

Brussels, 19 May 2025

COST 038/25

DECISION

Subject: Memorandum of Understanding for the implementation of the COST Action “European Media and Born-digital Art Conservation and Knowledge Network” (EMBARK) CA24129

The COST Member Countries will find attached the Memorandum of Understanding for the COST Action European Media and Born-digital Art Conservation and Knowledge Network approved by the Committee of Senior Officials through written procedure on 19 May 2025.

MEMORANDUM OF UNDERSTANDING

For the implementation of a COST Action designated as

COST Action CA24129
EUROPEAN MEDIA AND BORN-DIGITAL ART CONSERVATION AND KNOWLEDGE NETWORK
(EMBARK)

The COST Members through the present Memorandum of Understanding (MoU) wish to undertake joint activities of mutual interest and declare their common intention to participate in the COST Action, referred to above and described in the Technical Annex of this MoU.

The Action will be carried out in accordance with the set of COST Implementation Rules approved by the Committee of Senior Officials (CSO), or any document amending or replacing them.

The main aim and objective of the Action is to strengthen Europe's ability to safeguard its collections of media art– an overlooked and underestimated segment of Europe's cultural heritage and research infrastructure– for current and future generations of researchers and public audiences. This will be achieved through the specific objectives detailed in the Technical Annex.

The present MoU enters into force on the date of the approval of the COST Action by the CSO.

OVERVIEW

Summary

Since the 1960s, European artists have been experimenting with emerging technologies, incorporating film, video, sound, slides, software and networked environments into their art production. Acknowledging media art's unique significance within the intersecting histories of art, technology and society, a diversity of museums, archives and art organisations across Europe have actively collected media art for decades. However, Europe's heritage institutions are struggling to maintain their media art collections, as they lack critical access to specialized conservation research, expertise, practice and infrastructure. For the last 15 years, the European heritage field has been addressing its growing need for specialized conservation expertise by establishing academic university curricula in media conservation, and by dedicating specialized conservation staff to media art collections.

However, the new expertise is still relatively scarce and scattered across disconnected institutions and small university departments. Existent knowledge, tools and practices remain siloed and inaccessible, and there is no shared understanding of current practices across Europe. With the goal to avert the preservation crisis, the ambitious pan-European **EMBARK (European Media and Born-Digital Art Conservation and Knowledge Network)** aims to strengthen Europe's ability to safeguard its collections of media art—an overlooked and underestimated segment of Europe's cultural heritage and research infrastructure—for current and future generations. EMBARK connects academic researchers, heritage professionals and relevant experts from the creative and technology industries, including conservators, art historians, anthropologists, curators, archivists, artists, digital preservationists, information and computer scientists, legal experts and engineers.

Areas of Expertise Relevant for the Action	Keywords
Arts: Preservation of cultural heritage	- media art conservation - contemporary art conservation - media art heritage - digital cultural heritage - born-digital art

Specific Objectives

To achieve the main objective described in this MoU, the following specific objectives shall be accomplished:

Research Coordination

- To bring together, in a coordinated way, researchers, innovators and heritage professionals from a broad range of disciplines, regions and career stages to form a cohesive scientific domain and community of practice.
- To develop a common understanding of shared challenges and potential synergies by assigning strategic, collaborative work packages that feed output into a growing knowledge base on a joint platform.
- To achieve the coordination of academic research in media art conservation across European universities and regions, across disciplinary boundaries, and across the current divide of academia and practice.
- To disseminate research results, including through co-authorship of joint scientific papers and training workshops, conferences and online cafés.
- To seek, identify and invite further stakeholders from diverse backgrounds and regions to grow the

network.

- To connect Action members to relevant existing communities of knowledge, e.g. through invited experts and Training School teachers, to facilitate knowledge transfer. To connect Action members with external stakeholders, including policy makers, to facilitate advocacy for media art heritage and new programming and funding in the field.
- To raise the profile of the value of media art collections by supporting and facilitating access to researchers, including YRIs, from a broader spectrum of study fields.

Capacity Building

- To develop a diverse and critical mass of researchers and practitioners that can accelerate the scientific advancement through coordination and division of labour and that develops lobbying power to raise awareness and funding for media art preservation in Europe.
- To build network continuity capacities with a focus on establishing shared systems of knowledge management that will sustain beyond the lifetime of the project.
- To provide Action members with critical input and training and to co-create a closer, interdisciplinary network of careers by facilitating the transfer and circulation of knowledge between universities, heritage institutions, tech companies, artists but also communities across different expertise groups and countries.
- To increase the quantity of YRIs in media art heritage sector; to elevate them by providing them with the opportunity to gain excellence and interdisciplinary skills necessary to address new fields of knowledge and to contribute to the advancement of the field while enhancing their own employability.
- To encourage and support heritage institutions to identify collection needs and skill gaps in the care of these collections, and to pursue effective advocacy for new specialised positions to ensure continued access.

TECHNICAL ANNEX

1. S&T EXCELLENCE

1.1. SOUNDNESS OF THE CHALLENGE

1.1.1. DESCRIPTION OF THE STATE OF THE ART

Since the 1960s, European artists have been experimenting with emerging technologies, incorporating film, video, sound, slides, software and networked environments into their art production. By employing, advancing or altering these technologies, media artists creatively reflect and **challenge notions of technological progress and innovation**. While early media art manipulated TV sets and video images to comment on mass media, or experimented with closed circuit installations to investigate topics around surveillance, today's media art embraces the latest technologies such as immersive media (XR) and artificial intelligence (AI). As a **force of societal and political critique**, media art uses technology to stimulate public debate of high-stake topics such as misinformation, free speech, social justice, climate action, gender identity, and democracy. Whilst, not all artistic engagements with recent technologies have been critical, e.g. the spectacular works by Turkish-born artist Refik Anadol (*1985), they serve to reach a wide popularity beyond common art audiences, in Anadol's case creating a new collective imagination of machine learning and sparking **public discourse** around this technological innovation. As a domain of public learning and deliberation, media art captures and shapes our emerging pan-European identity as a region characterized by artistic creativity, technical innovation and democratic values. In acknowledgement of media art's unique significance within the **intersecting histories of art, technology and society**, a diversity of contemporary art museums, festival archives and art organisations across Europe have actively collected media art for decades. These media art collections do not only provide evidence of Europe's artistic legacy of the 20th and 21st centuries, they also constitute an **important research infrastructure** for a variety of study fields, including Anthropology, Art, Art History, Computer Science, Digital Humanities, History, Media Studies, Philosophy, Political Science, Public History, Science and Technology Studies and Sociology.

