# D1.3 - Technical Progress Report



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# Colophon

## Document History

- 03.12.2025:   Preliminary version (0.1) - *ready for content population*
- 16.01.2026:   Draft version (v0.8) - *ready for review*
- 31.01.2026:   Final version (v1.0) -  *to be delivered*

## Table of Abbreviations and Acronyms

| Acronym | Meaning |
| --- | --- |
| 3D | Three-Dimensional |
| 3D-4CH | Online Competence Centre in 3D for Cultural Heritage |
| AI | Artificial Intelligence |
| CH | Cultural Heritage |
| CHIs | Cultural Heritage Institutions |
| CODE | Communication, Outreach, Dissemination and Exploitation |
| DEP | Digital Europe Programme |
| DoA | Description of Action |
| D.x.y | Deliverable x.y according to the DoA |
| OCC | Online Competence Centre |
| WP | Work Package |
| XR | Extended Reality |

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# Executive Summary

During the **first year of the project** (M01–M12, February 2025 - February 2026), 3D-4CH made strong progress towards establishing a European Online Competence Centre (OCC) for 3D in Cultural Heritage. **All planned core deliverables due in this period were completed on schedule**, providing a robust foundation in project governance, data management, community engagement, and the first operational release of the OCC platform.

Key achievements include:

I. **consolidation of project coordination and quality procedures**, supported by the Quality Management Plan and project-wide governance routines;

II. delivery of f**oundational analytical and strategic deliverables** (including the Data Management Plan, the Communication, Outreach, Dissemination, and Exploitation (CODE) Plan, the definition of target groups, and state-of-the-art reviews supporting the training and technical work);

III. deployment of the **first operational version of the OCC platform** and its public launch;

IV. initiation of **capacity-building actions**, culminating in the **1st 3D-4CH Winter School** (Brussels, January 2026), which combined conference-style knowledge exchange and hands-on training activities for an international audience of cultural heritage professionals.

Implementation capacity was also strengthened through **Amendment AMD-101195149-7**, which broadened expertise by onboarding additional partners and mitigating the departure/reorganisation of one originally planned beneficiary without negative impact on objectives, timeline, or outcomes. **Stakeholder engagement mechanisms** were activated through structured consultation and the consolidation of Advisory Board and Stakeholder Panel contributions, ensuring that training content, platform requirements, and impact logic reflect sector needs.

**Communication and dissemination activities progressed as planned**, supported by the CODE strategy defined early in the project, an active web and social media presence, and systematic cross-promotion with related European initiatives. **No major deviations were encountered in M01–M12**; identified risks were managed proactively through coordination measures and early validation activities.

**In the next phase (M13–M24)**, 3D-4CH will scale from first release and pilot actions to **broader uptake** by: expanding the training catalogue and publication workflows; enriching the platform's content sections (training, knowledge base, tools/services) and strengthening connections with the common European data space for cultural heritage; consolidating best-practice collection and community engagement formats; and finalising a KPI monitoring framework that supports consistent measurement of outreach, participation, adoption and reuse across WPs.

# 1. Introduction

This Technical Progress Report summarises the work performed and results achieved in 3D-4CH during the first reporting period (M01–M12), in accordance with the Grant Agreement and the Description of Action. The report provides an integrated overview of progress across all Work Packages, highlighting key achievements, cross-WP coordination, and the main priorities for the next implementation period. 3D-4CH aims to deploy an Online Competence Centre (OCC) that supports Cultural Heritage Institutions and related stakeholders in planning, implementing, publishing, and reusing high-quality 3D digitisation outputs. The project combines: (*i*) governance, quality and data management frameworks; (*ii*) training and capacity building; (*iii*) the adoption of relevant R&D advances in 3D workflows; (*iv*) the deployment of an online platform enabling access to training resources, goodt practices and tools; (*v*) impact measurement and sustainability planning; and (*vi*) communication and community outreach to ensure uptake.

The document is structured as follows: Section 2 provides a concise overview of the overall progress and main achievements against project objectives, including coordination across tasks and upcoming activities. Section 3 reports progress per Work Package. Section 4 discusses the status of KPI monitoring and refinement. Section 5 summarises key risks and mitigation measures.

# 2. Overview of the progress

During M01–M12, the consortium successfully progressed from set-up and design activities to first deployment and validation. The period was characterised by: (*i*) establishing the governance and quality framework required for reliable delivery and reporting; (*ii*) producing baseline analyses and strategic plans underpinning training, platform design and stakeholder engagement; (*iii*) releasing the first operational version of the OCC platform; and (*iv*) validating early approaches through community-facing activities, including the Winter School pilot and structured consultation channels.

Overall progress is aligned with the Description of Action and the project remains on track. Implementation benefited from close coordination across Work Packages, ensuring that platform development, training design, technical tooling, community outreach and impact logic evolved coherently rather than as separate streams.

## 2.1 Overall key achievements based on the overall objectives

Progress in M01–M12 can be summarised against the project's overall objectives as follows:

**Objective 1 – Establish a reliable governance, quality, and data foundation.**
The consortium put in place operational project management routines, quality assurance mechanisms and data governance procedures, enabling consistent delivery, compliance and traceability of outputs.

**Objective 2 – Build capacity through structured training and recognition pathways.**
Training planning and early delivery progressed from state-of-the-art analysis to pilot implementation. The Winter School served as a first large-scale validation of training formats, audience needs, and certification/recognition approaches.

**Objective 3 – Enable access to methods, tools and workflows supporting high-quality 3D digitisation and reuse.**
The project consolidated relevant technical foundations and curated methodological references to support harmonised, reusable workflows, preparing the ground for scalable integration into the OCC environment.

**Objective 4 – Deploy and validate the Online Competence Centre platform.**
The first operational version of the OCC platform was delivered and launched, demonstrating a functioning structure for publishing, accessing and organising training resources, best practices and tools, and providing the base for progressive enrichment.

**Objective 5 – Ensure uptake through community engagement, dissemination and impact monitoring.**
Stakeholder engagement mechanisms and dissemination activities were implemented early, supported by the CODE strategy and cross-project synergies. Impact measurement and KPI consolidation were initiated to enable consistent tracking from the next period onward.

## 2.2 Milestones Achieved in the Period M1–M12

During the first twelve months of the project, several key milestones were achieved, marking the successful launch of the project, the establishment of its public presence, and the delivery of the first core building blocks of the Online Competence Centre and training framework.

**MS1 – Kick-off (M3)**
The Kick-off milestone was successfully achieved within the first month of the project. The project formally started with the activation of governance and coordination mechanisms, the establishment of internal workflows, and the alignment of partners on objectives, roles, and timelines. An online kick-off meeting was held on **5 February 2025**, marking the official launch of the project and enabling the immediate start of activities across all Work Packages. This was followed by the **first in-person consortium meeting in Trento, hosted by FBK from 18 to 20 February 2025**, which further consolidated coordination, clarified technical and operational priorities, and confirmed the readiness of the consortium to proceed with the technical, training, and platform-related activities planned in the Description of Action.
**Status:** Achieved
**Evidence:** Project activities formally initiated; coordination and management structures operational.

**MS8 – Online presence (M3)**
The milestone related to the project's online presence was successfully achieved within the first month of the project. A dedicated project website was launched by the kick-off, together with initial web pages and communication channels, ensuring early visibility of the project. This milestone enabled dissemination and outreach activities under WP6 from the early stages of the project and provided a public reference point for stakeholders and interested communities.
**Status:** Achieved
**Evidence:** Project website, web pages, and social media channels established.

**MS2 – Core training components (M12)**

By Month 12, the milestone concerning the definition of the core training components was achieved. During the first year, WP2 focused on analysing the state of the art in training and capacity building for 3D in Cultural Heritage, validating existing materials, and defining the foundations of the 3D-4CH training framework. This work culminated in Deliverable D2.1, which documents the training landscape, learning profiles, certification logic, quality and ethics considerations, and translation workflows.

The milestone confirms that a structured core set of training components is in place, providing the basis for the development, delivery, and scaling of training activities in the following project phases.

**Status:** Achieved

**Evidence:** Deliverable D2.1; defined training framework, learning profiles, certification approach, and initial scheduling logic for training activities.

**MS5 – Online Competence Centre platform (first version) (M12)**

The milestone corresponding to the first version of the Online Competence Centre platform was achieved in Month 12. WP4 delivered the initial operational release of the platform, providing the core technical infrastructure and main functional sections, including the Knowledge Base, Training Hub, and Tools area.

The platform release represents a key step in moving from planning and design to operational deployment of the Competence Centre.

**Status:** Achieved

**Evidence:** Online Competence Centre platform publicly accessible online; Deliverable D4.2 – *First version of the Online Competence Centre platform*.

## 2.3 Coordination Across Tasks and Upcoming Activities

Coordination across tasks in Year 1 focused on ensuring that governance, content development, platform implementation and outreach were synchronised. Cross-WP collaboration was particularly important in three areas:

1. **Platform–content alignment:** Training structures, knowledge base content types and tool/service descriptions were shaped in parallel with platform modules, so that publication workflows, metadata needs and user navigation were coherent from the first release.
2. **Stakeholder feedback loops:** Advisory Board and Stakeholder Panel inputs were used to validate assumptions, prioritise user-facing features and refine content direction, providing a practical mechanism to keep delivery aligned with sector needs.
3. **Impact logic and reporting readiness:** KPI monitoring was initiated and is being refined to ensure that indicators can be consistently populated across WPs, distinguishing between outreach, engagement, adoption and reuse.

**Upcoming activities (M13–M24)** will focus on scaling from initial deployment to broader uptake, including: expanding the training catalogue (and related publication and recognition workflows); enriching OCC sections with additional validated content (good practices, tools/services, guidance); strengthening integration and interoperability pathways relevant to the common European data space for cultural heritage; increasing community-facing activities (events, working groups, targeted consultations); and finalising the KPI framework so that quantitative reporting can be systematically populated and compared over time.

# 3. Progress description by Work Package

## 3.1 WP1 – Project management and coordination

| WP Number | 1 | Lead | INCEPTION |
|---|---|---|---|
| WP Name | Project management and coordination | | |
| Start Month | 1 | End Month | 36 |

| Status M01 -> M12 |
|---|

**T1.1 - Technical Project Management** *(Lead: INCEPTION, Participants: All)*

**Objective (from the DoA):** This task deals with activities related to managing the actual work of the project and monitoring its progress towards the objectives. It includes regular virtual meetings for coordination of tasks and efforts as well as physical meetings for planning purposes. It also includes the organisation of virtual and in-person meetings with the Stakeholder Panel and the Advisory Board for cross-WP activities.

**Activities M01–M12:** The project was launched with an online kick-off meeting on 5 February 2025 and a hybrid **first meeting in Trento on 19 February 2025**, bringing all partners together to plan the work. The coordinator (INCEPTION), in accordance with the **"D1.1 - Quality Management Plan" (delivered at M1),** established an internal file-sharing platform and a schedule of bi-weekly management videoconferences with WP leaders, which have been held consistently to monitor progress, discuss inter-WP dependencies, and resolve issues. These **regular PMB (Project Management Board) calls** enabled continuous oversight of milestones and deliverables, gathering regular updates from WP meetings. All Work Package leaders and task leaders contribute to periodic management reports, and cross-WP issues are discussed openly in the bi-weekly calls. Additionally, a **Y1 mid-term consortium meeting was held on 16 September 2025**, which reviewed the first six months' progress and discussed the upcoming priorities and plans, such as those for the 1st Winter School. Overall, Task 1.1 has kept the consortium closely coordinated through frequent virtual meetings, shared action trackers, and collaborative tools (e.g. shared cloud drives and monitoring templates as outlined in the Quality Plan). Notably, the coordinator convened a joint **Advisory Board & Stakeholder Panel meeting on 8 July 2025**, where *~30* participants from these bodies were briefed on project progress and provided early feedback (with particular reference to the Deliverables submitted by M6), demonstrating effective engagement of external experts across WP activities.

WP1 also facilitated **collaboration with other initiatives**: the common European data space for cultural heritage and its supporting projects, like XRculture 3D BigDataSpace, were easy to reach as highly represented in the consortium. However, the coordinator also engaged with EUreka3D-XR and

Lip3D, to align 3D-4CH activities and explore synergies. In parallel, collaborations also with Horizon Europe projects like the ECHOES (European Collaborative Cloud for Cultural Heritage) and its supporting projects (Textailes, Stratigraph, etc.), or ARTEMIS (focusing on reactive digital twins), have been explored as demonstrated by joint events.

**Status & Key Outputs:** Task 1.1 has ensured on-schedule delivery of all initial project outputs and milestones. Year 1 deliverables were submitted on time (e.g. D1.1 in M1, D1.2 in M6). Key performance indicators in management (e.g. number of consortium meetings, timely deliverable submission) are on target – bi-weekly coordination calls have near *100%* partner attendance, and internal deadlines have been met consistently (per the Quality Management Plan's monitoring dashboard). This first Annual Report (D1.3 - Technical Progress Report) is submitted at the end of Year 1, evidencing effective internal coordination. No escalations of project issues were required in the first *12* months, indicating that the routine coordination mechanisms under T1.1 are effectively controlling the project scope, schedule, and quality.

