



D2.2 Report on training programme

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EXECUTIVE SUMMARY

This deliverable illustrates the training programme and activities developed through a close collaboration between Photoconsortium, CUT, CRDI, and the Europeana Foundation, with participation by all partners. The training programme was developed in line with the Europeana Capacity Building Framework (ECBF), ensuring a well-structured and thorough approach to supporting knowledge transfer, capacity building and education of learners. It aims to share vital information on a variety of digitisation formats, standards, authenticity, and best practices mainly related to 3D objects, thus improving the skills and competencies of the cultural heritage professionals.

The digitisation training of heritage items was conducted in accordance with the VIGIE 2020/654 Study on quality in 3D digitisation of tangible cultural heritage, as the milestone document for high quality results in 3D digitisation. It includes the collection of 3D data and paradata, specifying the complexity and quality of the digitisation outcome. The marketing plan that supports the capacity building programme, created at month 6 of the project, successfully identifies target learners and represents anticipated outcomes, also with reference to the Bloom's taxonomy as a framework for educational goals. By promoting community involvement with Digital Cultural Heritage (DCH), the training also seeks to influence various sectors, including research, education, creative industries, and tourism.

A combination of training methodologies (such as the development of learning resources, webinars, practical hands-on workshops, and participation in conferences) led by DCH specialists within the EUreka3D project, created an engaging learning environment, that is accessible openly via the project's communication channels. Furthermore, participant Cultural Heritage Institutions (CHIs) play an active role in sharing knowledge to peers, by contributing their insights and successful reuse examples, thereby expanding audience participation. This multifaceted approach not only enhances knowledge transfer but also fosters collaboration among participants, empowering them to apply their skills in real-world contexts. This initiative aspired to establish lifelong learning and innovation in CHIs' workflows, ensuring that the advantages of DCH are accessible to all segments of society.

This deliverable is essential in documenting the actions and feedback from both online and onsite training activities, aiding in a thorough evaluation of the project's impact. It covers crucial elements of 3D digitisation, which include data acquisition, processing, metadata curation, specification of paradata and publishing to Europeana through the EUreka3D Data Hub. Notable outcomes from the programme are the "3D Digitisation Guidelines: Steps to Success", a series of webinars called "Transforming Heritage", and "Paradata, Metadata and Data for 3D acquisition in cultural heritage", onsite training sessions in various locations, and several case studies from partner CHIs. Furthermore, the "EUreka3D: Good Practices for the 3D Digitisation of Cultural Heritage" is a significant booklet that includes the project narratives and case studies with details on the obstacles and achievements encountered throughout the project.

The Key Performance Indicators (KPIs) showcase the project's outreach initiatives, highlighting its success in drawing a considerable number of participants to various webinars, events, and training sessions, exceeding numerous KPIs. For example, the Paradata, Metadata and Data webinar involved 377 participants, while the Transforming Heritage webinar series engaged 330 participants in 2023 and 368 in 2024, with a broad geographic spread of participants. Alongside quantitative metrics, qualitative insights were gathered through post-event surveys. The overall satisfaction expressed by respondents suggested that the events were positively received, with participants showing a keen interest in further exploring the subjects discussed. The project also collected qualitative accounts from stakeholders about the significance of 3D digitisation,

paradata, and the necessity for a specialised EU Cultural Heritage Cloud infrastructure. Notable individuals within the cultural heritage sector shared perspectives on the challenges and advantages of embracing new standards, including the documentation of paradata and methodologies introduced by the Eureka3D project. The project's achievements were underscored in promoting innovation and collaboration among heritage professionals while tackling the obstacles encountered in the heritage digitisation field.

1. INTRODUCTION

This report describes the scopes and delivered actions of the EUreka3D training and capacity-building effort. The training programme in EUreka3D was especially aimed at capacity building of cultural heritage professionals, particularly disseminating recommendations on high quality digitisation of 3D based on the VIGIE 2020/654 Study. Complementary to this, the programme aimed at sharing knowledge in the Cultural Heritage professional community about key themes such as formats, standards, authenticity and fake media, also sharing good practices and real-life experiences of digitisation of cultural collections and showcasing resources and tools to support high-quality 2D and 3D digitisation and collections' reuse.

The capacity building programme was designed following the approach, protocols and standards of the Europeana Capacity Building Framework (ECBF), in close collaboration between Photoconsortium, training leader CUT, dissemination leader CRDI, and Europeana Foundation. The principles of the marketing plan to support the delivery of the capacity building programme were presented and outlined in the D4.1 Dissemination and Exploitation plan and D1.2 Integration Report 1 (both delivered at M6, corresponding to June 2023), in this latter and in the D1.7 Final integration Report also taking into account reflections on expected learning outcomes.

In the context of EUreka3D, the training aims to increase the capacity of cultural heritage professionals and communities' involvement with Digital Cultural Heritage (DCH) especially in areas of research, education, creative industries, and tourism. The training was conducted through webinars, hands-on workshops, conferences, and key events organised and presented by experts from the DCH sector within the EUreka3D project. The training for digitising heritage objects was made according to the VIGIE 2020/654 Study on quality in 3D digitisation of tangible cultural heritage. The training included acquiring the 3D data and paradata with the specification of the complexity and quality of the digitisation result. Further training included the ingestion, archiving, processing, metadata annotation, and publishing of 3D heritage artefacts, monuments and sites to Europeana through an automated workflow using the EUreka3D Data Hub platform. Moreover, Cultural Heritage Institutions (CHIs) were invited to our webinars, key events and conferences to provide their experience with projects on 3D heritage data, which showed not only detailed digitisation results but also reuse cases that proved to be engaging to a wider audience.

The programme realised by the project comprises various actions, reported in more details in next sections:

1. Production of learning and training resources, openly accessible in the project's website, YouTube and on Zenodo. Outstanding examples are the 3D Digitisation Guidelines: Steps to Success (a guide to help CHIs implement the VIGIE 2020/654 Study, available online and in printed form); the content providers case studies, written to share the stories, challenges and lessons learnt by the 4 partner CHIs in the digitisation, management and sharing of high-quality cultural collections; and the recordings of all online webinars produced by the project.

2. Online and onsite events. Specific events were delivered as webinars or onsite and hands-on training activities. Outstanding examples include a collaboration with the International Council on Archives (ICA) that led to the EUreka3D consortium organising the webinar series "Transforming Heritage" which unfolded in two webinar series in Fall 2023 and 2024; and the organisation of onsite training events in Bibracte, Limassol, Malta, and Girona.

