Trends, Opportunities, Challenges

Thomas Flynn | 3DISE 2025
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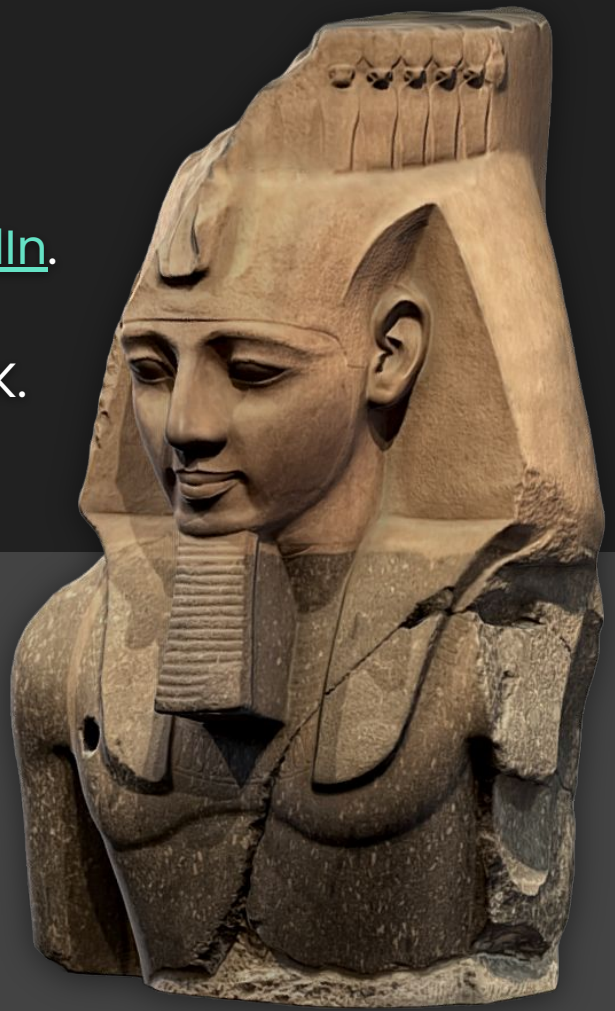
bit.ly/Flynn3Dise

A quick history of me

- Editor of the Spatial Heritage Review | LinkedIn.
- Co-Chair of IIIF 3D Community Group.
- Visiting Fellow @ Bournemouth University, UK.
- Co-author of glam3D.org.

- Cultural Heritage Lead, Sketchfab.
- Co-founder, Museum in a Box.
- 3D Digitisation, British Museum.



Colossal Bust Ramesses II - Livestream Tutorial by Thomas Flynn
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An Idea

A dream...💭

“A **globally representative library** of **openly licensed, interoperable, well optimised** cultural heritage 3D assets powering **online, mobile first storytelling** experiences that **educate** & **delight** audiences with **cultural & historical knowledge**, all underpinned by **interlinked archives** of **high quality datasets sustainably stored** for future generations.”

Engaging & delightful 3D experiences for audiences.

underpinning

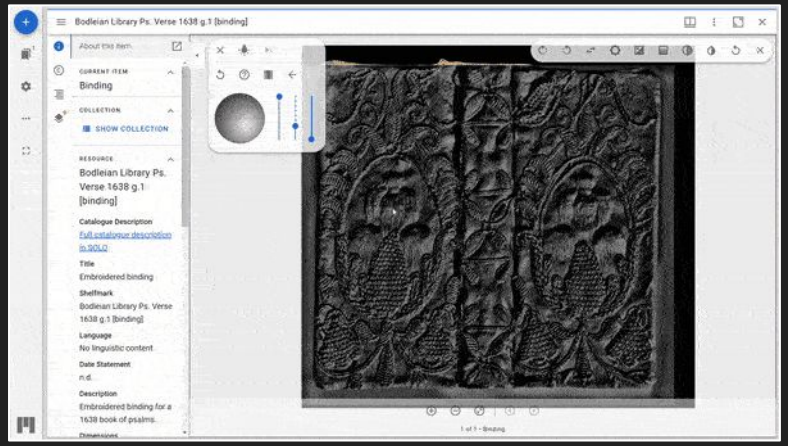
Accessible libraries of openly licensed & interoperable 3D data.

powering

Well documented and archived high quality 3D data sets.

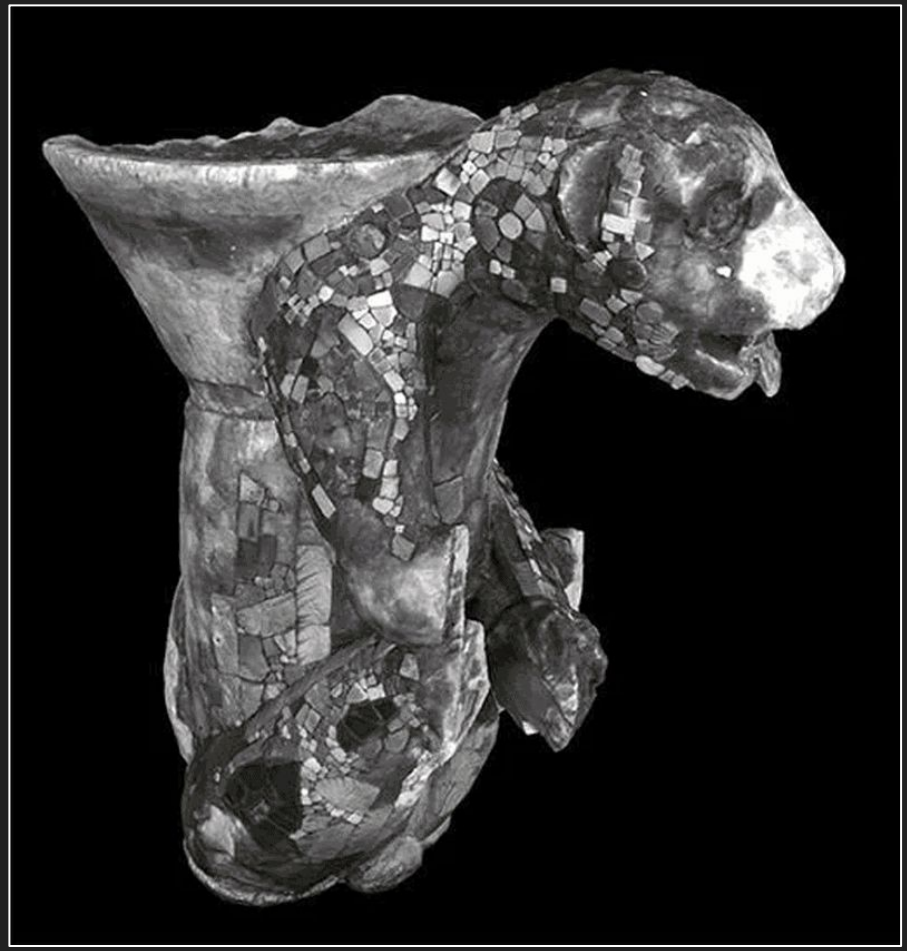
Trends, Opportunities, Challenges

High resolution,
digitise everything.



