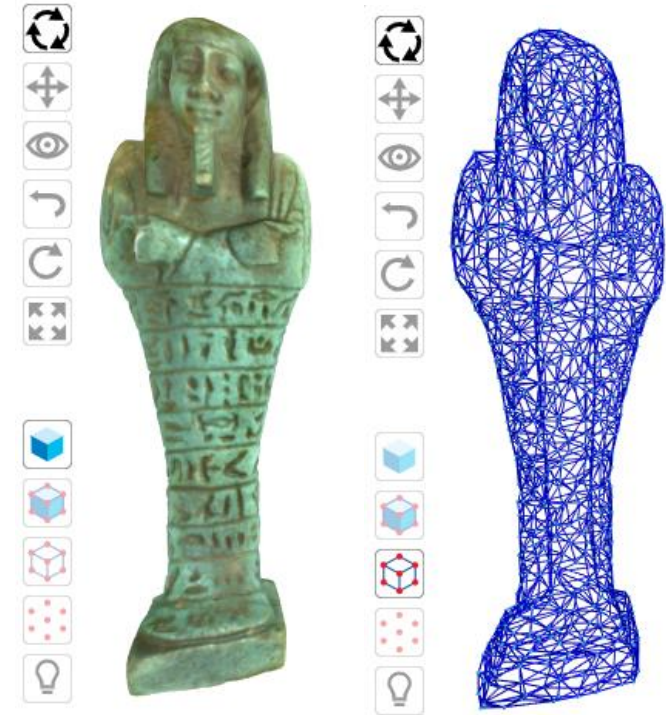# Virtual Museum 'Takeouts' and DIY Exhibitions

– Augmented Reality Apps for Scholarship, Citizen Science and Public Engagement

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UNITED KINGDOM · CHINA · MALAYSIA

World Museum

Project Aim

To create **technology demonstrators** that could supplement the co-design of useful and easy-to-use **AR apps aimed at benefiting diverse user groups** that include **scholars**, **citizen scientists** and the **interested public**, and at providing interactive, informative and personalized views of individual artefacts and virtual reconstructions.

