility.

Harmonizing Progress with Societal Values

The humanities and social sciences (H) examine diverse aspects of human life, culture, and society, analyzing values, norms, and historical contexts, and offering insights into current and future challenges that shape human coexistence and social structures. This enables them to identify both risks and opportunities related to technological development and to ensure that such progress remains ethical, socially responsible, and acceptable from the perspectives of public policy, legislation, law, and economics. Social sciences and humanities can offer deeper insights into the impacts of artistic creation on society and culture while exploring how art shapes and influences social changes or the economy. They hold the key to understanding the rights of intellectual property or copyright and their protection in an era of rapid changes in digital technologies and generative AI.

INTERDISCIPLINARITY
Collaboration between fields where each discipline contributes its methods and perspectives to solve a common problem while maintaining its identity.

TRANSDISCIPLINARITY
An approach that integrates knowledge across fields into a new framework, often extending beyond the academic environment for comprehensive problem-solving.

ART-BASED RESEARCH
A method that uses various artistic forms as tools for research and achieving impact across different themes, including social and cultural phenomena.

Risks of Inaction

If we do not expand the possibilities for integrating these fields of new technology, art, humanities and social sciences, we risk fragmented solutions that will either be narrowly technology-focused, neglecting social, cultural, or ethical dimensions, or based solely on traditional approaches without utilizing modern technological capabilities. The impacts of technological innovations without this integration risk increasing social inequalities and tensions (due to exclusivity, inaccessibility, inadequacy, and reduced utility of solutions for some groups) or contributing to cultural appropriation (where technology uses cultural content without consent or collaboration with the original authors or communities), as well as cultural erosion (where technology replaces live cultural practices with digital versions). Art without the integration of modern technologies would lose its ability to reflect and influence current societal changes or limit new creative possibilities. The absence of transdisciplinary collaboration within the humanities and social sciences may marginalise their influence on addressing complex issues such as climate change, digital inclusion, or economic challenges. Single-discipline solutions to complex societal issues, without a interdisciplinary or transdisciplinary approach, may address specific problems but may not be sustainable in the long term or may inadvertently cause unacceptable impacts. Without collaborative approach, there is a risk that broader environmental, social, cultural, and ethical aspects will be overlooked, making today's challenges even more complicated in the future.

RECOMMENDATIONS

The following recommendations aim to expand opportunities for interdisciplinary and transdisciplinary research that connects new technologies, art, humanities, and social sciences, while also removing barriers that hinder the full utilization of their innovative potential:

RECOMMENDATION 01: Establishing a Data and Analytical Framework for Transdisciplinary Innovations

We recommend creating a data and analytical foundation to monitor and analyze transdisciplinary research and innovation potential in the fields of new technologies, art, humanities, and social sciences. This analytical framework would enable public administration to redefine approaches to sustainable policies, taking into account cultural or historical contexts and managing investments in innovations more effectively. These insights would further be utilized for more effective public policies and services, positively influencing talent development for the creative economy. The formulation of policies, support programs, research questions, and opportunities for innovation should consider human values and cultural identity to avoid being socially blind to their potential negative impacts.

RECOMMENDATION 02: Strategic Support for Transdisciplinary Approaches

We recommend expanding existing or creating specific policies and funding programs focused on long-term, high-risk and potentially breakthrough transdisciplinary projects that connect technologies, art, humanities, and social sciences. This approach should provide stable and long-term funding, enabling purposeful collaboration among various experts, which is crucial for the development of collective intelligence that can more effectively address complex social challenges. At the same time, institutions should focus on fostering entrepreneurship in the academic and artistic sectors through the utilization of new technologies and business models. This will enhance the effectiveness of transdisciplinary approaches in both economic and social contexts.

RECOMMENDATION 03: Supporting Artistic Research in Technological and Social Innovations

We recommend implementing specific policies and financial support for artistic research that has the potential to play a crucial role not only in art and design but also in the development of new technologies, the economy, and social innovations. Artistic research opens new forms of interaction with technologies and brings innovative solutions that are both functional and aesthetically valuable. It is also key to create an open environment that supports experimentation, creativity and the exploration of new concepts, allowing both the academic and artistic communities to discover and convey their added value to society.