3. Cooperation and cross-collaborations with stakeholder organisations in cultural heritage and other sectors such as education and tourism. Various scientific conferences and third-party events were attended,

in light of disseminating the project's outcomes and introducing the capacity building activities; collaboration was established with relevant initiatives. As outstanding examples, a cooperation agreement was established and a coordination meeting was organised with Erasmus+ project ARTEST comprising EU universities and 5 Mongolian; and the project partners participated in events by projects TExTOUR, INCULTUM, SECRETOUR and other organisations linking tourism and the GLAMs sector.

1.1 Role of this deliverable in the project

Task 2.2 in the Grant Agreement is about the following: “Develop, deliver and disseminate a capacity building programme, also following the protocols and standards of the Europeana Capacity Building Framework (ECBF). Both online and onsite events are realised in this task and promoted and disseminated in WP4, also informing the impact assessment task”.

This deliverable D2.2 enlists the various actions conducted in the training programme (on site and online) with commentary about participation and feedback received. It is related to various other deliverables, including:

- D4.1 Dissemination and Exploitation Plan (M6)
- D1.2 Integration Report 1 - Integration Initial Report of EUreka3D with the common European data space for cultural heritage (M6)
- D4.2 Impact Assessment report (due 31/12/2024)
- D1.7 Final Integration report (due 31/12/2024)
- This deliverable also feeds the D1.6 Final Technical report (due 31/12/2024)

1.2 Structure of the document

Besides the Executive Summary, the document is composed of the following chapters:

1. Introduction
2. The EUreka3D Training and Capacity Building Programme
3. Reflections on the training and capacity building programme, and audience feedback
4. Conclusions

2. THE EUREKA3D TRAINING AND CAPACITY BUILDING PROGRAMME

This section lists all the activities deployed in the project which are part of the Training and Capacity Building programme, in a variety of outcomes and actions which will be maintained as open access resources and which will be reused in following actions such as the continuation project EUreka3D-XR which includes a dedicated work package on capacity building.

As mentioned above, the training and capacity building actions were varied, including the production of learning and training resources, online and onsite events, participation in third party events and collaborations with stakeholders.

The work done and the knowledge, both collected and created in the project, position EUreka3D squarely as a centre of competence in 3D digitisation, management and sharing, and pave the way for future activities in supporting CHIs in their digitisation journey.



Fig. 1 Presenting the EUreka3D workflow at the final conference in Girona

2.1 Production of learning and training resources

Title	Content and publication date	Responsible partner
3D Digitisation Guidelines: Steps to Success	<p>This guide is designed to help anyone on their 3D digitisation journey. It is specifically aimed at Cultural Heritage professionals and outlines and simplifies the recommended standards highlighted in the EU VIGIE Study 2020/654 (Study on quality in 3D digitisation of tangible cultural heritage).</p> <p>Booklet, plus flyers and postcards to explain the 3D digitisation</p>	CRDI with CUT – UNESCO Chair on Digital Cultural Heritage, Photoconsortium, imec

	recommendations in a more user-friendly way Published in May 2024.	
3D Research Challenges in Cultural Heritage V: Paradata, Metadata and Data in Digitisation	This open access book presents a collection of papers focussing on 3D digitisation in the domain of cultural heritage arising from the two webinars held by the project. A major focus of the 16 papers included in this State of the Art Survey is on all aspects of the documentation of the digitisation process, i.e. paradata, which alongside metadata, is critical to the scientific rigour, replicability and sustainability of digital heritage resources. Open access publication with Springer published December 2024	CUT – UNESCO Chair on Digital Cultural Heritage
Case studies on content providers' journey	EUreka3D project develops four use cases to show how 3D digitisation offers new ways to stimulate interest in cultural heritage, by enabling the creation of more advanced collections to represent not only cultural objects but also the story and memories associated with them. Website page available in September 2024	Coordinated by Photoconsortium with collaboration of all the partners
EUreka3D Data Hub services and tools user manuals	Introductory website page available in July 2024 Iterative production of User Manual, version 3 was available in November 2024 and also included in D3.3	EGI with AGH and imec
EUreka3D Final booklet: "EUreka3D: Good Practices for the 3D Digitisation of Cultural Heritage"	The EUreka3D Final Booklet includes all the stories from the project, and in particular the 4 case studies produced by the content providers, illustrating the challenges, lessons learnt and success of their innovation journey in EUreka3D, for others to take inspiration from. Online publication + 200 printed copies, published 11 December 2024	CRDI with collaboration of all partners
Videos and Recordings from online events	The recordings from online training and dissemination events are published on the project's YouTube channel . A variety of dissemination and illustrative videos were also produced and published as well on YouTube.	CRDI
Zenodo	A Zenodo community was opened in 2024, to publish all the outcomes of the project, including the deliverables, training and learning resources and other publications.	CRDI
Informative Media webpage	In addition to the training and learning resources, this webpage is a collection of communication materials and newsletters on the EUreka3D project.	CRDI



Fig. 2 The three main training and learning resources produced in Eureka3D: Digitisation Guidelines, Final Booklet, and Springer open access publication



Fig. 3 Postcards promoting the 3D Digitisation Guidelines

2.2 Online and hybrid events (Webinars)

Title	Audience/Number of participants	Activity, topics, learning outcomes	Delivery date
“3D in Cultural Heritage” EUreka3D opening conference in Roma	Cultural Institutions, researchers in 3D for cultural heritage, PhD students, other cultural professionals. 50 (onsite) 120 (online)	The challenges and needs for creating 3D content in good quality and reusable, the opportunities offered by the common European data space for cultural heritage	online and onsite event in Rome, Italy 6 th of June 2023
Transforming heritage: from 2D to 3D digitisation - first series, held during Fall 2023	Archivists and records management professionals, CHI professionals, digital humanities researchers and students 330 (online)	The three sessions emphasised on the quality management, and quality guidelines based on VIGIE 2020/654 Study on digitisation of tangible heritage. Furthermore, the session focused on the usage of Cultural Heritage 3D objects for research and outreach to different stakeholders. <ul style="list-style-type: none"> • Being digital, being standard. Guidelines for digitisation of cultural heritage • Boosting 3D digitisation for research and reuse of cultural heritage collections • 3D Innovation and creativity in the cultural heritage sector 	Webinar 1: 27/10/2023 Webinar 2: 10/11/2023 Webinar 3: 01/12/2023
EUreka3D Data Hub. Demo Event: Implementing a Data Hub and services in the Data Space for Cultural Heritage	Partners and members of the Advisory Board 12 (onsite) 10 (online)	Storage, visualisation and preservation of 3D Heritage models and their accompanying information. The available solutions that cultural professionals can consider for their collections management and aggregation workflows according to the EUreka3D Data Hub.	online and onsite event in Brussels 15 th of December 2023
Webinars: Paradata, Metadata and Data for 3D acquisition in cultural heritage	Digital Cultural Heritage community 539 (online)	A discussion on the most advanced requirements and cases of the use of paradata and metadata in the digital documentation of the Past in 3D, for enriching 3D assets, creating knowledge and promoting reusability. From these events, an open access book was published with Springer.	online events 8 th of April and 17 th of May 2024

