



D4.3 Sustainability Plan

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EXECUTIVE SUMMARY

This deliverable presents the Sustainability Plan for the EUreka3D-XR project, taking into account that the project is set in the wider context of digital transformation of the cultural sector and is specifically connected to the common European data space for cultural heritage, sharing the general aims and contributing to addressing the challenges that cultural heritage institutions face.

Considering the activities of the EUreka3D-XR project, the deliverable assesses the level of sustainability in the various areas that the project addresses. The key stakeholder groups for sustainability are content providers (e.g. CHIs) and content users (e.g. professionals in education or tourism). In addition, there is a level of sustainability for third party technical providers and general (non-professional) users.

This report presents the sustainability plan of the 5 areas of the project's implementation: the 3D models and contents aggregated into Europeana and promoted in the data space; the XR Toolbox comprising of five tools created by the technical service providers; the EUreka3D Data Hub, which makes the 3D models and tools available for use; the Learning and Competence Centre which sustains the transfer of knowledge from the capacity building activities; and finally the XR Experiences which are developed and recorded as case study scenarios for the inspiration and experimentation of other CHIs and developers beyond the consortium partners.

The foundation of this plan of Sustainability is heavily linked to the information being gathered by the Capacity Building work package which in turn links and informs the Impact Assessment Report.

It must be added that the project felt it important to assign a fully independent Advisory Board of experts to assess the project objectives and progress. Their input has been recorded during feedback collection in the Capacity Building actions but their feedback has been important to efficiently plan for Sustainability, too.

The document is composed of the following chapters:

1. Introduction
2. Methodology
3. 3D Models and Contents Sustainability
4. XR Toolbox Sustainability
5. Infrastructure Sustainability
6. Learning and Competence Centre
7. XR Experiences
8. Conclusions

With Annexes

- I. Maintenance plan for 1, 3 and 5 years
- II. Sustainability Interview Questions for partners of EUreka3D-XR

1. INTRODUCTION

The EUreka3D initiative is a collective effort of a consortium of partners who contribute to the overall sustainability of project's results according to their role and mission as organisations. As a non for profit initiative, the main goal that drives the activities both in the project and beyond its end is the benefit that EUreka3D is providing to its stakeholders communities. In this light, the work for impact assessment is of primary importance for supporting the sustainability of project outcomes, and for enabling the constitution of a spin-off initiative that will continue the provision of services to the cultural heritage community. This spin off initiative, already envisaged at the end of EUreka3D project and officially announced in the course of EUreka3D-XR, takes the form of the EUreka3D Competence Centre, coordinated in its operations by Photoconsortium and based on the provisions of the EUreka3D partners.

1.1 VISION TOWARDS SUSTAINABILITY

Key Exploitable Results have been identified since the early stage of the project and widely described in the chapter 6 of D4.1 Dissemination and Exploitation Plan¹. Such exploitable results correspond to the project achievements which need to be sustained beyond the end of the funding period.

The Key Exploitable Results identified since the planning phase of the project are:

- **3D Models and Supporting Contents**, meaning the collections (data, metadata and paradata) aggregated into Europeana and the data space by CRDI, BIBRACTE, CUT
- **XR Toolbox**, meaning the five tools developed by NTUA, Swing:It and Miralab
- **Infrastructure**, meaning the EUreka3D Data Hub, and its services for storage and computing, managed by EGI and its affiliated entities
- **Learning and Competence**, meaning all the learning resources, editorials, and all published content on Europeana and data space, project webpages, project blog, social media channels, managed by the respective partners (PHC, CRDI, meemoo, EF and others)
- **XR Experiences**, meaning the three demonstration scenarios developed by CRDI, BIBRACTE, CUT.

All partners are in fact responsible at different levels to contributing to sustainability of the project's results:

- the cultural institutions (together with Europeana and Photoconsortium as Europeana aggregator) for the maintenance of the datasets published online in the EUreka3D Data Hub and in Europeana
- the tools developers for the maintenance of the access of the respective tools;
- EGI and its affiliated partners for the access and the maintenance of the EUreka3D Data Hub;
- meemoo for the capacity building effort of the project, together with CRDI and Photoconsortium for the web presence and published materials, and with Europeana Foundation for the maintenance of editorials and the integration of EUreka3D results in the data space for cultural heritage
- the cultural institutions for the improvement and sustainability of the scenarios and their case studies.

¹ <https://EUreka3d.eu/wp-content/uploads/2025/07/EUreka3D-XR-D4.1-dissemination-exploitation-plan.pdf>

1.2 ENVIRONMENTAL SUSTAINABILITY AND CONTRIBUTION TO EUROPEAN GREEN DEAL GOALS

Eureka3D-XR is aware of the challenges and the trade-off between benefits and threats that 3D digitisation and an increased online access to cultural collections and applications entail in terms of impact on the environment and climate.

On one hand, 3D models and virtual experiences of cultural heritage may reduce the impact of travels to visit the original, reducing carbon emissions from transportation (e.g., fewer tourists flying to locations) and also allowing more inclusive access also to audiences that have mobility challenges. These are very valuable benefits, which however must not be outbalanced by the downsides of an increased consumption of energy, that could be mitigated by ensuring that cloud storage/rendering servers use renewable energy sources. On the other hand, there is also a very relevant potential of 3D and XR in promoting cultural heritage with better audience engagement. In this light, such promotion and wider online visibility may cause an increase of the tourist flux to locations, museums and sites, which would certainly benefit the territory but may also generate unplanned negative impacts. The trade-off between online and physical access to cultural experiences (reducing the travels vs. promoting tourism) may vary depending on the actual context and local environment, however it is observed that both trends exist despite their apparent contradiction.

Energy consumption is also a challenge in itself for the digitisation process of cultural collections, due to massive data processing/storage required by HD scans, which raises concerns about servers' power usage. While optimising compression algorithms or adopting edge computing where possible may mitigate these impacts slightly, it is crucial not to overlook how interconnected systems influence one another holistically.

There are also challenges and concerns about current technologies becoming obsolete quickly, thus requiring cultural organisations to plan periodic re-digitising or migrating collections and XR experiences across new platforms, each iteration consuming additional resources.

For data storage and running of project's tools and applications, and for other online services such as the newsletter's management tool and videoconferencing tools, the Eureka3D-XR project made use of certified eco-friendly providers who use renewable energy, neutralise their gas emission, work with energy-efficient hardware, and recycle their hardware. In the course of the project, we reused existing web presence instead of activating a new project website.

Project partners were encouraged to explore alternative ways to reduce carbon emissions and energy use, such as for example switching to clean and renewable energy; travelling less and only when necessary and by train instead of flying; using public transport; and reducing the use of paper documents.

The principles supported in Eureka3D-XR project, also recommended to partners for long-term implementation are the following:

- Use green energy sources: utilise renewable energy when operating 3D scanning or printing equipment.
- Optimise 3D models: reduce the complexity of 3D models by removing unnecessary polygons to minimise printing sizes and energy consumption.

- Reuse and recycle: where possible, reuse support material in 3D printing or recycle failed prints for other materials.
- Select sustainable materials: prefer eco-friendly, biodegradable materials when available.
- Thoughtful panning: balancing short-term gains against long-range ecological costs will determine true sustainability outcomes.

1.3 STRATEGIC FRAMEWORK AND REFERENCE DOCUMENTS

The EUreka3D initiative is set in a context of change for Europe, where digital innovation is driving reflections and European strategies, with the aim to promote and harmonise wide-scale access to cloud service offerings that comply with EU requirements in areas like data protection, security, data portability, energy efficiency and market practices in Europe. A conceptualisation study “[Building a European Cloud Marketplace](#)”², released in 2021, reflected on the need of supporting cloud-uptake and data transaction in the light of developing a EU Marketplace for federated cloud-to-edge-based services. This was reflected in the [Digital Europe Programme](#)³ to reinforce EU critical digital capacities by focusing on the deployment and best use of technologies such as artificial intelligence, cybersecurity, advanced computing and data infrastructure. In this scenario, and following the [Recommendation \(EU\) 2021/1970](#)⁴ on a common European data space for cultural heritage, the cultural sector is urged to improve the pace of its digital transformation, particularly around technologies like 3D, AI and XR, and to share cultural data for reuse by various stakeholders. The evolution of Europeana, the flagship EU initiative for digital cultural heritage since 2009, is at the basis of this more advanced concept of data space, and all actors in the cultural heritage sector both get the opportunity and face the challenges of onboarding the data space for data sharing, use and reuse. It is in this context that the EUreka3D initiative was funded with two data space supporting projects, first with the EUreka3D (2023-2024, GA n. 101100685) and now the continuation project EUreka3D-XR (2025-2026, GA n. 101174054).

1.4 ROLE OF THIS DELIVERABLE IN THE PROJECT

This Sustainability Plan is delivered an M13 out of 18 of project duration. The sustainability reflections started since M1 in the context of the impact assessment activities, and also leveraged the work done in the previous EUreka3D project, integrating it with additional considerations based on the continued experience and specific considerations about the sustainability of the five tools.

The Impact Assessment Report due at M18 will include a dedicated chapter that provides final considerations about sustainability at the end of the project.

² <https://digital-strategy.ec.europa.eu/en/library/building-european-cloud-marketplace-conceptualisation-study>

³ <https://digital-strategy.ec.europa.eu/en/activities/digital-programme>

⁴ <http://data.europa.eu/eli/reco/2021/1970/oj>

2. METHODOLOGY

2.1 IMPACT ASSESSMENT AS A DRIVER FOR SUSTAINABILITY

The EUreka3D initiative addressed the growing need of enabling the 3D digital transformation of the Cultural Heritage (CH) sector, in 2023-2024 focusing on supporting high quality 3D digitisation and creating an infrastructure, the EUreka3D Data Hub, to provide CHIs with a safe storage space on cloud to upload, share and manage data, metadata and paradata of 3D collections. The EUreka3D Data Hub is also a direct entry-gate to Europeana, allowing the seamless creation of datasets in the Europeana Data Model, and their publication in the common European data space for cultural heritage. The impact generated on communities by this effort was tracked and clearly assessed in the course of the project, thus providing evidence of the interest by target communities in the project's results, and particularly in the use of the EUreka3D Data Hub.