RECOMMENDATION 04: Expanding the Framework for Integration of Social Sciences, Humanities and Arts into Research and Innovation

We recommend modernizing the approach to research and innovation to better reflect societal needs and diverse forms of research outputs. This includes consistent application of Responsible Research and Innovation (RRI) principles in research through public engagement, gender equality, enhanced science education, transparent access to results, high ethical standards, and governmental responsibility. Following these principles, it is necessary to update recognized forms of research in the Frascati Manual, particularly expanding the definition of research in arts, humanities and social sciences, recognizing the distinct nature of artistic research. This includes acknowledging additional forms of research outputs beyond traditional "products," such as experiences and behavioral changes. This broader definition would better reflect the diverse ways in which research contributes to addressing societal needs through transdisciplinary collaboration.

RECOMMENDATION 05: Improving Frameworks for Evaluating Interdisciplinary Projects

We propose strengthening the evaluation processes for interdisciplinary projects by involving evaluators with experience in interdisciplinary research or at least from relevant fields. Evaluations should take into account not only the quality of individual disciplines but also the added value of their integration and the synergy that interdisciplinary and transdisciplinary research brings. It is also important to introduce new metrics and evaluation frameworks that better capture the long-term impacts of these projects, which often manifest only over a longer time horizon. Given that artistic, interdisciplinary, and transdisciplinary research lacks both suitable evaluation frameworks and traditional publication channels, we recommend creating specific evaluation criteria that will make this type of research comparable to the assessment of traditional disciplinary fields and expand existing evaluation paradigms to include impact perspectives.

RECOMMENDATION 06: Supporting Education and Skill Development in Transdisciplinary Approaches (STEAM)

We support changes in the education system that will prepare students to solve complex problems and promote interdisciplinary and transdisciplinary collaboration by integrating science, technology, engineering, arts, humanities and social sciences, and mathematics (STEAM). This approach to education adds creative and design competencies, other transversal competencies, and critical thinking and action to technical competencies. These programs should be connected with both public (including cultural infrastructure) and private sectors, focusing on practical application of knowledge across disciplines. Additionally, training should be available specifically focused on skills needed for transdisciplinary research, such as leading diverse teams, theories of knowledge in various fields, interdisciplinary communication, and methods of integrating different research, participatory and creative approaches.

RECOMMENDATION 07: Supporting the Development of Research Careers and Entrepreneurship in Creative and Transdisciplinary Fields

We recommend providing broader support to research, artistic, and innovation communities to ensure stable conditions for career development in transdisciplinary fields, including equal opportunities and support for entrepreneurship. We also propose expanding investment funds to include a focus on impact investments. This approach aims not only for financial returns but also for achieving positive social, cultural, or environmental impacts. This comprehensive support, including linking the research-creative community with investors and businesses, is particularly important for the emerging generation of artists and scientists and for the development of the creative and digital economy, and ultimately, society.

RECOMMENDATION 08: Ensuring Funding and Infrastructure for Transdisciplinary Research

To effectively support interdisciplinary and transdisciplinary research solutions, we recommend securing stable funding, including for research infrastructures that will foster the development of talent and knowledge. Given the lack of research infrastructures for the arts, humanities, and social sciences, it is essential to ensure their development and sharing among various research organizations. This approach would strengthen cross-disciplinary collaboration and reduce the financial burden on individual institutions. Another type of suitable infrastructure includes spaces that support modular collaboration with a carefully curated research and artistic community, enabling experimentation, openness, and inclusivity, while fostering curiosity and an impact-focused approach—factors essential for innovation and maximizing the benefits of transdisciplinary efforts.

RECOMMENDATION 09: Supporting Global Collaboration and Sharing Best Practices for Transdisciplinary Innovations

We recommend fostering a creative and collaborative environment that enables engagement in international networks, sharing best practices and inspiring projects, and creating accessible case and impact studies documenting successful transdisciplinary projects. Such collaboration not only provides opportunities to share insights but also allows for a collective response to global and local challenges, thereby enhancing resilience and adaptability to complex problems. Emphasizing the sharing of real examples and impacts from these projects inspires other innovators and contributes to both local and global solutions to societal challenges.

