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SHAPE-ID: Shaping Interdisciplinary Practices in Europe

Deliverable 3.2 - Report of workshops and analysis of IDR/AHSS integration learning cases

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Foreword

The SHAPE-ID project was scheduled to organise six learning case workshops across Europe between December 2019 and May 2020 to enable stakeholders to explore best practices in interdisciplinary and transdisciplinary research (IDR/TDR) with an emphasis on research involving the Arts, Humanities and Social Sciences (AHSS).

The first three of these workshops – held in Dublin in December 2019, Edinburgh in January 2020 and Turin in February 2020 – took place as planned. The remaining three – intended to take place in Bilbao in March, in Warsaw in April and in Zurich in May 2020 – were postponed due to the COVID-19 outbreak. Due to the ongoing and uncertain situation with COVID-19, the SHAPE-ID consortium considered the organisation of in-person meetings no longer feasible and decided to reorganise the workshops in a remote setting. This choice, besides ensuring the protection of all participants' health while reducing further delays to the project, has presented the opportunity to experiment with interdisciplinary/ transdisciplinary learning activities in a virtual environment.

Indeed, despite the adversity, there is an opportunity to be seized in organising online events. Exploring the potential of online techniques for working and developing interdisciplinary and transdisciplinary collaborations is a necessary step considering that personal mobility and gatherings will not resume at previous levels of frequency and intensity soon. In particular, the role of the Arts and Humanities in this scenario is essential because the technology-driven process of moving meetings online will challenge most of the tacit and emotional aspects of human interaction, such as informal and private communication, the emotional effects of collaboration, and all those non-visible elements of social exchange that need to be considered and influence the outcome of collaborative research. We therefore had the opportunity to learn how to design, prepare and conduct online workshops – taking advantage of the necessary delay to research suitable methodologies and redesign already well-planned in-person workshops – and evaluate their efficacy compared to the traditional face-to-face workshops.

This document reports on the workshops, organising the findings into a coherent framework in order to feed into a second report, *D3.3 – Recommendations and measures to maximise IDR impact on society.* The current report is structured as follows:

Section 1: Integration of challenge-oriented learning journeys

Section 2: Overview of the six workshops' outcomes (Dublin, Edinburgh, Turin, Zurich, Warsaw, Bilbao)

Section 3: Detailed reports for each of the six workshops

Section 4: Conclusions on IDR learning cases tackling societal challenges and missions

In addition, Appendix 1 includes the full set of six workshops evaluation reports and Appendix 2 the full list of participants at all learning workshops.

1 Integration of challenge-oriented learning journeys

The SHAPE-ID learning case workshops were designed to bring together experts on inter- and transdisciplinarity from different backgrounds to co-produce recommendations on best practice in conducting and supporting IDR/TDR in the context of societal challenges, with a specific focus on the integration of the Arts, Humanities and Social Sciences (AHSS) disciplines. Participants were drawn from a wide range of disciplinary backgrounds and sectors and included AHSS and Sciences, Technology, Engineering, Mathematics and Medicine (STEMM) researchers with experience working on IDR/TDR projects, policymakers, funders, representatives of Research Performing Organisations and from industry, civil society and the cultural sector. Workshops were organised by SHAPE-ID partners (in collaboration with local co-organisers in some cases) across Europe – Dublin, Edinburgh, Turin, Bilbao, Warsaw and Zurich – to enable the integration of perspectives from different regions. By consulting these experts, the project aimed to test, validate and extend the findings of the SHAPE-ID literature review and survey and explore IDR/TDR methods and approaches for addressing societal challenges, missions or other complex issues where collaborative research across disciplines and sectors is needed.

This challenging task was undertaken by using a learning journeys approach tailored to the SHAPE-ID purpose and context. The approach was carefully planned with the contribution of all SHAPE-ID partners, meeting for a co-design workshop in Rome, at the ISINNOVA premises, in June 2019. The results of these planning activities are presented in detail in the SHAPE-ID Deliverable D3.1[1], and briefly summarised in the box below.

The first three workshops were held as planned, face-to-face in Dublin (December 2019), Edinburgh (January 2020) and Turin (February 2020). However, COVID-19 travel restrictions necessitated the postponement of the latter three workshops and their reorganisation in a virtual format. This has created new challenges but also provides an opportunity to learn about the potential and pitfalls of remote collaboration – an increasingly likely scenario for those pursuing IDR/TDR in the near future.

[1] Sessa, Carlo, & Galvini, Giorgia. (2019). Matrix for integration of learning cases and framework of analysis. DOI: https://doi.org/10.5281/zenodo.4118413

Design of the SHAPE-ID Learning Workshops

The workshop series was developed at a Co-Design Workshop in Rome in June 2019, where partners defined a common approach and agreed the themes and schedule for each workshop (Table 1). The challenge-oriented focus of each workshop was agreed in consultation with all partners and with input from emerging findings from the literature review. In particular, efforts were made to address the significant underrepresentation of the Arts and Humanities in IDR/TDR to better understand the challenges of AHSS integration.

Each workshop was designed as a learning journey, commencing with presentations of case studies, vignettes or examples of successful (and unsuccessful) projects, followed by group discussions around key challenges and questions related to the workshop topic, and concluding with a forward-looking session in which participants engaged in activities to co-design missions and recommendations. This approach was intended to bring participants on a journey that deepened their understanding of other perspectives and from there enabled them to collaboratively explore pathways to change. Within this common framework partners organising workshops developed individual programmes, selecting the most appropriate methods for each activity.

Workshops were organised according to the following schedule and topics:

Workshop	Date	Location	Organisers*	Challenge-oriented focus
1	2-3 Dec 2019	Dublin	Trinity College Dublin	Positioning the Arts and Humanities to lead research addressing societal challenges
2	20-21 Jan 2020	Edinburgh	University of Edinburgh	Bringing an Environmental Humanities lens to bear on interdisciplinary collaboration among AHSS and between AHSS and STEMM
3	17-18 Feb 2020	Turin	ISINNOVA (Politecnico di Torino)	Inter/Transdisciplinary educational models and approaches that support sustainable urban transformation
4**	10-11 Sept 2020	Zurich (online)	ETH Zurich (td-net)	Intersections or reconfigurations? Arts and Humanities integration in inter- and transdisciplinary research
5**	23-24 Sept 2020	Warsaw (online)	IBL PAN	Streamlining Digital Humanities research and infrastructure in the cultural heritage domain
6**	19 Oct 2020	Bilbao (online)	ISINNOVA (University of Deusto)	Artificial Intelligence (AI) challenges and scenarios of collaborative learning, working and living with machines (co- robotics)
*external collaborator in parenthesis			**initially scheduled for Mar-May 2020 in person, in the order Bilbao, Warsaw, Zurich; redesigned as virtual workshops	

Table 1 Workshops overview

In a nutshell:

- Workshop 1 (Dublin) addressed the overarching question of how the Arts and Humanities can play a greater role, as leaders or equal partners, in research focused on societal challenges (mission-oriented research, research informed by the United Nations (UN) Sustainable Development Goals (SDGs) or other socially relevant research challenges).
- Workshop 2 (Edinburgh) took up the challenge of integrating the Environmental Humanities into research addressing the significant environmental challenges facing the world today, focusing on the design and evaluation of funding calls.
- Workshop 3 (Turin) addressed the challenge of education for sustainable urban transitions, in collaboration with the TrUST network based at Politecnico di Torino.
- Workshop 4 (Zurich/online) focused on the challenges of including the Arts and Humanities (AH) in a more meaningful way in inter- and transdisciplinary research and funding initiatives.
- Workshop 5 (Warsaw/online) addressed streamlining inter- and transdisciplinary cooperation between digital humanities researchers and the cultural heritage sector.
- Workshop 6 (Bilbao/online) explored the potential of better AHSS integration for societal challenges associated with Artificial Intelligence (AI) development, to ensure AI for societal good.

The organisers of each workshop produced a workshop report summarising the activities and outcomes of the event. This document compiles these reports, presenting first an executive summary of each highlighting key findings, followed by detailed reports for each workshop. A synthetic analysis of workshop results in light of the SHAPE-ID objectives is carried out in the associated Deliverable D3.3, but two main conclusions are anticipated here, which resonate with the findings of the SHAPE-ID literature review[2] and survey[3] and the recommendations[4] derived from these:

[2] Vienni Baptista, B, Fletcher, I Maryl, M, Wciślik, P, Buchner, A, Lyall, C & Pohl, C. (2020). Final Report on Understandings of Interdisciplinary and Transdisciplinary Research and Factors of Success and Failure. DOI: 10.5281/zenodo.3824839.
[3] Spaapen, J, Vienni Baptista, B, Buchner, A & Pohl, C (2020). Report on Survey among interdisciplinary and transdisciplinary researchers and post-survey interviews with policy stakeholders. DOI: 10.5281/zenodo.3824726.
[4] Vienni Baptista, B, Lyall, C, Ohlmeyer, J, Spaapen, J, Wallace, D & Pohl, C. (2020). Improving pathways to interdisciplinary and transdisciplinary research for the Arts, Humanities and Social Sciences: first lessons from the SHAPE-ID project – Policy Brief. DOI: 10.5281/zenodo.3824953.

Improving AHSS integration and valuing AHSS contributions

The Arts and Humanities have a significant role to play in addressing societal challenges – not only in public engagement roles as is often the case in practice, but in helping to centralise and interrogate values, behaviours, attitudes and culture when defining and framing problems. Critical and historical perspectives can highlight the contingency of current narratives and open up a space in which to imagine alternatives. AHSS perspectives can help navigate the challenging and nuanced cultural issues at stake in the development of new technologies with significant impact on society and individual lives, not only to communicate or encourage adoption but to understand the problems more deeply and with contextual sensitivity. To realise the potential of greater AHSS integration, a number of complementary approaches are needed. On the one hand, capacity building is needed within higher education institutions to increase competence and confidence in researchers to develop IDR/TDR collaborations. On the other hand, fundamental changes are needed in how funding calls are written so that the AH are not treated as a "compensatory presence" in projects otherwise driven by STEMM or Social Sciences perspectives. Funding calls should be written to explicitly include and integrate different disciplinary perspectives and AH experts with demonstrable interdisciplinary expertise should be involved in the peer-review process. Furthermore, different funding instruments – such as seed funding to build capacity and relationships, two-stage application processes to encourage risk-taking, and research infrastructure funding to support larger institutional initiatives – should be deployed as appropriate (and with appropriate increases in programme budgets) to actively encourage greater AH participation.

Long-term commitment to building interdisciplinary and intersectoral relationships

Relationships are key enablers of IDR/TDR. It takes time and trust to build collaborations, yet to achieve real societal change, it is critical to incorporate collaborators from outside of academia and for universities to build better links with policymakers, municipal authorities, citizens' groups, industry, artists and others. Time, resources and changes to education and training are needed to develop these capacities and funders should incentivise the strengthening of partnerships between universities and non-academic stakeholders. The importance of time to build relationships has several implications in terms of processes of change that need to be instituted at different levels, including facilitating informal encounters and exchanges between researchers and between researchers and stakeholders in policy, civil society, industry and other societal actors; long-term commitment to integrating research partners into education and training initiatives; and appropriate research infrastructure and training to enable sharing and reuse of data between different partners and stakeholders (within and beyond academia). Importantly, integration needs to be understood as a process that does not simply begin with the

decision to collaborate on a project proposal or end with the completion of a project. Ongoing commitment (including appropriate resourcing) from higher education institutions, policymakers and funders is needed to build a sustainable culture of interdisciplinary and transdisciplinary research.

2 Workshop overviews

2.1 Dublin Workshop overview

The first SHAPE-ID learning case workshop took place on 2-3 December 2019 at the Trinity Long Room Hub Arts and Humanities Research Institute and addressed the question of how the Arts and Humanities (AH) could position themselves as leaders in research addressing societal challenges. The workshop aimed to identify practical solutions to overcoming barriers to AH integration and consider how the AH community can contribute to addressing societal challenges alongside colleagues in the STEMM disciplines and other stakeholders, in IDR/TDR.

Following three short "scene-setting" presentations to share case studies of AHSS involvement in IDR/TDR, participants engaged in co-design activities to explore the potential of AH disciplines to contribute to or lead IDR/TDR addressing societal challenges; the mindsets and organisational cultures that act as barriers or supports to AH-STEMM integration; pathways to overcoming these obstacles; and how existing or potential "Missions" could be structured to incorporate AH leadership and substantial contributions.

What role can the Arts & Humanities play?

There was widespread acknowledgement of the specific **ways that Arts and Humanities perspectives can contribute** to how societal challenges are addressed in research projects. Most emphatically, it was felt that the emphasis on human-centred values has the potential to reshape how a problem is framed and approached from the outset. In particular, the AH perspective can contribute to redefining what is of value by centralising the human and the societal, thereby helping rebuild trust in fractured societies. This can redefine the direction of research, for instance towards how to *live with* rather than try to *solve* problems that are complex and highly contextual in nature. Furthermore, the historical and critical perspectives of AH researchers can help highlight the contingency of current narratives and values, opening up the potential to actively explore alternatives.

What is needed to improve AH integration?

A number of key insights and recommendations arose from the discussions and activities:

- Valuing disciplines: strong disciplines are the foundation of good interdisciplinary collaboration, ensuring that partners bring deep and unique disciplinary expertise, and that they have the confidence to understand and communicate the value of these contributions. The importance of disciplinary training must be acknowledged and valued.
- Supporting interdisciplinarity: while maintaining an understanding of the importance of disciplines, institutions must also ensure that interdisciplinary researchers (from all disciplines) flourish rather than suffer for pushing boundaries and taking risks.
- Relationships: core to successful interdisciplinary collaboration are mutual respect and trust, which take time to establish. It is essential to factor in the time and space necessary to establish these, both prior to and at the beginning of major collaborative projects. Readiness to approach collaboration as a level playing field is important in overcoming power imbalances and misunderstandings that are common due to disciplinary cultures and a tendency within Universities and government policy to more highly value STEMM disciplines currently.
- Funding instruments: one important means of facilitating relationship building is providing seed funding to develop collaborations, with less risk to funders and researchers. Diversified funding instruments are also needed to support activities from small-scale exploratory projects to large-scale research infrastructure, which can provide the spaces and opportunities for collaboration.
- Leadership, training and education: there is a need for capacity-building to ensure AH researchers have the means to lead and collaborate in interdisciplinary research teams, particularly training about interdisciplinary work, facilitation and the translational activities involved in communicating research across disciplinary boundaries and beyond academia. The AH community need strong, enterprising leadership to enable this.
- Challenge-based research questions: overarching themes and challenges were identified as one good way of bringing researchers and other stakeholders from diverse backgrounds together to work on a common problem.
- Greater Understanding: there is a lack of meta-research on Arts and Humanities research and more work is needed to understand and effectively communicate the value of AH research.
- Other voices: researchers need to develop more open and inclusive structures to engage society. Recommendations included seed funding for building collaborations that include stakeholders from outside of academia, new inclusive fora for developing multi-stakeholder projects and proposals, and the involvement of citizens in aspects of proposal evaluation.
- Reframing policy priorities: decisions on investment and funding need to place societal benefit and not just financial return on investment at their core. The emphasis on innovation should be

counterbalanced with efforts to achieve a more just and equal society and just innovation. The Arts and Humanities should be integrated into the understanding and regulation of digital technologies.

2.2 Edinburgh workshop overview

The second SHAPE-ID Learning Case Workshop, which took place on 20-21 January 2020, was organised and hosted by the University of Edinburgh. The workshop gathered experienced researchers from the AHSS together with funders, policy makers and representatives from other international bodies. By bringing an environmental humanities lens to bear on interdisciplinary collaborations, we hoped to learn more about potential enablers to facilitate AHSS integration in IDR/TDR.

Following three short "scene-setting" presentations to share case studies of AHSS involvement in IDR/TDR, participants engaged in co-design activities discussing the development of interdisciplinary research projects, critiquing funding calls and proposing appropriate peer review criteria.

The language prevalent in call texts was seen as very instrumental, instructive (rather than questioning) and likely to lead to interdisciplinary "tokenism". This approach was interpreted as a lack of trust in researchers where the AH were treated as a "compensatory presence" rather than having a role in defining research agendas.

Three broad areas for improvement were identified:

Writing the call

- How calls are written is critical to promoting the inclusion and integration of different disciplinary perspectives.
- Call texts should use language (including in call titles) that is more inclusive, accessible and jargon free and specifically welcomes diverse ranges of methodological approaches.
- The goal should be co-creation involving an equitable, mixed disciplinary team for design.

Application process

- A two-stage application process involving an initial, blinded outline, followed by an invited full proposal, may encourage more risk-taking.
- Recognition of the interpretive work required in identifying an AH angle on a call and the role played by intermediaries (e.g. National Contact Points and University Research Offices).

Peer review

- Innovative IDR/TDR proposals need suitable evaluators which requires academics to sign up as reviewers and there are currently too few AH academics.
- Peer reviewers and panel chairs for IDR/TDR proposals need to have demonstrable interdisciplinary expertise (not just experience).
- Remote evaluation, rather panel discussion, might strengthen the AH voice.
- A more refined keyword system would guide evaluator selection.

Participants also highlighted:

- The role of national funders in building capacity
- A lack of articulation between national and EU funding
- A need for greater knowledge exchange and media training to enable the AH community to communicate the value of their research domains
- A number of more widespread institutional issues related to the promotion of IDR/TDR that go beyond the European Commission (EC) encouraging greater participation in interdisciplinary funding calls.

2.3 Turin Workshop overview

The SHAPE-ID Learning Case Workshop held in Turin on 17-18 February 2020, co-organised with the TrUST research platform,[5] brought together researchers and experts from academic and non-academic institutions working in the field of **Education for Sustainability** to explore how inter- and transdisciplinary education can support sustainable urban transformations.

Multiple paths and processes for the implementation of inter- and transdisciplinary education, including shaping the vision and long-term goals of universities and developing collaborative exchanges across disciplines, are needed to realise a meaningful transformation on how topics will be taught and developed. **Practical examples** and **best practices** capable of adding value to subjects on an academic course and tangibly enriching students' minds can advantageously support the process of **transforming methodologies** and **programme structures** within educational institutions.

[5] TrUST: Transdisciplinarity for Urban Sustainability Transition is a research project coordinated by Dr Giulia Sonetti that aims at better understanding how to achieve more efficient and effective inter/trans-disciplinary research and education for an urban sustainability transition. It received funding from the Interuniversity Department of Regional & Urban Studies and Planning - Excellence Award at Politecnico di Torino, and the support of more than 70 institutions and organisations working on SDGs implementation.

Inter- and transdisciplinary education is a complex process that requires a deep and wide first-person experimentation to explore and digest its multiple facets. Paradoxically, such unstructured learning experiences need clear and defined **structures** and a **safe space** to manage a process more interactive and dynamic than more traditional teaching methods, demanding a greater preparatory workload, but on the other hand, ensuring better and longer-lasting results.

Workshop participants outlined numerous hindering factors in the implementation of inter- and transdisciplinary education, which can be synthetically categorised as**: financial limits**; limits of time and space; the **organisational structure** of universities; **peer relationships**; cultural aptitude and **students' perspectives**. A concrete, detailed and practical framework for implementing inter- and transdisciplinary projects, together with an evaluation and **monitoring system** able to capture their benefits, could change the parameters behind the allocation of funding and overcome the effects of these hindering factors.

On the other hand, a combination of factors, like **specific competencies**, real cases for analysis and implementation, **personal and structural incentives**, and best practices for dissemination, have to act synergistically to support a sustainable urban transformation. In this learning process, involved actors who were previously dissociated from their own urban spaces, delegating their management to others, begin to feel responsible for and engaged with their own city. **Ensuring citizens' sense of ownership of their cities** is the critical step for achieving a transformation towards sustainability.

2.4 Zurich Online Workshop overview

The Learning Case Workshop organised by ETH Zürich (online, 10-11 September 2020) focused on the challenges of including the Arts and Humanities (AH) in a more meaningful way in interdisciplinary and transdisciplinary research (IDR/TDR) and funding initiatives.

To ensure a diverse group of participants, we worked together with the Network for Transdisciplinary Research (td-net, Swiss Academies of Arts and Sciences), which is the primary Swiss contact point for researchers and funders in the field of inter- and transdisciplinary research and teaching. Twenty-nine participants and nine SHAPE-ID partners shared an online setting. The workshop sought to learn from participants' experiences by identifying necessary transformations (conceptual, institutional, funding, etc.) in practice and policy and to discuss instruments and concrete strategies for AH integration in IDR/TDR and funding.

The workshop opened with an icebreaker session using visual images to prompt discussion about participants' experience in IDR/TDR in their daily work. This was followed by a "scene-setting"

presentation by Prof. Dr Gabriele Bammer (Australian National University). Participants then had the opportunity to explore two of six art-led interventions and tools for knowledge co-production in breakout rooms. Day 2 focused on funding strategies and opportunities to foster more and better AH integration in IDR/TDR. Dr Joël Graf (National Contact Point, Euresearch, Switzerland) presented "Integration of Humanities and the Arts in European R&I Funding: Challenges and Opportunities". After the presentation, Professor Catherine Lyall and Dr Isabel Fletcher, SHAPE-ID partners from the University of Edinburgh, facilitated a co-design session to learn from participants what might be useful features of the SHAPE-ID toolkit now being developed.

To conclude, we summarise three main insights extracted from the workshop discussions. These constitute necessary transformations (conceptual, institutional, funding, etc.) in practice and policy and concrete strategies for AH integration in IDR/TDR and funding:

- The need to reverse in research and funding how we look at IDR/TDR and to reflect on the relevance of informal encounters and resources we bring to a collaboration.
- The demand to understand integration as a process that might not be complete, what integration entails and how we can recognise "good-enough-integration".
- The need to include a critical assessment of projects and their underlying assumptions and values in evaluation processes. This would require "unboxing" the technical jargon in some cases, to explain plainly and as transparently as possible the methods and outputs of the project.

2.5 Warsaw Online Workshop overview

The "Warsaw" virtual workshop, organised by the Institute of Literary Research at the Polish Academy of Sciences (IBL PAN), took place online on 24-25 September and was dedicated to streamlining the inter- and transdisciplinary cooperation between digital humanities (DH) research and the cultural heritage (CH) sector. The workshop participants came from 11 European countries, representing different backgrounds: humanities researchers, cultural heritage professionals, heads of research infrastructures, as well as funders and policy makers. They focused on what could be done to enable such a collaboration by addressing the persistent obstacles for the uptake of interdisciplinary, digital humanities approaches in the cultural heritage domain on both institutional and practical levels, as well as by prototyping solutions to these obstacles, including the policy measures that could be undertaken to achieve better integration of DH into both humanities scholarship and CH projects.

After four contextualising presentations on Day 1, participants were divided into four breakout groups in which they were asked to map the main obstacles for DH/CH cooperation (institutional, funding,

policy, other), providing examples. During the plenary session rapporteurs from groups shared insights and defined the main challenges. This was followed by an evening excersise dedicated to an interdisciplinary project ("Atlas of Holocaust Literature"). Day 2 began with a plenary co-design session, summing-up the challenges identified on Day 1 into four problem areas, and brainstorming on a broad range of remedies. Next, four breakout groups were formed corresponding to the challenges. The groups were tasked with prototyping a concrete solution (e.g. policy measure, funding call). During the wrap-up session rapporteurs presented the prototypes discussed by the groups.

The main challenges were defined along with a goal-oriented statements designed to tackle them:

- Copyright, permissions, standards and ownership

  How might the EU ensure full technical integration around FAIR principles, so that the data is mutually re-usable between CH/DH domains?

- Funding and sustainability

  How might we facilitate better networking between CH and DH domains to make the interdisciplinarity of the two domains more visible to funders and policymakers and to improve the accessibility of cooperative funding?

  How might we enable long-term collaboration with different actors (beyond one project) to improve the sustainability of the outcomes of CH/DH cooperation?

- Diverse research cultures on disciplinary, national and European levels

  How might we build more trust around data sharing between DH researchers and small or local CH institutions (CHIs)?

  How might we instigate curricular reform to assure teaching digital humanities skills in humanities curricula?

  How might we build strong interdiscipilnary or intersectoral consortia, bringing the right institutions together and fostering cooperative relationships between researchers and CH professionals opening new, two-way modes of cooperation?

- Evaluation and quality assessment

  How might we ensure cultural outreach, public engagement and societal impact recognition in researcher evaluation systems?

Some aspects of those challenges were addressed by **prototyped solutions:**

Copyright reform with regards to Text & Data Mining

The prototype concentrates on the activities that should be undertaken in order to allow unrestricted research reuse of existing cultural resources for text & data mining (TDM). The goal of the prototype is to make specific institutions aware of the problem and encourage them to change their policies on the basis of the prepared recommendations.

Innovative funding scheme for upcycling deposited project data

The prototype envisions an innovative funding scheme for upcycling (preservation and reuse) of deposited project data. To remedy the lack of reuse of CH/DH data, mechanisms must be put in place that foster interdisciplinary collaboration based on data that we already have, around post-project data curation and exploitation (rather than only archiving).

Shared understanding of research cultures

The main purpose of the prototype is to minimise the barriers between different research cultures. The idea is to promote the value of inter- and transdisciplinary collaboration between Cultural Heritage Intitutions (CHIs) and humanities researchers throughout the whole career lifecycle (From Bachelor's to Post-Doctoral Level), in order to create a robust disposition towards collaboration with CHIs among future researchers.

Evaluation framework

The prototype tackling challenges in the academic reward systems concentrates on assessing the careers of individuals involved in working with data in order to ensure that data experts are adequately evaluated and valorised. The focus is on the evaluation procedures in Europe which are slow in crediting and incentivising digital, data-rich research outcomes as valuable academic outputs.

2.6 Bilbao Online Workshop overview

The final SHAPE-ID **Learning Case Workshop** was co-organised with the University of Deusto in Bilbao (Basque Country, Spain) and took place on 19 October 2020. The workshop was originally planned to take place in person in Bilbao on 23-24 March 2020 but was postponed due to the COVID-19 pandemic. In adapting the workshop to an online format, efforts were made to maintain the ambitions and intention that the host and participants have planned for the original event.

The focus of the workshop was the societal challenges associated with Artificial Intelligence (AI)

development. The aim was to discuss through an interdisciplinary approach the most urgent practical recommendations but also highlight the need for a more thorough cultural change encouraging greater AHSS participation in the innovative process of developing AI technologies.

Following three short scene-setting presentations to provide a common ground for discussion, participants were engaged in co-design activities reflecting on the development of two Horizon 2020 flagship projects and one proposal, in which the University of Deusto actively participates with different stakeholders: (1) ATELIER – citizen-driven smart cities; (2) BD4QoL – Big Data Models and Intelligent tools for Quality of Life monitoring and participatory empowerment of head and neck cancer survivors; (3) TAILOR_EU - Trustworthy Artificial Intelligence in European Law Enforcement. Three main conclusions emerged from discussing these projects:

1) Information and Communications Technologies (ICT) and AI tools can be used not only to track social behaviours with big data applications, but also to collect public feelings, sentiments and opinions about common concerns, evaluate the impacts of policy decisions etc. Moreover, these tools can help to scale up citizen participation and inclusion of their oversight in decision-making processes , but this requires time, the users' willingness to use new technologies and raising their awareness of the more complex environment and challenges. These requirements can be addressed by explicitly including Arts, Humanities and Social Sciences (AHSS) perspectives in technological development.

2) The AHSS are essential to communicate effectively, raise awareness and build confidence, for instance in the development of medical products that require a wide trial before being approved. In this sector, progress in clinical practice benefits not only from the scientific testing of the effectiveness of new therapies, but also from the inclusion in the analysis of idiosyncratic aspects that affect personal responses to the therapies. This is exactly the area where especially Art and Humanities are essential to learn from personal experiences and expression.

3) AHSS disciplines, which centralise the human perspective, can interrogate and explain the collective and social benefits of using AI without hiding particular interests and biases and generating a scientific culture and acceptability among users. Nevertheless, the cost of these social and cultural processes could be too high to be included in the development of some technological solutions.

In conclusion, although AI and algorithms are a standard technology applied universally, outcomes of AI projects strongly depend on the organisational and social context in which the technology is being applied. AHSS are crucial for understanding the different cultural perspectives and evaluating the impact

of the technology on the users and the society at large. In this process, there are often different conflicting interests to consider. Still, it is the way human relations are handled that determines the building of a trusting relationship – an essential element for the adoption of any technology.

3 Detailed workshop reports

3.1 Dublin Workshop: Arts and Humanities to address societal challenges

Workshop Objectives and Activities

The opening workshop in Dublin addressed the question of how the Arts and Humanities could position themselves as leaders in research addressing societal challenges. The workshop aimed to identify practical solutions to overcoming barriers to Arts and Humanities (AH) integration and consider how the AH community can contribute to addressing societal challenges alongside STEMM colleagues and other stakeholders, in inter- and transdisciplinary research (IDR/TDR).

Following three short "scene-setting" presentations to share case studies of AHSS involvement in IDR/TDR, participants joined group discussions in a World Café format to explore the potential of AH disciplines to contribute to or lead IDR/TDR addressing societal challenges; the mindsets and organisational cultures that act as barriers or supports to AH-STEMM integration; and pathways to overcoming these obstacles. On Day 2 they engaged in co-design activities to explore how existing or potential "Missions" could be structured to incorporate AH leadership and substantial contributions.

Scene-setting presentations

Dr Susan Flavin

Dr Susan Flavin (TCD) presented on her ERC-funded project FoodCult, which takes a truly interdisciplinary approach to diet in early modern Ireland, with collaborators from history, archaeology, bioarchaeology/organic geochemistry and information technology, as well as artisans and filmmakers. The range of disciplines allows for a multiscale integrated analysis of diet. Each individual approach has its limitations in working with the historical evidence but through their overlaps a fuller picture can be achieved. The possibilities engendered by the collaboration are exciting in advancing the field and pushing the boundaries of historical method.

Dr Flavin spoke of remarkable meetings with real lightbulb moments as the team worked to find new ways of communicating across the different languages they were accustomed to speaking. She also noted that publishing interdisciplinary research was an ongoing challenge.

Professor Barry C Smith

Professor Barry C Smith (Institute of Philosophy, School of Advanced Study, University of London) shared insights into the scope, potential and challenges of interdisciplinary collaboration between the Arts and Humanities and Sciences, drawing on his experience as founding director of the Centre for the Study of the Senses, which pioneers collaborative research between philosophers, psychologists and neuroscientists, and as the Arts and Humanities Research Council's Leadership Fellow for the Science in Culture Theme. Professor Smiths' key insights on interdisciplinary collaboration included:

- A strong disciplinary base is essential for successful collaboration, to ensure partners have real expertise to bring;
- Collaboration must be bidirectional and reciprocal, with benefits for all contributing disciplines;
- Good interdisciplinary collaboration can speed up innovation, create new research questions and can potentially transform the contributing disciplines;
- Building the foundations for effective interdisciplinary collaboration takes time.

Professor Smith spoke of the potential for mutual learning between AH and STEMM disciplines with examples of the neurosciences and medicine interested in locating human experience within the sciences, looking at modes of reflection, cooperation and tools that feed medical practice. On the other side, AH disciplines are learning from the sciences to better understand the underpinnings of AH, opening up to new techniques and tools for AH objects of study, e.g. the nature of music or the embodied experience of seeing rooted in the brain.

Professor Smith argued that all disciplines can share a common interdisciplinary cause in addressing the major challenge of what it means to be human in the age of Artificial Intelligence, genetics and climate change.

Dr Marcus Collier

Dr Marcus Collier (TCD) discussed the challenges of working with multiple actors from outside of academia in his transdisciplinary Horizon 2020 research project Connecting Nature, which is working with city authorities to develop, implement and measure the impact of nature-based solutions in urban settings across Europe and beyond. The concept of nature-based solutions already undermines a long history of separation of nature and cities, looking at how nature can be seen as a form of technology, used to foster better relationships and address problems of urban living. Examples of nature-based

solutions include the use of street trees, parks and urban green areas to provide a range of natural benefits such as intercepting dust, toxins and noise, sheltering and cooling property, sinking carbon and buffering flooding. They also provide spaces for recreation, fostering well-being, and a host of other social benefits. Social, cultural and environmental benefits are thus inextricably linked. Connecting Nature partners are only 30% academic, with significant involvement from city authorities, urban community groups and SMEs in developing, piloting and measuring the impact of such solutions.

Dr Kavita Sivaramakrishnan

Dr Kavita Sivaramakrishnan (Columbia University) presented a compelling case for humanities leadership in understanding and addressing the challenges of global ageing from a contextual, political, cultural and ethical perspective. The current global lifespan shift is unprecedented, with transformations in mortality rates and the rates of chronic disease creating very new life courses in a highly compressed way, particularly across Asia and Africa. Researchers from Social Sciences disciplines such as demography, sociology and psychology already collaborate with biomedical sciences and are able to ask longitudinal questions and provide theories for societal medical and scientific shifts. However, contextual knowledge is lacking.

Considering the place of contextual knowledge and the potential role of the contextual disciplines, Dr Sivaramakrishnan argued that comparisons across contexts, identities and cultures is an essential part of a new life course perspective that views age and youth on a continuum. AH perspectives are also valuable in the translational activities needed to bridge the gap between the UN Sustainable Development Goals and how policy is made at a local level. Furthermore, the challenges of global ageing are not distinct from environmental problems and Dr Sivaramakrishnan proposed that overlapping research networks are needed to address these complex societal challenges with multiple intersecting causes.

Dr Jennifer Edmond

Dr Jennifer Edmond (TCD) discussed the transformative experience of leading the Horizon 2020 KPLEX project, an ICT-programme "sister project" intended to inform future research and policy in ICT. KPLEX brought together researchers in literature and historical data, anthropology, research data archives and language technology services to bring a social sciences and humanities perspectives to "big data". One of the key challenges this interdisciplinary project tackled was overcoming language barriers, working towards a shared understanding of "data". As a sister project, the AH disciplines were unusually at the

forefront of an ICT-related project rather than in the back seat. Dr Edmond highlighted a number of key factors for success in interdisciplinary research projects:

- the importance of dialogue and mutual respect;
- the need for facilitators and integrators to enable the translational work between disciplines;
- the value of reversing the usual hierarchies whereby the AH play tokenistic or service roles in ICT projects;
- the value of reciprocity;
- the importance of co-developing research questions;
- the need to be open to the unexpected;
- how rewarding interdisciplinary work can be.