The current EUreka3D-XR project, as a continuation and upgrading of EUreka3D, is taking a step forward and expanding the services offered to CH professionals and communities to reuse 3D and other collections with tools that create XR experiences addressed to the visitors online or onsite. Also in this case, impact has been tracked since the early stage of the project, also with support of expert advice and recommendations from the project's Advisory Board (see next section 2.3 below).

All the documentation, dissemination materials and capacity building resources produced (since the first EUreka3D project and continuing in EUreka3D-XR) is another important element of which the impact is being monitored and tracked, both with quantitative measures (e.g. events attendance, downloads etc) and qualitative assessment (user satisfaction).

2.2 INTERVIEWS

To plan and evaluate the partners' position towards the sustainability of the project's results, a series of questions were posed and discussed in the consortium (see Annex II). These questions addressed the core sustainability areas which make up the chapter headings (3-7) of this deliverable. In addition, the project partners were also asked for a realistic plan that would ensure the availability and maintenance of the tangible outcomes of the project related to these areas (Annex I).

2.3 ADVISORY BOARD, FOCUS GROUPS, FEEDBACK FROM ENGAGED AUDIENCE

From the outset, the EUreka3D-XR project thought it important to set up an Advisory Board of experts on 3D and Cultural Heritage, as independent external reviews, to ensure the project to remain focused on the needs of the broader 3D community and to produce outcomes that were both achievable and useful. This Advisory Board was established, following the success of the involvement of an Advisory Board in the EUreka3D project.

Advisory Board members met twice in the early months of the project (July and October 2025). These sessions confirmed that the project's tools and scenarios were perceived as technically strong and conceptually valuable, highlighting that their adoption depends largely on sustainable learning support rather than functionality of the tools alone. As part of the Capacity Building, focus group meetings were held also with external stakeholders representing CHIs and other tools' end users. Feedback from Advisory Board and Stakeholders Group meetings contributed to the sustainability plan, particularly to the confidence that 1, 3, 5+ year sustainability is viable.

As reported in the recent D1.3 Technical Progress Report 2:

“A strategic role for impact assessment of tools and scenarios is provided by the members of the Advisory Board, who are seasoned experts in 3D, cultural heritage and XR applications. The online focus groups organised with their participation in July and October confirm that the EUreka3D-XR project is on a promising trajectory. Advisory Board members expressed strong appreciation for the quality and ambition of the three scenarios and acknowledged the progress made on the underlying tools. At the same time, they repeatedly highlighted the critical importance of user centred evaluation, robust training materials, and realistic sustainability planning. In summary, according to the AB members, the project is technically and conceptually advanced, and the tools are perceived as potentially valuable for a broad range of cultural heritage institutions. The main risks lie not in functionality but in adoption: ensuring that institutions have the confidence, skills and incentives to integrate these tools into their regular practice, and that visitors are aware of and willing to use the resulting XR experiences.”

In addition to engaging the Advisory Board and the Stakeholders Group, questionnaires were submitted to EUreka3D-XR events participants, to get concrete and measurable elements for the sustainability of the tools beyond the end of the EU co-funding period.

Finally, a programme of showcases of the EUreka3D-XR prototypes and scenarios was organised. Next to questions about quality of the event and learning, insights of tool-specific feedback were collected for future sustainability and impact assessment, as reported in the table below:

Feedback from focus groups with Advisory Board	<i>1= low; 5=high</i>
AR Tour Builder & Experience (NTUA): <i>Question: to what extent do you think the tools could be reused by other CHIs that do not participate in the project?</i>	4,3
AI 3D Builder (Swing:It): <i>Question: to what extent does the tool meet the needs of CH professionals for 3D reconstruction?</i>	3,9
3D XR Studio (Swing:It): <i>Question: how confident are you that the 3D XR Studio is appropriate for edutainment)</i>	3,7
Avatar Builder (Miralab): <i>Question: How do you rate the innovation of the Avatar builder?</i>	3,7
Feedback from Girona workshop with archivists, specifically about AI 3D Builder	<i>1=no; 5=absolutely</i>
<i>Statement: I see clear potential to use this tool in my organisation.</i>	3,5
<i>Statement: I see clear potential for other cultural heritage organisations to use this tool.</i>	4
<i>Statement: The tool aligns with our workflows and needs in 3D digitisation or content creation.</i>	3,4

3. 3D MODELS AND CONTENTS SUSTAINABILITY

In this chapter we look at the digitised contents of the Eureka3D-XR project that have been either specifically produced to meet the objectives of the project, and all the support material deemed useful to user stakeholders. For the avoidance of doubt this content is limited to the digitised content (3D models, 2D contents, and their associated information as metadata and paradata) that has been aggregated and made available to the data space as published collections in Europeana. The details of the content are listed below in 3.5.

This deliverable has separated the question of the sustainability of ‘contents’ from that of the ‘XR experiences’ produced in the pilot scenarios: while they may also be defined as ‘XR contents’, in fact XR experiences are not made available directly in Europeana, and have their own set of sustainability measures, as outlined in a dedicated chapter 7.

The project is confident that the sustainability of the contents will be 5+ years. The standards of digitising 2D items is well established, which means their long-term usability is guaranteed. Although 3D models are newer and standards are less established, the project partners have followed the highest possible measures to maximise their viability, use and re-use.

The high quality 3D models produced by the content partners of Eureka3D-XR have been published in Europeana through the Eureka3D Data Hub, as open access collections for use and reuse by a variety of professional and amateur stakeholders. The 3D models were digitised in high quality using the guidelines of the VIGIE 2020/654 recommendation, producing the current best practice standard available for the production and documentation of 3D models. Information about the production process for the models is captured with the paradata that certify the digitisation methods, its quality and complexity. Metadata are produced in collaboration with experts from the CHIs and from historic, artistic, archaeological, ... studies. Data, metadata and paradata are therefore interconnected elements that determine high quality of 3D contents. As a result of the project, the 3D models are now available for use by the broadest range of user stakeholders from public through to professionals who need a high level of detail and information, in terms of technical quality of the 3D models as well as complete and trustful information in metadata and paradata.

In addition to the 3D contents, the partners used 2D collections to enrich the XR experiences. These collections are also aggregated in Europeana, and need to be maintained in terms of online and persistent availability of data and accurate metadata maintenance when needed.

The availability of new, high quality content in Europeana, and especially 3D models of cultural heritage artifacts and sites, is in line with the efforts stemming from the EC Recommendation 2021/1970 to Member States to actively encourage cultural heritage institutions to make their digitised assets available through Europeana, and thus contribute to the data space. Maintaining and promoting high quality cultural collections and enhancing their visibility to different stakeholders in various key domains (e.g. education, smart cities and environmental modelling, sustainable tourism and cultural creative sectors) is one of the core tasks for Europeana, with evident implications in verifying and supporting the maintenance of said collections on the Europeana.eu in time.

3.1 SUMMARY OF PARTNER RESPONSES TO THE SUSTAINABILITY OF CONTENTS

The EUreka3D-XR project partners broadly agree that high quality 3D digitisation, following VIGIE 2020/654 guidelines, significantly enhances the sustainability, reliability, and long-term usability of cultural heritage 3D models. All content partners are committed to follow the guidelines, considering that the inclusion of provenance, metadata, and paradata are regarded as critical factors for professional reuse and scientific validation. While the models themselves may eventually be superseded by technological advances, the underlying datasets, documentation, and standards-based methods are considered invaluable. The content partners emphasised that VIGIE-aligned workflows support consistent quality, enable future file conversions, and facilitate reuse in XR, education, conservation, and research contexts. Long-term sustainability depends on the preservation of raw data, interoperability frameworks, and support for format migration.

Europeana relies on recommendations such as the VIGIE2020/654 to support the production of high quality 3D models. Europeana does not validate the quality of 3D models based on its technical properties, but instead on the use intended for the models. The Europeana Data Model (EDM) and the Europeana Publishing Framework (EPF) capture the requirements that support the provision of high quality metadata and content. Based on the tiers model described in the EPF, the 3D models that the EUreka3D-XR project will aggregate into Europeana are anticipated to be labelled at tier B or tier C based on the metadata and paradata provided with the model. Variations will depend on the licence provided by the content owner.

Tool developers consistently stressed that high quality models directly improve XR immersion, user comfort, and interaction accuracy. Clean topology, real-world scale, optimised geometry, and material integrity allow seamless deployment across VR, AR, mobile, and desktop environments. The VIGIE recommendations also deliver advantages such as standardisation, traceability, automatic quality certification, and easier integration into aggregators and data spaces.

Challenges to the sustainability of 3D models included the lack of standards and current lack of community support relating to preservation formats, for example long-term access and readability of 3D file formats. Also, it is thought the rapid evolution of AI and XR technologies may introduce new requirements in the future but the structured approach of EUreka3D-XR ensures that its 3D assets remain viable for at least 3–5 years, with long-term reuse possible through reprocessing of preserved raw data and paradata-rich models.

Apart from the 3D models themselves there are some additional considerations required for the accessibility of those digitised items.

3.2 ACCESSIBILITY OF 2D CONTENTS

Europeana has been aggregating 2D contents for almost 2 decades and the methodology for this is well established for content partners and CHIs. The 2D contents will remain hosted by each Content Partner who are committed to maintaining the persistence of links that Europeana needs to identify, visualise and share to users. The Content partners are contributing this content with a recommendation to be as open as possible in regards to access to maximise their use and re-use.