RECOMMENDATION 10: Supporting Communication, Inclusive Language, and Public Engagement

Communication and language are crucial not only for creating synergies among various fields but also for strengthening mutual understanding between science and the public. To achieve broader societal impact, we recommend developing narratives and value frameworks that bring research and technologies closer to the public, enhancing their acceptance by clearly highlighting social benefits. Artistic interventions, participatory public policy design, and innovative forms of visualization and experience can significantly support the understanding of scientific knowledge and its impacts. At the same time, the language of grant calls should be formulated inclusively to encourage the participation of experts from the fields of art, humanities, and social sciences, as they can significantly contribute to research and innovation, especially when any impact on individuals and society is anticipated.

Context of the EU: Draghi Report

The TAH Center focuses on harnessing innovative potential at the intersection of disciplines to support not only national and European competitiveness but also to address crucial local and global challenges of the 21st century. In line with the recommendations of the Draghi Report, TAH concentrates primarily (not exclusively) on two key areas.

- **Support for the Integration of Societal Values into Research and Innovation**

On page 246, the report emphasizes the importance of integrating values such as transparency, diversity, inclusion, gender equality, open science, and open access into the pursuit of competitive advantages: **"These values and principles should remain at the core of Europe's approach and constitute the strength of its model of excellent, collaborative research."** The TAH Centre places a strong emphasis on responsible research and innovation.

- **Curriculum Revision and Development of Key Skills for the Future**

On page 275, the report emphasizes the need to adapt curricula to meet the changing skill demands in the European labor market: The TAH Centre recommends the establishment of transdisciplinary programs that develop both technically oriented (STEM) and so-called transversal skills, such as creativity, adaptability, and emotional intelligence (A), because **"These skills are a key factor affecting labor productivity and will become more important for workers to add value in an increasingly machine-intensive environment."**

International Examples of Best Practice

Funding

Research Ireland

Research Ireland (IR, established in 2024 following the merger of IRC and SFI) provides support for transdisciplinary research that connects the arts, humanities, and social sciences with the natural sciences and engineering, including engagement with non-academic sectors and society, through the following programs:
Creative Connections supports the establishment of joint interdisciplinary workshops to foster collaboration.
The COALESCE programme has been offering funding for transdisciplinary projects aimed at addressing major societal challenges since 2018. The competition in 2025 will focus on:

- Transdisciplinary projects with a principal investigator from the humanities and social sciences (SHUV) and another participant from the STEM fields,
- International collaboration,
- Collaboration on policies to address gender-based violence.

Academy

MIT Media Lab

MIT Media Lab (USA, established in 1985) has a broadly defined support for transdisciplinarity in its research focus, which intersects various fields such as art, science, technology, multimedia, and design. Research themes like **Future Worlds** and **Cultivating Creativity** are designed to foster a creative and collaborative environment that encourages partnerships with non-academic spheres. Programs such as **Connected Mind + Body** and **Life with AI** focus on researching technologies that integrate aspects of mental and physical well-being or intelligent systems, emphasizing the interconnection between humans and technology. MIT Media Lab creates a space for original ideas and provides infrastructure for experimental approaches and cross-disciplinary collaboration.

Investment

Upstart Co-Lab

Upstart Co-Lab (USA, established in 2016) offers impact investments in the creative economy, including the sectors of art, design, fashion, film, and media. It focuses on supporting inclusive growth, creating sustainable jobs, and providing capital for entrepreneurs from diverse communities, as well as women-owned businesses. Its **Inclusive Creative Economy Strategy** has received funding from significant foundations and organisations, offering $15 million and planning to create a $100 million portfolio. Through its „**creativity lens**" Upstart Co-Lab demonstrates to investors how the creative economy can generate financial returns while also delivering positive social and environmental impacts. Upstart Co-Lab publishes **annual reports** on the financial performance and impact of its investments.