Discussion

Discussion following the presentations focused on two key areas:

Disciplines and Collaboration

- **Strong disciplines are an important foundation:** Researchers need to be able to add value in a collaborative context and the best IDR projects are when people with strong expertise in different disciplines come together.
- **Time to develop collaborations:** It can be risky for researchers to step out of their comfort zones. The temptation is to dedicate time where success is more likely and researchers need to satisfy their own disciplines first. A good deal of time is needed to bring experts together to circle the field, discuss and explore potential. Interdisciplinary collaboration is a process passing through the "4 C's": contact, confusion, conflict and finally collaboration (Barry Smith). Successful large-scale research projects often have a long run-in time, with collaboration taking place long before the funding application. Lack of shared goals and understandings, and breaking into silos, can lead to failure. To address this, in the UK the Arts and Humanities Research Council (AHRC) often requires teams present together as part of the evaluation process for large-scale grants, to ensure they really work as a team.
- **Level playing field:** Creating a level playing field is a challenge as there is often a hierarchy between disciplines. Researchers need to be humble and able to leave ego at the door.
- **Collaborative research questions:** These need to be clear and discrete, with one problem and multiple possible ways to address it necessitating different expertise.

Bridging Research and Policy

Some discussion took place around the challenge of bridging the gap between research and policy, focusing on the following issues:

- **Time Frames:** Policy and funding cycles are typically quite short whereas collaboration takes time to develop. Research and policy also involve and require different levels of depth.
- **Scale and Context:** Context is an important aspect in how policies set at a global level (e.g. UN SDGs) are translated or interpreted locally, as local policy makers set local budget lines and implementation. The ability of the AH to approach context in a deep and nuanced way and develop contextual knowledge suggests an important role for the AH in policymaking, at both global and local levels.
    - **Example 1:** The Connecting Nature project has worked with city authorities with very different budget constraints and politics and engaged in a co-creation process to bridge gaps meaningfully. One mechanism involved using painting to successfully bring policymakers together and was developed by a partner who is a poet.
    - **Example 2:** Following on from the KPLEX project, the Principal Investigator (PI) is looking at developing a "humanities canvas" that could provide a model for taking an AH approach to any question or problem addressed in collaborative work, e.g. looking at discourse, representation, historical events, the everyday, etc.
- **Foresight:** It was observed that foresight exercises take place in the sciences but seldom in AH. Predictive or forecasting sciences are the focus and AH has a role to play here because of a better ability to understand the present. The idea of a "predictive humanities" was proposed and was recommended as a change in how AH researchers are educated, improving their understanding of the transferability of their skills and opening up to a responsible relationship to the world.

World Café

Round 1: the potential for the Arts and Humanities to contribute

Researchers discussed the question of how the AH can or should contribute to research addressing societal challenges, arriving at recommendations focused on the following areas:

Redefining research problems to centralise the human dimension

- **Centralising human experience:** In AH disciplines human experience is at the heart of methods and mechanisms of knowledge production. The AH can therefore centralise human experiences in contextualising and framing problems and projects, instead of their being led by the search for technological solutions.
- **Redefining what is of value:** AH perspectives understand value not just in terms of what is measurable but take emotion, ethics and societal and individual values into account. By centralising issues that really matter to people, we have the potential to create powerful relatable narratives. This has the potential to build trust in fractured societies. E.g. Environmental humanities: narratives of the Anthropocene demonstrate the interconnectedness of the social and environmental.
- **Problem-framing:** an AH perspective should be involved in problem-framing to help understand and approach the problem in context and in human terms. This has the potential to bridge the gap between academic scholarship and society. The AH also have potential to contribute in the area of foresight.
- **Beyond "problem-solving":** AH perspectives have the potential to redefine the direction of research, for instance towards how to *live with*, rather than *solve*, problems. E.g. how to live with dementia. Another example is the concept of the "syndemic" as a broader understanding of crises in terms of multiple and intersecting causes. In the context of innovation and creativity, there is the potential to reclaim the concept of innovation by helping define what creativity is in the age of machine learning and Artificial Intelligence.
- **Connecting to wider societal concerns:** by defining problems in terms that are relevant to people, the AH can build stronger connections between research and society, including involving non-academics in research to participate creatively (co-creation).
- **Some examples of the potential of AH contributions**:
    - Showing the richness and discovery of later life that co-exists with vulnerability. E.g. scientific research underpinning a theatre piece about singing in choirs and what people get out of participating in these activities.
    - Developing inter-cultural dialogues as an alternative to technocratic responses to contemporary migration crises.

Putting the human at the centre of technological development

- **Human interactions in technological development:** AH perspectives centralising human experience can contribute to defining the design and future of technology with real human and societal value.

The Long View: historical memory and reflection

- **Reflectivity and the long view:** AH disciplines are by nature reflective and can contribute a longer-term view that is not simply focused on current problems, technological solutions or current funding cycles. This can help counter the short-term time frames and thinking of some applied technological/scientific research.
- **Learning from the past:** We can learn from the past, particularly the failures of the past, from the deep perspectives of disciplines such as archaeology and history. Historical memory is directly relevant to many societal problems in the world today.
- **Critical perspectives and contingency:** Understanding the past provides a critical perspective from which we can understand the cultural contingency of prevalent narratives (hence the possibility of doing or thinking otherwise).

Beyond the "two cultures": realising the potential of Arts and Humanities integration

AHSS and STEMM: Similarities, Differences and Disparities

- Some participants noted that the framing question (around AH leadership) implies a structural division between AHSS and STEMM, which we should not reinforce. In fact, both STEMM and AHSS disciplines try to prove, create and calculate things, but in different ways and with different tools. We should not think of competition between AHSS and STEMM disciplines to lead research.
- We need to acknowledge that within AHSS, as in STEMM disciplines, some research lends itself to applications and other research is basic research and not intended for or suited to application. This should be respected.
- We also need to acknowledge that AH disciplines are not exclusive in producing human-centred knowledge. Many modes of knowledge production do this and the division may not be helpful.
- Various views were expressed around how well AH and STEMM researchers understand one another. Some had experience of AH researchers knowing very little about science compared to how much scientists knew about AH. Others said that arts practitioners are very interested in science. It was suggested that climate change and popular science may be leading to a growth in

interest and knowledge. Within academia, cultural differences persist. For example, AH researchers find the hierarchies of science workplaces difficult to understand.

- The logic of academic research can exclude those (such as artists) whose research follows different logics. We should try to connect with other ways of knowing. Knowledge production outside of academia, such as in museums, can be ignored or side-lined when the focus is on academic disciplines in interdisciplinary collaboration. A broader concept of research should accommodate research taking place outside of universities.
- AH researchers (particularly artists) are not already embedded in policy contexts in the way that STEMM researchers more often are and there is a sense that their knowledge is not respected. It is necessary to fight to be taken seriously by policymakers.

Leadership, Collaboration and Capacity Building

- The issue of whether confidence or competence is an obstacle to AH leading interdisciplinary research was raised. Capacity building was widely acknowledged as necessary to realising the potential for the AH to take on more leadership roles. AH researchers must be proactive in exercising leadership and developing research projects.
- The following questions were raised: To what extent does an AH "community" actually exist in an integrated form? How do they see themselves? Who leads this community?
- Other participants argued that it is not necessary to speak of leading, but rather of being part of a team, with meaningful collaboration. The language of "integration" emphasises this potential for constructive contribution.
- There is a need for education and training about interdisciplinarity and a shared understanding of collaboration.

Communication

- How well do we communicate what research does? Making people aware of what research has led to is critical and more stories about the impact of AH research are needed.
- Translational research: there is an assumption that perhaps AH researchers are better at communication but we often struggle to explain what it is we do. Forming an identity to communicate the value of the AH is important.
- Interdisciplinary researchers may be best positioned to undertake this translational work as they already need to understand different languages. Researchers occupying boundaries are accustomed to needing to communicate across these boundaries.

Round 2: Enablers, Obstacles and Practical Steps

Relationships as main enablers

One of the most commonly mentioned factors enabling successful collaboration across disciplines was interpersonal relationships and the time and effort needed to build trusting, respectful relationships. The following issues arose from the discussion:

- **Respect:** This means not just understanding one another's work but valuing and accepting it, ideally moving towards genuine mutual enthusiasm. Positive attitudes such as an inclusive mentality, openness and curiosity were listed as important here. Respect needs to be shown to other disciplines and other stakeholders outside of academia. Courage was also mentioned, as it is necessary to leave ego at the door, step out of your comfort zone and ask questions about what you don't know. Respect is needed to overcome some of the obstacles raised by disciplinary cultural differences and power imbalances (discussed below).
- **Building Trust:** Building trust is essential to effective collaboration and involves working together to define a question, arrive at a common purpose, identify shared values and develop common vocabularies. It is important to acknowledge the hidden work that goes into this trust-building.
- **Time and Spaces:** Time is needed to build trust and time should be made available where possible even before a project begins. Spaces also need to be available for conversations to happen, with opportunities for collaborators to meet in person. Both are necessary to arrive at a deeper understanding of each other's perspectives and overcome barriers to understanding.
- **Leadership:** This was noted as an essential factor in bringing people together. The Arts and Humanities need enterprising leadership, people who understand the strengths of AH disciplines and build partnerships. In an example provided, a culture of belief in one Institute of Advanced Studies stemmed originally from one senior STEMM researcher who took a lead in fostering this culture. Leadership for AH also requires taking the initiative and engaging with policymakers and others who set the agenda. Researchers need to become involved in defining policy, understanding how evaluation happens, etc.

Relationships were discussed in the context of enabling collaboration and overcoming obstacles presented by disciplinary cultures, embedded bias and power disparities between partners.

Disciplinary Cultures, Bias and Power as main obstacles

The importance of strong disciplines was emphasised, but for the most part differences between disciplinary cultures were discussed as obstacles to collaboration, leading to embedded assumptions and bias and frequently reflecting disparities in esteem between STEMM and AHSS disciplines.

- **Strengths of Disciplinary Culture:** Strong disciplines and strong "fences" between disciplines are important in allowing what is unique and valuable about each discipline to develop and this must continue to be supported. This leads to researchers with distinct expertise who are better placed to bring something of value to a collaboration. Co-creation necessitates that researchers can lead with their own expertise. For example, AHSS researchers can speak to how they can contribute to the specific challenge of Alzheimer's and work collaboratively.
- **Differences in Disciplinary Cultures:** Differences in how disciplines see trajectories and outputs for research, as well as their respective time scales to achieving results, costs of research and different cultures of collaboration, can create obstacles to mutual understanding. For example, STEMM research is often costlier than AHSS research and the value of a given sum of money is therefore experienced as less than it would be in AHSS disciplines. Collaboration is also a more established part of STEMM cultures compared to AHSS.
- **Identification with Disciplines:** Researchers can often identify personally with their disciplines and this can obstruct meaningful collaboration if it results in defensive attitudes and a narrow focus on academia.
- **Power Imbalances:** Rather than pretending that power asymmetries do not exist between STEMM and AHSS disciplines in a collaboration, we need to acknowledge where they do exist and work to overcome them. The systems of reward and incentives for interdisciplinary research are often unequal. Within academia, suggestions to address this balance included diversifying the voices that are heard in relation to a given issue and avoiding tokenism in collaboration with AHSS researchers. The problem of power extends beyond academia. For example, a patient rarely has the same power as a medical professional. Some funders and charities have addressed this well, looking at Public and Patient Voices (PPV).
- **Embedded Bias:** Creative thinking and skills are misunderstood and not valued in policy and institutional thinking. There was a suggestion that unconscious bias towards "soft" disciplines is connected to gendered thinking.
- **Disparity of Esteem:** There is a problem of "epistemic injustice" whereby STEMM disciplines tend to be valued more highly in the current system. STEMM research costs more and brings in more

research funding. They are also far better embedded in industry. Universities adopt STEMM as the reference point for measuring performance, with AHSS researchers expected to adopt this model to be valued. Further, government policy often values STEMM disciplines more highly. For example, in Ireland there is a major policy focus on STEMM research, even though the main ERC successes were in the AHSS (a core strength of the Irish and UK academic systems). It was also suggested that AH researchers are more often encouraged to seek collaboration with STEMM researchers than the other way around.

Careers, Education and Training

A number of obstacles and challenges were identified in relation to researcher career structures and institutional structures providing researcher education and training.

- **Career Risks for Early Career Researchers:** Although it might be expected that younger researchers would be more open to engaging in IDR/TDR, in practice it is often considered risky to their career paths. It was noted that it is often more senior academics who take on IDR/TDR as they are seeking a challenge. It is important to foster a culture within universities whereby collaborators will flourish and not suffer from taking these risks and stepping out of their comfort zones. A number of steps were suggested to improve reward structures for younger academics crossing disciplinary boundaries, including joint appointments within Universities (between Schools/Departments/ Faculties) and between universities and other institutions.
- **Educational Silos:** The potential for IDR/TDR is hampered by the narrow disciplinary base of much undergraduate and school education. The long-term trend has been towards ever deeper specialisation. It was suggested that a broader cultural change in education is necessary to avoid the formation of silos, starting even with second level education. Broad teaching and pedagogy at undergraduate level was recommended to foster understanding across disciplines.
- **Training:** There is often little opportunity to develop leadership skills in the AH disciplines and training was recommended to foster leadership development. Training was also recommended in facilitation skills, to enable interdisciplinary conversations.

Practical Steps: Funding, Infrastructure and Supports

A number of topics around funding and infrastructural supports were raised:

- **Diversified Funding Instruments:** In general, it was recommended that a range of funding instruments should be used to fund IDR/TDR projects to create more diverse opportunities, including support for both bottom-up and top-down initiatives. Funding instruments should take

into account the need for relationships to develop and trust to be built for successful ID/TD collaboration to take place.

- **Seed Funding:** The need for seed funding came up in a number of discussions. It was recommended as necessary for kick-starting collaborations on smaller initiatives or challenges. The importance of travel for developing collaborations should be considered.
- **Funding for IDR Infrastructures:** This was recommended in order to create crucibles for new research as it addresses the importance of having physical infrastructure in place to facilitate new conversations and collaborations across disciplines (e.g. Durham Institute for Advanced Studies).
- **The Impact of Funding:** Funding instruments not only facilitate research but have an impact on perceptions. The ERC was mentioned as a success story in introducing parity between AHSS and STEMM disciplines through a demand-driven budget. On the other end of the spectrum, it was suggested that efforts to integrate "SSH" in collaborative projects in H2020 LEIT and Societal Challenges Work Programmes has led to superficial and tokenistic integration in order to tick the box of involving AHSS.
- **Application Procedures:** One-size-fits-all application procedures and templates can create barriers to some applicants, e.g. applicants from the creative arts, discouraging participation even where calls seek to encourage it.
- **Institutional Supports:** It was suggested that Research Performing Organisations should develop and implement rules and policies on the basis of best practice to support IDR/TDR, including revising hiring practices to support joint appointments (as discussed above). Support for grantsmanship was also mentioned as an enabling factor within institutions.
- **Theme-based and Challenged-based Research:** Theme-based and challenge-based research questions were mentioned as an important enabling factor for IDR/TDR, allowing researchers to work together on an important challenge. An example of the Global Brain Health Initiative (TCD) shows how success can be achieved by bringing new expertise to bear on the challenge of global ageing, rather than focusing on individual careers.

Practical Steps: Better Understanding and Communication

More generally, it was acknowledged that there is no single solution and much more work remains to be done to translate the recognised potential of AH into concrete practical steps. To support this work, a number of recommendations were made:

- **More meta-research:** There is a lack of meta-research on AH research, which can make it difficult to properly situate AH research in relation to STEMM research. It was suggested that more such

research is needed (the equivalent of more Science and Technology Studies research directed to AH research).

- **Recognising Hidden Work:** It is important to better understand, acknowledge and foreground the opportunities and challenges involved in doing IDR/TDR and to recognise the often-hidden work involved in making collaborative research work.
- **Communicating Value:** The AH community needs to be able to identify areas where problems cannot be solved by technical, economic or political measures, demonstrating how AH inputs may be crucial, e.g. intercultural dialogue through literature and the Arts. AH researchers also need to be confident in communicating the value and potential of their contributions to researchers in other disciplines for the purposes of collaboration.

Mission-Oriented Research Co-Design Activity

On Day 2 of the workshop, participants engaged in a co-design activity around mission-oriented research and innovation. Following a contextualising presentation from **Doris Alexander** (TCD) on Mission-Oriented Research and Innovation in the European funding framework context, participants joined breakout groups to design missions around the following challenges: climate change, healthy ageing and crises of democracy. Using a poster template adapted from the Mazzucato report on mission-oriented research and development,[6] groups were asked to design a portfolio of projects and initiatives responding to an identified mission, as well as the relevant stakeholders, structures and resources. At the beginning of the exercise, groups were asked to consider what addressing the challenge would look like both without and with substantial AH involvement. At the end of the exercise, they were asked to highlight three key recommendations that could advance progress in the area of their proposed missions. The completed posters are reproduced below along with an account of each group's output.

[6]Mazzucato, M. (2018) Mission-Oriented Research & Innovation in the European Union: A problem-solving approach to fuel innovation-led growth. Available at https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf

Climate Change

Addressing the Challenge With & Without AH integration

Several key ideas arose from the discussion of what addressing the "Climate Change" challenge could look like with or without the involvement of AH perspectives:

- **Redefining Values:** Without AH integration, we keep solving problems with market-based solutions, instead of being driven by citizens' concerns. For example, modelling forecasting is a 100% market-based mechanism (incorporating tech, credits divestment). AH can challenge this productivity framework in a fundamental way because of their practice of reflective and critical thought. Rethinking value can raise issues such as climate justice and can question what is of value.
- **The Importance of Narrative:** Behaviour change and adaptability are important. Storytelling and narratives can help make the topic personal so that diverse groups of citizens believe they have more channels of participation rather than solutions being forced on them. AH can connect beyond scientific facts through storytelling and can support mainstreaming through popular culture.
- **The Importance of Language:** AH integration can better influence the language we use to describe it (e.g. crisis rather than change) and also support a more rounded understanding of a subject, critical self-reflection and a social justice dimension.
- **Critical Analysis:** AH methodologies for monitoring projects using SDGs indicators, e.g. critical analysis, discourse analysis, designing a methodology around collective narratives.
- **Bringing a Historical Perspective:** By looking into the past, we can potentially find hope and useful lessons for overcoming the current crises. To assess the current situation, we have to understand why it happened and the long-term causes of activities.

Defining a Mission

Similar points arose during the discussion of how to formulate a mission:

- **Narrative:** It was proposed to start with a back-casting narrative (work backwards from a story about a desirable future) and identify a way to mobilise citizens. AH can also frame this mission as an urgent problem needing immediate action.
- **Evaluation:** This mission is linked to *SDG 13.2: Integrate climate change measures into national policies, strategies and planning*. AH can contribute to qualitative analysis of SDG indicators

- **Critique:** A critical perspective was brought to bear on the question. A truly sustainable city is not only net zero energy but must be more broadly livable. The idea of a net zero energy city is connected to economic growth, but there are other pathways to achieving this mission, such as degrowth, reducing the speed of human societies' growth. Critical and pessimistic perspectives should be included as valid approaches within a portfolio of projects.
- **Education:** AH was considered important for education, raising awareness and translating SDG broad goals into policies and practices. SDG indicators need to be adapted to local contexts for individual cities. AH contribution to education can ensure climate justice is considered.

Key Recommendations

1) **Embedding a broadened approach to thinking that includes AH in education at all levels.** More informal learning, soft skills, thinking about narrative. Horizon Europe programme linking with Erasmus programme and synergies should be developed.
2) **Structuring the political agenda for inclusivity.** Striving for a just society and greater equality must underpin efforts to combat climate change.
3) **Requirement for investments and funding.** Decisions are currently made on the basis of financial return on investment (ROI). We need to work towards societal ROI, societal benefit and innovation justice, not just innovation.

CHALLENGE

Climate Change

MISSION

Net Zero Greenhouse Emissions

within just cities by 2030

STAKEHOLDERS

- Private sectors
- Policymakers
- Citizens
- Universities
- NGOs

STRUCTURES & RESOURCES

- Funding and investments
- Communication and information
- Leadership
- Capacity building
- Transformative governance
- Democratic process
- Policy
- Education
- Governance

PROJECTS

Narratives (Storytelling)

Research projects that investigate how decision are taken

A qualitative study the SDG indicators

Investigation of values

Examining the pessimistic perspective and critical analysis

Healthy Ageing

Addressing the Challenge With & Without AH integration

It was acknowledged that much is being and can be achieved on the medical front without AH involvement from the point of view of treatments and curative interventions on a physical level. However, the biomedical view can pathologise ageing, missing much that is important to the experience of ageing. The added value of AH integration was outlined on a number of fronts:

Understanding ageing: AH researchers can position current attitudes to ageing in a historical and philosophical context, looking at the history of ageing and how it has changed. This can help recognise prejudices and preconceptions about ageing.

Meaning and value in ageing: AH perspectives can reframe the discussion to incorporate questions of value and what it means to live a fulfilling life as we age (not just to live longer). This can capture the positive aspects of ageing through cultural works that have explored the deeper meaning of older age and values such as wisdom, dignity and aesthetic experience. AH can contribute to countering stigma and focusing on the quality and richness of lived experience. It was noted that the value of culture (e.g. the creative and performing arts) is better understood than the value of AH scholarship. AH research can capture narratives and paint a fuller picture of human experience that includes social and spiritual aspects of ageing.

Non-medical challenges of ageing: AH can provide perspectives that contribute to interventions that can help with non-medical aspects of ageing such as loneliness and isolation. These social aspects are contextual and non-Western attitudes and practices of medicine need to be considered. For example, older people in China may go to healers rather than doctors because the healer spends time with them. Better access to people, information and other forms of social connectedness are critical even when someone is free from sickness or pain.

Addressing inequality: There is a risk that biomedical solutions may exacerbate social inequality by developing solutions that already privileged groups will benefit most from. AH can ensure questions about equitable access are central to the discussion in developing new treatments or technologies. Social and ethical perspectives highlight inequalities around physical manipulations and interactions.

Public inclusion in research: There are also issues of inequality of knowledge and framing. More inclusion and involvement of citizens and other groups across communities, ages, social classes, cultures, etc. is needed to involve society beyond the university.

Defining a Mission

The mission articulated for this challenge was: "**define what it means to be 'well' in older life**". The following points were identified as important to exploring this:

- Aim to recalibrate, reappraise or re-evaluate the importance of **quality of life** in older age.
- Consider the **role of arts and culture** in healthy ageing.
- **Develop strategies for wellness** which investigate multiple ways to deliver this. The challenge should be opened up to allow solutions coming from a **plurality of perspectives**.

Key Recommendations

1) Programme funding that includes smaller seed grants to build capacity and encourages new partners from AH and outside of academia into collaboration.
2) We need new fora for developing multi-partner proposals including citizens (new forms of decision making (citizens' assemblies etc.)).
3) Involve citizens in the evaluation of proposals.

CHALLENGE

Healthy Ageing

MISSION

Define what it means to be "well" in older life

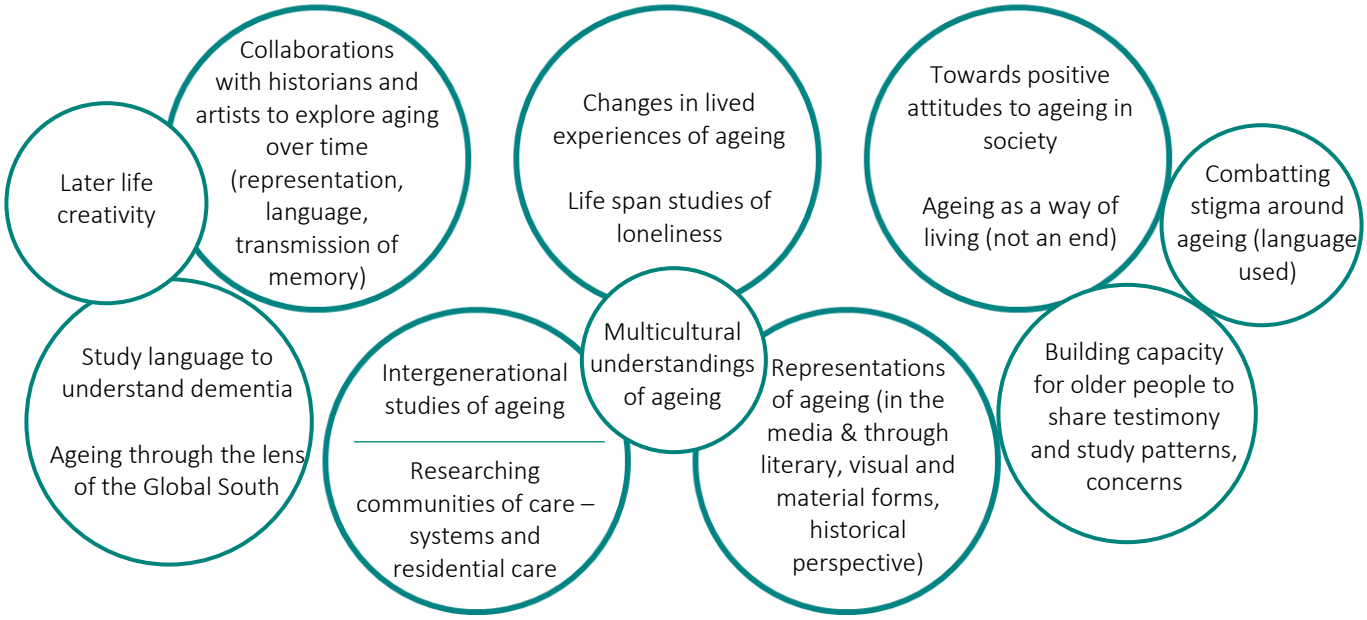
STAKEHOLDERS

- AHSS and STEMM scholars
- AHSS umbrella organisations to analyse critical mass in scholarship
- Public knowledge
- Who sets the agenda? Understanding research priorities and funding agencies.
- Older people and support organisations
- Intergenerational, intercultural, place-related quality of life dialogues

STRUCTURES & RESOURCES

- Fora for developing multi-partner proposals including citizens
- Prototyping solutions (Danish e.g. of civic prototyping)
- Seed funding to introduce new partners (inc. non-academic) and build capacity
- Citizen evaluation of proposals
- Grants for bringing in people with other skills and experience (non-academic)
- Attitude change towards hierarchies within AH: value joining IDR community

PROJECTS



Crises of Democracy

Addressing the Challenge With & Without AH integration

The discussion did not particularly focus on what addressing this challenge with or without AH involvement could look like but explored aspects of the challenge and what was contributing to the crises. The following points arose:

- **Centralisation of decision making:** More decision making is centralised with fewer people and spending is not distributed equitably around countries, with unequally distributed access to resources, services and structures.
- **Is there really a crisis?** It was proposed that Brexit may be democracy functioning and not democracy in crisis. In the UK there is a clash between representative and direct democracy.
- **Better understanding of populism:** Democracy is in transition because of the rise of populism and there is anxiety as to how it changed. People use different media channels than politicians and people in power did not anticipate this. Technology is moving far too fast for democracy to keep up and the actors who dominate the system have a competitive advantage.

Defining a Mission

The mission was defined as "Renewing and Safeguarding Democracy in Times of Rapid Technological, Economic, Social and Geopolitical Change" and ways of addressing this were discussed:

- **Restoring confidence:** Examining how to restore confidence in representative democracy by examining the lack of trustworthy information and the issue of echo chambers on social media.
- **Comparison of old and new democratic instruments:** A historical perspective is needed to understand the crisis as a crisis of the instruments of democracy – e.g. referenda, voting, old systems versus new technologies.
- **Importance of democratic fundamentals:** Democracy is about freedom of speech, rule of law, etc., not only voting, and these also need to be examined.
- **Better understanding of individual dimensions:** Individuals experience inequality, austerity, threats to their sense of identity and information overload. These experiences need to be understood as contributing factors to the breakdown of trust.
- **Mediating structures:** Better exploration of the impact of mediating structures: filter bubbles, polarisation, lack of dialogue, deep fakes, knowledge technologies affecting how we think, mistrust, disbelief in expertise, etc.

- **The role of artists:** Artists have better capacities to intervene as they pick up the spirit of the times quicker. Research always takes more time. Art is what very often motivates us to act, since we often do things for emotional reasons.

Key Recommendations

1) Participatory and creative public engagement. Developing more open and inclusive structures that engage society. AH can bring in context from history, philosophy etc.
2) Fundamental research into formation of collective identities through the lens of narrative, language, culture, history etc.
3) Integrating AH into understanding and regulation of digital technologies.

CHALLENGE

Increase Trust in the Functioning of Democracy

MISSION

Renewing and Safeguarding Democracy in Times of Rapid Technological, Economic, Social and Geopolitical Change

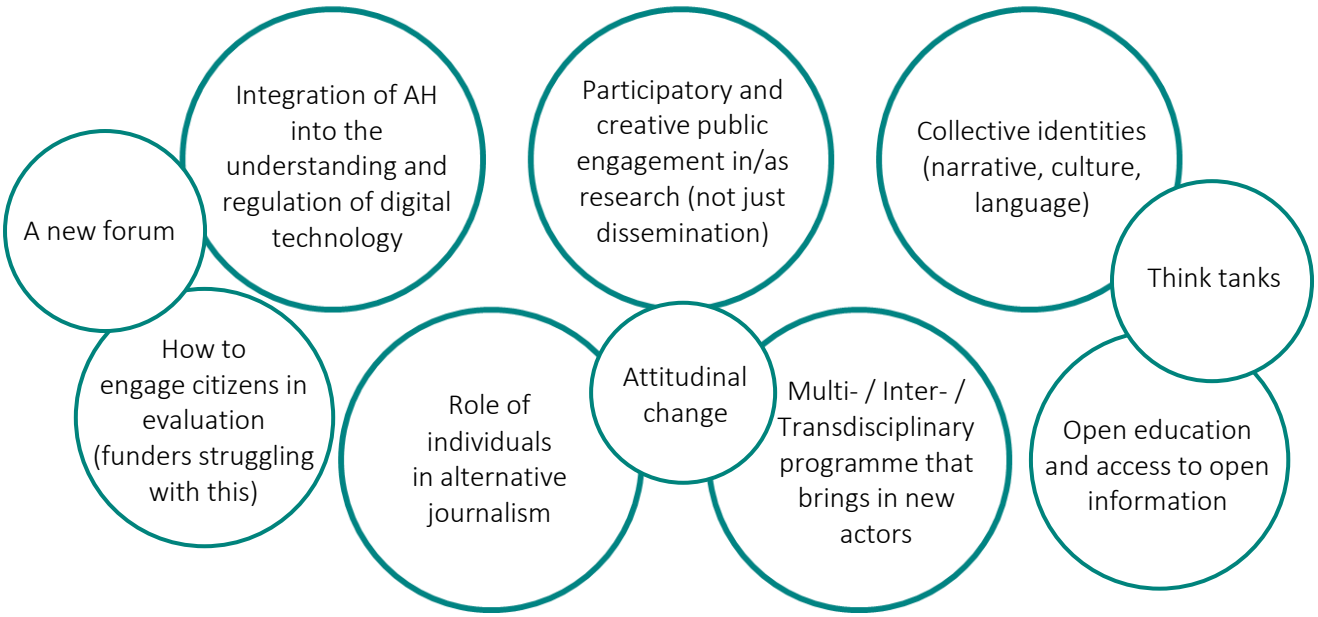
STAKEHOLDERS

- Excluded/marginalised people
- Artists
- Single individuals and the public
- Young people
- Policy makers national and international
- NGOs
- Academia
- Business and technology sectors
- Educators
- Local/national government

STRUCTURES & RESOURCES

- Participation in research
- Language and culture
- Open education
- Education and funding
- Access to open information
- Communications technology
- Connecting universities with citizens
- Interdisciplinary centres
- Think tanks

PROJECTS



Final Discussion

A short plenary discussion was held after each mission area group reported back to the wider group. The main issue raised was the extent to which the AH community is ready to accept and engage with research agendas set externally and focusing on societal challenges. AH cultures typically focus on individual scholarship and set their own agendas. It may be necessary to do this first in a bottom-up way within the community before engaging more broadly.

Institutions need to put in place strong support mechanisms for the AHSS as institutional supports are needed to create groups working together. Big challenges or themes can bring together different research groups and faculties but need to be established from the top down. It was observed that UK universities excel at getting funding because they have good research funding infrastructure.

During the final session, the points raised indicated a pathway from individual disciplines to doing interdisciplinarity:

Disciplines: It is important to encourage and facilitate interest-driven research as well as grant-driven research following current funding priorities. AH researchers who wish to work on interdisciplinary problems such as ageing are advised to simply start working on it from their own perspective, bringing their own disciplinary expertise, before attempting to engage with IDR.

Capacity Building: There was evidence of great enthusiasm for working across disciplines, but people were very conscious of the barriers. There was a sense of insecurity around how AH research could be relevant, and anxiety too from stakeholders in the worlds of business and art as to their role in research and their place at the table. Institutional supports are needed to build confidence, to facilitate discussions and to invest in fostering leadership capacity in the AH.

Inclusive Fora: The issue of how to involve non-academic stakeholders was raised repeatedly, with widespread interest in how to bring these important voices into the discussion. There was concern that academic voices represent an elite and academic language can be alienating. To change in the ways that are needed the university needs to open up to other voices. It was suggested that an ideal starting point is to define a problem of common interest and begin to bring people together around this. The workshop itself was cited as an example of a structure that could be transferable to create for a for discussing problems of interest.

Including the Arts: Participants also noted the potential value of the arts, drama, narrative and social experiments to connect different groups and understand different cultures, as well as allow us to explore conflict and difference, engage emotion and provide opportunities for reflection.

Critical Thinking for Change: The AH community need to consider how the critical thinking deployed in their disciplines can contribute to the development of scenario planning and different trajectories for the future, and how to mobilise around them.

3.2 Edinburgh Workshop: Environmental humanities

Workshop Objectives and Activities

This SHAPE-ID Learning Case Workshop organised and hosted by the University of Edinburgh on 20-21 January 2020 brought experienced researchers from the AHSS together with funders, policymakers and representatives from other international bodies. The objective of this workshop, which took place over two half days, was to explore what discussions with colleagues who share a broad interest in the environmental humanities might reveal about the motivations for undertaking research in this field and the models and styles of such research. By bringing an environmental humanities lens to bear on interdisciplinary collaborations among the AHSS disciplines and (to a lesser extent) between AHSS and STEMM, we hoped to learn more about potential enablers that might facilitate AHSS integration in interdisciplinary and transdisciplinary research.

Our focus on the Environmental Humanities was motivated by the fact that this is an area of scholarship that is establishing itself as an interdisciplinary research field supported by peer review journals, international conferences and centres of excellence. Collectively, as a consortium and as a wider community of scholars, the SHAPE-ID team has experience of interdisciplinary topics that span (primarily) the social and environmental and natural sciences. In running this workshop, we hoped to compare this experience with that of the arts and humanities (AH) disciplines, given their typically different working styles and concerns (e.g. lone scholar vs. research teams; conceptual/philosophical vs. instrumental framings, etc.).

