

D3.1. Cultural and local connections' criteria

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PU = Public

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

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Executive Summary

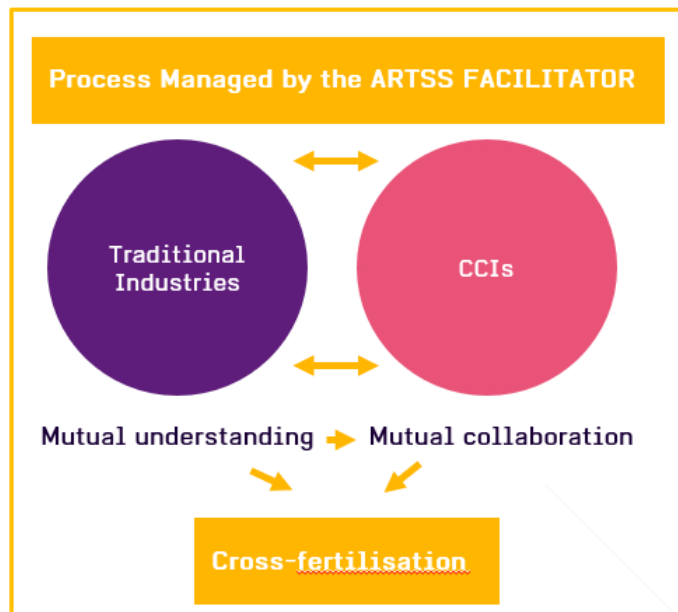
The deliverable "D3.1. Cultural and Local Connections' Criteria " provides an in-depth analysis and methodology for **integrating cultural and local dimensions into innovation projects, particularly within the InteractionSeeds framework**. This deliverable explores how interactions between Research & Industry and the Cultural & Creative Industries (CCIs) can be optimised through an approach combining art and design thinking.

D3.1 constitutes a comprehensive guide for implementing innovation approaches that integrate culture, art, and society, and highlights the importance of a skilled Art-Science-Society facilitator to guide these processes and ensure their long-term success.

Exploring collaborative approaches

In chapters 2 and 3, a combination of methodologies such as **cross-fertilisation, Living Labs, and action learning**, aligned with the Quintuple Helix model has been explored. Cross-fertilization is essential for matching diverse stakeholders (R&I stakeholders and "seed" initiatives) and ensure ideas from multiple sectors and disciplines are hybridized, leading to innovative approaches. Living Labs are collaborative environments focused on co-creation with users, actively involving citizens in innovation processes. Action learning allows for the immediate application of knowledge in real-world contexts. The **Quintuple Helix model** integrates academia, public administration, citizens, industry, and the environment to ensure all relevant societal dimensions contribute to and benefit from the innovation process.

Throughout the beginning of the project, the Creativity World Forum 2024 experienced by the project partners revealed a lack of mutual understanding between traditional industries and CCIs. This discovery highlighted the need for specialised platforms and initiatives to facilitate dialogue and mutual understanding, as well as the essential role of an Art-Science-Society facilitator.

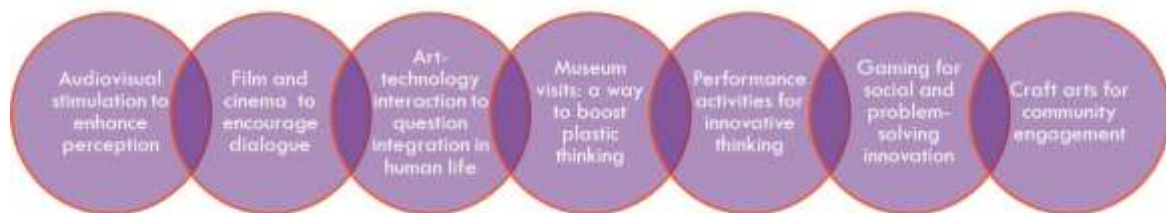


Art-Design Thinking as a Key Approach to embed Cultural elements in innovation and knowledge valorisation

Chapter 4 emphasizes the **importance of Art-Design Thinking as a methodology for innovation, merging the creativity of art with the structure of design**. Art Thinking focuses on generating open-ended questions and exploring new perspectives, while Design Thinking focuses on creating concrete products and services tailored to user needs. The integration of these two approaches fosters socially engaged and culturally rich innovations. The deliverable also details the cognitive strategies and mindsets underlying Art-Design Thinking, such as metacognition, emotional engagement, and tolerance of ambiguity.

Highlights on how such approach can be applied in traditional industries and CCIs for the creation of products and service, as well as process, that are not only functional but also resonate deeply with societal values, are provided.

Finally, several **Art-Design Thinking approaches applied to specific contexts are presented**.



These approaches are designed to foster creativity, engagement, and problem-solving in various contexts, such as adaptation to climate change, human-technology interaction, heritage preservation, urban planning, well-being, and education.

Engagement Strategies for Artists and Cultural Stakeholders

In chapter 5, the deliverable emphasizes the importance of involving artists and cultural stakeholders in innovation processes through a structured framework including need finding, ideation, strategy, experimentation, and feedback. It offers various Art-Design Thinking approaches to support each phase, ensuring that solutions are user-centred and have a significant impact.

Role of the Art-Science-Society (ArtSS) Facilitator

The ArtSS facilitator plays a crucial role in establishing collaborative foundations, developing a strategic vision, facilitating the co-design of solutions, and ensuring long-term sustainability.

Chapter 6 details the facilitator's key responsibilities, such as initiating collaborations, developing a strategic vision, facilitating co-design, and ensuring long-term

sustainability, as well as building and strengthening network connections. The step-by-step guide is completed by Key Performance Indicators (KPIs) for evaluating the facilitator's success are also mentioned, such as stakeholder participation, pilot project success, and measurable impact.

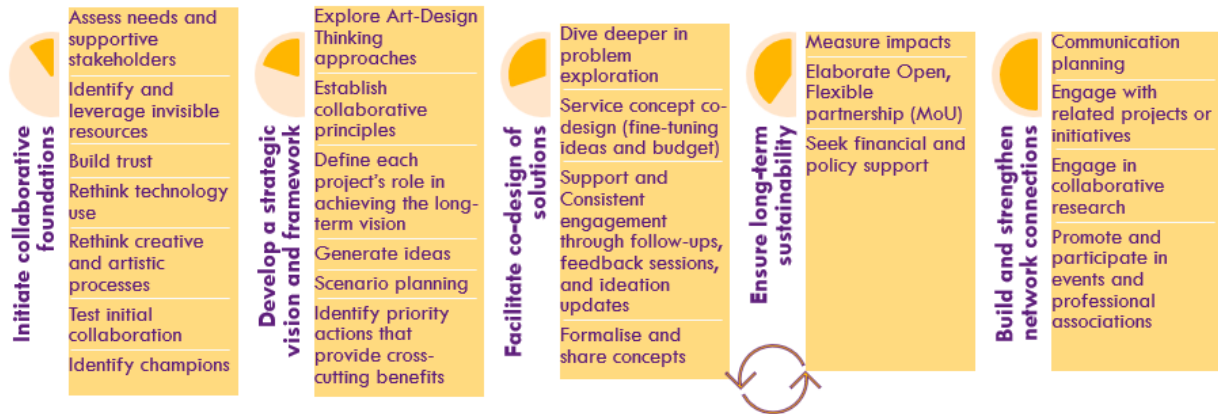


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Table of Acronyms

Acronym	Description
SMEs	Small and Medium Enterprises
CCIs	Cultural and Creative Industries
ArtSS	Arts – Science - Society

1. Introduction

1.1. InteractionSeeds objectives

The InteractionSeeds project seeks to promote science beyond academic labs, foster critical thinking, question technological assumptions, and explore innovative paths for societal progress. Recognising the unique skills that artistic and cultural organisations bring to these ambitions, **the project aims to foster the integration of art-based methods to facilitate deeper understanding and connections** with the world through various expressive forms. These methods, when applied to research, inspire solutions for a sustainable, inclusive, and aesthetically enriched future.

Implementation of InteractionSeeds **involves creating or replicating art-centred or cultural interactions** such as visual arts, music, multimedia, literature, design, and performances **that actively engage with the public**. This approach provides **a replicable framework for making research and innovation (R&I) insights accessible to citizens, integrating art at the heart of collaborative projects** to communicate scientific knowledge and foster co-creation.

InteractionSeeds defines a **seed** as a documented replicable artistic method or interactions that has been used to address a challenge within the domains that the project focuses on, specifically in Health, Climate Action and Environment, Trust in the Digital Age, and Democratic Change.

1.2. Purpose of the deliverable

The purpose of deliverable D3.1 is to establish a standard methodology for selecting and nurturing interaction seeds. This involves first engaging stakeholders, understanding their challenges, **identifying suitable seeds, and then adapting the seeds to their new context**.

In the InteractionSeeds project, the process of assessing and adapting pre-selected seeds is carried out by small task forces. These task forces work with R&I stakeholders to:

1. Identify a suitable framework to support the seed's implementation.
2. Determine the conditions for the framework to be easily replicable.
3. Tailor the framework to the specific context, needs, and location of the stakeholders.

The **implementation of the seeds is done through a co-design process** that involves local stakeholders, consortium partners from the host locality, the consortium partner who originally sourced the seed.

The goal of the co-design process is twofold:

1. Adapt the interaction seed to fit the local context.
2. Provide sufficient training to local stakeholders and the host partner in the **Art-Design Thinking approach**, enabling them to independently apply and sustain the process in the future.

2. Explanation of the selected methodology at the proposal stage

A combination of methodologies such as cross-fertilization, Living Labs, and action learning—aligned with the Quintuple Helix model—has initially been selected due to being well-suited to achieve the project objectives, as each supports the various stages of stakeholder matching, contextualization, and test case development.

These methodologies are described in the next sections.

2.1 Cross-fertilisation

Cross-fertilisation is essential for tasks T3.1 'Confirmation of the first R&I stakeholder/seeds matching' and T3.2 'R&I stakeholder/Seeds matching for the second batch of 10+ cases still to be identified', where diverse stakeholders (R&I stakeholders and seed initiatives) are matched and validated. This process ensures that **ideas from multiple sectors and disciplines**—each of which may have differing objectives—are **hybridized, leading to innovative approaches for addressing challenges**.

By bringing together diverse perspectives early on, **cross-fertilization encourages stakeholders to collaboratively refine ideas and objectives, promoting solutions that are feasible, scalable, and adaptable across varied contexts**. This methodology is particularly useful for creating a solid foundation in the first and second stakeholder-seed matching rounds, allowing for a rich exchange of knowledge and ideas that can enhance the replicability of seed implementations.