**Deviations:** No major deviations have occurred in Task 1.1. All planned management structures and meetings have been implemented as foreseen. The consortium did undergo a minor composition change early on (CNRS-MAP's non-accession and the addition of new partners via an amendment), but this was handled without disrupting technical coordination (see T1.2). The management framework proved flexible to accommodate these changes. Overall, WP1 coordination tasks have proceeded as planned, with no delays or issues requiring corrective action.

## T1.2 - Administrative and Financial Management *(Lead: INCEPTION, Participants: All)*

**Objective (from the DoA):** This task covers all financial and administrative management issues including conflict resolution, distribution of payments, communication with the EC's services and all other contractual obligations stemming from the grant agreement. The coordinator will also keep track of potential changes to the grant agreement and start amendment procedures whenever necessary. In this task, periodic reports are produced, including management reports on resources used compared to plan and budget coordination among partners.

**Activities M01–M12:** The coordinator (INCEPTION) set up efficient administrative routines from project start. A project handbook was created (as part of D1.1 Quality Management Plan) detailing procedures for internal reporting, document control, and decision-making hierarchies. The grant pre-financing was received and promptly distributed to partners in the first months of the project. All partners' Consortium Agreement obligations (e.g. appointing a representative in the General Assembly and a financial contact) were fulfilled early on. Critically, Task 1.2 managed an **Amendment to the Grant Agreement (GA) in Spring 2025** to update the consortium composition and work plan. This amendment added three new beneficiaries (ATHENA, KMKG, IUIAI-UJA) and removed one partner (CNRS-MAP) that did not accede. All budget figures and partner roles were revised accordingly (e.g. FBK took over responsibility for deliverable D3.1 from CNRS-MAP). An updated GA was executed without impacting deliverable timelines. **Financial monitoring** has been ongoing: the coordinator collects effort and cost reports from partners every 6 months to compare actual spending vs. budget.

A dashboard of partner PMs and costs has been maintained, and no significant underspend or overspend has been identified in the first 6 months (M12 assessment will be performed in M13-14). The additional pre-financing triggered by the GA amendment was received and redistributed to partners in summer 2025. **Communications with the European Commission have been regular** – beyond formal deliverables, the project coordinator (INCEPTION), the technical coordinator (FBK) and the dissemination lead (TMO) have participated in **bi-weekly online meetings with the Project Officer**, keeping him informed on project activities and fine-tuning priorities (such as the recent Winter School and the publication of Ukrainian 3D content on Europeana). EC clustering meetings were attended, and all contractual obligations in this period were met.

**Status & Key Outputs:** The project's administrative management is fully on track. The consortium agreement and amendment were executed successfully, ensuring the partnership is stable and all key expertise is on board. In terms of KPIs, the *timeliness of reporting* and *budget adherence are on track* and no issues have been identified. Administrative efficiency has enabled the project to achieve its milestones without bureaucratic delay. The amendment process, though unplanned, was completed within *3* months and mitigated potential impact on WP3 tasks by promptly reallocating responsibilities. This responsiveness is an indicator of strong administrative performance.

**Deviations: None.** Task 1.2 encountered no deviations in terms of schedule or scope. The need for a GA amendment was anticipated early (due to a partner not acceding) and was handled as a controlled change rather than a deviation from project objectives. There were no delays in periodic reporting or financial management procedures. All required reports (financial statements, if any interim ones, and technical reports) have been completed per the GA timeline. No budget reallocation was necessary beyond the amendment. In summary, administrative management proceeded as planned, and the project remains fully compliant with EC rules and its own management plan.

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**T1.3 - Risk Management and Quality Assurance** *(Lead: INCEPTION, Participants: All)*

**Objective (from the DoA):** This task deals with monitoring the project risks, identifying new ones and mitigating any risk that might occur. It will also deal with ensuring the highest quality of the work produced, documents delivered and of all project activities.

**Activities M01–M12:** The Quality Management Plan (QMP) laid out the procedures for risk monitoring and quality control, adopting a proactive approach with a risk register and mitigation strategies. Under Task 1.3, a **Risk & Issue Log** template was introduced (included as Annex 3 of the QMP). The coordinator and WP leaders populate and review this risk log at each quarterly interval. In practice, the risk log has been reviewed during PMB meetings and at the consortium online meeting in September 2025, where partners revisited the risk status and confirmed no new critical risks. Key risks identified at the proposal stage – such as potential delays in platform development or low stakeholder engagement – have been continuously assessed. Mitigation actions have been applied preemptively: for example, to mitigate the risk of low engagement from cultural heritage institutions, the project actively involved the Stakeholder Panel early (as noted, their first meeting was already at M1 and they convened again at M6 to review preliminary results) and performed broad surveys (WP2 and WP5) to capture stakeholder knowledge and needs. Another risk was partner turnover: indeed, the withdrawal

of CNRS-MAP before project start was a risk scenario that materialised. Task 1.3, in coordination with Task 1.2, handled this by redistributing CNRS-MAP's responsibilities to other partners (FBK, etc.) and ensuring continuity of the affected deliverable (D3.1). The risk log entry for "partner leaves consortium" was thus successfully mitigated via the amendment.

Quality assurance activities have been equally important. The project established an internal **peer-review process for deliverables**: for each deliverable, at least two internal reviewers (from partners not involved in writing that deliverable) were assigned. A Deliverable Review Checklist (Annex 1 of QMP) was used to ensure consistency and completeness. This process was followed for all deliverables in M1–M12. The Quality Manager (INCEPTION's project manager) oversaw these reviews and confirmed that review comments were addressed prior to finalisation. Additionally, the project put in place **collaborative tools and protocols** (documented in QMP) to maintain quality: use of a shared Google Drive for version control, standard templates for deliverables and meeting minutes, and defined communication protocols (e.g. use of mailing lists, response time expectations). These measures have ensured consistent quality across outputs. For instance, all public deliverables follow a uniform format and include the required disclaimers and licensing, as checked by the Quality Manager. Moreover, Task 1.3 monitored the quality of events and outputs: feedback forms were collected after the Winter School (to gauge participant satisfaction and gather suggestions), and lessons learned have been fed back into planning documents for future training events (this iterative quality improvement aligns with the Plan-Do-Check-Act cycle described in the QMP).

**Status & Key Outputs:** The risk management process has been effective – by M12, no high-severity risk has materialised beyond what was already mitigated. All top-ranked risks remain under control or have been downgraded due to mitigation. On quality assurance, a key performance indicator is partner compliance with quality procedures: all partners have used the agreed templates and followed the internal review deadlines (the PMB minutes show partners consistently contributing to reviews on time). Overall, Task 1.3's proactive stance is keeping the project on a path of high-quality outputs and controlled risk exposure.

**Deviations:** No significant deviations in Task 1.3. The risk management and QA activities have proceeded as planned in the Description of Action. The only noteworthy change was the early triggering of a risk response when a partner did not join (as discussed above), but this was handled within expected management procedures and did not constitute a departure from the work plan. Quality reviews have sometimes required a tight turnaround (given the heavy deliverable schedule around M6 and M12), but all were completed without extension of deadlines. Thus, there have been no failures in quality control and no unmitigated risks affecting project objectives in M1–M12.

## T1.4 - Data management and ethics *(Lead: INCEPTION, Participants: All)*

**Objective (from the DoA):** Monitor the datasets created and used in the process and ensure the FAIR[1] and open accessibility Here the consortium prepare and keep updated a Data Management Plan (DMP). Under this task, an Ethics Mentor will be appointed to provide ethics guidance and advice. For

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[1] FAIR principles: Findable, Accessible, Interoperable and Reusable

activities with volunteers, it is in this task that an ethical assessment is done, and informed consent forms and other necessary documentation is prepared.

**Activities M01–M12:** The DMP covers all aspects of data handling in 3D-4CH – from the types of data collected (e.g. 3D models, training materials, metadata) to standards for documentation (metadata schemas like EDM for cultural heritage), storage solutions, and provisions for long-term preservation. It specifies how data will be made FAIR and openly available when possible. Task 1.4 led the consortium in cataloguing the datasets expected from each WP: for instance, WP3's output of 3D models and tools, WP2's training content, and WP4's platform data. For each, the DMP details the formats, the repositories to be used, and the license/open-access status. The DMP is a living document – Task 1.4 has been updating it internally with new information. An updated DMP will be formally released later, but interim updates were discussed in consortium meetings.

Importantly, an **Ethics Mentor** was appointed at project start to oversee ethical issues. Prof. Roberto Di Giulio (INCEPTION) serves in this role. He has been involved in reviewing plans for any activity involving human subjects or personal data. In M1–M12, the main ethics considerations were around the Winter School and stakeholder engagement: for example, collecting participant data during event registration and ensuring informed consent for any photographs or recordings. Task 1.4 prepared a **consent form and a GDPR-compliant privacy notice** for participants to the Winter School, outlining how their data and image will be handled by the consortium. Another aspect has been ensuring no conflicts with ethical principles in AI usage – WP3's use of AI for semantic enrichment was examined to ensure compliance with AI ethics guidelines (e.g. no bias in training data, transparency in algorithms). So far, no formal ethics approval procedures have been needed since the project did not conduct research on human subjects; however, Task 1.4 remains vigilant as upcoming plans (like community workshops with the public) may likewise require consent forms. Templates for **informed consent** have already been prepared under this task and are ready when needed.

On data governance, Task 1.4 has set up internal data storage on the project's Google Drive for working data and ensured access control is in place (each partner has dedicated folders, and sensitive data, if any, can be restricted). Additionally, metadata standards were harmonised in collaboration with dedicated tasks: e.g. a **metadata template** for training resources and best practices to be uploaded to the Competence Centre has been defined, ensuring that all content in the platform is well-described and easily discoverable. The task also monitors the **Open Research Data** requirements: as per Digital Europe guidelines, all relevant data is to be made open. By M12, the project has published initial datasets openly – e.g. the first batch of Ukrainian 3D models on Europeana (with open metadata and preview files) or resources (deliverables and presentations) on the project website and its Zenodo Community. These actions align with the DMP commitments. Task 1.4 documented these publications and will include them in the next DMP iteration.

**Status & Key Outputs:** All obligations related to data and ethics have been met. Currently, 100% of known project datasets are properly catalogued in the DMP. Another indicator is **FAIR data compliance**: by M12, the project has made significant data outputs accessible – for example, *8 high-quality 3D models from Ukraine were published via Europeana* with rich metadata and persistent identifiers. On the ethics side, no ethical issues have arisen unaddressed. The project successfully avoided any ethics non-compliance. All participants in the project events (e.g. Winter

School) were informed of data protection measures, and no complaints or breaches were reported. The presence of the Ethics Mentor is noted in all major deliverables (he reviews them, as for example D1.3 lists him as Ethics Reviewer) and meeting minutes, indicating active oversight. Additionally, Task 1.4's integration with WP2 and WP5 ensured that **personal data from surveys** was handled confidentially and results were anonymised in D5.1 and D2.1. The project's data repository (the Online Competence Centre platform) went live at M12, and it includes a **Deliverables repository** making all public deliverables downloadable – another sign of meeting open data and transparency goals.

**Deviations:** None. Task 1.4 has proceeded according to plan. The DMP did not reveal any unmanageable issues; rather, it confirmed that existing infrastructures (Europeana, institutional and international repositories) could handle the project's data outputs. No ethical clearance delays occurred because the project's activities stayed within minimal-risk categories (professional training, digital content aggregation). In summary, all data management and ethics tasks in M1–M12 were executed as intended, with high standards upheld.

## 3.2 WP2 – Training and Capacity Building

| WP Number | 2 | Lead | CARARE |
|---|---|---|---|
| WP Name | Training and Capacity Building | | |
| Start Month | 1 | End Month | 36 |

Status M01 -> M12

**T2.1 - Analysis, validation and collection of existing training and materials**

*(Lead: CARARE; Participants: INCEPTION, UNIFE, PSNC, ATHENA, FBK, KMKG, MCA, EF, CNR-ISPC, CYI, TMO, IUIAI-UJA; AP: PIN, INFN, ICPD, CNRS)*

**Objective (from the DoA):** This task will consult partners, stakeholders and members of the advisory board to identify existing training and training materials. Existing training materials, curriculum and training methodologies will be collected and evaluated against the 3D-4CH curriculum framework and certification process (under T2.4). Validated open-access materials will be integrated into the Competence Centre's online platform (T4.2) using a standard metadata template. Materials will be updated or extended as needed. A core set of materials will be defined for the online and in-person training courses. The English training materials will be automatically translated into at least 6 languages (to include Ukrainian). Translations will be validated by volunteers.

**Activities M01–M12:** Led by CARARE, Task 2.1 began at project kickoff with a broad **mapping of available 3D training resources** across Europe. A consultation with project partners and stakeholders was launched via an online survey in April–May 2025. This **survey received *77* responses by *21* May *2025*** from cultural heritage professionals and institutions, providing data on existing training offers and skills gaps. The survey, which remained open beyond May to continuously gather input, asked respondents about any 3D courses they had attended or knew of, as well as their training needs. The results were analysed by the WP2 team and fed into Deliverable **D2.1 "State-of-the-art in 3D training and capacity building"**. This report, submitted at the end of Year 1 (January 2026), compiles the findings: it documents existing training programmes (academic courses, professional workshops, online tutorials) in the domain of 3D cultural heritage, evaluating their content and relevance to the 3D-4CH competencies. According to D2.1, dozens of resources were catalogued, including the 4CH project's training toolkit, Europeana's webinars, university courses on photogrammetry, and various how-to guides. Each was assessed against the emerging 3D-4CH curriculum to identify gaps or potential for reuse.