The workshop opened with an icebreaker session using visual images to prompt **discussion about participants' experience of IDR/TDR** which allowed us to gather information about barriers/ opportunities/level of engagement with IDR/TDR. This was followed by **three short "scene-setting" presentations to share case studies of AHSS involvement in IDR/TDR**. Speakers were asked to highlight barriers and enablers and to consider the benefits (and possible drawbacks) to Environmental Humanities research:

Dr Anna Antonova (Rachel Carson Centre for Environment and Society, LMU Munich, Germany) spoke eloquently of her experiences as an interdisciplinary Early Career Researcher, highlighting the rewards and pleasure of working across disciplinary and sectoral boundaries while facing the challenge of negotiating the very traditional disciplinary structures of the University.

Professor Naomi Sykes (University of Exeter, UK) offered insights from a number of highly interdisciplinary projects centred around animals. Discussing examples of two projects focusing,

respectively, on the chicken and the fallow deer, Professor Sykes showed how these were used as a lens to explore human-animal interactions and our relationships with the natural world from a variety of cultural and scientific perspectives, revealing how relationships with and to animals feeds directly into policy.

Professor Dolly Jørgensen (University of Stavanger, Norway) presented on her experience leading the In the Clouds project, an Art-Science workshop funded by the Research Council of Norway. The project brought together scholars in Art History, History of Science and Technology, Environmental History, Anthropology, Media Studies, Science and Technology Studies, Geography, Religious Studies and Computer Science, with photographers, filmmakers, painters, poets and performance artists, to collaborate with a museum on an exhibition on clouds, examined from this diversity of perspectives. Professor Jørgensen reminded us that excellent interdisciplinary research can occur within the broader Arts and Humanities community and does not necessarily require collaboration with STEMM disciplines. She also spoke about how she had approached a recent grant call and how her strategy of reframing it so that it better fitted her interests as an AH scholar had been successful.

After the presentations the group split into smaller working groups to engage in co-design activities around the development of research projects and funding calls. In the first exercise, each group worked to outline an inter- or transdisciplinary research project based on a short text on environmental challenges.

Participants were asked to cast themselves as researchers (or potentially research users) and to co-design an interdisciplinary research proposal in response to a prompt such as a press release that described an environmental challenge. This group exercise allowed participants to reflect on what they had heard from presenters and to expand on and explore their own experiences/aspirations/ disappointments of IDR/TDR. The output from this short exercise took the form of a poster that started to describe a possible research proposal. However, the key purpose of the exercise was to encourage participants to reflect on the process of designing collaborative, interdisciplinary research, and less on the detail of the actual research proposal.

On the second morning of the workshop, participants again worked in groups, this time to critique and redesign existing funding calls dealing with environmental issues so that they might better include some of the priorities of AH research and encourage the participation of these researchers to address the challenges outlined. Having rewritten some of the call text, participants were then asked to propose

peer review criteria/processes that were fit for purpose for this call. Participants were guided in this activity by a series of observations on the co-design process adapted from Pohl et al. (2017) (Table 2).

Table 2 Observations on co-design process

Distinguishing between research question and societal problem	Makes the researchers reflect about what the societal problem actually is, and if and how their own research contributes to solving a societal problem
Is the knowledge needed what research may provide?	Researchers need to reflect on different forms of knowledge their project could provide, and compare it to the actual knowledge needed
Disciplines and societal actors involved in research	Increases awareness of relevant expertise and decision power available elsewhere
Expectations and interests of societal actors / disciplines	Researchers must substantiate why societal actors and other disciplines need to be involved in order to make vague notions of involvement and interaction explicit and concrete

Adapted from Pohl et al. (2017) Ten Reflective Steps for Rendering Research Societally Relevant, GAIA 26/1: 43 – 51

Workshop Outcomes[7]

Factors that support/hinder IDR/TDR

The SHAPE-ID preliminary literature review[8] identified 25 key factors that might support or hinder IDR/TDR. During the workshop, moderators were attuned to identifying any of these aspects that might arise during the group exercises and this allowed us to test out some of our preliminary findings from the literature. These factors are summarised in the form of a word cloud[9] (Figure 1) where the relative sizes of words/phrases are an indication of the frequency with which they occurred in discussions.

[7] The data gathered during this workshop came in a variety of formats including contemporaneous notes (written by the seven members of the SHAPE-ID present who acted as facilitators, discussion moderators and observers) and notes produced by participants as annotations on their posters. These latter were captured using the handwriting recognition 3M Post-It App and converted into Excel spreadsheets. All of these digital formats were uploaded into the qualitative data analysis software NVivo 12 which was then used to organise the data into a thematic analysis by the workshop leader.

[8] Vienni Baptista, Bianca, Maryl, Maciej, Wciślik, Piotr, Fletcher, Isabel, Buchner, Anna, Wallace, Doireann, & Pohl, Christian. (2019). Preliminary Report of Literature Review on Understandings of Interdisciplinary and Transdisciplinary Research. DOI: 10.5281/zenodo.3760416

[9] Produced using wordclouds.com

Figure 1 Word cloud representing frequency with which certain obstacles and enablers of IDR/TDR arose in discussions.

Of the 25 factors identified by the literature review, the following were not recorded during workshop discussions: Academic tribalism; Cognitive; Interactional; Mutual Ignorance on collaboration; Non-epistemological values; Objectivity – subjectivity.

Constructing and de-constructing research calls

Much of our discussions focused on **the use of language in the call texts**. The calls reviewed were seen as **very instructive (rather than questioning)** with significant use of imperatives. Calls were seen as too rigid and prescriptive. There was a perceived need for language that opens up the topic rather than closes it down and that focuses on what kind of project might meet the challenge rather than on desirable solutions/outcomes.

Current practice was felt to signal a disproportionate influence of economists/business schools. The one mention of social aspects that was included in the sample we looked at was considered to make **tokenism** not only possible but likely. As one specific criticism, artists were always asked to come in to translate, facilitate, "make things pretty" or to act simply as a broker or facilitator without the expectation that they would conduct research themselves.

This critique of the call texts led to discussion around the **expectations** raised by the use of language. Calls were seen as speaking to governments (and demonstrating wise spending of resources) rather

than to academics. The **lack of openness**, where so many aspects of the research project were predefined in terms of the scale of the research or what partners should be involved, was felt to leave little room for AH.

There was widespread criticism that these calls were too **"instrumental"**: the requirement for **impact** implies change in a context where economic growth and increased investment are taken for granted as positive outcomes. This led participants to query how we define an impact and whether impacts are always positive? Such language assumes that technology can solve the challenges but ignores the human questions. The language currently used makes assumptions, e.g. referring to cultural heritage as "assets" which automatically monetises rather than considers other forms of value. Word choices reveal particular positions. Calls were couched in technical, social science and economic terms. Such technocratic framing drives people away and means that notions of the social, culture and power are absent.

This approach was interpreted as a **lack of trust** in researchers, undermining their ability to identify problems, users and appropriate impacts. Indeed, many of the required outputs were not possible for AHSS researchers, with outputs instead being framed in the expectation of an ecological or economic perspective in some of the texts that we reviewed. This was interpreted as a "science over culture approach" and the overarching view was that the scope of such calls was too narrow, assuming a solution.

The AH were seen as being treated as a **"compensatory presence**" instead of having a role in defining research agendas in a way that builds on the epistemological strengths of AHSS. Research funders were urged to "make room to ask the bigger question" and imagine a different set of calls where AHSS rather than STEMM is the starting point, rather than "a corrective, addendum or supplement". Could we imagine a world where calls are AHSS-led and the language makes accommodations for STEMM?

AHSS or – in the language of the European Commission – SSH, was seen as being one entity rather than a spectrum of different disciplines. We were reminded that we need to view the Arts, Humanities and Social Sciences separately, particularly as their research methods can be significantly different. Calls that did favour projects that include SSH invariably required an economist or maybe a political scientist or policy researcher but rarely an AH partner. Participants thus foregrounded the danger of amalgamating AHSS disciplines together (and thereby provided further justification for our choice of focus on AH for this workshop).

The language used could be more inclusive, accessible and jargon free. Seeding call texts with strategically inserted words could help flag otherwise overlooked aspects of the call, for example for researchers interested in gender. Quite explicit language that welcomes research combining IDR/TDR approaches "inclusive of AH" resulting in projects that challenge the prevailing narrative and assumptions would be welcomed. The importance of **call titles** should not be overlooked as they immediately begin to frame expectations, for example consider the difference between "building" and "imagining" in a title or the inclusion of a word such as "value" which might signal concepts that act as an entry point for AHSS. (There was also recognition that certain language – e.g. "imagination" would not play well in government/policy circles where value for money is a concern.)

To appear more inclusive for AH, call texts could specifically welcome **diverse ranges of methodological approaches** from applicant teams. This might include but should not be limited to creative forms of public engagement and outcome dissemination. For example, an oral history approach can be a means to access alternative narratives.

What AH seek is opportunities for curiosity-led rather than impact-driven research but H2020 is inherently challenge-led, requiring very specific impacts often related to the competitiveness of EU industries. These **calls are perceived as working at the service of the nation state or an EU body and need to be more open if they are to attract the interest of more AHSS researchers**. Unsurprisingly, this may explain why the AHSS are much more successful in the ERC funding programme.

In summary, AH researchers do not like the questions being asked: "EC expects us to deliver answers. EC should be asking AH to devise the question". To facilitate this, AH researchers have a role in helping funders to propose the right questions and manage the right expectations to drive behaviour, as discussed below, but achieving this may require further capacity building within the AH community.

Capacity building

It was acknowledged that there are ongoing and long-term debates around achieving culture change within academia. The social sciences had started to engage earlier in these discussions but the experience (and hence expertise) of AH of IDR/TDR is lower. So, in the absence of funders changing, how do AH grasp the nettle and communicate their added value?

While the AH clearly have the **competences**, it requires **confidence** and a **sense of security** to articulate the value that these disciplines bring to IDR/TDR. It needs encouragement and requires people to act as advocates. It requires researchers to be **entrepreneurial** and to see **opportunities** that may move us

from our comfort zones. It also requires **tenacity** and **a willingness and ability to subvert calls to AH interests**. This led others in the audience to argue that it was not insecurity but the fact that AH do not like the questions being asked. The environmental humanities are already doing IDR/TDR within/across AH disciplines and we were reminded that an individual can conduct interdisciplinary research on their own, not only in a collaboration involving STEMM. Nevertheless, concern was voiced about the risk to funding if AH seem uninterested in interdisciplinary, collaborative research.

When contributors spoke about their **motivations for undertaking IDR/TDR**, they reminded us that encountering different kinds of literature and approaches can reveal important new insights and lead one to become a more versatile scholar with a wider academic network. Others noted that they would never have arrived at their research findings without working across disciplines. The downside was that they **may feel uncomfortable having to simplify their work for policy** and may find it difficult to reach policy audiences. It was suggested that Humanities students and scholars (in contrast to those from the social and natural sciences) are not taught sufficiently about the policy process and when and how to contribute. **The ability to communicate the value of AH research requires AH students and scholars to benefit from greater knowledge exchange and media training**.

Some of the discussion of the **institutional challenges** that early stage scholars encounter when trying to pursue IDR/TDR reminded us that it is still hard to pursue an IDR/TDR project through the rigidly disciplinary structures of universities. This is especially true at examination (viva) stage (for both the candidate and the examiner). Indeed, it was suggested that a panel system would be better for IDR/TDR PhD examinations, possibly similar to the US system to give continuity with examiners. Even despite the privileges of funding, setbacks at an early stage of one's IDR/TDR career can be a blow to self-confidence and mental health. These aspects point to much **more widespread institutional issues related to the promotion of IDR/TDR** and questions about when is the right time for an individual to "become" interdisciplinary, that **go beyond the EC encouraging greater participation in interdisciplinary grant calls**.

These aspects of the discussion also highlighted the **role of national funders in building capacity**. At the UK level, for example, smaller British Academy awards often lead to future awards in the AHRC-funded humanities space. Likewise, the AHRC Connected Communities programme provided small grants that kept building on each other, particularly supporting early career researchers. These smaller grants mean that funders can afford to take more risks and invite "edgy, unexpected work". The Irish Research Council has similarly tried to build a funding pipeline so that researchers are better prepared to apply for EU funding. Some national funders are seen as particularly effective in aligning national funding with

EU funding (the Dutch were cited as an example) but at the same time, do not want to be seen as too instrumental and need to leave money for curiosity-led research.

While national funders can lay the groundwork in terms of capacity building for IDR/TDR through, for example, small networking grants, the **lack of articulation between national and EU funding** is exacerbated by pragmatic issues such as different funding cycles resulting in different time horizons for national funders and the EC.

Ways forward

Writing the call

How calls are set up is critical to promoting the inclusion and integration of different disciplinary perspectives. Participants agreed that trying to "shoehorn" AH into already defined technology-led calls was the wrong approach; the result is that AH will always look like "an add on". Instead, a **co-creation approach** involving a wide variety of different disciplines would help to identify priorities, ask the right questions, and avoid inherent contradictions within call texts. This requires changing how we construct calls for proposals at a fundamental level so that the AH are more involved in setting the research agenda. Instead of assuming that technology can solve the problems, these challenges should be open for discussion around, for example, adoption, uptake and diffusion of technology and these are "human questions". Participants talked in terms of drawing in "ecosystems of thought" to address multi-sector interdisciplinary challenges. **The goal should be an equitable, mixed disciplinary team for design and evaluation** (see below). There was also recognition that this aspiration may be more difficult to achieve than it looks as: (i) AH are less familiar with research co-production and (ii) this requires a change in culture where the EC acknowledges that, although there may be "a received story", they are also willing to welcome projects that challenge this.

In summary, the workshop exercises **raised awareness of the importance of being involved in helping to write the calls**: this places the onus on the AH community to get involved in defining calls and on funders to facilitate this.

Application process

Crafting an application is a significant time commitment. A **two-stage application process involving an initial, blinded outline, followed by an invited full proposal, may encourage more risk-taking**.

Calls should be **more welcoming of multiple different methodological approaches**, as noted above, and in particular **could permit supplementary visual materials**. Currently, submissions are often constrained by the online application portal which may exclude certain forms of AH research.

Support mechanisms

Attracting a greater diversity of disciplines requires a willingness on the part of both funder and applicant to do some **interpretive work** on the call. Do academics lack skills in reading and interpreting call texts and would annotated call texts help? The AH may need a mediator/translator in the process of navigating funding calls. Helping people to view call texts differently and understand how AH interests might fit is a key role for university research offices and National Contact Points (NCPs). However, there was also a recognition of resource constraints and the fact that NCP provision varies at the national level, depending on the size of the member state and research capacity – likewise with the research office support that individual universities are able to provide.

Other suggestions for support mechanisms included:

- Illustrative examples/case studies that invite AH participation;
- In addition to Net4Society promoting SSH focused calls, including keywords or annotations with the call texts, would further help those from a variety of different disciplines to access calls of interest;
- Seed funding to enable stakeholder engagement to build collaborations prior to writing a grant application.

Refining peer review processes

Innovative IDR/TDR proposals need suitable evaluators. It was acknowledged that it was difficult to get the right people for evaluation. Peer reviewers for IDR/TDR proposals need to have demonstrable interdisciplinary expertise (not just experience). Panel Chairs for such proposals must understand the IDR/TDR nature of the call, have academic expertise in IDR/TDR and experience of chairing a cross-disciplinary, cross-sector panel: "a really good chair needs to have a firm hand to make sure that everybody's voice is heard, so that people are not advocating for their own methods as the only valid ones". Related to this point, is was suggested that **remote evaluation,** rather than a face-to-face panel discussion, might strengthen the AH voice. This might lead to less adversarial encounters where the AHSS reviewer feels like a lone voice on a panel.

All of this **requires academics to sign up as reviewers** and this reveals a problem of numbers – there are currently **too few AHSS academics in a crowded evaluation space**.

A more refined **keyword system to guide evaluator selection** was proposed so that AH keywords can be identified in a more fine-grained way to avoid proposals being reviewed by inappropriate evaluators (see comments above about the heterogeneity of the AHSS).

Given that the EC is moving heavily towards research that favours end results and "impact", there is a risk of hard-line economic bias in the review process, making other AHSS contributions even less visible. This requires further consideration of how to provide more **objective evaluation criteria for research process, not just impact**.

Other suggestions to improve IDR/TDR peer review included:

- More co-production of call followed through to evaluation: some scholars have already written about the need for IDR/TDR evaluation to become more collaborative and interactive;
- Possibility of responding to proposal reviewers or at least to inappropriate panel allocations ("a right of reply" stage);
- Recognising the difference between Arts, Humanities and Social Sciences scholars when populating a review panel;
- Inclusion of non-academic stakeholder representatives on review panels;
- Improved guidelines for reviewers, for example on methods used in different disciplines;
- An indication of review criteria included in call text.

3.3 Turin Workshop: Transdisciplinary education for urban sustainability

Workshop Objectives and Activities

The third SHAPE-ID Learning Case Workshop was held in Turin on 17-18 February 2020 and was developed in collaboration with the TrUST research platform.[10] The workshop brought together researchers and experts from academic and non-academic institutions working in the field of Education for Sustainability (EfS). The objective of this workshop, which took place over one and a half days, was to explore what kind of inter- and transdisciplinary educational tools and approaches can support and improve sustainability in the realm of urban transformations. By bringing attention to the combination of two increasingly relevant issues, education and urban sustainability, we wanted to explore how methods and practices of education for sustainability can support synergies between Arts, Humanities and Social Sciences (AHSS) and STEMM perspectives in inter- and transdisciplinary research projects.

Our focus on Education for Urban Sustainability was motivated by the fact that the nexus between the educational process and sustainable urban transformation is potentially highly impactful for the concrete realisation of the United Nations (UN) Sustainable Development Goals (SDGs) as well as the integration of AHSS and STEMM disciplines. The need for a meaningful contribution from the AHSS in learning processes is increasingly crucial in a technologically driven society. Sustainable urban transformation is an urgent matter, considering the concomitant climate, democracy, and urban governance emergencies, and this will require consolidating the cooperation between educational institutions and urban stakeholders – the ultimate aim of EfS agendas.

The workshop opened with two short "scene-setting" presentations to introduce the SHAPE-ID and TrUST projects, share the scope of their collaboration and present the aim of the two-day workshop. This was followed by an initial set of keynote presentations from invited international experts focusing on new learning paradigms in EfS, from primary school to university campus level. The main activity of the first day of the workshop was a writing session, where we asked participants to define their experiences of inter- and transdisciplinarity, the SDGs, processes, methods and lessons learned in implementing EfS. Participants were also asked to describe obstacles and barriers, as well as triggers and enabling factors, which influence inter- and transdisciplinary education for sustainable urban

[10] TrUST: Transdisciplinarity for Urban Sustainability Transition is a research project coordinated by Dr Giulia Sonetti that aims at better understanding how to achieve more efficient and effective inter/trans-disciplinary research and education for an urban sustainability transition. It received funding from the Interuniversity Department of Regional & Urban Studies and Planning - Excellence Award at Politecnico di Torino, and the support of more than 70 institutions and organisations working on SDGs implementation.

transformations. On the second morning of the workshop, participants split into smaller working groups to engage in co-design activities around the development of mission-oriented projects.

International keynote presentations

Dr Jo-Anne Ferreira – Pedagogies and system change in higher education curricula

Dr Jo-Anne Ferreira (La Trobe University) introduced the underlying pedagogical principles of Education for Sustainability (EfS), the fundamental methods for embedding EfS in universities, and how the system change model has been implemented in practice.

Focused on what students can do with their knowledge, Education for Sustainability is a value-oriented holistic approach, centred on social changes, based on real issues, experimental and transformative actions, and an active and critical learning enabled by forms of cooperative engagement. Education for sustainability is undertaken through system-wide change theory and practice, working partnerships, system thinking, mindful participation, reflective and visioning activities. A system change model is applied by developing partnerships envisioning a new map of the educational system, sharing and generating new knowledge and information, and implementing action research based on reflection and action for change.

As a model intended to create change within a system, it is likely to encounter barriers in pursuing implementation. Nonetheless, Dr Ferreira concluded by stressing the importance of monitoring the process of implementation, ensuring the achievement of goals previously set.

Dr Julie Davis - Interdisciplinary Early Childhood Education for Sustainability

Dr Julie Davis presented two examples of practices and process from Early Childhood Education for Sustainability (ECEfS): the Lone Pine Project and the Transnational Dialogues network.

The Lone Pine Project is an interdisciplinary collaboration between Early Childhood Education teachers and Design students (architecture, urban design, landscape design) to figure out the key issues and problems, and design jointly a day centre on a pilot community site. This process made it possible to explore new notions of teamwork across disciplines, understand and respect the skills, cultures, and perspectives of each participant, and reflect deeply and critically on real-world issues.

Transnational Dialogues is an international network of researchers in ECEfS that seeks to build coordination capacity and networks, overcoming the isolation of “marginal” researchers. During the

project, researchers discovered that despite sometimes being inept at considering linguistic and cultural diversity, they were able to constantly evolve thanks to the ongoing exchange with peers.

Dr Davis concluded by highlighting the positive impact of inter- and transdisciplinary work in dealing with "wicked problems" and the abundance of lessons to be learned from past activities and research.

Drs Maria Alvarez - Liberating pedagogy: learning inside of complexity and uncertainty.

Drs Maria Alvarez presented an innovative educational methodology included in the Global Project and Change Management Bachelor's degree programme of Windesheim Honors College. The learning process addresses features of the contemporary world – volatility, uncertainty, complexity, and ambiguity (VUCA) – and prepares students for future roles as change agents and value creators. During one semester, students develop essential skills in four fundamental areas for contemporary challenges: civil society, global health, social entrepreneurship, and urban dynamics. The 4E-model helps students to structure the process of managing complex issues through four steps:

1) **Explore:** Students and other users of the model are invited to investigate the challenge by analysing the context, probable causes and solutions.

2) **Engage:** Participants map the networks and identify stakeholders who can be key players in addressing the complexity of the challenge.

3) **Elaborate:** strategies to solve the problem are defined by shaping the role of each network and stakeholder and defining the activities that they should undertake.

4) **Evaluate:** As a final phase, students define which value will be created for whom and how it will be evaluated.

The Value Creators concept gauges the progress of experiential learning, navigating across different knowledge boundaries and self-reflection skills that should be embedded in academic curricula. It is a building block, preparing students for moving from the university to the professional and social environment.

Writing Session

At the beginning of the writing session, we asked participants to define their experiences of inter- and transdisciplinary education to pave the ground for a co-creation process, which requires mutual knowledge and understanding. The following questions were asked to comprehend in-depth

participants' expertise and detect potentialities inherent to inter- and transdisciplinary educational processes.

- Would you define your education activity as ID/TD? If so, why?
- Which SDGs you can map your activity on?
- How do you make ID/TD Education happen? Which methods, tools and tricks, team building do you put in place?
- Do you have prior experience in working in this way?
- Did you take learnings from those earlier experiences?
- What are the barriers you encountered in ID/TD work in education?
- Could you tell us examples in which these barriers made a project/an action fail?
- What could be a trigger/enable ID/TD education for a sustainable urban transformation?
- Could you tell us a story about your case of success or failure?

Different answers, perspectives and narratives have been synthesised, integrated, and elaborated in the following sections to understand inter- and transdisciplinary educational processes and their roles in supporting sustainable urban transformations.

Defining educational activity as interdisciplinary and transdisciplinary

Interdisciplinarity

Workshop participants defined interdisciplinarity as the process of combining knowledge, integrating different disciplines, and merging diverse perspectives. Interdisciplinarity should be supported by an explicit and solid willingness on the part of all collaborators to work towards a common goal by redefining and reframing the problem, as well as potential solutions.

Transdisciplinarity

Transdisciplinarity has been described by participants as the integration of academic and professional theories and methodologies with citizens' and civil society organisations' perspectives into a reflective process and challenge-based learning. The aim of transdisciplinary education is the co-creation of positive actions and benefits in terms of social responsibility and sustainability. The natural force of innovation pushes this process, while power structures and administrative requirements often limit it.

For this reason, evaluation is fundamental to enrich communication about both successes and causes for failure.

After they had defined their educational experience as inter- and transdisciplinary, participants mapped their activity onto the SDGs. They were asked to flag which of the 17 SDGs were more relevant and related to their own research activity, and Figure 2 below shows the result of this exercise. The size of each SDG is proportional to the frequency with which the participants cited the SDG (for instance, SDG4 Quality of Education was cited 13 times, while SDG2 Zero Hunger was mentioned only once[11]).

Figure 2 Mapping SDGs in participants' activity

Not surprisingly, the most cited SDGs are Quality Education, Sustainable Cities and Communities, Climate Action, Gender Equality, Reduced Inequalities, and Responsible Consumption and Production – all SDGs that are transversal and cross-cutting – while those more sectoral, concerning specific environmental and social goals were less cited.

[11] The total number of workshop participants was 23, but each of them mentioned numerous SDGs correlated to their activity. The total observations were 78.

Implementing education for urban sustainability

The development of inter- and transdisciplinary education

The multiple paths and processes for the implementation of inter- and transdisciplinary education, like shaping the vision and long-term goals of universities or identifying real cases for analysis, have to benefit from each other to realise a meaningful transformation on how topics will be taught and developed.

As we describe in detail later in this report, the structural organisation of universities, especially humanities departments that are epistemologically and conceptually past-oriented to consolidated disciplinary knowledge, sharply limits the possibility of stretching the existing curricula and programmes to include interdisciplinary topics. Similarly, the bottom-up process to push institutions to create inter- and transdisciplinary courses encounters more administrative and bureaucratic barriers than a top-down process. However, the **universities' strategic plans** can be a leverage point for improving the academic system, as well as a space where it is possible to match the universities' management goals with strategic aims to enhance inter- and transdisciplinarity education programmes.

Workshops and other methods for **collaborative exchange** are the ideal tools to support dialogue among disciplines and centres of education, and trigger teams and networks to co-create solutions for a joint mission, fostering inter- and transdisciplinarity in academies.

These conversations and connections are catalysed in courses and classes where students can develop transversal knowledge that is able to cater to different interests and be helpful to a specific cause, such as sustainability. A dynamic **joint session with professionals from other disciplines** helps students to develop critical discussions and clarify conflicting perspectives and divergent stakeholders' positions. For example, the objects for student analysis can be challenges already identified by interdisciplinary teams composed by a diversity of experts. Students are encouraged to investigate the issue from different angles and through various methods. For instance, if the topic is the problem of microplastics in the river, the research would be conducted considering biodiversity, water management, legal regulation, health consequences to create collaboratively a new scheme for framing the topic and finding a solution.

Generally, combining a **learning process based on real problems** with strategic analysis, critical thinking and stakeholder engagement facilitates outreach activities, educational innovation and ultimately a

better transdisciplinary collaboration. Figure 3 briefly illustrates the myriad of methods, tools and tricks mentioned by participants as useful supports to implement education for urban sustainability.

In conclusion, practical examples and best practices capable of adding value to subjects of an academic course and tangibly enriching students' minds can advantageously support the process of transforming vision, methodology and the structural content of educational institutions.

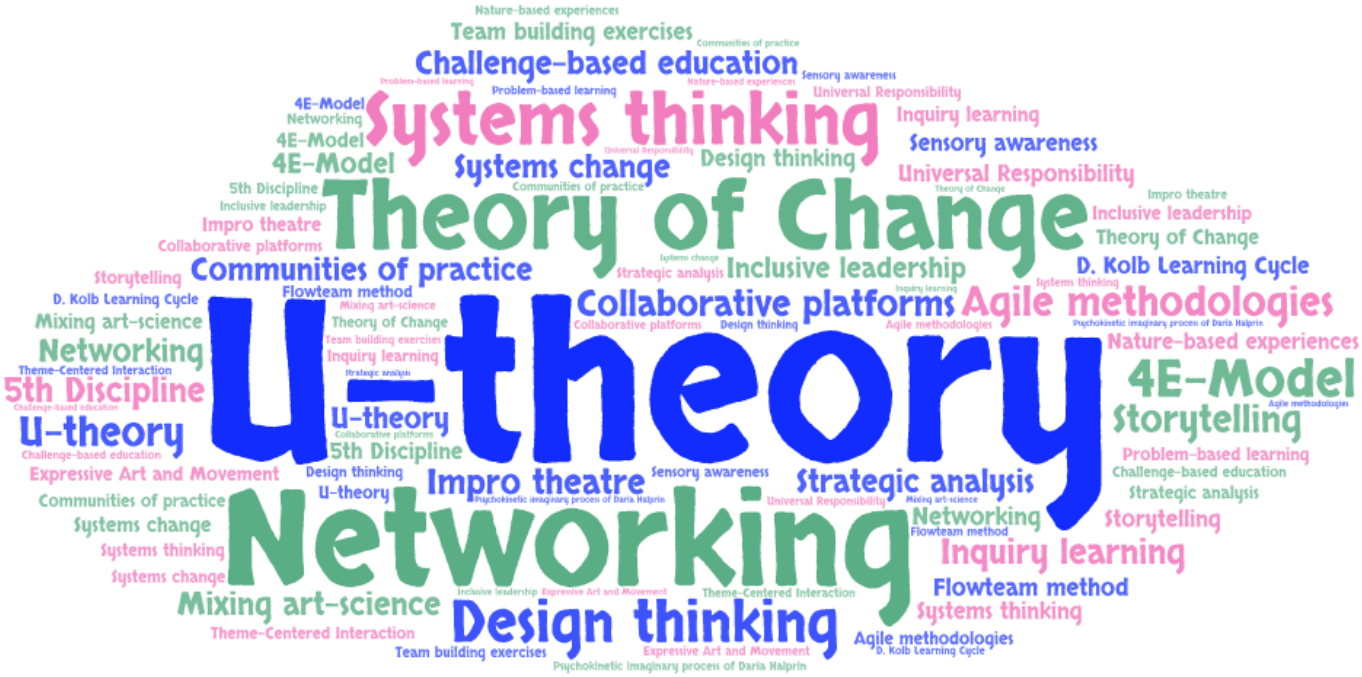


Figure 3 Methods, tools and tricks of inter- and transdisciplinary education

Prior experiences in inter- and transdisciplinary education

Inter- and transdisciplinary education cannot be taught just theoretically. It requires deep and wide first-person experimentation to explore and digest the multiple facets of the process.

The vast majority of workshop participants agreed on the necessity of a learning-by-doing approach in designing inter- and transdisciplinary educational programmes, for example, by engaging students in scenario-based learning to co-create continuing storytelling. Project-based education is particularly useful to overcome the challenges of teaching inter- and transdisciplinarity to large numbers of students, allowing them to deal with real problems and to work with different stakeholders and disciplinary perspectives. The validity of the learning-by-doing approach in inter- and transdisciplinary

practices has been tested several times in both creative and analytic processes, such as cultural studies and the production of audio-visual materials, as well as in the evaluation of impacts.

The practice of inter- and transdisciplinary education reaches the peak of its realisation in innovative educational concepts and counselling activities for transformative learning. One holistic teaching approach to address tricky challenges and generate agents of change mentioned by a participant is called Value Creators. More than a new educational concept, this method creates an environment where students work to build societal values by connecting with academic communities and stakeholder networks around the world. Furthermore, some workshop participants briefly described their counselling activities to enable transformative processes, like supporting individuals and groups in their transition towards more sustainable and meaningful living and working, fostering constructive inter- and transdisciplinary collaboration in the academic field, and building facilitation and management competencies with enterprises.

Lessons learned from experts' practice

Inter- and transdisciplinary education is a complex undertaking that requires the application of different methods according to specific audiences. In this respect, multiple lessons and suggestions were drawn from this workshop session. The key points can be synthesised in the necessity of **having a structure** and creating a safe space to manage a process that is much more difficult than the traditional teaching method, demanding more workload, but on the other hand, ensuring better and more durable results.

Paradoxically, such unstructured learning experiences need clear and defined structures for the collaboration, especially when students and extensive networks are involved. The leader of an inter- and transdisciplinary process has to master a comprehensive toolbox to orient participants clearly, defining expectations and maintaining levels of interest and engagement through a solid and trustworthy leadership style. Trust is a crucial factor to build and feed a learning process that brings participants out of their comfort zone, changing their priorities and deconstructing their worldview to face the limits of their knowledge. **Staging a safe environment** is a prerequisite to enable experimentation, self-reflection, transformation, and productive team building, which requires a lot of time.

Additionally, participants shared useful recommendations for implementing transdisciplinary projects smoothly:

- In a co-creation activity that involves many stakeholders and citizens, specific attention should be paid to the representativeness of social groups engaged, as well as the transparency of the process and its social legitimacy.
- Continuous monitoring during project implementation should be planned, ensuring institutional sustainability and constant communication with all actors involved.
- Finally, social innovation prefers less regulated environments to enable multiple facets and unpredictable developments to emerge from the process. As described in more detail below, the traditional university is considered a possible obstacle to this.

Obstacles to implementing inter- and transdisciplinary education

Workshop participants delivered several narratives, outlining numerous hindering factors in the implementation of inter- and transdisciplinary education. Obstacles can be synthetically categorised as financial limits, leading to limits of time and space; the organisational structure of universities; peer relationships; cultural aptitude and students' perspectives. We present the barriers discussed as a sequence of causes and effects in order to delineate a possible solution to the causal circle.

Primarily, universities and academic institutions have an inevitable **financial limit** that often results in unsuitable places and tools as well as constraints on the most precious resource, personnel time. The working time of staff and teachers is a critical factor because of the additional workload required by inter- and transdisciplinary educational activities, which have to be adapted to different groups of students. Moreover, the increasing involvement of temporary and part-time staff intensifies the difficulty of engaging them in such a complicated and experimental process.

The financial issues and their administration are strictly correlated with **university organisation**. Firstly, the academic structure is based on **disciplinary divisions**, and then funds are distributed according to the number of students enrolled in each faculty. The competition between disciplines and colleagues strengthens divisions, and a common space for inter- and transdisciplinarity is missing. A transdisciplinary programme, for example, has to be integrated into a faculty, reducing its activities and ambitions. A university structure based on disciplines, besides determining programme contents and increasing *silo thought* in all actors involved, defines the criteria for the assessment and recruitment of researchers and teachers.

An evaluation mechanism that does not value inter- and transdisciplinary practices discredits the ID/TD knowledge produced and reduces the possibility of involving colleagues to support the process actively. The university *milieu* is predominantly characterised by a **self-referentiality** and interest in preserving its own disciplinary structures, and this undermines the flourishing of skills for collaboration and facilitation, as well as the development of "outside-the-box" thinking.

The **extreme reliance on "expert knowledge"** risks limiting more active learning through the involvement of external stakeholders and non-scientists, such as citizens, in research projects. If the benefits of a problem-based educational approach are not recognised, the space for integrating different perspectives in a common understanding is squeezed, amplifying the gap between inter- and transdisciplinary theories and practices.