In spite of its globally acknowledged value and significance, Europe's media art heritage is facing a **preservation crisis** that is impacting the ability of researchers and audiences to access collections. Heritage institutions are struggling to maintain their media art collections, as they **lack critical access to specialized conservation research, expertise, practice and infrastructure**. Moreover, media art's special preservation needs are still overlooked and poorly understood by culture administrators and policy makers, resulting in a general **shortage of policies, programming and funding** in this area. Particularly vulnerable are the diverse collections in Inclusiveness Target Countries (ITCs) and grassroots organisations across Europe. Without action taken, Europe's diverse media art heritage could suffer large-scale loss in the short term, amounting to nothing less but an **historical gap within Europe's art history and research infrastructure**, where European media artworks can no longer be experienced, understood, described and interpreted. The scholar Fernando Domínguez Rubio identifies the dilemma as follows: 'The rapid obsolescence of the technological environments in which digital-based artworks exist is generating an increasingly intractable paradox within art museums: although it is possible to preserve artworks produced centuries ago, the preservation of an artwork produced just a few decades ago poses formidable, often insurmountable, challenges.' (Domínguez Rubio 2020, 305)

The time pressure to act is acute: legacy technologies that have not already been (or cannot be) digitised or updated are increasingly difficult to support, as manufacturers, spare parts and **maintenance expertise and services are dwindling**. Moreover, many first-generation media artists are now approaching their end of life, rendering impossible researchers' and collections' **access to artists' embodied knowledge**, preservation guidance and authorization. The same is true for technicians, engineers and programmers, who co-created legacy artworks or whose expertise is critical for artworks' maintenance and ongoing interpretation: **little time is left** to tap and record their tacit knowledge.

Latest technologies, too, increasingly require swift conservation action. When today's complex software-based artworks enter collections, an immediate and **conservation-led acquisition process must secure relevant archival files and data** to ensure their future longevity. However, this process, or its requirements, are not yet widely understood, and newly acquired artworks often **lack life-extending deliverables**, adding considerable **cost and effort to their future access**. As new ways of distributing and collecting born-digital artworks are emerging with the advent of **blockchain technologies and NFTs (Non Fungible Tokens)**, collection stewards are facing additional pressure to develop new archival protocols and legal standards, considering not only the preservation of the digital artworks themselves,

but also their decentralized ecosystems of networked environments.

Fortunately, time also offers an advantage in tackling these challenges now: Never before have media art researchers and heritage professionals been better positioned to **identify common needs, build consensus on shared approaches and create transnational synergies** for saving this crucial segment of Europe's cultural heritage. Over the last 15 years, European universities have established curricula in media art conservation as a **new scientific discipline**, producing the first generations of specialist practitioners and postgraduate researchers. Meanwhile, museums, archives and art organisations across Europe have launched **new staff positions** for media art conservators and researchers. The innovative power of this emerging specialization is evident in recent publications and conference papers and proves highly effective when applied to heritage collections. However, the new expertise is still relatively **scarce and scattered across disconnected institutions and small university departments**. Existent knowledge, tools and practices remain siloed and inaccessible, and there is no shared understanding of current practices across Europe. Adding to the **fragmentation of knowledge** within Europe, there is a discernible disconnect between research-intensive countries and Inclusiveness Target Countries (ITCs). This isolation limits the ability of scholars and practitioners to develop vibrant communities of practice that are needed to advance the field and lobby policy makers for sustainable funding, and the **risk of duplicated efforts** across European countries is increasing with every project commissioned on the national level.

At this unprecedented moment in media art history, two converging timelines meet: media art collections' increasing urgency for action, and media art conservation's newly gained maturity as an emerging discipline, prepared to deliver action. Now, at this historic intersection, the COST Action **EMBARK - European Media and Born-Digital Art Conservation and Knowledge Network** sets out to bring together researchers, heritage professionals, artists and technologists, who are actively shaping innovative and transformative research and practice in support of Europe's media art heritage.

1.1.2. DESCRIPTION OF THE CHALLENGE (MAIN AIM)

EMBARK's main aim is to address the **high risk of an historical gap** within Europe's art history and research infrastructure and to strengthen European collections' ability to preserve their entrusted media art heritage. To achieve this, invested but disconnected individuals, institutions and initiatives across Europe must join forces and **forge a cohesive scientific domain** by building an impactful and pan-European connection between academic research and heritage practice that is currently lacking. Current research and practice developments are mostly **confined to regional and national networks** and isolated by language barriers (especially in the ITCs), a lack of exchange formats and diminished travel funding in the post-pandemic cultural and academic sectors. Without a unified and collaborative approach to the development of research and practice, the inefficient duplication of effort is **wasting time and resources**, while putting collections that are in urgent need of preservation at further risk. Central to its effort to coordinate knowledge transfer and research will be EMBARK'S strategy to include Action members from both academic research and collection practice. A survey of existing **skills and knowledge gaps** will inform the **identification and coordination of new practice-led research areas** that transform understaffed and under-resourced heritage institutions, while creating new PhD opportunities and elevating careers of Young Researchers and Innovators (YRIs).

Current approaches to media art preservation are not just geographically isolated, but also dominantly **mono-disciplinary**. EMBARK will address the **interdisciplinary and intersectional nature of media art** by facilitating knowledge exchange and transfer across a diversity of stakeholders, including artists, technologists, art historians, conservators, anthropologists, curators, archivists, digital preservationists, information and computer scientists, and legal experts. This inclusiveness will also support EMBARK's aim to create a **movement of outreach and advocacy**, resounding the cause of Europe's media art heritage through existent channels and larger networks of a variety of adjacent and intersecting professional fields. EMBARK's **inclusion of media artists** in particular will stimulate the development of innovative approaches. Heritage professionals have invited artist perspectives in the past to inform conservation strategies for individual artworks. However, European media artists have yet to be engaged in an encompassing and intersectional discussion on the preservation of their art as well as their own **unexplored potential of contributing to the sustainability of their legacy**. EMBARK will include affiliated artists as Action members, and will develop formats that will allow unaffiliated artists to participate and contribute.

To address the required scale and urgency of action across Europe's collections, EMBARK will explore measures to improve the **efficiency and cost-effectiveness of conservation practices** and facilitate consensus around shared methods, tools and protocols. Special attention will be devoted to the

underexplored **potential and ethical implications of employing AI** for alleviating labour shortage pressure in preserving and accessing digital art archives. Additional understudied areas of research include the networks of care for digital art; the stewardship of complex software-based artworks in the context of decentralized environments; categories and systems of shared knowledge management and the sustainability implications of digital preservation practices.

1.2. PROGRESS BEYOND THE STATE OF THE ART

1.2.1. APPROACH TO THE CHALLENGE AND PROGRESS BEYOND THE STATE OF THE ART

EMBARC will be Europe's first-ever pan-European approach to the preservation challenge faced by its media art heritage, and will be transformative as it forges a **cohesive scientific domain** from an array of disparate approaches. EMBARK radically **expands and redefines the research field** by connecting a new diversity of stakeholder disciplines, sectors and countries who have not collaborated previously. In building a pan-European, interdisciplinary media art heritage community, EMBARK produces a critical mass of stakeholders that is needed to implement new shared practices, reach policy makers and lay the ground for **future capacity-building EU grants**. EMBARK will be the foundation for any future effort to share and research digitized and born-digital media art on transnational platforms, a concept envisioned by Europeana and the ECCCH (European Cultural Heritage Cloud). To this end, EMBARK will be deeply invested in **broadening the access** to media art heritage for academic research and the public. The exploration of **new forms of governance** of media art will be enhanced by the investigation of novel AI technologies, e.g. to support the characterization, description, restoration and public accessibility of media artworks.