To **enrich and supplement museum visits**, support **exhibition planning**, and enable **DIY exhibitions** of collected and eclectic museum artefacts.
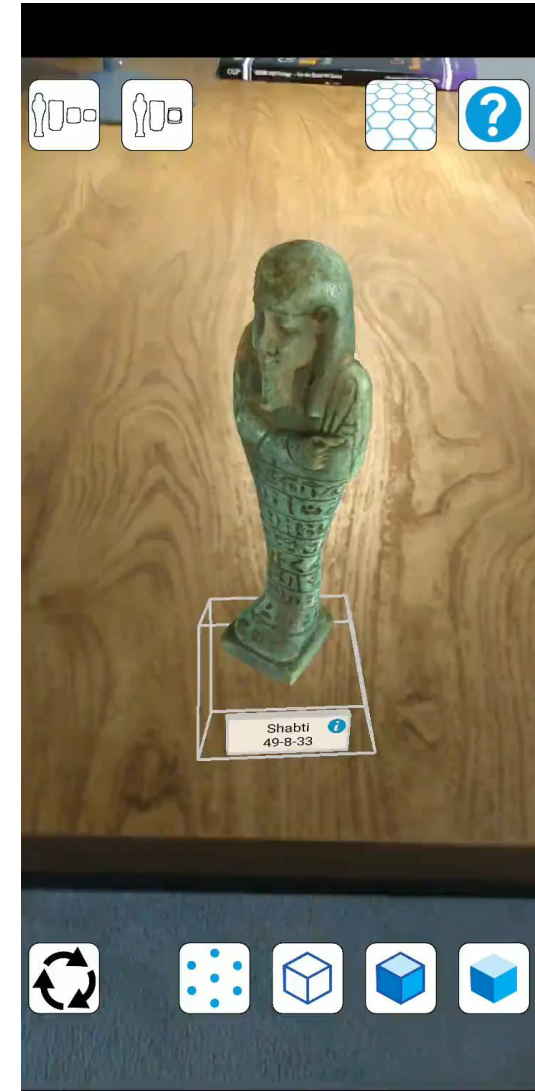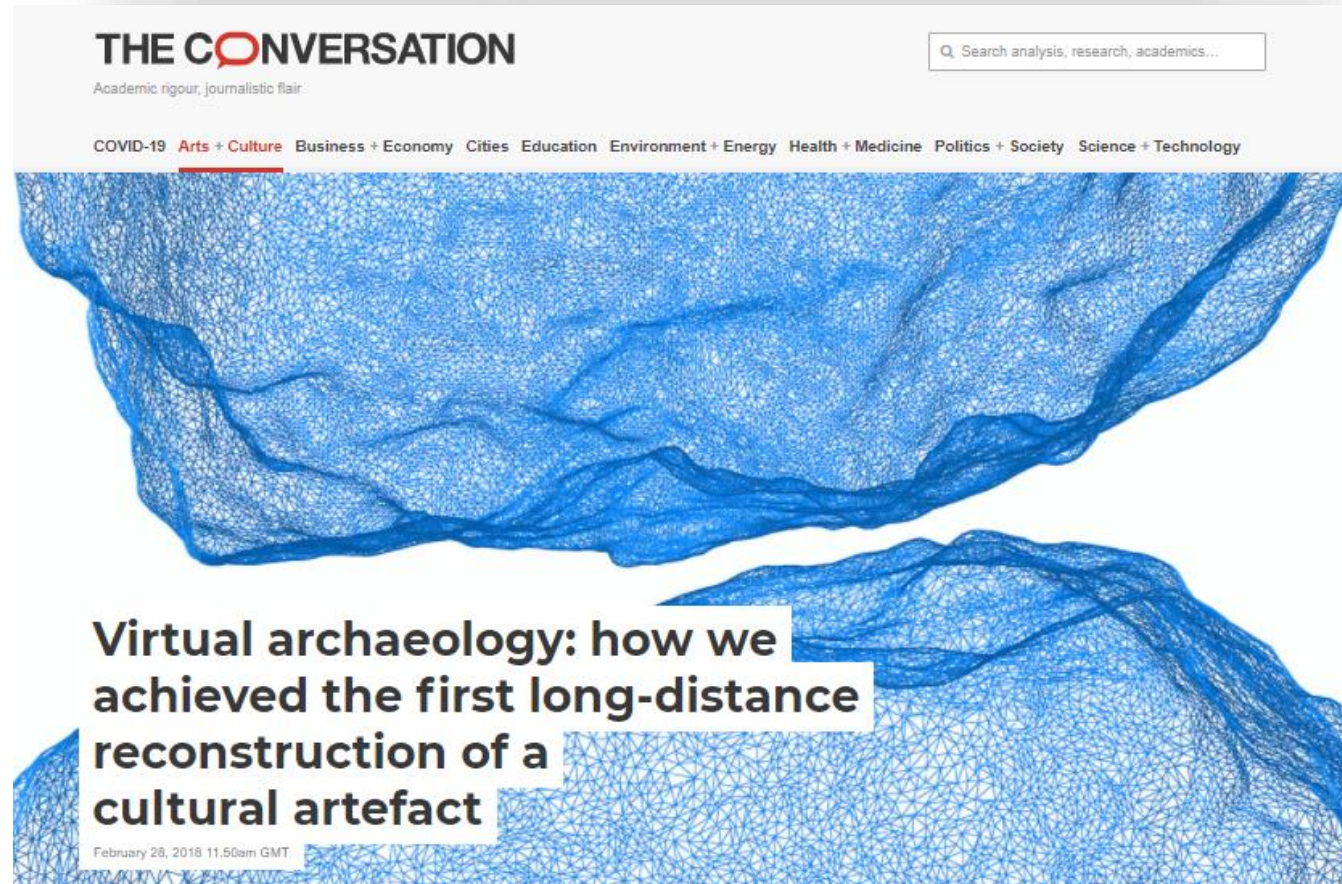
Virtual Cuneiform Tablet Reconstruction (VCTR)