The consequences and effects of this vicious circle on scholars are manifold. Firstly, students that most of the time still have to learn to trust in themselves are highly exposed to the risk of getting lost among too many perspectives without acquiring an in-depth knowledge of the specific subject. The teacher has to deliver a clear, precise and concrete learning process to meet students' expectations and orient their curiosity-driven learning. The significant **scarcity of transdisciplinary training opportunities** and best practices hinders a consistent integration of disciplines, and the students' aspirations to apply theoretical notions to solve real-life problems are often left unattended.

A concrete, detailed and practical framework for implementing inter- and transdisciplinary projects, together with an evaluation and monitoring system able to capture their benefits, could change the parameters behind the allocation of funding and overcome the effects of hindering factors.

Examples of barriers in inter- and transdisciplinary project realisation

A project for the promotion of the restorative justice approach has implemented co-design methods for content creation and active learning through gaming, informal teaching, and job opportunities for training secondary teachers, in three school settings. However, the project failed, especially in one school, mainly because teachers, in particular those specialised in hard disciplines (Maths, Physics), expected a standard toolkit for restorative justice that they could have used in their teaching activities. The experts' invitation to co-create the toolkit interactively during the training was perceived by teachers as a lack of knowledge, reducing their trust in the process and methods introduced by the project. Furthermore, teachers, in particular those specialised in the natural sciences, did not recognise as relevant the core concept of the method, namely the necessity of taking care of students' relations and their emotions as well as adopting a participative approach for conflict resolution. Teachers did not implement the restorative justice approach adequately, and in the end, the school abandoned the project.

The attempt to create a new academic course in one University on global interdisciplinary and comparative perspectives was significantly reduced, leading to the failure of the original project. The initial plan was to mix humanities, art, social sciences, juridical and health disciplines, but the final course is basically a history degree. The interdisciplinary options have been hidden or eliminated from the flexible academic path offered to students. Even if the council has not yet discussed the contents of the programme, the result is substantially different from the original idea.

Enabling inter- and transdisciplinary education to trigger a sustainable urban transformation

A combination of factors, like specific competencies, real cases for analysis and implementation, personal motivation and structural incentives, and best practices for dissemination, have to act synergistically to support a sustainable urban transformation.

Urban sustainability is a multifaceted issue, and **specific competencies** – like creativity, system and critical thinking, and the mastering of intricate knowledge in several areas – are required to tackle complexity. A systemic approach should be implemented by asking students to define the research

question in interdisciplinary terms and providing them with the necessary tools for a criticism of the emotional overload surrounding a topic like sustainability. This process introduces functional and transversal skills into technical and specialised courses, moving beyond the distinction between "hard" and "soft" skills and acknowledging the value of both types of competence for creating sustainable societies.

Methodologically, the passive transmission of knowledge becomes **active learning**, where learners are decisive actors in the educational process. It also implies preparing students and especially teachers to be coaches in the learning process, with the training of transdisciplinary facilitators being duly acknowledged. A sort of new "transdisciplinary scientist" profile (see box below) should master a number of competences and skills that all together are required to link the world of science (universities) and the world of society (civic actors). The consolidation of this link is a crucial element to enhance the quality of higher education and ensure its impact in terms of the SDGs and the 2030 Agenda for Sustainable Development, and it should be considered a fundamental requirement for top ranked universities.

The dialogue between universities and municipalities will allow finding **real-world problems** for applying action-based research and implementing transdisciplinary approaches. The involvement of external actors engenders an informal space for learning, which is particularly useful for students that become aware of the multiple roles and aspects embedded in transdisciplinary practices. The acknowledgement of concrete urban challenges, especially if institutionalised through a compulsory phase in any academic curriculum, will generate in involved actors a feeling of owning the problem and an urgency to act, thus incentivising the institutions to change. The ten-year project at Campus Kindergarten in Brisbane called Sustainable Planet is evidence of this process, considering that besides the initial topic of water conservation, the project is currently also addressing energy consumption, waste management and climate change mitigation issues.

Enabling inter- and transdisciplinary education for supporting a sustainable urban transformation requires a **systemic activity** drawing on specific competencies like those previously described, to cope with real urban challenges, to design various incentives and the dissemination of constructive narratives. In this learning process, citizens, that were previously dissociated from their own urban spaces, delegating their management to others, begin to feel responsible for and engaged with their own city. **Ensuring cities belong to citizens** is the critical step for achieving a space where it is possible to live pleasantly for a long time.

How to profile a "transdisciplinary scientist"[12]?

The participants of the Turin Workshop remained in contact after the workshop, with the aim of forming a transdisciplinary experts' community.

An interesting follow-up discussion concerns the definition of the profile of a "transdisciplinary scientist", recognising the peculiar capacities and features of a transdisciplinary researcher and educator as opposed to a disciplinary profile. Nikki Brand – one of the keynote speakers at the workshop – picked the collective brain of the embryonic ID&TD community with an e-mail asking: *"What should we call a scientist in a research program, who: can be (1) part of matchmaking between societal partners and the researchers, (2) who record the substantive findings and ultimately create a synthesis, (3) and monitor the performance of particular learning strategies (3)? They should not be 'mere' facilitators, but scientists who do not feel limited to a single academic discipline and can connect the dots between different academic deliverables."*

How to capture this profile in one word? A discussion started and at the moment of writing is ongoing (including in a SHAPE-ID webinar organised on 10 December 2020). One aspect emerging from the discussion is the association of the concept with the capacities this profile should demonstrate of navigating across different boundaries of specific fields of knowledge (scientific or practical), without being lost in deep disciplinary details, but at the same time keeping necessarily robust knowledge foundations while making a transdisciplinary synthesis. "Boundary freedom" is one name for this capacity. A nice description of it came from one of the participants (Ruth Foerster): "*I want to draw special attention to the middlemen and facilitators who acted as the human equivalent of boundary objects. Intermediate persons allow for a mediation between the heterogeneous worlds of science and practice along with current and new (cutting edge) practices. In both cases, actors from both sides were able to take this role and facilitate communication or negotiation between the two groups, e.g. by clarifying discussion. Most of these people had experience in both worlds and thus were not neutral or outsiders concerning content the way most moderators are expected to be but could switch roles and sides. In that way they were able to live in both worlds and mediate between them. In particular, practitioners functioned as gatekeepers and multipliers of scientific knowledge production in their practice.*"

[12] Kaså S. and Pohl C. Methods for transdisciplinarity and how to use them. Joint keynote at the International Transdisciplinarity Conference, September 10-13, University of Göteborg, Sweden. To learn more about the question of integration expertise look also at Gabriele Bammer's work and blog (https://i2insights.org/).

Cases of successful urban sustainability transformation

Ersilia Foundation is part of the Building Urban Intelligent Living Design Solutions (BUILD) project. This European project brings together architecture, biotech and economic specialists coming from both academia and the business sector. The interdisciplinary team has co-created a semester-long programme where students coming from the three different disciplines have to work together to design new solutions for urban environmental challenges. Several groups have been formed, and they are working on innovative artefacts and solutions that will be presented to investors. Students are very grateful to have this opportunity that is intensely stimulating and engaging for them.

The inter- and transdisciplinary programme at the University of Bale called Mankind-Society-Environment had been successfully reformed (in 2001-2002) to address a problem with training projects for students. Previously, the students had to tackle complex, real-world issues in groups up to 15 during a 1-year course. In the end, they had to present their results to the problem-owners, teachers and academic audience composed of experts on the specific topic. The quality of the project reports varied widely and the problem-owners (external organisations) were not always satisfied by the contents of the deliverable because they expected reliable scientific results to be used in practice. Also, teachers were not satisfied since the reports did not meet the high-level academic standard. At the same time, students were frustrated since they put a lot of effort into the project without having positive feedback.

The reform of the programme introduced:

- a sound introductory part where problems and methods to apply have been framed;
- co-teaching to train teachers for this innovative approach;
- basic courses for students and teachers on project management, team communication and development;
- contracts with problem-owners for managing their expectations.

Mission-Oriented Research Co-Design Activity

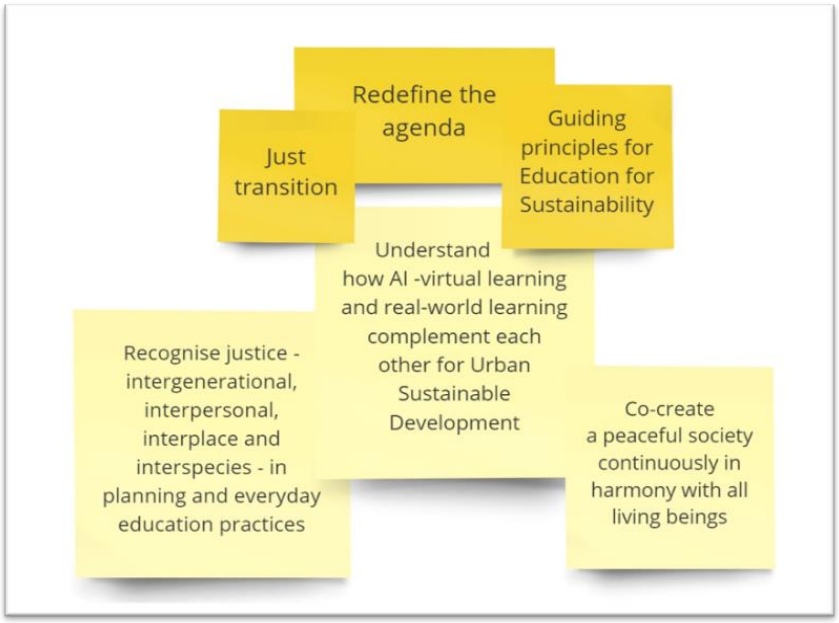


Figure 5 Redefine the Agenda challenge

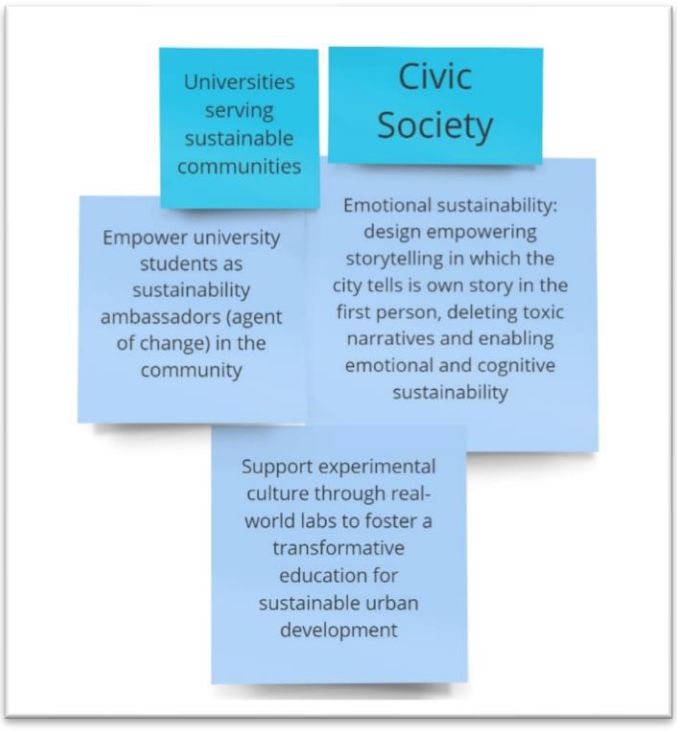


Figure 4 Universities serving sustainable communities

Dr Carlo Sessa presented the Mission-Oriented Research Co-Design activity, facilitating a brainstorming activity to crystallise the challenge of fostering inter- and transdisciplinary approaches for a sustainable urban transformation. At the end of the first day, participants were invited to look at the workshop group as a community. On the morning of Day 2 they arrived at the workshop with a fairly clear idea about what we can collectively generate within the next 3-5 years. All participants described how they had glimpsed the challenge and different aspects of the process. Numerous input and narratives have been clustered into three broad areas of challenge: redefine the EfS Agenda (Figure 5), universities serving sustainable communities (Figure 4), and change from within the university (Figure 6).

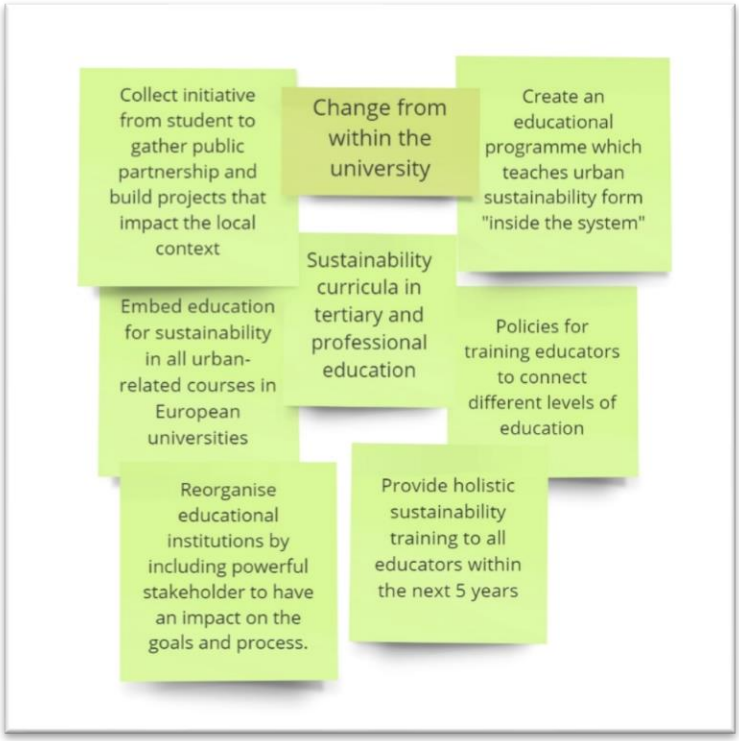


Figure 6 Change from within the university challenge

Three groups were formed after clustering the brainstorming outputs (individual post-its). Each group than worked to, co-design a mission, with the identification and definition of a path to achieve the challenge. The activity involved the following steps[13]:

1) **Define a Mission Statement** that substantially contributes to education for urban sustainability through a bold, inspirational goal with broad societal relevance. The mission has to be cross-disciplinary, cross-sectoral, and involve multiple actors; ambitious yet realistic; targeted, measurable and time-bounded.

2) **Create a stakeholder map** that includes who sets the agenda for achieving the mission, who needs to be involved, influenced and persuaded. During the exercise, participants should also look at the roles played by different actors and which cultural factors should be considered during the stakeholders' involvement.

3) **Outline structures, mechanisms and resources** needed to support the mission implementation, considering if existing ones can be used, adapted or replaced. The result should also contemplate an effective monitoring and evaluation mechanism.

4) **Define potential projects, initiatives, and policy proposals** that can contribute to achieving the mission.

The following sections describe the three challenges and the mission statements drafted by each working group.

[13] The activity used a template developed by Trinity College Dublin for the first workshop based on Mazzucato, M. (2018) Mission-Oriented Research & Innovation in the European Union: A problem-solving approach to fuel innovation-led growth. Available at https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf

Enabling Just and Resilient Active Urban Communities

CHALLENGE

Redefining the agenda towards a just transition through guiding principles of Education for Sustainability

MISSION

Enabling just and resilient active urban communities

Time frame: 20-30 years

STAKEHOLDERS

- Representatives from universities.
- Educator and Students.
- Municipal authorities (politicians and administrative structures) that can join multi-departments or steering groups
- Civil society organisations and citizens - neighbourhood councils in Berlin involved in co-design, implementation and evaluation of projects for the neighbourhood.

STRUCTURES & RESOURCES

- Multiple scales, from neighbourhood to local, regional, national and European (depending on the problem).
- Professional facilitation resources for advancing co-creation.
- Funding for pilot/experiments (research, education, citizen science).
- Strategy & funding for retraining new competences (new academic curricula, reorganisation of municipalities).

PROJECTS

University Serving Sustainable Communities

CHALLENGE

Civic University

MISSION

Universities serving sustainable communities

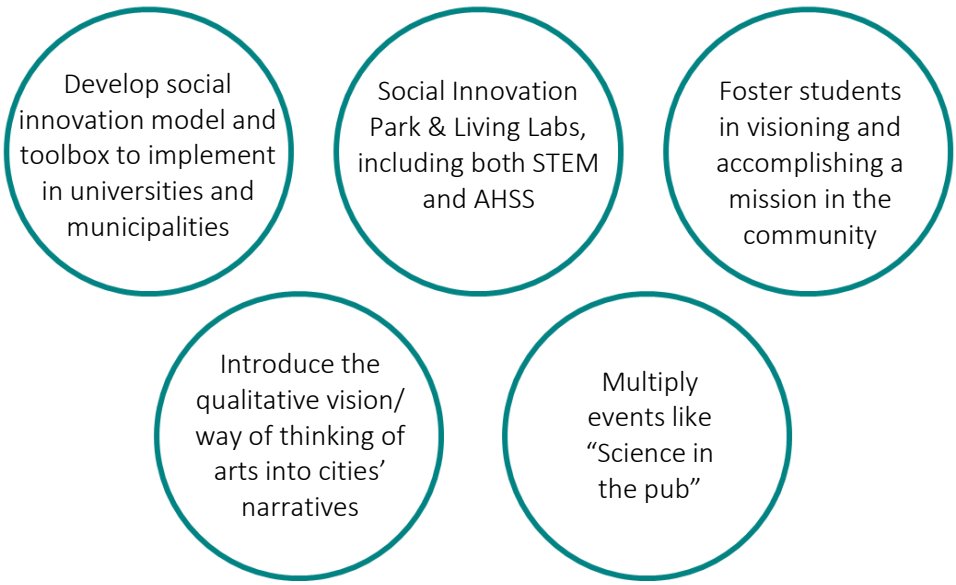
STAKEHOLDERS

- *Healthy cities organisations* like associations and activists' networks.
- Cultural institutions such as museums, art galleries, libraries.
- School system, sports centres.
- Social entrepreneurs, community centres, religious groups and NGOs.
- Shops and small local business.
- Municipalities and city administrations.

STRUCTURES & RESOURCES

- Platforms for sustainable communities provided by University
- Toolbox/guidebook for social innovation processes (storytelling, collaborative work, co-creation, etc.)
- Providing professional facilitation
- New social innovation models (connect to innovation offices of universities)

PROJECTS



Empower a community of change to reorient HEIs towards sustainability

CHALLENGE

Change from within the university

MISSION

Empower a community of change to reorient HEIs towards sustainability

STAKEHOLDERS

- Administrators, students and professors.
- Local communities working with HEIs.
- Leading external actors with adequate time and space.
- Rectorate group in charge of selecting the team that carries out the process.

STRUCTURES & RESOURCES

- Collaborative process for shared ownership
- Policies setting the process as mandatory
- Criteria that value good teaching
- Inter and transdisciplinary degree toward sustainability

PROJECTS

Define new curricula based on a challenge for sustainability

Teach methods and activate training for collaborative processes

Deconstruct the mainstream sustainable labelling and enable new ways of accounting

Awards for "TD champions" from a community of change agents in the existing structure

Re-frame the expectation of students and professors

3.4 Zurich Online Workshop: Arts and humanities integration approaches

Workshop Objectives and Scope

This workshop was originally planned to take place in Zurich in May 2020 but was postponed due to COVID-19 restrictions. It was redesigned and rescheduled to take place online in September 2020, trying to maintain the aims and rich perspectives the hosts had envisioned for the in-person event.

Based on findings from Work Package 2 (WP2) of SHAPE-ID, it was decided to focus the workshop on the challenge of including the Arts and Humanities (AH) in a more meaningful way in interdisciplinary and transdisciplinary research (IDR/TDR) and innovation policy and funding initiatives. The workshop programme design took into consideration the four policy implications elaborated by the first SHAPE-Policy Brief[14], i.e.:

1) Inter- and transdisciplinary research takes place for a wide range of reasons and with partners playing a variety of roles.

2) Inter- and transdisciplinary research is often more time-consuming than mono-disciplinary research as researchers need to navigate disciplinary differences to align goals and approaches. Funding programmes should allow for additional resources to enable IDR/TDR development.

3) Inter- and transdisciplinary careers are still seen as risky for researchers. Policymakers should support and incentivise universities to build capacity in IDR and TDR by taking steps to de-risk inter- and transdisciplinary career paths and integrate IDR/TDR into education and training at an early stage.

4) Uptake of knowledge and recommendations on inter- and transdisciplinary research does not appear to be widespread. A validated online toolkit of IDR/TDR methods, materials and best practice examples is urgently needed to provide a common point of reference for European stakeholders to facilitate the above recommendations.

In this workshop, we aimed at discussing practical recommendations but also highlighted the need for a more thoroughgoing culture change to encourage greater AHSS, and particularly AH, participation in IDR/TDR.

[14] Vienni-Baptista B., Lyall C., Ohlmeyer J., Spaapen J., Wallace D., & Pohl, C. (2020) Improving pathways to interdisciplinary and transdisciplinary research for the Arts, Humanities and Social Sciences: first lessons from the SHAPE-ID project – Policy Brief. DOI: 10.5281/zenodo.3824954

Workshop Participants

The workshop was a participatory event that brought together researchers – early career and senior – in different fields of knowledge, as well as artists, representatives of funding agencies, policymakers, and higher education institutions.

To ensure a diverse group of participants, the hosts collaborated with the Network for Transdisciplinary Research (**td-net**[15], Swiss Academies of Arts and Sciences), which is the primary Swiss contact point for researchers and funders in the field of ID/TD research and teaching. This partnership enriched the workshop due to td-net's expertise with methods and tools for IDR/TDR[16].

Hosts jointly opened a call on the td-net platform to invite stakeholders from different institutions and fields of knowledge. 29 participants and 9 SHAPE-ID partners were invited to the LCW. The workshop included representatives from Australia (1), the UK (3), Denmark (1), Germany (1), Italy (1), Poland (1), Portugal (1), and Austria (1) in addition to Swiss participants and SHAPE-ID partners.

Workshop Format and Activities

Integration is a process enabling researchers and practitioners to combine and/or attune different concepts, methods, perspectives or theories between several disciplines at different stages of the research process. As the basis for building a collaborative endeavour, integration also needs to be guided and supported using different methods and tools[17]. The workshop provided a digital platform[18] in which participants actively contributed to group discussions and activities designed to experience the potential of AH integration to contribute to or lead IDR/TDR.

The Workshop took place over two days fully online. It sought to learn from participants' experiences by: (i) opening a space for exchange and networking; (ii) identifying necessary transformations (conceptual, institutional, funding, etc.) in practice and policy; and (iii) discussing instruments and concrete strategies for AH integration in inter- and transdisciplinary research and funding.

The discussion during the workshop had the following as guiding questions:

[15] http://www.transdisciplinarity.ch/en/td-net/Ueber-td-net.html
[16] We extensively use the "td-net toolkit for co-producing knowledge" for the workshop design. This is accessible at http://www.transdisciplinarity.ch/toolbox
[17] Pohl C. & G. Wuelser (2019) Methods for Coproduction of Knowledge Among Diverse Disciplines and Stakeholders. In: Hall K., Vogel A., Croyle R. (eds) Strategies for Team Science Success. Springer: Cham.
[18] Using Zoom.

1) Why and with what purpose is it necessary to broaden and increase the reach and relevance of AH participation in IDR/TDR? How is greater AH involvement essential to addressing societal challenges?
2) How does this influence the process and results of IDR/TDR? What kind of intersections or reconfigurations among disciplines are needed?

The workshop opened with an icebreaker session using visual images to prompt discussion about participants' experience in IDR/TDR and the factors that hinder AHSS leadership/participation in their daily work. This was followed by a "scene-setting" presentation by Prof Dr Gabriele Bammer (Australian National University) entitled "Towards integration: What is integration and why is it a means to AH participation in IDR/TDR?". This initial input aimed at building common ground among participants and focusing on integration as a main topic for Day 1. Prof Bammer explored the ways integration can happen and how AHSS can fruitfully lead this process, together with examples from the i2sinsights[19] blog. She highlighted the limits of integration and the need to acknowledge those unknowns and outliers that cannot be neatly integrated.

Three key aspects of integration were discussed in Prof Bammer's presentation, focusing on their relevance for inclusion of the AH in IDR/TDR that sought to provide more comprehensive understanding of societal and environmental issues, along with more effective action addressing them:

- Bringing together a diverse group of researchers and stakeholders with differences in disciplinary expertise, practice experience, values, interests, mental models, unknowns and much more.
- Creating a coherent and comprehensive whole (understanding or action plan) from these previously separate parts.
- Staying alert to outliers that cannot be synthesised into the new coherent whole (rather than ignoring them).

After a question and answer session, we opened a forum to experience and experiment with integration using different tools and techniques. Participants had the opportunity of choosing two out of nine experiences – three artist-led interventions and six tools for the co-production of knowledge. These were:

[19] https://i2insights.org

- Emancipatory boundary critique**:** this tool consists of a set of questions to empower non-experts to uncover normative assumptions underlying an expert's solution to a problem along with the solution's social and ecological implications.
- The knight's move, or how to surprise yourself in words: James Wilkes invited participants to engage in a creative writing exercise based on translation.
- Marketplace**:** this tool opened a platform for spontaneous interactions and intense collection of ideas and feedback on how AH are integrated in IDR/TDR.
- Nomadic concepts: are a heuristic tool and analytical practice for communicating across disciplinary, professional and cultural boundaries through discussing and opposing different understandings and use of concepts such as identity, space or emotion.
- How to make a fluvial almanac: Jonathon Keats guided participants through the process of making a monthly river almanac by observing local surroundings, which can be compared to observations made in future years as a means of reckoning natural time.
- Theory of change**:** this is a model of a change process. It provides a description and explanation of how and why an activity or a set of activities (such as a project or programme) is expected to lead or contribute to a process of change.
- Toolbox dialogue approach: this consists of a set of questions and statements (i.e., the "toolbox") that are used to trigger dialogue in a workshop format. It helps researchers become aware of their own (disciplinary) thought style and the (disciplinary) thought style of their collaborators.
- Three types of knowledge tool: this tool enables reformulating research questions in order to check what (societal) knowledge demands the questions meet. Three versions of a research question are generated, each stressing a different type of knowledge.
- Curating the Imagination: Ariane Koek led participants through an exercise in which they learned some of the techniques which curators use to encourage transdisciplinary work.

Day 2 focused on funding strategies and opportunities to foster more and better AH integration in IDR/TDR. Dr Joël Graf (National Contact Point, Euresearch, Switzerland) presented "Integration of Humanities and the Arts in European R&I Funding: Challenges and Opportunities". His presentation provided lessons learned from efforts at AHSS integration in inter- and transdisciplinary Horizon 2020 projects from the point of view of a National Contact Point. Funding opportunities and policy implications in the upcoming European Framework Programme Horizon Europe were also discussed.

After the presentation, Professor Catherine Lyall and Dr Isabel Fletcher, SHAPE-ID partners from the University of Edinburgh, facilitated a co-design session to learn from participants what might be useful features of the SHAPE-ID toolkit now being developed. The toolkit seeks to improve pathways to AHSS integration for a variety of stakeholders. The group split into smaller working groups to engage in a discussion on the features the toolkit. This group exercise allowed participants to reflect on what they had heard from presenters and to expand on, and explore, what a toolkit should look like.

Workshop Outcomes

Challenges of integrating Arts and Humanities in IDR/TDR

The main outcome of the event was the space created for participants to experiment with tools that are not usually included in IDR/TDR, such as the artistic-led techniques. In this sense, participants emphasised the need to think about different processes of integration that not only take "problem-solving" as the main focus of attention, and might range from critical perspectives to integration of values and emotions as means to find a common ground.

Below we provide some examples of the outcomes that the different tools allowed in each group:

- When testing the "Emancipatory boundary critique", participants tended to agree that the tool would be very helpful in conversations with technical specialists, especially as a means of developing a discussion among non-specialists after a specific presentation.
- In the case of the "Nomadic concepts", participants agreed that the tool is important for scientists and engineers because it supports innovative and lateral thinking. It makes it possible to put people at the centre of the research process.
- The group that experimented with the "Theory of Change" tool raised the following issues: (i) the tool prompts a lot of thought about stakeholders and potential overlaps between the core consortium and sphere of influence; (ii) the process developed is very iterative, proceeding from control to influence and back; and (iii) the tool forces participants to recognise the different demands on stakeholders (e.g. business vs academic) who experience time differently.
- The "Three types of knowledge" tool was defined as a "fascinating exercise" by participants "because it helps you to restructure your knowledge and question." Participants agreed that this tool is useful if the research question is not defined or to reshape the research question.

- In the activity "Curating Imagination", participants realised that Arts and curation techniques can act as a means to help the integration process. Working with imagination and creativity allows us to find new approaches to integration in IDR/TDR.

According to participants, integration entails **other specific features that can trigger new ways of rethinking the integration process**, i.e.:

- Experimentation with curiosity and with other types of expertise: in the words of one participant, "We all have curiosity, we all have expertise, there's so many things we can explore".
- Iteration of the integration process.
- Questions guiding the research process are context dependent.
- Important role of "multipliers" (from stakeholder communities) to make the research process more meaningful.
- Relevance of informal tools (such as simple wiki documents) to work collaboratively.
- The Arts can highlight the difference between reason and emotion in a research process.
- Importance of language, concepts and structure and the limitations of diversity through the usage of English as a lingua franca.

Participants tended to agree that **AH researchers** are not always good at playing the "academic game" and usually pursue research in a way that makes it hard to lead or participate in an integration process. Participants acknowledged that there are different ways of perceiving integrative relationships, on some occasions with the idea of "using art": imposing unfair power dynamics in the relationship between art and science. On some occasions, a pervasive instrumental role is imposed on AH in IDR/TDR that does not allow researchers to fully unpack their potential and contributions in a collaborative endeavour.

A concluding remark in the discussion emphasised that "**Arts and Humanities need to acknowledge the challenge**". In this sense, a participant noted that "an integration project should **put in the centre the people participating in the process**". This would also suggest a need for STEMM[20] researchers to reflect on power dynamics and to learn how AH researchers would frame their contributions.

During the discussion, participants also raised the question of the instrumentalisation of the Arts and their techniques. Suggestions on focusing on the process of work and sharing ways to teach AH tools constitute means to overcome the fetishisation of artistic outcomes. For instance, tools like the ones

[20] Science, Technology, Engineering and Mathematics.

that were tested in the workshop can open spaces for experimentation in IDR/TDR settings to "unlock the educational artistic and scientific environment." Participants agreed on the need to "look for surprise, novel connections, and new thoughts" while collaborating, using "techniques that can produce newness and cause [a] diagonal leap that connects two spaces that are not contiguous."

Some **questions** were posed for **future reflection**:

- What would desirable integration look like? Is integration then still the right word for including AH interventions? Is integration only a "positive" process or does integration also mean a loss? Are we ready to face that cost?
- What happens to our scientific work when we allow ourselves to observe it from an artistic perspective? Does this allow us to ask different types of research questions? Or does it simply allow us to bring in feelings and views that we normally block off?
- What do we lose when we block off aspects of who we are (for example, emotions) when performing IDR/TDR? What do we gain when we are able to integrate, for example, reason and emotion?
- Is there a difference between integration and collaboration? Why do we use one word or the other?

In summary, the workshop exercises raised awareness of the importance of being involved in helping and contributing with AH integration in research and funding; to get involved in re-thinking new means and ways of integration in IDR/TDR. Researchers and funders are equally invited to acknowledge these processes and challenges.

Funding and calls for IDR/TDR

During the second day, participants discussed why and how AH can be fruitfully integrated in calls and funding schemes that allow rich research processes to address societal challenges. Participants agreed that there is an **urgent need** for experts in IDR/TDR to be involved in **designing the calls**, specifically to encourage greater AH integration. Funding bodies are urged to accept suggestions to build suitable expert teams of reviewers and advisers. In the words of one participant "if we don't do it [have an expert panel of advisers and reviewers], **there's a danger that the non-transdisciplinary people will redefine IDR/TDR** to suit themselves".

Another fact that calls for more involvement of IDR/TDR experts in designing funding schemes is the observation that the concept of AHSS is used as an argument to design separate programmes with limited budget and a specific focus on AHSS. This separation is not considered helpful for the integration

of AH in IDR/TDR. In the words of one participant: "we are risking that AH also get siloed". The SHAPE-ID team has already highlighted that labelling AHSS as a collective does not allow for differences between these disciplines and their respective approaches to IDR/TDR to flourish. Participants also pointed out some of the institutional obstacles related to the promotion of IDR/TDR and questions about when is the right time for **an individual to "become" an interdisciplinary scholar**.

The discussion also highlighted the role and responsibility of national funders in **building capacity for IDR/TDR**. Some national funders are seen as particularly effective in aligning national funding with EU funding (such as the Dutch case). The main challenge is pointed out in this quote from one participant:

> Where sciences are very good at speaking with one voice, AH are more fragmented when it comes to speaking as a community. Organisations like EASSH and [projects like] SHAPE-ID are important to overcome this difficulty.

Participants shared experiences and stories around personal difficulties in approaching calls when trying to build an inter- or transdisciplinary project. Some of them suggested that these stories should also be systematised by funders in order to better understand the constraints researchers face to get their projects funded. Others questioned the idea of including these terms (inter- and transdisciplinary) in the calls, and the need to have a more open perspective on how to fruitfully integrate collaborative research and AHSS leadership in funding schemes.

A top-down approach to funding calls can make it difficult for inter- and transdisciplinary experts to participate due to the usage of specific definitions that do not always represent the multiple ways of performing IDR/TDR. As already noted in the first SHAPE-ID Policy Brief, participants agree that the "AH should be involved at the beginning of a project **to conceptualise the issue differently**"[21].

Toolkit

Participants envisaged how the SHAPE-ID toolkit can be structured to represent the diversity of disciplines and adequate formats for IDR/TDR. During the discussion, most agreed on the importance of AH in "touching the heart" and how underexplored this is in research. In this sense, the toolkit could provide two different settings: (i) as means to approach research problems from an AH perspective, and (ii) to inspire change. In this sense one of the functions of the toolkit could be to expand

21 Vienni-Baptista B., Lyall C., Ohlmeyer J., Spaapen J., Wallace D., & Pohl, C. (2020) Improving pathways to interdisciplinary and transdisciplinary research for the Arts, Humanities and Social Sciences: first lessons from the SHAPE-ID project – Policy Brief. 10.5281/zenodo.3824954

researchers' and practitioners' imaginations – enlarge their vision and inspiration. A quote from one participant provides a new perspective:

> If the user is not used to integrat[ing] AH in interdisciplinary projects, the motivations to use the toolkit are different, it is more about the reason why you are interested in this approach, how the challenge/idea can be reshaped.

Participants were asked to reflect on toolkits and their features and were invited to answer the following questions. We present some insights on each of the questions:

Where do you go for information on inter- and transdisciplinary research at the moment?

