METAHERITAGE

- Frequently Asked Questions-

Webinar Cultural Heritage to Digital Experiences: 3D Digitisation and Immersive Projects in Practice

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Frequently Asked Questions

Cultural Heritage to Digital Experiences: 3D Digitisation and Immersive Projects in Practice

On 27 October 2026, METAHERITAGE held an online webinar exploring how 3D digitisation and immersive technologies can support the documentation, interpretation and presentation of cultural heritage.

Featuring historian and 3D artist **Alexandre González Rivas** and film director and XR artist **Emilia Gozzano**, the session explored practical workflows and real-world applications of photogrammetry, LiDAR, 3D modelling, augmented reality, virtual reality and mixed reality in museums, exhibitions and cultural tourism.

This FAQ brings together questions raised during the webinar.

Webinar #7: Cultural Heritage to Digital Experiences: 3D Digitisation and Immersive Projects in Practice - Metaheritage

Questions Raised During the Webinar

Which software tools and hardware do you use for cultural heritage digitisation and immersive projects?

For GIS and LiDAR, I use Global Mapper and QGIS. For modelling, I use Blender, and for sculpting, ZBrush. For UVs, I use Blender and RizomUV. For texture baking, I use xNormal or Marmoset. For texturing, I use Substance Painter.

I also use Lightroom a lot for photo editing and Photoshop.

As game engines, I usually use Unity for AR/VR and Unreal Engine for cinematics and video games. For video editing, I use DaVinci Resolve.

Hardware:

CPU: AMD Ryzen 9 7950X3D 16-Core Processor
RAM: 128 GB DDR5
SATA HDD: 2 TB
HDD: 16 TB
Graphics card: NVIDIA GeForce RTX 4090

Were the parts that no longer exist modelled in 3D for the reconstruction?

Exactly. In any reconstruction, the parts that we cannot document through photogrammetry or laser scanning are modelled manually in Blender.

How can these solutions be made as accessible as possible for people with reduced mobility?

For example, you can create augmented reality experiences using a brochure, a book or a marker that people with reduced mobility can use without having to move around. You can also create virtual reality experiences with headsets where users only need to move their heads, without having to move their bodies, as well as virtual tours that can be

enjoyed while sitting in a chair.

We know the techniques work, but what about their practical applications for a wider audience? Who are we creating this for?

Exactly, that is the challenge. For example, after seeing the number of schoolchildren visiting some museums, we have created gamified experiences to engage this type of audience more effectively.
Ideally, each project should involve analysing the target audience before choosing which technology to use. For example, if you are targeting older people who are not very familiar with using mobile phones, you are not going to create a smartphone-based augmented reality application, because they probably will not download it.

Interactive tables are useful, but they are quite inaccessible for people with disabilities. Are there other similar solutions that are accessible to everyone?

Well, it depends on the disability. For deaf people, it is advisable to include subtitles in all experiences.
For blind people, it is more difficult. Ideally, you would provide real objects, such as 3D-printed replicas of cultural heritage objects that they can touch, and make sure the audio experience is well designed.
For people with reduced mobility, you can create augmented reality experiences using a brochure, a book or a marker that they can use without having to move around. You can also create virtual reality experiences with headsets where users only need to move their heads, without having to move their bodies, as well as virtual tours that can be enjoyed while sitting in a chair.
Regarding interactive tables, one option is to install the touchscreen vertically and provide an extended stylus so that users can reach the screen from a distance. Another option, which I have also implemented, is to enable interaction through hand gestures.
This type of solution helped address one of the main challenges during COVID, when people were not allowed to touch shared surfaces.

Additional Questions and Answers

The following supplementary questions and answers have been prepared to expand on the themes discussed during the webinar. They provide general guidance and do not form part of the original Q&A session.

How do you decide whether to use photogrammetry, LiDAR or a combination of both?

The choice depends on the heritage asset, the conditions on site and the intended use of the digital model. Photogrammetry uses overlapping photographs and is particularly useful for capturing surface detail and colour. LiDAR measures distances using laser light and can be useful for capturing the geometry of buildings and larger spaces.
Combining both approaches can help create a model with detailed geometry and photographic textures. Factors such as access, lighting, reflective surfaces, the required accuracy and the available budget should inform the decision.

What are the main steps involved in turning a heritage asset into an immersive experience?

The first step is to define the purpose of the experience and its intended audience. This helps determine what needs to be captured and which technology is appropriate.
The process typically includes documenting the asset, capturing photographs or scan data, processing and cleaning the resulting model, and preparing its geometry and textures for the chosen platform. The model can then be integrated into a virtual tour, an interactive application or an AR or VR experience, together with interpretation, audio and other content.
Testing with users is essential before launch to check usability, accessibility and performance.

Can a small museum or heritage organisation with a limited budget get started with 3D digitisation?

Yes. A manageable starting point is to digitise a single object or develop a short experience around a clearly defined story, rather than attempting to recreate an entire collection or building.
Depending on the object and the required quality, an initial photogrammetry project may be possible using an existing camera or smartphone, suitable lighting and processing software. However, staff time, training, equipment and the preparation of interpretive content should also be included in the budget.
A small pilot can help the organisation assess the workflow and visitor response before investing in a larger project.

What skills and expertise are needed, and which tasks can be carried out in-house?

These projects combine heritage knowledge with digital production and experience design. Depending on their scope, they may require expertise in photography or scanning, 3D modelling, historical research, storytelling, software development and accessibility.
Museum teams can often contribute research, select assets, prepare interpretive content and support visitor testing. Technical capture and development may require training or external specialists.
Clear responsibilities and documentation are important so that the organisation can manage and update the experience after delivery.

How do you distinguish documented evidence from interpretation when reconstructing missing parts?

A reconstruction should be supported by identifiable sources, such as archaeological evidence, historical photographs, plans or comparable examples. Where evidence is incomplete, interpretive decisions should be documented and uncertainty acknowledged.
The experience can communicate these distinctions through explanatory notes, alternative views or visual cues that distinguish surviving material from reconstructed elements. The aim is to help users understand both the proposed reconstruction and the

evidence behind it.

How do you choose between a virtual tour, a mobile augmented reality experience and a virtual reality headset experience?

Start with the audience, the setting and the learning or interpretation objectives.
A browser-based virtual tour can support remote access using familiar devices. Mobile AR can add digital content to a physical visit, but requires consideration of device compatibility, connectivity and how visitors will access the experience. VR headsets can provide a strong sense of immersion, while also requiring equipment, space, supervision and maintenance.
Accessibility, visitor comfort and staff capacity should be considered alongside the creative possibilities. Testing a simple prototype can help identify the most suitable format.

What maintenance and updates are needed after a digital experience has been launched?

Maintenance may include software and security updates, compatibility checks, content corrections and the repair or replacement of equipment. Online experiences may also require hosting and technical support.
Before launch, organisations should agree who is responsible for these tasks and budget for ongoing costs. They should also retain the source files, relevant permissions and technical documentation needed to update or reuse the content.

How can museums assess whether an immersive experience improves visitor engagement and understanding?

Evaluation should reflect the objectives established at the start of the project. Useful methods include observing how visitors use the experience, collecting short feedback surveys and asking questions about what they understood or remembered.
Measures such as time spent, completion rates and technical difficulties can help explain how the experience performs but should be considered alongside visitor feedback. Including people with different access needs in testing can also reveal barriers and opportunities for improvement.