3.3 ACCESSIBILITY OF 3D CONTENTS

3D models have very different considerations than 2D images due to the complexity that is needed to create them and the much larger file sizes that result. Depending on the scale of the original object or site, the resulting images and files that are required to render an accurate, detailed 3D model can number from

the hundreds to several thousands of files⁵. All of the files need to be packaged, producing a sizable file, where handling and storage considerations are not often able to be addressed at an institutional level. In addition, a 3D viewer is required to visualise these 3D models. These challenges, that cultural institutions face when digitising in 3D, have all been addressed and solved by the EUreka3D Data Hub, briefly illustrated in chap. 6 and widely discussed in previous deliverables from EUreka3D⁶ project. The EUreka3D Data Hub is championed by a number of stakeholders both inside and outside the project and its cloud resources are secured until 31 December 2027 (3 years from the end of the EUreka3D project).

Published content from the EUreka3D Data Hub, all associated with a PID, will remain published without discontinuation. After this it is anticipated that a paid for service mechanism will be available as part of the envisaged competence centre. It is known that the EUreka3D Data Hub is not the only service option that is aggregating 3D content into Europeana but as far as we are aware it is the only hosting service that is run by a not for profit foundation that uses federated cloud resources from acknowledged university and academic institutions, registered and based in the EU, serving the most of the scientific data infrastructures used by the research in the EU, and which has made it the primary choice for many CHIs.

3.4 CONTENT GUARANTEES TOWARDS SUSTAINABILITY

- Content partners have guaranteed that content published and aggregated on Europeana won't be depublished or made unavailable.
- Content partners have guaranteed that the links to content from Europeana will remain stable and visible.
- Updates to content will be under the responsibility of the content providers, who remain the owners of the contents and the associated rights of exploitation if applicable.
- In addition to the content provided originally, future enrichment or update of collections (including data, metadata and paradata) will be made to the contents stored on the EUreka3D Data Hub.

3.5 FEATURES OF SUSTAINABILITY FOR EACH COMPONENT

Partners collections used to develop the scenarios are composed of 3D models and additional 2D collections (images, videos, texts, etc..). The 3D models are hosted on the EUreka3D Data Hub while the 2D collections are hosted on the institution's website. There is a commitment by content providers to keep the links alive up to 5 years after the end of the project (and ideally, forever). The use of PIDs in the EUreka3D Data Hub workflow helps the long-term preservation of online content.

The metadata are made available for publication in Europeana via the EUreka3D Data Hub (3D contents) and MINT tool (2D contents). The preparation of the datasets for compliance with the Europeana Data Model is curated by Photoconsortium as the accredited aggregators for Europeana, together with EGI (EUreka3D Data Hub) and NTUA (MINT tool). Quality checks on the datasets and final publication in Europeana.eu are curated by partner EF and its dedicated data service team.

⁵ For example, the digitisation of the Saint Neophytos Englystra in Paphos was extremely complex due to the shape of the environment, its lighting conditions and other challenges. In total 8.52GB of point cloud data (e57 format) and 1.54GB of complementary panorama imagery was acquired from nine scan positions. Photography acquired 14.58GB of data in 2,766 images.

⁶ D3.3 Final report on the EUreka3D services and resource hub: design and implementation: <https://EUreka3d.eu/wp-content/uploads/2024/11/EUreka3D-D3.3-v1.0-and-annex.pdf>

At the time of writing, the work is ongoing with expected delivery of collections, ready for publication, at the end of April 2026, also informing *D3.8 Publication of content in Europeana* as the detailed report on the 3D and 2D content used in the pilots and aggregated to Europeana/Data Space for Cultural Heritage. The collections and the connected stories from the pilot scenarios are highlighted for dissemination to a wider community of CH and other stakeholders of the data space with editorials published in Europeana.eu website and Europeana Pro.

A provisional list of items to be aggregated by each content partner is provided for reference:

Girona collections:	<p>3D content: model of the bastion, model of one tower, model of a portion of the walls</p> <p>2D content: 1 or more demonstration video, Ca. 100 engravings</p>
Bibracte collections	<p>3D content: model of the reconstruction hypothesis for the elevation of public building PC15, model of the PC2 masonry cellar, models of artefacts discovered after the digitisation for Eureka3D</p> <p>2D content: 1 or more demonstration video, 1 of the scenario and tools evaluation, 5-10 POIs content, 20-50 photographs, maps, drawings; ca. 30 audio files; ca. 15 PDF</p>
Cyprus collections	<p>3D content: Model of the Englystra (also included in Twin-it 2 campaign), model of Saint Neophytos, 1-2 models of monks</p> <p>2D content: 1 or more video, selection of ca. 100 images</p>

4. TOOLBOX SUSTAINABILITY

The EUreka3D-XR Toolbox comprises a suite of five tools (AR Tour Builder and AR Tour Experience, AI 3D Builder, 3D XR Studio, Avatar Builder) created by the EUreka3D-XR project which allows CHI curators to self-create and experiment with different types of XR applications, reusing their digital collections. Each tool is openly accessible and accompanied by easy-to-understand documentation, manuals and video tutorials.

These tools have been used to create the XR Experiences, outlined in Chapter 7, and the project sustainability commitment for the toolbox means they will be freely available and open source for CHIs, or individuals. The tools are provided by EUreka3D-XR as online services, while their source code is openly available on GitHub through which public visibility of the code itself and sustainability will be granted. This toolbox will be communicated, signposted and remain with active links from the main project website - EUreka3d.eu.

Unlike the Contents described in chapter 3, a main consideration of sustainability for the toolbox is whether the Tools will be relevant in the long-term, i.e. 5 years and beyond. This concern is mainly due to the rapid development of 3D technology, AR frameworks, mobile phone capabilities and operating systems. Another concern is related to the incorporation of AI to enhance and realise creative ideas, which when there is limited core knowledge, may lead to untrustworthy and inconsistent results. In the interview questions we asked the partners for their insight and experience into the sustainability of the toolbox.

A challenge for the sustainability of the toolbox is the ongoing IT maintenance activities, both economic and in effort. This is not uncommon for projects of this nature and specifically burdensome for SMEs who don't have broad resources without guaranteed funding. In this project the software tools are released as open source solutions and this provides many advantages, one of which is also the implicit shifts of maintenance and sustainability towards the involved open source community of users and re-users. Ongoing support by tool developers is however offered, and is likely focused on resolving critical issues affecting the tool, when not related to third party software. Another advantage of relying on an open sourced community for maintaining the tools is a faster engagement for new developments and includes external stakeholders by fostering a much broader potential use of the project results.

4.1 SUMMARY OF PARTNER RESPONSES TO THE SUSTAINABILITY OF THE TOOLBOX

Feedback across partners shows that the XR tools developed within EUreka3D-XR are considered intuitive, accessible, and well-suited for non-technical users. Their interfaces resemble familiar CMS and other digital platform environments, lowering the learning curve for CH professionals. Overall, CHIs can effectively use the tools for small to medium-scale projects, though complex VR experiences may still require specialist support.

Tool developers emphasise that the tools are deliberately designed to require only basic IT skills, avoiding the need for coding or advanced 3D expertise. Extensive documentation and templates allow CHIs to create meaningful experiences with their own models.

Longevity of the tools is expected to be strong over the next 1–3 years, with uncertainty increasing beyond five years due to evolving mobile operating systems, XR frameworks, and hosting requirements. The project is viewed as a significant contribution to the democratisation of XR creation, aligning with a broader trend

toward reusable, modular, and open XR tools for the CH sector. Partners expect increasing adoption as more institutions seek to integrate XR into visitor interpretation and digital engagement strategies.

We also asked the Advisory Board about the relevance of the Toolbox. As previously mentioned, a key takeaway from the Advisory Board was that the main concern is not whether the tools will remain technically adequate in the long-term, but rather that their continued usefulness strongly depends on the quality and availability of sufficient information and documentation, enabling the intended audiences to reuse the tools. To address this, significant efforts have been made by the project partners to create detailed documentation, manuals and video tutorials to give the tools the best opportunity to be understood and used in the long-term.



QR code: Eureka3D-XR Toolbox manuals⁷

4.2 TOOLBOX GUARANTEES TOWARDS SUSTAINABILITY

- The software of the tools developed in the project will be published under an open source licence. Each IT Development partner has chosen an open source licence for its developed code.
-
- The Tools - software and open content - will be published on Github. Alternative European-based platforms that give access to open source software are under investigation.
- The maintenance of the tools will be provided by the developing partners (NTUA, Swing:It, Miralab), members of Eureka3D-XR consortium, in accordance with the Grant Agreement. The sustainability is granted through the setup of the proper GitHub account which will host the source code, openly available.
- The tools source code will remain freely available and open source.

4.3 FEATURES OF SUSTAINABILITY FOR EACH COMPONENT

- AR Tour Builder: An online web application; available openly online (as source code and as a service); developed and supported by NTUA.
- AR Tour Experience: A mobile app; available openly online (as source code and as a downloadable app); developed and supported by NTUA.

⁷ <https://Eureka3d.eu/Eureka3d-xr-toolbox/>

- AI 3D Builder: pipeline⁸; the tool is made available openly, promoted on the data space for cultural heritage; developed and supported by Swing:It.
- 3D XR Studio: bundling an online web component and a mobile one; the tool is made available openly, promoted on the data space for cultural heritage; developed and supported by Swing:It
- Avatar Builder: framework, procedural guidance and tutorial; reusable datasets and step-by-step guidance are accessible via the project website and promoted on the common European data space for cultural heritage; developed and supported by MIRALab.

⁸ A pipeline is a structured sequence of interconnected processes in which the output of each stage constitutes the input of the subsequent stage. It is not a tangible product or standalone application, such as a web app, but rather an organisational and procedural model used to structure and automate workflows.