Photometric Stereo by Bodleian Library / Factum Arte

Kintsugi3D, Michael Tetzlaff / Minneapolis Institute of Art



Seated jaguar figure case study, British Museum, Rigsters Arago, Francien G. Bossema, Daniel O'Flynn et al.

Goldsmithing by brother_ _k on X

4D chef by Juan Sebastian Medina Murcia on LinkedIn

Metadata

- Data about the data.
- Data about the subject.

Paradata

- How was data captured?
- Who? Why? When? What happened?

Water Moon Guanyin by Thomas Flynn
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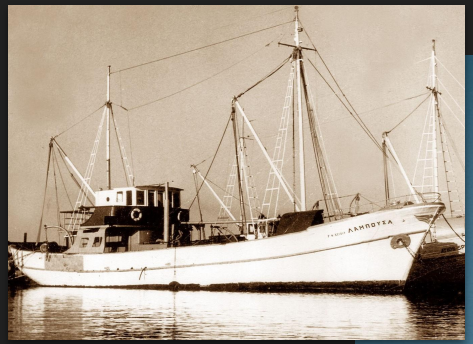
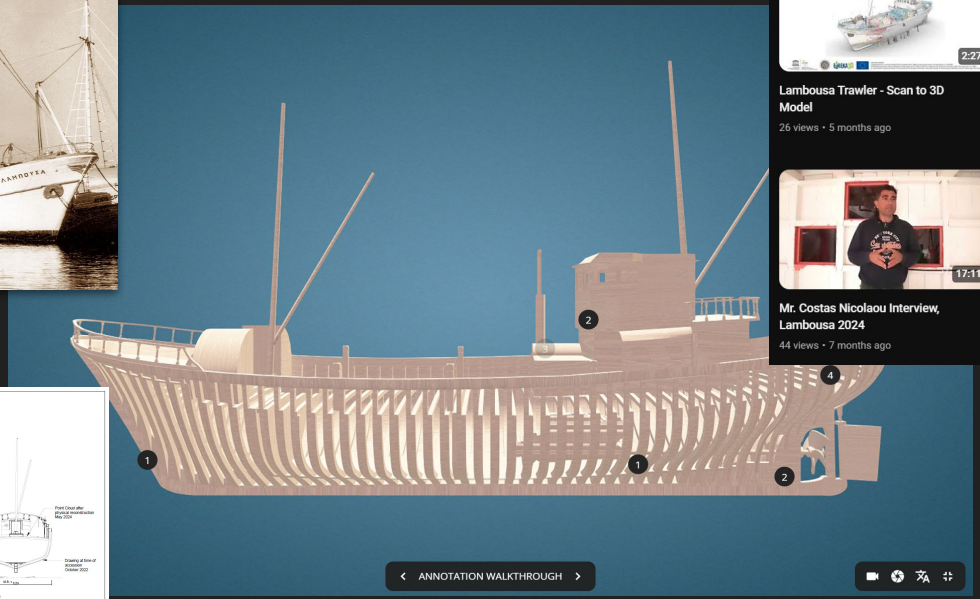
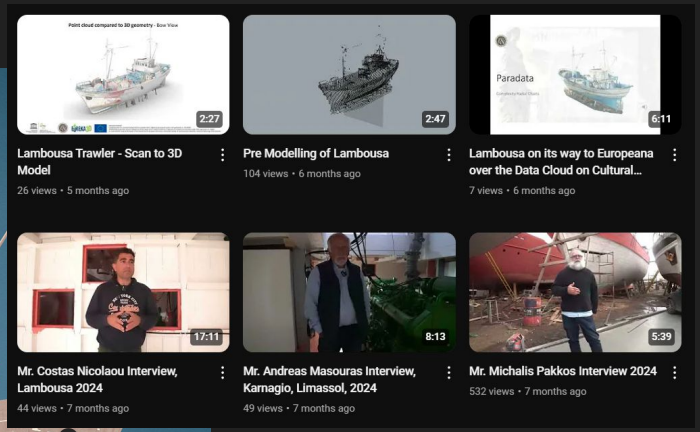
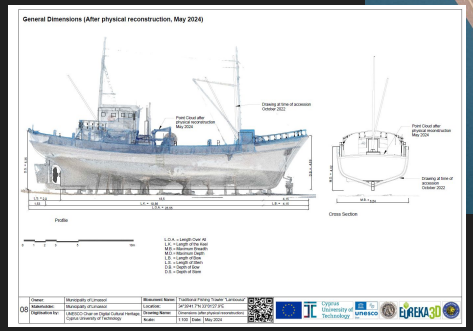
Memory Twins > Digital Twins