Eureka3D: Preserving Values through #MemoryTwins	<p>Project partners, heritage professionals, education</p> <p>43 (onsite) 12 (online)</p>	<p>Demo event on the occasion of the third Eureka3D project plenary. This event followed the presentation of the Eureka3D project at the TwinIt celebration event and Fair in Brussels on 14/5. Lambousa Boat and Panagia Chrysorrogiatissa Monastery were presented as Case Studies of advanced digitisation and 3D Modelling.</p>	<p>online and onsite event in Limassol</p> <p>29th of May 2024</p>
Transforming Heritage: Formats, authenticity and preservation - second series, held in Fall 2024	<p>Archivists and records management professionals, CHI professionals, 3D digitisation and digital infrastructure providers, digital humanities researchers, and students in all these fields.</p> <p>368 (online)</p>	<p>The three sessions took place in autumn of 2024, and focused on formats, authenticity and preservation for 3D and digitisation in the cultural heritage field, delivered by expert speakers and renowned professionals.</p> <ul style="list-style-type: none"> • Digital Media Authenticity • A new dimension for the Audiovisual Heritage: a Eureka3D initiative • An overview of recent and emerging JPEG formats for digital archival and long-term preservation 	<p>Webinar 1: 26/9/2024</p> <p>Webinar 2: 24/10/2024</p> <p>Webinar 3: 15/11/2024</p>
EGI DataHub Webinar	<p>Community of scientists in IT, data and e-infrastructures</p> <p>45 (online)</p>	<p>Presentation and demo of the Eureka3D Data Hub in the context of EGI infrastructure</p>	<p>11th of September 2024</p>
Eureka3D Final Conference	<p>CHI professionals, researchers, and practitioners in Digital Cultural Heritage</p> <p>42 (onsite) 65 (online)</p>	<p>The event focused on sharing the project outcomes addressing topics such as the methodology for 3D digitisation, the Eureka3D Data Hub, authenticity and standardisation for 3D, and the project's four use cases from content providers.</p> <p>During the final conference and the following weeks, an onsite exhibition with posters and screens displayed the four 3D digitisation cases and the main project's outcomes.</p>	<p>onsite and online event in Girona</p> <p>13 of December 2024</p>

2.3 Onsite events and Hands-on Training Activities

Title	Audience/Number of participants	Activity, topics, learning outcomes	Delivery date
Mnemosyne Summer School 2023	22 students from 6 countries (CY, RO, GR, GB, FR, RS) with 25 expert speakers from 12 countries 47 (onsite)	<ul style="list-style-type: none"> • The transversal role of digital culture for sustainable development • Methods to protect universal cultural heritage via science, technology and innovation • Inclusive and resilient societies through the promotion of cultural diversity • Global citizenship and technological environments for humankind and its Memory of the Past. <p>This one-week full immersion program combined lectures, workshops, practical lab sessions and hands-on field training at heritage sites, which developed practical and theoretical skills in Cultural Heritage studies</p> <p>As part of the training, a session about the EUreka3D action took place, and coordinated by the project leader Antonella Fresa (Photoconsortium) and Marinos Ioannides (Cyprus University of Technology), specifically focusing on the use of Cloud Infrastructures and the process of aggregating and harvesting high quality 3D models for its publication on Europeana.</p>	onsite training in Cyprus at CUT – UNESCO Chair on Digital Cultural Heritage 23 th - 27 th of October 2023
Europeana Digital Practice Workshop in Bibracte	Teachers and cultural educators working in museums 20 (onsite)	Within the context of EUreka3D project, the workshop has addressed the different types of resources and their conditions of use on Europeana, and the 3D digitisation of archeological objects as an educational resource for teaching and a way of engaging young audiences.	onsite training in Bibracte 28 th of November 2023
3D Heritage Innovators Exchange: Training Activity in Malta	CHI professionals, and researchers in Digital Cultural Heritage 25 (onsite)	Key training activity to exchange knowledge on heritage digitisation methodologies for artefacts, monuments and archaeological sites. During the week-long event, the CUT team presented the EUreka3D workflow for the reconstruction of 3D digital twins, indicating Panagia Chrysorrogiatissa, Lambousa Boat and Holy Cross Church as an advanced digitisation examples. Furthermore, the corresponding	onsite training in Malta 23 rd – 27 th of September 2024

		metadata and related paradata was shown, for the upload to the project's cloud platform Datahub. Emphasis was given during the demonstration for the automatic harvesting of digital 3D records to Europeana.	
Bibracte's training in Nancy	CH professionals 15 (onsite)	Presenting the EUreka3D project and Data Hub to the members of the 3D consortium that manages the French National 3D Conservatory.	onsite training in Nancy 27 November 2024
EGI Conference 2024	Community of scientists in e-infrastructures AAI workshop: +80 attendees data spaces session: +40 participants Interactions at the booth: +100	AAI technical workshop where EUreka3D was presented Presentation in the dedicated session "Inside Data Spaces: Enabling data sharing paradigms" Additionally, a booth was set up for EUreka3D, providing a demo of the EUreka3D Data Hub and sharing informative materials.	Onsite event in Lecce 30 September - 1 October 2024
Image and Research	Photographic and audio-visual heritage professionals 139 (onsite)	A presentation and demo was delivered in the session dedicated to artificial intelligence, semantic web, management software, speech recognition and transcription, digital preservation, metadata, 3D technology, following a scientific paper which was accepted.	onsite Conference in Girona 21st of November 2024
Paradata, Metadata, and Data in 3D Digital Documentation for Cultural Heritage: #DigitalTwins or #MemoryTwins Workshop at Euromed 2024	CHI professionals, researchers, and practitioners in Digital Cultural Heritage and AI in Cultural Heritage 120 participants (onsite) with 17 presentations from 10 countries	Memory Twin, an innovative framework born at the UNESCO Chair on Digital Cultural Heritage, represents a groundbreaking evolution of the digital surrogate concept. Unlike the conventional Digital Twin that focuses on creating virtual replicas of physical heritage, the Memory Twin integrates the tangible and intangible aspects of cultural assets. This approach preserves not only buildings, artefacts, and landmarks but also their associated culturally significant stories, rituals, and knowledge. As an approach to holistic preservation, Memory Twin reflects an understanding that cultural heritage is not solely defined by its material aspects but by the traditions,	onsite event in Limassol from CUT-UNESCO Chair on Digital Cultural Heritage 2/12/2024