2.2 Living Lab methodology

Living Labs are collaborative and open innovation environments built on a structured approach to user co-creation, merging research and innovation efforts within community settings and emphasizing citizen involvement at the core of the innovation process. They **prioritize collaborative creation, swift prototyping, and testing, as well as the scaling of innovations and enterprises**, delivering various forms of shared value

to participating stakeholders¹. The Living Labs approach is especially pertinent as it prioritises a user-centred, open innovation ecosystem. This **methodology facilitates the co-creation of solutions by actively involving citizens**, who represent a central pillar of the Quintuple Helix. Living Labs provide an environment where research and innovation activities can directly involve the community in real-world contexts. For T3.3 ‘Adding cultural/local specific features to all test cases’, where cultural and local-specific features are integrated into test cases, Living Labs enable local users to directly influence and shape the development of these cases, **ensuring cultural relevance and user acceptance**.

Additionally, for T3.4 ‘Design of the tests and definition of tests’ protocols for the 20+ test cases’, the Living Labs methodology supports the **design and testing of protocols** by providing an infrastructure that includes partners, users, and management, all working cohesively. The systematic, real-time feedback from end-users within the Living Labs framework also allows for **continuous iteration and improvement**, making the resulting protocols stronger and tailored to user needs. The acclaimed Living Lab approach builds, manages, and enriches local ecosystems and interdisciplinary teams, promoting inclusivity within urban and regional environments. It encompasses multiple themes, including culture, urban innovation, cultural heritage, well-being, ICT, sustainability, skills development, and social inclusion.

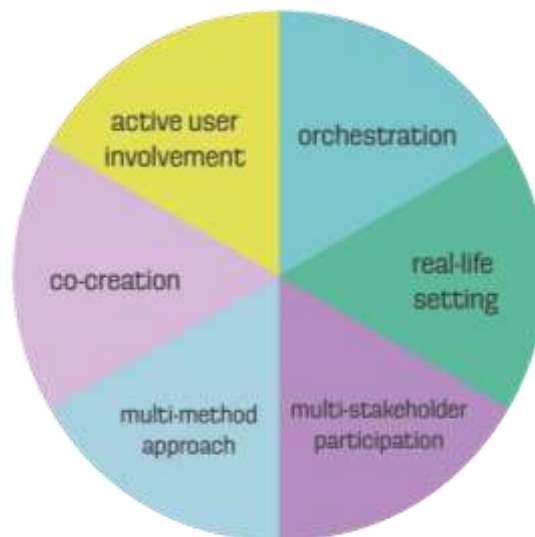


Figure 1 Living Labs’ main features.

¹ ENoLL - European Network of Living Labs. (2024, November 7). *Living Labs*. European Network of Living Labs. Retrieved from <https://enoll.org/living-labs/#living-labs>.

2.3 Learning In action

"Learning in Action" methodology, aligned with the D2.1. Training kit developed by CluBE (M10), enables immediate application of knowledge in real market and industrial settings. In fact, this methodology is essential for **bridging the time gap between knowledge creation and its practical application**, which is a critical element in innovative projects that seek to move from theoretical development to market-ready solutions. By applying this approach, stakeholders can continuously test and refine solutions within the cultural and local ecosystem, learning and adapting as new insights arise, which increases both feasibility and long-term impact. For T3.4, this is particularly beneficial, as **the methodology allows protocols and test designs to be refined based on real-world application, ensuring that final test cases are both effective and realistic.**

2.4 Quintuple Helix model

Transversally, we have included the Quintuple Helix model, integrating Academia, Public Administration and Government, Citizens, Industry, and Environment, complements these methodologies by ensuring that all relevant societal domains contribute to and benefit from the innovation process. This model provides a **well-rounded framework that aligns with cross-fertilization, Living Labs, and Learning in Action**, enabling these methodologies to **address the multifaceted nature of sustainability, social impact, and industrial application.**

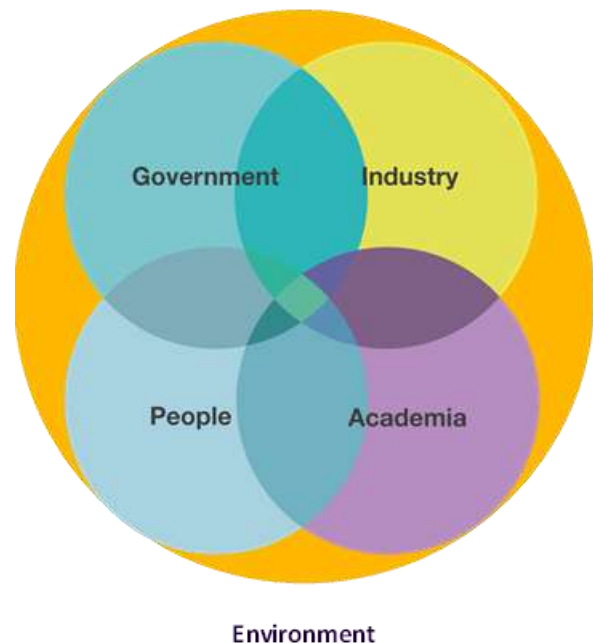


Figure 2 The Quintuple Helix's agents.

The stakeholders involved in the Quintuple Helix can gain various advantages from the Living Lab approach. For example, companies can access fresh and innovative ideas, users can receive the innovations they seek, researchers can obtain valuable case studies, and public organizations can achieve a higher return on investment in innovation research.

- Academia refers to schools, colleges, universities, research institutes, and innovation labs (the public and private sectors).
- People (citizens, civil society and users) include non-profit formal organizations, NGOs, charities, foundations, associations, trade unions & social entrepreneurs when not profit-seeking, communities, interest groups.

- Government and public sector take into account central, regional and local governments, intergovernmental organisations, government entities (ministries and agencies, public administrations, land manager and landowners, other publicly-owned entities).
- Industry considers companies, SMEs, entrepreneurs, retailers, corporates, profit-seeking organisations operating in the market, including commercial ICT & technology sectors, representatives of these stakeholders

3. Contextual conditions that have transformed the initial methodology

3.1 Background: GAIA's participation in the Creativity World Forum 2024

First, it should be noted that GAIA currently hosts the pilot project under the Department of Culture and Language Policy of the Basque Government, **Basque District of Culture & Creativity** (BDCC). This initiative creates a platform for the Cultural and Creative Industries (CCIs) in the Basque Country, supporting projects focused on creation, professionalization, innovation, internationalization, financing, growth, and competitiveness. The BDCC offers tailored support to cultural and creative companies, helping them navigate the most appropriate pathways and seize opportunities for development.

Building on this foundation, GAIA, through the BDCC, participated in the Creativity World Forum 2024 as the coordinator of the thematic area on CCIs Companies and Markets. The focus of this thematic area was to **accelerate the establishment and recognition of CCIs in both local and global markets, by implementing initiatives and services that promote monetization, sustainability, and cross-fertilisation**. The event, held on April 15, 16, and 17, 2024, across the Basque Country's capital cities—Bilbao, Vitoria-Gasteiz, and Donostia-San Sebastián—served as a flagship gathering for the DCC Network. It brought together global innovators to discuss creativity, innovation, and entrepreneurship. Each year, a different international DCC region hosts the forum, setting the theme and approach. In addition, the event features the DCC LivingLab, an international student workshop designed to connect emerging creative talent, who play an active role in the conference.

3.2 A conceptual result obtained after the CWF experience and the implementation of the seeds: the need of an Art-Science-Society Facilitator

From this experience, we have arrived to the conclusion that there is **lack of mutual understanding** between traditional industries and Cultural and Creative Industries (CCIs). This often **restricts their collaborative potential, leading to missed opportunities for innovation**. These sectors operate with distinct objectives and methodologies:

- Traditional industries focus on scalability, efficiency, and structured processes;
- CCIs prioritise creativity, adaptability, and user-centric approaches.

Without a shared language or framework, aligning these perspectives becomes challenging, creating silos and reducing the chances for effective partnerships.

To address this, there is a pressing need for specialised platforms and initiatives that facilitate dialogue and promote mutual understanding. Such platforms can serve as structured environments where stakeholders from both industries can interact, gain insight into each other's operations, and recognise the tangible benefits of collaboration. For example, traditional industries can learn how CCI-driven innovation can enhance brand differentiation and consumer engagement, while CCIs can leverage the scalability and market access provided by traditional industries.

Extending it to Research & Innovation, an **Art-Science-Society Facilitator (ArtSS facilitator) is essential in these cross-fertilisation efforts, guiding these interactions to maintain a productive exchange of ideas and alignment towards common goals.** Acting as a bridge, the facilitator employs methodologies such as workshops, co-creation sessions, and prototyping activities that bring together key players—manufacturers, designers, cultural managers, tech experts, and local authorities or end-users—to collaboratively address sector-specific challenges.

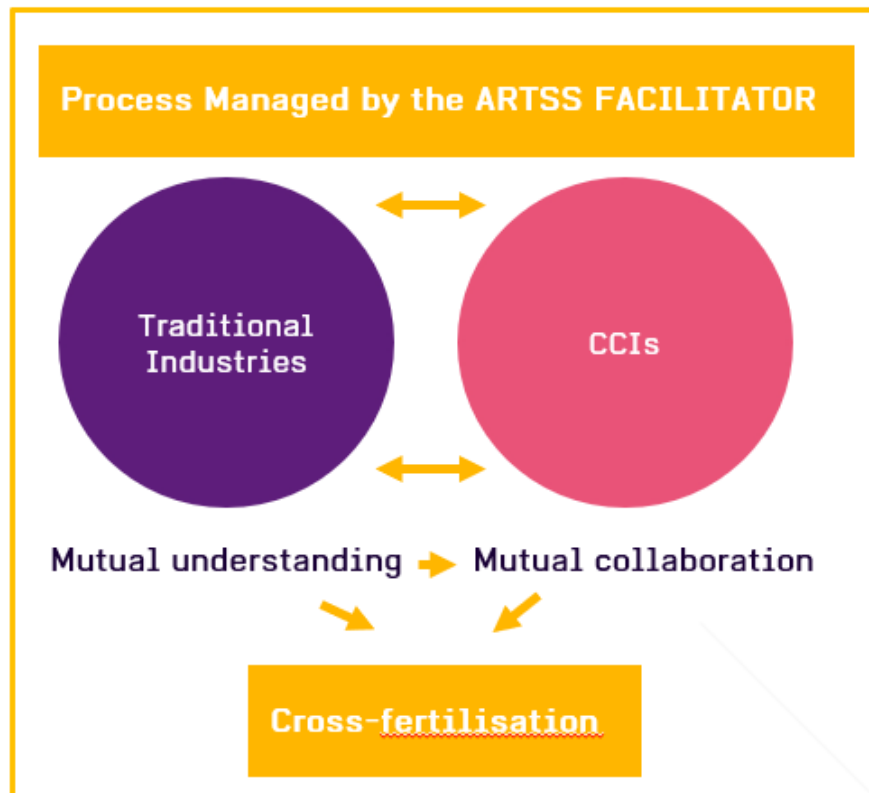


Figure 3 Conclusions from the Creativity World Forum 2024

By involving society in these processes, particularly through citizen engagement, this role ensures that solutions are not only innovative and practical but also inclusive and attuned to the needs of the wider community, paving the way for broader acceptance and application.