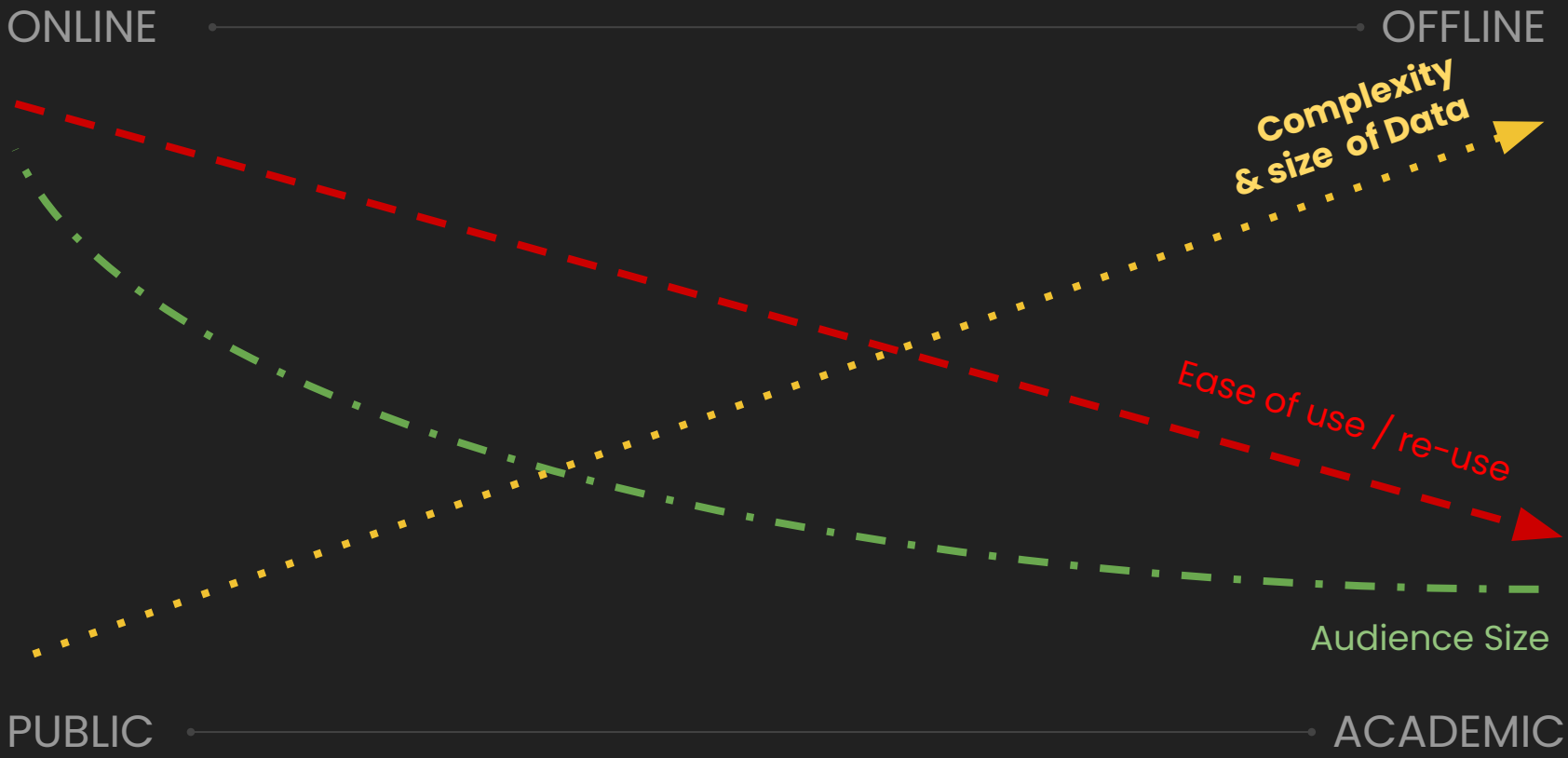




elambousa.eu

Digital Heritage Research Laboratory (DHRLab) at Cyprus University of Technology

Different Audiences, Different 3D Data



Storytelling & Heritage at Risk.

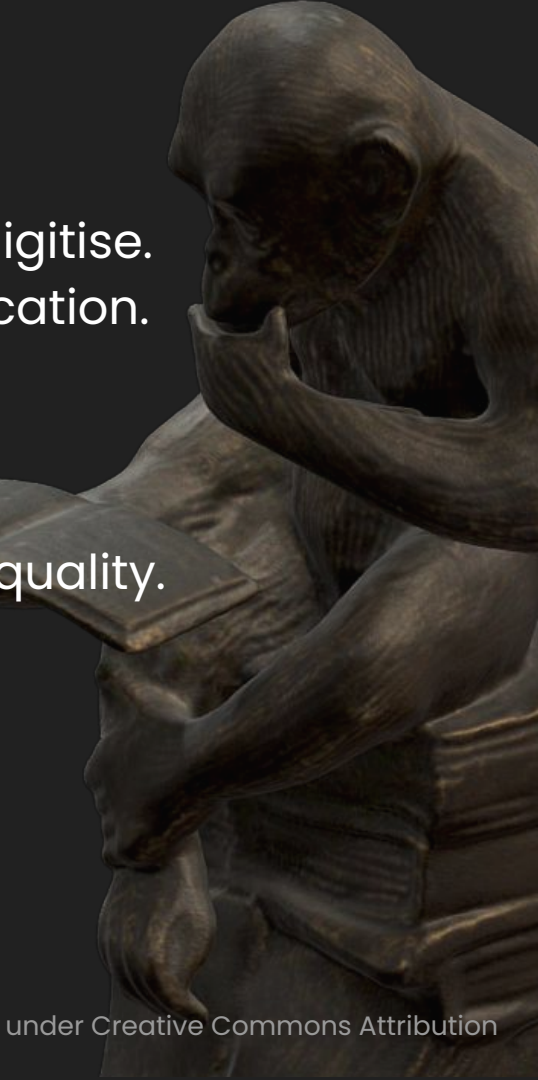
📚 Stories, stories, stories

- The reason cultural organisations exist, why they digitise.
- Stories as narrative, but also communication, education.

- What stories to tell? For whom? By whom?
- Do the most powerful stories address big issues?
  e.g. climate change, conflict, decolonisation, & inequality.

- Holistic digitisation.

- Interactivity & agency.



Modern Bookend - Chimpanzee Reading Book by Global Digital Heritage and GDH-Afrika is licensed under Creative Commons Attribution