Evidence

Creative PEC

Creative Industries Policy and Evidence Centre (GB, established in 2018) provides independent and evidence-based policy recommendations for the creative economy. Its partners include policymakers, entrepreneurs, organisations within the creative economy, and other research institutions. The core team consists of 17 members and is hosted at Newcastle University, funded by the Arts and Humanities Research Council (AHRC), in partnership with the Royal Society for the Arts. The Creative PEC publishes research papers, **government submissions**, **policy briefs**, and regular **State of the Nations** reports in four broad thematic areas:
1. Creative education, skills, and talent (with Work Advance);
2. Arts, culture, and heritage (with Sheffield University);
3. Internationalisation (with Newcastle University);
4. Research and development, innovation, and clusters (with University of Sussex). Creative PEC research also addresses topics such as AI, intellectual property and regulation; business models and access to finance; value of arts and culture; diversity and inclusion or environmental sustainability.

Conclusion

The transdisciplinary approach that connects new technologies, art, humanities, and social sciences is not merely a tool for enhancing these specific areas, or specialized institutions, teams, or individuals, but represents a key strategy for the development of an innovative ecosystem, quality of life, and the economy. We believe that the implementation of these recommendations will support innovative potential and strengthen competitiveness within European and global efforts for technological, socially responsible, and sustainable development. The implementation of these recommendations should be backed by further analytical quantitative and qualitative data, without assuming that changes in the management of educational, research, cultural, or industrial policy need to be revolutionary. On the contrary, if we unlock the potential of transdisciplinary collaboration at the intersection of art, social and humanities sciences, and new technologies, the impacts can be disruptive.

The TAH Centre is ready to develop partnerships focused on improving public services through expert assistance, consultations, and analytical support. We offer the opportunity to implement pilot projects to spark transdisciplinary connections or to test innovative approaches, such as regulatory sandbox, living lab, art-tech testbed, and others, to increase the positive impacts of research, development, and innovation.

The TAH Committee expresses gratitude to the members of the TAH International Advisory Board, as well as to experts including Hasan Bakhshi, Bernard Hay, Avril Joffe, Jairaj Mashru, and members of the Global Creative Economy Council, for their insights and expert contributions to this document.

On behalf of the TAH Centre

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Opinion Piece

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"The TAH Centre's Policy Brief is a timely initiative that underscores the essential integration of technology, arts, and humanities as pillars for advancing creativity and innovation. As artificial intelligence is increasingly reshaping our society, a balanced approach that leverages technological advancements and human-centered perspectives is essential. By fostering this intersection we not only open new pathways for creative expression but also safeguard ethical standards and cultural diversity in innovation. Equally important is the need for creative education at all levels, integrating arts, fostering lifelong learning, and developing soft and interpersonal skills crucial for the future workforce. The TAH Centre provides a framework that inspires individuals to thrive in a dynamic creative economy. This forward-thinking vision ensures that technology serves humanity's diverse and evolving needs."

References

A Global Agenda for the Cultural and Creative Industries, available HERE
Business R&D in the Arts, Humanities and Social Sciences, available HERE
Creative Economy Outlook 2024, dostupný HERE
Integrating social sciences and humanities in Horizon Europe and Horizon 2020, available HERE
Leveraging the Full Potential of Artistic Research, available HERE
Manifest TAH, available HERE
Projekt Future PRO - megatrendy a velké společenské výzvy, available HERE
Projekt SHAPE-ID, available HERE
Projekt SIENNA: Technology, ethics and human rights, available HERE.
TechEthos – Ethics for Technologies with High Socio-Economic Impact, available HERE
The future of European competitiveness: Report by Mario Draghi, available HERE
The Oxford Handbook of Interdisciplinarity, available HERE.

The TAH - Centre for Innovations in Technology, Art, and Humanities was established in August 2024. Its mission is to support dialogue among the fields of new technologies, art, social sciences, and humanities. The centre aims to create transdisciplinary partnerships for innovative solutions to the global challenges faced by individuals and society. TAH aims to establish a national contact point and an analytical, coordination, and outreach center to promote interdisciplinary collaboration.

www.tah-centre.org