Approach to Challenge 1: Networks of shared expertise and infrastructure

A dedicated EMBARK working group (WG) will explore unused potential for transnational synergy, efficiency and effectiveness in media art conservation. By fostering **consensus around shared methods, protocols and tools**—e.g. for the analysis and archival file management of born-digital video—EMBARC will strengthen the formation of user and support communities who can jointly contribute to the ongoing open-source tool development. To prepare for a future perspective of shared European platforms for digital cultural heritage, the Action will identify **common infrastructural needs** to archive, manage, access and research digital media art across national borders. EMBARK will also develop a strategy on how to sustain critical access to the dwindling expertise, sources and services that support **analog, legacy and bespoke media art technologies** and will compile a map of providers across Europe. This will enable collection stewards to pool and channel their demand, thereby creating more **sustainable business for niche expertise** such as analog video digitisation, cathode-ray tube refurbishment or 16mm film looper manufacturing. EMBARK will also work to **establish a knowledge base** that provides access to rare but essential technological information, such as equipment service manuals and other printed, pre-internet documentation. Essential to the effort of establishing continued and pan-European access to scarce knowledge on obsolete technologies will be an **oral history initiative that captures the technical know-how and practice** of retiring technicians, programmers, artists and co-creators. This knowledge will also stimulate new, art historical and other scientific interpretation of artworks.

Approach to Challenge 2: Software-based Art and Ownership

Ownership of the most recent, often complex software-based artworks challenges heritage institutions in unprecedented ways: their **complex dependencies, e.g. on external data sets** and other decentralized environments expose these works to changes that are often beyond the control of heritage custodians. Some of these artworks only exist online. In the last couple of years, online ownership of artworks has surged and gained global public attention and controversy among collecting institutions, as blockchain technologies catalyse **new forms of artwork ownership, valuation and distribution**, including NFTs (Non-Fungible-Tokens). The evolution of decentralised digital ecosystems, especially in the sector of **Web 3.0, the decentralised Web**, produces new online platforms and infrastructures of collection governance, e.g. DAOs (Decentralised Autonomous Organisations). EMBARK will explore the manifold implications for the stewardship of these most recent media artworks, including their long-term access. A dedicated WG will bring together researchers and collecting institutions with contemporary media artists, computer scientists, legal and technology experts to address ownership issues around licensing, smart contracts and copyright as well as technological issues around blockchain infrastructures and systems, IPFS storage and security.

Approach to Challenge 3: How can AI support the conservation and stewardship of media art?

Outside of the cultural heritage domain, larger digital archives of audio-visual assets, e.g. those of

commercial network stations, have already implemented a host of proprietary AI applications that employ text, face, voice and image recognition to enrich assets with semantic metadata and create new pathways to curatorial access. In cultural heritage, European initiatives have only recently started to explore AI applications for interpreting research data, e.g. in fashion (AI4Culture) or archeology (COST Action MAIA). Within media art conservation, AI bears additional, unexplored potential for **enhancing the efficiency of digital file preservation**. EMBARK will dedicate a WG that includes digital preservation experts and AI industry partners to explore AI automation for the processes of (1) content migration and format conversion of outdated file formats for long-term access, (2) file monitoring for content integrity and validation, (3) content analysis and metadata generation for improved discoverability, (4) restoration and repair of digital video content, e.g. for exhibition purposes and (5) long-term storage optimization through analyses of usage patterns, file types, and access frequency. **Conservation-ethical issues** will be considered in regard to treatment transparency and the professional commitment to the reversibility and documentation of changes to artworks.

Approach to Challenge 4: Shared Systems of Documentation and Knowledge Management Media artworks only exist, when they are installed and functioning as a system of compatible media, hardware and software components. The ability of curators to (re-)exhibit, of conservators to maintain and of researchers to interpret media artworks, **hinges on the knowledge captured** around them: What are the artist-intended spatial and technical parameters, what are work-defining properties that must be preserved or reproduced? Every iteration of an artwork generates new knowledge, contributed to by artists, curators, conservators, registrars, technicians, exhibition designers, educators, researchers or external service providers. Additionally, technical metadata are generated to describe and manage digital file components. Established collection management databases (CMS) are poorly suited to capture and share this layered knowledge. To create a more effective and accessible **environment of knowledge sharing, research and learning**, a dedicated WG will explore dynamic, **wiki-based documentation tools for multi-stakeholder data entry** while considering sustainability factors, shared terminology, shareability and integration through Linked-Open Data (LOD) and structured access. The network will further explore how preservation-critical information can be integrated into existing and future European platforms and initiatives, including Europeana and the ECCCH, to enable shared and distributed systems of research and care that consider **stakeholders outside of collections and academic institutions**, including educators, artists and the general public.

Approach to Challenge 5: Sustainability and the Preservation of Media Artworks

Responding to the climate emergency, EMBARK will dedicate one WG to understanding and addressing the **environmental and economic impact** of preservation practices for the care, storage and access of media art collections. Strategies like LOCKSS (Lots of Copies Keeps Stuff Safe) are embedded in our digital preservation models. However, these require re-evaluation as we question the environmental impact of storing multiple copies. Blockchain technology and the use of tools based on AI have also highlighted ethical issues of energy consumption and sustainability within digital collections. EMBARK will **integrate Life Cycle Assessment (LCA)** as a tool to raise awareness and guide conservation decision-making and will consider the range of activities related to the stewardship of media art collections, including those related to loans, exhibitions, preservation, access and storage, and new ownership models developed using blockchain technology. EMBARK will also consider the impact of **European 'Right to Repair' legislation** on strategies for hardware maintenance. EMBARK will raise awareness and provide tools to inform decision-making and to integrate consideration of sustainability and environmental impact into the design of systems and protocols for media art.

1.2.2. OBJECTIVES

EMBARK's main goal is to strengthen Europe's **ability to safeguard its collections** of media art—an overlooked and underestimated segment of Europe's cultural heritage and research infrastructure—for current and future generations of researchers and public audiences. To achieve this, EMBARK sets its goals in four critical areas:

1. Creating a pan-European, interdisciplinary community of science and practice in media art conservation that connects academic research with practice needs, enables joint work on relevant topics, and lays the groundwork for EU-level research grants in the future.
2. Supporting Europe's heritage collections in securing more media conservation expertise and capacity; supporting their advocacy for new positions, and supporting universities in producing more graduates and post-graduates with relevant specialization.
3. Supporting Europe's heritage collections to implement more efficiency-enhancing technology that makes conservation practice more effective and affordable, especially for vulnerable collections.