		memories, and narratives that give it life and meaning.	
3D Heritage Innovators Exchange: Training Activity in Cyprus	PhD students and professionals in heritage and archaeology 16 (onsite)	Training activity to exchange knowledge on heritage digitisation methodologies for artefacts, monuments and archaeological sites which saw delegates implement the knowledge gained in the field. Following the EUreka3D recommended guidelines for digitisation of CH objects the group undertook the digitisation of a religious monument and artifacts at the village of Aradippou , Cyprus	Onsite training from CUT-UNESCO Chair on Digital Cultural Heritage in Aradippou, Cyprus 5th – 7th of December 2024
CUT Training to Students from Mongolian University of Science and Technology and Mongolian National University of Arts and Culture	Students and professionals in heritage and archaeology 4 students from Mongolian Universities and 5 students from CUT	As part of the ERASMUS+ ARTEST programme CUT hosted four early career researchers from the Mongolian University Science and Technology and the Mongolian National University of Arts and Culture. Over the 10 day training period the exchange students undertook training in the digitisation of CH objects using the EUreka3D guidelines for documentation as the basis for their work.	Onsite training from CUT-UNESCO Chair on Digital Cultural Heritage in Cyprus 6-16/12/2024
EUreka3D Public workshop in Girona	Catalan institutions and heritage professionals 17 (onsite)	Including presentation of the 3D Digitisation Guidelines and the EUreka3D Final Booklet, plus workshop on strategies for the dissemination of 3D digitisation projects.	onsite event in Girona 13th December 2024

2.4 Collaborations and participation in Conferences and events

Title	Audience/Number of participants	Activity, topics, learning outcomes	Delivery date
Citizen Science in Cultural Heritage: practices and digital technologies	Academia and students in ICT 30 (onsite) 20 (online)	Participation in the event to announce the work ongoing in the project for supporting innovation in digitisation and digital cultural heritage	online and onsite event in Athens, 29 May 2023
EGI Conference 2023	Community of scientists in e-infrastructures ca. 120 (onsite)	Participation in the conference to announce the ongoing work, with poster presentation and flyers	onsite event Poznan 19-23 June 2023
European Researchers' Night 2023 in Cyprus	Academia and students in ICT and cultural heritage Ca. 2.000 visitors (onsite)	CUT presented project work at the event which saw ca. 2.000 visitors ranging from school children to government officials and stakeholders in attendance.	onsite event in Nicosia 29 September 2023
CS3 2024 Cloud Storage Synchronization and Sharing Conference	Community of scientists in IT, data and e-infrastructures 180 (onsite)	Presentation of EUreka3D as a case study on Open Data Lifecycle Management	onsite event in Geneva 13 March 2024
INCULTUM International conference	CHIs and tourism professionals 60 (onsite)	Poster presentation	onsite event in Granada 12 April 2024
Annual conference of Kyiv National University of Culture and Arts	Academia and students, cultural institutions in Kyiv 60 (onsite) 12 (online)	Presentation of EUreka3D and data space in the theme of Information Technologies in the socio-cultural sphere, education and economy	online and onsite event in Kyiv 24 April 2024
International Conference on Geoinformation, Data, Processing, and Applications 2024 (GeoDPA'24)	Experts on the domain of Geoinformatics, Space, Aeronautics, Energy, Transport and Security.	Poster presentation of the Space-to-Ground Documentation and Monitoring of Cultural Heritage: The Case of UNESCO Site - Holy Cross at Pelendri, Cyprus	onsite event in Oldenburg 24-25 April 2024

	Over 20 research institutes attended at DLR Germany No. of attendees: 100 (onsite)		
XV Jornada d'Estudi i Debat in Barcelona	Professionals in Archives and Document Management 75 (onsite)	Presentation of Eureka3D to support digital transformation of cultural heritage	onsite event in Barcelona 15 May 2024
Digital Storytelling Festival 2024	CHIs and other heritage, education and creative professionals 80 (online)	Eureka3D project and the case of the advanced modelling of Lambousa boat, presented in the panel session "Innovative media"	online event 22 May 2024
Seminar on Archives and Tourism	CHIs and tourism professionals 50 (onsite)	Presentation on tourism, archives and culture and the relationship between preservation and experience as digitally mediated	onsite event in Lloret de Mar 24 May 2024
EVA Florence 2024	CHIs and other heritage, education and creative professionals	Scientific paper published	onsite event in Florence 28 May 2024
SECreTOUR launch event	CHIs and tourism professionals 20 (onsite)	Presentation of the work of Eureka3D in supporting the digitisation of heritage assets for reuse in tourism, and distribution of the 3D Digitisation Guidelines	onsite event in Banska Bystrica 7 June 2024
Clean Oceans and Mapping our Seas	CHIs, preservation professionals, tourism sector ca. 150 in total	The case of the Lambousa boat was presented and discussed as an exemplary case of restoration, digitisation, advanced 3D modelling and reuse and reuse of maritime heritage.	onsite and online event in Malta 19 June 2024
CEDCHE meeting	Member States, CHIs 40 (online)	Presenting Eureka3D Case Studies, including the advanced digitisation and 3D modelling of Panagia Chrysorrogiatissa Monastery, Lambousa Boat and Holy Cross Church to Commission Expert Group on the common European Data Space for Cultural Heritage	online event 4 July 2024
PPAM 2024 International Conference on Parallel	IT and data scientists 250 (onsite)	Presentation at the conference. Conference proceedings have been published.	onsite event in Ostrava, 8-11 September 2024