All participants agreed that they build their work on their own knowledge, experiences, and networks (personal and institutional). They develop platforms and databases for their specific needs. Some participants considered that direct collaboration and exchange are also meaningful ways of learning about IDR/TDR. Yet it was also mentioned that sources/tools/literature related to IDR/TDR all focus very much on the research community and are not very accessible to "outsiders" or "newcomers".

What is missing from this existing information?

- Tacit knowledge from people's experiences when implementing tools.
- Case studies of using tools, addressing questions such as "What did we try when using this tool? What happened? What went wrong? What did we learn? What did we produce?"
- Narratives on "how to do" and "how the collaboration can be set up" are missing.
- The messiness of IDR/TDR may hinder the traceability of processes: "sometimes we are applying methods and tools in different ways, so it is necessary to make processes visible".
- Sensitive indexing of experiences.
- Processes and resources for creating a community.
- Means and strategies to open pathways with policymakers and funders.
- The private sector is mostly poorly represented in some toolkits as a relevant participant that can contribute to integration processes.
- The presentation of tools and toolkits often does not meet AH requirements.
- Different types of integration (following from the previous section): In the words of one participant:

  > this is interesting because depending on the way we think of integration we may have different understandings of what the toolkit should do. Thinking about a platform to make this available might help channel people to the appropriate mode of integration. How can we then develop a toolkit sensitive to particular modes of integration people are involved in?

Who do you think are the main audiences for the SHAPE-ID toolkit?

Participants tended to agree that "a toolkit cannot be a universal thing; it should be framed for a specific context for application" and for specific audiences. From an Arts perspective, the following quote is indicative of what the toolkit should entail for AH:

> I've pushed back from a view the Arts can do crowd pleasing translating of research – that is not terrible, but unfortunately positions the artists in the end of the process – I think there's a lot of value in the critical nonlogical approach that a training in the Arts or literature can bring in ways that can be productively upsetting.

What format of information would work best for you and/or other audiences?

- Interactive elements, searchable, that user could ask questions.
- Multi-layered: Best practices and project examples to provide successful narratives on IDR/TDR.
- Co-evaluative tool: Participation of external experts that assess and allow tools to be interactive and change accordingly.
- The toolkit should be connected with social media, a very interactive and dynamic platform.
- It shows potential partners from the Arts (as a "marketplace").

Key insights from the Workshop

To conclude, we summarise three main insights extracted from the Workshop discussions. These constitute necessary transformations (conceptual, institutional, funding, etc.) in practice and policy and concrete strategies for AH integration in IDR/TDR and funding:

- The need to reverse in research and funding how we look at IDR/TDR and to reflect on the relevance of informal encounters and resources we bring to a collaboration.
- The demand to understand integration as a process that might not be complete and what is and how we can recognise "good-enough-integration".
- The need to include a critical assessment of projects and their underlying assumptions and values in calls and in evaluation processes. This would require "unboxing" the technical jargon in some cases, to explain plainly and as transparently as possible the methods and outputs of the project.

3.5 Warsaw Online Workshop: Digital humanities and cultural heritage collaboration Workshop Objectives and Activities

Objectives

Digital humanities (DH) has become a field in which interdisciplinary Arts and Humanities scholarship engages in transdisciplinary dialogue with ICT and STEMM. However, integration of such inter- and transdisciplinary cooperation in cultural heritage (CH) projects is often challenged by **systemic obstacles on the institutional, policy and funding level** (e.g. institutional structures, disciplinary panels in funding calls, research evaluation mechanisms). Furthermore, the research, preservation, and outreach/dissemination components of collaboration between DH and CH are difficult to balance, since they are different in terms of relative importance, corresponding practices and success measures for each of the two domains. These barriers hinder inter- and transdisciplinary cooperation which would be otherwise beneficial for both sides and should be addressed, given the importance of CH in the next European Commission research and innovation framework programme (Horizon Europe).

The work carried out on the use of digital methods by humanities researchers allows us to differentiate between **cutting-edge DH methods,** where research questions are driven by the digital tools, and **digitally-enabled research practices**, based on disciplinary workflows, characterised by a selective use of certain digital tools (See: Maryl et al 2020 for more background). The Digital Methods and Practices Observatory (DiMPO) DARIAH Working Group has conducted a European survey on scholarly practices and digital needs in the Arts and Humanities which mapped the scale of this uptake. These results were later explored in group interviews with scholars of contemporary history for the NEP4DISSENT COST Action's Joint Review Report (Ch.5). This work identified the gap in mutual understanding between digital and non-digital scholars as one of the crucial barriers for the broader uptake of digital methods. The working assumption of this workshop is that a similar challenge exists in the cooperation between DH and CH.

The emergent status of digitally-enabled research complicates inter- and transdisciplinary cooperation. Due to the lack of understanding of how such methods may be incorporated into disciplinary workflows, DH practitioners (including research infrastructures) may not be receiving enough feedback to tailor their services to actual and potential users both in the Arts and Humanities disciplines and in the CH sector. The same applies to new modes of scholarly communication brought about by digital humanities, which potentially allow for a better societal impact than non-digital humanities.

On the institutional level, in many European countries research and cultural heritage are governed by different ministries and use different funding schemes, which makes a shared agenda difficult. The 2019 DARIAH report *How to Facilitate Cooperation between Humanities Researchers and Cultural Heritage Institutions* highlights the **growing need for cooperation between those sectors**, especially with regard to improving access to resources and promoting their potential among researchers. The authors posit that DH researchers and CHIs can enter into mutually beneficial cooperation, and provide some recommendations on collaboration strategies, data standards and communication, along with a showcase of successful projects. This document, circulated in advance to workshop participants, set the stage for the workshop, by showing the potential of such cooperation.

The workshop focused on what could be done to enable such collaboration by addressing the persistent obstacles to the uptake of interdisciplinary, digital humanities approaches in the cultural heritage domain, on the one hand, and by building a shared understanding of the significant differences in practices of digital curation, data preservation and public outreach between the DH and CH sector, that need to be addressed to foster that collaboration. The workshop aimed to prototype solutions to these challenges on both institutional and practical levels, including the policy measures that could be undertaken to achieve better integration of DH into both humanities scholarship and CH projects.

On the one hand, we asked what measures should be undertaken to facilitate cooperation between cultural heritage experts and humanities researchers working with digital sources and employing digital research methods. On the other, we deliberated on how to strengthen the generative role of CH projects in providing new data and fostering new research questions for digital humanities scholarship and, vice versa, how digital humanities can align research agenda with the goals of CHIs to better serve the preservation and outreach aims of cultural heritage projects.

Thus, the ultimate ambition of the workshop was to understand how to trigger processes of **integration** of **digital humanities** research with the **cultural heritage** sector to promote **sustainable** and **mutually beneficial** cooperation.

Virtual workshop methodology

This workshop was intended to run as a face-to-face event on 20-21 April 2020 in Warsaw. All the necessary arrangements had been made and 24 participants had confirmed their attendance. Due to COVID-19 travel restrictions the workshop was postponed to 24-25 September. Given the development of the pandemic situation, the event was rescheduled to take place online.

The change of format called for a redesigned methodology. The research team surveyed available software, solutions and best practices. In conclusion we opted to run the workshop over two 3-hour sessions with a long break in the middle, to minimise participants' fatigue and ensure their attention. We decided to use Zoom for video conferencing, as this is a widely used tool and we could take advantage of its breakout room feature. To allow for more informal and direct communication between participants before and during the meeting, we set up a dedicated Slack channel. All notes were taken on Google docs files and stored in a shared Google drive folder for convenience. Although note-taking was largely undertaken by the research team, we encouraged contributions from all participants.

The workshop participants came from different backgrounds. We invited digital humanities researchers, cultural heritage professionals, heads of research infrastructures, as well as funders and policymakers, believing that such a spectrum would enable a multi-faceted perspective on the issues in question. We also aimed at geographical diversity, with participants coming from 11 European countries: Belgium, Czechia, France, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Poland and the United Kingdom. Altogether we had 22 participants, 4 SHAPE-ID observers, and 4 facilitators from IBL PAN.

Activities

Before the workshop participants were asked to join the Slack channel and acquire access to the Google drive folder. To ensure that participants did not have any technical difficulties, helpdesk slots were set up before the workshop. They were asked to post brief introductions on Slack, sharing their experience and expectations for the workshop. We also asked them to read the relevant DARIAH report How to Facilitate Cooperation between Humanities Researchers and Cultural Heritage Institutions and (optionally) Sustainable and FAIR Data Sharing in the Humanities: Recommendations of the ALLEA Working Group E-Humanities. The latter document was discussed by Natalie Harrower in the introductory session.

The workshop took place on 24 and 25 September (1-4 pm CEST), with 30-minute breaks in the middle. During the breaks the video conference room remained open and participants were encouraged to bring their coffee or lunch and chat online.

Day 1 (24 September) began with Maciej Maryl's welcome and an introduction to the SHAPE-ID, consortium and project goals. It was followed by short presentations by Natalie Harrower (DRI), Jenniffer Edmond (DARIAH, TCD), Charles Giry-Deloison and Alexandre Caussé (JPI CH) dedicated to the issues of cooperation between DH researchers and CHIs from different perspectives. Next, participants

were divided into four breakout groups in which they were asked to map the main obstacles for DH/CH cooperation (institutional, funding, policy, other), providing examples. During the plenary session rapporteurs from groups shared insights and defined the main challenges. This was followed by the presentation of the "Atlas of Holocaust Literature" interdisciplinary digital humanities project with a virtual walk (short video)[22] followed by a Q&A with the project's creators (Bartłomiej Szleszyński, IBL PAN). After the workshop, participants who were interested in learning more about SHAPE-ID or the Atlas were invited to join two rooms of a "SHAPE-ID bar" for unstructured discussions.

Day 2 (25 September) began with a plenary session, summing up the challenges identified on Day 1 and co-creating a list of possible remedies. Participants also shared examples of best practices. Next, four breakout rooms corresponding to particular remedies were created, where participants focused on designing a concrete solution in response to challenges (e.g. policy measure, funding call), sharing insights and difficulties. During the plenary session rapporteurs presented the prototypes discussed by the groups. After relaying the information about the evaluation process, the workshop was concluded.

Keynotes and discussion

Dr Maciej Maryl (IBL PAN) welcomed the participants and delivered some introductory remarks on the topic of the workshop and the SHAPE-ID project. He dwelled on the "A Life on the Hyphen" manifesto (Huet et al. 2019)[23], which borrows the hyphen metaphor from a book on Cuban-Americans by Gustavo Pérez Firmat. Just like Cubans who arrived in the US as children and have a dual identity, digital librarians are both full-time librarians and fully-fledged scholars. Unfortunately their work remains invisible to both respective areas. The manifesto calls for recognition of "hyphenated scholars" and bridging the gap between seemingly separate areas of library and research work. Similarly, this workshop tries to address these issues by looking at the barriers for cooperation between the cultural heritage sector and digital humanities researchers.

Natalie Harrower, Director of the Digital Repository of Ireland, presented the report Sustainable and FAIR Data Sharing in the Humanities: Recommendations of the ALLEA Working Group E-Humanities, which provides hands-on guidelines on data practices in the humanities. The report is divided into sections corresponding to the research workflow (identify, plan, collect, deposit, disseminate, legacy

[22] We introduce and present this on the SHAPE-ID blog at https://www.shapeid.eu/the-atlas-of-holocaust-literature-a-case-study-in-interdisciplinary-research/

[23] Huet, H., Alteri, S., & Taylor, L. N. (2019). Manifesto: A Life on the Hyphen: Balancing Identities as Librarians, Scholars, and Digital Practitioners. DHQ: Digital Humanities Quarterly, 13(2).

data). Harrower observed that the FAIR principles are gaining momentum in the research sector, and funders are increasingly mandating the timely sharing of FAIR data and other outputs (e.g. software). The GLAM sector (i.e. galleries, libraries, archives, museums) and memory institutions are also (unevenly) looking to FAIR, which provides good tie-ins for dissemination such as Europeana and EOSC. Pathways for implementing and assessing FAIRness are still being developed, and they require community tailoring. Successful adoption of FAIR is dependent on commensurate changes in research culture: training and access to data stewards/support, changes in rewards and incentives.

Jennifer Edmond, President of the DARIAH Board of Directors, reframed the problem of cooperation as the need to find a common ground between CHIs which are custodians of research assets and the scholarly community which poses research questions. From the point of view of a Research Infrastructure (RI) like DARIAH, there is a seamless, if broken, continuum between the two, because it tends to be a line rather than a circle, going only in one direction (i.e. from CHI to researchers). Hence, the role of research infrastructures is to provide more interaction between these two groups. In order to do so RIs should concentrate on skills and competencies. Researchers tend to cope well with the issues of discovery, use, reuse, and sharing of research data. The crucial area for such intervention thus relates to application and integration skills and this is where RIs may help. Training and Education is one of 4 pillars of DARIAH. This is being achieved through the "Train the Trainers" approach, i.e. providing professional training to individuals who would later disseminate their skills within their institutions.

Charles Giry-Deloison and Alexandre Caussé (Joint Programming Initiative on Cultural Heritage) in their joint presentation focused on three points. (1) Digital humanities is an integral part of research in cultural heritage. As an example they referred to the upcoming JPI Call on Digital Heritage as well as a conference scheduled for 11-12th March 2021 (Conference: Digital Technology and Heritage: the challenges and opportunities at stake). (2) Heritage Science is always transdisciplinary. The JPI CH Scientific Advisory Board aims at fostering dialogue between researchers and professionals and sees the importance of linking these sectors. This is also a way to apply research in society. (3) Safeguarding Research Data. There is a need to harmonise the existing databases before building new ones. JPI coordinates the actors in the heritage science plus the Research Infrastructure - European Research Infrastructure for Heritage Science (E-RIHS).

The discussion of keynote presentations pointed to the academic evaluation system as a significant obstacle to the uptake of FAIR principles. While academic culture in the humanities is very collaborative in other respects, when it comes to research outputs, scholars do not have enough incentives to curate data outputs of their research in a FAIR way as long as the article and monograph publication and its

impact factor remain the dominant token of scholarly recognition. Some progress has been achieved thanks to the 2012 Declaration on Research Assessment (DORA), advocating more complex evaluation systems, which is slowly being incorporated into academic policies in some institutions such as Durham University in the UK. In addition to the policy dimension, it was also pointed out that in order to implement FAIR principles in research, scholars need greater institutional and technical support to enable data preservation and reuse beyond the funding cycle.

Day 1: Defining the Challenges

In the ideal world of interdisciplinary and transdisciplinary research, the digital cultural heritage sector and humanities research would be intertwined in seamless workflows driven by shared curation of the data of culture. In real life however, they are not. Workshop participants, cultural heritage professionals, researchers, funders and policymakers were asked about the biggest obstacles to such cooperation, from the perspective of their professional domains.

Divided into four breakout groups, participants had 45 minutes for the discussion. In the first part of the session they enumerated concrete obstacles, and were asked to apply different perspectives: that of an individual CH and DH professional, and those of institutions and funders operating in the framework of national and EU level policies. Supporting questions concerned some details of said obstacles:

- Where are the needs of researchers not served by the existing digital CH infrastructure, and vice versa, where does the digital research infrastructure not meet the needs of the CH sector?
- What are the challenges to the sustainability of professional careers bridging DH and CH domains?
- What are the differences in understanding and exploiting digital data between CH and DH professionals?
- How can access to CH objects be better attuned to the research agenda, and how can research results be better captured to serve CH goals?
- What are the obstacles to re-using CH data in DH research?
- What are the obstacles to re-using DH research results in CH projects?
- What are the differences in the way CH and DH communities communicate the results of their work?

- What are the deficiencies of mechanisms intended to generate feedback in crucial areas in which the two communities intersect, e.g. digital preservation, repository design, discovery services, public outreach?

In the second part we tried to transform some of those obstacles into goal-oriented statements using the How might we technique. We returned to the issues and tried to rephrase them as goal-oriented statements, assuring they are neither too general nor too detailed and allowing for various solutions. These were reported during the plenary session.

Evening exercise

The goal of the evening exercise was to showcase an interesting instance of transdisciplinary collaboration between digital humanities and cultural heritage institutions in achieving public outreach, using the example of the Atlas of Holocaust Literature, a project developed by Digital Humanities Centre at IBL PAN. Originally we intended to present the project to workshop participants and subsequently take them for a walk to some of the places represented online, focusing on the issues surrounding the representation of time and space in the virtual environment. Since the workshop had to move online we prepared a virtual walk in the form of a video .

The Atlas of Holocaust Literature, currently available only in Polish, is one of the scholarly digital collections on the New Panorama of Polish Literature platform, created and developed in the Institute of Literary Research of the Polish Academy of Sciences. Digital collections published on that platform are created by combining scholarly knowledge, digital narrative structures and carefully selected visual material - prepared by a graphic designer or obtained from Cultural Heritage institutions such as museums and libraries.

The Atlas of Holocaust Literature is an example of a fruitful, interdisciplinary cooperation between researchers from different domains: digital humanities, Holocaust studies and cartography. Secondly, it shows how tangible cultural heritage, such as photographs or handwritten testimonies, can be contextualised and situated in time and space by researchers. Working with selected Holocaust testimonies of the the Warsaw Ghetto from the Ringelblum Archive, the research team extracted almost a thousand spatial units (addresses, routes, areas) and linked them with people and events. The result could be also treated as a cultural-heritage collection, on the one hand, and a research tool for Holocaust scholars, on the other. The exercise aimed at discussing differences between the representation of time and space in the virtual environment as opposed to the built environment of the remains of the ghetto, in order to increase awareness of how digital research projects might deepen

the societal impact of cultural heritage practices localised in time and space by providing a complementary, interactive and synoptic perspective.

The Atlas has been developed by the interdisciplinary team based at IBL PAN, led by Jacek Leociak and Bartłomiej Szleszyński. The latter participated in a Q&A with workshop participants.

Day 2: Prototyping the Solutions

In the plenary session Maciej Maryl presented a summary of Day 1, focusing on the four main challenges, distilled by the IBL PAN team from the record of the breakout session discussions:

- Copyright, permissions, standards and ownership;
- Funding and sustainability;
- Diverse research cultures on disciplinary, national and European levels;
- Evaluation and quality assessment.

These were accompanied by the goal-oriented statements generated on the previous day, which are described in greater detail in the Outcomes section below. Participants were then invited to engage in a brainstorming exercise aimed at collecting ideas for solutions and sharing existing best practices relevant to those challenges, which formed the basis for the breakout sessions on Day 2.

Participants were divided into four groups corresponding to the challenges and asked to discuss concrete solutions to overcome them. We applied a prototyping method with elements of perspective assessment. First, we discussed a concrete, detailed solution to the given challenge. Participants were encouraged to discuss such features of the proposed solution as goals, expected outcome, target audience, action plan (including activities and timeline), resources needed (e.g. funding, training, infrastructure, institutional or policy support), and evaluation of the outcomes. In the second step we assessed whether the needs of relevant stakeholders are sufficiently addressed by considering the prototype from different perspectives (those of researchers, funders, policymakers, cultural heritage institutions, research institutions, companies, teachers, students and others). The prototypes were presented by breakout group rapporteurs and discussed during the final plenary session.

Outcomes

Key challenges

Participants identified the following challenges as the main obstacles for DH/CH cooperation. They are discussed below together with corresponding goal-oriented statements aimed at overcoming these difficulties.

Challenge 1 Copyright, permissions, standards, and ownership

How might the EU ensure full technical integration around FAIR principles, so that the data is mutually re-usable between CH and DH domains?

Adoption of FAIR principles involves very specific technical requirements. In many cases institutions in both DH and CH operate on the basis of siloed infrastructure, including proprietary data management systems which are not interoperable. Clear information on accessibility and reuse of data is needed to advance such integration. As each institution works within a specific mode of operation, local knowledge may be needed to assess the resources. It is also important to grant and maintain access to heritage data for research and education, e.g. as a general exception to the European Copyright Directive for Research. Hence, the solutions at the EU level require the alignment of the existing infrastructure to meet the technical requirements of FAIR principles.

The quality of the process is important. For instance, crowdsourced data input raises the question of the quality of the metadata or transcriptions being created. FAIR principles and good metadata are enablers for interaction between researchers, cultural heritage institutions and infrastructures.

Integration and interoperability do not have to mean a mega-infrastructure for all resources. It was discussed whether we might create a joint infrastructure which would enable keeping various data under one roof and provide the tools for their exploration. There were doubts as to megaprojects' openness to more risks, as scale brings potential for gaps and the complexity of these issues is a risk to project success. If we generate data and make it accessible in a machine-readable form, we may create many other formats. Then it can be 'downgraded' to less accessible formats, such as PDF. To do it the other way around is not possible.

Challenge 2 Funding and sustainability

How might we facilitate better networking between CH and DH domains to make the transdisciplinarity of the two domains more visible to the funders and policymakers and to improve accessibility of cooperative funding?

This discussion addressed the general lack of cross-sectoral funding. CH and DH professionals apply to different funding schemes with diverse success criteria, and different kinds of reporting expected. That makes it hard to find a good model for cooperation. For instance, storing and sharing project data according to FAIR principles is not a standard in the CH sector. On the other hand, scholarly-based projects have success criteria very tightly aligned with academic publications through the journal impact factor, whereas success for CHIs is measured more often in terms of societal impact.

The main systemic factor identified, apart from different attitudes to certain concepts and to the creation of datasets or collections, was the frequent difficulty faced by researchers collaborating with CHIs in terms of speed or agility. They would like rapid delivery of results and often the GLAM sector is unable to deliver at the pace required by a research project due to their own commitments, goals and staff availability. There are many different ways of understanding different concepts (e.g. data, corpus, collections – not just between researchers and CHIs but also between different disciplines) and the language varies between different individuals, groups and institutions. More time and labour needs to be devoted to building a shared understanding and developing sustainable communication between different actors, learning about each other. Such understanding needs to be developed even before working together or through a special preparatory phase of the project, dedicated to establishing a shared understanding.

How might we enable long-term collaboration with different actors (beyond one project) to improve the sustainability of the outcomes of CH/DH cooperation?

Ensuring sustainability for such cooperation is a difficult process because of the complex data systems and legacy data systems. Different staff involvement models (e.g. joint appointments between a research institution and a CHI) might be interesting to explore.

Challenge 3 Different research cultures (on the disciplinary, European and national level)

How might we build more trust around data sharing between DH researchers and small or local CH institutions?

Although data sharing resonates in part with FAIR issues discussed in Challenge 1, here it is viewed from the research culture perspective. CHIs and researchers often work with different aims in mind. These purposes manifest themselves in the ways in which data collections are made, processed and shared. There are different needs in terms of accessibility of data. This often means that CHIs and researchers have very different ways of thinking about constructing the dataset and researchers may not always be able to compile one. A researcher may have specific requirements in the ways in which their datasets are being constructed, in terms of coverage or sampling. On the other hand, these aims are not always connected to a purpose of increasing the societal impact of the data, which is the priority for CHIs who need to focus on national heritage comprehensively. Even though many resources are made available by CHIs, they may not always be used by researchers with specific research questions in mind.

These differences may also have a geographical dimension as in the case of Hungary where smaller, provincial institutions are more reluctant to cooperate with researchers. They don't feel incentivised to share their data and hold a very conservative view on data sharing. There is also competition between CHIs to monopolise data. On the other hand, in the Greek landscape, it is much easier to cooperate with GLAM institutions from the private sector than the public sector, because it takes less time to make decisions and the approach to sharing the CH assets is less conservative. The conclusion is that we need to build more trust and more explicit and precise dialogue, clarifying what exactly scholars need from the CH sector institutions and how universities could provide a reciprocal benefit to them. It is difficult to categorise this observation at the European level because the national context is crucial and diverse.

How might we instigate curricular reform to assure teaching digital humanities skills in humanities curricula?

An introduction to DH for humanities students is needed. The misunderstandings about DH do not only occur along the line of communication between CHIs and researchers. This issue often keeps reappearing on the disciplinary level where more traditional scholars are not aware of digital methods, needs and solutions in their fields. They may be experts in their field of work on prepared collections but do not have deep knowledge of data standards, or metadata creation. The specialised, interesting resources that they create may be of little use for DH research. It is also an important point for DH practitioners to consider since there is a danger of a „bubble" in which they collaborate and communicate with other researchers specialised in DH. While not all humanities researchers need to engage with the digital, they should be acquainted with DH on some basic level to assess it critically. Moreover, the knowledge about formats, standards, sustainability issues, challenges, etc. becomes

indispensable in the humanities. The necessity of teaching DH foundations should be clearly communicated to the policy makers and other institutions responsible for shaping educational policies.

How might we build strong interdiscipilnary or intersectoral consortia, bringing the right institutions together and fostering cooperative relationships between DH researchers and CH professionals opening new, two-way modes of cooperation?

It was a shared understanding that more dialogue in different forms and working together in interdisciplinary research scenarios (involving co-creating datasets) need to be facilitated so CHIs may understand better how their collections can be useful for research and vice versa. This could be also achieved through joint seminars and presentations of relevant projects. Researchers and CH professionals may have different goals with regards to a project involving digitisation: CHIs may simply want their holdings digitised and made publicly accessible, whereas researchers are more concerned with contextualisation and interpretation. This should also work the other way around as archivists are usually very attached to their collections and know their content best. Hence, they may not want others to misunderstand or misuse it. External funding creates opportunities to align goals, build trust, create a common platform, and overcome professional differences.

The CH and DH communities of practice are are very different (though the details do vary, of course). Whereas researchers have a lot of autonomy, museum staff are bound by stricter rules and approval requests. It is easier to solicit interest from scholars but harder to secure long-lasting commitment. This can make it hard, for example, to recruit CHIs into research projects. Intersectoral cooperation looks different when there is more than one CHI, as it opens up issues of metadata homogeneity, access conditions, licenses, etc., discussed in more detail under Challenge 1. Diverse practices may not always be compatible and cultural differences between countries may also play a role but it also brings richness to the project.

Challenge 4 Evaluation and quality assessment

How might we ensure cultural outreach, public engagement and societal impact recognition in researcher evaluation systems?

In order to facilitate intersectoral cooperation we need to incentivise its outcomes for both sides, for instance by valuing curatorial projects and exhibitions in literary cultural studies, or history. A good example comes from the UK, where DH has not had a problem interacting with CHIs. It could be attributed to changes in the evaluation mechanism for research which included societal impact even

before it became an important feature of the EU framework programme. The Research Evaluation Framework (REF), a national exercise which distributes research funding to universities, is providing a lot of benefit for the collaboration between universities and cultural heritage sites precisely because it prizes direct public benefit of research activities. To create a similar effect in other countries, DH researchers should advocate broader recognition of societal impact in national and international evaluation mechanisms.

On the other hand, in the new version of the Standard Evaluation Protocol (SEP) in the Netherlands, the Quality and Relevance in Humanities (QRIH) has been introduced in cooperation with stakeholders from humanities faculties. It is a bottom-up approach to evaluation: researchers and people from outside academia suggest what are good evaluation criteria for a particular project, what is good evidence of achievement of a concrete incentive. Such an approach, emphasising narratives rather than figures, is a good practice in the assessment of interdisciplinary work.

Prototyped solutions

Participants worked on challenges discussed above by choosing one concrete aspect which could be remedied by a tailored solution. Thus, the prototypes do not address enitre challenges but some concrete, ofter narrow areas where the intervention was planned.

Copyright reform with regards to Text & Data Mining

Responding to the challenges around copyright, permissions, standards, and ownership, this prototype concentrates on the activities that should be undertaken in order to allow unrestricted research reuse of existing cultural resources for text & data mining (TDM). The goal of the prototype is to make specific institutions aware of the problem and encourage them to change their policies on the basis of the prepared recommendations.

The plan entailed creating a coalition of relevant stakeholders like European Research Infrastructure Consortia, academic advocacy networks e.g. (ALLEA, EASSH), libraries (e.g. CENL, LIBER), associations, learned societies, SMEs interested in benefits from TDM, etc. This coalition should propose a concrete amendment to the copyright act, detailing the uses important for the research community and stressing their public benefit. New legislation recommendations should be made on the basis of analysing the existing solutions.

Next, wider support should be sought from policy and funding institutions on both EU and national levels (e.g. funding agencies). This should include enlisting people who can support such a bid.

Moreover, the coalition should look for public consultations as an occasion to present a common stand. A roundtable in Brussels should be organised with representatives of many groups with a proposal to launch a conversation about those changes. A meeting at the European Parliament should also be arranged to raise awareness of those changes.

Existing practices and solutions in this area, mentioned by the participants, include:

- Heritage Data Reuse Charter, a joint initiative of European organisations (APEF, CLARIN, DARIAH, Europeana, E-RIHS) and projects (Iperion-CH, PARTHENOS) aimed at setting up principles and mechanisms for improving the use and re-use of cultural heritage data.
- LIBER (Association of European Research Libraries) lobbying around Text and Data Mining.
- Passenger Pigeon Manifesto: http://ppmanifesto.hcommons.org/ , a call to CHIs to open the digitised heritage.
- GLAM Labs International Network and Open a GLAM Lab
- Some ongoing initiatives on Interoperability, e.g. Europeana and CLARIN worked on the metadata model together so it could become more visible (data doesn't have to move). See: https://pro.europeana.eu/post/clarin-case-study and https://www.clarin.eu/blog/bridging-europeana-and-clarin-infrastructures
- Importance of distributed data infrastructure. This work is being done in the Social Sciences and Humanities Open Cloud project.

Innovative funding scheme for upcycling deposited project data

Addressing the funding and sustainability issues, this prototype envisions an innovative funding scheme for upcycling (preservation and reuse) of deposited project data. While a digital infrastructure exists for depositing project data, it mostly performs an archiving function, whereas the reuse of deposited data is fairly moderate. That precludes not only important public benefits, such as better returns from public spending, but also decreases the sustainability of project data beyond the funding cycle, as deposited data are no longer curated and adjusted to the changing technological landscape. To remedy the lack of reuse of CH/DH data, mechanisms must be put in place that foster interdisciplinary collaboration based on data that we already have, around post-project data curation and exploitation (rather than only archiving), which would involve multiple stakeholders to increase its societal impact.

Targeting the CH and DH sectors as well as educators, NGOs and for-profit companies, the scheme's main goals are to build sustainability into the outcomes of the work of CH and DH organisations in a proactive way, by linking data, results and findings between different projects, and thus creating the space and increasing the capacity for future interdisciplinary collaboration between the two domains geared towards absorbing the data into future projects. The main benefit of the projected funding scheme are incentives for CH/DH actors to make data accessible in a FAIR way, so that the data is kept alive and upcycled, i.e. actively curated, enriched and better integrated, beyond the funding cycle. The scheme would also make possible better outreach to user groups beyond the two domains (educators, NGOs, companies), and could lead to devising new metrics for assessing the impact of a given project by the measure of its reuse. Finally the scheme would contribute to counteracting the bias against data reuse among humanities scholars (inferiority of projects that re-use the work of other scientists). Beyond lobbying for establishing the prototyped scheme on national and European level (e.g. upcoming Horizon Europe Cluster 2: Culture, Creativity and Inclusive Society), actions needed to transform the prototype into a working solution include seeking that the existing funding schemes require projects to plan collaborations involving data reuse as part of their sustainability plans, and guiding evaluators to better assess the innovation potential of projects based on re-used data. Finally, projects interested in data reuse should proactively seek partnerships with existing funded projects, and dedicated communication platforms should be established for the purpose. Finally, a multi-stakeholder COST Action on deepening and facilitating the exploitation, curation, and public impact of post-project data could advance the examination of the matter.

Existing best practices should be taken into account, including the GLAM Lab community model of cooperation between research and CHIs, and the Greek-German Fund policy on data reuse, as well as the CHIST-ERA call on Open Science stimulating CH/DH cooperation.

Shared understanding of research cultures

The main purpose of the prototype is to minimise the barriers between different research cultures, defined as one of the most complex challenges. The idea is to promote the value of inter- and transdisciplinary collaboration between CHIs and humanities researchers throughout the whole career lifecycle (From Bachelor's to Post-Doctoral Level), in order to create a robust disposition towards collaboration with CHIs among future researchers. A specific element of this idea is to shift the focus from the size of the Master's thesis to professional internships at smaller cultural heritage institutions (preparation at the Master's level). Inter- and transdisciplinary collaborative PhD projects and Post-Doctoral Positions (50% CHI / 50% University) should also be part of this solution.

This action should be preceded by a detailed analysis of the barriers for collaboration and differences in approaches between DH and CH (e.g. research excellence seems to be a greater motivator for researchers compared to CHIs, whereas the later group seems to be more engaged with the general public and society). Such collaboration skills should be implemented in practice, for instance, through internships at smaller cultural heritage institutions, like the ones currently offered by the University of Ghent (https://www.ipg.ugent.be/en/internships). It is also important to make clear the immediate benefits of such collaboration for both individual careers and institutions.

Existing practices and solutions in this area, mentioned by the participants, include:

- COST Actions seem very appropriate for establishing common ground and for making connections leading to joint projects. However, one can't go far beyond networking there, to establish more durable forms of collaboration. COST actions serve as a starting point leading to creating future project proposals and research scenarios.
- Erasmus+ Knowledge Alliances for training future professionals (universities and archives)
- UK Funding Schemes: Designate CHIs as Independent Research Organisations (see for example https://ahrc.ukri.org/funding/research/iro/).
- Working with Cultural Heritage Professional Networks (e.g. in Norway only a few museums are eligible as Research Partners) to stimulate the formal recognition of CHIs as Independent Research Organisations (being able to host PhDs and others, e.g. British Library)
- Possibilities of shared appointments (e.g. the Belgium FEDtWIN programme: postdoctoral positions: 50% CHI / 50% University)
- The Digital anthropocene syllabus: https://ethos.itu.dk/the-digital-anthropocene/ and also: Courage Connecting Collections: http://cultural-opposition.eu

Evaluation framework

The prototype tackling the challenge of evaluation and quality assessment focuses on the academic reward system and assessing the careers of individuals involved in working with data in order to ensure that data experts are adequately evaluated and valorised. The focus is on the evaluation procedures in Europe which are slow in crediting and incentivising digital, data-rich research outcomes as valuable academic outputs.

Researchers involved in data creation need to be appropriately recognised for their work. One of the key tasks is to define the amount and the value of the work behind specific data generation and curation activities. The aim is to show that data management is an academic activity – one needs to ensure that people recognise it as research – and to distinguish the resource from the research output, by defining the new knowledge that data generates. The emphasis should also be placed on the level of the project: we should focus on how people collaborate in a specific initiative dealing with DH and CH in order to highlight best practices and ways to evaluate the quality of digital resources. It is equally important to shift academic thinking about authorship. The process could be similar to the description of an experiment – a step by step description allows for value assessment. Authorship is crucial since when we collect digital data, there are typically a lot of authors. Furthermore, social impact should be taken into account during the evaluation process, though it is often challenging to review the non-academic uses of data. Similar action could be taken with regards to crediting programming outputs.