By establishing these facilitators and platforms within a Living Lab framework or Innovation Environments, we can foster a collaborative ecosystem where **traditional industries and CCIs mutually reinforce each other.** This structured approach can accelerate innovation, blending the efficiency of industry with the adaptability and user-centric focus of CCIs to generate sustainable, culturally informed growth across both sectors.

3.3 Conclusions of the Workshop on Art, Technology, and Wellbeing (first implemented seed of GAIA)

Held the 16th of May 2024, a workshop about technology, art and wellbeing among citizens has been organised by GAIA in Donostia-San Sebastián (Spain). The primary objective of this workshop was to explore how artistic methodologies can be combined with technological advancements to enhance human experiences and address societal challenges. This workshop was designed to foster interaction and dialogue among citizens, artists, technologists, and researchers.

After 3 hours of discussion and immersion in artistic activities, the workshop highlighted a significant gap in facilitators equipped to drive cross-fertilisation among industry, art, and technology sectors. This gap limits the potential for productive collaboration, shared learning, and innovation across these fields. **The absence of skilled facilitators** capable of bridging these domains results in missed opportunities for synergy and mutual enrichment, especially in integrating technological advances with artistic and industrial applications that could enhance societal wellbeing.

There is a clear need for **analysis of best practices in technology, innovation, art, and culture**. To address this need, an in-depth analysis of best practices in events and institutions that successfully combine technology, culture, and innovation is essential. Such analysis could provide valuable frameworks and actionable insights into how these sectors might collaborate effectively. The following examples serve as key models for how art, technology, and industry can intersect successfully:

- **Sónar Festival (Barcelona, Spain):** Sónar is a globally recognised electronic music festival with a strong focus on the intersection of music, creativity, and technology. As a pioneer in incorporating digital innovation within a cultural framework, Sónar offers a platform for exploring how electronic art and music technologies can drive new creative expressions and business models. Studying Sónar's approach to engaging diverse audiences and fostering dialogue between music, art, and technology could provide insights into how cross-sector partnerships can drive both cultural engagement and technological adoption.
- **Ars Electronica (Linz, Austria):** This institute is a prominent example of integrating art, technology, and science within the sphere of new media. Through its exhibitions, events, and educational programmes, Ars Electronica showcases groundbreaking work at the intersection of digital art and technology. Its model highlights the importance of fostering experimental environments where artists, technologists, and educators can collaborate on projects that push the boundaries of digital and interactive media.

- **European Creative Economy Conference 2024 (Helsingborg, Sweden):** This conference brings together stakeholders from the creative economy to discuss future directions in cultural and creative sectors. It emphasises the role of creative industries in economic development and community wellbeing, showcasing practices that foster resilience and adaptability. Analysing this conference's structure and themes could offer strategies for designing similar events that prioritise innovation and sustainability in creative industries.
- **EIT Culture & Creativity (European Institute of Innovation and Technology):** This initiative supports cultural and creative sectors by funding innovation and providing a network for creative entrepreneurs across Europe. It exemplifies a coordinated approach to fostering creativity as a driver for economic and social development. EIT's structured support for innovation in CCIs provides a replicable model for policies and programmes aimed at building capacities within cultural and creative sectors.

4 Key for adding a cultural approach to the seeds: Art-Design Thinking as a methodology

The **Art-Design Thinking methodology** can be described as an integrated approach that combines the expansive, vision-driven creativity of art thinking with the structured, solution-oriented framework of design thinking. This fusion offers a powerful tool for innovation, especially within the Cultural and Creative Industries (CCIs) and other sectors, fostering a dynamic exchange of ideas between the arts and industry.

4.1 Art Thinking vs. Design Thinking: a comparative foundation

Although art thinking and design thinking share common elements, they differ significantly in their focus and objectives².

Art Thinking

- **Philosophy:** Art thinking is primarily concerned with generating broad, open-ended questions rather than seeking immediate solutions. It encourages the exploration of diverse perspectives and conceptualisation without the pressure of producing a tangible outcome. The emphasis is on "creative questions" and "looking for new directions," which enables the identification of unexplored possibilities.
- **Purpose:** The primary goal of art thinking is to challenge existing paradigms and propose innovative strategies for addressing future challenges. Rather than providing quick answers, it aims to generate new ways of thinking, helping to define a conceptual landscape that may later inspire practical solutions.

Design Thinking

- **Focus:** Design thinking is more focused on the creation of concrete products and services. It seeks to provide practical, actionable solutions to real-world problems by focusing on user needs and systematically exploring potential solutions.
- **Process:** The methodology follows a structured process, involving stages of user research, ideation, prototyping, and testing. The outcome is often a tangible product or service that aims to meet specific user needs or solve a pressing issue.

² Source: Susan Liggett, Rae Earnshaw, Jill Townsley (2023): *Creativity in Art, Design and Technology*, Springer.

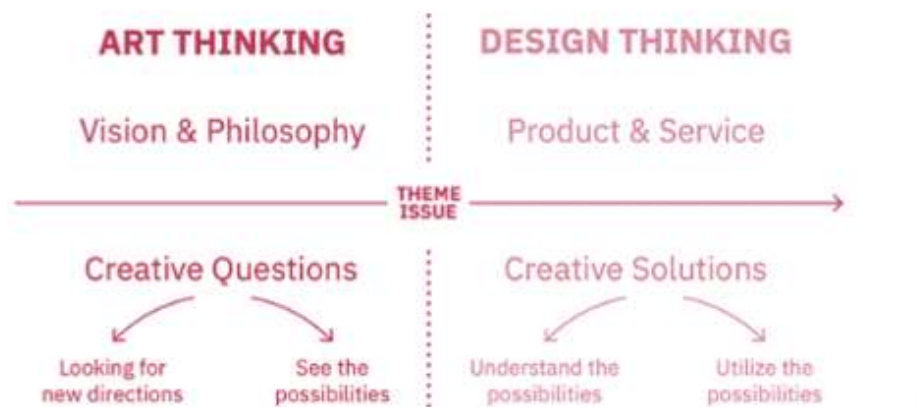


Fig. 8.1 <https://ars.electronica.art/futurelab/en/research-art-thinking/>, reproduced with permissions

Figure 4 The integration of an Art-Design Thinking approach. Extracted from Ars Electronica. ³

While Art Thinking nurtures the generation of abstract ideas and challenges existing paradigms, fostering expansive and innovative thought processes, Design Thinking takes these ideas and applies a structured, pragmatic approach to produce practical, user-focused solutions. Both methodologies are complementary: Art Thinking can inspire new questions and broader perspectives, while design thinking translates these into actionable outcomes, making them integral to the innovation process across various disciplines.

4.2 Integrating Art-Design Thinking: a methodology for innovation

Art-Design Thinking is a dynamic, interdisciplinary methodology that merges the visionary exploration of art with the pragmatic, problem-solving/solution-driven nature of design. This integrated approach fosters interdisciplinary collaborations and creativity, and enables the development of culturally rich, socially resonant, and innovative products and services. By balancing conceptual exploration with real-world impact, *Art-Design Thinking* enhances both the imaginative and practical application of ideas.

The value of incorporating art thinking into design lies in its ability to spark creativity in a culturally informed manner. **This approach is not merely about adding cultural elements to a product or service but embedding art's conceptual and open-ended**

³ Nkrang, A.: Interaction and Collaboration in AI-based Creative and Artistic Applications, Ars Electronica, Creative Intelligence (2020). <https://ars.electronica.art/futurelab/en/research-creative-intelligence/>.

perspective into the design process itself. By encouraging creative exploration, *Art-Design Thinking* fosters socially engaged innovations that resonate across diverse cultures and communities. Moreover, it provides a framework for addressing broader societal issues, bringing people together through shared cultural experiences.

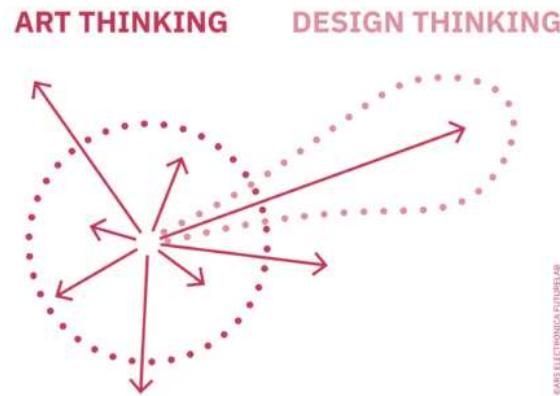


Fig. 8.2 <https://ars.electronica.art/futurelab/en/research-art-thinking/>, reproduced with permissions

Figure 5 The novelty of incorporating Art into Design Thinking. Extracted from Ars Electronica.⁴

One of the key advantages of integrating these two methodologies is their **capacity to address complex, multifaceted problems that require both imaginative vision and tangible outcomes.** **Art thinking** contributes by expanding the scope of possible solutions, encouraging non-linear thinking and the breaking of conventional boundaries. It invites new narratives and alternative modes of interpretation, which often reveal unexpected insights that can lead to more profound, forward-thinking solutions. Meanwhile, **Design Thinking** ensures that these abstract ideas are grounded in the real world through a structured, iterative process of prototyping, feedback, and user testing. This approach keeps the innovation process anchored in user needs, enabling a seamless transition from ideation to practical implementation.

The fusion of these methods can be especially transformative in fields where both innovation and societal relevance are crucial. For instance, in the development of cultural products or services, combining art and design thinking can lead to creations that are not only functional but also resonate deeply with societal values, challenging the status quo while addressing pressing social issues. By fostering collaboration between artists, designers, and technologists, **Art-Design Thinking** also facilitates interdisciplinary partnerships, ensuring that diverse expertise converges in the creation of innovative solutions.

⁴ Nikrang, A.: Interaction and Collaboration in AI-based Creative and Artistic Applications, Ars Electronica, Creative Intelligence (2020). <https://ars.electronica.art/futurelab/en/research-creative-intelligence/>.

In practical terms, this integration might manifest in areas such as immersive technologies, sustainable product development, or societal innovation. For example, in the design of environmentally friendly technologies, the artistic component can help visualise future ecological scenarios and engage the public emotionally, while the design-thinking process ensures that these solutions are feasible and scalable.