The project evolved from our
Virtual Cuneiform Tablet Reconstruction Project
https://virtualcuneiform.org/
- a long-standing international collaboration aimed at supporting:

i.   virtual access to cuneiform artefacts (Mesopotamian clay tablets inscribed with ancient cuneiform script)

ii. virtual reconstruction of broken tablets.

Supporting Webpages

3D prints downloadable from site

3D Interactive Cuneiform Tablet

3D Cuneiform Interactive Viewer v3.0

The Virtual Cuneiform Tablet Reconstruction Project
Home - About - 3D Acquisition - Collaborative Environment - Automated Reconstruction - 3D Gallery - Interaction Example - Schools - AR Museum App - Publications - News - People - Contact

3D Interactive Shabti Model

About this Object: This virtual 3D model is an Egyptian 'shabti' statue; shabtis were special servant statues placed in tombs. The statue in the app is holding agricultural tools for farm work. It is over 2,500 years old and was once owned by Florence Nightingale who spent several months in Egypt in 1849-50. The hieroglyphic script on the statue is a magical spell to bring it to life and set it to work. This statue is number 7 of Liverpool World Museum's 10 Objects from Ancient Egypt.

Android AR App (ARCore/Processing for Android)
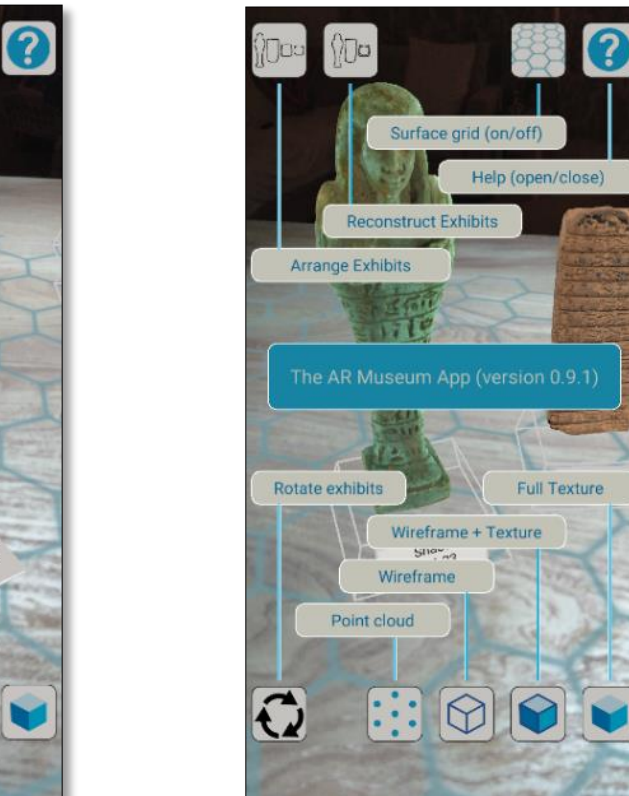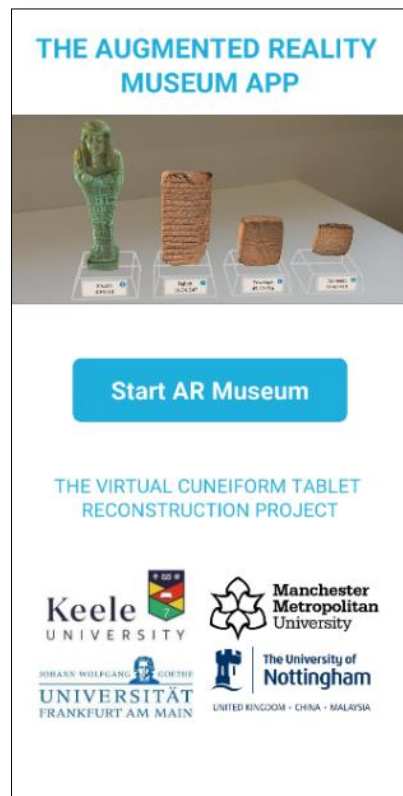
iOS AR App (Swift/Xcode/ARKit)
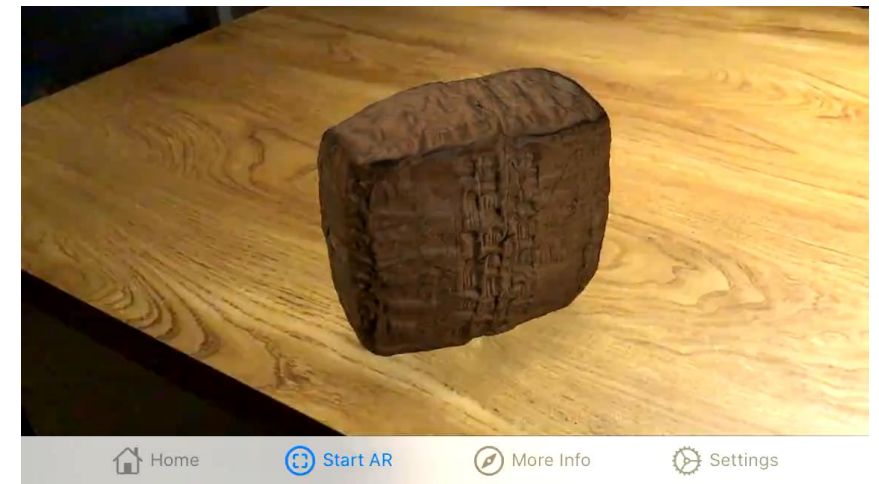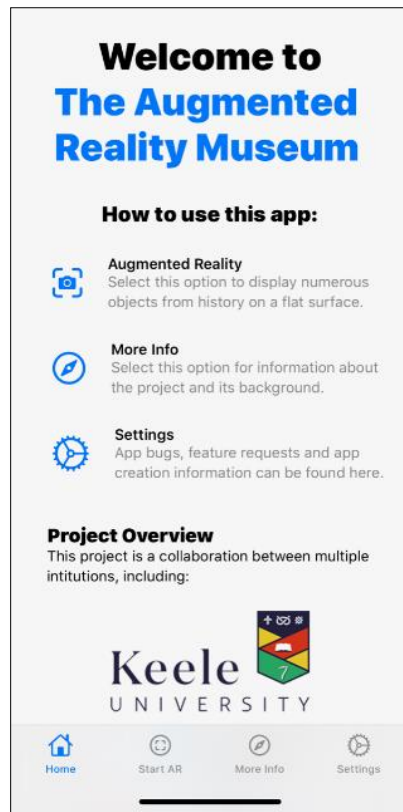
Educational 3D Model Views

point cloud view

wire mesh view

3D photographically rendered view

Exhibition Views and Interactions

3D exhibitions with and without surface, automated alignment and artefact information.