While current peer review practices should be approached critically, some form of expert review should be applied in the evaluation process. The key is for the experts to understand and embrace interdisciplinarity and also to be able to evaluate well. Someone can be an expert in a field but not be able to evaluate a project adequately as it is not a trivial thing to do. Training should be provided for experts on how to review the data creation and curation activities.

Evaluation of digital outputs could be supported and facilitated by an academic data journal, consisting of articles which describe in detail the content and creation process of particular datasets. Such journals focus on data quality and contribute to changing perceptions about this topic. National and EU funders should be enlisted in the process since they often show an interest in SSH but are often not well-informed on how to provide adequate support.

Existing practices and solutions in this area, mentioned by the participants, include:

- Example of the UK REF – rules included creation of digital resources and data
- Ghent University: interdisciplinary networks within university, social value creation (post-docs), interdisciplinarity (SSH and STEMM) and intradisciplinarity (see: https://www.ugent.be/intranet/en/research/soc-value/overview.htm)
- Dutch Evaluation system – cultural outreach in the review procedure can be included
- DORA principles
- Tracking scientific credit rather than authorship CRediT http://credit.niso.org/

- Research and Innovation Conference in Brussels – Open Science: EUA group on Research Assessment – recommendations for research institutions for changing the evaluation systems bottom-up / Open Science Policy Platform OSPP – with national centres
- European Expert group report on rewards and incentives for open science (including an Open Science Career Assessment Matrix): https://ec.europa.eu/research/openscience/pdf/os_rewards_wgreport_final.pdf

3.6 Bilbao Online Workshop: AI4Good

Workshop Objectives and Scope

The final SHAPE-ID Learning Case Workshop was co-organised with the University of Deusto in Bilbao and took place on 19 October 2020. The workshop focused on the societal challenges associated with Artificial Intelligence (AI) development and the role the Arts, Humanities and Social Sciences (AHSS) can play in this process. The aim was to discuss through an interdisciplinary approach the most urgent practical recommendations and to highlight the need for a more thoroughgoing culture change encouraging greater AHSS participation in the innovative process of developing AI technologies.

The emergent status of Artificial Intelligence complicates inter- and transdisciplinarity cooperation due to a widespread lack of understanding of the topic. The workshop followed the Council of Europe Commissioner for Human Rights Report *Unboxing Artificial Intelligence: 10 Steps to Protect Human Rights*, in understanding AI:

> AI is used as an umbrella term to refer generally to a set of sciences, theories and techniques dedicated to improving the ability of machines to do things requiring intelligence. An AI system is a machine-based system that makes recommendations, predictions or decisions for a given set of objectives. It does so by (i) utilising machine and/or human-based inputs to perceive real and/or virtual environments; (ii) abstracting such perceptions into models manually or automatically; and (iii) deriving outcomes from these models, whether by human or automated means, in the form of recommendations, predictions or decisions.[24]

The implications of AI development are significant. As the report highlights:

> AI-driven technology is entering more aspects of every individual's life, from smart home appliances to social media applications, and it is increasingly being utilised by public authorities to evaluate people's personality or skills, allocate resources, and otherwise make decisions that can have real and severe consequences for the human rights of individuals.[25]

By the same token, while the incremental developments in digital technologies have thus far aligned with human projections of progress, AI-driven technology is bringing a disruptive change that will radically challenge our social and economic fabric. The combined effects of globalisation and robotics ("globotics") and the emergence of more sophisticated autonomous artificial agents and social robots

[24] https://rm.coe.int/unboxing-artificial-intelligence-10-steps-to-protect-human-rights-reco/1680946e64, p.5
[25] Ibid.

present new scenarios that could generate both opportunities and threats in terms of the ethics, politics, and dynamics of our social and working lives. The impact of COVID-19 is only making these challenges more urgent, with an acceleration of the ongoing trends in the digitalisation and virtualisation of life. In this context, the workshop focused on what could be done to orient AI research and innovation for the good of society ("AI4Good"), as opposed to "black box" AI development, and how AHSS integration can be encouraged to move towards trustworthy human-centric AI development with greater transparency and accountability of AI applications vis-a-vis Sustainable Development Goals (SDGs).

Workshop Format and Activities

This workshop was planned as a face-to-face event exactly at the point when the COVID-19 pandemic spread more virulently across the European continent. Due to travel restrictions and the ongoing pandemic situation, the workshop was rescheduled to take place online, demanding a change of format and methodology. The research team examined available software, solutions and best practices as well as the availability of invited participants in order to redesign the event.

Ongoing constraints and participant availability made it necessary to rethink plans to organise a full online workshop in September, with two sessions of about 3 hours each over two days (the standard adopted for the other online workshops). We decided together with the University of Deusto team to design a different event, with one session of 2.5 hours, and an agenda focused on assessing the ethical and societal challenges for AI in three specific sectors and projects currently coordinated by Deusto scientists: ATELIER (smart cities), BD4QoL (big data to support cancer patient recovery) and TAILOR-EU (security). Each of these projects embodies AI use in different application domains, and participants were asked to discuss the challenges of the projects from a human-centric perspective. To trigger the discussion, a multi-stakeholder group from each project was asked to describe the key challenge addressed by research and innovation, and how AHSS could contribute to integrating their disciplinary and interdisciplinary perspectives to orient AI development for the good of society ("AI4Good").

A consequence of this choice is that the discussion was necessarily focused on ethical, legal and social impacts (ELSI) of AI research and development from a multi-disciplinary perspective, without the opportunity to spend more time on co-creation and prototyping of ID/TD solutions to address the challenge (undertaken in the second day in the other workshops).

In the end, we opted for running the workshop in a single 2.5-hour session with a short break in the middle, to ensure the continuous presence of participants and maximise their focus on the workshop

topic. This choice also allows the research team to experiment and compare different formats for online workshops. Although notetaking was undertaken exclusively by the research team, we encouraged contributions from all participants, especially in the phase of crystallising workshop discussions and conclusions.

The workshop participants came from different backgrounds. We invited AI developers, data analysts, clinicians, AHSS researchers, funders, civil society representatives and patients. We also aimed at geographical diversity with participants coming from the United States and 7 European countries: Spain, Netherlands, Ireland, Italy, Belgium, the United Kingdom and France. Altogether we had 31 participants, 8 SHAPE-ID facilitators, 3 organisers from the University of Deusto in Bilbao and 6 representatives of flagship projects.

The workshop began with a welcome from Professor Rosa Santibañez, Vice-Rector for Research and Transfer at the University of Deusto, followed by an introduction to the SHAPE-ID project and the 6i model, which framed the methodology for the multi-stakeholder interdisciplinary and international co-creation session.

Dr Carlo Sessa from ISINNOVA, leader of the Work Package 3, welcomed the participants and introduced the SHAPE ID consortium, goals and project progress. He presented the Responsible Research and Innovation integration approach that involves the interaction of researcher, research users, research performing organisations, policymakers and funders. The creation of a trustworthy human-centric approach to AI development entails collaboration between AHSS and STEMM disciplines as well as the involvement of non-academic stakeholders to shift the paradigm and scenario and create shared impacts and value from AI technologies. A transdisciplinary creation of new solutions with a wide and deep integration of AHSS perspectives and needs would allow developing technologies to consider diversity and include non-discrimination and fairness principles as well as societal and environmental wellbeing goals.

Dr Antonia Caro González, Head of the International Research Project Office, University of Deusto, presented the 6i model to tack complex challenges through innovative, collaborative and purpose-driven R&D management. She dwelled on the European Ethics Guidelines for Trustworthy AI and introduced the interdisciplinary platform and projects developed by the Deusto research teams. The 6i model integrates six elements that are usually managed in a disconnected manner: International, Interdisciplinary, Intersectoral, Impact, Innovation and Inclusion. These dimensions have been considered simultaneously in order to achieve the wellbeing and inclusive development of entities,

communities and sectors. The 6i innovation system at Deusto comprises 89 international research projects and a platform that includes a balanced presence of representatives from the government (14%), business (31%), academia (34%) and civil society (15%) sectors.

After the keynote presentations, participants discussed three flagship projects in the fields of smart cities, health and security. These projects worked as "seeds" to trigger the discussion in the breakout sessions, aiming to jointly reflect on to what extent and how research and innovation on these topics should integrate AHSS disciplines and other business, civil society or policy perspectives to orient AI development for the good of society ("AI4Good"). Project representatives presented to a smaller group of participants the main concerns of the project in terms of AHSS integration, with the aim of driving the project towards trustworthy and human-centric development, with greater transparency and accountability of AI applications vis-a-vis Sustainable Development Goals. As a result, participants co-created a series of recommendations for improving meaningful AHSS involvement in research and policy addressing AI societal challenges. After relaying information about the evaluation process, the workshop was concluded.

Citizen-driven smart cities

Description of ATELIER project

ATELIER is a smart city project that demonstrates Positive Energy Districts (PEDs) within 8 European cities with sustainability and carbon neutrality as guiding ambitions, applying, among others, Artificial Intelligence-based tools. ATELIER, together with cities district users, will showcase innovative solutions that integrate buildings with smart mobility and energy technologies to create a surplus of energy and balance the local energy system. All ATELIER cities will establish a local PED Innovation Atelier to co-produce locally embedded, smart urban solutions. In the ateliers, the local innovation ecosystem (authorities, industries, knowledge institutes, citizens) is strengthened, enhancing embeddedness and removing any obstacles (legal, financial, social, etc.) for implementation of the smart solutions. ATELIER integrates a high degree of citizen engagement throughout the project, by actively involving local residents (>9000), local initiatives, and energy communities in activities to align technical solutions with citizens' objectives and behaviour. The project embeds AHSS for generating knowledge and enabling the potential of local innovation ecosystems in the co-design and co-implementation of smart solutions. ATELIER generates Data Commons and Analytic Tools that remain open and accessible while providing a huge amount of information to citizens, industry, entrepreneurs, agencies and public administrations

and produces Smart Bus Shelter information points, mobile applications and artistic creations to engage with a wider audience. The main barriers tackled by the project are:

- Social barriers: related to the adoption of flexible energy management structures, usage of ICT tools, adoption of open data protocols, etc.
- Policy barriers: The implementation of PEDs requires an integrated approach that is hampered by policies that are bounded by domains and restricted to specific sectors.
- Financial barriers: related to marketability and roll-out of solutions, defining new business models, making end users co-owners of solutions, etc.

Contribution of AHSS to inclusive smart cities design

Challenge description

The ICT cluster in the Basque country considers the integration of Arts and Humanities perspectives to be crucial, since they have to facilitate the processing of a large amount of data about the urban ecosystem by the societal fabric. A lot of new business models will appear just using AI but new skills are needed to develop this new intelligence. Essentially, a transdisciplinary model is needed to develop solutions for the good of society. In a co-creative process, different goals and roles, especially for AI, have to be clarified. The role of algorithms in the use of AI is a political issue; for this reason, the project involves many societal stakeholders.

Discussion outcomes

The discussion to define the role of AI should contemplate the possibility of not developing the tool. Currently, there is an impulse for AI to be used in solving every single problem, but people should also have the opportunity to know and interact with neighbours without the involvement of digital devices. The digitisation of the world is creating divides and barriers, and decision-makers should acknowledge it. For example, the case of AI deciding who gets a mortgage highlights the contemporary emphasis on tools, whereas progress has to be based on the objectives that it achieves. The tool cannot be evaluated in itself but according to its use. Nevertheless, AI has tremendous power, and it is present extensively in contemporary life. Therefore, the instrument has to foresee a mechanism to involve human interaction and its insight since AI can make life-changing decisions. Usually, technologies are designed by a specific sector of society, typically, men with a similar cultural background and assumptions. The Arts and Humanities, especially if involved at the design phases, can bring different and significant perspectives. For example, literature helps to deal with the ambiguities and shadows of progress. At

the same time, history, cultural, ethnicity and gender studies can define the context and establish what is fact and what is fiction. On the other hand, AI can be seen as a general-purpose technology that supports the generation of more neutral networks by disseminating decision-making to a very broad range of people. For example, it can support public administration in engaging citizens to support the participatory decision-making process.

ICT tools in overcoming social barriers

The pandemic is increasing the inequalities within cities and urban areas already exacerbated by the digital divide. Technologies are opportunities but should not be seen as a solution to all problems. It is essential to keep people at the core of technological development in order to ensure the accessibility of tools, especially when introducing a solution to a city council. In principle, ICT enables the involvement of more citizens in the decision-making process, but the complexity of contemporary life has to be considered in this process. Keeping decision-making power in people's hands means presenting them with a growing number of ideas and possibilities. The large number of decisions to be made could overwhelm citizens. A co-creation process to design ICT applications could find the right balance that can be different according to individual or social category (e.g. based on age). Moreover, AI tools have to improve their explicability and transferability in order to overcome social barriers. The protection of personal data, as well as the accessibility of the latest information, not only through a mechanism controlled by the service provider but from third parties (e.g. regulatory agencies), are essential elements to consider.

Participatory empowerment of patients using AI tools for monitoring Quality of Life

Description of BD4QoL project

Big Data Models and Intelligent tools for Quality of Life monitoring and participatory empowerment of head and neck cancer survivors aims to help recovering patients return to their everyday life. For this reason, the project is developing person-centred monitoring and follow-up plans. The project evaluates with a clinical perspective 400 patients from three participating hospitals in Italy (Casa Sollievo Della Sofferenza, University of Milan) and Spain (DEUSTO University and Onkologiko Hospital). Once people at risk are identified, the project tools monitor and evaluate their behaviours and behaviour changes in order to predict how their quality of life will evolve during their recovery and it provides them with interventions to better cope with this delicate phase. The effectiveness of interventions is monitored

in order to tailor the interventions suggested – somehow repeating the cycle. The BD4QoL project uses a mobile app installed on patients' phones. This aims to reduce obtrusiveness and improve the overall acceptance of the system by patients. In this way, it is possible to achieve rich modelling detecting 70 activities, 70 potential behaviour markers as well as emotions. All of these data are used to create an advance machine learning model for quality of life (QoL) and late long-term adverse effect detection based on behavioural markers. The goal is to build a patient empowerment platform based on a self-adapting e-coach to support them in the recovery process. In the context of this development, the main concerns currently experienced by the project are related to:

- The acceptance of the technology by patients and families, who need to overcome privacy concerns and fully understand the value provided by the system. The reduction of obtrusiveness of the device might help users accept it at such a difficult time in their lives.
- The acceptance of AI techniques by clinicians. These kinds of technologies and tools are not always well accepted. Part of the problem is making more transparent and understandable how these systems are built and how conclusions are reached. It has to be clear that the technology will support and not replace clinicians' work. Clinicians will be in control of the AI tools and not the other way around.

Adoption of the technology by patients and families

Challenge description

In the development phase of the project, patients sign an "informed consent form" and, during the enrolment process, they are informed about the project goals, process, their role and how their data will be used. They are requested to download the system app, and the study will run for quite a long time (15 months). During the trial, patients are aware that they are sharing a lot of personal data and the benefits they will receive from this application have been explained. The project uses three questionnaires, already adopted and clinically accepted to evaluate the QoL of cancer survivors not only in medical terms. The questionnaires are completed by patients every six months and analysed to arrive at a more realistic point of view on their improvements. The concern about the adoption of technology by patients is related to the dissemination phase in order to improve communication and increase tool acceptance. Moreover, the project is developing a chat bot using an AI system that will allow cancer survivors to be supported in term of nutrition, physical activities and more.

Discussion outcomes

Different elements need to be clear not just to inform patients but really involve them in data use and management, for example, if it is a commercial product or an innovation for societal change according to the type of impact produced (individual vs population level). This might have a significant impact on gaining the trust of both user groups. It is also important to share the definition of quality of life used to evaluate patients' progress through an open dialogue in order to include psychological and emotional dimensions.

Patients need to be aware that the goal of the technology is to save human lives and to be reassured since the answers provided through the technology could be based on big data patterns that do not always reflect more personal differences that are equally important in determining personal health outcomes. Each patient can react differently since they could have diverse needs and expectations at physical, nutritional, psychological and pharmacological levels. For this reason, the monitoring system should be people-centred to ask their feedback and make the patients feel that they are at the centre of the investigation.

It is also important to involve families, since patients might be willing but relatives might be scared. For example, it might seem difficult to follow up indications made by non-human agents, e.g. on sports programmes when in chemotherapy. However, the environment should be very supportive and comfortable with the use of the technology so they can enable the patient's recovery process. Trust and confidence are the keywords for informed and consensual adoption of new technologies to monitor and improve quality of life.

Regarding the AI-based chat bot, assuming the machine never gives inappropriate suggestions, it is important to understand whether patients trust and feel comfortable receiving medical advice from a machine instead of a doctor. There is no reluctance in general to experiment with new experiences that can help patients to cope with the disease but to substitute people with a machine in a daily interaction is another level. Currently, the comfort zone could be delimited by the exploration of what AI can offer to progress integrally in terms of quality of life.

Acceptance of AI techniques by clinicians

Challenge description

The project is validating its approach with a clinical trial considering all the rules that have been agreed with the scientific and medical community about the development of medical products. For example,

drug approval rules are complex and require testing a drug on a large number of patients, while in this case, patients are involved in evaluating interventions and how good these are for improving their lives. Although the project coordinator is a clinician and the protocol has been designed by doctors, who have been the main drivers behind the proposed framework, there is a significant reluctance by clinicians to adopt AI applications.

Discussion outcomes

Language is an important aspect because sometimes engineers are very focused on technical aspects. When we build a system to make decisions that will be used by clinicians, the metrics have to be understood by end users. Moreover, the issue of trust with clinicians may not only be a problem of understanding the language/metrics used but more a fear of losing control over treatment decisions. For example, when a model to feed accuracy that it is not an essential feature for clinicians is tested, there is the need for a combined effort to comprehend which kind of data and analysis helps clinicians and ensure that the system will not replace but support them to make more informed choices. The challenge is to merge different kinds of knowledge.

Regarding the protocol for medical product development, the process cannot be approved if it is based on a limited number of patients, even if the data collection and analysis is very sophisticated. It is crucial to understand the culture and mindset of clinicians who are accustomed to using evidence-based medicine. There is a tension between the legal and procedural constraints and the rhythm of development necessary to save lives and improve the quality of life. This gap between research results and implementation practices is known as the “valley of death” and is particularly frustrating to patients in a critical condition who are aware that some research results and solutions are still not applied.

Currently, there is a huge need for improving the application of big data and AI tools in the decision-making process in the field of health. Clinicians acknowledge the limits of the traditional approach in providing adequate advice in nutrition, physical activity and psychological support because the patient is not just a body but a cultural, emotional, psychological, contextual and gendered living being. Doctors need support to cope with all these aspects, and the involvement of AI tools should be discussed as a means of improving medical services to patients.

Trustworthy Artificial Intelligence in European Law Enforcement

Description of TAILOR_EU project

TAILOR_EU is an interdisciplinary, international, and cross-sectoral consortium of 13 partners from Law Enforcement Agencies (LEAs), civil society and academia, working together to promote the responsible use of AI for law enforcement and increase citizen acceptance of the use of AI in the fight against crime, including cybercrime, and terrorism. In line with the recent communication from the European Commission on the EU Security Union Strategy (COM(2020) 605 final)[26] which recognises the need to ensure that AI is integrated into security policy in a way which is effective both in fighting crime and in ensuring fundamental rights, TAILOR_EU places security as a societal value at its core and provides a complete analysis of existing AI tools and the legal, ethical, societal, gender, and organisational concerns arising from their use.

The project will create a roadmap grounded in fundamental rights, diversity, inclusion, and in the seven fundamental principles for trustworthy AI outlined by the High-Level Expert Group on Artificial Intelligence (AI HLEG): human agency and oversight, technical robustness and safety, privacy and data governance, transparency, diversity, non-discrimination and fairness, environmental and societal wellbeing and accountability.[27]

Translate the different languages of involved stakeholders

Challenge description

Trust is the main enabler for the translation of different languages. The project had many exchanges to understand different approaches and how each of the stakeholders understood EC guidelines. When AI developers, Non-Governmental Organisations (NGOs) and researchers met together for the first time it seemed impossible to create a common ground for work since everybody was speaking about different purposes and challenges. Different profiles – lawyers, technologists, NGOs – are needed, but it is also essential to apply an interdisciplinary approach with people who are willing to understand others and get out of their comfort zones.

[26] https://ec.europa.eu/info/sites/info/files/communication-eu-security-union-strategy.pdf
[27] https://ec.europa.eu/futurium/en/ai-alliance-consultation

Discussion outcomes

Trust is not only a matter of understanding each other but also recognising the legitimacy of knowledge production, the importance and dignity of others' contributions. In this way, it is possible to break the stereotypical behaviour whereby everyone thinks only their own discipline counts. Another essential aspect is transparency, which is also one of the most important criteria in the European Guidelines for Trustworthy AI.[28] Artificial Intelligence, its algorithms and the data that have been used have to be explained to citizens clearly and transparently so that they can understand what AI means. Several studies show that a lot of algorithms are biased because people who programme them are white males with a specific background, which increases bias and discrimination and decreases inclusion. Therefore, the aim is to use algorithms that are fair to everyone, ensuring basic human rights. The only objective for this process is a legal, safe, trustworthy algorithm. Representatives from all sectors are required in order to design AI tools transparently.

Promote acceptability of AI tools among different users

Challenge description

AI is very widely used in law enforcement and security applications. There are many predictive applications and widespread use of facial recognition, crowd monitoring, etc. The TAILOR_EU project does not tackle a specific use of AI, but it generally assesses how AI is used by users who do not know the logic "boxed into" the big data sources and algorithms driving AI choices. The TAILOR_EU project aims to promote the acceptability of AI tools by understanding the perspective of non-practitioners and highlighting the benefits and needs addressed by the development of AI technologies.

Discussion outcomes

Law enforcement is not apart from society, and criminals can also use the application of AI in this sector. Therefore, it is necessary to understand how criminal structures use AI technologies in order to prevent misuse. This risk could be an obstacle in accepting AI tools. The budgetary argument is another issue to consider. It is needed to ensure and publicly recognise that the productivity benefits are greater than the costs to invest in AI development and application. Several analyses also highlight a consistent gap between the willingness to use AI tools, like identity check based on predictive decisions, and the knowledge of predictive policing. AI, technological development and societal needs have to go hand in

[28] Ibid.

hand. People in a digital setting behave differently than in a real focus group, and it is necessary to create an adequate environment to allow them to speak frankly and share their concerns.

Conclusion and key insights

- AI applications may be able to offer useful evidence to support decision-making, but the final decisions will need to come from the people themselves if there is to be broader acceptance of such technologies. Transparency is key to this.
- AI and technological development should not overlook the differences in the acceptability of solutions among different cultures. The dissemination of AI and new technologies must consider the differences in language and interpretation adequately, in order to be better understood and eventually adopted by citizens.
- Involving society in technological development can add significant value, but it is also an expensive and challenging exercise. A repository of lessons learned might support future improvements in citizen engagement.
- The participatory process is based on trust. This requires time, listening, transparency, openness and interpersonal skills to be built.
- The sustainability challenge is not only a matter of improving the efficiency of production, but it is an issue of reducing demand by educating users to consume less.
- The hardest but necessary aspect to orienting AI for the good of society is to enable more open processes, "unboxing" the AI algorithms while implementing them in the societal context.

4 Highlights from workshops tackling societal challenges and missions

The following table provides a synoptic view of the SHAPE-ID learning case workshops combining the process and outcome dimensions.

The process dimension includes two macro-activities: the assessment of ID/TD research challenges and opportunities, undertaken in the first part of each workshop (1st day of the in-person workshop or 1st online session of the online event), followed in the second part of the workshop by the co-creation of solutions (prototyping) to address societal challenges with IDR/TDR approaches. A notable exception was the Bilbao online workshop, which included only one session.

The outcome dimension shows the outcomes of the learning workshops classified from the university "three missions" perspective, i.e. the research, education and the so-called third mission.[29]

		LEARNING WORKSHOP PROCESS	
		Assessment of ID/TD challenges and opportunities	Co-creation of ID/TD solutions
LEARNING WORKSHOPS OUTCOMES	1st Mission: Research	**Dublin**: Overcoming barriers to AH integration in research addressing societal challenges. **Edinburgh**: Potential enablers to facilitate AHSS integration in ID/TD research addressing environmental topics. **Zurich**: Challenges of including AH in a more meaningful way in ID/TD research and funding initiatives.	**Dublin**: Co-creation of ID/TD mission-driven project ideas to address: • Climate change • Healthy Ageing • Trustful Democracy **Edinburgh**: Co-creation of an ideal ID/TD project proposal inclusive of environmental humanities. **Zurich**: Co-creation of user-requirement guidelines for the SHAPE-ID Toolkit to facilitate ID/TD research.
	2nd Mission: Education	**Turin**: How ID/TD education can support sustainable urban transformations (Education for Sustainability).	**Turin**: Co-creation of ID/TD education for sustainability mission-driven project ideas: • New Education Agenda for a Just Sustainability Transition • Civic University • Empower ID/TD community to change from within the university
	3rd Mission: a) Technology transfer and innovation b) Continuing education c) Social engagement	**Warsaw**: Streamlining ID/TD cooperation between digital humanities researchers and the cultural heritage sector. **Bilbao**: How greater AHSS and intersectoral participation can contribute to addressing societal challenges associated with Artificial Intelligence (AI) development.	**Warsaw**: Co-creation of prototype ideas to enable cooperation between digital humanities research and the cultural heritage sector: • Innovative funding scheme for upcycling deposited project data • Whole career lifecycle incentives to DH/CH cooperation • Better DH research and competences evaluation framework

The main conclusions emerging from the workshops – presented in detail in the related sections of this report – are highlighted again below, separately for typology of university mission:

[29] Broadly defined the third stream of universities' activities is concerned with the 'generation, use, application and exploitation of knowledge and other university capabilities outside the academic environment' (Molas-Gallart et al. 2002. Measuring Third Stream Activities. Final Report to the Russel Group of Universities. Brighton: SPRU, University of Sussex). However, measuring third mission activities should not be conceptualised only as a residual activity in contrast to research and education. We use here the approach presented in Secundo, G. et al. 2017. An Intellectual Capital framework to measure Universities' third mission activities, Research Gate. This defines three main university third mission goals: a) technology transfer and innovation (the "entrepreneurial" university), b) continuing education (vocational programmes to develop entrepreneurial and professional skills on the labour market) and c) social engagement (the "civic" university embedded in local, regional, national and international communities and networks, often focused on shared purposes, e.g. achieving Sustainable Development Goals).

4.1 First mission: Research

- **The emphasis on human-centred values** has the potential to reshape how a problem is framed and approached from the outset. In particular, the AH perspective can contribute to redefining what is of value by centralising the human and the societal, thereby helping rebuild trust in fractured societies. This can redefine the direction of research, for instance towards how to *live with* rather than try to *solve* problems that are complex and highly contextual in nature. Furthermore, the historical and critical perspectives of AH researchers can help highlight the contingency of current narratives and values, opening up the potential to actively explore alternatives. The importance of emotions and the role of the Arts in particular in addressing this has also been highlighted. (Dublin, Zurich)

- **Leadership, training and education:** there is a need for capacity-building to ensure AH researchers have the means to lead and collaborate in interdisciplinary research teams, particularly training about interdisciplinary work, facilitation and the translational activities involved in communicating research across disciplinary boundaries and beyond academia. The AH community need strong, enterprising leadership to enable this. (Dublin)
- **Challenge-based research questions:** overarching themes and challenges were identified as one good way of bringing researchers and other stakeholders from diverse backgrounds together to work on a common problem. Support is needed from funders and universities to develop new for a for such multi-stakeholder collaborations (Dublin)
- **Writing and managing ID/TD research calls**: How calls are written is critical to promoting the inclusion and integration of different disciplinary perspectives. Call texts should use language (including in call titles) that is more inclusive, accessible and jargon free and specifically welcomes diverse ranges of methodological approaches. The interpretive work required in identifying an AH angle on a call and the role played by intermediaries, e.g. National Contact Points and University Research Offices, should be recognised. Peer reviewers and panel chairs for IDR/TDR proposals need to have demonstrable interdisciplinary expertise, not just experience. (Edinburgh)
- **There is the need to reflect on the relevance of informal encounters and tacit knowledge resources** we bring into an ID/TD collaboration and to understand integration as a dynamic process that might not be complete – which call for asking what integration entails and how we can recognise "good enough integration" in any ID/TD research venture. (Zurich)

- **A critical assessment of projects and their underlying assumptions and values** should be included in evaluation processes. This would require "unboxing" the technical jargon in some cases, to explain plainly and as transparently as possible the methods and outputs of the project. (Zurich)

4.2 Second mission: Education

- **Inter- and transdisciplinary education is a complex process** that requires a deep and wide first-person experimentation to explore and digest its multiple facets. Paradoxically, such unstructured learning experiences need clear and defined structures and a safe space to manage a process more interactive and dynamic than more traditional teaching methods, demanding a greater preparatory workload, but on the other hand, ensuring better and long-lasting results (Turin).
- **Practical examples and best practices** capable of adding value to subjects on an academic course and tangibly enriching students' mind can advantageously support the process of transforming methodologies and programme structures within educational institutions (Turin).
- **Numerous factors hinder the implementation of ID/TD education**, which can be synthetically categorised as: financial limits, limits of time and space; the organisational structure of universities; peer relationships; cultural aptitude and students' perspectives. A concrete, detailed and practical framework for implementing inter- and transdisciplinary projects, together with an evaluation and monitoring system able to capture their benefits, could change the parameters behind the allocation of funding and overcome the effects of these hindering factors (Turin).

4.3 Third mission: Stakeholder engagement

- The Warsaw workshop was focused on one main question: How might we facilitate better networking between Cultural Heritage (CH) and Digital Humantities (DH) domains to make the interdisciplinarity of the two domains more visible to the funders and policymakers and to improve accessibility of cooperative funding?
    - One prototype idea is an innovative funding scheme for upcycling (preservation and reuse) of deposited project data. To remedy the lack of reuse of CH/DH data, mechanisms must be put in place that foster interdisciplinary collaboration based on data that we already have, around post-project data curation and exploitation, rather than only archiving.
    - Another prototype idea to minimise the barriers between different research cultures is to promote the value of ID/TD collaboration between CHIs and Humanities researchers throughout the whole career lifecycle (From Bachelor to Post-Doctoral Level), in order to create a robust disposition towards collaboration with CHIs among future researchers.

- Finally, one prototype idea to tackle challenges in the academic reward systems concentrates on assessing the careers of individuals involved in working with data in order to ensure that data experts are adequately evaluated and valorised. The focus is on the evaluation procedures in Europe which are slow in crediting and incentivising digital, data-rich research outcomes as valuable academic outputs.

- Three main conclusions emerged from the Bilbao workshop's discussion of three flagship initiatives focusing on Artificial Intelligence application challenges in different sectors (ATELIER – citizen-driven smart cities; BD4QoL – Big Data Models and Intelligent tools for Quality of Life monitoring and participatory empowerment of head and neck cancer survivors; TAILOR_EU – Trustworthy Artificial Intelligence in European Law Enforcement):

  - Information and Communications Technologies (ICT) and AI tools can be used not only to track social behaviours with big data applications, but also to collect public feelings, sentiments and opinions about common concerns, evaluate the impacts of policy decisions, etc. Moreover, these tools can help to scale up citizens' participation and inclusion of their oversight in decision-making processes, but this requires time, willingness on the part of users to adopt new technologies and raising awareness of the more complex environment and challenges. These requirements can be addressed by explicitly including Arts, Humanities and Social Sciences (AHSS) perspectives in technological development.

  - The AHSS are essential to communicating effectively, raising awareness and building confidence, for instance in the development of medical products that require a wide trial before being approved. In this sector, progress in clinical practice benefits not only from scientific testing of the effectiveness of new therapies, but also from the inclusion in the analysis of idiosyncratic aspects that affect personal responses to the therapies. This is an area where AHSS perspectives are important for learning from personal experiences and expression.

  - AHSS disciplines, which centralise the human perspective, can interrogate and explain the collective and social benefits of using AI without hiding particular interests and biases and generating a more transparent scientific culture and acceptability among users.

  The highlights above will be further considered and expanded in the synthesis of recommendations and measures to maximise the impact of IDR/TDR (particularly the integration of AHSS in societal challenges research) on society in the associated SHAPE-ID Deliverable 3.3.

Appendix A – Workshop evaluation reports

Dublin Workshop: evaluation report

Quantitative evaluation

At the end of the workshop, evaluation questionnaires were distributed to all participants, asking them to compile and return their answers anonymously.

The questionnaire included four quantitative questions, to rank on a scale from 0 (not at all satisfied) to 5 (very much satisfied):

1) The quality of experience: overall satisfaction, scene setting, first day World Café, reconnection on Day 2, second day co-design activity, final evaluation session.

2) The quality of discussions and materials: overall satisfaction, moderators, inputs to discussions (presentations and other documents), quality of discussions, discussions outputs

3) The quality of logistics: overall satisfaction, location of the workshop, organisation of the workshop.

4) The quality of the learning outcomes (quantitative evaluation)

The answers from 17 participants (out of 25 in total) are summarised in the table and graphics below:

Table 3 Dublin workshop quantitative evaluation

	Quality of the experience						Quality of discussion and materials					Quality of place and logistic			
	Overall quality of the experience	Scene setting	Day 1 World Cafè	Reconnection on Day 2	Day 2 Mission-Oriented Research Co-Design	Evaluation session	Overall satisfaction of discussion	Moderators	Input to the discussions	Quality of dialogue	Discussion outputs	Overall satisfaction of workshop location	Location of the workshop	Organisation of the workshop	Meet learning expectations
P 1	5	5	4	5	5	5	4	4	4	5	5	5	5	5	5
P 2	4	4	4	4	4	4	5	5	4	5	4	5	5	5	4
P 3	4	5	4	3	4	4	4	4	4	4	4	5	5	5	5
P 4	4	5	4	5	3	4	4	3	4	5	4	5	5	5	4
P 5	4	3	4	3	4	4	4	4	4	4	4	5	5	5	3
P 6	4	5	4	4	4	3	4	4	5	5	5	5	5	5	5
P 7	5	4	4	4	5	5	5	4	4	5	4	4	5	5	4
P 8	4	4	4	4	4	4	4	4	4	4	4	5	5	5	4
P 9	4	4	4	4	2	4	4	3	4	4	4	4	5	5	4
P 10	4	5	5	5	4	5	4	5	4	4	4	5	5	5	4
P 11	4	5	5	4	4	5	4	5	4	5	4	5	5	5	4
P 12	4	5	4	3	4	5	4	5	5	4	4	5	5	5	3
P 13	4	5	4	3	3	4	4	4	4	4	3	5	5	5	3
P 14	5	5	4	4	4	5	4	3	4	5	4	5	5	5	5
P 15	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
P 16	4	5	4	3	4	4	4	5	5	5	4	5	5	5	4
P 17	4	4	3	3	3	3	4	4	4	4	4	5	5	5	4
AVG score	4,24	4,59	4,12	3,88	3,88	4,29	4,18	4,18	4,24	4,53	4,12	4,88	5,00	5,00	4,12

The success of the workshop is immediately evident. Most of the scores in the table are satisfied (4) and very much satisfied (5). there is a minority of average scores (3) and only in one case a participant was moderately unsatisfied (2), in relation to the mission-oriented co-design session on the second day.