Finally, *Art-Design Thinking* enhances the innovation process by encouraging both the exploration of new, visionary concepts and the practical realisation of these ideas into functional, socially relevant products and services. This approach supports the creation of innovations that not only meet user needs but also engage with cultural, ethical, and societal dimensions, making it a powerful tool for the development of solutions that have both lasting value and impact.

4.3 The rationale behind art-design thinking

Art-Design Thinking is not only about process but also about the cognitive strategies and mindsets that underpin the methodology. These strategies allow creators to think critically and creatively, while the mindsets promote adaptability and engagement.⁵ The cognitive strategies and mindsets are defined as follows

Cognitive Strategies:

- **Metacognition:** The ability to reflect on one's own thinking process is key to Art-Design Thinking. This practice allows creators to evaluate their assumptions and approaches, enabling them to adapt and refine their work over time.
- **Resource utilisation:** Drawing on diverse, interdisciplinary sources helps broaden the understanding of challenges and opens up new avenues for creative exploration.
- **Prolonged research:** Art thinking values extended periods of research, enabling deeper insights into the complexities of a problem and informing more nuanced solutions.
- **Problem creation:** Rather than immediately seeking solutions, *Art-Design thinking* encourages the deliberate formulation of new questions, reframing problems in innovative ways.
- **Use of constraints and generators:** Constraints, far from being limitations, are used as tools for creative exploration. They push creators to think differently and find solutions within defined boundaries.

⁵ Source: Jessica Jacobs (2018): *Intersections in Design Thinking and Art Thinking: Towards Interdisciplinary Innovation*. Vol. 5, Issue 1. Columbia College Chicago, USA.

- **Conversational approach:** Art-Design Thinking encourages an ongoing dialogue with the work itself. This dynamic interaction allows the creator to remain flexible and responsive to new insights as they arise.
- **Delaying closure:** The creative process in Art-Design Thinking often involves postponing definitive conclusions, allowing ideas to evolve and mature over time.
- **Reflection and thematic coherence:** Continuous reflection on the thematic consistency of the work ensures that the creative output remains aligned with the initial vision, even as it adapts and transforms during the process.

Mindsets:

- **Emotional engagement:** Creators are encouraged to engage emotionally with their work, fostering empathy and a deeper connection with users. This emotional resonance ensures that the final product or service speaks to the lived experiences of individuals.
- **Intuition:** Art-Design Thinking values intuition as a guide for decision-making, balancing logical analysis with instinctive understanding.
- **Tolerance of ambiguity:** Art-Design Thinking embraces uncertainty and ambiguity, encouraging creators to explore complex, multifaceted problems without the need for immediate resolution. This openness to ambiguity allows for more innovative and unconventional solutions.

A concrete example of the importance of cognitive and mindset skills can be found in the field of AI education. Cognitive and emotional skills, leading to critical thinking and an inquisitive mindset seem to be a pre-requisite to a higher understanding and active engagement with AI in a safe and ethical manner. Recent studies (Long and Magerko, 2020; Chiu et al, 2024) have therefore add the aspects of student confidence and self-reflective mindsets as a necessary step to achieve AI literacy. However, the authors recommend future studies to work on this mindset, as it is still understudied in AI education. InteractionSeeds suggests that blending AI teaching together with the Arts is a way to achieve this mindset.

4.4 Application in Industry and CCIs

Art-Design Thinking has profound implications for both the Cultural and Creative Industries (CCIs) and broader industrial sectors such as:

- **Product and Service Innovation:** By adopting Art-Design Thinking, CCIs can create products and services that are not only functional but culturally

meaningful and socially relevant. This leads to offerings that resonate deeply with users while addressing practical needs.

- **Process Innovation:** The methodology also has significant potential for innovating processes within industries, fostering greater creativity and flexibility in product development, marketing, and delivery.

By integrating the conceptual depth of art thinking with the practicality of design thinking, Art-Design Thinking provides a comprehensive, interdisciplinary approach to innovation. This methodology fosters creativity that is culturally informed and socially engaging, allowing for the development of solutions that are not only effective but also meaningful in the context of contemporary society.

How artistic work contributes to innovation ?

Artists bring unique skills to the innovation process, particularly through their ability to experiment and think critically. They excel in situations that are uncertain and ambiguous conditions that are often present in innovation. According to Oakley et al., (2008) ⁶ while more analytical approaches seek to reduce uncertainty, artists are comfortable navigating it, using their interpretative skills to explore complex issues. This approach contrasts with problem-solving methods typically used in scientific fields, where outcomes are clearly defined.

Artists also work with tacit knowledge—knowledge that is personal or gained through experience. This kind of knowledge is essential in innovation, as it helps transform ideas into something shareable. Artists often link seemingly contradictory ideas through metaphors and analogies, which is vital for generating creative solutions, not just in the arts but also in other industries.

The organisation of artistic work and its role in innovation

The way artistic work is organised also influences innovation. Artists typically work in flexible networks rather than in traditional, rigid company structures. **These networks are often project-based and temporary, mirroring the flexible, fast-paced nature of innovation in other sectors.** Creative industries are highly interactive, requiring entrepreneurs to adapt quickly to technological changes.

These flexible, non-traditional work arrangements are no longer limited to the arts. Many sectors now use similar practices, such as casualisation and self-employment. In the arts, earnings do not always reflect formal qualifications or years of experience, which is different from most professions. Artists are often driven by intrinsic rewards

⁶ Oakley, Kate, Sperry, Brooke, Pratt, Andy (2008): *The Art of Innovation: How Fine Arts Graduates Contribute to Innovation*. Edited by Hasan Bakhshi.

like personal fulfilment, rather than financial gain. They are willing to work for low pay or in unstable conditions, driven by passion and the hope of future success. This attitude makes artists valuable to employers in other sectors, especially those that require long hours, creative ideas, and emotional commitment, such as in the tech and service industries. The mindset and work ethic that artists develop through their training are increasingly in demand across various fields.

4.5 Art-design thinking tools applied to specific contexts

4.5.1. Audiovisual stimulation

What does it mean?

Audiovisual stimulation refers to the use of sound and visual elements to **create immersive and engaging experiences that enhance perception, understanding, and emotional connection**. By leveraging digital technologies, oral storytelling, and immersive environments, this approach fosters creativity, co-creation, and critical reflection.

Through its capacity to create immersive, **thought-provoking experiences, it enables the development of new narratives** that bridge the past, present and future realities.

Music stimulation for instance enhances **cognitive function and improves mood**, creating an environment that promotes deeper focus and creative problem-solving. Combined with conventional design-thinking tools such the Ishikawa diagram, it helps participants better understand the causes and develop innovative solutions.

How can it be applied?

From initiatives and art-science-society projects gathered in the [InteractionSeeds repository](#), it is possible to conclude that, due to its **versatility**, audiovisual stimulations can be applied in a multitude of contexts such as heritage preservation, urban planning, cultural mediation, well-being, making it an essential tool for diverse creative and societal initiatives.

Some examples are introduced below.

Oral Storytelling for Cultural Heritage and Co-Creation

Oral storytelling, an ancient method of transmitting knowledge, is revitalised through audiovisual tools, ensuring the preservation of cultural heritage. By integrating soundscapes, visual narratives, and digital interactivity, communities can actively participate in co-creation, keeping traditions alive while engaging in contemporary discourse.

Cultural Mediation and the Preservation of Rural Communities

Audiovisual tools serve as a bridge between past and future by documenting craft skills, oral histories, and traditional practices of rural communities. These contributions offer a sensitive approach to future development, ensuring that cultural heritage remains a relevant and living part of contemporary society.

Future Soundscapes and Urban Planning

Audiovisual stimulation plays a crucial role in envisioning the future of urban spaces. Through co-creation processes, citizens, artists, and planners collaborate to design future soundscapes that reflect societal aspirations, fostering new perspectives on urban development and well-being.

ElektraArt: Audiovisual Stimulation and Well-Being

Artistic audiovisual experiences contribute to mental well-being by creating meditative, immersive environments. Through carefully designed sound compositions and visual aesthetics, these experiences offer moments of introspection, relaxation, and sensory enrichment.

4.5.2. Film and cinema

What does it mean?

Film and cinema serve as powerful tools for audiovisual stimulation, offering both stress reduction and a positive state of mind through **engaging narratives** and visual storytelling. By presenting diverse perspectives and immersive storytelling techniques, films can **inspire reflection, encourage dialogue, and drive social awareness** on contemporary global challenges.

How can it be applied?

Beyond entertainment, movies can play a crucial role in sparking political debates on pressing issues such as the digital age and climate change.

One concrete example is ["The Best Option" Short movie](#), produced by Serge Goriely, a cineast and researcher in Philosophy, and his company Arkadinia asbl. The European Parliament's Panel for the Future of Science and Technology seek to provide unbiased information on the opportunities, risks, and ethical concerns surrounding science and technology, with a focus on Artificial Intelligence (AI). To engage the public in discussions about AI, they commissioned a 20-minute short film, *The Best Option*, based on a theater. The film follows Mina, a rare human selected by a mysterious company to receive an AI implant that promises to help her reach her full potential. The experimental nature of the film is emphasized by its use of computer-generated voices and a photo-film format. The film has proven to be an effective tool for sparking debates and reflections on AI's social and political implications, offering an emotional

engagement that is often more impactful than traditional conferences or academic papers.

4.5.3. Art and human-technology interactions

What does it mean?

Contemporary art's ability to engage with issues beyond its traditional domain has strengthened its role in interdisciplinary research, notably enhancing its impact within citizen science. Artists are increasingly contributing **meaningful insights into how technology can integrate into human life** in ways that are **efficient, respectful, and critically evaluated**. This integration is achieved by combining artistic and scientific approaches.

How can it be applied?

Such creative method can be especially applied in projects that explore human-technology interactions in various domains such as health and digital age.

One compelling example is [Exographies by Amaia Vicente](#), developed in collaboration with the research centre Tekniker. This project explores the use of exoskeletons, which assist motor function and are applied in neurophysiological therapies, such as those used by Vicente for multiple sclerosis treatment. Through artistic experimentation, *Exographies* navigates the boundaries between machinery and the human body, questioning traditional definitions of a “normal body” and examining how technology can influence brain plasticity and learning. This intersection of art and science highlights the transformative potential of interdisciplinary collaboration, particularly in understanding and redefining the human experience through innovative technological applications.

Another inspiring example is the [psycho-technological theatre proposed by RISE](#), where actor and robot share the stage equally. Using open source, technologies in visualization, neurofeedback and robot real-time control, the project intends to build a theatrical performance in which an actor through thoughts and actions controls a robot on stage, while interacting with it. In this context, artistic sensibilities can come into play and bring a different, more humanistic, way of looking at the issue than a more functional interaction design-oriented perspective.