5. INFRASTRUCTURE SUSTAINABILITY

The beta testing of the EUreka3D Data Hub was launched at the end of 2023 and promotion was initiated by Photoconsortium and other partners in the context of the EUreka3D project. In addition to project partners, the year 2024-2025 saw a growing number of institutions interested in testing and using the platform. While the numbers witnessed today do not represent yet a critical mass, it is an encouraging signal from the community of CHIs dealing with 3D collections of interest in the services of the EUreka3D Data Hub.

The EU's drive towards 3D digitisation of cultural heritage, which is pushing for the mass digitisation of at-risk monuments and sites by 2030, in order to create a shared data space supported by initiatives like Twin it! and projects like EUreka3D-XR, has shown slow progress: according to a recent report⁹ that assesses the progress as of November 2023, Member States are well behind in meeting the ambitious 2030 targets, with ca. 16 million 3D digital assets still needed to reach the target, which currently seems unrealistic. Nevertheless, significant growth and an acceleration in the pace of CHIs for creating and sharing of 3D content in Europeana is expected, and this is the market segment for which EUreka3D Data Hub offers a comprehensive solution. With an appropriate and targeted communication and marketing campaign, possibly endorsed by a joint effort with Europeana to support the EUreka3D Data Hub as a key tool for joining the data space with 3D content, it is expected a growth in the number of CHIs and national aggregators joining the community of users across Europe.

5.1 SUMMARY OF PARTNER RESPONSES TO THE INFRASTRUCTURE

Partners agree that the EUreka3D Data Hub plays a central role in providing secure, EU-based, and culturally focused infrastructure for hosting, preserving, and sharing 3D models. Prior to the hub, CHIs relied on fragmented systems, local servers, offline storage, temporary project platforms, often lacking long-term preservation features, or non-European platforms. The Data Hub's integration with Europeana and support for metadata and paradata make it attractive as a primary hosting platform. Interoperability is considered essential by all partners, as it ensures visibility, reuse, and compliance with aggregation standards. The EUreka3D Data Hub can act as an intermediary service provider in the context of the data space for cultural heritage.

Europeana confirmed that data sovereignty is very important and although they do not impose any restrictions to the hosting platforms that CHI Content Providers use, they are supportive of an EU based solution such as the EUreka3D Data Hub to allow a viable alternative to non-EU corporate platforms such as Sketchfab. Europeana also stressed the importance of maintaining control and the security of raw models for preservation purposes which can be a different consideration to the hosting of 3D models purely for general dissemination and use. In fact, the interoperability with EUreka3D Data Hub has been tested successfully by the e-Ark initiative.

In dedicated questions to EGI, they confirmed that the infrastructure is technically scalable through additional compute and storage resources, though sustainability depends on long-term funding, service contracts, and operational support.

Cost remains an important factor, with CHIs willing to pay for sustainable, reliable services that remain accessible to institutions of various sizes. Long-term viability depends on sustained investment, maintenance,

⁹ <https://digital-strategy.ec.europa.eu/en/news/eu-report-calls-member-states-accelerate-digitisation-cultural-heritage>

and alignment with evolving digital infrastructure standards, but partners express confidence that the hub can serve as a long-term foundation for 3D heritage storage and distribution.

5.2 FEATURES OF SUSTAINABILITY FOR EACH COMPONENT

The EUreka3D Data Hub is a suite of tools and services as listed below.

Storage resources: in EUreka3D, the EGI DataHub is the backbone of the infrastructure, enabling CHIs to access a virtual data space and use storage and computing resources to manage their 3D assets. In this secure environment, data, metadata and paradata can be stored, managed, shared and published in a user-friendly and integrated manner.

Computing resources: EUreka3D Data Hub uses EGI's Cloud Computing to provide servers dynamically. These servers are created using Virtual Machines (VMs) which are software components that run on physical hardware and emulate and provide the functionality of a physical computer system. Consequently, this infrastructure is virtual, not physical, thus being flexible to change according to the project needs.

AAI: EUreka3D Data Hub uses EGI Check-in, a federated access and identity management system compatible with EOSC (European Open Science Cloud) AAI. Check-in supports the protection of assets, and the organisation of the EUreka3D community, categorising users into different groups according to their responsibilities and access capabilities. Built on modern, industry-standard technologies such as OIDC and SAML, Check-in supports a wide range of identity providers, delivers secure Single Sign-on (SSO), enables advanced identity management, and ensures full GDPR compliance.

3D viewer: EUreka3D provides a viewer to support the visualisation of 3D models, it is fully compatible with Europeana and embeddable on the web. To complement this viewer, a viewer with advanced 3D animation capabilities is being developed by partner MIRALab, and being tested for integration in the EUreka3D Data Hub and Europeana.

Metadata editor tool: users of the EUreka3D Data Hub can associate metadata to their stored 3D objects, through a user-friendly form and a more advanced RDF/XML editor. The metadata editor tool is based on the Europeana Data Model.

PID assignment: this service is supported by EUDAT's B2HANDLE, a European initiative to release and manage PIDs (Persistent Identifiers) to ensure long-term preservation of digital objects, with which a collaboration was established by the EUreka3D project.

OAI-PMH endpoint: an OAI-PMH endpoint used for transferring metadata to external systems, specifically, but not limited to, the Europeana platform. This allows public data to be shared in EDM RDF/XML format, exposed via OAI-PMH for indexing, ensuring it is easily discoverable in line with FAIR principles.

Aggregation: supported by Europeana and accredited aggregator Photoconsortium, this service enables the metadata to be quality-checked against the Europeana Publishing Framework and finalised for publication to Europeana.

5.3 INFRASTRUCTURE GUARANTEES TOWARDS SUSTAINABILITY

The sustainability and continuation of the EUreka3D Data Hub is critical for the sustainability of the data produced in the project and, more broadly, to the outcomes of EUreka3D-XR. The integration of EUreka3D-XR into the common European data space for cultural heritage will maintain the necessary alignment of the project with the wider EU initiatives, contributing to the long-term sustainability of the project.

Besides this, investments and commitment from partners are needed to support the growth of the infrastructure. In this regard, partner EGI has established a Service Level Agreement (SLA) with the EUreka3D project to guarantee operation until the end of 2027. This includes the maintenance of the different components of the EUreka3D Data Hub, as indicated in Section 5.1.

Beyond this time, sustainability of the EUreka3D Data Hub is linked to the development of pay-per-use mechanisms, initially explored already at the end of the EUreka3D project and illustrated in D3.3 “Final report on the EUreka3D services and resource hub: design and implementation”¹⁰, that would be at the core of activities for partners under the umbrella of the EUreka3D Competence Centre.

To support the market analysis currently being carried out to develop a comprehensive business model for the EUreka3D Data Hub, a survey on the potential market¹¹ was launched in Fall 2025 across the EUreka3D partners' networks to gather stakeholder feedback to support informed decision making. The survey remains open to additional stakeholders and its results will be considered in the next Impact Assessment Report.

To ensure sustainability of the EUreka3D Data Hub, the following is needed:

- In the Short-term (1 year): Securing funding and formalising key contracts (SLAs and OLAs).
- In the Mid-term (2-4 years): Establish multi-year contracts that provide predictable revenue streams, along with stronger validation from the customer perspective.
- In the Long-term (5+ years): In addition to the established contracts, engage in joint scaling discussions (capacity plan from the perspective of how the service will grow).

¹⁰ <https://EUreka3d.eu/wp-content/uploads/2024/11/EUreka3D-D3.3-v1.0-and-annex.pdf>

¹¹ <https://forms.gle/XniFvcMRobA8cmb16>

6. LEARNING AND COMPETENCE CENTRE

“Knowledge transfer is a key outcome of both Eureka3D and Eureka3D-XR. 3D digitisation is still a nascent area for many, and to make informed decisions about their 3D digital journey they need to be aware of the developments and best practices that are being demonstrated by the leading professionals in the sector. During both projects a large amount of information has been written, gathered and recorded from online and published articles, professional blogs (such as Europeana Pro Blogs), webinars, workshops and dedicated sessions, including those with the Eureka3D-XR Advisory Board. The discussions have been taken further by connecting with partner networks of cultural heritage professionals such as the International Council of Archives and the networks of the Europeana Aggregators Forum. The case studies that have been produced by the XR scenarios in the project serve as a lasting example of best practice, as well as online at the project website¹² and many other dissemination channels.

Eureka3D is committed to maintaining this information as a valuable resource for the 3D digital transformation and as a foundation to build and develop ideas and innovation. To widen access, many of the publications have been translated to several EU languages.

In an extension of the Eureka3D, the XR project produced an open online training course¹³ in partnership with the Europeana Academy.

Overall, the knowledge that has been shared, and will continue to be shared, will have a positive impact on all of the stakeholders of 3D for many years to come, to innovate methodologies and workflows, and to support the implementation of standards to improve the preservation and use of Cultural Heritage digital memory twins.

In regard to sustainability, the knowledge gained in the Eureka3D-XR project is available in the project website, as well as via external websites such as Europeana as detailed below. As an informed resource of the 3D transformation in the culture heritage sector as it stands today, that will remain published. However, to build on this knowledge, progress research, foster ideas and assess and adopt new technologies and standards, would require a commitment by all partners and a coordination of responsibilities beyond the end of the funding period. Eureka3D and Eureka3D-XR have continued to discuss and recommend a dedicated competence centre on 3D to facilitate the ongoing knowledge transfer of 3D Cultural Heritage practices and to support the Eureka3D Data Hub. This is described in 6.3.