Processing & Applied Mathematics		The conference paper was invited to be published also for a scientific publication in 2025 on FGCS Future Generation Computer Systems journal	
Supporting Communities Through Digital Cultural Tourism	CHIs and tourism professionals 20 (online)	Webinar by TEXTOUR	online event 19 September 2024
European Heritage Hub Forum	CHIs and other heritage, education and creative professionals ca. 400 in total	Participation in the fair and distribution of dissemination materials	onsite and online event in Bucharest 7 October 2024
Heritage Horizons Europeana Projects Week	CHIs and other heritage, education and creative professionals 165 (online, day 2) 138 (online, day 3)	Day 2: participation in panel on 3D demo of the EUreka3D Data Hub Day 3: presentation of reuse workflows and cases in EUreka3D and future EUreka3D-XR	online event 25-29 November 2024
Euromed 2024 10th International Conference on Digital Heritage	CHIs, policy makers, scholars, and the broader GLAM sector Total participants: 202 (onsite) 18 (via video) 75 papers presented over the conference	Antonella Fresa and Marinos Ioannides were conference chairs. Five researchers from CUT were on the local organising committee. The EUreka3D tote bag with dissemination materials and 3D digitization guidelines was distributed to all participants. Expected publications arising Proceedings, two special collections on The Memory Twin Initiative and Creative & Cultural Tourism. Expected Open Access Publication early 2025 via Springer	onsite event in Limassol, Cyprus 2nd-4th of December 2024
Cultural & Creative Tourism as a Driver for Sustainable Development workshop at Euromed	CHIs and tourism professionals 100 attendees with 17 presentations from 12 countries	Distribution of 3D Digitisation Guidelines as training materials, and discussion addressing the theme of reuse of digitised collections in cultural tourism and location promotion.	onsite event in Limassol CUT-UNESCO Chair on Digital Cultural Heritage 3 December 2024
Data Spaces Symposium 2024	Researchers and investors in e-infrastructures and IT	EUreka3D was featured and disseminated at EGI booth.	Darmstadtium (Frankfurt), 12-14 March 2024

2.5 Sum up table of outreach:

	online participants	onsite participants
Sect. 2.2 Webinars and hybrid events	1.489	147
Sect. 2.3 Onsite and hands-on training	-	628
Sect. 2.4 Participation in conferences	approximate number of attendees of conferences, exposed to Eureka3D training programme and learning resources: nearly 4.300	

3. REFLECTIONS ON THE TRAINING AND CAPACITY BUILDING PROGRAMME, AND AUDIENCE FEEDBACK

3.1 Challenges

In the development and implementation of the outreach strategies to endorse the capacity building actions, a number of challenges were identified, and successfully addressed.

CHALLENGES IN THE CONTENT AND FORMAT	
Entry level of the learners	The variety of digital skills in the CHIs and professionals influenced the content of the training and capacity building actions.
COMMENTARY: To find a good balance, in some cases the topics addressed and the expected learning outcomes were tailored to less skilled learners; in other cases, the presentations were more technical, focused and advanced; finally, when presenting to stakeholders outside the cultural heritage sector, more general overviews of the current scenario in cultural heritage were provided.	
Format of the activity	Online and onsite events are different and imply a different level of attention of the learners, and different organisational efforts.
COMMENTARY: The Project delivered all types of events: fully online, fully onsite, and hybrid. While onsite events, especially hands-on training, are more engaging for attendees and can last for longer (full day or even multiple days), online events proved to be more effective when they're compact, so that it is possible for attendees to include them in their often full agendas. Also, organisational aspects are different and while for onsite events the orchestration of a physical location is more demanding, online events can be plagued by the risk of failing or unstable internet connections that may affect the event either on the organisation's side or on the side of the participant. Hybrid events are in fact even more challenging due to these differences, and the need of taking into account all aspects and risks both onsite and online. Finally, when the event is embedded in larger containers, such as during a wide conference either onsite or online, it is of course more effective to include it in the plenary session rather than in parallel sessions which are less accessible and visited.	
CHALLENGES IN OUTREACH	
Quantitative outreach	Ensure that the information about the capacity building programme reaches out to many CHIs and other professionals.
Geographic outreach	Ensure significant geographic coverage is achieved in the capacity building programme.
Sectorial variety	Ensure that not only GLAMs but a more varied typology of stakeholders is reached, including scientists in IT, preservation, tourism professionals, academia, students and education.
COMMENTARY: To achieve this a mix of actions was taken to endorse the events in the WP4 Communication and Dissemination: promotion via the project's newsletter; promotion via the Europeana channels; promotion via partners' and associate partners' own professional networks and existing project networks.	

3.2 Feedback from the community of stakeholders and events participants

3.2.1 Measuring outreach of the capacity building programme against KPIs

In line with the impact assessment strategy, widely described in the D4.2 Impact Assessment Report, the project has collated data that quantifies the reach of external stakeholders who attended webinars, events, and numerous dissemination activities during the project's life. This data aims at matching the project's KPI as indicated in the Grant Agreement, particularly the following KPIs linked to the Piloting work and capacity Building actions in WP2:

- Participants in the pilot (project CHI partners, their staff and their networks): overall 50
- Participants in the online capacity building sessions: overall 200
- EUreka3D training programme: min. 150 participants from CHIs from all over the EU
- Workshop at the Euromed 2024 Conference: min. 200 participants from the GLAM sector, policy and scholars
- Workshop/demo at ENA: min. 50 participants from the CH sector
- Technical workshops at EGI annual conference: min. 25 scientists from the e-infrastructure community
- Workshop/demo at I&R Image & Research: min. 25 professionals from the archival community
- Participation in third parties' events attended by the partners: min. 10 key events

The number of participants is indicated in the tables from chapter 1 and summarised below, outstanding the expected KPIs and showcasing an extensive response to the work done in creating innovation and new capacity in the workflows of heritage institutions and professionals. As outstanding examples, the *Paradata Metadata and Data* webinar in two parts reached out 377 participants on the 8th of April and 162 on the 17th of May, from 84 Countries and 52 paper abstracts were submitted for the publication of the open access book also following the Euromed workshops. The *Transforming Heritage* webinar series organised in collaboration with ICA reached out to 330 participants in 2023 and 368 in 2024, also excelling in geographic spread with participants from all over the world, including but not limited to Nepal, Indonesia, Philippines, Mozambique, Lebanon, South Africa, US, Japan, Mexico, Guatemala, Brazil, Chile.