4.5.4. Museum visit: a way to boost plastic thinking

What does it mean?

A museum visit introduces participants to diverse forms of art and design, stimulating creativity and interdisciplinary thinking. More than just an observational experience, it becomes an interactive space where **art, science, and society converge**. For instance, in a workshop on **eco-friendly architecture**, a museum visit can expose participants to **innovative materials and design concepts**, broadening their perspectives and encouraging **unconventional problem-solving**.

By integrating **experiential learning, critical thinking, creative strategies, and art therapy**, museums foster **plastic thinking**—a flexible, adaptive mindset that makes learning **dynamic, inclusive, and transformative**.

How can it be applied?

Through **field trips, re-enactments, and media production projects**, museums transform passive observation into **active engagement**. These hands-on experiences help participants connect historical values, beliefs, and traditions to contemporary educational, scientific, and societal challenges.

For example, [historical re-enactment](#) enable educators to incorporate tangible and intangible cultural heritage into their teaching, fostering cultural identity and community awareness. This immersive approach bridges the past and present, making history more relatable and impactful.

Museums also serve as **creative incubators**, demonstrating the [Role of Art in Education for Critical Thinking](#). Through interactive exhibits and hands-on projects, participants explore how art and technology intersect—such as in digital installations, bio-art, or sustainable design projects. For instance, designing solutions for environmental issues inspired by museum exhibits cultivates problem-solving skills and interdisciplinary collaboration.

Furthermore, art therapy workshops within museums provide inclusive learning environments, particularly benefiting individuals with special needs. Sensory-friendly programs, interactive storytelling, and expressive art activities foster emotional resilience and cognitive development. One example is the [Creative Inclusion course](#), offered by Erasmus Learning Together, which promotes supportive and accessible education through artistic expression.

4.5.5. Performative activities for innovative thinking

What does it mean?

Performative arts—such as **role play, theater, and dance**—offer a unique avenue for fostering creativity, adaptability, and critical thinking by **disrupting routine patterns** and encouraging alternative perspectives. By engaging in **bodily movement and intuitive problem-solving**, participants explore ideas holistically, integrating physical expression with cognitive processes. For example, when designing public spaces, participants can use dance and movement to examine how people interact with their environment, leading to more innovative and human-centered solutions.

Performing arts also bridge science, society, and sustainability, offering an emotionally resonant platform for **learning, advocacy, and innovation**. Through movement, storytelling, and interactive performance, they inspire critical thinking, creative problem-solving, and social engagement, driving positive change in diverse fields.

How can it be applied?

Performing arts provide a unique medium for **exploring complex societal challenges**, from climate adaptation and digital trust to the intersection of humans and technology. By addressing emotions and attitudes, they encourage self-reflection and open discourse, **helping participants re-examine assumptions and expand their perception of agency for action**.

Role Play and Theatre for Problem-Solving

Role play allows participants to act out specific roles, experience diverse perspectives and practice real-world scenarios. For instance, in environmental monitoring training for local communities, participants can role-play negotiating with resistant stakeholders or addressing privacy concerns, improving their empathy and problem-solving skills in a controlled environment.

Beyond personal development, performing arts fill a cultural and social gap, offering a means to connect communities, advocate for environmental consciousness, and inspire positive action. For instance, [schoolchildren engaging in theatre-based sustainability workshops](#) can explore real-world ecological challenges and envision solutions relevant to their daily lives, reinforcing their role in the sustainable transition.

Dance and music for Sustainability Advocacy

Artistic performances can promote environmental consciousness by engaging audiences on an emotional level. Initiatives such as [Global Water Dances](#) raise awareness of water conservation, while the [Music for the Sea – Posidonia Project](#) brings together artists and scientists to advocate for the protection of marine habitats.

Exploring Human-Technology Interaction

In the digital age, performing arts provide a thought-provoking way to explore the relationship between humans and technology. Through creative storytelling and movement, artists can examine how technology integrates into human life, sparking discussions on ethical, emotional, and societal implications. [Productions investigating the encounter between man and machine](#) challenge audiences to reflect on the balance between technological progress and human-centered innovation.

4.5.6. Gaming for social and problem-solving innovation

What does it mean?

Gaming introduces an interactive element to problem-solving, where participants **engage in game-like scenarios to brainstorm solutions**. For example, in urban planning, a game could allow citizens to design their ideal sustainable city, considering factors such as transportation and green spaces. This method **fosters creativity and collaboration**, making the planning process engaging and enjoyable while encouraging participants to explore diverse ideas and approaches in a playful and dynamic setting.

How can it be applied?

The [KONEKTA – La Perrera](#) initiative in Bilbao highlights how video games can foster creativity, technological skills, and **community engagement among young people**. Through its MAKER GUNE space, participants explore STEAM disciplines via game development, interactive storytelling, and digital media, **blending artistic and technological creation**.

By embracing the DIY philosophy, youth engage in hands-on projects that promote critical thinking and social commitment. Video games serve as both a creative tool and a means to **explore real-world issues**, encouraging innovation and digital literacy. With over 10,000 participants in its first year, KONEKTA – La Perrera demonstrates how gaming can drive education, creativity, and civic engagement.

4.5.7. Craft arts

What does it mean?

Craft arts allow to foster environmental awareness and community engagement, by transforming materials - such as waste - into meaningful artistic expressions.

Projects like #ItIsNotTooLate Seagrass Beds and Green Club demonstrate how craft-based initiatives can promote sustainability and collective action. By transforming waste into art, participants not only address ecological issues but also cultivate a sense of ownership and pride in their local environment. Such initiatives highlight the potential of craft arts to inspire innovative thinking and sustainable practices within communities.

How can it be applied?

In the [#ItIsNotTooLate Seagrass Beds](#) project, the community engaged in eco-cleaning actions, collecting significant amounts of glass and mixed waste. A public call for artists led to the creation of the "See Glass Again" installation, a nine-meter diameter structure featuring a ring-shaped drywall with an eel mosaic. This installation, built through public workshops, symbolizes the connection between marine and terrestrial ecosystems and highlights local fishing heritage. The project successfully combined art, community involvement, and environmental education to raise awareness about seagrass bed conservation.

Similarly, the [Green Club](#) initiative in Athens, Greece, integrates artistic elements into educational workshops to explore sustainability and circular economy principles. Participants engage in hands-on activities such as crafting recycled objects and designing environmental sensors, experiencing the intersection of creativity and environmental responsibility. This approach not only enhances learning outcomes but also fosters a deeper emotional connection to sustainability, motivating both educators and students to adopt more responsible practices.

5. Artists and Cultural & Creative stakeholders' engagement strategies

Engaging artists and cultural stakeholders in the creative process is essential for fostering innovative solutions and building meaningful connections within diverse communities.

Dynamic Innovation Environments, such as Innovation Hubs, Community Innovation Centers, Living Labs, or Social Innovation Spaces, offer platforms for co-creation and active user engagement. **These environments are designed to tackle complex challenges by incorporating real-world contexts, multidisciplinary expertise, and iterative processes.** By fostering collaboration among diverse stakeholders, they enable the development, testing, and refinement of solutions that are not only creative and practical but also aligned with the needs and aspirations of their target communities. Depending on challenges to solve, they allow to engage with citizens, local authorities and policy makers, academics, industry, startup and enterprises working together on sustainable practices and user-centric solutions.

The engagement strategies that drive these initiatives often adhere to a structured approach to problem-solving. **This includes the essential steps of need finding, ideation, strategy development, experimentation, and feedback.**

These steps are introduced below together with insights on **Art-Design Thinking** approaches that could support them. Together, these steps and tools provide a comprehensive framework for developing user-centric, impactful solutions, as outlined in the next sections. **It is important to note that there is no perfect methodology or a one-size-fits-all approach for any specific step.** The artistic and design-thinking approaches presented **are interchangeable and adaptable**, allowing for flexibility in their application across different phases of the process. Depending on the context, user needs, and project goals, any approach can be adjusted or combined to achieve the most effective and innovative outcomes.

5.1 Need finding: Discovery of user needs, goals, and values to get the right solution

This step is crucial for ensuring that the solutions developed address real and significant issues faced by users. Engaging with users through interviews, surveys, and observational studies helps uncover needs and pain points. This empathetic approach ensures that the solutions are not only innovative but also relevant and impactful, aligning closely with what users truly require.

Examples of art-design thinking approaches that could apply to need finding are provided below.

Table 1 Art-Design thinking approaches that could apply to need finding

ENGAGEMENT STRATEGIES: NEED FINDING	
Art-Design thinking approaches	How it helps
Speculative Design & Critical Design: Encourages questioning the status quo and imagining alternative futures	Helps identify hidden or emerging user needs by exploring <i>what if?</i> scenarios.
Empathy Mapping & Visual Storytelling: Uses artistic visualization to capture users' emotions, behaviors, pain points, and aspirations.	Encourages deeper emotional insights and understanding of implicit needs.
Cultural Probes: Users are given creative tasks (sketching, journaling, photo diaries, slam-poetry etc.) to document their lives.	Reveals unexpected needs and personal values through self-expression.
Participatory Art & Co-Creation: Involves users in creative workshops or collaborative artistic activities.	Engages users in meaning-making, ensuring their perspectives shape the discovery phase.

<p>Abstract Thinking & Metaphorical Exploration: Uses abstract art techniques (collage, expressive drawing) to explore user emotions and aspirations.</p>	<p>Surfaces subconscious needs that may not emerge through traditional interviews.</p>
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5.2 Ideation: To unleash creativity, discover valuable insights, and generate innovative solutions

This phase brings together diverse stakeholders, including users, designers, and industry experts, in collaborative brainstorming sessions. Techniques like mind mapping, sketching, and role-playing encourage out-of-the-box thinking and the exploration of a wide range of possibilities. The goal is to foster a creative environment where unconventional ideas can emerge and be refined into viable concepts.

Artistic methods allowing for deep engagement, emotional resonance, and innovative ideation are provided in the table below.