6.1 SUMMARY OF PARTNER RESPONSES TO THE SUSTAINABILITY OF THE KNOWLEDGE TRANSFER

Knowledge transfer is recognised across partners as a vital element for ensuring the long-term success of 3D digitisation and XR adoption in the cultural heritage sector. Eureka3D-XR has delivered training, webinars, workshops, and expert-guided dissemination that empower CHIs to build internal capacity and reduce dependency on external vendors. Partners highlight that shared methodologies, best practices, and openly communicated workflows help prevent low quality or ethically problematic digitisation while supporting the development of sector-wide standards. Many believe that the project provides foundational guidance that will inform practices for years to come. Networking impacts have also been significant, expanding

¹² <http://Eureka3d.eu>

¹³ https://europeana.mocit.fr/courses/course-v1:europaana+Eureka3D01+2024_Q3/about

collaboration between CHIs, technology providers, and research institutions. The project has created opportunities for cross-disciplinary exchange, which partners consider essential for future innovation.

Tool developers note that the knowledge produced supports more efficient workflows, improves user understanding, and accelerates tool adoption.

Continuation of knowledge transfer is considered critical: without it, expertise would fragment, innovations would lose momentum, and CHIs would struggle to stay aligned with rapid technological change. Several partners support establishing competence centres to maintain training, ethical guidance, and technical alignment, ensuring that momentum continues beyond the project's duration.

6.2 FEATURES OF SUSTAINABILITY FOR EACH COMPONENT, AND RESPONSIBLE PARTNER

Website: [EUreka3D.eu](http://www.EUreka3d.eu): The project website originally created for project EUreka3D (2023-2024) has been reused and expanded with specific features and additional pages about the outcomes, events and resources of EUreka3D-XR, under the subpage <http://www.EUreka3d.eu/EUreka3d-xr>. The website therefore collects all information from both projects, in a continuity that allows users to access materials, reports, recordings of events from 2023 onwards. The website is under the responsibility of partner CRDI.

Blog on [digitalmeetsculture online magazine](https://www.digitalmeetsculture.net)¹⁴: similarly to the website, this blog was created since the beginning of EUreka3D project and kept updated and animated with posts and news about the progress of EUreka3D-XR, also offering a tool to redirect readers of Digitalmeetsculture magazine to the project website. The blogs are in fact featured on the website home page via a RSS mechanism. The blog is under the responsibility of Photoconsortium.

Social media: The entirety of the progress, achievements and history of EUreka3D-XR is recorded and can be tracked through the project's main social media channels, managed by CRDI. To build on the visibility and audience already established through the previous EUreka3D initiative, the existing social media accounts are being reused, with updates to the profile names and visual identity to reflect the new phase of the project: [Instagram](https://www.instagram.com/EUreka3d_xr/)¹⁵ (with 212 followers to-date) and [LinkedIn](https://www.linkedin.com/company/EUreka3d-xr/)¹⁶ (with 720 followers), and through its [X](https://x.com/EUreka_3d)¹⁷ (with 293 followers) page up until February 2026. More updates on the project and related initiatives can be found on the project's blog page and related social media ([Facebook](https://www.facebook.com/Digitalmeetsculture/)¹⁸ with 1908 followers, [LinkedIn](https://www.linkedin.com/in/digitalmeetsculture-net-47a4695a/?locale=en_US)¹⁹ with 2478 followers, [X](https://x.com/digitalMculture)²⁰ with 1190 followers). Project's coordinator Photoconsortium also contributes to dissemination work by the means of its own channels ([Facebook](https://www.facebook.com/PhotoConsortium/)²¹ with 1182 followers, [Instagram](https://www.instagram.com/photoconsortium/)²² with 212 followers, [LinkedIn](https://www.linkedin.com/company/107460588/admin/dashboard/)²³ with 152 followers, [X](https://x.com/PhotoConsortium)²⁴ with 659 followers). The variety of social media platforms used for dissemination by the project partners is kept accessible under responsibility of the respective partner, not

¹⁴ <https://www.digitalmeetsculture.net/projects/EUreka3d-blog/>

¹⁵ https://www.instagram.com/EUreka3d_xr/

¹⁶ <https://www.linkedin.com/company/EUreka3d-xr/>

¹⁷ https://x.com/EUreka_3d

¹⁸ <https://www.facebook.com/Digitalmeetsculture/>

¹⁹ https://www.linkedin.com/in/digitalmeetsculture-net-47a4695a/?locale=en_US

²⁰ <https://x.com/digitalMculture>

²¹ <https://www.facebook.com/PhotoConsortium/>

²² <https://www.instagram.com/photoconsortium/>

²³ <https://www.linkedin.com/company/107460588/admin/dashboard/>

²⁴ <https://x.com/PhotoConsortium>

only over the active duration of the project, but also after it will have ended, to help reach a wide range of different kinds of audiences.

Newsletter: EUreka3D-XR project has adopted a regular newsletter as one of its central outreach tools. The newsletter is designed to reach and engage a broad range of target audiences, including project partners and stakeholders, professionals from cultural heritage institutions, 3D digitisation and XR service providers, cultural tourism professionals, end-users, educators, researchers, and representatives of the creative industries. The main goals of the newsletter are to share project outcomes and publications, and promote events, specifically the capacity building programme developed within the project. To ensure continuity and capitalise on the outreach already built through the previous EUreka3D project, the existing newsletter platform and subscriber base are reused and increased along the current project and will possibly be used also beyond the project term to keep contacts with the network of stakeholders and followers. The responsible partner is CRDI.

Course on Europeana Academy: a first course developed from the 3D digitisation guidelines created in EUreka3D project is now published on the [Europeana Training Platform](#)²⁵. Expansions of the course with focus on XR will be available by the end of the project. Both resources are self-paced and can be completed autonomously by the learners. The training platform itself is maintained by Europeana.

Webinars: recording of the webinars and of the hybrid events are published on [Youtube](#)²⁶, also collected in Playlists for easier access and retrieval by interested audiences. The EUreka3D Youtube channel is maintained by CRDI.

Editorials on Europeana and data space: Collections and galleries from the project content providers, blogs and stories from project cases, information about events, tools and resources are regularly published in various channels maintained by partner EF such as the [Europeana.eu](#) website, the Europeana Pro blog and the new website for the data space. All editorials, including those from EUreka3D project are collected in a dedicated [landing page](#)²⁷ maintained by EF. Possible migration of Europeana Pro blogs to the new data space website may happen under the responsibility of EF, with guarantee that no content will be lost.

Photoconsortium Educational Portal [dedicated section](#)²⁸: A page dedicated to all the learning outcomes and tools from the EUreka3D and EUreka3D-XR projects is featured on Photoconsortium's online portal that showcases and promotes educational resources. The page highlights the available resources, including the digitisation guidelines, the online courses, the use cases, information about the XR scenarios and tools and about the EUreka3D Data Hub. The Educational Portal is under the responsibility of Photoconsortium.

Final Booklet - *3D and XR in the European Digital Cultural Heritage*. At the time of writing, the final booklet is in the making, conceived as a tangible record of the knowledge gathered and disseminated in the EUreka3D-XR project that acts like a user guide to the 3D/XR transformation in cultural heritage sector that will have a lasting impact for many years to come. It will be available in printed form at the end of May 2026 for distribution at the final event of the project in Cyprus. Updates at the end of the project will be published as online resources on the website. It follows and complements the final booklet of the EUreka3D project

²⁵ https://europeana.moocit.fr/courses/course-v1:europeana+EUreka3D01+2024_Q3/about

²⁶ https://www.youtube.com/@EUreka_3DXR

²⁷ <https://www.europeana.eu/it/EUreka3d>

²⁸ <https://www.photoconsortium.net/educationalportal/EUreka3d/>

that is maintained as an open access resource. The online version will be maintained on the project website by CRDI. In addition, CRDI guarantees that possible remainders of physical copies of the booklet will be distributed to interested stakeholders.

6.3 EUREKA3D COMPETENCE CENTRE

The 'Eureka3D initiative' is referred to here as the combination of the outcomes produced by the EUreka3D project co-funded by the EU under the contract no. 101100685 and the EUreka3D-XR project co-funded by the EU under the contract no. 101174054.

The EUreka3D initiative has set-up and deployed a secure and trusted Data Hub and associated support services to enable the organisations from the cultural heritage sector to participate in the implementation of the EC Recommendations 2021/1970 accelerating the 3D digitisation of their collections.

To continue the efforts of the EUreka3D and EUreka3D-XR projects, a Competence Centre operated by the partners after the end of the EU co-funding period will combine technical infrastructure with governance mechanisms to ensure an easy and secure cross-border access to key datasets in the cultural sector, facilitating at the same time content co-creation, co-distribution and cross-media narratives in the virtual worlds.

The platform developed by EUreka3D and EUreka3D-XR, made of tools, services, guidelines and manuals has been proposed to the European CHIs that have replied very positively. A good number of collection owners uploaded their 3D contents in the EUreka3D Data Hub, participated in the capacity building events, attended the series of webinars run between 2023-2024- 2025, and experimented the use of the EUreka3D-XR tools to create new XR experiences. On the basis of their encouraging feedbacks and because of the interest that several CHIs are expressing in the EUreka3D initiative, we consider the establishment of the EUreka3D Competence Centre to be the most effective way to ensure the continuation and long-term impact of the project's successful results.

The Centre is conceived as a not-for-profit initiative whose operations are coordinated by Photoconsortium, with a strong liaison with the other partners from EUreka3D and EUreka3D-XR consortia who are willing to participate in the new venture. This liaison can guarantee access to leading organisations whose expertise lies in digital heritage, data management, e-infrastructures, high quality 3D digitisation, immersive technologies and much more, as described in the previous chapters. The initial coordination role of Photoconsortium will guarantee a seamless transition from the project's set-up to the full deployment phase, for which a sound governance plan will be agreed among the partners joining the new Competence Centre.

Together, the members of the EUreka3D Competence Centre will ensure a holistic approach, connecting technological innovation, cultural expertise, and educational excellence.

This new Competence Centre aims to bring to market a comprehensive suite of services and tools designed to support CHIs in the complex process of 3D digitisation of collections, sites, and monuments. Building on the achievements and methodologies developed within the EUreka3D initiative, the Competence Centre serves as a sustainable and long-term hub for innovation, training, and collaboration in digital heritage preservation.