4. Educating policy makers on the value of Europe's media art heritage as essential research infrastructure, on its special preservation needs and on required programming and funding.

1.2.2.1. Research Coordination Objectives

RCO1: To bring together, in a coordinated way, researchers, innovators and heritage professionals from a broad range of disciplines, regions and career stages to form a **cohesive scientific domain and community of practice**.

RCO2: To develop a common understanding of **shared challenges and potential synergies** by assigning strategic, collaborative work packages that feed output into a growing knowledge base on a joint platform.

RCO3: To achieve the **coordination of academic research** in media art conservation across European universities and regions, across disciplinary boundaries, and across the current divide of academia and practice.

RCO4: **To disseminate** research results, including through co-authorship of joint scientific papers and training workshops, conferences and online cafés.

RCO5: To seek, identify and invite further stakeholders from diverse backgrounds and regions to **grow the network**.

RCO6: To connect Action members to relevant **existing communities of knowledge**, e.g. through invited experts and Training School teachers, to facilitate knowledge transfer. To connect Action members with external stakeholders, including policy makers, to facilitate advocacy for media art heritage and new programming and funding in the field.

RCO7: To raise the profile of the value of media art collections by supporting and facilitating access to researchers, including YRIs, from a broader spectrum of study fields.

1.2.2.2. Capacity-building Objectives

CBO1: To develop a **diverse and critical mass** of researchers and practitioners that can accelerate the scientific advancement through coordination and division of labour and that develops lobbying power to raise awareness and funding for media art preservation in Europe.

CBO2: To build **network continuity capacities** with a focus on establishing shared systems of knowledge management that will sustain beyond the lifetime of the project.

CBO3: To provide Action members with **critical input and training** and to co-create a closer, interdisciplinary network of careers by facilitating the **transfer and circulation of knowledge** between universities, heritage institutions, tech companies, artists but also communities across different expertise groups and countries.

CBO4: **To increase the quantity of YRIs** in media art conservation and to engage and **elevate** them by providing them with the opportunity to gain excellence and interdisciplinary skills necessary to address new fields of knowledge and to contribute to the advancement of the field while enhancing their own employability in the heritage sector.

CBO5: To encourage and support heritage institutions to **identify collection needs** and **skill gaps** in the care of these collections, and to pursue effective advocacy for new specialised positions to ensure continued access.

2. NETWORKING EXCELLENCE

2.1. ADDED VALUE OF NETWORKING IN S&T EXCELLENCE

2.1.1. ADDED VALUE IN RELATION TO EXISTING EFFORTS AT EUROPEAN AND/OR INTERNATIONAL LEVEL

This Action builds on the networks and achievements of previous and ongoing initiatives not just in the field of media art conservation, but in the related disciplines digital preservation, audiovisual archiving

and contemporary art conservation. Over the last 21 years, only **four small-scale EU projects have focused exclusively on media art heritage**, never including more than three European countries: 404 Object not Found: What Remains of Media Art (2003-2004); Digital Media Art in the Upper Rhine Valley (2010-2012); SOMEART (2010-2013); and Dynamic Preservation of Interactive Art (2017-2019). Apart from one Eastern European initiative (New Media Museums [2021-2022, CZ, HU, PL, SK]), **all former and ongoing projects on media art conservation—globally—are mono-national**: Preservation of Video Art (2003-2005, NL); Aktive Archive (2004-2011, CH); Matters in Media Art (2005-2015, US); DOCAM (2005-2010, CA); Media Conservation Initiative (2016-2021, US); Documenting Digital Art (2019-2023, GB); VoCA Time-based Media Stewardship Workshops (2019-2023, US); Reshaping the Collectible (2019-2022, GB); Preserving and Sharing Born Digital and Hybrid Objects (2021-2022, GB); Collaborative infrastructure for sustainable access to digital art (2021-2024, NL) and Archiving Australian Media Arts (2021-2024, AU).

This **national-centric, insular funding landscape** underscores the enormous value that EMBARK will add to existing efforts in advancing and establishing media art conservation across Europe. EMBARK is the **first-ever pan-European initiative** that (1) focuses exclusively on media art conservation as an emerging discipline, (2) connects many more than just four European countries, (3) centers on network-building with a focus on YRIs' development, (4) includes a rigorous, interdisciplinary and intersectional diversity of stakeholders, (5) invites media artists to shape joint approaches to preservation, (6) maps skills, practices and knowledge gaps across Europe, and (7) identifies and coordinates new, practice-led research **to form a cohesive scientific domain**.

To capture and build on national achievements, EMBARK will invite researchers and coordinators of these previous and ongoing projects to participate as Action members, as experts and/or as contributors to Action Conferences and Training Schools. In addition, EMBARK will also draw from the knowledge and networking power generated by **EU-funded projects in related scientific fields**. Notable projects in **contemporary art conservation** include Preservation & Re-Installation of Installation Art (2004-2007) and NACCA - New Approaches in the Conservation of Contemporary Art (2015-2019). Significant projects in **Digital Preservation** and **Audiovisual Media Archiving** include GAMA - Gateway to Archives of Media Art (2007-2009); PRESTOSPACE (2004-2008); PrestoPRIME (2009-2012); Digitising Contemporary Art (DCA) for Europeana (2011-2013); PRESTO4U (2013-2014); PERICLES (2013-2017); E-ARK (2014-2017); E-ARK4ALL (2018-2019); and E-ARK3 (2019-2021). EMBARK will also seek knowledge exchange with members of **former and current COST Actions** that address(ed) related challenges, including GRADE, SEADDA, MAIA, ARTinRARE, and EFAP.

2.2. ADDED VALUE OF NETWORKING IN IMPACT

2.2.1. SECURING THE CRITICAL MASS, EXPERTISE AND GEOGRAPHICAL BALANCE WITHIN THE COST MEMBERS AND BEYOND

Among EMBARK'S initial group of 41 proposers from 20 COST full member countries (including 12 ITCs) are acclaimed scholars and heritage practitioners who have **developed and shaped the emerging field** of media art conservation since its early beginnings 20 years ago. They are joined by academic researchers, including talented YRIs, and a pan-European constellation of curators, conservators, digital preservationists, art historians and archivists who are **charged with the preservation of Europe's most valuable media art collections**. Representing a diverse range of collection types and countries—spanning from bespoke art organisations to festival archives to large international museums—this network of heritage professionals is well-suited to deliver **robust, shared approaches to media art conservation** that consider Europe's varied landscapes of socio-economic, cultural and political conditions for heritage preservation. **Media artists and their technical collaborators** will be included to challenge and contribute strategies towards sustaining their legacy. Securing this critical artist expertise within the EMBARK network will call for creative funding, as only some artists are institutionally affiliated and can become Action members according to COST policies. Addressing **knowledge gaps and knowledge transfer**, the proposed network also includes **technology partners** with expertise in digital preservation, legacy media technologies, computer science, immersive media, Web 3.0, Linked Open Data, wiki technologies, AI, and blockchain technology. These experts will stimulate and enrich EMBARK WG meetings, Training Schools and Short-term Scientific Missions (STSM), and will inform the development of **efficiency-enhancing tools, workflows and networks of care**.