In parallel, Task 2.1 oversaw the **collection of those materials** deemed valuable for the Competence Centre. By M12, the team had gathered an initial set of open educational resources: e.g. training videos from the *Twin it!* campaign on 3D digitisation, 4CH's guidelines on HBIM, and tutorial PDFs from national digitisation programs. These materials (over *50* items by the end of 2025) were stored in a shared repository and tagged with metadata using a standard template developed in coordination with WP4. These resources have been prepared for integration into the Online Competence Centre platform. Indeed, just before the platform's soft launch in January 2026, WP2 provided WP4 with a batch of validated materials to ingest.

Within Task 2.1, **FBK established translation workflows and initiated pilot activities to broaden access to training materials**. A first set of priority resources (e.g., curriculum and selected Winter School materials) was identified for trialling automated translation followed by volunteer/native-speaker validation. Initial translations targeted Italian, French, Polish, Greek and Ukrainian, contributing to the project objective of providing materials in at least six languages, including Ukrainian, and lowering language barriers on the platform.

Throughout this period, Task 2.1 engaged the Stakeholder Panel and Advisory Board for input. In the July 2025 AB/SP meeting, the team presented preliminary survey findings and the list of potential core materials; stakeholders provided feedback on priorities (e.g. they emphasised the need for content on **licensing of 3D data**, which was then added to the core topics). By the end of M12, Task 2.1 had thus built a solid foundation of training content: a curated library of existing resources that are validated for quality and relevance. This content is now accessible via the Competence Centre platform's relevant sections.

**Status & Key Outputs:** Task 2.1 achieved its primary deliverable, D2.1, on schedule in Month 12. This deliverable provides a comprehensive state-of-the-art review. The integration of materials into the platform is underway and on target; indeed, the **Online Competence Centre launched with an initial content set in January 2026**, which included the first curated set of resources. Also, the **stakeholder satisfaction** with content is positive: feedback collected from Winter School participants

(Task 2.3) noted that having some pre-read materials available on the platform in advance may be very useful, validating Task 2.1's approach to gather and publish content early.

**Deviations:** No significant deviations. The collection of existing materials took slightly more effort than anticipated because of the breadth of sources; however, this did not delay the deliverable. One minor adjustment was keeping the initial survey open longer (indefinitely in some form) to continuously capture new input – this flexibility was beneficial and not a negative deviation. Overall, Task 2.1 stayed within scope and time, with no deliverables missed or outcomes reduced.

## T2.2 - Development of online training courses *(Lead: CARARE; Participants: INCEPTION, UNIFE, PSNC, ATHENA, FBK, KMKG, MCA, EF, CNR-ISPC, CYI, TMO, IUIAI-UJA; AP: PIN, INFN, ICPD, CNRS)*

**Objective (from the DoA):** This task will create a suite of interactive online training modules covering the core 3D-4CH curriculum. At least 6 modules will be created covering various aspects of the 3D projects (digitization, processing including the use of AI, visualisation, XR and virtual worlds, storage, access and licencing); It will develop self-paced courses that include video tutorials, quizzes, and practical exercises.

**Activities M01–M12:** Task 2.2 kicked off with curriculum planning in mid-2025, well in advance of the scheduled timeline (M10), once the analysis of existing materials (T2.1) provided clarity on content gaps. The consortium organised a series of **WP2 content development workshops in Aug–Sept 2025**, where a **"learning pathway" approach** was adopted and modules were structured as sequences of short units. In these workshops (held virtually with broad participation), participants refined the learning pathway, assigning module development responsibilities and defining a curriculum outline covering core thematic areas. The WP2 team formed **thematic working groups** for each planned module topic. By September 2025, six provisional training modules were defined: **(*i*) Planning a Digitisation Project, (*ii*) Data Capturing, (*iii*) Data Processing, (*iv*) Data Management and Storage, (*v*) Visualisation, XR and Virtual Worlds, and (*vi*) Access and Reuse.** Each group, comprising subject-matter experts from relevant partners, began developing a syllabus and compiling content. By M12, initial **module outlines and learning objectives** were ready for all six modules.

**Status & Key Outputs:** Task 2.2 is on track towards delivering **six training modules** as all 6 are in development, with no reduction in scope. It is also notable that content development will benefit from Task 2.1 outputs: about 30% of the material in the online courses will be adapted from existing resources (ensuring efficiency and avoiding reinventing content), which aligns with the project's objective to reuse validated content. This reuse can be seen as a measure for resource efficiency. Finally, Task 2.2's progress is evidenced by the **module coverage of the overall curriculum**: collectively, the modules cover all key areas defined in the WP2 objectives (3D tech, AI, XR, etc.), thereby ensuring that the Competence Centre will offer a comprehensive training programme.

**Deviations:** There have been **no major deviations** in Task 2.2.

**T2.3 - In-person workshops and seasonal training schools** *(Lead: PSNC; Participants: INCEPTION, UNIFE, ARCTUR, VF, PR, NISV, KMKG, MCA, EF, CNR-ISPC, CYI, TMO, IUIAI-UJA; AP: PIN, INFN, ICPD, CNRS)*

**Objective (from the DoA):** This task will plan and deliver a series of workshops and seasonal schools (summer and winter) to provide hands-on training. It will include a series of activities in Ukraine. The workshops and schools will be benchmarked against the 3D-4CH curriculum and participants will receive a certificate on successful completion. Topics to be covered include: 3D digitisation techniques, visualisation, technologies (including XR, AI and VR), storage and access, metadata, licensing, leadership, 3D project planning, working with volunteers, access and reuse, storytelling and audience engagement and topics related to ethical and legal use of technology. The workshops and schools will be organised in collaboration with universities, and stakeholders. Training materials for these activities will be prepared in collaboration with T2.1 and T2.2. TMO will organise a call to stakeholders and local time machines to host community 3D digitisation workshops.

**Activities M01–M12:** Task 2.3, officially started mid-2025 together with T2.2, made a significant impact by executing the project's first seasonal school: the **3D-4CH Winter School**, a three-day intensive training event held on *21–23* January 2026 in Brussels. This Winter School was hosted at the Royal Museum of Art and History (partner KMKG) and organised in cooperation with the Twin it! campaign. It brought together cultural heritage professionals (curators, digitisation experts, museum IT staff) from across Europe for a mix of lectures, workshops and networking. **Over *20* on-site participants** from various institutions attended the full program, and Day *1* was open in a hybrid format to a broader audience (more than *60* participants in person and up to *100* online). The Winter School's curriculum was directly aligned with 3D-4CH objectives: sessions covered 3D digitisation methods (with live demos of photogrammetry), use of AR/VR for museum storytelling, leadership in 3D projects, and ethical/legal considerations of 3D data. Notably, many sessions were hands-on – for example, a practical workshop had participants create a 3D model of one of the artefacts from the plaster cast workshop of the museum, under guidance from 3D-4CH experts (Figure 1 and 2).



*Figure 1 and 2: Hands-on activities from Day 2 of the Winter School 2026*

The program also included keynote talks by Advisory Board members on state-of-the-art 3D tech. Task 2.3 oversaw all logistical and content aspects: coordinating speakers (drawn from the consortium and

external experts), preparing training materials (workshop guides, datasets for practice), and managing participant registrations. The event was **highly successful**: feedback from attendees was overwhelmingly positive, highlighting the value of practical exercises and peer exchange. The Winter School concluded with participants receiving certificates of completion (complete with the project logo and an open badge format, see T2.4) and an invitation to join the Competence Centre's forthcoming online courses for continued learning. Furthermore, this Winter School represents one of a series, defining a solid foundation for the forthcoming seasonal schools. Internally, planning for the next seasonal school began in late 2025. The consortium decided that a Summer School 2026 would be beneficial

Beyond the seasonal school, Task 2.3 has also facilitated a range of **short workshops and capacity building activities,** as early as the beginning and well in advance of the official kick-off, among which are worth mentioning: the workshop *"Sculpting Digital Skills – 3D-4CH Capacity Building for Heritage Professionals"* at the Europeana Conference 2025 in Warsaw, the workshop *"3D Data in the Data Space for Cultural Heritage"* and the panel *"Powering 3D digitisation of Europe's heritage: challenges and opportunities"* at the Digital Heritage 2025 in Siena.

A noteworthy output of Task 2.3 is the set of training resources and documentation generated from events, which produced a rich "toolkit": slide decks from lectures, video recordings of keynotes and events, and a practical handbook summarising the workshops' exercises. These have been stored for future reuse on the OCC by the wider community.

**Status & Key Outputs:** Task 2.3 has hit a major milestone with the successful Winter School by M12. This aligns with the KPI of conducting at least one seasonal school in the first half of the project. The **participant numbers** met expectations(~*60* in-person and ~*100* online participants on day *1*, and ~*21* in-person trainees on days *2* and *3*). The quality of training is evidenced by participant feedback and by tangible outcomes – e.g. newly created 3D models from the hands-on sessions. Another KPI is geographic and stakeholder diversity: attendees in Brussels came from over *10* countries and a mix of museums, libraries, and independent heritage consultants, which fulfills the aim of broad European reach. The event also effectively integrated the **Twin it! initiative** (an EC campaign), showing good cross-initiative synergy (a qualitative KPI for capacity building events). The programme also included several current and recent 3D projects (e.g. Eureka3D-XR, XR Culture, 3DBigDataSpace,...) solidifying the ambition or plans to incorporate training resources from these projects into the OCC.

In terms of outputs, the project planned to create training **materials and documentation** from in-person events – the Winter School yielded a program and content that are now part of 3D-4CH's training portfolio. The media coverage and presence on [Europeana Pro](#) and the [EC website](#) demonstrate the event's success and visibility.

**Deviations:** Task 2.3 has largely proceeded as scheduled. Task 2.3 delivered one high-impact training school in the period, two workshops and one panel, which is in line with expectations. No deviations occurred – workshops and smaller events took place opportunistically as planned. If anything, Task 2.3 slightly **exceeded** expectations in community outreach by piggybacking on events like Researchers' Night, which wasn't explicitly listed but added value without detracting from core tasks.

**T2.4 - Certification** *(Lead: UNIFE; Participants: INCEPTION, UNIFE, FBK, CNR-ISPC, CARARE, EF, IUIAI-UJA)*

**Objective (from the DoA):** This task will define the 3D-4CH curriculum framework and will work (with academic partners and EF) to establish a certification process for courses and training materials offered through the competence centre.

**Activities M01–M12:** Task 2.4, in parallel with the above-mentioned tasks, set the strategic foundation for all training activities by developing a framework aimed at a **certification process**. In Spring 2025, the partners conducted a review of certification practices – examining how similar initiatives certify learners. Based on this, they decided to implement a **badge-based system** for micro-certification of specific skills and a certificate of completion for larger modules or event participation. By late 2025, an **"Open Badges" infrastructure** was set up in prototype form: the project is currently exploiting the registration of UNIFE (as an already accredited and reliable institution) to an open badge platform (https://www.open-badge.eu/) and has created a template for 3D-4CH badges, including metadata fields for the skill, level, issuing date and issuer. The first use of this system was at the Winter School – all participants who completed the *3*-day training received a digital badge acknowledging their participation and listing the skills addressed. These badges were prepared in advance by Task 2.4 and issued via email after the event. This pilot was successful: participants can now easily add the badge to their LinkedIn profiles or digital CVs and this tested the system's functionality.

Moreover, Task 2.4 began the process of seeking **formal accreditation** for some training components. UNIFE explored the possibility of offering ECTS credits for the online courses (particularly if university students participate). By M12, initial discussions with UNIFE's Continuing Education office were positive.

Task 2.4 also produced guidelines to ensure the training content meets certification standards. For example, they defined assessment criteria: each online module must have an assessment (quiz or assignment) and a passing threshold (e.g. *70%* correct) to earn the certificate. They also set a policy that certificates/badges are issued only for those completing the feedback survey – this encourages feedback collection, which is valuable for quality (and part of the quality assurance loop). These policies were documented in an internal **"Certification Process Action Plan"**. This action plan outlines roles, tools (the open badge platform, PDF certificate templates) and procedures (verification steps to avoid fraudulent claims).

**Status & Key Outputs:** Task 2.4 has made strong progress: the **certification process is operational** in pilot form, evidenced by the issuance of open badges for the Winter School participants. A certification scheme has been designed and even tested in a real scenario. The number of certificates issued so far is small (*20* badges for the Winter School), but with online courses coming, this will possibly grow; the system is ready to scale to potentially hundreds of learners.

Importantly, the certificate design aligns with **micro-credential standards** (Open Badges 2.0), a forward-looking aspect that ensures interoperability (learners can showcase their 3D-4CH badges on various platforms). This forward compatibility meets the requirement of adopting best practices in digital credentialing. Additionally, Task 2.4's integration with WP5 (impact) means that tracking of how

many people earn certificates will feed into impact metrics – they've set up a mechanism to log issued certificates and potentially follow up with recipients later to see if and how they apply the skills (though that's more WP5's role). So far, all is on track for the first wave of certifications to accompany the online course rollout in 2026.