The EUreka3D Competence Centre continues and expands the mission of the two predecessor projects (namely EUreka3D and EUreka3D-XR) by offering end-to-end expertise in:

- Consultancy, training, and research in 2D/3D and audiovisual data acquisition for cultural heritage;
- Digitisation services, including implementation and data acquisition;
- Quality assurance and validation of digitisation results;
- Transformation of point clouds into 3D models;
- Capacity-building and educational programs, including training events and publications;
- Management and maintenance of the EUreka3D Data Hub, offering storage, archiving, computing services, AAI integration, and 3D viewing capabilities;
- Aggregation of digital cultural content to Europeana
- Interface with the European Collaborative Cloud for Cultural Heritage (ECCCH)
- Collaboration with other existing and emerging data spaces;
- Support for the customisation of EUreka3D-XR tools and creation of new XR/AR/VR experiences;
- Participation in cutting-edge research projects in the field of digital cultural heritage.

Unlike many initiatives dependent solely on European funding, the EUreka3D Competence Centre is planned with a self-sustaining business model. At its run-time full implementation phase, its operations will be financed through the provision of pay-for-service consultancy, training and competitive annual subscription to the storage and computing services of the EUreka3D Data Hub, ensuring fair remuneration for participating partners and long-term sustainability of the Centre.

Within the scope of a not-for-profit business, all profits will be reinvested to improve infrastructure, expand the Data Hub, and produce new best practice and educational resources.

The perspectives of sustainability of the EUreka3D Competence Centre have been the core part of the discussion at the EUreka3D-XR project meeting held in Brussels in September 2025. The plan to create a new limited company was considered at the meeting and eventually postponed to a more mature phase of the 3D digitisation campaign by the targeted CHIs whose commitments are still under development.

A mediation role could be played by national bodies (e.g. the Europeana national aggregators) supporting the Competence Centre, where the customers of the EUreka3D Competence Centre are either the CHIs within the framework of direct contracting relationships with the Centre and/or national agencies appointed by the Member States to support the implementation of the EC Recommendation of 2021.

6.3.1 Reference scenarios of representatives use cases

The following table provides an indication of the potential for the interest and long-term sustainability of the business and implementation plan for the Competence Centre.

The basic service shared by all the customers of the Competence Centre is the access to the storage and computing resources provided by the EUreka3D Data Hub, PID, aggregation to the data space, interoperability with the eArk initiative, plus the attendance to selected training and capacity building activities.

Special services may be customised on the basis of the needs expressed by the individual customers, ranging from metadata and paradata management, ad-hoc training, 3D digitisation, etc.

It is worth reminding here that quality is a major matter that the EUreka3D-XR Competence Centre intends to address. Where other platforms might accept content to varieties of quality and associated metadata and paradata, the EUreka3D Competence Centre will support customers in achieving high quality data in line with

the VIGIE 2020/654 guidelines. The aim is a holistic approach that connects 3D geometrical information with cultural and historical context, rich descriptive and technical information composing metadata and complete paradata describing the process and the technology adopted for the actual digitisation exercise.

Customer type	Requirements				
	Business	Technological	Legal	Functional	non-Functional
Museum of national scope	Direct negotiation Pay-per-use: - Data Hub - Training - Customisation of tools - Access to other complementary services	- Compatibility with the metadata/paradata model of the museum - Viewer features appropriate for the museum's 3D contents - Integration with long-term preservation services	Protection of IPR - DEA for aggregation to Europeana, if not already signed	Interoperability with national infrastructures	Integration with the national digital strategy
Local Museum	Preferable negotiation through national aggregator Low price for annual subscription	Implementation of EDM compatible metadata format	- Protection of IPR - DEA for aggregation to Europeana, if not already signed	Ease of use	Integration with local/regional digital strategy
Archive	Preferable negotiation through domain aggregator Annual subscription	Mapping of the model of the archive to EDM	- Protection of IPR - DEA for aggregation to Europeana, if not already signed	Interoperability with specific systems and formats of the archives sector	Integration of archival documentation with contemporary real-life scenarios and community story-telling
Archaeological site	Direct negotiation Pay-per-use: - Data Hub - Training - Customisation of tools - Access to other complementary services	Mapping of the model of the site's digital collection to EDM	- Protection of IPR - DEA for aggregation to Europeana, if not already signed	Interoperability with specific systems and formats of the archaeology sector	Re-connecting museum's objects with physical places
Library	Depending on the	Mapping of the	- Protection of IPR	Interoperability	- Elaboration of

	scale of the 3D collections resulting in direct negotiation or negotiation through national or domain aggregators	model of the 3D digital collection of the library to EDM	- DEA for aggregation to Europeana if not already signed	with specific systems and formats of the library sector	library contents with community story-telling - Connecting library contents with library archives, photo-libraries
Private collection owner	Direct negotiation Pay-per-use: - Data Hub - Training - Customisation of tools - Access to other complementary services	Mapping of the model of the 3D digital collection of the private organisation to EDM	- Protection of IPR and business copyrights. - DEA for aggregation to Europeana if not already signed	Interoperability with specific systems and formats of the individual collection owners	Story-telling and collaboration for new editorial productions
Association	Agreement for mediation services	Study for the compatibility of data, metadata and paradata of the associated institutions with major standards, including EDM	- Implementation of the rights statements required by the associated organisations. - The relationship between the association and its members is not under the responsibility of the Data Hub.	N/A	Story-telling and collaboration for new editorial productions, in agreement with associated collection owners
Aggregator	Agreement for mediation services	Compatibility of the EUreka3D Data Hub with data, metadata and paradata formats of the aggregated institutions	- Service Level Agreement establishing the legal responsibilities of the EUreka3D Data Hub towards the aggregator. - The relationship between the aggregator and its members is not under the responsibility of the Data Hub.	N/A	Promotion of the use of the EUreka3D-XR tools to encourage the development of new scenarios
National	Direct negotiation	Mapping of the	- Protection of IPR	Interoperability	Story-telling and

cultural entity	Pay-per-use: - Data Hub - Training - Customisation of tools - Access to other complementary services	model of the 3D digital collection of the national cultural organisation to EDM	- DEA for aggregation to Europeana, if not already signed	with specific systems and formats of the entity	collaboration for new editorial productions
Picture library	Direct negotiation Pay-per-use: - Data Hub - Training - Customisation of tools - Access to other complementary services	Mapping of the model of the 3D digital collection of the picture library to EDM	- Protection of IPR - DEA for aggregation to Europeana, if not already signed	Interoperability with specific systems and formats of the picture library	Story-telling and collaboration for new editorial productions
Cultural and Creative Enterprise	Direct negotiation Pay-per-use: - Data Hub - Training - Customisation of tools - Access to other complementary services	Compatibility of the EUreka3D Data Hub with the development environment of the enterprise.	Business agreement	Technical support for the re-use of the EUreka3D-XR tools	Granting access to open-source software
University/Academy	Collaboration agreement	Compatibility with standards	Consortium agreement to regulate a possible participation in the Competence Centre	Interoperability with the research institutions systems	Launch of new collaboration projects

7. XR EXPERIENCES

There are 3 XR experiences that are being produced in the project to act as demonstrator and case studies for the application of the tools:

- Virtual Girona: Discovering the Historical Walls; by partners CRDI and Swing:It
- The AR narrative of the hidden side of the Bibracte archaeological site; by partners BIBRACTE and NTUA
- The creation of a new life of Saint Neophytos' Enkleistra in Cyprus in the virtual space; by partners CUT and MIRALab.

In all three case studies, it must be stressed that these are prototype proof-of-concept implementations of the tools and methods developed within the EUreka3D-XR project and should be understood both in those terms and in the context of “real-world” virtual experience implementations with defined budgets and timescales. The focus with this outcome of the project should therefore not be on the sustainability of the experiences created but on the applicability, sustainability and ease of implementation for the tools and processes developed to create these exemplar scenarios and experiences.

The XR Experiences were created from the 3D Models (contents), as described in Chapter 3, and built from the Tools in the XR Toolbox, as described in Chapter 4. These experiences were treated as demonstrator case studies and formed the best practice Scenarios which were a basis for much of the capacity building and knowledge transfer, as described in Chapter 6.

These XR experiences are stand-alone developments and are technically usable at the featured sites to engage visitors (users). There is also an additional online VR experience for the Saint Neophytos' Enkleistra in Cyprus which offers a fully 3D rendered experience without any physical connection to the site. The content used to create the experiences, together with a full description of the context, stories, development, lessons learnt and challenges encountered, are made available to the CH community via the data space for cultural heritage (collections published in europeana.eu, case studies and pilots' stories promoted via Europeana Pro).

Although the XR Experiences were demonstrator pilots, they can be classed as a tangible outcome and in a sense 'content'. As they are site specific, the sustainability of the experiences relies on the benefits that the institutions, in charge of those sites, see and the visitor demand and engagement that may prioritise the life of the product. The sustainability of the XR Experiences (including further extensions) is under the responsibility of the pilot coordinators (Bibracte, CRDI, CUT) who have established the agreement with the actual content providers (site owners).

A realistic lifespan for the XR experiences to be used on site would be around 12 months, based on various factors such as: response from users; novelty of the experience and needs for upgrade and improvements; durability of equipment and compatibility of the software; changes in the digital strategy of the leading institutions according to changed needs and priorities. For these reasons the commitment of CRDI, Bibracte and CUT remains linked more to maintaining the collections and documentation of the three XR experiences available for online access, rather than ensuring that the XR experience would still be available on site in the long-term.

The sustainability of having the XR experience available for 5+ years in fact seemed less of an issue compared to whether the XR experiences would actually be used by visitors in 5+ years. In this regard, the experiential feedback from the interview questions were an important validation that IT developed engagements reliably have a sustainable future even when that technology may be superseded.