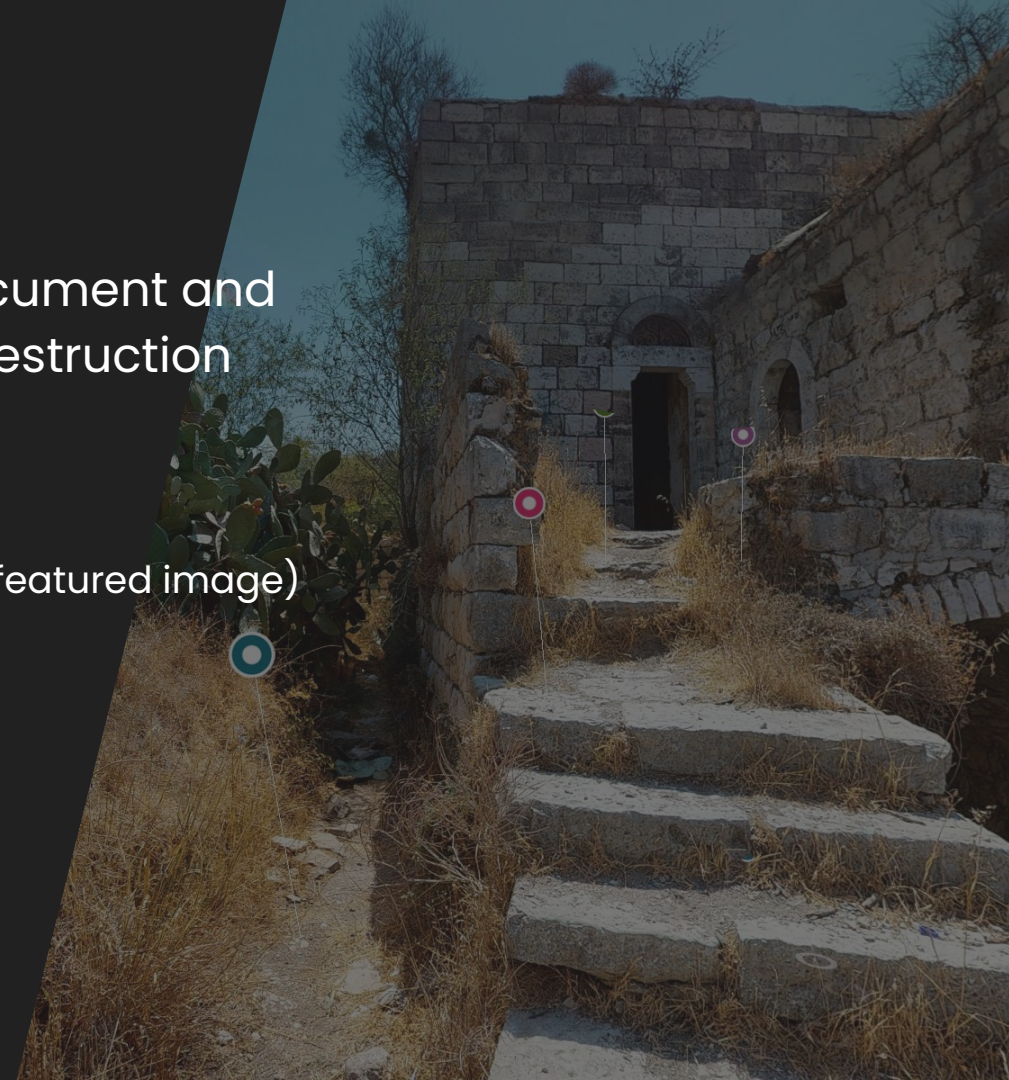
Scrollytelling

- Getty
  - Sculpting Harmony
- ICRC
  - Broken Cities
- New York Times
  - Why Notre-Dame Was a Tinderbox
- ABC Australia
  - Culture in the Crosshairs

Endangered Heritage

3D digitisation is being used to document and valorise heritage under threat of destruction from war and climate change.

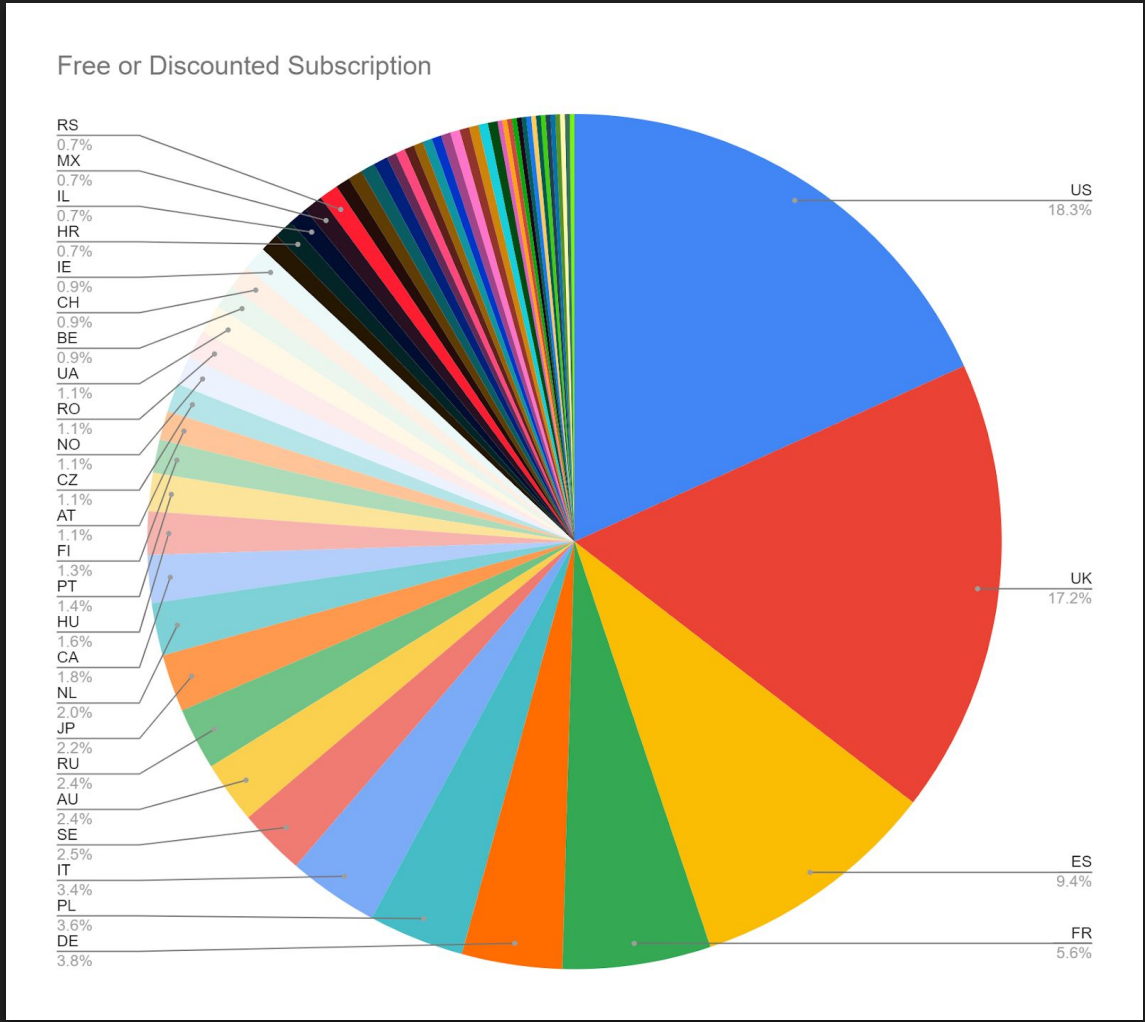
- Palestinian Heritage
  - "The abandoned village of Lifta" (featured image)
  - Kareem Yahia / OpenVL
- Ukrainian Heritage
  - Skeiron
  - Back Up Ukraine



Diversity, Inclusion, Accessibility

Who is documenting culture & history in 3D?