The network of proposers includes **faculty and YRIs from notable European Universities** that have launched media art conservation programs in recent years. At the time of application, **22% of the EMBARK participants are YRIs**. To enhance coordinated practice-led and impactful research, EMBARK will strategically work with universities to **increase the percentage of YRIs** over the course of

the Action. So far, EMBARK's networking outreach has met great interest among junior and established researchers and practitioners throughout Europe. EMBARK's target is to **include 60+ Action participants from 25+ COST full member states**, and to invite additional experts in support of WG topics. The Action recognises guidelines and best practice about promoting and adopting gender equality, and **56% of EMBARK proposers are female**. This slight imbalance is representative of the gender distribution within the cultural heritage sector.

2.2.2. INVOLVEMENT OF STAKEHOLDERS

To increase network membership by at least 40% over the course of the Action, EMBARK will strategically attract and recruit additional Action members through (1) widely distributed **open calls** for network participation and (2) **targeted outreach** to specific (categories of) stakeholders.

EMBARK's main networking objective is to increase the number of **academic researchers, especially YRIs** from a range of fields, who can cultivate new areas of **interdisciplinary, practice-led research**. EMBARK will identify research areas related to collection needs and invite university faculty and YRIs to build new partnerships with heritage institutions across Europe and **develop and coordinate new MA, PhD and Postdoc theses** that contribute to larger development goals. As detailed under 3.2.1., EMBARK membership will have a major impact on the career development of YRIs. To broaden EMBARK's impact on practice development, and to invigorate EMBARK's five WGs, more **heritage professionals** and **specific technologists** will be invited as Action Members. Especially in the ITCs, EMBARK will rely on regional and national networks to identify more **disparate stakeholders**.

Beyond Action membership, EMBARK will engage **regional and national policy makers** by inviting them as Action Conference panelists and moderators, and by providing them with roadmaps, policy and funding goals. To foster exchange with **related COST Actions** and other former and ongoing (EU) initiatives, EMBARK will invite project protagonists to participate and present at EMBARK meetings and Training Schools. EMBARK will benefit from pioneering scientific achievements in the US and Australia by **inviting selected non-European experts** to assume teaching roles at Training Schools, and to transfer knowledge as speakers and panelists at the annual Action Conferences.

To include the expertise of **unaffiliated artists** and **free-lanced technical experts**, who do not meet the COST policy for Action membership, EMBARK will seek alternative models of compensation, e.g. grant funding, residency programming or institutional sponsoring.

3. IMPACT

3.1. IMPACT TO SCIENCE, SOCIETY AND COMPETITIVENESS, AND POTENTIAL FOR INNOVATION/BREAKTHROUGHS

3.1.1. SCIENTIFIC, TECHNOLOGICAL, AND/OR SOCIOECONOMIC IMPACTS (INCLUDING POTENTIAL INNOVATIONS AND/OR BREAKTHROUGHS)

EMBARK will be the first-ever, pan-European initiative to address the preservation crisis faced by Europe's media art collections and to build the collaborative research and practice environment that is needed to tackle this challenge. As such, EMBARK will have a **defining impact** (1) on the emerging scientific field of media art conservation, (2) on the ability of heritage institutions to collect and preserve media art, and (3) on the ability of academic and public audiences to access and interpret Europe's media art heritage sustainably. Critical breakthroughs are expected on several levels:

SCIENTIFIC IMPACT: By integrating existing and disparate knowledge across language, discipline, sectoral, organisational and regional barriers, EMBARK will deliver a major breakthrough for the establishment of media art conservation as a cohesive, scientific domain. **In the short term**, through new and diverse collaborations between academia and heritage practice, EMBARK will (1) create a joint, interdisciplinary research agenda, (2) produce new scientific literature, (3) integrate and empower YRIs, ITCs, grassroots organizations and marginalised collections, (4) develop new, shared methodologies that enhance practice-efficiency, including the use of AI, and (5) generate new knowledge and research data, including the oral history output obtained from artists and technology stakeholders. **In the long term**, a new generation of trained and interconnected YRIs will lead research and practice developments in a coordinated, collaborative approach. They will successfully pursue capacity funding, and with the increase of visibility and advocacy, the field will grow and produce new specialised professionals and jobs. Thus, EMBARK will transform media art conservation to become a robust science and practice that is fit to maintain Europe's media art heritage as a critical research infrastructure and integral part of

European art history.

TECHNOLOGICAL IMPACT: In the short term, a major breakthrough for the effectiveness and competitiveness of media art conservation in Europe will be reached with EMBARK's identification of new (AI-powered) methods and tools that enhance and accelerate preservation and access workflows in digital art archives. New user and support communities around shared methods and tools will make their implementation more effective, and promote further joint development of open-source tools. The coordinated maintenance of legacy technologies, too, will mark a new era in media conservation, as access to rare knowledge, resources and services will start to be shared across Europe. In the long term, with the aid of state-of-the art technology, media art conservation will become more feasible and affordable, even for marginalised and vulnerable collections, e.g. in the ITCs, who are struggling with labour shortage.

SOCIO-ECONOMIC IMPACT: In the short term, and through the power of collaboration and partnerships, EMBARK will be lifting and including underrepresented and vulnerable collections, including those with works by marginalised artists. By connecting these collections to leading conservation research, expertise, practice and infrastructure, EMBARK boosts their resilience and thereby the preservation of Europe's rich regional diversity of media art heritage. EMBARK will raise awareness among policy makers to value and sustain Europe's media art heritage through innovative programming and funding. In the long term, EMBARK will be Europe's foundation for saving this heritage as a diverse, reflective landscape for societal critique and learning through art. Collections will be equipped with the knowledge and new-found confidence to collect the media art of our time sustainably. They will be able to provide society with an ongoing dialogue between art and technology, enhancing our media literacy and ability to critique media technologies and their impact on our lives, society and democracy.

3.2. MEASURES TO MAXIMISE IMPACT

3.2.1. KNOWLEDGE CREATION, TRANSFER OF KNOWLEDGE AND CAREER DEVELOPMENT

EMBARK will mobilize expertise from across disciplines and regions to convene in a well-structured schedule of (Joint) WG meetings, Action Conferences, Training Schools and Short-term Scientific Missions. At the heart of EMBARK's strategy to create and transfer knowledge lies the coordinated exchange between academic researchers and heritage practitioners. This exchange, further contributed to by a diversity of experts, forms excellent environments for knowledge and career development.