These results are evident also looking at the average scores in the last row of the table, which range from a minimum of 3.88 (for the reconnection and co-design session on the second day) to the maximum of 5.00 for the workshop location and practical organisation.

Although the results are in the positive range for all aspects of the workshop, it is important to note the slight variations in the perception of the quality of the different sessions of the workshops, as they are shown in the graphics of the average scores for the quality of experience and for the quality of discussions and materials below:

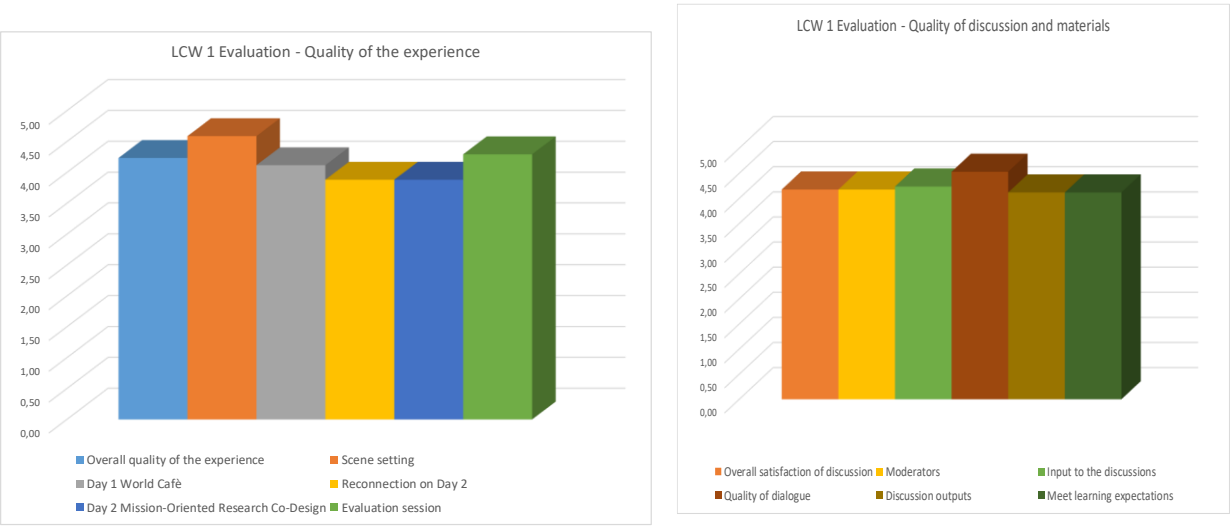


Figure 7 Quality of experience (L) and discussion & materials (R) – Dublin

Although the satisfaction scores are consistently high, small variations in the **quality of experience** (diagram on the left) provide interesting signals. The introduction (scene setting) was the most appreciated, and this is now an asset for the other SHAPE-ID workshops to consider (e.g. using the same SHAPE-ID presentation slides and approach for setting the scene with inspiring presentations to trigger discussion). The relatively least appreciated sessions have been the reconnection and co-design sessions on the second day. This indicates that there is some need and room for improving the collective discussion of mission-oriented research in the next SHAPE-ID workshops. The evaluation session at the end of the workshop has been again highly appreciated, and this encourages us to continue to apply the most significant change approach and the interactive 1-2-4-All liberating structure approach for this session in the next workshops.

The evaluation of the **quality of discussions and materials** (diagram on the right) has been uniformly very high, with a peak for the quality of the dialogue, which confirms the interest and engagement of

participants on the topic and their satisfaction with the discussion and the Arts, Humanities and mission-oriented research perspectives represented in the workshop.

Finally, as mentioned, the quality of workshop logistic and organisation was rated highly by all participants.

Qualitative evaluation

The quality of the workshop can be further assessed considering the answers to two qualitative questions at the end of the questionnaire:

1) Name one thing you liked especially about the workshop and one thing you didn't like so much
2) What recommendations do you have for future workshops?

Is interesting to read what participants liked more or less, in the following table:

I very much liked…	I did not like …
The mix of people and format	Facilitation level
The diversity of opinions, the energy of discussion, the good humour of discourse	My own occasional bewilderment
The background and expertise was clearly well thought through	Nothing (i.e. I liked everything)
The cross-sectoral aspect – these opportunities are too rare	In many cases the discussion was dominated by a few (male) voices
The combination of people's background and experiences	The fact that humanities still look at "leading", "driving", being "indispensable". This is not the point: strong leadership is recognised as valuable if has access points.
Different research perspectives of the participants	The lack of concrete/detailed conclusions
To work through/brainstorm on missions – challenges – key recommendations	Needed more time!
Discussion and presentations	1-2-4-all
Meeting different types of people + perspectives	Short time for workshops + low participation of SHAPE-ID people in groups
Well organised and thought through	Would be good to think about what the collective entity of AHSS is and how it can be mobilised
The organisation/admin was very good and the convenor (energy, direction and synthesising) was excellent	It was a bit too cool the room in the first day!
Range of people, background, knowledge, and all were given a chance to contribute, introduce themselves	Slightly rigid moderators
Being exposed to an area which is outside of my own. Hearing from experienced and diverse speakers	
The range of participants and the fertility of discussion on health	A certain lack of focus on occasion
Good mix of people and early career investigators/post-docs	Could have been more involvement of researchers outside the EU, especially global youth
Diversity of participants, richness of discussion	I would have liked half a day more

Analysing the most frequent answers – those given by a plurality of participants – we can highlight what has been perceived as strengths or weaknesses of the workshop.

As for the **strengths**, surely the first is the diversity of participants and perspectives, and the good mix of people engaged in the event. The background and care in preparing the workshop was also much appreciated, as well as the overall organisation and coordination of the two-day event.

As for the **weaknesses**, the most frequently noted was the facilitation in the group sessions, which could have benefited – in the opinion of several participants – from more moderator preparation, leadership, flexibility and fairness in managing the contributions of the participants in the discussion (in one case the claim was that few voices, mostly male, were heard, and on occasion focus and concrete conclusions were lacking). Another perceived weakness was the short time for discussions, and one participant explicitly asked for a longer duration of the workshop (half a day more).

Not surprisingly, the suggestions and tips for next workshops – given by answering to the last question of the questionnaire – are partly directed towards reducing the weaknesses noted above, However, there are also new insights to improve the quality of the discussions, as shown in the table below:

Tips to reduce weaknesses	New insights
Improve facilitation	Inclusion of more artists and possibly other civilians
Just a tiny bit more time for discussions (the workshop was very successful and triggered a lot of thinking!)	Shift the focus to issues/topics in order to allow disciplines to contribute to framing a thinking. Same issues can be addressed from many perspectives
Perhaps table moderators can be charged more explicitly to aware of the need to ensure the dialogue is truly inclusive	Ask for details of the tools/measures proposed
Better prepare (table) moderators	Translate the structure of the mission-oriented approach into a mechanism of how to take an idea and work through to include perspectives
Keep reminding participants about the requirements + outcomes of each session	Keep the mix of disciplines, sectors and short timings
	To engage those from outside the academia, perhaps additional scene setting/preparation would be needed
	Perhaps a little homework (for participants) before the workshop? It would help to focus discussion/encourage thought on specific topics in advance.

Most significant lessons learned

As can be grasped by the high scores given by all participants in the last column of the evaluation table – mostly 4 or 5, with only three participants rating the experience on average (3) – the workshop met the learning expectations. The average score was 4.12.

To better understand the lessons learned, in the final session of the workshops participants were asked to think at "what – if any – changed their mind after the workshop experience, what they bring home as a new insight from the workshop discussions that they could tell to others".

To answer this question, the final evaluation session was organised using the 1-2-4-All microstructure of interaction.[30] Participants were asked to think first alone about their own answer (for 2 minutes), then to discuss in pairs with their neighbour (3 minutes), then to merge into groups of four to discuss and decide what are the most significant answers/lessons learned (10 minutes).

Finally, the five groups so combined presented their selection of lessons learned in the plenary. The following is a list of the main insights emerging from the process:

- The Art and Humanities contribution to societal issues and problems must be more innovative and proactive. The title of the workshop is "Shaping interdisciplinary practices in Europe", but the workshop has been mostly limited to discussing issues of funding and grant applications. We really need much more profound engagement, changing structures within the university and opening it more to the outside world. We should be brought to do it and to think in a much longer-term perspective. At the same time, AH disciplines are not immutable, and their contribution should be analysed also in an historical perspective.
- The language of academic research can be hard to understand and digest for non-academic people. How this should be taken into consideration in seeking more partnership with non-academic civic, social and cultural actors? Indeed, AH can help in transforming academic language into an appealing way of engaging, informing and inspiring a wider audience, addressing also the emotional dimension.
- The workshop has encouraged us to think about research happening outside of academic/university institutions, raising some issues: Where are the centres of applied research in

[30] see SHAPE-ID D3.1, page 63, for more details.

society? How can these more easily contribute to our research on significant societal issues/questions?

- AH experts may have a strong desire to play a leading role in IDR/TDR, but they also have a sense of insecurity. Although AHSS are in principle applicable to every challenging issue, it is problematic to measure and quantify the value of their contributions. There is also a clear lack of cross-sectoral dialogue, especially between AH and STEMM experts: missing STEMM people in the workshop was a factor preventing a direct discussion. To engage non-academics, there is the need to streamline very dense discussions, to make them more easily accessible.

- AH should not be so concerned about their position in the landscape of disciplines, because their typical topics of research have proved once again to be central. For example, the concept of emotion turns out to be key also in research on global value chains, circular economy and responsible consumption and production – e.g. to understand what can trigger behavioural change. On the other hands, AH experts should work out their own perspective, discussing practical problems with non-AH colleagues. This is lacking: for instance, there was a good discussion about technology and demography in the workshop, but it felt like an "exclusive" discussion without the inclusion of those we were talking about.

- Elitism vs populism are false alternatives. Experts acquire elitist knowledge from their disciplinary studies but also need other sources to be informed – e.g. the experiential knowledge of people. We need creative arts to involve, explore and generate emotions and reflections.

- The discussion has been too centred on grants dynamics, while it should have been focused on the needed institutional reforms. AH should concentrate on the reformation of academic structure and public institutions, bringing the AH perspective also into business and public engagement affairs. AH can help to create and support intergenerational solidarity and community memory, for instance by leading civic (non-academic) participation initiatives and processes – helping concretely to set agendas, organise and evaluate discussions about societal challenges, etc.

- The challenge now for AH disciplines is to articulate a clear and added-value role for human sciences, not only for academia but for the entire society. AH should help to identify a starting point for planning the future, for defining and describing possible scenarios and for mobilising people towards desirable societal goals. AH practitioners should be more confident in themselves by taking the initiative, facilitating the process and having a leading role.

Edinburgh Workshop: evaluation report

Quantitative evaluation

At the end of the workshop, evaluation questionnaires were distributed to all participants, asking them to compile and return their answers anonymously.

The questionnaire included four quantitative questions, to rank on a scale from 0 (not at all satisfied) to 5 (very much satisfied):

1) The quality of experience: overall satisfaction, scene-setting, Day 1 activities, reconnection on Day 2, Day 2 activities and final evaluation session.

2) The quality of discussions and materials: overall satisfaction, moderators, inputs to discussions (presentations and other documents), quality of discussions, discussions outputs

3) The quality of logistics: overall satisfaction, location of the workshop, organisation of the workshop.

4) The quality of the learning outcomes (quantitative evaluation)

The answers from 14 participants (out of 20 in total) are summarised in the table and graphics below:

Table 4 Edinburgh workshop quantitative evaluation

	Quality of the experience						Quality of discussion and materials					Quality of place and logistic			
	Overall quality of the experience	Scene setting	Day 1	Reconnection on Day 2	Day 2	Evaluation session	Overall satisfaction of discussion	Moderators	Input to the discussions	Quality of dialogue	Discussion outputs	Overall satisfaction of workshop location	Location of the workshop	Organisation of the workshop	Meet learning expectations
1	4	5	5	3	4	4	4	5	4	5	4	5	5	5	4
2	5	5	5	5	5	5	5	5	4	4	5	5	5	5	5
3	4	5	4	5	4	5	5	4	5	5	4	5	5	5	4
4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
5	4	4	3	3	3	4	5	4	4	5	5	4	5	4	5
6	4	4	4	4	4	5	5	5	4	5	4	5	5	5	5
7	5	5	4	5	4	4	5	5	5	5	5	4	4	4	4
8	4	5	5	4	3	4	5	4	5	4	4	5	5	5	4
9	4	5	5	4	5	4	5	5	5	5	5	5	5	5	4
10	4	5	4	4	4	4	5	4	5	4	4	5	5	5	4
11	4	3	4	4	5	3	5	5	3	4	3	4	5	5	4
12	4	5	4	4	3	5	5	5	4	5	4	5	5	5	3
13	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
14	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4
AVG score	4,36	4,71	4,43	4,29	4,21	4,43	4,93	4,71	4,50	4,71	4,43	4,79	4,93	4,86	4,29

The success of the workshop is immediately evident. Most of the scores in the table are satisfied (4) and very much satisfied (5). There is a minority of average scores (3) mostly related to the quality of the experience, in particular on the second day.

These results are evident also looking to the average scores in the last row of the table, which range from a minimum of 4.2 (for the second day) to a maximum of 4.93 for the workshop discussion and practical organisation.

Although the results are in the positive range for all the aspects of the workshop, it is significant to note the slight variations in the perception of the quality of the different sessions of the workshops, as they are shown in the following graphics of the average scores for the quality of experience and discussions:

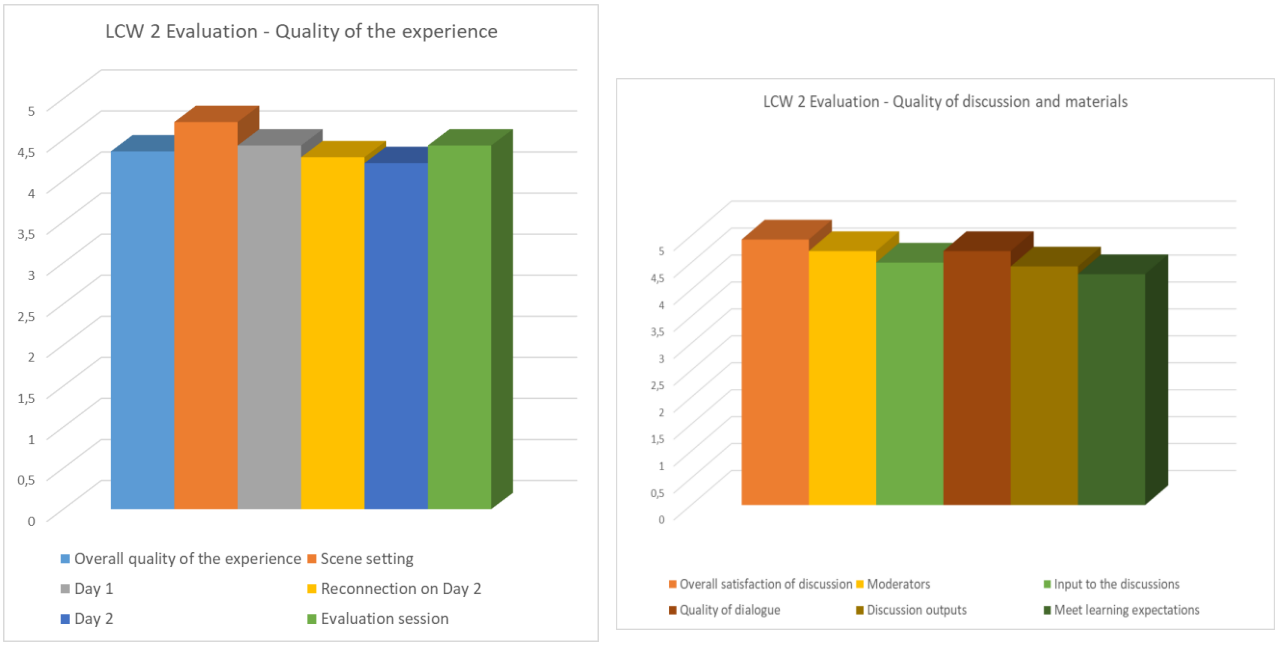


Figure 8 Quality of experience (L) and discussion & materials (R) – Edinburgh

Although the satisfaction scores are consistently high, small variations in the **quality of experience** (diagram on the left) provide interesting signals. The introduction (scene-setting) was the most appreciated session, consolidating the SHAPE-ID asset and expertise in preparing the participants at the beginning of the learning journey. The relatively least appreciated session has been once again been of Day 2. Despite the progress compared to the first workshop, there is room for improving the collective discussion of mission-oriented research in the next SHAPE-ID learning workshops.

Indeed, participants in the second day may be tired, their curiosity or emotional engagement lower than the first day, their expectations to come to conclusions higher – all aspects that requires more attention to keep participants' involvement high. The evaluation session at the end of the workshop has been again considerably appreciated, encouraging us to continue to apply the most significant change approach and the interactive *1-2-4-All liberating structure* for this session in the next workshops.

The evaluation of the **quality of discussions and materials** (diagram on the right) has been uniformly very high, and its overall satisfaction has been higher than with the experience. The peak of fulfilment for the quality of dialogue and the role of moderators confirms the interest and engagement of

participants on the topic and the adequacy of input and engagement in discussion as well as the supporting staff.

Finally, as mentioned, the quality of workshop logistics and organisation was very much appreciated by all participants.

Qualitative evaluation

The quality of the workshop can be further assessed considering the answers to two qualitative questions at the end of the questionnaire:

1) Name one thing you liked especially about the workshop and one thing you didn't like so much

2) What recommendations do you have for future workshops?

Is interesting to read what participants liked more or less, in the following table:

I very much liked…	I did not like …
The postcards as icebreakers. I would have loved even more time to discuss this.	The font size on the big poster-size print out was too small.
It was the first time that I participated in an SSH dedicated workshop where we actually try to find an answer and not just complain.	Maybe a little more time for discussion.
The fact that the workshop involves participants from across different fields (researcher, funder) and diversity of perspectives.	
The opportunity to hear from a wide variety of perspectives. The workshop was well organised and managed, and the facilitators were well prepared.	Perhaps more detail on the expected outcome of the workshop and how they will feed into the SHAPE-ID project.
The mixing and remixing of participants during discussions.	The length of the workshop sessions (too short). Just when the discussion began to become very stimulating and helpful, we had to move on to a new programmed session.
The level of engagement by all participants. The emphasis on interaction and dialogue through a focused task.	
The facilitation during the workshop focused activities, helped to moderate and balance the discussion at the table – the chance of networking to meet and follow-up with new colleagues.	The same people talked all the time, despite the group and moderators change.
Meeting stakeholders from different perspectives in a setting that promoted excellence and fun discussions.	The workshop felt a bit short. Would have loved a third "workshopping" session, perhaps on designing a funding call and increased opportunity to engage with all other participants.
The structured exercise, good ideas and motivation to facilitate the discussion.	
The openness and inclusiveness of the discussion	Less inter/transdisciplinary experts than participants with AHSS background.

The facilitation was exemplary; getting this right is so important and makes the difference in terms of productivity. The mix of attendees was also important.	
Listening to all the discussion around the language used and how to pick research topic made me think of the difference I could try and make as NCP (National Contact Point).	

Analysing the most frequent answers – those given by a plurality of participants – we can highlight what has been perceived as strengths or weaknesses of the workshop.

As for the **strengths**, surely the first is the diversity of participants and perspectives, and the excellent mix of people present at the workshop, in particular, their high level of engagement and proactive involvement. However, a gender imbalance was evident, as the large majority of participants were women. The background and care in preparing the workshop was also much appreciated, as well as the overall organisation and coordination of the 2-day event. The participants mostly perceived the role of facilitators as a strength instead of weakness. Another strength was considered the excellent quality of the templates used for the expected output. Nevertheless, it is necessary to insist that participants should not lose sight of these templates along the process, using the posters to be filled per group.

As for the **weaknesses**, the most frequently noted issue was the short time for discussions, and more than one participant explicitly asked for a longer workshop duration. Another point raised was the unbalanced representation of perspectives, due to both diverse sensibilities of participants and attitudes towards quantitative and qualitative methods and tools.

Not surprisingly, the suggestions and tips for future workshops – offered in response to the last question of the questionnaire – are partly given to reduce the weaknesses noted above. However, there are also new insights to improve the quality of the discussions, as shown in the table below:

Tips to reduce weaknesses	New insights
It would have been nice to have more space where hang up and look at the entire group' work.	Although workshops are focused on interdisciplinary, perhaps a broader mix of academic disciplines could be interesting.
Spread out over three days if possible, with more opportunity to return on discussion topics and points that would benefit from further unpacked session and more opportunity for productive social interludes.	As you gather the momentum across sessions, begin each workshop with a quick report on lessons learned to that point but also acknowledge ongoing issues, tensions and elements of contention.
At least one full day would be great (so, at least 1 day and half total workshop duration). Do keep the workshop sessions because they were well-conceived and engaging.	Including non-AHSS experts would have added a new perspective in the debate. Publishing the workshop outputs or other items to disseminate informally would be an added-value.

Perhaps including a little bit more discussion time.	Using more humanities language framing and less crystallised challenging
	As SHAPE-ID organises a series of workshops on interrelated challenges, send summaries of previous workshops in advance so that conversation can be informed and add on previous experience rather than risking to cover the same ground.

Most significant lessons learned

As indicated by the high scores given by all participants in the last column of the evaluation table – mostly 4 or 5, with only one participant rating the experience on average (3) – the workshop met the participants expectations. The average score was 4.43.

To better understand the lessons learned, in the final session of the workshop participants were asked to think of "what – if anything – changed their mind after the workshop experience, what they bring home as new insights from the workshop discussions that they could tell to others".

To answer this question, the final evaluation session was organised using the 1-2-4-All microstructure of interaction.[31] Participants were asked to think first alone about their own answer (for 2 minutes), then to discuss in pairs (3 minutes), then to merge into groups of four participants to discuss and decide what are the most significant answers/lessons learned (10 minutes).

Finally, the four groups so combined presented their selection of lessons learned in the plenary. The following is a list of the main insights coming out of the process.

- The workshop provides a valuable opportunity to share experience with people who think about similar issues/question but from different professional viewpoints.
- This was a first time for each of us to search across different roles (researcher, NCP, programme officer) not in defensive ways but with a common purpose, namely to find a solution to the lack of SSHA involvement in the EU framework funded projects.
- There are many small changes (such as pilot case studies) that can help in the short term to tweak and break down barriers and involve marginalised SSHA people without necessarily solving the big challenge in toto.
- The main issue concerns what positive outcomes may look like for the AH community in the interdisciplinary space.

[31] see SHAPE-ID D3.1, page 63, for more details.

- Is a vision needed to create a step-change and a challenging path?
- The conversation often ends without a clear solution and identification of the stakeholders (funders, AH leaders, university administrators) that can help to implement the change.
- How far back up the pipeline (training) is needed and how broad (e.g. beyond researcher)?
- Although the workshop's focus was on how AH can frame challenging topics, most of the conversation came back to grant issues.
- The set up for dealing with societal challenges is framed from the STEMM point of view, and AH is asking how to step into, despite its mission and path being quite diverse, wider and often not fitting with the precision of STEMM frames of mind.
- AHSS need to have confidence and take the lead in funding proposals.
- AHSS need confident “pointy elbows” to push their leadership.
- There seems to be increased integration and a movement towards AHSS inclusion across governments, funders etc.

Turin Workshop: evaluation report

Quantitative evaluation

At the end of the workshop, evaluation questionnaires were distributed to all participants, asking them to compile and return their answers anonymously.

The questionnaire included four quantitative questions, to rank on a scale from 0 (not at all satisfied) to 5 (very much satisfied):

1) The quality of experience: overall satisfaction, scene-setting, Day 1 activities, reconnection on Day 2, Day 2 activities and final evaluation session.
2) The quality of discussions and materials: overall satisfaction, moderators, inputs to discussions (presentations and other documents), quality of discussions, discussions outputs
3) The quality of logistics: overall satisfaction, location of the workshop, organisation of the workshop.
4) The quality of the learning outcomes (quantitative evaluation)

The answers from 18 participants (out of 23 in total) are summarised in the table and graphics below:

Table 5 Turin workshop quantitative evaluation

	Quality of the experience						Quality of discussion and materials					Quality of place and logistic			Meet learning expectations
	Overall quality of the experience	Scene setting	Day 1	Reconnection on Day 2	Day 2	Evaluation session	Overall satisfaction of discussion	Moderators	Input to the discussions	Quality of dialogue	Discussion outputs	Overall satisfaction of workshop location	Location of the workshop	Organisation of the workshop	
P 1	5	5	5	5	5	5	5	5	5	5	4	5	5	5	4
P 2	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3
P 3	4	5	4	4	4	4	5	5	4	4	4	5	5	5	4
P 4	4	5	4	5	4	4	4	5	4	4	4	5	5	5	5
P 5	4	3	3	4	4	4	4	3	4	4	3	4	4	5	3
P 6	5	5	5	5	5	5	4	5	5	5	4	5	5	5	5
P 7	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
P 8	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5
P 9	5	5	5	5	5	5	4	5	4	4	5	4	5	5	4
P 10	4	5	4	4	4	4	3	4	3	3	3	5	5	4	4
P 11	5	5	5	5	5	5	5	5	5	4	4	5	5	5	5
P 12	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4
P 13	4	5	4	5	5	5	4	5	5	4	5	5	5	5	4
P 14	4	5	3	5	5	5	4	5	3	5	5	5	5	5	4
P 15	3	5	2	4	4	3	3	4	3	3	3	5	5	5	3
P 16	4	5	4	4	4	4	5	5	3	5	4	5	5	4	4
P 17	4	4	3	4	5	4	5	4	5	4	4	5	5	5	5
P 18	4	4	3	5	4	4	4	5	4	4	4	5	5	4	4
AVG score	4,28	4,72	4	4,56	4,50	4,33	4,28	4,61	4,17	4,22	4,11	4,78	4,83	4,72	4,17

The success of the workshop is evident. Most of the scores in the table are satisfied (4) and very much satisfied (5). However, there is a not negligible share of average ratings (3), mostly related to the quality of the experience on the first day and the input to the discussion, along with a single not satisfied score (2).

These results are evident also looking at the average scores in the last row of the table, which range from a minimum of 4 for the first day, to a maximum of 4.78 (as average) for the workshop organisation.

Although the average scores are in the high range for all aspects of the workshop, it is important to catch the "weak" signals from the slight variations that can be observed in the perception of the quality for the different sessions. These are shown in the following graphics of the average scores for the quality of experience and discussions:

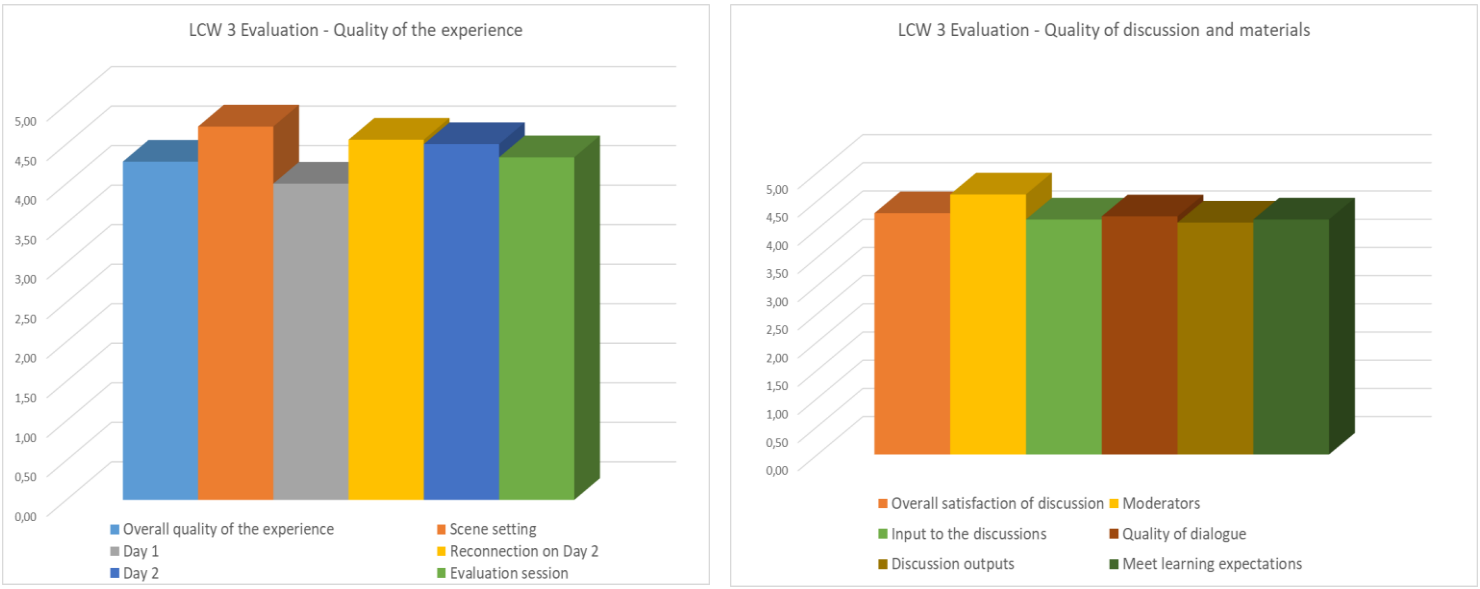


Figure 9 Quality of experience (L) and discussion & materials (R) – Turin

Indeed, small variations in the **quality of experience** (diagram on the left) provide interesting signals:

- Compared to the overall satisfaction (4.3), the most appreciated sessions were the introductory setting the scene session (4.7), the Day 2 reconnection session (4.6), and the Day 2 working groups session (4.5), while the final evaluation session was rated on average 4.3 and the relatively least appreciated sessions have been the activities on Day 1 (4.0)
- From the above pattern, and some elements directly gathered on the ground during the first day, we can conclude that the writing sessions on Day 1 were considered insufficiently interactive, and there was an initial problem of lack of clarity about the purpose of the writing sessions, which was partially recovered with an intervention for refocusing the exercise after the first writing session (4 participants didn't fill out anything in their files).

The evaluation of the **quality of discussions and materials** (diagram on the right) confirms these impressions. Compared with the overall satisfaction with the discussion (4.3), the quality of the moderation was the most appreciated (4.6), while the quality of the input to the discussions (4.2), the dialogue (4.2) and discussion outputs (4.1) somewhat less appreciated. It is important to note, however,

that these variations are small, and the evaluation remains high also for the relatively less appreciated aspects.

Finally, as mentioned, the quality of workshop logistics and organisation was appreciated by all participants.

Qualitative evaluation

The quality of the workshop can be further assessed considering the answers to two qualitative questions at the end of the questionnaire:

1) Name one thing you liked especially about the workshop and one thing you didn't like so much
2) What recommendations do you have for future workshops?

Is interesting to read what participants liked more or less, in the following table:

I very much liked…	I did not like …
The organisation, in particular, the quality of the people involved.	
The mission-oriented research co-design session. It would have been interesting to develop the "civic society interaction" mission further and jointly.	The stressful timing for several activities and the final keynotes, which should be at the beginning of the workshop not at the end.
The number of people, the google doc for the writing session and the graphic reporting.	The lack of content on findings of TD/ID education for sustainability.
Profound preparation, considering the materials sent, the warm and euphoric atmosphere, the great food and drawing exercises.	
Relaxing exercises and mutual learning.	Short time for some session of dialogue.
All participants were staying at the same hotel. Breakfast and walks made networking easier. The different approaches brought up to the workshop on what ID/TD is or could be. Relaxing exercises.	The first-morning room was too cold.
The idea of the positive/ecological footprint of mindfulness/education for sustainability, the entire discussion, the graphic reporting, the positive example of collaborative efforts.	Unnecessary printings, stressful timing and too many food temptations.
The location, the enthusiastic atmosphere and some new theoretical perspectives.	
The range of participants.	The excessive fragmentation of the process into tasks.
The workshop focus on getting something concrete done. Variety of method used (drawing, bodywork). The networking and social events.	
The mix of methodology (writing, discussion, awareness exercise), the music and the people.	The first-day plan: too much time sitting on the chair.
The process and the collective energy and willingness.	Only the writing session. It should be combined with a sharing discussion.
Interaction with people from different backgrounds.	Short time for group discussion and plenary session.

The overall organisation, the original design of the activities, the collaborative and open-mind spirit, the composition of the group.	The writing sessions.
Relaxed, open and cooperative attitude	The final output is unclear.
Diversity of participants and the approach based on the theory U.	The first two keynotes were "boring" and took a lot of time that could have been more useful for co-creative activities.

Analysing the most frequent answers – those given by a plurality of participants – we can highlight what were perceived as strengths or weaknesses of the workshop.

As for the **strengths**, surely the first is the diversity of participants and perspectives, and the excellent mix of people present at the workshop. In particular, their level of engagement and proactive involvement has generated a highly appreciated atmosphere. The overall organisation of the workshop and social events was highly valued, in particular for its possibility of fruitful networking. The mix of methodology was also perceived as a strength, and in particular, the innovative graphic reporting was highly appreciated.

As for the **weaknesses**, the most frequently noted were the short time for debate, co-creative activities, and sharing outputs. As emerged also from the quantitative evaluation, the first day and in particular, the writing session was criticised by several participants. Another point raised was the lack of clarity of the final output and then its utility.

Not surprisingly, the suggestions and tips for next workshops – provided in response to the last question on the questionnaire – are partly given to reduce the weaknesses noted above. However, there are also new insights to improve the quality of the experience and discussions, as shown in the table below:

Tips to reduce weaknesses	New insights
More days, at least three; and more time for gradually discussing working plans during the missions session.	More facilitated and co-creative sessions. More time for in-depth creation and discussion of feedback, also in terms of learning expectations. Use visual prototyping, e.g. how do you envision the ideal ID/TD education for a sustainable urban transition?
Since ID & TD is the core issue of the workshop, an effort should have been needed to clarify their definitions.	Make it a full two-day workshop, and try to make the event itself as sustainable as possible in terms of resource used, food, materials, travelling.
Have keynotes to break the rhythm, not just at the beginning and the end.	Clarify how the SHAPE-ID toolkit will be developed and what comments the EU will have on the workshop outputs.
Preparation of the written session in advance, maybe sending questions some days before and asking people to reflect on them.	Perhaps it would be good to finish by reflecting on what each of us can do when we get back to our university.