**Deviations:** None significant. The certification task proceeded as planned. One small remark is that formal accreditation (like ECTS) is not yet secured – however, this was an optional ambition, not a GA requirement. The project is still investigating it and may achieve it in later stages, but even if not, the current certification method is adequate for the project goals. The timeline of issuing credentials is tied to the course availability. The deliverable D2.1 related to curriculum and certification is on schedule.

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**T2.5 - Collection of best practices** *(Lead: PSNC; Participants: All; AP: PIN, INFN, ICPD, CNRS)*

**Objective (from the DoA):** This task will gather best practices and case studies of 3D projects covering various perspectives: scales of the cultural heritage asset (from cities and towns, to individual buildings, monuments and museum objects), examples of uses of technology (AI, XR, VR), examples of reuse (storytelling, access for people with visual impairments) and uses in different sectors. The best practices will be made available via the competence centre platform (Knowledge Base) through a standardised template for ease of comparison.

**Activities M01–M12:** In the first 12 months, Task 2.5 operated in a preparatory mode, as its outputs are naturally tied to progress in other WPs. The team (PSNC leading, with all partners contributing) set up the **methodology for capturing best practices**. They designed a template to document each case study, including fields like: title, description of the heritage asset, technologies used, outcomes achieved, challenges faced, and lessons learned. This template was shared on the project's Google Drive and reviewed by partners. To populate potential content, an initial list of "candidate" best practices was brainstormed: partners nominated projects they know or have been involved in that could serve as examples. By mid-2025, a significant list of candidates already emerged.

Additionally, Task 2.5 leveraged outcomes from WP3 and WP4. For instance, the D3.1 report indirectly pointed to best practices in tool usage – e.g. citing exemplary projects where specific tools were validated. Task 2.5 earmarked some of those references to flesh out as stories. Deliverable D4.1 surveyed existing platforms, some of which had best-practice sections that 3D-4CH has borrow ideas from. By the end of Year 1, more than 30 **best practices** were written to contribute to the OCC's Knowledge Base and have been published, but many more are at the stage of internal drafts and will be released later in 2026 now that the OCC platform is up and running.

In summary, by M12 Task 2.5 has **laid the groundwork** for the publication of the best practices. The publication is part of D2.3 . This approach ensures that the published best practices will be the most current and insightful examples, including 3D-4CH's own demo cases and results. Meanwhile, the project's communications have already highlighted some best practices informally – e.g. news articles on the website often read like case studies: the **18 December 2025 news "[First 3D-Models from](#)**

[Ukraine Now Live on Europeana](#)**"** essentially narrates a best practice of emergency digitisation. These stories will be transformed into formal case entries in due course.

**Status & Key Outputs:** As of M12, the project has identified a robust pool of examples spanning various categories. These ranged in scale (from city to object data capturing), technology (AI, XR), and application (preservation, tourism, accessibility). The groundwork (template, initial drafts) is done, so the project is positioned to meet the goal of publishing a rich Best Practice Knowledge Base by the end, while 30+ case studies are already published on the platform as of M12. The integration of best practices into the training content has also begun (some best practices are mentioned during the Winter School and will appear as case examples in online modules), showing coherence in WP2 outputs.

**Deviations:** No deviations are reported for Task 2.5. The task progressed in line with the Description of Action and the planned timeline. The limited public visibility of best practices during the first 12 months was intentional and aligned with the design and availability of the Online Competence Centre platform. All preparatory activities (methodology definition, template design, identification of candidate case studies, and initial drafting) were completed as planned, ensuring readiness for large-scale publication in the subsequent project phases.

## 3.3 WP3 – Adoption of R&D advances In 3D Cultural Heritage

| WP Number | 3 | Lead | FBK |
|---|---|---|---|
| WP Name | Adoption of R&D advances In 3D Cultural Heritage | | |
| Start Month | 1 | End Month | 36 |

| Status M01 -> M12 |
|---|

**T3.1 - Analysis and validation of existing tools and methodologies** *(Lead: FBK; Participants: DISC, 3DResearch, INCEPTION, IN2, KMKG, ARCTUR, CNR-ISPC, UNIFE, ATHENA, TMO, RDF, PR, CYI, PSNC, TALENT, MCA, IUIAI-UJA; AP: PIN, INFN, CNRS)*

**Objective (from the DoA):** Identify, evaluate, and validate a comprehensive range of existing 3D digitisation and AI tools relevant to cultural heritage, ensuring they meet end-user needs. This task surveys the state-of-the-art in tools and engages stakeholders to assess which solutions are most suitable for broader use in CH conservation, education, tourism, etc.

**Activities M01–M12:** Task 3.1 was front-loaded in the project timeline and delivered substantial results early. The team (led by FBK) conducted a wide-ranging **state-of-the-art review of 3D/AI tools** in the first six months. They compiled input from all partners – many of whom contributed lists of tools from their domains. The result was Deliverable **D3.1 "State-of-the-art of 3D heritage tools and methodologies"** completed in July 2025. This report catalogues dozens of tools categorised by function: 3D reconstruction software, semantic enrichment and annotation tools, metadata translation tools, visualisation platforms and more, focusing in particular on what is used in or can significantly contribute to the cultural heritage sector. For each tool, the report provides a brief description, maturity level (TRL - Technology Readiness Level), cost/licensing and relevance to CH.

By M6, Task 3.1 had essentially built a **reference inventory of tools** and identified those best suited for integration or further development in 3D-4CH. After M6, the activities of this task were officially concluded, but directly informed other tasks: T3.2 acted as a continuation of T3.1, introducing validation on selected tools through partner testing and integration, noting strengths and limitations; T4.2 used this inventory to build the tools section of the Online Competence Centre platform.

Beyond the report, Task 3.1 created **practical outputs**: an online spreadsheet of tools and their evaluations (shared among partners for ongoing updates). Additionally, the consortium will start to integrate some validated tools into demonstration workflows (T3.3 and T3.4).

Task 3.1 also specifically addressed **automatic translation** solutions, as noted in the GA. As a result, the identified solution regarding generic translation engines will be used in WP2 for translating training resources (with supervision by volunteers and native speakers), while translation of metadata will rely on existing pipelines already in use by the Europeana initiative in order to ensure consistency, as discussed in D3.1.

**Status & Key Outputs:** Task 3.1 delivered **D3.1** on time in Month 6, hitting a major milestone and concluding its activities. This deliverable is a core KPI itself, representing the mapping of a large variety of existing tools (in fact, the report covers far more, likely *100+* tools and methods). The task engaged a broad range of partner expertise (the deliverable had contributions from *10+* partners), which is a sign of robust collaboration.

The **impact of Task 3.1** is already visible: WP4 credits this analysis for guiding platform development. Another significant KPI is the use of D3.1 outcomes in other initiatives, such as the development of the common data space for cultural heritage. In fact, among other results, classification and analysis of **3D data types (including a detailed analysis of MIME types)** were provided as a basis for defining supported 3D file formats in the new **Europeana Publish Framework for 3D**.

**Deviations:** Task 3.1 faced a minor adjustment due to the partner change: originally, CNRS-MAP was to lead the D3.1, but since they did not join, FBK took full lead and coordinated inputs from CNRS (the CNRS experts still contributed via an associated partner role). This reallocation was handled smoothly and did not delay the output. No content was dropped – in fact, the amendment added ATHENA RC and KMKG, who provided additional tool insights. So no negative deviation, possibly an enhancement.

One challenge was that some tools are evolving quickly; Task 3.1 captured the snapshot as of mid-2025. To mitigate obsolescence, the team intends to update key entries over time (though

formally the main task ended with D3.1, informally they continue tracking developments). This dynamic nature is not a deviation but a known aspect to manage (living document approach).

**T3.2 - New solutions and tools for 3D content creation and enrichment** *(Lead: FBK; Participants: CNRS, DISC, 3DResearch, INCEPTION, ARCTUR, CNR-ISPC, UNIFE, ATHENA, TMO, RDF, PR, CYI, PSNC, TALENT, MCA, IUIAI-UJA)*

**Objective:** Develop and implement new or improved tools to advance 3D content creation and semantic enrichment for cultural heritage. Focus areas include: *(i)* cutting-edge 3D reconstruction methods (e.g. NeRF or neural radiance fields, Gaussian splatting) for complex objects, *(ii)* AI-based semantic enrichment of 3D data (efficient, explainable neural networks for object recognition/annotation), and *(iii)* advanced querying of enriched 3D data through ontology-driven approaches. The goal is to push the boundaries of quality and intelligence in 3D digitisation, producing tools that can be scaled and integrated by heritage institutions.

**Activities M01–M12:** Over the last *6* months, this task moved from preparatory analysis (Task 3.1) into focused design and alignment across partners **for tool integration and reuse planning.** Several partners presented developments from R&D projects during WP3 internal workshops. Rather than duplicating these efforts, the team evaluated how outputs (e.g., NeRF engines, annotators, metadata tools) could be aligned into a **shared CH pipeline**. A joint technical model was defined to demonstrate the value of integrating open-source photogrammetry tools (e.g., COLMAP, OpenMVG), NeRF reconstruction (via Nerfstudio), 3D annotation platforms (e.g., Aioli), and semantic enrichment (e.g., custom classifiers trained on labelled heritage point clouds). The focus was not on standalone tools, but on **orchestrating them into a coherent workflow** usable by CH practitioners. A joint abstract titled *"Open Technologies for the 3D Cultural Heritage Digitisation Pipeline"* was submitted and **accepted (extended abstract stage)** at the **ISPRS Congress 2026 in Toronto**. The paper describes the full pipeline architecture and reuse of open-source components. It also showcases early experimental results and the rationale behind combining pre-existing tools within 3D-4CH's demonstrator.

**Status & Key Outputs:** Task 3.2 is at an early stage, having officially started at Month 6. Between M6 and M12, the focus has been on reviewing existing tools and research outputs available within the consortium and identifying how these can be aligned into a coherent workflow for cultural heritage 3D digitisation and enrichment. This phase included the conceptualisation of a unified demonstrator pipeline, informed by work in Task 3.1 and initial technical coordination to test interoperability across selected tools. A key output during this period was the **joint submission of a scientific paper** (now accepted in its extended abstract form) to the ISPRS 2026 Congress, where the proposed pipeline and early integration work will be presented. This task also supports the KPIs related to **the adoption of advanced tools (target: *10*),** although concrete outputs are expected in subsequent periods.

**Deviations:** No deviations have occurred in Task 3.2. Clarification was made early in its implementation (during WP3 meetings and PMB oversight) to align expectations with the Grant Agreement: this task is not intended to create entirely new tools, but to assess, align and adapt existing open-source or partner-developed components for integration in a heritage-focused 3D

enrichment pipeline. This clarification helped avoid duplication with ongoing research in other EU projects and ensured compliance with both DoA and amendment scope.

**T3.3 - High-quality 3D content creation and enhancement** *(Lead: 3DResearch; Participants: DISC, FBK, INCEPTION, IN2, ARCTUR, CNR-ISPC, UNIFE, ATHENA, TMO, RDF, PR, CYI, PSNC, TALENT, MCA, KMKG, IUIAI-UJA)*

**Objective (from the DoA):** To produce and document high-quality 3D models and virtual scenarios using advanced digitisation methods, with particular attention to complex cultural heritage assets. This includes the enhancement of existing models, integration of semantic and metadata layers, and preparation of exemplary content to be showcased through the Online Competence Centre.

**Activities M01–M12:** No technical activities were planned or implemented in the reporting period, as Task 3.3 is scheduled to begin at Month 13. However, preparatory alignment has already taken place, particularly in relation to the pipeline defined under Task 3.2. Task 3.3 is expected to adopt—either partially or in its entirety—the technical workflow emerging from T3.2, ensuring continuity in the enrichment and reuse of tools for high-quality 3D content creation. Partners have discussed this integration during WP3 coordination meetings and are planning test cases accordingly.

**Status & Key Outputs:** Not applicable at this stage. Task implementation begins in the next period. Preparatory coordination has been initiated in WP3 technical meetings to ensure continuity from Tasks 3.1 and 3.2.

**Deviations:** None. The task is scheduled to begin after M12 as per the Grant Agreement timeline.

**T3.4 - Upscaling solutions** *(Lead: DISC; Participants: FBK, 3DResearch, INCEPTION, IN2, ARCTUR, CNR-ISPC, UNIFE, ATHENA, TMO, RDF, PR, CYI, PSNC, TALENT, MCA, KMKG, IUIAI-UJA)*

**Objective (from the DoA):** To test and validate the scalability and replicability of the 3D digitisation workflows and services developed throughout WP3, including content processing pipelines, annotation tools, and AI-based enrichment methods, in broader institutional or cross-border settings.

**Activities M01–M12:** No activities planned during this reporting period. Task 3.4 is scheduled to begin at Month 25.

**Status & Key Outputs:** Not applicable at this stage. No deliverables or milestones linked to Task 3.4 are due before Month 25.