Knowledge creation: The five WGs will work in synergy to produce a new understanding of current media conservation practices, knowledge gaps and preservation challenges across a diversity of European institutions and regions, including underrepresented and marginalised media art collections. Interdisciplinary WG collaboration will radically expand and transform currently mono-disciplinary knowledge. Stimulated by Training School and STSM input, WGs will produce new knowledge about (1) methods and tools (including AI powered tools) that can make media conservation more effective and efficient; (2) the stewardship of complex software-based art, including NFTs; (3) European sources and new networks of care for legacy technologies; (4) new dynamic tools for multi-stakeholder documentation and knowledge exchange; and (5) prerequisites for archiving and sharing media art heritage across European borders.

Knowledge transfer is EMBARK's central method for identifying common needs, building shared approaches and creating transnational synergies. Through transfer of existent (sometimes tacit) knowledge, academic researchers will learn about real-world preservation challenges in heritage collections; underrepresented (ITC and grassroots) collections will learn about effective practice from established media conservation programs; the heritage and research community will learn about artwork production and maintenance from artists, their technical co-creators and other knowledge keepers; YRIs will learn from senior researchers and collection professionals how to produce research excellence and manage grant projects; and policy makers and the general public will learn about the value of Europe's media art heritage, and strategies how to address its preservation crisis. EMBARK's various cross-network activities will circulate knowledge produced by the WGs, and specialty knowledge, including about AI, blockchain, wiki or Web 3.0 technologies, will be transferred to WG members through STSMs and Training Schools. Powered by WG 4, which is dedicated to knowledge sharing mechanisms, EMBARK will establish a joint platform to compile, structure and exchange knowledge during and beyond the Action. Knowledge produced by EMBARK will be transferred to the scientific community, to heritage practice, to policy makers and the general public as laid out in the dissemination plan (3.2.2.).

Career development: YRIs in academic research and heritage practice will benefit from collaborating with experienced leaders in the field, (co-)authoring scientific presentations and publications, and from presenting at (Action) conferences and EMBARK Cafés (online). They will gain extra-curricular skills through Training Schools and STSMs, and will be able to attend international conferences through grant funding. To foster YRIs' progress towards higher spheres of professional responsibility, achievement and leadership, EMBARK will encourage YRIs to assume management roles, e.g. as WG leaders, Management Committee members, or meeting hosts. Young and ITC researchers in management roles will benefit from training offered by the COST Academy to boost their leadership, management, administrative and communication skills. In addition, EMBARK will offer mentoring opportunities, including speed mentoring events with senior leaders.

3.2.2. PLAN FOR DISSEMINATION AND/OR EXPLOITATION AND DIALOGUE WITH THE GENERAL PUBLIC OR POLICY

EMBARK will deliver an innovative, multi-targeted dissemination strategy that will operate on open access principles, embodying a culture of transparency, openness and hospitality at its core. Three YRI members will be named as communication officers; in collaboration with the Core Group, and approved by the Management Committee, they will develop a communication and dissemination strategy, an editorial plan for regular updates, and manage the EMBARK website, blog posts, video uploads and social media channels. EMBARK will promote its activities, progress and findings through a blend of appropriate channels and platforms that reach EMBARK's target audiences in cultural heritage, policy and the general public.

Dissemination of research results

- **Presentation at major international conferences**, including ICOM-CC, IIC, iPRES, NTTW, ISEA International, AIC, and FUTURE TALKS. The EMBARK Core Group will produce a conference participation plan for WG content dissemination (at least 5 conferences/year are estimated).
- **Publication in peer-reviewed journals**, including Studies in Conservation, Leonardo and JAIC (Journal of the American Institute for Conservation). EMBARK WGs will produce 5 jointly authored scientific publications over the course of the Action (one per WG).
- **European and National Research Councils**. EMBARK will disseminate the new, coordinated research strategy to research councils at targeted events.
- **Announcements via Heritage Body channels**. EMBARK will publish announcements of Open Calls for Action participation, Action Conferences, workshops, findings and achievements via communication channels of international heritage organisations, including ICOM, ICCROM, E.C.C.O., INCCA, and the national UNESCO committees.
- **Announcements via digital preservation networks**. To extend EMBARK's reach to the broader field of digital preservation and software preservation, it will announce EMBARK events, open calls, research results and publications via their global dissemination networks, including those of the Digital Preservation Coalition (DCP) and the Software Preservation Network (SPN).
- **Presentation at Action Conferences and other network events**. EMBARK's four annual Action Conferences with accompanying workshops and 12 Online Cafés will be open to all researchers.
- **Publication on the Action website**. The EMBARK website will offer public access to all aspects and resources of the EMBARK Action, including the knowledge and resources generated by the EMBARK WGs. Over the course of the Action, EMBARK will develop a long-term knowledge base that can exist beyond the Action and lifetime of the Action website to serve as a sustainable resource for researchers. The publication of all resources will follow Open Access principles and consider Intellectual Property Rights.
- **An EMBARK youtube channel**, also accessible through the website, will offer public access to the repository of Action Conference and workshop recordings, tutorials (including maintenance tutorials for legacy technologies), oral history interviews (including with media artists and co-creators), and other resources relevant to research.
- **Affiliated institutions** of EMBARK members will use their communication channels to raise awareness of the initiative and to further disseminate EMBARK's achievements.

Exploitation of results

- **Academic participants** will be able to produce new, relevant and impactful research that builds on new peer-reviewed literature and responds to actual preservation needs and state-of-the-art developments in collections.
- **Heritage collection professionals**. With new knowledge gained from training schools, conferences, publications and partnerships with academic researchers, they are empowered to

reassess the preservation needs of their collections, and their roles in meeting these needs. They will have access to new shared methods, tools and support communities, and will be equipped with arguments and clear strategies for capacity-building advocacy and fundraising. They will be more confident to collect media art.

- **Industry partners.** Technology partners providing input to various WG focus areas, including AI, will learn from heritage preservation use cases and identify potentials for further development of their products and services. Providers of rare services in the area of legacy technologies will benefit from a new, pan-European client base resulting from coordination by EMBARK WG 1.
- **Government policy.** EMBARK's pan-European survey of the preservation crisis, and its coordination of efforts to avert an historical gap in media art history has the potential to cause a reckoning among policy makers, who will be able to refer to EMBARK's findings and advocacy.