Target KPI from GA	Achievement	Commentary
Participants in pilot (project CHI partners, their staff and their networks): overall 50	Participants in onsite events and hands-on training: 729	Data of onsite events from the table in sect. 2.3 Additional events were hybrid, as indicated in the table on sect. 2.2
Participants in the online capacity building sessions: overall 200 EUreka3D training programme: min. 150 participants from CHIs from all over the EU	Webinar series Fall 2023: 330 Webinar series Fall 2024: 368 Participants in other online events: 746	Data of online events from the table in sect. 2.2

<p>Workshops at the Euromed 2024 Conference: min. 200 participants from the GLAM sector, policy and scholars</p>	<p>Participants in workshops:</p> <ul style="list-style-type: none"> • Paradata Webinars: 539 • Onsite Euromed: 202 • Video Presenters: 18 	<p>This activity included an articulated programme of thematic interventions, with online and onsite actions culminating in Euromed 2024 conference in Cyprus.</p> <p>Overall, the number of participants went beyond expectations, engaging DCH experts and learners. An open access publication with Springer was derived from this activity.</p>
<p>Workshop/demo at ENA: min. 50 participants from the CH sector</p>	<p>Outreach in Europeana events: 383</p>	<p>The data includes the participation in Europeana Projects week day 2 and day 3, and in the Digital Storytelling Festival</p>
<p>Technical workshops at EGI annual conference: min. 25 scientists from the e-infrastructure community</p>	<p>EGI 2023 attendees: +120</p> <p>EGI 2024: AAI workshop: +80 attendees; data spaces session: +40 participants; Interactions at the booth: +100</p>	<p>The project participated in both annual events from EGI. In 2023, the participation was mainly about announcing the preliminary development of the project, while in 2024 it was possible to actually demonstrate the project's results.</p>
<p>Workshop/demo at I&R Image & Research: min. 25 professionals from the archival community</p>	<p>Participants in I&R: 139</p>	<p>The EUreka3D session was included in the plenary programme of day 1 of the conference, thus being delivered to all attendees of the conference</p>
<p>Participation in third parties' events attended by the partners: min. 10 key events</p>	<p>Events attendees: 18</p>	<p>The participation in third party's events has the double scope of providing communication and dissemination of project's outcomes and promoting learning resources and training activities.</p>

3.2.2 Understanding the audience and the learning outcomes of the events

In addition to counting the participants, the project made efforts to collect more qualitative data from the stakeholders. In particular, post-event surveys were submitted to the participants of online events, that included questions on:

- General information about the respondent (participant's profile)
- Assessment of the event (satisfaction)
- Assessment of learning outcomes - (quiz with true/false, participant to choose the correct answer based on the knowledge shared in the webinar)

As an example of the post-event survey, in the box below it is reported the survey submitted to participants after the webinar on Digital Media Authenticity, delivered on 26/9/2024:

DIGITAL MEDIA AUTHENTICITY 26/9/2024 - KEYNOTE SPEAKER: FREDERIK TEMMERMANS (IMEC)
POST EVENT SURVEY

A - General information about the respondent

1/ Sector

- Cultural Heritage Institution professional
- Creative Industry
- Archive sector
- Education Professional
- Tourism Sector
- Archives
- Records Management

2/ Please write your sector if you checked the option "Other"

3/ Country (box to write free text)

4/ Did you hear about Eureka3D project and the EU recommendation on digitisation of heritage under threat by 2030 (box to write free text)

B - Assessment of the event

5/ On a scale of 1-5, how satisfied are you of today's meeting, for personal knowledge and/or in your work?

- 5 completely satisfied
- 4 satisfied
- 3 neither satisfied or dissatisfied
- 2 dissatisfied
- 1 completely dissatisfied

6/ Did this event encourage you to learn more about digitisation standards and procedures?

Yes / No / Unsure N/A

C - Assessment of learning outcomes - true/false, choose the correct answer

1/ Verifying the authenticity of digital media is critical for ensuring trust and providing transparency. The authenticity of a media file:

- Can always be verified if the original file was generated directly with a digital camera (False)
- Can be verified through the use of cryptographic techniques, such as hashing and digitally signing the media content (True)
- Does not require consideration of the file's metadata, as it is unrelated to the content's authenticity (False)

2/ Securing metadata and provenance information is essential for maintaining the integrity and authenticity of media files. This is because:

- Secure metadata ensures that information about the creation, modification, and ownership of the media remains accurate and tamper-proof (True)
- Consideration of metadata is irrelevant since it can always be recreated or altered without affecting the media file’s integrity or authenticity (False)
- Once metadata is altered, it does not impact the media file’s authenticity or usability (False)

3/ Provenance tracking in digital media involves:

- Recording and maintaining a persistent chain of data documenting the history of a media file from its creation to its current state (True)
- Documenting changes made to the media, as long as those changes impact the visual appearance of the media (False)
- Recording only the information relevant to the creation of the media asset (False)

10/ Is there anything you’d like to share with us? Feel free to write down any comment, takeaway, request or suggestion (box to write free text)

The attendance and reach of the capacity building activities were very good, and from the responses received to post event surveys the overall satisfaction rate of the respondents indicates that the events were well received. Also, the variety of responses to the quiz, and additional commentaries left by the respondents, suggest that the stakeholders communities are interested in learning more about these important topics.

Some examples of the feedbacks received in two webinars are provided below.

For the webinar on Authenticity, we received in total 36 responses.

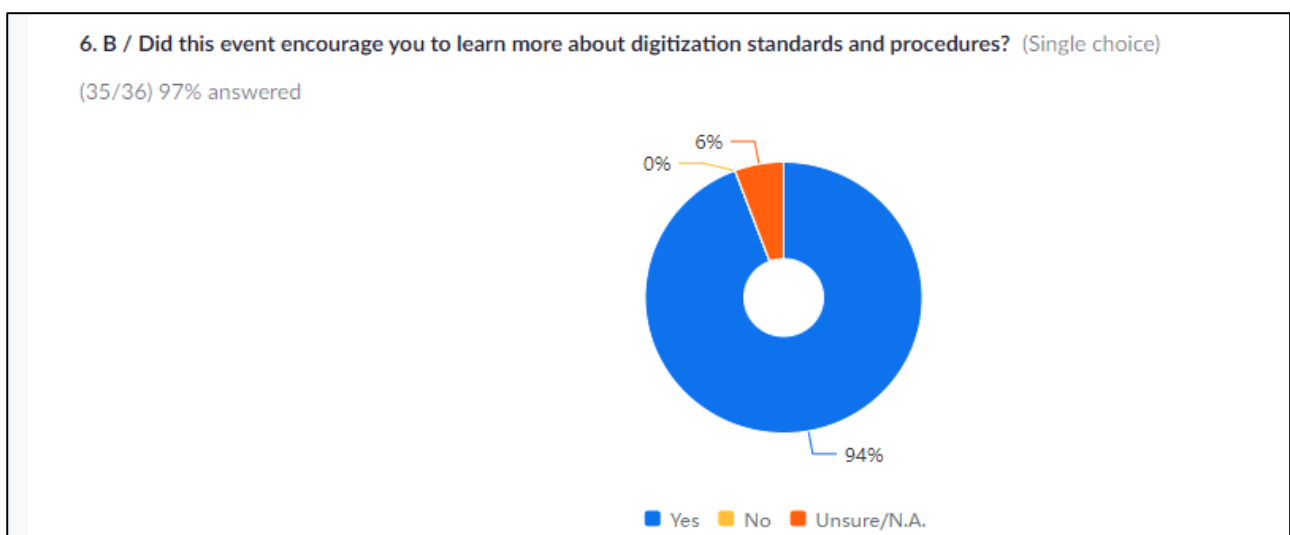


Fig. 4 Responses from the webinar on Authenticity, indicating that 35 respondents over 36 answered the question 6 B, with 94% of them mentioning that the event encouraged them to learn more about digitization standards and procedures