Table 2 Art-Design thinking approaches supporting the ideation phase

ENGAGEMENT STRATEGY: IDEATION	
Art-Design thinking approaches	How it helps
<p>Exquisite Corpse & Free Association: Encourages unpredictable and imaginative idea generation by allowing multiple contributors to build upon each other’s input.</p>	<p>Breaks conventional thought patterns and fosters unexpected connections.</p>
<p>Conceptual Collage & Mood Boards: Uses images, textures, and materials to visualize abstract ideas and generate unexpected insights.</p>	<p>Stimulates lateral thinking and allows teams to visually synthesize complex concepts.</p>
<p>Role-Playing & Improvisation (Theatrical Thinking and Immersive acting): Uses performance-based techniques (e.g., acting out scenarios) to explore different perspectives..</p>	<p>Encourages empathy, reveals hidden constraints, and promotes rapid idea iteration. It also makes concepts tangible and emotionally resonant.</p>
<p>Disruption & Randomization (Oblique Strategies): Uses random prompts, absurd constraints, or chance-based interventions to disrupt linear thinking.</p>	<p>Forces new perspectives and prevents predictable solutions.</p>

<p>Storytelling & Narrative Prototyping: Uses visual storytelling, comics, or short scripts to explore user scenarios in a creative format.</p>	<p>Helps teams emotionally connect with ideas and refine them through narrative logic.</p>
<p>Audiovisual storytelling: Creates rough video sketches or simple animations to visualize and test ideas in action or produces short cinematic pieces that imagine future solutions, dystopian/utopian scenarios, or alternative realities.</p>	<p>Helps teams explore real-world contexts, emotional impact, and user interactions before building a physical prototype. It also encourages visionary thinking and reveals unexpected cultural, ethical, or social implications of an idea.</p>
<p>Mood Films & Audiovisual Atmospheres: Creating short, abstract visual montages with music and voiceovers to convey the emotion, aesthetics, and values of an idea.</p>	<p>Captures the “soul” of an idea and sparks discussion about how to refine or pivot it. The sound and music can also be used separately to engage a multi-sensory ideation process that goes beyond visual elements.</p>
<p>Documentary-Style User Insights: Teams create mini-documentaries featuring user interviews, their daily lives, and pain points.</p>	<p>Ensures human-centered ideation by grounding the process in authentic voices.</p>

5.3 Strategy: Design of action plans to achieve long-term aims

It focuses on translating the innovative concepts generated during ideation into actionable steps. It includes setting clear objectives, identifying key resources, and outlining timelines and milestones. Strategic planning ensures that the co-created solutions are scalable, sustainable, and aligned with broader organisational or community goals, paving the way for successful implementation and long-term impact.

Artistic approaches that could enrich strategic planning

Visual mapping and speculative design techniques can be used to create conceptual roadmaps. By employing **collage, illustration, or storytelling exercises**, teams can envision and communicate future scenarios more effectively, ensuring that creativity remains central to planning efforts.

5.4 Experimentation: Tools to test and validate the developed solution

Tools are used to test and validate the developed solution. Prototypes, pilot programs, and beta testing are employed to gather data on the solution's performance in real-world conditions. This iterative process allows for refining and optimising the solution based on user feedback and observed outcomes. Experimentation is critical for identifying potential flaws, understanding user interactions, and ensuring that the final product or service meets the desired standards of usability and effectiveness.

Artistic approaches that could enhance the experimentation phase

Artistic approaches such as **role-playing, theatrical improvisation, and performance-based prototyping** can enhance experimentation by allowing users and designers to act out interactions in simulated environments. This **immersive approach** helps uncover hidden challenges and fosters deeper engagement in the testing phase.

5.5 Feedback: To evaluate the user's reactions to the solution

It involves evaluating users' reactions to the solution to inform further improvements. Continuous feedback loops are established to collect user opinions, experiences, and suggestions. Methods such as surveys, focus groups, and usability testing sessions are utilized to gather comprehensive feedback. This input is analysed to identify areas for enhancement and to ensure that the solution evolves in line with user expectations and needs.

Art-driven feedback techniques providing richer insights

Art-driven feedback techniques, such as **visual storytelling, metaphorical mapping, and participatory art installations**, can provide richer, more intuitive insights. By allowing users to express their reactions through creative mediums, feedback becomes more engaging and reflective of deeper emotional and experiential responses.

6. Art-Science-Society Facilitator in cross-fertilisation processes

A **Art-Science-Society Facilitator (ArtSS Facilitator)** working to bridge the gap between traditional industries and Cultural & Creative Industries (CCIs) has the crucial role of **fostering collaboration across these distinct fields**.

This guide outlines the skills, approaches, and specific steps a facilitator will employ to create an innovative environment that unites traditional industry expertise with the creativity and cultural insights of CCIs.

A Art-Science-Society Facilitator is responsible for coordinating user-driven innovation environments that blend creative methodologies, such as *Art-Design Thinking*. These environments encourage collaboration between users and producers to co-create innovative solutions within a transparent and inclusive ecosystem. This ecosystem supports not only cultural innovation but also advances business and societal progress. The facilitator ensures that all participants—ranging from users to stakeholders—are actively involved in a trusted space that fosters collaboration and idea exchange, ensuring that innovations meet the diverse needs of the community.

6.1 What is their role in InteractionSeeds?

In the context of InteractionSeeds, the Art-Science-Society Facilitator's primary responsibility is to **define, manage, and implement co-creation strategies**. This involves guiding exploration, experimentation, and evaluation through the *Art-Design Thinking* framework. The facilitator ensures the **application of cross-fertilisation methodologies** that stimulate interdisciplinary collaboration, blending artistic, design, technological, and social perspectives to drive meaningful innovation. This process ensures that all steps—from ideation to prototype testing—are strategically aligned with the goals of the Innovation Environment. The key responsibilities of the ArtSS Facilitator are summarised in the figure below and detail in the next section.

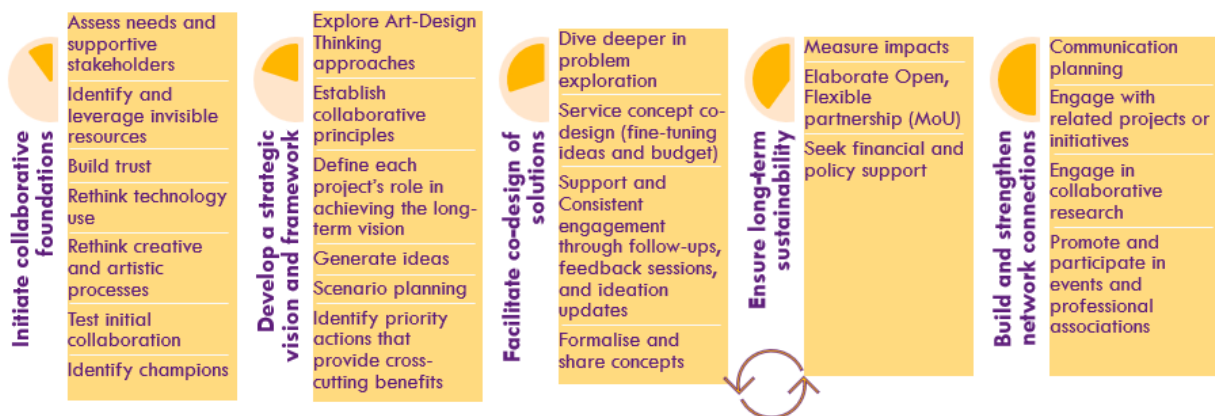


Figure 6 Art-Science-Society facilitator's responsibilities in the framework of InteractionSeeds

6.2 Key responsibilities and methodology

4.7.1. Initiate collaborative foundations

The first responsibility of the ArtSS Facilitator is to establish a foundation for collaboration by involving key stakeholders, including businesses, artists, universities, research institutions, and public entities. The goal is to **create a cooperative framework** that encourages commitment to innovation across both fields. Such cooperative framework should include:

- **Facilitate stakeholder engagement and needs assessment:** The ArtSS Facilitator identify the needs and objectives of a region or R&I institutions while mapping the supportive stakeholders essential for establishing a strong collaborative foundation.
- **Identify and leverage invisible resources:** The ArtSS Facilitator guides each group to recognise underutilised or hidden resources, encouraging stakeholders to reimagine the value within their existing networks or assets (e.g., activation of latent networks, cultural capital or institutions to drive innovation; repurposing manufacturing techniques in artistic contexts).
- **Building trust:** Open discussions and dialogue sessions allow each side to express their goals, limitations, and expectations, helping to bridge cultural or communicative differences and foster mutual understanding.
- **Testing initial collaboration:** A small, achievable project that uses existing resources and aligns with shared goals can serve as an initial "pilot" project, testing commitment and compatibility among stakeholders.
- **Rethinking technology use:** The ArtSS Facilitator encourages both sides to see technology as a bridge that enhances human interaction and creativity, rather than just a technical tool. Emphasising how technology can augment rather than replace the creative or artisanal process is key.
- **Rethinking creative and artistic processes:** Similarly, the ArtSS Facilitator encourages R&I partners to see art and CCI as a bridge that enhances human interaction and creativity and make abstract ideas tangible and immersive.
- **Identifying champions:** Recognising individuals or entities particularly motivated to inspire others and drive sustained engagement is critical. These "champions" serve as key players in fostering momentum within the collaboration. In this sense, InteractionSeeds will work towards a labelling strategy.

4.7.2. Develop a strategic vision and framework

Once foundational relationships are established, the ArtSS Facilitator works collaboratively with stakeholders to outline a coherent strategy that aligns with a shared vision for the future, ensuring all initiatives contribute to a larger, sustainable impact.

The development of a strategic vision is made possible through the following actions:

- **Explore Art-Design thinking approaches:** The ArtSS Facilitator explores, for inspirational purpose, artist-led innovation or art-science projects that have demonstrated positive effects in similar or various domains.
- **Establish collaborative principles:** Together with core partners, the ArtSS Facilitator co-designs a broad, user-centered framework clarifying each project's role in achieving the long-term vision, ensuring that all individual initiatives connect to common goals.
- **Idea generation:** The ArtSS Facilitator facilitates brainstorming sessions focused on open sharing, exploration, and knowledge exchange, encouraging creativity without immediate constraints to stimulate innovative ideas.
- **Scenario planning:** With stakeholders, the ArtSS Facilitator helps create detailed, desirable long-term scenarios that depict a shared vision of what the collaboration could accomplish, providing clarity and motivation.
- **Action planning:** Identifying priority actions that provide cross-cutting benefits helps ensure efficient allocation of resources and maximum impact for all involved.

4.7.3. Facilitate co-design of solutions

The ArtSS Facilitator's role is to guide stakeholders through a co-design process where solutions are developed and that align with the needs and strengths of both traditional industries and CCIs. The co-design process includes the following elements:

- **Deep-dive in problem exploration:** The ArtSS Facilitator helps each group understand the root of the challenges they face, encouraging them to see these challenges as opportunities for innovation, fostering alignment of perspectives and shared objectives.
- **Service concept co-design:** In partnership with stakeholders, the ArtSS Facilitator defines the scope and framework for potential solutions, identifying leaders for each area and setting a clear timeline. Relevant co-design methodologies are applied to structure the creative process.
- **Support creative development:** Consistent engagement through follow-ups, feedback sessions, and ideation updates helps keep stakeholders invested and aligned with the collaborative vision.