Dialogue with the general public

- **Action Conferences, including its workshops,** will be open to the public. EMBARK will strategically invite local policy-making bodies, civil society organisations, and communities to attend and/or participate in conferences, e.g. as panellists, moderators.
- **Media Artist Talks** and other public programming such as guided topical tours of conference-hosting collections will frame the Action Conferences and attract a broad public audience, including local school classes and (art) students, who will be invited.
- **An Action blog** on the website will offer accessible, in-depth insights into perspectives, challenges and approaches taken by network participants. Over the course of the Action, EMBARK members (co-)author a minimum of 15 blog posts (three per WG).
- **EMBARK's social media channels** will broadcast open calls, project news, events and announcements and provide the platform for audience engagement with followers.
- **An EMBARK Discord channel** will allow immediate and multi-topical, structured interaction among stakeholders inside and outside of the Action, including the interested public.
- **The EMBARK Café** will be a low-threshold, free and public online format (Zoom, two hours 3x year) with short presentations and discussions. Invited speakers include artists, who will attract a broader public.
- **Observation of World Days.** To further engage the public and policy makers, EMBARK will mark public events such as the "World Day for Audiovisual Heritage", the "World Digital Preservation Day" and the "European Day for Conservation-Restoration" with events and social media campaigns.

4. IMPLEMENTATION

4.1. COHERENCE AND EFFECTIVENESS OF THE WORK PLAN

4.1.1. DESCRIPTION OF WORKING GROUPS, TASKS AND ACTIVITIES

The network is organised into five working groups (WGs) each responsible for leading the tasks and activities related to one of the five key challenges of the project. The WGs will meet four times a year, twice online, and twice in person (during the annual Action Conferences, and at an annual Joint WG meeting, which features parallel WG sessions and a general session for cross-WG cohesion). In addition, a Core Group with representatives of all WGs will track WG progress and address intersections and work package distribution across WGs.

Working Group 1: Networks of Expertise and Infrastructure

This WG will identify shared needs among Europe's heritage collections pertaining to the infrastructure (here: research, skills, knowledge, services, networks and technical infrastructure) needed for the preservation of media art. WG members, including academics, heritage practitioners, artists, digital preservationists and technology experts, will address the following key questions:

- 1) Which are the current processes, methods and tools that define media art conservation, and how can we jointly engage in their further development as a scientific community?
- 2) What research is needed to fill the knowledge gaps and advance the development of core infrastructure for media art collections?
- 3) Who are the knowledge keepers and service providers across Europe who support the maintenance of obsolete technologies in historic media artworks? How can we sustain access to their knowledge and skills?
- 4) How can we enhance efficiency and effectiveness by pooling and sharing knowledge?
- 5) How can artists contribute to the sustainability of their media art legacy?
- 6) How can we reach the public and policy makers to support the preservation of media art heritage?

Tasks
➤ Identify the key categories of infrastructure that are impacting the preservation of media art. ➤ Identify 4 cases that demonstrate the persistence or precarity of infrastructure underpinning media artworks and impacting their preservation. ➤ Identify new areas of scientific, practice-led research needed to support the development of a robust infrastructure for media art collections. ➤ Knowledge exchange: What can we learn from each other, and how from other fields? What areas of collaborative research can be developed? ➤ Identify and map 'knowledge keepers' for particular skills or knowledge across Europe.
Activities
➤ Per year: 4 WG meetings, 1 Training School, 1 Action Conference ➤ Publications the course of the Action: at least 1 co-authored, peer-reviewed paper; 3 blog posts on Action website; report on output of case study and WG results

Working Group 2: Software-based Art and Ownership

This WG will examine the collection and ownership of software-based artworks with complex dependencies (e.g. external data sets and decentralized environments), including online art from the 1990s to current NFTs. Topics include emerging curatorial, conservation and legal frameworks, copyright and security issues in relation to emerging infrastructures such as blockchain technology. The WG will consider the following key questions:

- 1) What are the current and emerging curatorial, conservation and legal frameworks for collecting and preserving decentralized software-based art, including online art?
- 2) What are the barriers to collecting software-based art, including online art?
- 3) What is the impact of blockchain technologies and the associated platforms and legal frameworks (for example for NFTs) on online art? What are the opportunities and challenges presented by blockchain technology to the preservation and management of art online?
- 4) Collaboration with WG5: How do UN Sustainability Goals impact collection on the blockchain?
- 5) What are the knowledge gaps and opportunities for collaborative scientific research?

Tasks
➤ Identify core barriers to collecting complex software-based art ➤ Map the different ways in which software-based, including online art is currently brought into collections and owned, documenting shifts in practice in relation to emerging technologies such as blockchain. ➤ Carry out a comparative analysis of the infrastructure (legal frameworks, platforms etc) that are emerging around blockchain technology and how it is changing the artworld. ➤ Map the current research landscape and carry out a gap analysis regarding current knowledge, training and infrastructure.

Activities
➤ Per year: 4 WG meetings, 1 Training School, 1 Action Conference, Short-term Scientific Missions ➤ Publications the course of the Action: at least 1 co-authored, peer-reviewed paper; 3 blog posts on Action website; outline of prompts for what to consider when acquiring software-based art online

Working Group 3: How can AI support the conservation and stewardship of digital media art?

This WG will examine how AI, most commonly employed in digital archives for automated transcription, image analysis, subtitling and semantic metadata enrichment, can be further employed to automate various digital preservation workflows in media art conservation. WG members, including collection practitioners, researchers and digital preservation specialists, will connect with AI industry partners and

researchers of recent and ongoing EU initiatives on AI in cultural heritage (including AI4Culture, MAIA) and will compare open-source, user-friendly and affordable AI tools that enhance the efficiency and effectiveness of digital asset management in media art conservation. Transparent and explainable AI systems shall be adopted that accord with the UNESCO Recommendation on the Ethics of AI. Here, ethical considerations will also address artist intent and copyright issues. Key questions include:

- 1) How can AI support the content migration and format conversion of outdated file formats to ensure long-term access?
- 2) How can AI automation support file monitoring for content integrity and validation?
- 3) How can we employ AI to support the format identification, content analysis and metadata enrichment for improved discoverability of media artworks and their content?
- 4) How can AI support the restoration and repair of digital video content, e.g. for scaling and deinterlacing low-res SD-video or compensating image errors? How are conservation ethical requirements such as treatment documentation met, if AI parameters are not disclosed?
- 5) How can we employ AI to optimize long-term storage through analyses of usage patterns, file types, and access frequency?

Tasks
➤ Identify core digital preservation tasks and workflows in media art conservation, which can benefit from AI automation. ➤ Compare and evaluate existing open-source AI tools, including those on AI4Culture platform, for application feasibility; identify conservation ethical issues, e.g. treatment transparency. ➤ Identify desirable data sets that might be compiled through EMBARK and create a road map for their development. ➤ Create specifications for further tools that we would like to see developed for media art preservation and collection management. ➤ Identify new areas of scientific advancement in the use of AI for the preservation of media collections.
Activities
➤ Per year: 4 WG meetings, 1 Training School, 1 Action Conference, Short-term Scientific Missions; consultation with tech developers both within academia and industry ➤ Publications the course of the Action: at least 1 co-authored, peer-reviewed paper; 3 blog posts on Action website; publication of WG outcomes on Action website ➤ Mapping exercises, road map development, simple use cases demonstrating the application of existing tools

Working Group 4: Shared Systems of Documentation and Knowledge Management

This WG considers how to build dynamic documentation tools to support multi-stakeholder knowledge management and access. This investigation will not only look at wiki technologies, but will explore the potential to integrate media art knowledge in existing EU platforms and initiatives, such as Europeana and the ECCCH (European collaborative cloud for cultural heritage). This work package is essential for the sharing of knowledge between academic researchers and practitioners in both small and large institutions. Previous EU initiatives, incl. SEADDA and EFAP will be considered.