Digitisation as a reinforcement of western collections, practice & values.



Source:
3D Scanning for Cultural Heritage Preservation, Access and Revitalization, 2023

Museum of British Colonialism

“To raise more awareness on the presence of detention camps in Kenya and the brutal history of the colonial period”

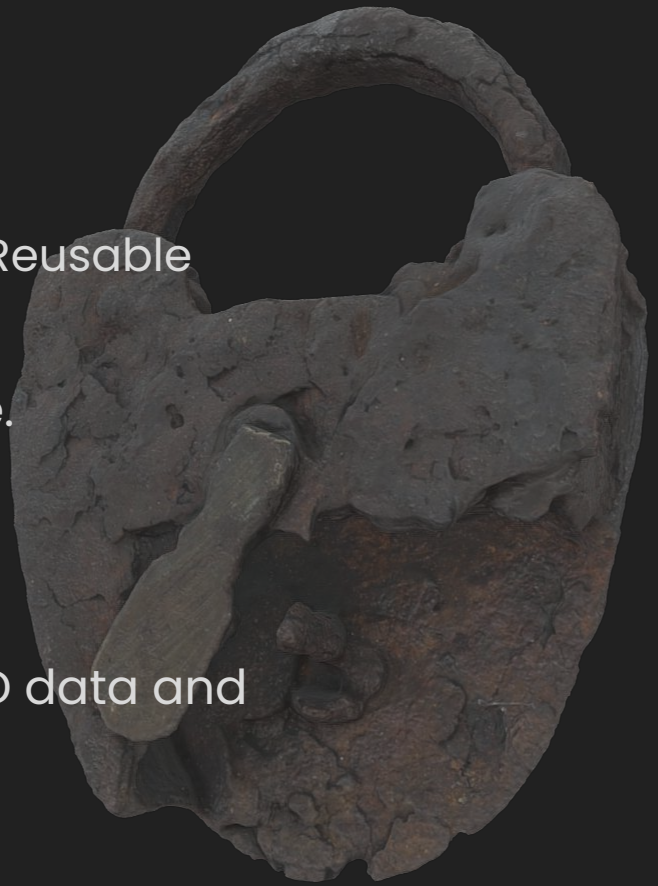
museumofbritishcolonialism.org

Watchtower, trench & entrance -Aguthi Works Camp by AfricanDigitalHeritage | skfb.ly/6S8WS

“This 3D model depicts the entrance, trench and watchtower to Aguthi Works Camp in Nyeri, Kenya.”

🔓 Data Accessibility

- FAIR **(E)**
  - Findable, Accessible, Interoperable, and Reusable go-fair.org (...and **Engaging**!)
- Meeting audiences where they already are.
- Online, Mobile First
- Data Optimisation
- Try to maintain the connection between 3D data and metadata + paradata



Cadeado Roman lock Cucufate, Portugal by Global Digital Heritage and GDH-Afrika is licensed under Creative Commons Attribution

Hyper optimised 3D:
The best introduction to your data.

?

Which of these models weighs in at **70mb**?

Which is only **3mb**?

Attic black-figure amphora, Camarina, Ragusa by Global Digital Heritage and GDH-Afrika is licensed under Creative Commons Attribution-NonCommercial

Museum in a Box

A platform helping stories reach the right audiences.

RFID enabled 3D prints (and other media) triggering audio only experiences.

Participatory creative processes.
museuminabox.org

3D Viewer Accessibility

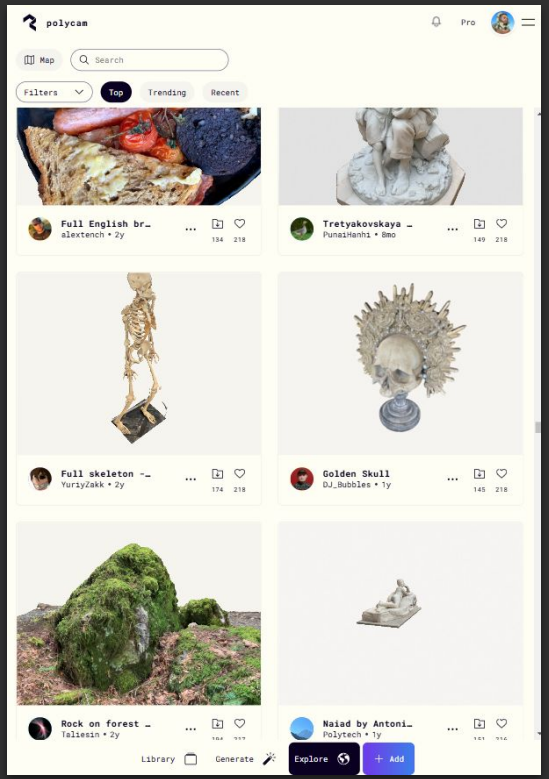
- Alt text
- Screen reading 3D
- Dynamic audio description
- Keyboard navigation
- Alternative navigation (e.g. game pads)
- Voice control

💡 3D Web Content for Everyone, Chris Joel

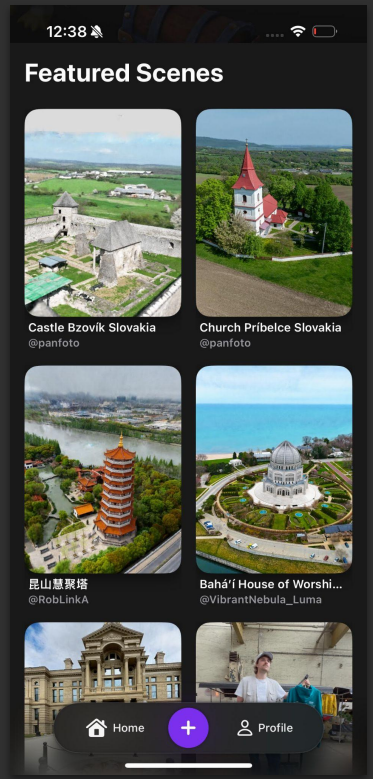
💡 Report from W3C Workshop on Inclusive Design for Immersive Web Standards, w3.org