For the webinar on Audiovisual Heritage, we received in total 22 responses.

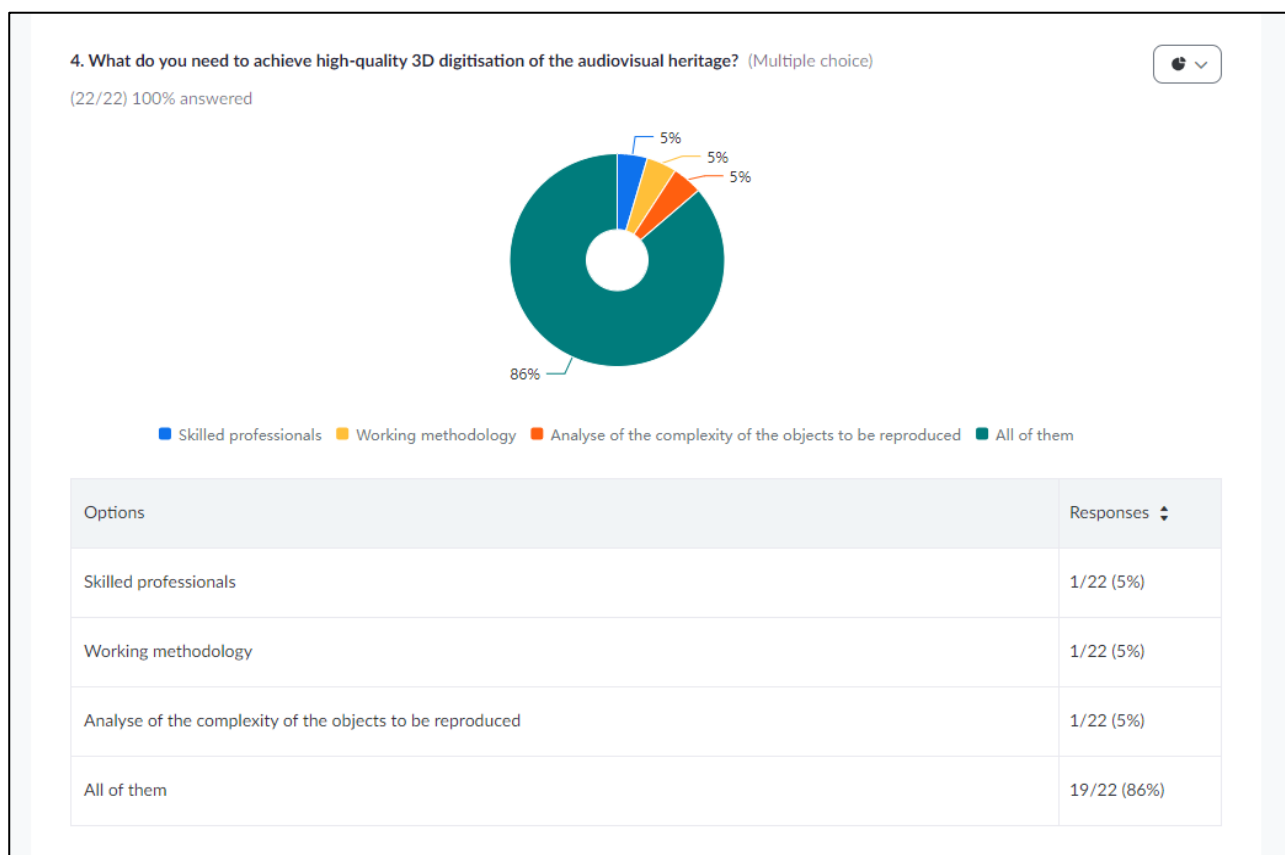


Fig. 5 Responses from the webinar on Audiovisual Heritage, indicating that 22 respondents over 22 answered the question 4, the vast majority of them expressing that to achieve high-quality 3D digitization of audiovisual heritage they would need all elements: skilled professionals, a working methodology, and analysis of the complexity of the objects to be reproduced.

3.2.3 Testimonies and feedback

To more accurately measure the impact, Eureka3D collected qualitative feedback and testimonies by stakeholders about various key concepts such as: the need for digitising in 3D; the importance of 3D digitisation standards (VIGIE 2020/654 Study); the importance of Paradata (in addition to metadata); the need of a dedicated EU Cultural Heritage Data Hub; user needs and expectations for 3D assets (particularly in relation to education and tourism); environmental impacts; the future of 3D and Cross Reality (XR).

The testimonies are provided below and published in the project’s final booklet.

The outcomes of the impact assessment effort in the project are widely described in the *D4.2 Impact Assessment Report*.

Monika Hagedorn-Saupe (German Association for Information and knowledge (DGI) and German representative in Expert Group on a common European Data Space for Cultural Heritage): Paradata and 3D documentation in general is a challenge for CHIs, because it is an innovation of their workflows and implementing innovation can be difficult. EUreka3D is working to show the added value and benefits of innovations that will motivate CHIs to embrace it, highlighting the added value that this additional work on documentation is bringing in terms of digital transformation.

Costas Papadopoulos (Maastricht University): Many CHIs use Sketchfab to host and share their 3D models, but this has various implications to take into account. To provide an equivalent but safer solution as EUreka3D project aims to do is of high value for CHIs. The challenge on sustainability is important to be addressed, especially in the area of granting maintenance and continuation for e-infrastructure dedicated to Social Sciences and Humanities, where we witness a quite high degree of fragmentation, with many projects and institutions developing tools and standards. There is a great need to encourage interoperability and connections and to create common platforms.