- 1) What is the knowledge we want to share with what kind of target groups? What can we learn from other sectors / fields about multi-stakeholder knowledge management?
- 2) Which wiki systems and transnational platforms are already being used for media art, what are their pros and cons? Which are not yet used, but have potential?
- 3) How can Web 3.0 be used for the exploration of new governance structures and shared responsibilities and knowledge management?
- 4) How can we enhance knowledge management to better deliver scientific research between different disciplines engaged in media art collections to advance the field?

Tasks
➤ Explore and compare existing and missing applications of wiki systems and transnational platforms for knowledge exchange on media art and its preservation. ➤ Explore platforms and mechanisms for maintaining and sharing knowledge in other sectors. ➤ Identify criteria for suitable knowledge platforms, including sustainability factors, and develop a description of the challenge as it faces different stakeholders, as well as a needs analysis.
Activities
➤ Per year: 4 WG meetings, 1 Training School, 1 Action Conference, Short-term Scientific Missions, consultation with tech developers both within academia and industry ➤ Publications the course of the Action: at least 1 co-authored, peer-reviewed paper; 3 blog posts on Action website; publication of WG outcomes on Action website ➤ Mapping exercises, consultation with different stakeholders, checklist on sustainability

Working Group 5: Sustainability and the Preservation of Media Artworks

This WG will examine the environmental and economic impact of current media conservation practices pertaining to media art loans, exhibitions, preservation, digital storage and access. The group will explore, if and how common practices such as multiple copy storage of digital artworks can be adapted to address the climate emergency. Key questions for this WG include:

- 1) What factors within the preservation of media art impact by UN Sustainability Goals?
- 2) How can we integrate Life Cycle Assessment (LCA) and other tools to support our decision-making?
- 3) How do new ownership models using blockchain technology affect sustainability goals?
- 4) How do we identify and champion positive emerging practice related to sustainability within the preservation of media art?

Tasks
➤ Identify practices in media art conservation that are impacted by the UN Sustainability Goals ➤ Survey tools, including Life Cycle Assessment (LCA) that can impact decision-making towards supporting the UN Sustainability Goals ➤ Identify impact of European 'Right to Repair' legislation on media art hardware maintenance ➤ Identify and champion positive emerging practice related to sustainability and the preservation of media art.
Activities
➤ Per year: 4 WG meetings, 1 Training School, 1 Action Conference ➤ Publications the course of the Action: at least 1 co-authored, peer-reviewed paper; 3 blog posts on Action website; publication of WG outcomes on Action website

4.1.2. DESCRIPTION OF DELIVERABLES AND TIMEFRAME

	Deliverables	Contributors	Time (GANTT)
D1	Launch Action website, youtube channel, social media channels and Discord channel	MC; CG; all WGs	M 10-12
D2	Five joint scientific publications (one per WG) in selected peer-reviewed journals; publications are timed throughout the Action and are completed by end of Action at the latest.	all WGs	M 46-48
D3	Presentations at four annual, public Action Conferences with invited speakers and workshops for attendees and EMBARK participants	all WGs	M 12-48

D4	12 Online Cafés (2-hour, public Zoom sessions) with short presentations on EMBARK topics and discussions	all WGs	M 12-48
D5	Publication of Action Conference recordings on Action website	CG	M 12-48
D6	15 blog posts on Action website (one every three months)	all WGs	M 12-48
D7	Publication of guidelines, recommendations, best practices, case study results and resources on Action website	all WGs	M 12-48
D8	Joint statement on the state of media art preservation in Europe aimed at policy makers	all WGs	M 48

4.1.3. RISK ANALYSIS AND CONTINGENCY PLANS

Risk	Proba- bility	Contingency Plan
Internal Risks		
Gender imbalance among participants	High	The cultural sector is female-dominated, but EMBARK will raise awareness of roles within media art conservation and offer opportunities for widening participation through engagement with different disciplines with more diverse cohorts such as engineering and computer science.
Not finding a sufficient number of YRIs	Low	EMBARK will reach out to universities to encourage YRI participation and coordination of MAs, PhDs and PostDocs in new areas of practice-led research based on partnerships with heritage collections in Europe.
Barrier to understanding/ cultural translation	Low	Experienced EMBARK leaders, supported by the Science Communication Manager, will ensure internal communication and mutual understanding across disciplinary, cultural, institutional and language barriers.
Papers are not accepted	Low	EMBARK will encourage joint authorship that brings together different levels of experience (YRI w/experienced professionals) and command of languages.
Insufficient dissemination / communication	Low	A comprehensive science dissemination and communication plan will guarantee awareness and understanding about EMBARK's scope, objectives and results among the target groups, including policy makers.
CG members leave network	Low	When members leave, a replacement will be identified promptly from the MC, while considering geographical, gender and age balance.
External Risks		
Negative impact on environmental sustainability	High	The Action will ensure a low carbon footprint of the project by leveraging online communication, aligning activities and meetings with existing conferences and encouraging greener modes of travel (e.g. train).
Change of Action environment by force majeure	Mode- rate	In case of a force majeure event, the Action MC will decide an alternative work programme to overcome the new situation and support as far as possible the impacted Action participants.

4.1.4. GANTT DIAGRAM

Activities, tasks and deliverables IP=in person ON=online	Year 1				Year 2				Year 3				Year 4			
	M 1-3	M 4-6	M 7-9	M 10-12	M 13-15	M 16-18	M 19-21	M 22-24	M 25-27	M 28-30	M 31-33	M 34-36	M 37-39	M 40-42	M 43-45	M 46-48
Kick-off Meeting, Brussels	IP															
Core Group Meeting	IP	ON	IP	ON	IP	ON	IP	ON	IP	ON	IP	ON	IP	ON	IP	ON
Management Committee	IP		IP		IP		IP		IP		IP		IP		IP	IP
Meetings WG1, WG2, WG3, WG4, WG5	ON	ON	IP	ON	IP	ON	IP	ON	IP	ON	IP	ON	IP	ON	IP	
Training Schools			IP				IP				IP				IP	
Short-term Scientific Missions				IP				IP				IP			IP	
D1: Launch Action Website																
D2: 5 Joint Scientific Publications																
D3: (Presentations at) Action Conferences					IP				IP				IP			IP
D4: Online Café, public			ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON		
D5: Publication Action Conference Recordings					ON				ON				ON			ON
D6: Website Blog				ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
D7: Publication of guidelines, resources															ON	
D8: Publication of Statement for Policy																ON

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