Citizen Digitisation

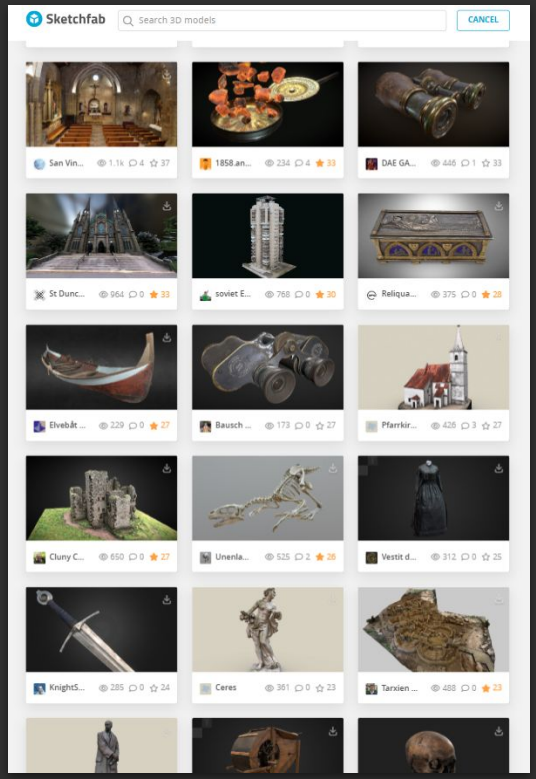
[Scaniverse](#)
‘Discover’ map interface.



[Polycam](#)
‘Top Scans’.

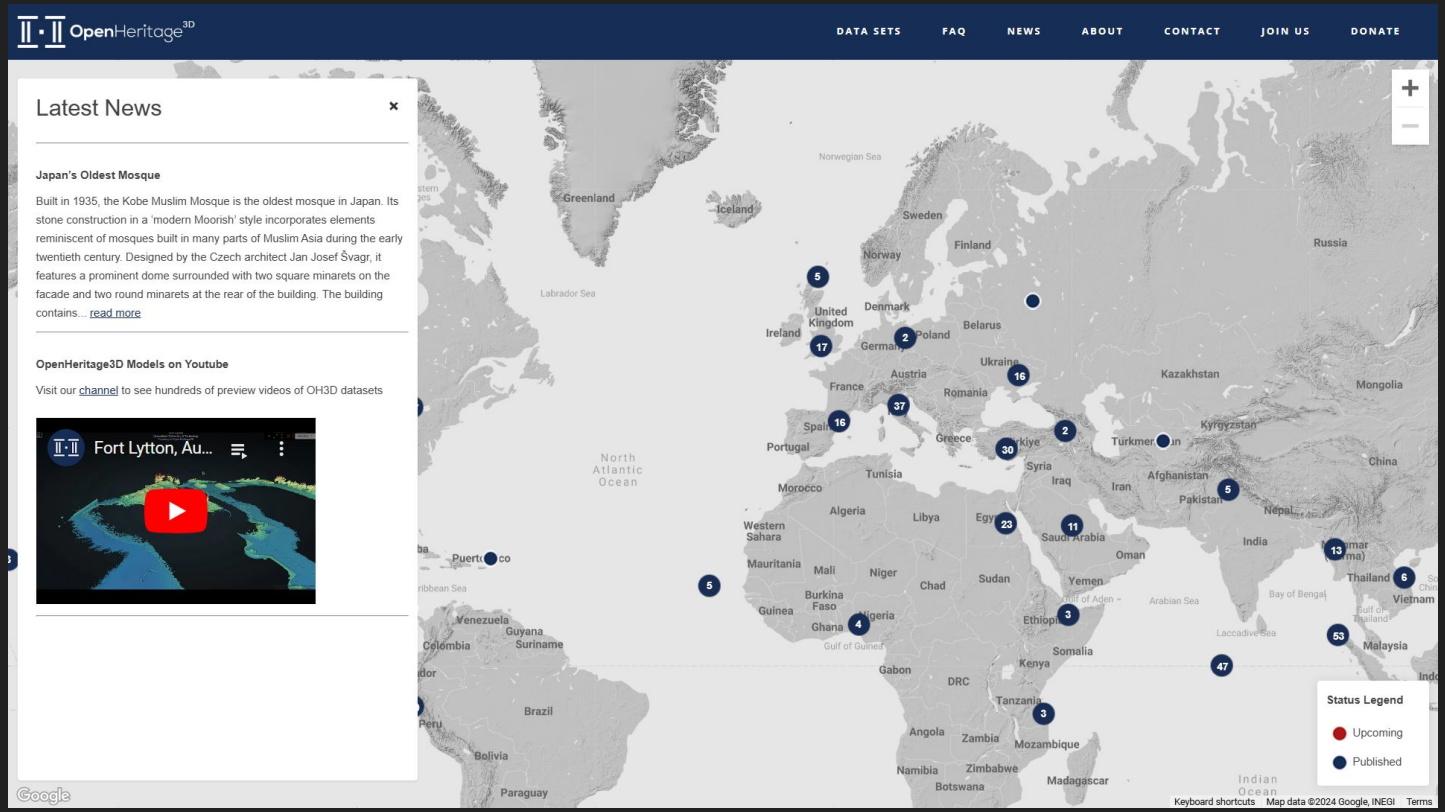


[lumalabs.ai](#)
“Featured Scenes”.