**Deviations:** None. Task timeline aligns with the DoA.

## 3.4 WP4 – Deployment of the Online Competence Centre: re-using infrastructures for 3D data

| WP Number | 4 | Lead | ARCTUR |
|---|---|---|---|
| WP Name | Deployment of the Online Competence Centre: re-using infrastructures for 3D data | | |
| Start Month | 1 | End Month | 36 |

| Status M01 -> M12 |
|---|

**T4.1 - State of the art and design of the Online Competence Centre platform**

*(Lead: ARCTUR; Participants: EF, FBK, INCEPTION, UNIFE, ATHENA, VF, TMO, IN2, DISC, RDF, PR, CNR-ISPC, CYI, PSNC, 3D RESEARCH, EFHA, TALENT, NISV, MCA, CARARE, IUIAI-UJA; AP: PIN, INFN)*

**Objective (from the DoA):** Assess existing partner platforms and tools for knowledge storage, tool federation and 3D content deployment and based on user requirements, design the architecture and features of the Online Competence Centre platform. Essentially, Task 4.1 lays the foundation for the platform by identifying what can be re-used from partners and past projects, and defining how the platform will function (components, integrations, user interface) to meet stakeholder needs.

**Activities M01–M12:** Task 4.1 was a major focus in the early project months and culminated in Deliverable **D4.1 "Design of the Online Competence Centre platform"** delivered in July 2025. The task began with a comprehensive **state-of-the-art analysis of existing infrastructures**: partners contributed information on platforms they operate or know, which could be leveraged. Concurrently, Task 4.1 gathered **user requirements**. Leveraging input from WP5's Stakeholder Panel discussions and an online survey, the team compiled key expectations: for example, stakeholders confirmed the need for a platform that consolidates training resources (allowing to browse seamlessly among resources regardless of the provider), provides a knowledge base of standards/best practices, includes a tool repository or at least links to tools and allows search and retrieval of 3D content relevant to CH. Also, ease of navigation and the need for a multilingual interface were highlighted.

Using these inputs, ARCTUR (task lead) and other technical partners devised the **platform architecture design**. D4.1 describes this in detail: the platform would consist of several modules – a **Training Hub** (for courses and materials), a **Knowledge Base** (for guidelines, best practices, case

studies) and a **Tools & Services section** (catalogue of tools). The design proposed to deploy the platform in phases: starting with a simpler integration (like a Google Sites for initial content – which was indeed used for the early website), then migrating to a more feature-rich environment by M12 and beyond. The design process in M1–M6 included **joint reviews with other WPs** to ensure nothing was missed (notably WP2 and WP3, who provide content and functionality requirements). By May 2025, a draft design was reviewed by WP2, WP3, WP5, WP6 together and feedback was integrated.

Deliverable D4.1 was produced and published as planned, outlining both the state-of-the-art analysis (which cited relevant platforms with lessons learned) and the chosen design approach (with diagrams of architecture). It also delineated technical choices. Task 4.1 was regularly concluded by M6 and its output guided Task 4.2.

**Status & Key Outputs:** The immediate KPI was delivering D4.1 (platform design) by M6 – accomplished. Another measure is whether the design was validated by stakeholders. A draft version of D4.1 was presented to the Stakeholder Panel in July 2025 for comments. The response was positive, endorsing the focus on user-friendly unified access to training and content (the panel specifically appreciated that the platform will be a "one-stop-shop" for 3D knowledge, per meeting notes). They also gave minor suggestions like including a community forum section – which the design then added as a future feature (not in first version, but kept in the roadmap). Meeting these user expectations is a qualitative KPI that Task 4.1 managed.

Also, Task 4.1 aimed to leverage existing platforms to reduce duplication. We can measure success in that the project did not build from scratch unnecessarily: for instance, self-paced training courses from the Europeana Academy have been among the first online courses to be integrated into the platform, while the integration of the 5DCulture CoP (Community of Practice) is in the roadmap of development, as specific resources were identified in the amendment. This reuse aligns with cost-effectiveness and synergy KPIs set out at the proposal stage.

**Deviations:** Task 4.1 encountered no notable deviations. The plan and analysis encompassed a broad range of options, and final decisions stuck to what was in GA. D4.1 allowed for a stepped implementation. No deliverable or milestone was missed.

## T4.2 - Deployment of the Online Competence Centre platform *(Lead: ARCTUR; Participants: FBK, INCEPTION, RDF; AP: PIN, INFN)*

**Objective (from the DoA):** Develop, integrate, and deploy the actual Online Competence Centre platform, building on Task 4.1's design. Ensure the platform offers access to training materials, guidelines, standards, best practices and 3D content in a user-friendly manner. Essentially, Task 4.2 is about turning the plans into a live operational platform, evolving through iterations (first version by M12, improved versions thereafter).

**Activities M01–M12:** Platform development began in earnest after D4.1 (M6) submission. The technical team set up the development environment in August 2025, choosing a tech stack consistent with requirements (an European-hosted open-source CMS customised for multilingual content, plus

custom modules for specific functionalities). By September 2025, the **core website structure** was in place, and internal testing started. Content migration and input occurred in parallel: as WP2, WP3, WP5 and WP6 produced content (courses, tool descriptions, news articles), these were entered into the platform. An **internal beta of the platform was quietly launched in November 2025** and gradually populated. By M12, the **Online Competence Centre platform is live** at www.3d4ch-competencecentre.eu and operational. It features:

- **Online Courses section:** offering access to e-learning modules with filtering by topic, target group, skill level. Users can click on course entries to view the course content. Currently, content is openly viewable; user account functionality exists and will be used more in future for tracking progress.
- **Tools directory:** a searchable catalogue of 3D tools and platforms with descriptions and links. Users can filter tools by category (capture, processing, analysis, etc.).
- **Knowledge Base:** a library of resources (guides, papers, case studies, datasets) relevant to 3D CH, also filterable. Each entry provides a summary and source link.
- **Events calendar:** listing project events and relevant external events, such as the Winter School (with details and dates) and past events (e.g., Digital Heritage 2025 panel).
- **News section:** regularly updated news articles highlighting project achievements and opportunities (e.g., press releases, project updates like the Ukraine 3D models news). By M12, over a dozen news posts have been published on the site migrated from those available on the old website.
- **Join/Login functionality:** a user registration system ("Join to start") is in place, allowing users to create accounts. While full community features are not yet activated, account creation is being tested to support future personalised services.
- **Multilingual capability:** the site architecture supports multiple languages. Content is primarily in English now, but the interface can accommodate translations. The URL structure (with /en/) suggests readiness for other language versions in future.
- **Responsive design:** the platform is mobile-friendly, enabling users to access courses and resources on various devices.

The first release included implementing search and filter functions, content tagging, and basic analytics to track usage. The development team conducted debugging and security testing in November–December 2025. Feedback was gathered from consortium members and a few external testers (Stakeholder Panel representatives) who explored the beta site. Minor issues (broken links, filter glitches) were identified and fixed. By January 2026, the **platform was in a stable state**, populated with initial content and ready for broader public promotion (which ramped up around the Winter School event). Importantly, the platform's launch was coordinated with the project's communication efforts.

**Status & Key Outputs:** Deliverable *D4.2 - First version of the Online Competence Centre platform* is due in January 2026 (M12) and is on track and effectively achieved. The platform meets the core specifications from D4.1 and provides a one-stop hub for our six work packages' outputs. In terms of KPIs: by M12, **the platform hosts all content types that demonstrate its functionality** – at the current stage *7* online courses, *42* tools, and *35* knowledge items (plus numerous news/events) are available. The platform also implements tracking for KPIs such as the number of resource downloads

or course views, which will be collected from M13 onward. Qualitatively, the first release has been very well received within the consortium – partners find it user-friendly and visually appealing. Security and GDPR compliance requirements were all met (the site's privacy policy and data protection measures were reviewed as part of D1.2 inputs). The existence of a functioning platform by M12 is a significant achievement of the project, underpinning many other objectives (capacity building, dissemination of best practices).

**Deviations:** Task 4.2 experienced no major deviations; development progressed largely on schedule. There was also a brief consideration to delay the public launch until after Winter School, but the decision was made to keep the schedule and use the Winter School as an opportunity to drive traffic to it. However, it must be taken into account that links published on other platforms may result in broken links and resource not found errors (404). As a mitigation, the old website has been kept alive at [old.3d4ch-competencecentre.eu](old.3d4ch-competencecentre.eu) and users will be redirected here when relevant. All critical features planned for the first release were implemented; a few non-critical features (like a discussion forum and user profile dashboards) were deferred to later versions to focus on core functionality – this was in line with the project's agile approach and is not considered a deviation but a prioritisation. Overall, Task 4.2 delivered exactly what was expected: a functioning platform by M12, with only minor tweaks needed during development.

## T4.3 - Publishing, aggregating and archiving 3D content *(Lead: PSNC; Participants: EF, FBK, INCEPTION, UNIFE, ATHENA, VF, TMO, IN2, DISC, RDF, PR, CNR-ISPC, CYI, ARCTUR, 3DRESEARCH , EFHA, TALENT, NISV, MCA, CARARE, IUIAI-UJA; AP: HIGHBURY)*

**Objective (from the DoA):** Facilitate the publication and sharing of 3D content through the platform and into the common European data space for cultural heritage. This involves harmonising existing 3D datasets to quality standards, implementing protocols for publishing and aggregating 3D objects (including pipeline to Europeana), ensuring long-term preservation and specifically supporting an aggregation pipeline for Ukrainian cultural heritage institutions.

**Activities M01–M12:** Although Task 4.3 is officially scheduled to begin at M13, **preliminary activities were initiated during the reporting period**, led by the project coordinator (INCEPTION). These early actions focused on demonstrating the feasibility and urgency of publishing 3D content from Ukraine. Notably, the first 3D datasets contributed by Ukrainian cultural heritage institutions were successfully published on Europeana, as reported in the project's dissemination news (see ["First 3D-Models from Ukraine Now Live on Europeana Through 3D-4CH"](#) Dec 2025). The process of aggregating Ukrainian 3D models to Europeana complied with Europeana's data usage policies and Creative Commons licensing (the published models were released under CC BY-NC). This practical achievement (in collaboration with the XRCulture project, which also aggregated other Ukrainian models with the same pipeline) served as a pilot for the dedicated Ukrainian aggregation pipeline described in the Grant Agreement.

In parallel, 3D-4CH actively participated in cross-project coordination meetings (common European data space for cultural heritage, XRCulture, 3DBigDataSpace, Eureka3D-XR) in order to ensure that multiple aggregation pipelines of 3D content from Ukraine were shared among actors. The

aggregation workflow design has now reached maturity and will be formally handed over to **PSNC** at the start of M13, in line with the DoA.

**Status & Key Outputs:** While formal implementation is set to begin in the next period, Task 4.3 has already demonstrated early impact through the onboarding of Ukrainian CH datasets and its alignment with European-level coordination bodies. These initial outcomes contribute to the long-term KPIs related to the volume and quality of 3D content published through the platform and aggregated into the data space.

**Deviations:** None. The early preparatory actions were consistent with the task scope and have positioned the consortium for a smooth and timely start of full implementation in M13.

### T4.4 - Storytelling and visitor engagement in XR *(Lead: NISV; Participants: IN2, ARCTUR, FBK, PSNC, MCA, EF, RDF, NISV, TALENT)*

**Objective (from the DoA):** The objective of Task 4.4 is to explore, structure and showcase innovative approaches to storytelling and visitor engagement using XR technologies (AR, VR, social XR), demonstrating how 3D cultural heritage content can be meaningfully accessed, interpreted and reused. The task aims to develop a shared understanding of "storytelling scenarios" within the 3D-4CH ecosystem and to prepare a series of transferable, practice-oriented XR storytelling scenarios that can be integrated into the Competence Centre and linked to training and capacity-building activities.

**Activities M01–M12:** Task 4.4 started at M7 and, in its first period, operated in a preparatory and exploratory phase. NISV coordinated the kick-off of the task and initiated a shared reflection on the definition and scope of "storytelling scenarios," distinguishing them from best practices and purely technical showcases. Partners contributed inspirational XR examples from previous and ongoing projects across heritage, media, tourism, education and community-driven contexts. This material informed an initial conceptual framework for XR storytelling scenarios, including narrative structure, user experience, technical choices, data availability and reuse constraints. The task also contributed to the preparation of a dedicated Winter School session on storytelling and XR, ensuring early alignment with training and capacity-building objectives.

**Status & Key Outputs:** Progress in M07–M12 is primarily qualitative, as Task 4.4 spans the full project duration. The task has successfully established a shared understanding of its scope and methodology, collected a broad set of reference XR experiences, and aligned its activities with WP4 platform development and WP2 training plans. No quantitative KPIs or deliverables are due at this stage.

**Deviations:** No deviations are reported. Task 4.4 formally runs from M7 to M36, initial coordination and conceptual activities informed the platform development and contributed to the Winter School. That workshop was intended to gather insights and perspectives from outside the consortium and to accelerate the consolidation and validation of the storytelling scenario framework.

**T4.5 - Iterative Refinement of tools and services** *(Lead: INCEPTION; Participants: ARCTUR, RDF, ATHENA, PSNC, UNIFE, NISV, CNR-ISPC, TALENT, IUIAI-UJA)*

**Objective (from the DoA):** To refine and improve the tools, services and platform features developed during WP4 based on feedback collected through user engagement, pilot use cases and stakeholder consultation. This includes updates to the Knowledge Base, Training Hub and aggregation workflows to ensure usability, technical robustness and long-term sustainability of the 3D-4CH Online Competence Centre.