Isto Huvila (Uppsala University): Integrating the paradata element in the CHIs workflow is of the utmost importance, and the EUreka3D methodology and tools are offering a big contribution with this, particularly regarding 3D content - but it is relevant for 2D collections also. The needs and requirements of different stakeholders are key to identify user specifications in terms of what type of data and information they need to record and to share to the public. The EUreka3D project seems to be in a perfect position to develop a standard relating to the integration of paradata, taking into account the user's context and expected target areas of use and reuse of the 3D data.

Eleanor E. Fink (American Art Collaborative Linked Open Data Program): EUreka3D is like a comet blazing a trail across the Cultural Heritage universe lighting the way for institutions to collaborate, create common platforms, and interoperability on a global scale. It has been an honor to serve as an advisor for a project that has exceeded its goals and is providing the cultural heritage community with the much-needed and previously missing set of standards for paradata and 3D documentation. What until recently has been a "garden of weeds" now has the potential of being a "Garden of Eden".

Dominik Lukas (University of Chicago): The partial treatment of the different technical aspects of information is a virulent issue when working through the process from data capture to the publication of a final model on whatever existing platform. More often than not, important parts of the potential metadata - leave alone the semantic annotation of legacy data or even paradata - are falling by the wayside and resulting data products are generally found lacking in these respects. Missing aspects then either require reintegration in the aftermath or will simply remain left out. With EUreka3D's "holistic" approach of integrating "all data" within the process, at the moment when they actually occur and taking the inclusion of paradata seriously, will provide an exemplar for the future development of EUreka3D and beyond. It will be crucial to attempt defining the metadata standards a practitioner has at their disposal and how these are integrated in the workflow, as these decisions might become a foundation for how the lack of paradata standards are to be tackled as well. EUreka3D's approach to think the standardization of these elements bottom up by having the technical process and the actual practitioner in mind, gives an exciting perspective on future solutions not only for publishing 3D models, but research data in general.

Hendrik Hameeuw, Conservator, Regionaal Archeologisch Museum a/d Schelde (RAMS, Belgium): As a small regional museum, with limited resources, collaborating with and having easy access to durable digital infrastructures is crucial. For our 3D digitisation programme this applies in particular. The effort to produce and manage this type of digital content of archaeological objects is time-consuming and challenging. Crucial incentives to be able to rely on a sustainable platform such as EUreka3D developed, that offers broad Grant Agreement n. 101100685

possibilities to disseminate the assets and associated (meta)data of our collections to a variety of end users. RAMS enthusiastically joined the test phase of the Data Hub and estimates that the developed path will provide a boost for the future storage and structured access to all sorts of 3D content.

Clara Silvestre Colomer, Archivist, INSPAI Centre de la Imatge Diputació de Girona: Collaborating with the Eureka3D project has helped us to get into the study of 3D digitisation and to undertake for the first time a digitisation of this type of some of the photographic objects preserved by our institution. Eureka3D has managed not only to train and offer knowledge in this field but also to advance in the path of digital transformation and offer useful and interesting solutions that address the current challenges of sustainability, traceability (collecting data, metadata and paradata) and interoperability. Thanks to the Data Hub platform developed within the framework of this project, INSPAI will be able to share and host its 3D models in a common space and ensure not only access to this heritage but also its preservation and reuse.

Albert Sierra Reguera, Programa Giravolt, Agència Catalana del Patrimoni Cultural: For the Giravolt program, collaborating with Eureka3D is a privilege. We share many working methods with them, but they have made progress in an area that is crucial for us: the management and workflow of all the files generated during digitisation, along with their metadata and paradata. With nearly 600 3D models and growing every year, we need solutions like this to manage and publish our collection.

CONCLUSIONS

The training and capacity-building programme described in this deliverable is significant for the development of skills and expertise among cultural heritage professionals throughout Europe and beyond. It includes essential aspects of 3D digitisation, which comprise data acquisition, processing, metadata annotation, the description of paradata, and innovation in workflows for collections' aggregation to Europeana via the EUreka3D Data Hub, also incorporating insights from the VIGIE 2020/654 Study. It included learning resources and various training methods, such as webinars and practical workshops, also facilitating the active participation of individuals, and participation in sectoral conferences across various fields, including research, education, and tourism. Significantly, the programme not only shares essential knowledge about digitisation standards, formats, and best practices, but also highlights the critical role of paradata in maintaining the authenticity and sustainability of digital heritage resources.

The thorough documentation of training sessions and participant feedback further supports the assessment of the programme's impact, showcasing its effectiveness in reaching and engaging a broad audience. The response from stakeholders clearly indicates the need for building capacity and knowledge in 3D digitization and collections management, also manifesting an interest in the CH community for the EUreka3D Data Hub as a solution to securely store and disseminate paradata, metadata and data of heritage objects, including sharing them in Europeana. The very successful participation rate in these events also emphasises the urgent need for continuous innovation and collaboration within the cultural heritage sector, paving the way for future initiatives focused on enhancing accessibility and encouraging the reuse of digitised collections.

In conclusion, the EUreka3D training and capacity-building programme supports advancement in the digital transformation of CHIs, equipping professionals with the essential tools and knowledge about the significance of digitisation for the preservation and promotion of our collective cultural heritage. The training resources developed and learning materials produced are maintained as open access documentation in the project's website and Zenodo community, offering a knowledge base that can be leveraged and expanded in future actions, in the EUreka3D-XR continuation project, starting in February 2025, and in other independent training activities for supporting 3D digitization.

In the light of the continuation of the commitment of the EUreka3D partners beyond the end of the EU funding period, it is worth mentioning a visit organised on 14 December 2024, to the important Montsoriu castle, where the project partners had the opportunity to discuss the future of this cultural landmark.



Fig. 7 Reconstruction of Montsoriu castle, from local exhibition onsite



After massive amounts of work done to restore the castle and the archaeological site, it is now once again accessible to visitors, but two major challenges still need to be solved: the isolated location and the conditions of the site make it difficult to reach and visit for people with limited mobility; and the current building that can be visited corresponds to the latest structure of the castle, which was significantly different from earlier buildings, deeply modified in time.

The stakeholder municipality and museum are therefore looking at 3D technologies for digitisation and virtual reconstruction of this site, to enable better user engagement and tourism promotion of the location.

During the visit of the EUreka3D delegation, an agreement was established with partner CUT for a next survey of the location to study the provision of a laser scanner digitisation of the castle.

This can be considered as the very first assignment for the future EUreka3D Competence Center.

Fig. 8 Panel describing the various phases of restoration works of Montsoriu castle, from the local exhibition on site