- **Staged development and sharing:** Intermediate milestones provide opportunities for evaluating progress and sharing successes with a broader audience, maintaining transparency and continuous learning.
- **Formalise and promote concepts:** As the collaboration develops a clear solution, the ArtSS Facilitator supports its formalisation through documentation, promotion, and outreach to potential adopters and funders, amplifying the initiative’s impact.

To support this process, the InteractionSeeds Canvas approach⁷ has been developed as a concrete tool to guide and enhance the creative development of potential solutions.

Adapted from the mission-model canvas, it introduces three key inputs:

- 1) **Societal Challenge:** Describing the societal challenge the seed aims to address by identifying linked problems and clarifying how the seed relates to society and the community.
- 2) **Needs:** Detailing the needs the seed responds to, emphasizing the importance of integrating artistic perspectives into societal and production processes while identifying the audiences and/or beneficiaries within the scope of the societal challenge.
- 3) **Artistic Approach:** Explaining how the seed implements a holistic cultural-artistic approach.

<p>Key partners</p> <ul style="list-style-type: none"> • Industry (SMEs, industrial technology providers, researchers etc.) in majority members of the clusters partners (Bulktier). • Cultural and creative professionals and institutions: artists, designers (Pett Müller Studio), Regional Cultural agencies (Damen Dele, aimed at urban regeneration). • Citizens (ZSO), participating in each of the 20+ test cases, with a special focus on students/youngsters and women. 	<p>Societal challenge</p> <p>What societal challenge is faced by stakeholders and/or beneficiaries?</p>	<p>Value propositions</p> <ul style="list-style-type: none"> • e.g. The innovative processes of the industry will be supported through creativity, co-creation, and new formats of all the stakeholders. • Promotion of digital and green transition through all the process, especially sustainability through the reuse of industrial materials in fashion. • Strengthen and further develop existing or new schemes promoting arts-industrial technologies. 	<p>Relationship with stakeholders</p> <p>e.g. A double focus will be put on: (I) communicating towards SMEs representative organizations that are sector of the project replicability and will be targeted as the repository main users; (II) horizontal communication towards relevant European and national institutions and related initiatives.</p>	<p>Beneficiaries</p> <ul style="list-style-type: none"> • Industry representatives (SME workers and managers, R&D stakeholders, sustainability experts, industrial technology providers, designers, manufacturers, entrepreneurs and members of the clusters partners) • Culture and creativity sector representatives (artists, designers, marketers and entrepreneurs) • Societal actors: citizens, groups of people (communities), organizations, or institutions with representativeness in a certain territory or society.
<p>Key Activities</p> <ul style="list-style-type: none"> • e.g. Dynamics that promote and facilitate the innovation in the design and manufacturing process of products of Fashion industry. • e.g. Raising awareness of the high environmental impact of the fashion industry and the need to reuse materials and opt for sustainable models. 	<p>Needs</p> <p>What do the stakeholders and/or beneficiaries need within the scope of the societal challenge?</p>	<p>Artistic approach</p> <p>How is a holistic artistic approach integrated into your seed?</p>	<p>Key Resources</p> <ul style="list-style-type: none"> • e.g. Research and Development: Continuous investment in R&D is necessary to stay at the forefront of technology and ensure continuous improvement of predictive models. • Collaborations with Living Labs: Collaboration with living labs comes at a cost but is essential for real-world testing and feedback, contributing to the robustness of solutions. 	<ul style="list-style-type: none"> • Researchers (universities/ companies/ research centres) • Public sector authorities (city councils, CCIs, public organisms and programs focused on CCIs (Cultural and Creative Industries).
<p>Impact (social, economic and environmental)</p> <ul style="list-style-type: none"> • e.g. Research and Development: Continuous investment in R&D is necessary to stay at the forefront of technology and ensure continuous improvement of predictive models. • e.g. Collaborations with Living Labs: Collaboration with living labs comes at a cost but is essential for real-world testing and feedback, contributing to the robustness of solutions. • e.g. Sustainable solutions in construction industry. 				

Figure 7 InteractionSeeds canvas approach

The Canvas serves as a dynamic tool that evolves throughout the collaborative process. As ideas and partnerships develop, the facilitator continuously updates the canvas to reflect new insights, ensuring that the framework remains flexible and responsive to emerging opportunities, stakeholder needs, and sustainability considerations.

⁷ Canvas developed for InteractionSeeds are available in Deliverable D3.2.

4.7.4. Ensure long-term sustainability

Sustainability is key for any Innovation environment. The ArtSS Facilitator ensures that both economic and institutional factors are considered in the development of an enduring partnership between traditional industries and CCIs. The following activities are handled by the facilitator:

- **Measure impact:** Collecting measurable evidence of success (e.g., economic benefits, social engagement, or environmental contributions) validates the Innovation Environment approach's value to all stakeholders.
- **Elaborate open, flexible partnerships:** Using a flexible partnership structure, such as a Memorandum of Understanding, encourages ongoing collaboration without the need for heavy legal constraints, adapting to each partner's needs.
- **Seek financial and policy support:** Diverse funding sources and supportive policies solidify the collaboration's long-term viability, reducing reliance on any single source of funding.

4.7.5. Build and strengthen network connections

Expanding the Innovation Environment reach and joining forces with similar entities can significantly enhance cross-fertilization by bringing in new ideas, best practices, and resources.

- **Role definition and communication:** Clearly articulating the Innovation Environment's purpose, approach, and potential value ensures stakeholders and potential collaborators understand the benefits and outcomes of cross-fertilization.
- **Active listening and learning:** Engaging with related projects or initiatives enriches the current collaboration and informs new strategies for the Facilitator.
- **Engage in collaborative research:** Collaborative research with institutions or other Innovation Environment, especially those with relevant expertise, can deepen understanding and explore new possibilities.
- **Promote and participate:** Representing this dynamic spaces for innovation at conferences, platforms, and professional associations presents opportunities to share insights, showcase achievements, and engage in proactive knowledge exchange.

6.3 Key Performance Indicators (KPIs)

To measure the success and effectiveness of the Art-Science-Society Facilitator in fostering cross-industry innovation, key KPIs include:

- **Active Stakeholder Participation:** Number of stakeholders (businesses, artists, research institutions, public entities) actively involved in co-design workshops and collaboration activities within the first year.
- **Pilot Project Success:** Percentage of initial pilot projects completed successfully, demonstrating tangible outcomes aligned with shared goals resulting on new businesses, ideas, products, or services generated.
- **Trust and Collaboration Satisfaction:** Percentage of stakeholders reporting improved trust, mutual understanding, and satisfaction with the collaboration process, measured through post-event or annual surveys.
Impact Demonstration: Measurable social, economic, or environmental impact achieved through implemented solutions (e.g., jobs created, carbon reduction, increased community engagement).
- **Sustainability Partnerships:** Number of long-term partnership agreements (e.g., MoUs) established across industries and sectors and stakeholders to ensure ongoing collaboration and resource sharing.
- **Policy Support:** Contribution to regional growth and industry competitiveness. and/or number of policies influenced to support the initiative's objectives and ensure long-term viability.
- **Funding and reduced costs and time:** Savings in time and cost for service implementation and Cost reductions for public sector applications.

6.4 Practical application: workshop around the figure of an Art-Science-Society Facilitator

The objective of this workshop held in November 2024 during the project's General Meeting in Metz, was to validate the approach of the ArtSS facilitator identified during the implementation of the first 10 batch of Interaction Seeds.

The dynamic consists of creating groups of three people, where each one, through a role-play (Art-Design Thinking tool), represents an **Industry-Academia R&I player**, the other one a **professional artist/creative** person and the third one, **another agent of the Quadruple Helix** (it can be Academia, Public Administration or Citizen) to work in the role of the Art-Science-Society Facilitator that can promote cross-fertilisation between traditional industries and CCIs.

For this, three groups of three people were created each of them working on the implementation of a seed included in the InteractionSeeds Repository. The results from

each group are summarized in Appendix 1. Main outcomes from the workshop are presented in the next chapter.

7. Conclusions

The *Art-Science-Society (ArtSS) Facilitator* plays a pivotal role in driving societal innovation and cross-fertilization processes by bridging traditional industries and Cultural & Creative Industries (CCIs). Through trust-building, strategic alignment, interdisciplinary cooperation, *Art-Design Thinking* and network expansion, the Facilitator empowers stakeholders to collaborate toward shared goals, fostering long-term, sustainable innovation. Additionally, a ArtSS Facilitator nurtures environments that encourage collaboration and innovation by ensuring user participation, access to technology, and developing adaptable methodologies tailored to the innovative environment unique context -whether focused on climate change, health, digital age, arts, cultural heritage or manufacturing.

These structured approaches enable effective citizen engagement, co-design, testing, and iterative improvements, strengthening the impact of innovative environments.

The workshop conducted during the InteractionSeeds General Assembly Meeting in Metz further validated the ArtSS Facilitator's role and demonstrated the value of art-design methodologies in tackling societal challenges. Through role-play activities, participants explored creative methodologies within various contexts, leading to concrete outcomes.

Key Insights from the Workshop

- **Fostering Cross-Sector Collaboration:** Art-design thinking effectively bridges gaps between sectors by facilitating co-creation through shared experiences, creativity, and innovation.
- **Creating Engaging and Inclusive Spaces:** The methodology promotes inclusive participation, fostering trust and ensuring diverse stakeholders contribute equally.
- **Enhancing Problem-Solving:** Artistic interventions transform abstract challenges into tangible, co-created solutions, making them more relatable and impactful.
- **Connecting Heritage and Innovation:** Artistic approaches link traditional practices with technological advancements, ensuring cultural preservation while driving progress.

The Role of the ArtSS Facilitator

The workshop reinforced the importance of the ArtSS Facilitator as:

- **A Catalyst for Cross-Fertilization:** Facilitators orchestrate collaborations between industries, researchers, creative sectors, citizens and public authorities fostering dynamic innovation.
- **A Bridge Between Stakeholders:** By linking artists, researchers, and policymakers, Facilitators establish mutual understanding and align goals.
- **A Driver of Open-Source Knowledge Sharing:** They ensure projects remain accessible for replication and adaptation on a global scale.
- **A Sustainability and Scalability Advocate:** Facilitators integrate projects into policy frameworks, secure funding, and promote long-term impact.

Additionally, the workshop highlighted new dimensions of the Facilitator's role, including managing stakeholder networks, balancing open-source collaboration with cultural preservation, and measuring impact to sustain engagement.