What remain sustainable are the lesson learnt by the pilot coordinators, who declared their willingness to continue to experiment the creation of XR/VR/AR applications, as continuation of the Eureka3D-XR experience, in the same and/or new settings. These lessons will be sustained after the end of the EU co-funding through the dissemination of the Final Booklet of Eureka3D-XR case studies, written by CHIs for CHIs.

7.1 SUMMARY OF PARTNER RESPONSES TO THE SUSTAINABILITY OF THE XR EXPERIENCES

Partners unanimously recognise that XR significantly enhances engagement with cultural heritage content by providing context, narrative depth, and physical interaction that surpasses static 3D models.

For CHIs, XR allows users to explore monuments, artefacts, and environments at real-world scale, encouraging embodied learning and deeper emotional connections. Early demonstrations at sites confirm increased user interest and intuitive interaction patterns. XR also enables the reconstruction of lost or fragmented heritage, empowering visitors to understand historical contexts that would be inaccessible otherwise.

While institutions vary in their formal digitisation strategies, most incorporate XR opportunistically within broader digital transformation programmes. Lifespan expectations for XR experiences generally range between three and ten years, depending on installation type, technological maintenance, and content refresh cycles. Developers note a growing demand for XR in tourism, education, and museum interpretation, with projections indicating continued expansion.

AI reduces production bottlenecks yet raises expectations for quality and storytelling complexity. Despite high development costs, modular asset pipelines and open standards improve long-term value. Across the project, XR experiences created through Eureka3D-XR are expected to remain fit for purpose for at least 1–5 years, with adaptability and content quality supporting longer-term relevance when sustained by appropriate updates and technical support.

7.2 ACCESSIBILITY OF XR EXPERIENCES

As stand-alone products, the availability of the XR Experiences are tied to the featured sites, and accessed by users via an app, installed either in a mobile device in CRDI and Bibracte, or on a Virtual/Mixed Reality headset in the case of Saint Neophytos. This implies a variety of challenges linked to the availability and maintenance of the equipment and software, and therefore needs resource allocation and planning in the medium and longer term. However, the evaluation of cost/benefit of the continued use of the application on site depends on the user feedback, which can be assessed only after a reasonable timeframe.

The pilot coordinators CRDI, BIBRACTE and CUT, in collaboration with the technical partners Swing, NTUA and MIRALab, are therefore committed to promote and use the application at their sites for the next 12

months after the end of the project, and assess the results to plan further actions. However, as indicated above, there is a commitment to maintain the collections, documentation and use cases accessible for consultation by other CHIs to learn and replicate the experience in their own contexts, with no specific expiration date foreseen (cfr. chapter 3 about content and chapter 6 about learning resources).

7.3 FEATURES OF SUSTAINABILITY FOR THE SCENARIOS

Virtual Girona: Discovering the Historical Walls.

- *1 year after the project's end:* Towards the end of the project and immediately after, a public rollout of the XR experience is planned, through on-site guided visits along the virtual walls, coordinated by CRDI after project completion, for citizens, visitors, and local stakeholders to experience the virtual reconstruction in situ. To complement the digital experience, CRDI foresees the production of a physical 3D-printed model of the reconstructed walls, intended for exhibition in a public space.
- *3-5 years after the project's end:* All validated 3D models and related documentation will be preserved and shared through the EUreka3D Data Hub, ensuring long-term accessibility and reuse. Selected 3D models, supporting 2D materials, and a video presenting the XR experience will be published on Europeana, contributing to the wider European digital cultural heritage ecosystem and enabling future research, education, and creative reuse. Depending on the reception of the virtual app and the onsite visits in the first year after the project, possible continuation and expansions of the experience may be considered by the Girona municipality.

The AR narrative of the hidden side of the Bibracte archaeological site:

- *1 year after the project's end:* following iterations of user testing, work will focus on finalising the overall narrative of the scenario “The Hidden Face of Bibracte” and on the definitive structuring of the points of interest. The selection of complementary content will be refined to ensure a balance between documentary richness, clarity, and accessibility for the general public. Various user engagement and local dissemination activities will promote awareness of the scenario and tools and support their appropriation by professionals in culture, education, tourism, and the cultural and creative industries. These actions aim not only to showcase the project results, but also to encourage future reuse of the tools on other heritage sites.
- *3-5 years after the project's end:* A strategic reflection will be conducted on the position of the AR Tour Experience application within Bibracte’s existing digital ecosystem, particularly in relation to the current application La Boussole. This reflection will address the technical, organisational, and financial conditions required for potential long-term adoption. In addition, opportunities to extend the system to other sites within the Grand Site de France “Bibracte – Morvan des Sommets” territory will be explored, as well as the possibility of developing participatory routes involving local stakeholders.

A new life of Saint Neophytos’ Enkleistra:

- *1 year after the project's end:* demonstration and deployment of the mixed reality (MR) experience with headset will be delivered to tourists and schools visiting the Englystra. This will allow to fully exploit the investment with the headsets, which however will need both regular recharging maintenance and eventual replacement due to use, and needs planning for renovation and re-

playability. The onsite deployment during the first year after the project's end will also clarify existing concerns over the use of the equipment within the limited space of the Englystra, in terms of possible queues in the access to the experience that may result not be acceptable to visitors and of possible risks and liabilities to the monument (e.g. the headset wearer may accidentally touch the fabric of the monument or misjudge steps due to alterations in perceived depth of field). For these reasons, it is possible that eventually the MR experience will not be used as a regular attraction for the general public, but made available only during certain times or for certain visitors (e.g., special events or VIP visits).

- *3-5 years after the project's end:* while the decision of continuing the MR experience is dependent on the factors expressed above, the outlook for the VR experience is more favourable. It is foreseen with a medium-term lifespan predicted, due to less hardware dependence (the VR experience can be played by users remotely and deployed onto an HMD screens at the museum at the Monastery of St Neophytos) and lowered barriers in accessing the experience on screen, also in a group rather than solo, this being particularly relevant for school groups where the educational scope of the experience would be to promoting discussion and multi-generational discourse, while prompting curiosity and social bonding. However, the use within schools requires formal scheduling within the school curriculum, as opposed to reliance on visitors to the site. As such, the experience needs to be factored into the learning programme in advance as part of a cohesive educational plan developed together with the institutions.

8. CONCLUSION

The EUreka3D-XR project represents a significant step forward in Europe's ambition to accelerate the digital transformation of the cultural heritage sector, particularly through high quality 3D digitisation and the development of immersive XR experiences. This sustainability plan demonstrates that the project has not only delivered substantial technical, cultural, and educational outcomes with a strong potential, but has also laid the foundation to ensure that these outcomes remain accessible, maintainable, and impactful well beyond the project's formal end.

Across all five core areas (3D contents, XR Toolbox, Infrastructure, Learning and Competence Centre, and XR Experiences) the project has pursued a holistic approach built on quality, openness, and long-term viability. The content partners have followed the highest available standards for 3D digitisation, especially the VIGIE 2020/654 recommendations, ensuring that published models, metadata and paradata, are fit for long-term reuse. A commitment to maintain persistent links and to ensure ongoing accessibility in Europeana is a solid sustainable outcome. These efforts ensure that the newly published 3D models and supporting 2D collections will remain discoverable, interoperable, and usable for professional and public audiences for at least five years, with strong potential for longer-term preservation.

The XR Toolbox developed in the project, comprising five open-source tools for creating AR, VR, and mixed-reality experiences, stands as another durable result. Its sustainability is strengthened by its open licensing, accessible documentation, and its availability both as source code and as online services. Although there are uncertainties linked to rapidly evolving mobile and XR environments, the project has actively responded by prioritising documentation, training materials, and user-centred design. These efforts significantly enhance the toolbox's capacity to remain useful to CHIs even as the underlying technologies continue to change.

The EUreka3D Data Hub further supports sustainability by providing an EU-based, secure, interoperable, and scalable environment for storing, managing, and aggregating 3D cultural heritage data. Its guaranteed operation until at least the end of 2027, supported by a Service Level Agreement and reinforced by plans for pay-per-use models, shows strong potential for long-term continuity. Its alignment with Europeana, FAIR data principles, and PID-based preservation mechanisms positions it as an important service to the common European data space for cultural heritage for future 3D digitisation efforts in Europe.

Knowledge transfer has also been integral to the project's sustainability strategy. Through webinars, publications, online courses, social media, and the forthcoming final booklet, the project has ensured that its expertise is shared widely within the cultural heritage community. This knowledge will continue to support institutions as they adopt and expand 3D/XR practices. The ongoing development of the EUreka3D Competence Centre further formalises this commitment, establishing a long-term organisational structure dedicated to training, research, consultancy, and infrastructure support.

Finally, the three XR experiences developed in the project exemplify the value of integrating high quality content, accessible tools, and robust infrastructure. Their sustainability depends on institutional commitment and user engagement, yet early feedback indicates strong potential for continued relevance and impact.

Overall, the EUreka3D-XR project has successfully combined technological innovation, cultural expertise, and strategic planning to ensure that its outputs remain viable, visible, and valuable for years to come.

ANNEX I: MAINTENANCE PLAN FOR 1, 3 AND 5 YEARS

The following table provides an overview of the responsibilities for each component of the Eureka3D initiative that is planned to be maintained in the short-, medium- and long-term.