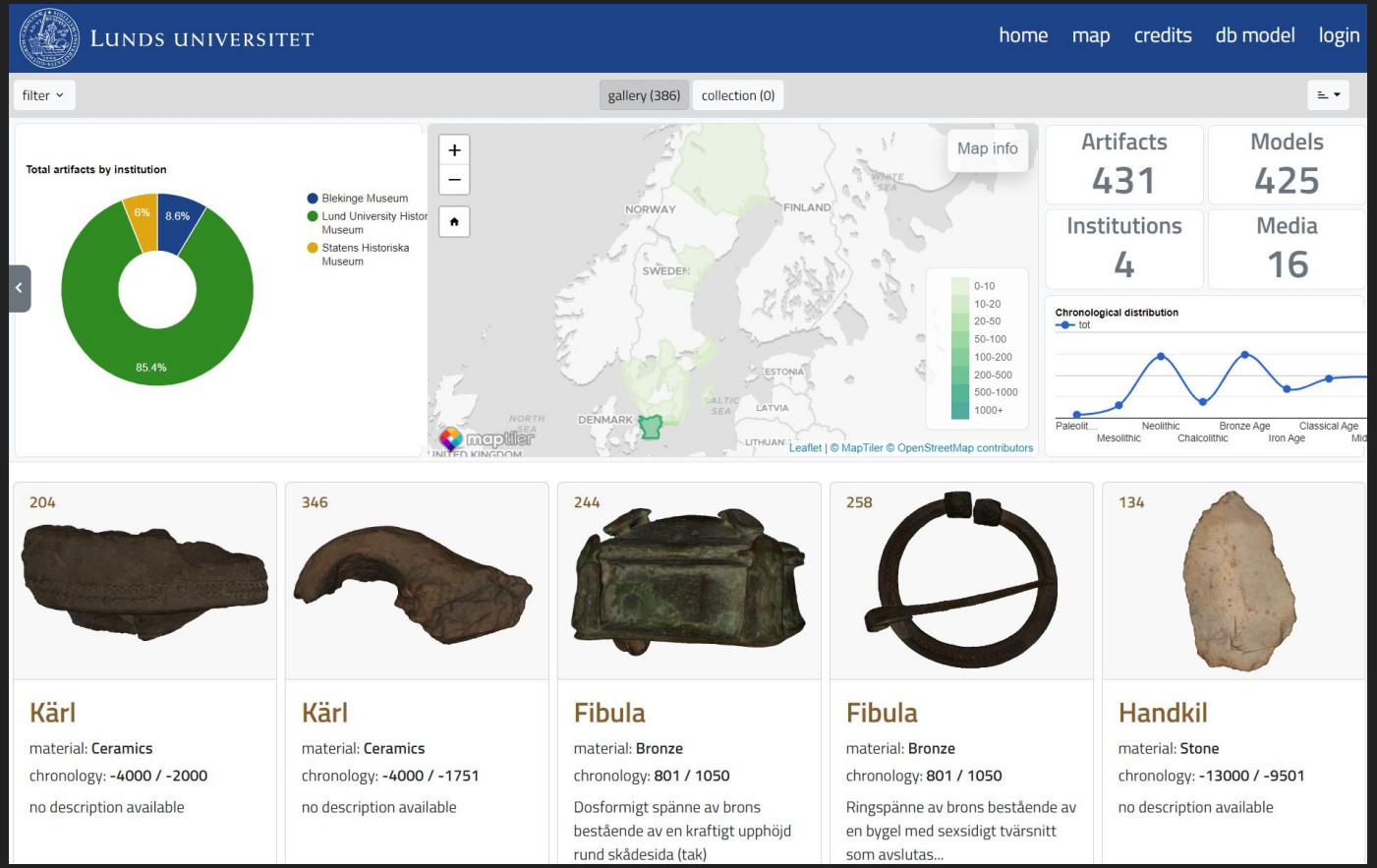


[sketchfab.com](#)
“Cultural Heritage & History” Category.

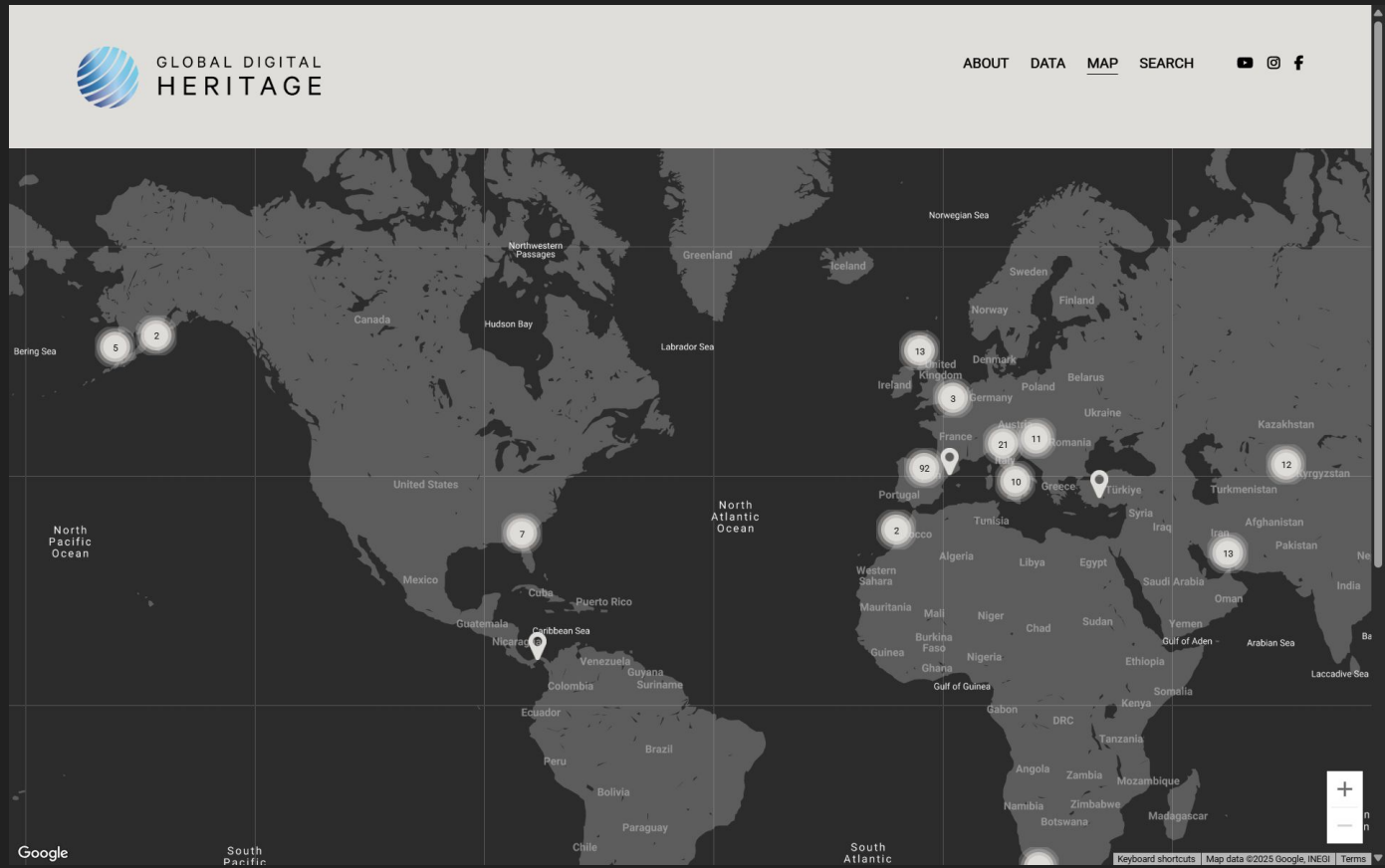
Spatial Data Platforms



openheritage3d.org



dyncolldev.ht.lu.se/plus



globaldigitalheritage.org

europeana pro ABOUT US JOIN THE NETWORK DISCOVER THE DATA Search for ...