Perspectives

The insights gained from this exercise reinforce the critical role of the ArtSS Facilitator in fostering collaboration, innovation, and inclusivity. Art-design methodologies offer unique tools to address societal challenges by blending creativity, culture and heritage, and technology. As this role evolves, embedding these methodologies into future projects will be key to driving sustainable, interdisciplinary innovation.

Appendix 1. Individual result from the workshop around the figure of an Art-Science-Society Facilitator

Results obtained from the group 1

SEED: Jetclay

Creator: Jetclay

Location: Spain

Art form: Design, Handcrafts, Cultural Heritage

Method name:

Open-source platform that explores the world of 3D printing and ceramic.

Challenge:

How to create an opensource community around the innovation of ceramics in relation to 3D printing in order to share knowledge and develop new tools.

Description:

Jet Clay is an initiative based on 3D printing of ceramics, based on ancient technologies related to sustainability and the protection of cultural heritage through pottery and clay creation. They have a Clay 3D printing service using the LDM (Liquid Deposit Modelling) equipped with a specialized extruder, for the deposition of dense fluid material such as clay mixture. They own a variety of 3D printers with different sizes, being able to print with small nozzles of 0,4mm for small objects up to 10mm nozzles for the large format projects with a printing volume of 1m high and 70cms wide. Any type of clay might be used with this system such as earthenware, stoneware, porcelain, etc. They also offer the firing service both in low and high temperature.

In JetClay they develop Open Source 3D printers & extrusion systems that they share with the community, publishing them in repositories like WikiFactory and also making workshops focusing on the building and use of these tools. These workshops are addressed to 3d printing users that want to add clay to their material palette but also to ceramists, artists and designers that want to start out in additive manufacturing with clay.

Purpose of artistic intervention:

The project seeks to share and disseminate, through open source, ways of creating ceramics and printing based on ancestral crafts that respect the environment, allow the optimisation of resources (for example, through the cooling function of the Spanish jar) and recover intangible cultural heritage and ways of doing things from the past. The

initiative has a high component of co-creation as it is an open-source dissemination platform that seeks to promote collaboration.

1. How does the seed respond to the challenge detected?

- The seed addresses the challenge by proposing a shared platform where artists can access resources and technology tools.
- It emphasizes the importance of attracting and retaining artists to ensure the platform's continuity and relevance.

2. How is cross-fertilisation between different sectors and agents of the Quadruple Helix presented?

- Cross-fertilisation is focused on creating an open-source community where stakeholders, including artists, facilitators, and technology providers, interact and collaborate.
- The shared platform serves as a space for workshops, experiments, and the integration of art, technology, and cultural heritage.

3. Do you think another agent of the Quadruple Helix could take part in this seed? Explain in which ways.

- Yes, additional agents could enhance the seed by:
- Public Authorities: Supporting the platform through funding and policy frameworks to ensure its sustainability.
- Academia: Providing expertise on cultural heritage preservation and technical resources for experimentation.
- Industry: Offering advanced tools and technology to facilitate artistic experimentation and improve platform functionality.

4. Is anything missing in qualifying the role of the facilitator?

Yes, the role of the facilitator requires further clarification and expansion:

- The facilitator should not only maintain the platform but also manage interactions among participants.
- Responsibilities should include:
 - Organizing workshops and experiments.
 - Linking diverse stakeholders and fostering collaboration.
 - Ensuring effective communication and workflow sharing among all participants.

- Coordinating the group and maintaining consistency from the project's inception.
- The challenge lies in balancing the open-source nature of the platform with preserving the cultural heritage of the area.

5. Who could play this role in this specific seed?

- While multiple stakeholders could assume aspects of the facilitator role, a dedicated individual with expertise in network management and cultural heritage would be ideal.
- The facilitator should:
 - Understand the nature of the platform's activities.
 - Manage the network and coordinate stakeholders effectively.
 - Act as a bridge between artists, technologists, and other agents.

Results obtained from the group 2

SEED: Iris Map – «Healing Imaginative Journey for Children»

Creator: Art dans la Cité

Location: France

Art form: Visual Arts

Method name:

Multi-sensoriel colourful illumination art.

Challenge:

How to help sick children in the hospital to have a positive state of mind and give them a boost of positive energy.

Description:

Seven playful films offer children ways to positively impact how they feel so as to ease their hospital care. They take them on 2-minute voyages into the colored spaces of their inner world.

Iris Map - 'Healing Imaginative Journey for Children' features seven short films that form part of Illuminart's contemplative content. These films enable children to change their energy during their stay in hospital, according to their emotional needs. From a menu of options, they are able to choose the type of energy they want to explore. During the intervention, Ann has visited the children at the hospital and stimulated their imaginations and energies with seven films she created. After viewing the films, the children were asked to express their creativity through dancing and drawing. Ann's seven films were integrated into iPads that the hospital provides to children when they need the switch their state of mind and stimulate their imaginations.

The Healing Journeys Ann created are a small part of something much larger: The Iris Map, a method Ann has developed through decades of work as a visual and performing artist and as an Imagination Activator for people in diverse fields, including for businesses and other organizations. The method enables agile exploration and navigation through the imagination.

Purpose of artistic intervention:

The artistic intervention aims to relieve their stress and allow them to feel a vibration within their being. During the workshops, the artist led the children on sensory journeys, using films, sounds, atmospheres and images to awaken the energies of the imagination.

1. How does the seed respond to the challenge detected?

The seed responds to the challenge by:

- Addressing the need for collaboration and emphasizing its potential for replication across diverse contexts.
- Creating engaging materials, such as videos, to make cultural heritage accessible, though these efforts lack a strong connection between agents of the Quadruple Helix.
- Highlighting scalability as a pilot project, which could be extended to other businesses and organizations.

2. How is cross-fertilisation between different sectors and agents of the Quadruple Helix presented?

- Currently, cross-fertilisation is limited due to weak collaboration between agents.
- To strengthen these bonds, the involvement of new agents is suggested:
 - Social organizations: To bring a community-focused perspective.
 - Hospitals: To explore potential therapeutic or educational benefits.
 - Public municipalities: To provide funding and policy support.
 - Research centers: To offer scientific validation and tools for measuring impact.

3. Do you think another agent of the Quadruple Helix could take part in this seed? Explain in which ways.

Yes, additional agents could improve the collaborative and innovative aspects:

- Businesses/Industry: Could bring resources, technical expertise, and an industrial-business-oriented approach to scale the project.

- Municipalities: Could secure funding and integrate the project into broader community programs to enhance its reach and sustainability.

4. Is anything missing in qualifying the role of the facilitator?

Yes, the facilitator's role could further include:

- Ensuring inclusivity and creativity while making the project adaptable to industrial or business contexts.
- Promoting the involvement of diverse targets, such as children and professionals (e.g., doctors), to broaden the project's impact.
- Fostering stronger partnerships between agents and guiding the project toward collaborative and scalable outcomes.

5. Who could play this role in this specific seed?

- A researcher in social sciences would be ideal, particularly one with strong connections to companies and municipalities.
- This facilitator could:
 - Oversee the adaptation of the project to different audiences and contexts.
 - Assess its impact on various groups.
 - Bridge the gap between creativity and industrial/business-oriented strategies to ensure broader applicability and replication.

Results obtained from the group 3

SEED: Cultural Heritage in Action - Relating Past to Present

Creator: Interact

Location: Heraklion (Crete)

Art form: Visual Arts and Artistic Crafts

Method name:

Theoretical lessons and presentations of examples of good practice as well as discussions and experience comparisons.

Challenge:

Bridging the gap between historical values, beliefs, and traditions and today's educational needs.

Description:

Bridging the gap between historical values, beliefs, and traditions and today's educational needs can be difficult. Educators must find ways to relate cultural heritage to present-day concerns and student experiences. Participants must learn how to work

with tangible heritage (buildings, artifacts) and intangible heritage (traditions, stories, practices). Traditional teaching methods may not be enough to fully engage students with cultural heritage. The challenge lies in using innovative methods like simulations, re-enactments, study visits, and media production to bring the past to life in a way that resonates with students. Participants engage in theoretical lessons, presentations of exemplary practices, and discussions to compare experiences. They explore the theoretical foundations and familiarize themselves with various tools. Through practical exercises, they learn to utilize cultural heritage as a resource for education. The program emphasizes on-site experiential learning, including study visits and simulations.

Purpose of artistic intervention:

Through simulations, re-enactments, and media production projects, participants engage with cultural heritage not just as knowledge, but as a living, creative process. Re-enacting historical events and traditions adds an emotional and sensory layer to the learning, fostering empathy and deeper understanding. Media projects allow participants to creatively express and document their experiences, blending art with education to make heritage accessible and engaging for students. Artistic adaptation, therefore, enhances both the personal connection to heritage and its relevance to contemporary teaching.

1. How does the seed respond to the challenge detected?

The seed responds by:

- Engaging students with interactive and dynamic activities outside traditional classroom settings.
- Utilizing artistic interventions, such as performances combining music and crafts, to make learning more authentic and relatable.
- Allowing students to actively participate, for example, by playing musical instruments and expressing themselves creatively.
- Bridging the gap between old and new educational needs by incorporating ancient methods (e.g., linking music, philosophy, and mathematics) into modern teaching strategies.

2. How is cross-fertilisation between different sectors and agents of the Quadruple Helix presented?

- Artists: Play a central role in facilitating the artistic interventions, such as leading performances and guiding students in hands-on activities.
- Academia: Provides theoretical frameworks, licenses, and research to contextualize the educational innovation and connect ancient and modern approaches.

- Local musicians: Contribute by offering alternative perspectives on music, helping participants to create their own musical pieces that connect with cultural heritage.

3. Do you think another agent of the Quadruple Helix could take part in this seed?

Explain in which ways.

Yes, Industry and Public Authorities could be included to enhance the project:

- Industry: Could supply necessary materials, digital tools, and technical support for implementing artistic and educational interventions.
- Public Authorities: Could provide funding, ensure policy alignment, and help integrate the seed into public educational programs to reach a broader audience.

4. Is anything missing in qualifying the role of the facilitator?

The facilitator's role could also emphasize:

- Encouraging collaboration between artists, academia, and potential industry or public authority partners to ensure a holistic approach.
- Leveraging local cultural assets while ensuring global scalability of the educational model.
- Addressing sustainability by creating frameworks that allow for continuous support and development of such initiatives.

5. Who could play this role in this specific seed?

- Academia and artists are the most vital facilitators, providing theoretical expertise and creative leadership.
- Researchers from fields like psychology and social sciences can add depth by integrating interdisciplinary methods to connect heritage with contemporary needs.
- Local musicians and craftspeople serve as practical facilitators of interactive activities, helping students engage authentically with the cultural heritage.