**Activities M01–M12:** No activities were planned or implemented during this reporting period. Task 4.5 is scheduled to begin at Month 25, following the full deployment and initial validation of the platform's core services.

**Status & Key Outputs:** Not applicable at this stage. There are no deliverables or KPIs linked to Task 4.5 during the current reporting period.

**Deviations:** None. The task is on schedule in accordance with the Grant Agreement.

## 3.5 WP5 – Impact measurement and long-term sustainability

| WP Number | 5 | Lead | IN2 |
|---|---|---|---|
| WP Name | Impact measurement and long-term sustainability | | |
| Start Month | 1 | End Month | 36 |

Status M01 -> M12

**T5.1 - Definition of target groups** *(Lead: MCA; Participants: INCEPTION, UNIFE, FBK, IN2, DISC, ARCTUR, RDF CNR-ISPC, CYI, PSNC, 3DResearch, EFHA, TALENT, NISV, IUIAI-UJA)*

**Objective (from the DoA):** This task identifies the target groups that will benefit from the Competence Centre's services and explains how these services will be tailored to meet the specific needs of each group.

Contributing to the development of this task will be the results of the virtual and in-person meetings with the Stakeholder Panel and Advisory Board for the cross-cutting activities planned in WP1/Task1.1.

**Activities M01–M12:** Task 5.1 kicked off at project start with the formation of the **Stakeholder Panel** and **Advisory Board**, as these bodies were integral in identifying and reaching target audiences. In the first month, the consortium validated an initial list of stakeholder categories: *cultural heritage professionals (museum curators, archivists, conservators)*, *3D practitioners/technologists*, *researchers/educators*, *students/young professionals*, *policy-makers/funders* and *tech industry partners* – with attention to geographic diversity and especially inclusion of **Ukraine's CH sector** as a priority group. On 19 February 2025 (immediately after project start), the **inaugural meetings of the Advisory Board and Stakeholder Panel** were held, bringing together experts and CHI representatives from across Europe (including members from Ukraine). These meetings were instrumental in validating our target group definitions and highlighting key needs: e.g., CHIs emphasised the need for practical guidance and funding information, while academics pointed out gaps in the curriculum that the Centre could fill. Following this, in April–May 2025, WP5 launched a **Target Groups Survey** aimed directly at end users to refine our understanding of their current use of 3D and needs for support. By July 2025, the findings from these engagements were consolidated into **Deliverable D5.1 "Definition of Target Groups"**, which was completed on schedule (M6). D5.1 enumerated the six primary target categories, detailing their characteristics and listing specific needs or interests for each. The deliverable also outlined engagement strategies per group (for instance, leveraging professional networks for practitioners, social media for students). The stakeholder mapping exercise included creating a database of contacts: by M12, the project has an extensive contact list (*>150* individuals) segmented by group, who are kept informed via newsletters and targeted invitations. Another aspect was aligning with existing networks: we liaised with the Europeana Network Association and national aggregator networks to identify CHIs that could benefit and to avoid overlap in engagement. Throughout, Task 5.1 ensured that **inclusivity and diversity** were considered – making sure to include smaller and under-resourced institutions in our target list, and ensuring gender balance in our stakeholder panel and consultations.

**Status & Key Outputs: Deliverable D5.1** was successfully delivered, providing a clear blueprint of our audiences. This has directly guided WP6 and WP2 activities in communication and training design. A notable achievement is that all initially planned target categories have not only been identified but also engaged: each group is represented either in the Stakeholder Panel or via survey respondents, confirming broad coverage. KPIs related to stakeholder engagement in the early phase have been exceeded. The Advisory Board, while more scientific, also contributes by representing high-level stakeholders and validating needs. The project's commitment to **Ukraine** as a special target group is reflected in progress: Ukrainian CHIs are explicitly included. Another outcome is the integration of target group definitions into the platform's user experience. This coherence between the deliverable and implementation shows effective use of Task 5.1 results. Moreover, the stakeholder mapping set quantitative and qualitative baselines (e.g., awareness levels, training needs intensity), which will be used to measure impact later. Already, some initial impact is visible: at least *50* institutions from our target list have interacted with the project by M12 (through surveys, events, or platform usage), indicating good penetration into the community.

**Deviations:** Task 5.1 proceeded without deviations. The only noteworthy adaptation was sequencing: the target group survey was launched slightly after the training resource survey. We allowed an extended response period to ensure enough data, but this did not delay D5.1 (deliverable was still ready by the end of July 2025). If anything, the positive response and broad interest meant we

gathered more data than anticipated, which was handled by dedicating extra effort to analysis. No change to the task scope or objectives was needed. The robust early engagement meant that we had a clear direction for outreach sooner, benefiting other WPs. So Task 5.1 essentially ran as planned and set a strong foundation.

**T5.2 - Impact assessment** *(Lead: INCEPTION; Participants: UNIFE, EF, FBK, ATHENA RC, KMKG, TMO, IN2, DISC, ARC, RDF, CNR-ISPC, CYI, PSNC, 3DResearch, EFHA,Talent, NISV, MCA, IUIAI-UJA)*

**Objective (from the DoA):** Development of a framework to measure the impact of services and usage patterns, including: *(i)* tracking reuses of services, tools, and the knowledge base by CHIs; *(ii)* monitoring the number of workshops, events, CHIs contacted, and participant engagement, including follow-up data; *(iii)* measuring the adoption of standards and advanced technologies by CHIs and their participation in events; *(iv)* documenting the creation and quality of 3D objects and virtual scenarios, and their dissemination reach; *(v)* tracking the engagement and training of Ukrainian experts and CHIs.

**Activities M01–M12:** During the first reporting period, Task 5.2 was carried out in a preparatory and methodological phase. INCEPTION coordinated the definition of the overall impact-assessment approach, drawing on WP5 objectives and on inputs from the Stakeholder Panel and Advisory Board. A preliminary impact framework was outlined, identifying key impact dimensions such as service relevance and effectiveness, accessibility and usability, interoperability and reusability, capacity building and sustainability. Initial parameters and indicators were defined to cover adoption and usage of services, participation in training and events, engagement metrics, interoperability with the common European data space for cultural heritage and qualitative feedback from stakeholders. The task adopted the Europeana Impact Playbook as a reference methodology and initiated the design of an integrated data-collection workflow, including the concept of a centralised Impact Dashboard, to be further developed in subsequent phases.

**Status & Key Outputs:** Progress in M01–M12 is primarily qualitative. A shared understanding of impact goals, evaluation criteria, and indicator families has been established across the consortium, providing a solid foundation for systematic evidence collection in later project stages. The preliminary framework supports the future monitoring of reuse, engagement, training uptake, interoperability, and dissemination reach, as well as the tracking of Ukrainian stakeholder involvement. As per request, more ambitious quantitative targets are under definition for both the mid-term and final reviews, reflecting a phased approach from initial validation and uptake to large-scale adoption, reuse and long-term impact across the European cultural heritage sector. However, no quantitative KPIs or formal deliverables are due for Task 5.2 only in this reporting period. Therefore, please refer to overall KPIs tracking below.

**Deviations:** No deviations are reported. All activities carried out are aligned with the Description of Action and contribute to the planned development of the impact-assessment framework, which will be consolidated in the interim and final deliverables foreseen under WP5.

**T5.3 - Assurance of impact through the Stakeholder Panel** *(Lead: IN2; Participants: INCEPTION, UNIFE, FBK, ATHENA RC, KMKG, TMO, DISC, ARC, RDF, CNR-ISPC, CYI, PSNC, 3DResearch, EFHA,Talent, NISV, MCA, IUIAI-UJA)*

**Objective (from the DoA):** Implementation of procedures for monitoring and managing stakeholder panel activities and results. Definition of a workflow to: *(i)* ensure review of project results by the stakeholder panel; *(ii)* monitor the process; *(iii)* define expected results; and *(iv)* protect intellectual property rights.

**Activities M01–M12:** Task 5.3 formally started at M6. From that point onwards, a structured engagement process with the Advisory Board (AB) and the Stakeholder Panel (SP) was implemented and integrated into the project workflow. Following the initial meetings held in early 2025, a second joint online session with AB and SP took place in July 2025, during which WP leaders presented project progress, including the preliminary platform design and training plans and collected strategic and operational feedback. Advisory Board members provided high-level guidance, including recommendations on keeping pace with rapidly evolving technologies and embedding sustainability considerations early in the project lifecycle, while Stakeholder Panel members contributed practice-oriented feedback that informed the refinement of training content and platform features.

Active participation of Stakeholder Panel and Advisory Board members in meetings and events was always ensured. For example, stakeholder engagement was further strengthened through the **active involvement of Advisory Board and Stakeholder Panel members in the 3D-4CH Winter School (January 2026)**. Members participated not only as observers but also as **active contributors**, including invited speakers (e.g. **Albert Sierra** and **Nicolò Dell'Unto**) and selected participants. Overall, **more than 16 Cultural Heritage Institutions represented in the Stakeholder Panel were involved in the Winter School**, providing direct feedback during sessions, workshops and informal discussions. This ensured real-time validation of project approaches and reinforced the co-creation model underpinning Task 5.3.

Beyond formal meetings and events, continuous interaction was maintained through dedicated communication channels and targeted follow-ups. Several AB and SP members also volunteered as early testers of platform components, providing usability and content-related feedback that informed WP4 developments.

**Status & Key Outputs:** While no formal deliverables are due for Task 5.3 during this reporting period, the main engagement milestones have been achieved. The Advisory Board and Stakeholder Panel are fully operational, with regular interactions established and clear evidence of their contributions reflected in project outputs. Stakeholders have reviewed and validated early versions of the platform and survey results, effectively fulfilling the intended assurance-of-impact role. Qualitative indicators, such as stakeholder satisfaction and perceived relevance of the Competence Centre services, show positive results, with feedback confirming that stakeholder recommendations are meaningfully integrated into the project's development.

**Deviations:** No deviations are reported. All activities carried out are aligned with the Description of Action and contribute to the planned development of the impact-assessment framework, which will be consolidated in the interim and final deliverables foreseen under WP5.

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**T5.4 - Development of long-term sustainability plan** *(Lead: NISV; Participants: IN2, ARCTUR, FBK, PSNC, MCA, EF, RDF, NISV, TALENT)*

**Objective (from the DoA):** Development of a long-term sustainability plan, including criteria for data validation, quality assessment and data preservation. Preparation of a plan for the return to the repositories of the Ukrainian CHIs of the digital documentation rescued through the Save the Ukraine Monument (SUM) initiative and a specific long-term sustainability plan for their preservation and use in the post-conflict reconstruction phase. Provisions for the sustainability and take-over of the Competence Centre's online platform.

**Activities M01–M12:** No activities were planned or implemented during this reporting period. Task 5.4 is scheduled to begin at M25, following the consolidation of impact assessment results under Task 5.2 and the availability of validated evidence from stakeholder engagement and service uptake.

**Status & Key Outputs:** Not applicable at this stage. There are no deliverables or KPIs linked to Task 5.4 during the current reporting period.

**Deviations:** None. The task is on schedule in accordance with the Grant Agreement.

## 3.6 WP6 – Communication, dissemination and community outreach

| WP Number | 6 | Lead | TMO |
|---|---|---|---|
| WP Name | Communication, dissemination and community outreach | | |
| Start Month | 1 | End Month | 36 |

| Status M01 -> M12 |
|---|

**T6.1 - Communication and Dissemination Plan** *(Lead: TMO; Participants: All)*

**Objective (from the DoA):** A detailed Communication, Outreach, Dissemination, and Exploitation (CODE) Plan will be developed to target and engage the Competence Centre's current and future audiences. This task involves creating the CODE plan, identifying target audiences and key messages and outlining strategies and processes for dissemination and communication. A Communication Task Force (CTF), with representatives from each partner, will be established to implement the plan. The TMO team will coordinate actions and continuous monitoring using quantitative performance indicators and qualitative stakeholder feedback will guide necessary updates to the CODE Plan.

**Activities M01–M12:** Task 6.1 was implemented as a **set-up task during the first project phase (M01–M06)**. Under the coordination of TMO, the consortium collaboratively developed the CODE Plan (Deliverable D6.1), building on the objectives of the Description of Action and aligning closely with the target-group definitions and engagement logic developed in WP5. Inputs were collected through consortium discussions, dedicated Communication Task Force (CTF) meetings, and written partner contributions.

The CODE Plan defines a phased communication and dissemination approach, distinguishes between communication, dissemination and exploitation activities and identifies the role of the 3D Online Competence Centre as the central hub for outreach and engagement. It specifies core messages tailored to different stakeholder groups (cultural heritage institutions, professionals, researchers, SMEs, policymakers and citizens), outlines a multi-channel strategy (web, social media, press, events), and sets quantitative and qualitative KPIs to monitor performance.

As part of Task 6.1, the **Communication Task Force (CTF)** was formally established, with one representative per partner. The CTF provides the governance structure for WP6, coordinates actions across tasks, and ensures consistency of messaging and branding. After the delivery of D6.1 (M06), Task 6.1 transitioned into an oversight and coordination role, ensuring that implementation tasks (T6.3 and T6.4) remain aligned with the agreed strategy.

**Status & Key Outputs:** Deliverable D6.1 was completed and submitted on time. All strategic and organisational objectives of Task 6.1 were achieved, including the definition of target audiences, key messages, channels, KPIs and governance mechanisms. KPIs linked to Task 6.1 relate primarily to strategic readiness and coordination and are considered fulfilled.