About Partners

Posted on Thursday January 23, 2025

Updated on Thursday January 23, 2025

Projects 3d Data-space

3DBigDataSpace

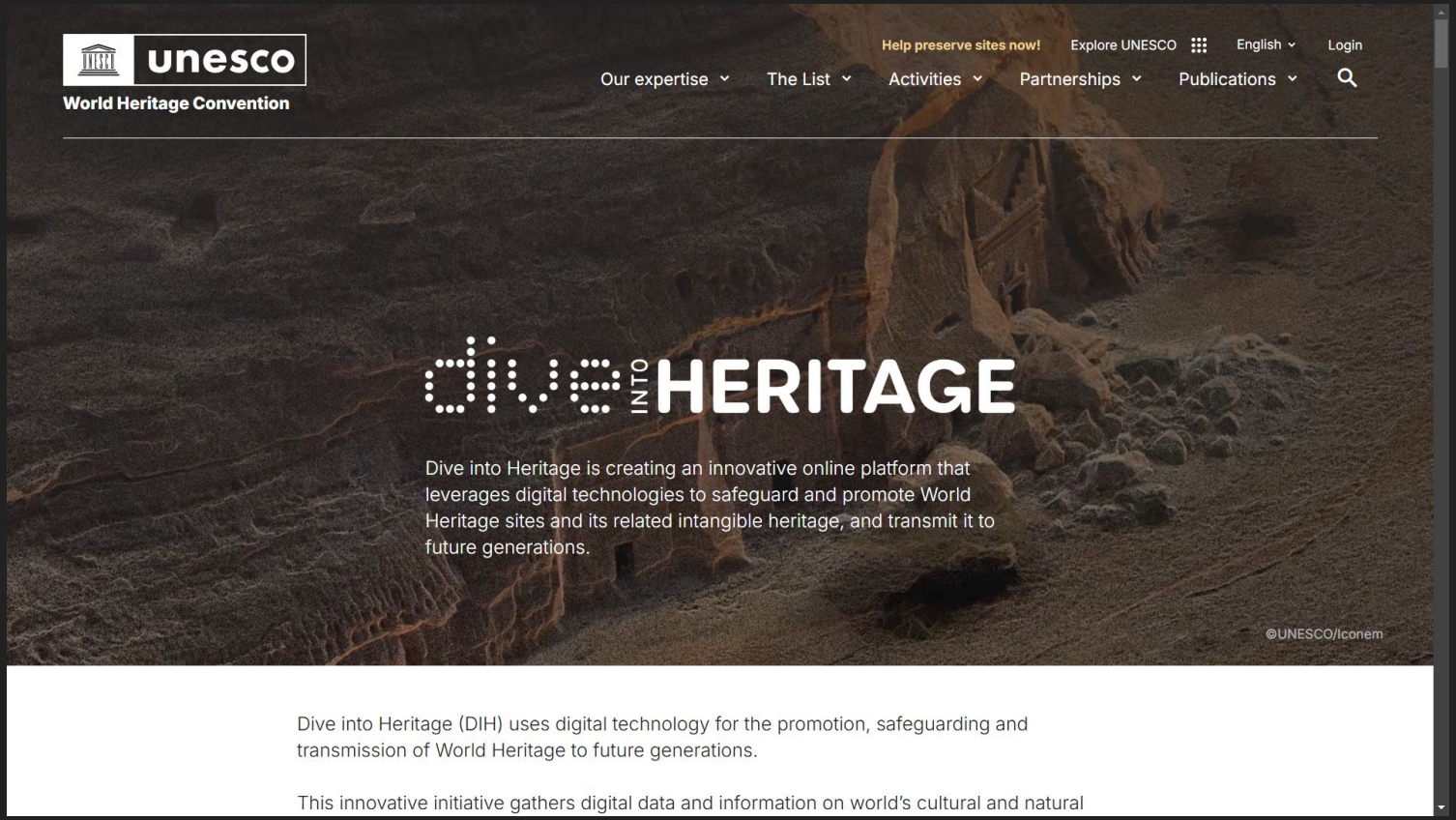
3DBigDataSpace aims to increase high-quality 3D content in the common European data space for cultural heritage and establish Europe-wide, stable, long-term storage solutions for 3D models.

1 January 2025
TO
30 June 2026

Add to calendar

pro.europeana.eu/project/3dbigdataspace

echoes-eccch.eu



whc.unesco.org/en/dive-into-heritage

A Windy Day by Loïc Norgeot is licensed under Creative Commons Attribution

Standards & Interoperability

Standards

File formats:

- Preserving 3D (Digital Preservation Coalition)
  - “There is no single perfect format for the preservation and future use of 3D data.” 😱
- File formats (Archaeology Data Service)

Metadata

- SPECTRUM: The UK Museum Documentation Standard (Collections Trust)
- Heritage Data Standards and Terminology (Historic England)

💡3D Digitisation Guidelines (Eureka3D, EU funded)

💡cs3dp.org (Institute of Museum and Library Services, US funded)

🤝 Interoperability

IIIF 3D Group

“A set of open standards for delivering high-quality, attributed digital objects **online** at scale, funded by a 67-member global consortium.”

OpenUSD

“An open and extensible ecosystem for describing, composing, simulating, and collaborating within 3D worlds.”

Data interoperability, organisational interoperability.

Bronze Hand of Sabazios, Gradina, Bosnia by Global Digital Heritage and GDH-Afrika is licensed under Creative Commons Attribution

Open Access & Reuse

Open Access

- Making heritage 3D data available for download and reuse.
- Acknowledging rights.
- Relinquishing control.
- Increasing participation & engagement.
  - Academic reuse
  - Creative reuse
  - 3D printing (accessibility)

Scene made of Free assets found on Sketchfab by Warkarma is licensed under Creative Commons Attribution

Serendipitous Reuse

Final year project by Eya Benismail student at the Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal.

“Project goal: To develop a physical rehabilitation system in mixed reality (MR), aimed at patients suffering from balance and coordination disorders.”

- Project link
- Open access 3D model

Sustainability

Sustainability (two meanings)

💾 Data sustainability

- Long term access to data
- National data repositories

🌻 The ecological impact of 3D digitisation

- Capture
- Processing
- Storage
- Display

Eco-house Diorama by Bram Verheyen is licensed under Creative Commons Attribution

🌻 Sustainability

- How do digitisation activities impact our climate?
- What are the ethics of multiplying the energy burden for a given collection item or historic site?
- High resolution Vs. high temperatures.
- How can the use of cultural heritage 3D tell the story of climate change?

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Franciscan monastery complex in Kłodzko, flood, Poland, 15 September 2024
by Jacek Halicki, CC BY-SA 4.0, via Wikimedia Commons

Thanks for Listening!

Thomas Flynn | 3DISE 2025
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