Component	Who is responsible for the maintenance plan up to July 2027	Who is responsible for the maintenance plan up to July 2029	Who is responsible for the maintenance plan up to July 2031
3D models and contents The following contents are maintained accessible via Europeana, according to the features and specificities indicated in sect. 3.4:			
Girona collections	CRDI	CRDI	CRDI
Bibracte collections	Bibracte	Bibracte	Bibracte
Cyprus collections	CUT	CUT	CUT
XR Toolkit The following software application should be maintained operational and accessible as open-source to interested CHIs, according to the features and specificities indicated in sect. 4.2			
AR Tour Builder and its AR Experience app	NTUA guarantees the maintenance of the tool	Open-source community	Open-source community
AI 3D Builder	Swing:It publishes the tool with open-source license, "as is" clause.	Open-source community	Open-source community
3D XR Studio	Swing:It publishes the tool with open-source license, "as is" clause.	Open-source community	Open-source community
Avatar Builder	Miralab guarantees the maintenance of the tool	Open-source community	Open-source community
Infrastructure The following resources should be maintained operative and accessible to the interested CHIs, according to the features and specificities indicated in sect. 5.3			
Storage resources	EGI and its federated providers	EGI and its federated providers	EGI and its federated providers
Computing resources	EGI and its federated providers	EGI and its federated providers	EGI and its federated providers
AAI	EGI and its federated providers	EGI and its federated providers	EGI and its federated providers
3D viewer	EGI and Miralab	EGI and Miralab	EGI and Miralab

Metadata editor tool	EGI with Europeana	EGI with Europeana	EGI with Europeana
PID assignment	EGI with B2Handle	EGI with B2Handle	EGI with B2Handle
OAI endpoint	EGI and its federated providers	EGI and its federated providers	EGI and its federated providers
Aggregation service	PHC	PHC	PHC
Learning and competence The offer of the following training and information resources should be maintained for the benefit of the upskill of cultural professionals, according to the features and specificities indicated in sect. 6.2.			
Website	CRDI	CRDI	CRDI
Blog	PHC	PHC	PHC
Social media	PHC, CRDI	PHC, CRDI	PHC, CRDI
Newsletter	CRDI	CRDI	CRDI
Courses on Europeana Academy	EF	EF	EF
Webinars (Youtube channel and playlists)	CRDI	CRDI	CRDI
Editorials	EF	EF	EF
Photoconsortium Educational Portal	PHC	PHC	PHC
Final Booklet	CRDI	CRDI	CRDI
XR Experiences (scenarios) The following XR experiences should be maintained accessible to cultural users and visitors of the cultural cities and cities, according to the features and specificities indicated in sect. 7			
Virtual Girona: Discovering the Historical Walls	CRDI will promote the AR Tour experience and collect feedback	CRDI evaluates if continuation of the XR experience is to be planned, and expanded/updated	CRDI evaluates if continuation of the XR experience is to be planned, and expanded/updated
The AR narrative of the hidden side of the Bibracte archaeological site	BIBRACTE will promote the AR Tour experience and collect feedback	BIBRACTE evaluates if continuation of the XR experience is to be planned, and expanded/updated	BIBRACTE evaluates if continuation of the XR experience is to be planned, and expanded/updated
The creation of a new life of Saint Neophytos' Enkleistra	CUT will promote the XR experience as Mixed Reality on site, and collect	CUT evaluates if continuation of the MR experience is to be	CUT evaluates if continuation of the MR experience is to be

<p>in Cyprus in the virtual space</p>	<p>feedback</p>	<p>planned, and expanded/updated.</p> <p>VR experience on screen will likely be implemented in the Museum of Saint Neophytos.</p>	<p>planned, and expanded/updated.</p> <p>VR experience on screen will likely be implemented in the Museum of Saint Neophytos.</p>
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ANNEX II: SUSTAINABILITY INTERVIEW QUESTIONS FOR PARTNERS OF EUREKA3D-XR

CONTENT:

The EUreka3D-XR project has added New, high quality 3D models, available on Europeana, complying to the *VIGIE 2020/654 Study On Quality In 3D Digitisation Of Tangible Cultural Heritage*, commissioned by the EC. Plus, XR experiences are derived from this content and shared in the data space for cultural heritage for others to take inspiration.

Questions to Content Partners regarding 3D models - digitisation

- Do you agree that digitisation of 3D models, complying to the VIGIE 2020/654 guidelines, add sustainability for the broadest variety of use (professional and public)? Do you think these models will be fit for purpose in 1, 3, 5, 5+ years?
- Is the VIGIE 2020/654 recommendation something you plan to continue using when digitising future 3D models?

Question for Tool Developers regarding 3D models - digitisation

- Why is the quality of 3D models important when creating XR experiences?###
- What advantages are there with the models produced in compliance with the VIGIE 2020/654 recommendation?
- Do you think the models produced in EUreka3D-XR will be fit for purpose for XR developers in 1, 3, 5, 5+ years?

XR TOOLS:

Templated XR tools and guidance in their use are made available for CHIs and developers.

Question to Content Partners regarding the XR Tools:

- How user friendly have you found the XR tools to be?
- From your experience with engagement of CH sites, do you think CHIs will find the XR tools useful and easy enough to deploy to create meaningful experiences of their own?
- Can you see these XR Tools being useful/used in 1, 3, 5, 5+years?

Question for Tool Developers regarding the XR Tools

- How simple can you make XR tools for CHIs? i.e. what level of IT knowledge and capacity is required by CHIs to use the EUreka3D XR Tools to build their own XR experiences? Will CHIs need to contract IT/XR professionals to be able to use the tools to apply to their own 3D models and CH sites?
- What level of customisation is required by CHIs to use the tools and implement a XR experience?
- Can you see these XR Tools being useful/used in 1, 3, 5, 5+years?

INFRASTRUCTURE:

The further development of the EUreka3D Data Hub as an EU non-profit storage and delivery platform for Cultural Heritage can competitively host data rich 3D Models with interoperability to the data space thus offering a valuable alternative to private and non EU products.

Question for Content Partners:

- Before using the EUreka3D Data Hub, which platforms were you using to store and/or visualise your 3D models?
- Are you still uploading/using alternative platforms to host your 3D models? If so do you believe the EUreka3D Data Hub could replace or become your primary hosting platform why/why not? Or under what conditions?
- How important is interoperability to Europeana? If Europeana is not your primary aggregation platform, which platform is the most important for the visualisation (access point) of your 3D models?
- How important is an EU based platform for hosting 3D models? And how important is a platform dedicated to Cultural Heritage for hosting 3D models?
- How important and convenient is Single-Sign-On Security to access and protect your data?
- How important is the cost of platforms to host and visualise 3D models? would you only be interested in adopting the EUreka3D Data Hub if it was competitively priced?
- Are you prepared to pay for services connected with tools and development of 3D Digitisation and XR?

Question for Tool Developers:

- Are you aware of a platform that makes available XR Tools to create XR Experiences?#####
- Do you believe the EUreka3D Data Hub is a suitable platform for hosting XR tools?
- Do you see an increase in multi-usable XR tools that will be made available for CHI XR experience creation? or do you believe the EUreka3D-XR project is a one-off, or one of few projects, that will create accessible Tools in this way?

Question for EGI (the EUreka3D Data Hub administrator)

- How scalable is the EUreka3D Data Hub? (Specifically for hosting 3D models and Tools)
- Have you received interest from External CHIs to host 3D models?
- Can the EUreka3D Data Hub be competitively priced with all the features that are available in Sketchfab (the most ubiquitous 3D platform)?
- What is needed to ensure the sustainability of the EUreka3D Data Hub for 1, 3, 5, 5+ years?

KNOWLEDGE TRANSFER:

The information gained by the project in the creation of 3D models and the development and deployment of the XR tools and experiences has been shared regularly throughout the project in all forms of dissemination. From online articles and social media posts, live webinars, interactive courses and in person workshops. Quantitative measures have been put in place to assess reach as well as more in depth qualitative feedback from surveys and dedicated Q&As, importantly including sessions with the project's Advisory Board of experts.

Question for Content Partners (CHIs)

- How important do you think the information and knowledge created in EUreka3D-XR is for anybody involved in the 3D Digital transformation, specifically CHIs?
- Do you believe the best practice scenarios will be valid in 1, 3, 5, 5+ years?
- Has the EUreka3D-XR project increased your network involved with the 3D transformation?
- Do you believe that the information harnessed in EUreka3D-XR will form standards that can be followed for 1, 3, 5, 5+ years?
- How important is continuation of the knowledge transfer (for example in a competence centre for 3D) of 3D and XR developments for the progression of 3D digital transformation in the CH sector?

Question for Tool Developers:

- How important do you think the information and knowledge created in EUreka3D-XR is for anybody involved in the 3D Digital transformation, specifically Tool Developers and XR Experience Users?
- Has the EUreka3D-XR project increased your network involved with the 3D transformation?
- Do you believe the EUreka3D-XR project will increase the interest in XR tools and creation of XR experiences in the CH sector?
- Do you believe the EUreka3D-XR project will increase the skills and innovation of XR tools developers and the CHIs who wish to create XR experiences for their sites?
- How important is continuation of the knowledge transfer (for example in a competence centre for 3D) of 3D and XR developments for the progression of 3D digital transformation for all stakeholders?

XR EXPERIENCES:**Question to Content Partners regarding the XR experiences:**

- It is expected that 3D models included in XR experiences will be more engaging than a 3D model in isolation. As a CHI, do you have previous experience where this has proved true? Do you have any early evidence that this is the case for the experiences created for your sites in the EUreka3D-XR project?
- Do you have a strategy for the digitisation and the engagement of 3D at your CHI level and at a National level?
- When you build IT experiences (3D or other), what lifespan do you typically expect users will engage/continue to use the developments/applications?
- Do you expect the EUreka3D-XR experiences to be used in 1, 3, 5, 5+years

Question to Tool Developers regarding XR experiences:

- What experience do you have of user engagement with 3D XR experiences and is the demand for both users and the Cultural Heritage sector increasing for experiences involving 3D.###
- With the advancement of technology , particularly with the rapid emergence of AI, is the lifespan of XR experiences significant enough on the return of investment to build them? (additional insight if the costs of development is increasing or decreasing).
- Do you believe the experiences will be fit for purpose in 1, 3, 5, 5+ years?