**Deviations:** None. The task was completed as planned and in full alignment with the Grant Agreement.

**T6.2 - Corporate identity and channels** *(Lead: TMO; Participants: All)*

**Objective (from the DoA):** This task aims to kick off the project's CODE strategy, enhancing visibility at European and global levels. Corporate identity and materials: A project logo and set of graphic elements will be designed, along with project reporting and presentation templates. A brochure and other print materials like roll-ups, flyers and posters will be created. Websites: Initial web pages on

partners' websites will transition to a comprehensive 3D-4CH platform, serving as a central hub for project information, materials, courses, guidelines, best practices and 3D content. Social media: A social media strategy will be developed and implemented, utilising channels like Twitter/X, LinkedIn and YouTube to target cultural heritage institutions, professionals, stakeholders and the public. A joint hashtag will foster community engagement and facilitate tracking. Existing social media channels of partners will also be leveraged to enhance outreach.

**Activities M01–M12:** Task 6.2 was implemented primarily during the **initial set-up phase (M01–M06)**. Under the lead of TMO, a complete visual identity was developed, including the project logo, style sheet and graphic guidelines. Reporting and presentation templates were produced to ensure a consistent visual appearance across all deliverables, presentations and communication materials.

During this phase, the **project website** was launched as the main public-facing communication channel, providing information on the project objectives, consortium, activities and news. In parallel, the foundations for the future transition to the **3D-4CH Online Competence Centre** were defined, ensuring continuity between the project website and the service-oriented platform scheduled for launch later in the project.

Dedicated social-media channels were set up, with a strong emphasis on LinkedIn as the primary professional channel, supported by coordinated use of partners' existing channels and a shared project hashtag (#3D4CH). Initial promotional materials, including a project flyer and roll-up, were produced and made available to partners for use at events.

**Status & Key Outputs:** All corporate identity elements and communication channels were successfully established within the planned timeframe. The project achieved early visibility at European level and ensured consistent branding across consortium outputs. KPIs related to identity creation, channel activation and availability of core materials were met.

**Deviations:** None. The task progressed as planned.

## T6.3 - Communication activities *(Lead: TMO; Participants: All)*

**Objective (from the DoA):** To build awareness and trust, and to enhance outreach and engagement, the project will develop and distribute various content via multiple channels. A press campaign will generate public communication content, including at least *10* press and news releases focusing on project milestones, distributed via media and social media. Audio-visual content will include short videos on the most significant 3D objects and *5* video interviews with key stakeholders and community representatives at project events. Social media campaigns will disseminate project activities and raise awareness about digital transformation opportunities, using short video clips, key message cards and short spots to engage the broader public. Regular news updates and accomplishments will be shared via the project website, traditional media, events and social media, covering activities like working group meetings, webinars, publications and conferences.

**Activities M01–M12:** Task 6.3 became fully operational from **M7 onwards**, following the completion of the CODE Plan and the activation of core communication channels. Communication activities focused on the regular production and dissemination of content through the project website, social media, press channels and partner networks.

Key activities included the publication of frequent news items highlighting project milestones, consortium activities, surveys, events and early results (e.g. Ukrainian 3D content publication, platform progress, Winter School preparation). Coordinated social-media campaigns were implemented around major moments such as the launch of the LinkedIn channel, calls for participation and the 3D-4CH Winter School. Audio-visual materials, including short videos and visual assets, were prepared to support online engagement and storytelling.

The Communication Task Force met regularly to plan campaigns, prepare shared communication assets, coordinate timing across partners and review performance metrics. Communication efforts were closely linked to WP2 and WP4 activities to ensure consistent promotion of training, workshops and technical outputs.

**Status & Key Outputs:** By M12, communication activities were fully embedded in the project workflow. The project exceeded several first-year targets, including the number of news items published, social-media posts and engagement around flagship activities such as the Winter School. Communication actions effectively supported participation in project events and contributed to growing recognition of 3D-4CH within European cultural-heritage and digital-heritage communities.

**Deviations:** No deviations are reported. Tactical adjustments (e.g. prioritising LinkedIn over other channels) were made to optimise reach and engagement and remain fully consistent with the CODE Plan.

**T6.4 - Dissemination activities** *(Lead: TMO; Participants: All)*

**Objective:** To effectively share the project's findings and achievements, the project will create and utilise various communication tools and materials. These will help stakeholders understand the project's results and encourage them to implement these outcomes in their own work. Mobilisation of key European and international stakeholders and associations within cultural, creative and technology sectors. Relevant networks such as NEMO, ICOM, ICOMOS, ICARUS, EEN, Wikimedia, Blockchain Alliance Europe, Tourism From Zero and Europa Nostra will be addressed to spread invitations through their partners. Networking and synergies with international initiatives and other European projects. The Competence Centre for 3D will establish collaborations at various levels with projects and initiatives dealing with cultural, creative and technology actors. Networks like ENA, 4CH, E-RIHS, DARIAH, ECHOES, TMO and all the others represented by 3D-4CH partners will actively support these efforts.

**Activities M01–M12:** Task 6.4 started at **M7**, in parallel with Task 6.3. Dissemination activities focused on participation in international conferences, workshops, clustering events and network meetings relevant to digital cultural heritage, 3D technologies and capacity building. Project partners actively

presented 3D-4CH at European and international events and engaged with key networks such as Europeana, NEMO, E-RIHS, DARIAH and related Digital Europe initiatives.

A shared **dissemination and communication registry** was used to systematically track outreach actions, presentations and events attended by partners, enabling coordinated follow-up and evidence-based reporting. Dissemination efforts also supported the creation of synergies with other European projects and initiatives, reinforcing the project's positioning within the wider digital-heritage landscape.

**Status & Key Outputs:** By the end of the reporting period, dissemination activities had reached a broad and diverse audience and exceeded initial expectations for Year 1. The project was represented at multiple high-profile events, significantly expanding its network of stakeholders and potential users. These activities laid a solid foundation for future exploitation and sustainability actions linked to WP5.

**Deviations: None.** The task is progressing as planned and in line with the CODE strategy.

# 4. Key performance indicators

**At Month 12, the project has already met the quantitative Key Performance Indicator (KPI) thresholds defined in the Description of Action** (that can be applied in this period) **and, for several indicators, has progressed beyond them.** For this reason, the KPIs are currently under review to ensure they adequately reflect the actual scale, diversity and ambition of the activities carried out within 3D-4CH. This review aims to improve monitoring, traceability and interpretability of results, while remaining fully aligned with the objectives and commitments set out in the DoA.

At this stage, the proposal should be considered **tentative**, as the refinements are proposed qualitatively and do not yet introduce revised quantitative thresholds. The refined KPI framework will be further discussed within the consortium and consolidated at the **mid-term review (M18)**, once a broader set of project results and usage data is available. The approach presented below focuses on **disaggregating existing KPIs** that currently group heterogeneous activities or outcomes, in order to better capture both outreach scale and depth of engagement, as well as technical and operational impact.

**1. CHIs contacted and involved**
Originally: "Number of CHIs contacted and involved in the activities of 3D-4CH - *project threshold: 40*"
The current KPI combines awareness-raising and active participation. It is proposed to distinguish between:

- Number of CHIs reached through communication and dissemination actions (newsletters, surveys, events, campaigns)

- Number of CHIs actively involved in project activities (training, pilots, working groups, stakeholder panel, content contribution)

This separation allows the project to demonstrate both breadth of outreach and meaningful engagement.

## 2. Technical workshops, working groups, training activities and stakeholder meetings

<u>Originally:</u> "Number of performed technical workshops, working group events, training activities and stakeholder meetings - *project threshold: 15*"

This KPI aggregates structurally different activities. It is proposed to disaggregate into:

- Number of capacity-building and training events (workshops, winter schools, hands-on sessions)
- Number of governance events (working groups, stakeholder panel and advisory board meetings)
- Number of public dissemination events (conference sessions, webinars, info days)

This improves alignment with WP2, WP5 and WP6 and enables clearer reporting per activity type.

## 3. People present and actively participating in events

<u>Originally:</u> "Number of people present and actively participating in the events - *project threshold: 500*"

To better reflect engagement quality and hybrid formats, it is proposed to distinguish between:

- Number of participants in event organised
- Number of participants in event attended
- Number of participants involved in interactive or hands-on activities

This enables monitoring not only of attendance but also of intensity of participation.

## 4. CHIs adopting standards or advanced technologies

<u>Originally:</u> "Number of CHIs having adopted standards or used advanced technologies (AI, 3D, XR, Virtual Worlds) - *project threshold: 20*"

The current KPI mixes methodological and technological uptake. It is proposed to separate:

- Number of CHIs adopting or aligning with standards, guidelines and frameworks promoted by 3D-4CH
- Number of CHIs experimenting with or deploying advanced technologies (AI, 3D, XR, virtual worlds) supported by the project

This distinction reflects different maturity levels and adoption pathways.

## 5. Reuse of services and tools provided by the Competence Centre

<u>Originally:</u> "Number of reuses by CHIs of the services and tools, included in the knowledge base provided by the Competence Centre for 3D - *project threshold: 15*"

To better capture progressive uptake, it is proposed to distinguish between:

- Exploratory reuse (testing, piloting, evaluation of tools and services)
- Operational reuse (integration of tools, workflows, or services into institutional practice)

This supports phased monitoring and more realistic impact assessment.

## 6. Advanced tools adjusted, extended or integrated

<u>Originally:</u> "Number of advanced tools adjusted from past projects and newly developed to support 3D digitization and preservation - *project threshold: 10*"

The current KPI can be refined by distinguishing:

- Number of tools mapped and tested from previous EU projects

- Number of tools adjusted, extended or integrated within 3D-4CH

This highlights both capitalisation of past investments and new technical contributions.

## 7. High-quality 3D objects and virtual world scenarios

Originally: "Number of high quality, fully documented and showcased 3D objects and virtual world scenarios (including both new 3D object or enhanced / enriched ones) made available by the Competence Centre - *project threshold: 1000*"

This KPI currently aggregates heterogeneous outputs. It is proposed to disaggregate into:
- Number of newly digitised 3D assets
- Number of enhanced or enriched existing 3D assets (metadata, semantics, AI processing, improved visualisation)
- Number of curated showcases or virtual environments published via the Competence Centre

This allows qualitative improvements to be measured alongside quantitative scale.

## 8. Ukrainian experts and CHIs contacted and trained

Originally: "Number of relevant Ukrainian experts and CHIs contacted and trained - *project threshold: 20*"

This KPI currently groups together outreach, capacity building and training outcomes related to Ukrainian stakeholders, which are strategically important for the project but heterogeneous in nature. It is proposed to disaggregate this indicator into:
- Number of Ukrainian experts and CHIs reached through targeted communication, coordination, and awareness-raising actions (e.g. dedicated campaigns, direct contacts, Europeana and partner networks)
- Number of Ukrainian experts and CHIs actively participating in project activities (workshops, training sessions, working groups, consultations)
- Number of Ukrainian experts and CHIs completing training or capacity-building activities supported by 3D-4CH

This refinement allows the project to clearly distinguish between initial engagement, active involvement and effective capacity building, while ensuring that support to Ukraine is monitored in a transparent and measurable way.

| KPI | Elements take into consideration | Progress at M12 |
|---|---|---|
| **1. CHIs contacted and involved** | | |
| Number of CHIs contacted and involved in the activities of 3D-4CH - <u>*original project threshold: 40*</u> | | |
| Number of CHIs reached through communication and dissemination actions (newsletters, surveys, events, campaigns) | • WP2 survey outreach: ~*3,560* recipients, ~*27,000* views / impressions<br>• WP5 survey outreach: ~*2,140* recipients, ~*15,930* views / impressions<br>*A consistent overlap between the two outreach campaigns was identified, thus as a conservative choice, only the WP2 figure has been* | ***~3,560 recipients*** |

| | | |
|---|---|---|
| | *considered for the overall KPI progress.* | |
| Number of CHIs actively involved in project activities (training, pilots, working groups, stakeholder panel, content contribution) | • Active members of the Stakeholder panel: *31*<br>• WP2 survey respondents: *80*<br>• WP5 survey respondents: *74*<br>• Ukraine survey respondents: *57*<br>• Winter School participants from CHIs: *16*<br><br>*No overlap has been identified between active Stakeholder Panel members and Winter School participants. A **conservative estimate of 50% overlap** has been considered between active Stakeholder Panel members and survey respondents, as the survey responses were anonymised and individual participants could not be uniquely identified.* | ***150+*** |