The writing session could have been organised in smaller groups from the beginning.	Do invite also non-academics.
More time for open discussion. Connect the workshop with a well-defined goal.	
Less frontal talks and more participation.	
I would have needed to discuss more educational examples and good practices.	

Most significant lessons learned

As evidenced by the high scores given by all participants in the last column of the evaluation table – mostly 4 or 5, with only two participants rating the experience as average (3) – the evaluation session met the participants' expectations. The average score is 4.33.

To better understand the lessons learned, in the final session of the workshop participants were asked to think of "what – if anything – changed their mind after the workshop experience, what they bring home as new insight from the workshop discussions that they could tell to others".

To answer this question, the final evaluation session was organised using the 1-2-4-All microstructure of interaction.[32] Participants were asked to think first alone about their own answer (for 2 minutes), then to discuss in pairs (3 minutes), then to merge into groups of 4 participants to discuss and decide what are the most significant answers/lessons learned (10 minutes).

Finally, the four groups so combined presented their selection of lessons learned in the plenary. The following is a list of the main insights coming out of the process.

- The workshop shows that collaborative effort with different discipline is possible and it is something replicable in "our" universities.
- Education for sustainable urban transformation requires mixed methods, adapting to different contexts and ways to share common problems and managing change. As a consequence, ID/ID requires a long-term effort and universities need to engage with societal actors for a sustainable urban transformation, e.g. by means of:
    - New good ideas for innovative academic programmes on social responsibility.

[32] see SHAPE-ID D3.1, page 63, for more details.

- New ideas and methods related to the Theory U, how to open up past-oriented knowledge to learning from the future, allowing collaborative and emergent knowledge.
- Giving value to collaborative programmes, in particular reconnecting our formation and information with childhood educational programmes for enhancing sustainable attitudes and learning in younger learners.
- Finding new allies through regenerative and nourishing mutual learning.
- Elaborating fundamentals (glossary, language) for framing and moving education for sustainability work forward.

Zurich Online Workshop: evaluation report

The "Zurich" workshop was the first event organised online. We tried to emulate the "most significant change" evaluation approach used in the previous in-person workshops. A final evaluation session was planned, but necessarily squeezed into a slot of 10 minutes at the end of the event, using a MURAL board to collect participants' insights on the most interesting lessons they would bring home from the experience. However, due to the short time available, compounded BY the low familiarity of the participants with the MURAL board tool, the experiment was not successful, and the evaluation was therefore undertaken on the basis of the questionnaires the participants were asked to complete after the workshop. The lesson was learned for the other two online events, skipping the online evaluation session at the end and keeping the questionnaires filled in shortly after the events as the only source of information to compile the evaluation reports.

Quantitative evaluation

At the end of the workshop, evaluation questionnaires were distributed to all participants. They were asked to complete and return these anonymously.

The questionnaire included three quantitative questions, with participants asked to rank on a scale from 0 (not at all satisfied) to 5 (very much satisfied):

1) The quality of experience: overall satisfaction, first day and second day.
2) The quality of discussions and materials: overall satisfaction, facilitation of virtual session, inputs to discussions (presentations and other documents), quality of discussions, conclusions in the final plenary session.
3) The quality of the learning outcomes (quantitative evaluation).

The answers from 11 participants (out of 29 in total) are summarised in the table and graphics below:

Table 6 Zurich (online) workshop quantitative evaluation

	Quality of the experience			Quality of discussion and materials					
	Overall satisfaction with the experience	Day 1	Day 2	Overall satisfaction with the discussion	Facilitation of virtual session	Input to the discussions	Quality of dialogue	Discussion outputs/ conclusion	Meet learning expectations
P 1	4	4	4	4	5	5	5	4	3
P 2	5	5	4	4	4	4	4	4	4
P 3	3	3	3	3	3	3	3	3	3
P 4	4	4	4	3	5	4	3	4	4
P 5	4	5	3	5	5	3	4	3	4
P 6	4	4	4	4	5	4	4	4	4
P 7	4	5	4	4	4	5	4	3	5
P 8	4	4	4	3	4	3	3	4	2
P 9	5	4	5	4	5	4	5	4	5
P 10	5	5	5	5	5	5	4	4	4
P 11	4	4	4	5	5	5	5	5	5
AVG score	4,18	4,27	4,00	4,00	4,55	4,09	4,00	3,82	3,91

The success of the workshop is notable, considering it was the first one organised online. Most of the scores in the table indicate that participants were satisfied (4) or very much satisfied (5). Nevertheless, the average rating (3) is considerably present, even if expressed by a limited number of participants. There is only one not satisfied score (2), related to the question of whether the workshop met the participant's learning expectation.

These results are also reflected in the average scores in the last row of the table, which range from a minimum of 3.82 for the discussion outputs during the conclusive plenary, to a maximum of 4.55 for the facilitation of virtual discussion.

Although a quantitative evaluation could provide a flat picture and not an exhaustive description of the event, it is important to catch the "weak" signals from the slight variations that can be observed in the perception of the quality for the different sessions of the workshops. These are shown in the following graphics of the average scores for the quality of experience and discussions:

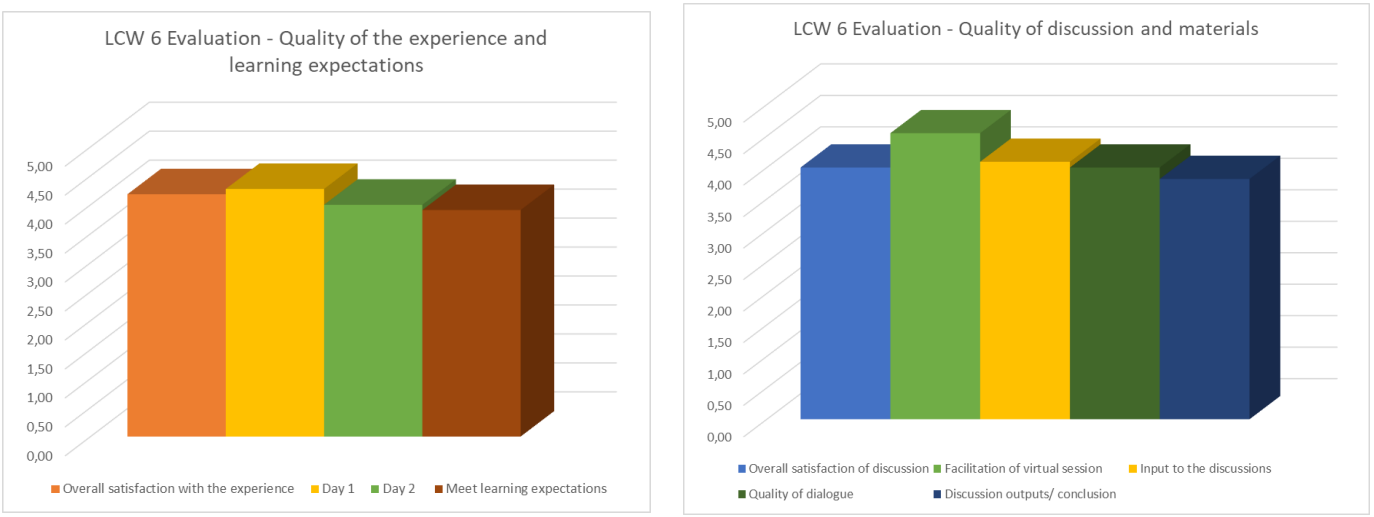


Figure 10 Quality of experience & learning expectations (L) and discussion & materials (R) – Zurich

The evaluation of the **quality of experience** (diagram on the left) shows a considerable level of participant engagement and satisfaction with the entire event (4.18) even if the second day was less appreciated (4.00) and its evaluation compensated by the more highly ranked experience of the first day (4.27).

Moreover, variations in the **quality of discussion and materials** (diagram on the right) provide interesting insights. The quality of dialogue (4.00) and the outputs of discussion presented during the concluding plenary (3.82) strongly correlated the overall satisfaction of the discussion (4.00). The quality of the moderation was the most appreciated element (4.55), while the quality of the input to

the discussions (4.09) was somewhat less appreciated. It is important to note, however, that these variations are small and the evaluation remains considerably positive even for the relatively less appreciated aspects. These small variations suggest interesting room for improvement related to two pivotal aspect of a workshop: the necessity of having an innovative and challenging incentive to engage participants and ensuring concrete and useful results.

The last factor strongly affected the evaluation of the **quality of the learning outcomes** (3.91), which could also ensue from high expectation from workshop participants.

Qualitative evaluation

The quality of the workshop can be further assessed by analysing the answers to two qualitative questions at the end of the questionnaire:

1) Name one thing you liked especially about the workshop and one thing you didn't like so much
2) Compared to physical workshops, how was your experience with this digital workshop? What recommendations do you have for future digital workshops?

What participants reported as liking more or less, in the following table:

I very much liked…	I did not like …
Very well structured and moderated. 2.5h seems the perfect duration. Great network and inspiring atmosphere.	Eventually a bit too much social science and too little arts.
Meeting people from various disciplines and backgrounds.	The time was too short for any in-depth discussions.
Incredibly well-organised. Lots of care into the programming to make it work online.	Some of the sessions felt so short that it was difficult to get into the substantive points of divergence.
The discussions in small groups, especially on the first day; really excellent.	The second day was much less inspiring in content and ended rather chaotically; without substantial conclusion and an evaluation that didn't work. A bit of a pity for such a nice workshop.
I very much liked the workshops/ ateliers I took part in.	I did not like the fact that we could only take two of the possible ateliers for each session.
I found interesting the river almanac from Jonathan Keats, as a way to "reading the time" in another way, through observation of the world around us (the river). I liked to meet people interested in better understanding ID and TD and in finding ways to to do it, that is to "integrate" what has been set apart through disciplinarity, namely through what we can learn from arts and humanities.	I'd have liked to have more policy makers in the audience.
I very much liked the opportunity to have hands-on exercises with TD/ID tools that I don't usually use. Also, it was nice to discover the Knight's move exercise.	Too little time for the exercise sessions, but overall the workshop duration was good. So maybe being frustrated about having too little time for the exercises can be interpreted as a mark of quality.

Very detailed planning and care over organization. Breakout groups activities were very well organised and insightful.	Lack of opportunity to meet more participants, but good to have the list of participants.
The chat worked well to allow parallel discussions.	It was a too short the time left for evaluation at the end but never mind, as you see we have done it later
I felt well connected despite Zoom, different nationalities and professional backgrounds	Virtual format is tiring. Difficult to keep concentrated.

Based on the analysis of these answers, we can highlight what have been perceived as strengths or weaknesses of the workshop.

As for the **strengths**, surely the first is the structure of activities, moderation and organisation of the workshop. The diversity of participants and perspectives, and the excellent mix of people present at the workshop guaranteed a high level of engagement and connection despite the remote setting. Moreover, specific activities, like the td-toolbox, and features, like how the Zoom chat has been managed, have been particularly appreciated, establishing a best practice to be used in other workshops and online events.

As for the **weaknesses** the time available and its influence on the quality of the dialogue and inputs was considered insufficient by several participants. A crucial factor influencing this result was the virtual format of the workshop that did not allow participants to keep concentrated on challenging activities and get to know each other in greater depth. Another point raised is the need to include the policymaker perspective adequately.

Unsurprisingly, the suggestions and tips for future workshops – provided in response to the last question of the questionnaire – are partly directed at reducing the weaknesses noted above. However, there are also new insights on improving the quality of the experience and discussions, as shown in the table below:

Tips to reduce weaknesses	New insights
Need longer to get to know each other online. Workshop was surprisingly good considering how everyone is fed up with Zoom but I think this was due to the quality of the speakers and that we are familiar with each other – so trust was already established.	Inviting one different artist to each small group seems to be a good idea, considering the scope of the project!
Very well structured. Getting to know people is more difficult. Introduction breakout room OK but could have be more personal. The idea with the picture is an idea but kept the introduction round rather abstract.	Include a wider range of artists to allow the variety of our positions and practices to be shared.
Some sessions could have been a little longer. I, like most of us, far prefer physical workshops but the organizers really worked hard to make this online	For many aspects, I think that you can reach many objectives to a high level with digital workshops. So, it works quite well, even if maybe not as efficiently as

workshop work. A session or sessions at end of first or second day to 'socialise' – ie unstructured time for people to interact with one another, would have been helpful.	life workshops (it depends on the dimension you are considering). I would suggest to continue exploring ways to help people exchange their experiences, their views, their knowledge, like the ones you have proposed in the workshop, and build bridges. I find that music was a bit absent from the workshop. I think that we can also integrate musicians, composers, interpreters…to do ID and TD.
The overall experience was really quite good. The one thing I really missed was informal chatting, joking and sharing ideas over coffee, during lunch breaks and over late-nightdrinks. Suggestions: More (time for) discussions in small groups, less plenary sessions and presentations. Make sure there is a concluding session with a bang.	
The change to smaller groups is surely very useful because you feel freer to speak. The bigger audience can be inhibitory.	Maybe offering an informal workshop for a follow-up-to deepen discussions that came up during the workshop?
Tiring. It is harder to remain focused than in a face-to-face setting. Digital workshops will remain a 2nd best option until we have forgotten/unlearned how it was to take part in a physical workshop.	

Warsaw Online Workshop: evaluation report

Quantitative evaluation

At the end of the workshop, evaluation questionnaires were distributed to all participants. They were asked to complete and return these anonymously.

The questionnaire included three quantitative questions, with participants asked to rank on a scale from 0 (not at all satisfied) to 5 (very much satisfied):

1) The quality of experience: overall satisfaction, first day and second day.
2) The quality of discussions and materials: overall satisfaction, facilitation of virtual session, inputs to discussions (presentations and other documents), quality of discussions, conclusions in the final plenary session.
3) The quality of the learning outcomes (quantitative evaluation)

The answers from 7 participants (out of 22 in total) are summarised in the table and graphics below:

Table 7 Warsaw (online) workshop quantitative evaluation

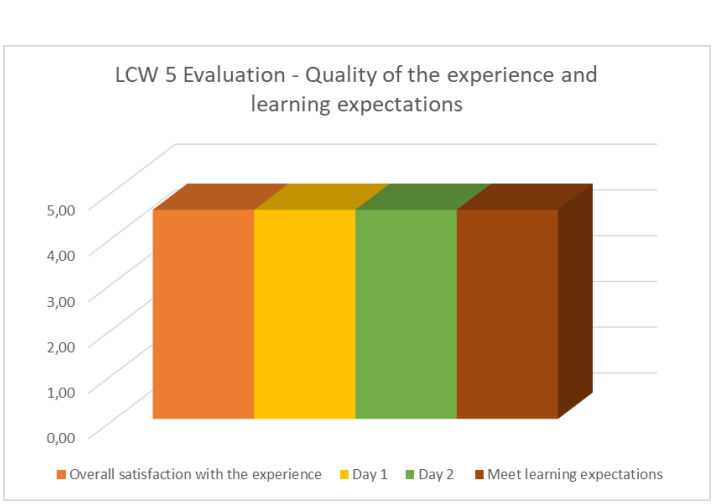
	Quality of the experience			Quality of discussion and materials					Meet learning expectations
	Overall satisfaction with the experience	Day 1	Day 2	Overall satisfaction with the discussion	Facilitation of virtual session	Input to the discussions	Quality of dialogue	Discussion outputs/ conclusion	
P 1	5	5	5	5	4	4	5	4	5
P 2	4	5	4	5	5	5	4	4	5
P 3	4	4	4	4	4	4	4	4	4
P 4	5	4	5	5	5	5	5	5	5
P 5	5	5	5	5	5	5	5	5	4
P 6	5	5	5	5	5	5	5	5	5
P 7	4	4	4	4	5	4	4	3	4
AVG score	4,57	4,57	4,57	4,71	4,71	4,57	4,57	4,29	4,57

First of all, it is worth considering that the number of responses is relatively low, as only 32% of the participants filled in the evaluation questionnaire. Although the limited number of responses affects the analysis, all information collected confirms the success of the workshop. Most of the responses indicate that participants were satisfied (4) or very much satisfied (5). There is only one average rating (3), related to the quality of discussion outputs during the concluding plenary session.

These results are reflected in the average scores in the last row of the table, which range from a minimum of 4.29 for the discussion outputs, to a maximum of 4.71 for the overall satisfaction and facilitation of virtual discussion.

Although the average scores are in the high range for all the aspects of the workshop, it is important to catch the “weak” signals from the slight variations that can be observed in the perception of the quality

for the different sessions of the workshops. These are shown in the following graphics of the average scores for the quality of experience and discussions:



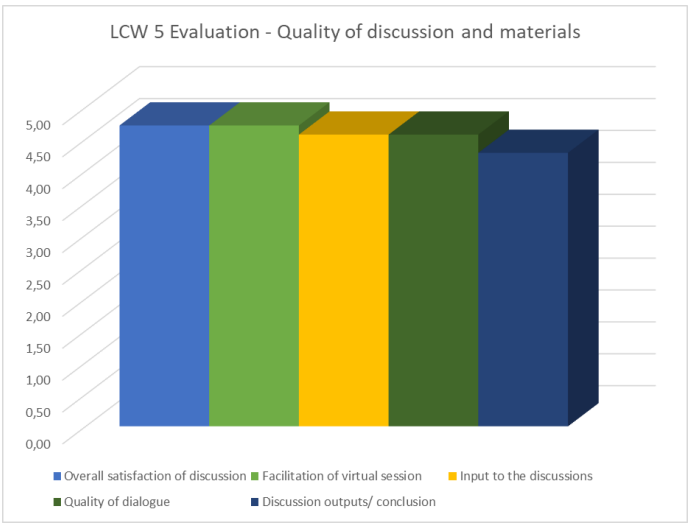


Figure 11 Quality of experience & learning expectations (L) and discussion & materials (R) – Warsaw

Indeed, small variations in the **quality of discussion and materials** (diagram on the right) provide interesting signals:

- Considering the overall satisfaction of the discussion (4.71), the facilitation of virtual sessions (4.71) has played a crucial role. The input to the discussion (4.57) and the quality of dialogue (4.57), as well as the emotional satisfaction with the experience, might have compensated for the least appreciated aspect, namely the outputs of the discussion presented in the concluding plenary (4.29).
- From the above pattern, and some elements directly gathered on the ground during the second day, we can conclude that the last working session of the second day was considered very ambitious compared to the time available.

The evaluation of the **quality of experience** (diagram on the left) demonstrates a high level of participant engagement and satisfaction with the entire event (4.57), with individual activities (4.57 both days) and with the **quality of the learning outcomes** (4.57).

Qualitative evaluation

The quality of the workshop can be further assessed by analysing the responses to two qualitative questions at the end of the questionnaire:

1) Name one thing you liked especially about the workshop and one thing you didn't like so much
2) Compared to physical workshops, how was your experience with this digital workshop? What recommendations do you have for future digital workshops?

Participants' responses to the question of what they liked more or less are instructive:

I very much liked…	I did not like …
I very much liked the fact that the workshop has created an opportunity for an exchange of thoughts between experts coming from various backgrounds and fields. We need these exchanges between researchers and CHIs to better understand our approaches and learn how to collaborate.	Maybe it's not about liking it or not, but some groups had better facilitators than others, also language-wise and this has slightly influenced the quality of the conversations held in the breakout sessions.
I very much liked learning about specific issues in collaboration between DH and CH communities.	I did not like that the topic of discussions was so wide encompassing both issues specific to the collaboration between DH and CH communities and general issues related to DH research. Making a difference between those two categories of issues would make discussions more fruitful.
I very much liked the amount of opportunities to express views and ideas.	It's going too far to say I didn't like it, but perhaps the 'homework' sent to us might have posed some specific questions or points for us to consider in advance. This might have encouraged a wider participation in the whole group sessions.
I very much liked the overall organisation. The workshop preparation was perfect, and reflected in all the sessions. I liked very much how we transformed high-level principles and ideas into prototypes, and appreciated the quality of the general discussion we had, which I found very stimulating. I look forward to seeing the evolutions of this work.	
I very much liked the clear objectives, the moderation and the homework in advance.	I did not understand the use of the Slack channel. We could have gone without it.
I very much liked how well the workshop was organised: the documents that were sent in advance (plus the regular reminders / summaries of tasks); the collaborative documents that were used during the sessions (including how the SHAPE-ID team had analysed/summarised the discussions from the first day in preparation for the second day.	

Based on the analysis of these answers, we can highlight what have been perceived as the main strengths or weaknesses of the workshop.

As for the **strengths**, surely the first is the number of opportunities for exchanging ideas, collaboration and co-creation activities, both synchronously during the workshop and asynchronously with side documents shared before the event. The diversity of participants and perspectives and the mix of people present at the workshop, as well as the structure and organisation of the workshop underlined this result, ensuring a highly appreciated event.

As for the **weaknesses**, while the organisation of the workshop was highly valued by some participants, it was slightly criticised by others. Comments suggest the need for a clearer method to distinguish participants' goals and the topic of discussion, as well as more structured supporting documents.

Another point raised was the crucial role of moderators during the breakout rooms and the importance of their quality in terms of facilitation skills.

Surprisingly, the answers given to the last question about suggestions and recommendations to organise future digital workshops have once again underlined the outstanding experience of this event. Although there is only one observation that indicates room for improvement in the timing of the activities, it is interesting to read the participants' observations that describe the strengths of this workshop from different points of view:

- It was the first digital workshop in which I didn't feel I was missing/losing important information or connections. The length of the sessions, and the breaks, were adequate to maintain people's attention online. 3-hour sessions are fine (not too much and not too less). Of course, there was no space for informal exchanges, but I found the result excellent in any case.
- Overall the workshop was excellent. The design and organisation were great, and the timing was just about right. Anything shorter would not suffice, anything longer would have been too tiring.
- Time for discussion was short and digital workshop/digital contact made it even shorter. I would recommend prolonging the sessions and the day. It would enable providing more accurate and interesting conclusions.
- I am one of the lucky participants, as I already knew quite a few of the other participants, so working in an online environment was no problem at all. However, this may have been harder for other participants who didn't know each other. In fact, even though I would have loved to have come to Warsaw again and meet face-to-face, I do find travelling exhausting, so I am quite pleased we could have taken part by Zoom. The video of the Atlas of the Holocaust was a wonderful idea to bring some physical materiality to the workshop. I thought that it was perfectly organised and perfectly timed (the sessions, including the breaks … which are so important also in online events). I have heard that there are systems for online post-it notes (e.g. https://miro.com/). I haven't used them yet, but I would be curious to try them in this kind of workshop setting. However, the Google docs, which were so well organised, worked perfectly.
- As far as digital events go, this one was definitely one of the best ones. It is much more difficult to maintain attention on a digital platform, but the sessions were scheduled in a manner that allowed shifting the focus as needed. I really appreciated the subtle role of the organizers who paid continuous attention despite occasional connection issues and managed to stimulate discussion and move in whenever needed. This must have been very demanding on them, but it really helped to make the workshop a success.

Bilbao Online Workshop: evaluation report

Quantitative evaluation

At the end of the workshop, evaluation questionnaires were distributed to all participants. They were asked to complete and return these anonymously.

The questionnaire included three quantitative questions, with participants asked to rank on a scale from 0 (not at all satisfied) to 5 (very much satisfied):

1) The quality of experience: plenary session and breakout rooms.
2) The quality of discussions and materials: overall satisfaction, facilitation of virtual session, inputs to discussions (presentations and other documents), quality of discussions, conclusions in the final plenary session.
3) The quality of the learning outcomes (quantitative evaluation)

The answers from 16 participants (out of 31 in total) are summarised in the table and graphics below:

Table 8 Bilbao (online) workshop quantitative evaluation

	Quality of the experience		Quality of discussion and materials					
	Planary session	Breakout rooms	Overall satisfaction with the discussion	Facilitation of virtual session	Input to the discussions	Quality of dialogue	Discussion outputs/ conclusion	Meet learning expectations
P 1	4	4	4	5	4	5	4	4
P 2	5	5	5	5	5	5	5	4
P 3	5	5	4	5	4	5	5	4
P 4	2	3	4	4	5	3	3	2
P 5	5	5	4	5	4	5	4	4
P 6	4	4	4	5	4	4	4	4
P 7	5	5	5	5	4	5	5	4
P 8	5	4	4	5	4	5	4	4
P 9	4	5	4	5	4	4	4	4
P 10	4	4	4	5	5	4	4	4
P 11	4	4	4	4	4	4	5	4
P 12	5	4	5	5	5	4	5	4
P 13	2	3	3	4	4	2	2	2
P 14	4	4	4	5	3	4	4	3
P 15	4	3	4	5	3	3	4	3
P 16	4	4	3	4	4	3	4	3
AVG score	4,13	4,13	4,06	4,75	4,13	4,06	4,13	3,56

The success of the workshop is noteworthy. Most of the responses indicate that participants were satisfied (4) or very much satisfied (5), although the average rating (3) is considerably present. Moreover, a limited number of participants expressed a lack of satisfaction (2), mostly with the plenary session and the fact that the workshop didn't meet their learning expectations.

These results are evident also looking to the average scores in the final row of the table, which range from a minimum of 3.56 for the quality of the learning outcomes, to a maximum of 4.75 for the facilitation of virtual discussion.

Although the average scores are in the high range for all aspects of the workshop, it is important to catch the "weak" signals from the slight variations that can be observed in the perception of the quality for the different sessions of the workshops. These are shown in the following graphics of the average scores for the quality of experience and discussions:

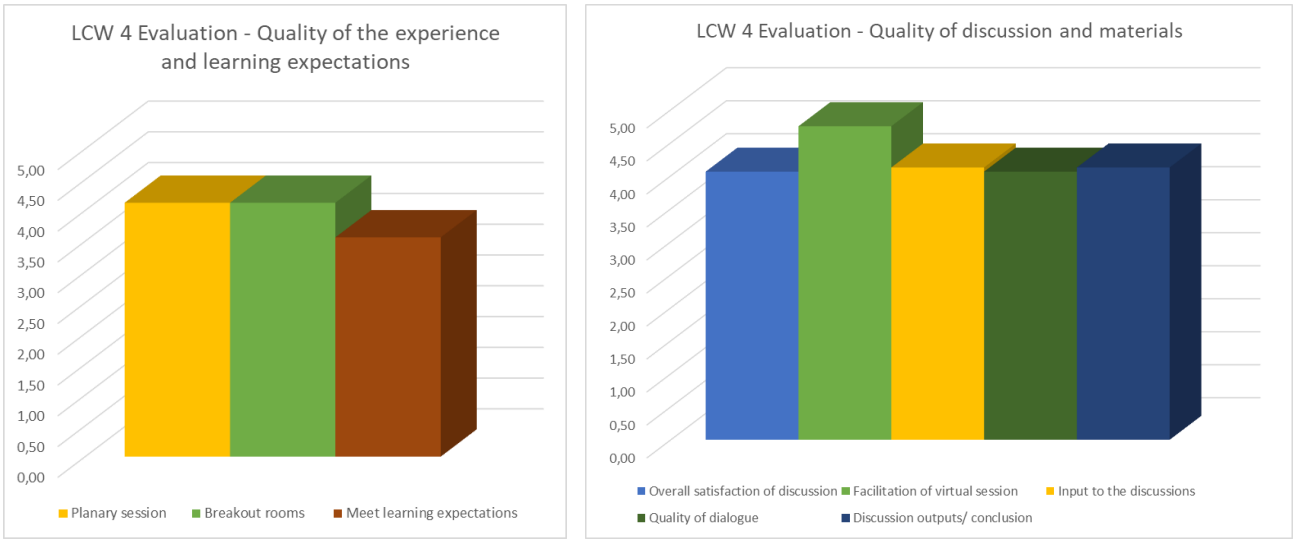


Figure 12 Quality of experience & learning expectations (L) and discussion and materials (R) – Bilbao

The evaluation of the **quality of experience** (left) highlights a considerable level of participant engagement and satisfaction since the assessment of both plenary and breakout room session is high (4.13).

Moreover, variations in the **quality of discussion and materials** (right) provide interesting indications. The overall satisfaction with the discussion is equivalent to the evaluation of the quality of the dialogue (4.06) while all other aspects of the discussion were more highly appreciated. The facilitation of the virtual session was the most highly ranked component (4.75), demonstrating the consolidation of these skills by consortium members. On the other hand, the quality of input to the discussion (4.13) has directly influenced the appreciation of outputs presented during the concluding plenary (4.13).

Surprisingly, the **quality of the learning outcomes** (3,56) has been evaluated as less satisfactory compared to all other aspects of the workshop, implicitly highlighting high expectations on the part of participants.

Qualitative evaluation

The quality of the workshop can be further assessed through analysis of the answers to two qualitative questions at the end of the questionnaire:

1) Name one thing you liked especially about the workshop and one thing you didn't like so much
2) Compared to physical workshops, how was your experience with this digital workshop? What recommendations do you have for future digital workshops?

Participants' responses to what they liked more or less were instructive:

I very much liked…	I did not like …
Moderation in the breakout session in which I participated was brilliant and highly effective: the moderator consistently led it and allowed balanced participation from all.	I was expecting more focus on the challenging aspects of the integration among AHSS and STEMM, while the workshop mostly concentrated on more "conventional" aspects, like trustable AI and AI performance. As a consequence, the "SS" part of AHSS was much more prominent than the "AH" part and participants (at least, we engineers) were not really pushed out of their "comfort zone".
The organisation was great and everything went flawless.	I think that the time for the breakout discussion was a bit short overall.
I very much liked more the forum full of highly qualified experts in the area and how the workshop has been organised.	The learning experience is limited by the fact that it is a digital workshop. I had great expectations about the workshop, but this because I know about the initial intention and early design. The resulting workshop did not resemble the original idea, and I was very deceived.
I very much liked being able to discuss problems with relevant European experts from the office without travelling.	The sessions were too short and without "third time" possibility.
The interdisciplinary discussion and the variety of the field of interest of the participants.	I would like to discuss more about technical and technologies questions.
I very much liked the participation of people, it made the meeting dynamic.	I did not like nothing especially.
I very much liked the breakout session. It was a very nice opportunity to hear other perspectives and experience on the topic.	I did not like an issue I had with the workshop overall is that it was too general and failed to engage in the complexity of the issues. I understand the challenge to be able to embrace a large range of issues, approaches, disciplines. However, I wish there had been more in-depth perspectives presented.
I very much liked the complementary nature between social science and technology.	I did not like maybe the discussions was too generic and high level.
Bringing together people from different disciplines is always interesting as a concept. The general concept about raising awareness around AI and its social implications is important.	The conversation never got beyond the common places that we have heard so many times before. The conclusions were an abstraction of an amalgamation of ideas; I didn't find them very actionable. The discussion in our breakout session was hardly about the topic at hand - the key questions posed as discussion topics were largely overlooked.

I very much liked to discuss with people with very different backgrounds and expertise.	I did not like the timing of the discussion in the breakout session that was interrupted abruptly. There was some misunderstanding about what AI is. Sometimes it was used as a synonym of "technology", in other cases was referred to as machine learning. For the sake of clarity, I'd recommend to clarify the vocabulary of the discussion beforehand.
I very much liked the agility of discussion in the breakout sessions.	I did not like the gap of understanding of the expected outcomes of the workshop derived of the fact of being alien to the project and, hence, not knowing many details about it.

Based on the analysis of these responses, we can highlight what have been perceived as strengths or weaknesses of the workshop.

As for the **strengths**, surely the first is the diversity of participants and perspectives, and the excellent mix of people present at the workshop. In particular, their high level of expertise has generated a decidedly appreciative atmosphere. The activities during the breakout session and their moderation were highly valued because they allowed participants to express different point of view. Finally, the overall organisation of the workshop and in particular, the concept behind the discussion was highly appreciated.

As for the **weaknesses**, the most frequently remarked aspect was the necessity of focusing the entire debate on a more concrete output. In particular, the time available for the activity during the breakout session was not enough to get beyond the common places and allow an in-depth analysis. Another point raised was the expectation to let Arts, Humanities and Social Sciences disciplines lead the interdisciplinary integration.

Unsurprisingly, the suggestions and tips for future workshops – given in response to the last question of the questionnaire – are partly directed towards reducing the weaknesses noted above. However, there are also new insights to improve the quality of the experience and discussions, as shown in the table below:

Tips to reduce weaknesses	New insights
I understand the limitations of going digital, and I think the chosen platform is probably the best one to carry out these online workshops. Maybe the moving from breakout sessions to the plenary is very sudden. The transitions should be treated in a different way.	I found the digital workshop very well organised, especially regarding the breakout session. It could be useful to think about an ice-breaking session to meet other participants out of the official discussion.
Digital workshop was well organised. Would have been nice to set up in advance the objectives and goals of the workshop. For the next time it is worthwhile to give more time to have a more in-depth discussion.	The networking aspects are tricky in virtual meetings. I wish I had had the chance to have a coffee with the participants and the organisers! This is of course a challenge for everyone organising virtual meetings.

Although the discussions went well during the breakouts extra focus and the use of other means of interaction like mentimeter to vote on given statements would improve the interaction. Also it would have been nice to have a short introduction of the participants during the breakouts as the “rooms” were quite small.	
I think it’s hard to overcome the physical distance purely with digital means, between a group of people who have never met each other. More time would have allowed to break the ice and get to the point of discussion.	
Make the breakout sessions more practical and engaging, e.g., discussing/creating scenarios, role play, case study presentation, develop mind maps etc.	
It is easy and effective. The limited time during break-out resulted in the limitation of conclusions but, nevertheless, profitable.	

Appendix B – Workshop Participants and Organisers

Organising Team Supporting SHAPE-ID Partners

Valerie Aldoff, Talent Your World (ES); Icy Anabo, University of Deusto (ES); Caterina Barioglio, Polytechnic of Turin (IT); Antonia Caro González, University of Deusto (ES); Caitriona Curtis, Trinity College Dublin (IE); Giovanna Giuffré, ISINNOVA (IT); Mich Hoo, Guallart Architects (ES); Svetlana Ivanova, ISINNOVA (IT); Emily Johnson, Trinity College Dublin (IE); Aoife King, Trinity College Dublin (IE); Laureline Lhuillier, Universitat Internacional de Catalunya (ES); Francesca O'Rafferty, Trinity College Dublin (IE); Theres Paulsen, Network for Transdisciplinary Research (td-net) (CH); Barbara Rossi, University of Deusto (ES); Rosa Santibañez, University of Deusto (ES); Giulia Sonetti, Politecnico di Torino (IT); Sibylle Studer, Network for Transdisciplinary Research (td-net) (CH)

Workshop Participants

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