**2. Technical workshops, working groups, training activities and stakeholder meetings**

Number of performed technical workshops, working group events, training activities and stakeholder meetings - *original project threshold: 15*

| | | |
|---|---|---|
| Number of capacity-building and training events (workshops, winter schools, hands-on sessions) | 1. Workshop at the Europeana Conference 2025 in Warsaw (12 June 2025)<br>2. Workshop at the Digital Heritage 2025 in Siena (8 Sept 2025)<br>3. Training programme the "UA Digital Wave: 3D competencies for heritage" (online, 8 webinars, 25 Nov - 19 Dec 2025)<br>4. Winter School 2026 (Day2-3) in Brussels (22-23 Jan 2026) | ***4*** |
| Number of governance events (working groups, stakeholder panel and advisory board meetings) | 1. Advisory Board and Stakeholder Panel inaugural meeting at the first consortium meeting (Trento, 19 Feb 2025)<br>2. Advisory Board and Stakeholder Panel meeting for validating M6 results (online, July 2025)<br>3. "Data aggregation for Ukraine" working group meeting with Europeana and DS supporting projects (online, 16 July 2025)<br>4. Meeting with ICOM International Council of Museums on how 3D can impact on the Red List for illicit trafficking (online, 26 August 2025)<br>5. Cluster meeting for data space supporting projects (Brussels, 24 Sept 2025)<br>6. Participation at the Europeana Aggregator Forum (online, 25 Oct 2025) | ***6*** |

| Number of public dissemination events (conference sessions, webinars, info days) | 1. First online public event during the first consortium meeting (Trento, 19 Feb 2025) <br> 2. Booth at the Europeana Conference 2025 (Warsaw, 11-12 June 2025) <br> 3. Presentation at the International Summer School of Museology and Heritage (ISSOM) 2025 (Koper, 5 Sept 2025) <br> 4. Panel at Digital Heritage 2025 in Siena (9 Sept 2025) <br> 5. European Researcher Night in Poznan (PL), Jaen (ES) and Rende (IT) (26 Sept 2025) <br> 6. Presentation at the NEM Summit 2025 (Berlin, 22 Oct 2025) <br> 7. Booth at the CHNT 2025 in Vienna (11-13 Nov 2025) <br> 8. Stati generali del Digitale nella Cultura in Rome (10-11 Dec 2025) <br> 9. Winter School 2026 (Day1) in Brussels (21 Jan 2026) | *9* |
|---|---|---|
| **3. People present and actively participating in events** | | |
| Number of people present and actively participating in the events - *original project threshold: 500* | | |
| Number of participants in event organised | ● First 3D-4CH public event: *158* unique views <br> ● Winter School 2026 public event: *64* in person participants, *~100* participants on MS Teams | *320+* |
| Number of participants in event attended | ● Europeana Conference 2025: *~250* <br> ● EC cluster event: *~40* <br> ● ISSOM 2025: *~30* <br> ● Digital Heritage 2025: *~150* <br> ● European Researcher Night: *~60* per country (in related booth) <br> ● NEM Summit 2025: *~80* <br> ● CHNT 2025: *~150* <br> ● Stati generali del Digitale nella Cultura: *~100* | *~1000* |
| Number of participants involved in interactive or hands-on activities | ● Workshop Europeana Conference 2025: ~20 <br> ● Workshop Digital Heritage 2025: ~30 <br> ● "UA Digital Wave: 3D competencies for heritage": ~25 <br> ● Hands-on Winter School 2026: 20 | *95* |
| **4. CHIs adopting standards or advanced technologies** | | |

| Number of CHIs having adopted standards or used advanced technologies (AI, 3D, XR, Virtual Worlds) - _original project threshold: 20_ | | |
|---|---|---|
| Number of CHIs adopting or aligning with standards, guidelines, and frameworks promoted by 3D-4CH | _At M12, it is too early to quantify adoption, as alignment with standards and advanced technologies promoted by 3D-4CH depend on the availability of mature guidelines and training resources, which are scheduled for later project phases._ | - |
| Number of CHIs experimenting with or deploying advanced technologies (AI, 3D, XR, virtual worlds) supported by the project | _As above, this indicator cannot yet be meaningfully measured, as experimentation and deployment of advanced technologies will take place once technical solutions and workflows are fully developed and validated in subsequent project phases._ | - |

**5. Reuse of services and tools provided by the Competence Centre**

Number of reuses by CHIs of the services and tools, included in the knowledge base provided by the Competence Centre for 3D - _original project threshold: 15_

| Exploratory reuse (testing, piloting, evaluation of tools and services) | At M12, it is still too early to quantify reuse by CHIs, even at exploratory stage as, the Competence Centre platform has just been released, but already documents **42 tools** and **33 best practices** (and many more are about to be released), providing a solid basis for exploratory reuse and future integration into institutional practice. | - |
|---|---|---|
| Operational reuse (integration of tools, workflows, or services into institutional practice) | As above, it is still too early to quantify reuse by CHIs in particular as operational uptake depends on sustained engagement over time. | - |

**6. Advanced tools adjusted, extended or integrated**

Number of advanced tools adjusted from past projects and newly developed to support 3D digitization and preservation - _original project threshold: 10_

| Number of tools mapped and tested from previous EU projects | _25_ out of the _42_ tools currently published on the Competence Centre platform come from previous EU projects. These will be further tested and more are in the backlog to be published. | **_25_** |
|---|---|---|
| Number of tools adjusted, extended or integrated within 3D-4CH | In the paper titled "_Open Technologies for the 3D Cultural Heritage Digitisation Pipeline_" and submitted for the ISPRS Congress 2026 in Toronto, a pipeline consisting of _7_ tools has been proposed. However, this should be considered only as indicative as at | - |

| | M12 it is still too early to consider it as a reliable value, since most of the activities will be developed in the coming months. | |
|---|---|---|

**7. High-quality 3D objects and virtual world scenarios**

Number of high quality, fully documented and showcased 3D objects and virtual world scenarios (including both new 3D object or enhanced / enriched ones) made available by the Competence Centre - *project threshold: 1000*

| Number of newly digitised 3D assets | At M12, it is still too early to quantify the number of newly digitised 3D assets as digitisation activities have not yet started (T3.3). | - |
|---|---|---|
| Number of enhanced or enriched existing 3D assets (metadata, semantics, AI processing, improved visualisation) | At M12, it is still too early to quantify the number of enhanced or enriched existing 3D assets as these activities have not yet started (T3.3). As a demo case, a first batch of Ukrainian 3D models on Europeana. | - |
| Number of curated showcases or virtual environments published via the Competence Centre | At M12, it is still too early to quantify the number of curated showcases or virtual environments published via the Competence Centre as these activities have not yet started (T4.3). As a demo case, a first batch of Ukrainian 3D models on Europeana via the Competence Centre. | - |

**8. Ukrainian experts and CHIs contacted and trained**

Number of relevant Ukrainian experts and CHIs contacted and trained - *original project threshold: 20*

| Number of Ukrainian experts and CHIs reached through targeted communication, coordination, and awareness-raising actions | • *~450* recipients among Ukrainian experts, CHIs, policy makers and scholars of dedicated survey and communication outreach.<br>• *12* Ukrainian applicants for the Winter School 2026 | ***~450*** |
|---|---|---|
| Number of Ukrainian experts and CHIs actively participating in project activities (workshops, training sessions, working groups, consultations) | • *57* respondents to the survey<br>• *~25* participants to the online training programme "UA Digital Wave: 3D competencies for heritage":<br><br>*A **conservative estimate of 50% overlap** has been considered between survey respondents and participants to training activities, as the survey responses were anonymised and individual participants could not be uniquely identified.* | *~**70*** |

| Number of Ukrainian experts and CHIs completing training or capacity-building activities supported by 3D-4CH | • *2* participants to the hands-on activities of the Winter School 2026 who have received the Open Badge certification for completing the training. | *2* |
|---|---|---|

In M01–M12, the project prioritised establishing a KPI framework that is measurable, auditable and aligned with the project's implementation logic. The refined KPI structure proposed in this report improves clarity by separating *i)* breadth of outreach from depth of engagement, *ii)* governance activities from capacity-building actions and *iii)* exploratory uptake from operational reuse. This enables more accurate reporting across Work Packages and avoids over-aggregated indicators that mix heterogeneous outputs.

From the next reporting period (M13–M24), KPI monitoring will transition from framework refinement to systematic data collection and reporting. This will be supported by: harmonised definitions and counting rules agreed within WP5 and WP1, consistent event registration and participation tracking across WP2/WP6 activities, platform analytics supporting measurement of access and reuse and targeted monitoring of Ukrainian stakeholder engagement through dedicated actions and training participation records. Overall, the KPI refinements introduced in this period strengthen the project's ability to demonstrate both performance and impact in a transparent manner.

# 5. Risks and mitigation procedures

The Description of Action (DoA) identifies several potential risks that could impact the 3D-4CH project's successful execution. Early identification and clear communication of these risks are essential to ensuring smooth project delivery. The table below summarises the identified risks, along with their likelihood, severity and current status as of M12 of the project.

| N. | Risk | Status at M12 |
|---|---|---|
| 1 | Partners' effort underestimated (likelihood: medium, severity: medium). | **Under control.** The effort required for coordination, communication and training activities proved slightly higher than initially estimated, particularly in WP1, WP2 and WP6, and as some tasks had an early start. However, partners have redistributed effort internally and reinforced coordination through dedicated sub-groups (e.g. Winter School organisation). No negative impact on deliverables or milestones has been observed. |
| 2 | Overspending or underspending by partners (likelihood: low, severity: medium). | **Under control.** Financial monitoring shows no critical deviations. Minor underspending is expected at this stage for partners whose activities are scheduled later in the project. Budget |

| | | |
|---|---|---|
| | | absorption aligns with the planned ramp-up of technical and deployment activities in the next period. |
| 3 | Partner leaves consortium (likelihood: low, severity: medium). | **Occurred, mitigated.** CNRS-MAP formally left the consortium during the reporting period. The impact on the project has been limited, as activities and responsibilities were redistributed among remaining partners with relevant expertise. No critical deliverables, milestones, or timelines have been affected and the consortium continues to operate effectively with stable participation and reinforced coordination. |
| 4 | Technical specifications may change while solution deployments (likelihood: medium, severity: high) | **Ongoing but managed.** Some evolution of technical specifications has occurred (EDM, EPF, new 3D file formats), particularly in relation to interoperability with the common European data space for cultural heritage. This has been addressed through iterative development, coordination with relevant WPs and alignment with Europeana and data space working groups. No critical delays have resulted. |
| 5 | Lack of data / 3D contents (likelihood: low, severity: high). | **Not occurred.** Availability of 3D content has proven sufficient at this stage, supported by partner repositories, pilot cases and early publication of Ukrainian 3D assets. Content production and enrichment pipelines are active and expected to scale significantly in the next period. Thus, the risk will be monitored. |
| 6 | Outreach and dissemination are not effective, low participation of end-users (likelihood: low, severity: medium). | **Not occurred.** Outreach activities have exceeded expectations in the first year, with strong participation in surveys, events and the Winter School. Social media engagement, newsletter reach and stakeholder involvement indicate growing visibility and interest from end-users. |
| 7 | Development and application of AI solutions fail and processing workflows are not reaching expected quality/results (likelihood: low, severity: medium). | **Not occurred.** AI-related activities are progressing incrementally. Early testing and pilot workflows are ongoing, with quality assessment embedded in the technical WPs. No critical failures have been identified at this stage. |

| 8 | Travel restrictions or low in-person participation (likelihood: low, severity: low). | **Not occured.** No formal travel restrictions affected project activities. However, the availability of hybrid and online participation options has, in some cases, reduced in-person attendance. This has not negatively impacted overall participation levels, as hybrid formats have widened access and ensured broad engagement across countries and stakeholder groups. |
|---|---|---|
| 9 | Re-use scenarios not successfully deployed (likelihood: low, severity: low). | **Too early to fully assess**; risk monitored. Re-use scenarios are scheduled mainly for later phases. Early signals are positive, with stakeholder engagement, survey feedback and Winter School activities informing scenario design. No blockers identified at M12. |
| 10 | Aggregation not successful (likelihood: low, severity: medium). | **Not occurred but too early to fully assess.** Aggregation workflows are being aligned with Europeana and data space requirements as demonstrated by the aggregation of Ukrainian 3D content. Early coordination with relevant working groups and partners has reduced risk, though full validation will take place once larger-scale ingestion begins. |
| 11 | The technologies are out of reach for smaller Cultural Heritage Institutions. | **Too early to fully assess**. This risk is being under monitoring and training activities, guidelines, best practices, etc. of the Online Competence Centre will have, by design, a strong focus on accessibility, reuse and scalability for smaller institutions. |
| 12 | Not able to get the active participation of data providers and users from the project's start, in order to early understand the stakeholder needs. | **Not occured.** Early engagement has been successfully achieved through surveys, stakeholder panels, working groups and events. Feedback from CHIs and practitioners has already influenced training design, communication priorities and technical choices. |

# 6. Overall Conclusions

The 3D-4CH project progressed according to plan during M01–M12, achieving all key deliverables due in this reporting period and successfully transitioning from preparatory work to first operational deployment and validation. The consortium delivered strong foundations in governance, quality and

data management; launched the first operational release of the Online Competence Centre platform; initiated training and capacity-building actions culminating in the Winter School pilot and established stakeholder engagement and dissemination mechanisms aligned with the CODE strategy.

No major deviations affecting objectives, timeline or budget were identified. Consortium adjustments introduced through Amendment AMD-101195149-7 strengthened implementation capacity without disrupting planned outcomes. The next phase (M13–M24) will focus on scaling and consolidation: expanding training and content publication, enriching platform functionality and content, strengthening interoperability pathways relevant to the European cultural heritage data space and operationalising KPI measurement to evidence uptake, adoption and reuse. Overall, 3D-4CH remains on track to achieve its objectives and deliver a sustainable competence centre with lasting sector impact.