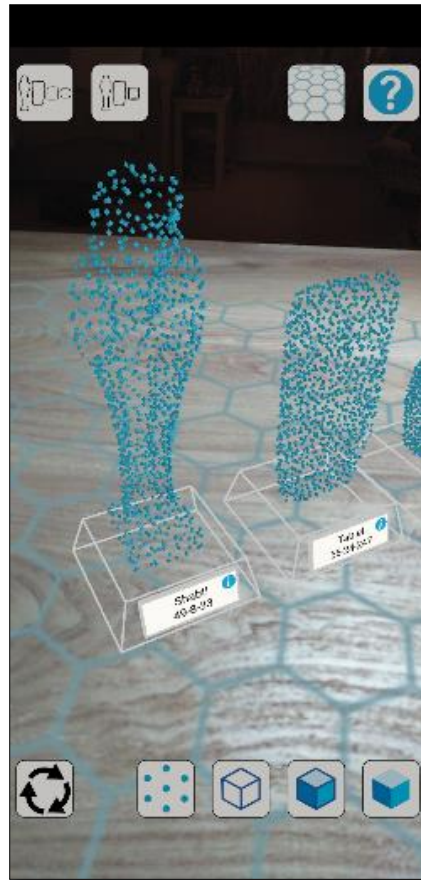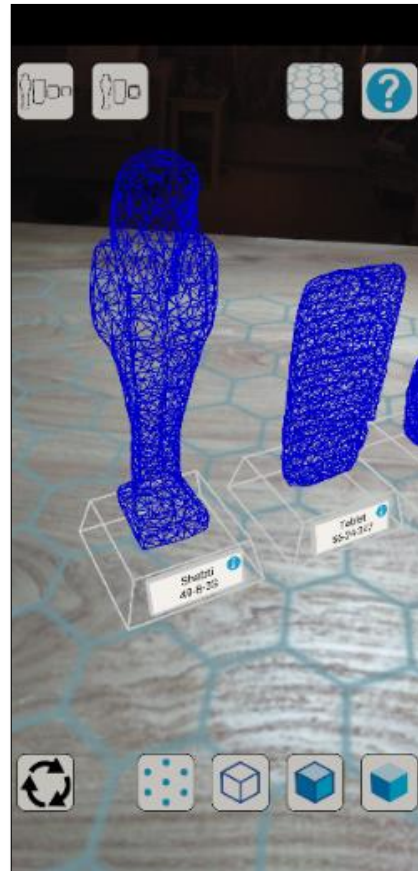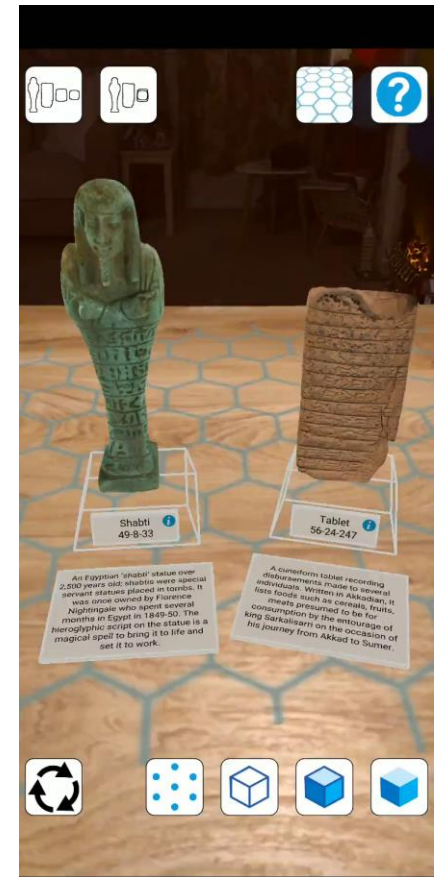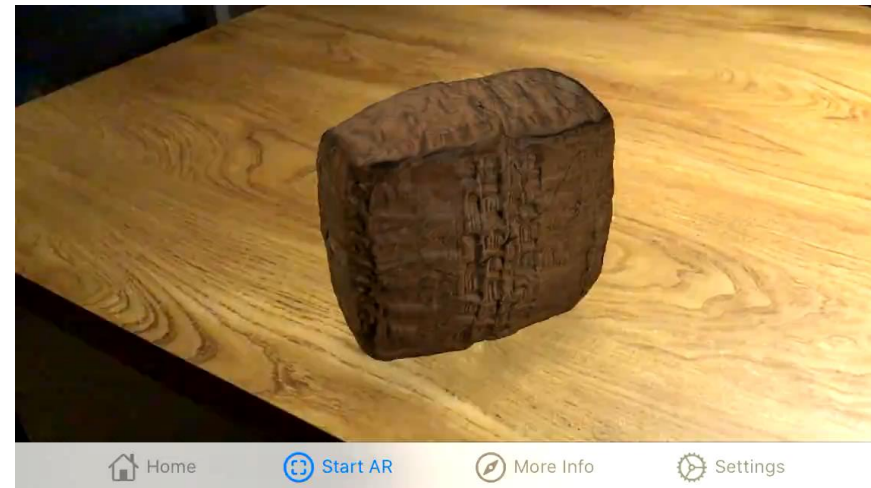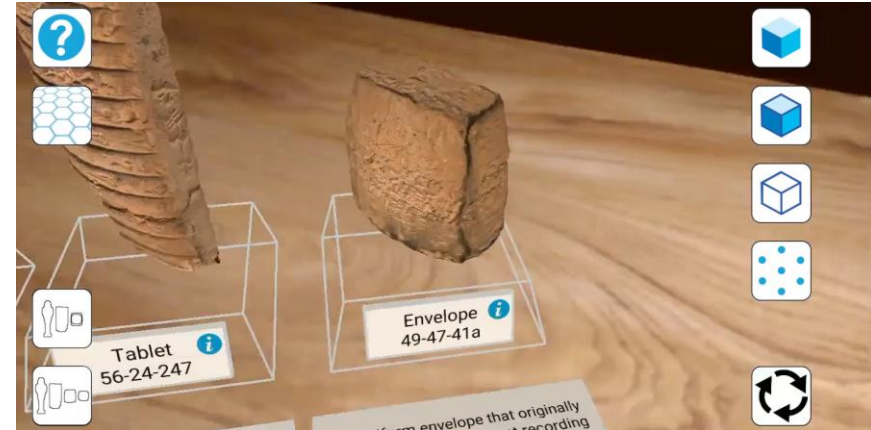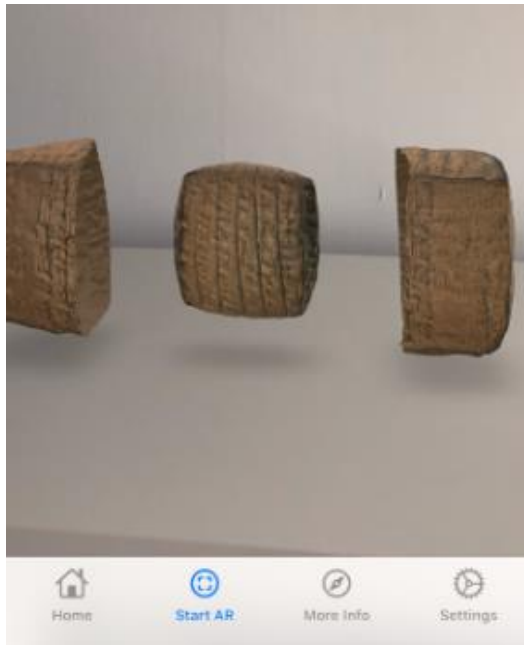# Individual and **Reconstructed** Artefact Views

Animated AR artefact reconstructed views of the cuneiform tablet, as it would have been, inside its envelope.

Further Work

- AR app co-creation

- User experience design

- (Please see upcoming MIT Press
  PRESENCE Special Issue Call for Papers)
  - https://virtualcuneiform.org/
  - https://virtualcuneiform.org/ARMuseum.html
  - (see for slides with videos)

- **Thank you so much for listening.**

Call for Papers
PRESENCE: Virtual and Augmented Reality
Special Issue on User Experience and Engagement

**User Experience and Engagement in the
Reality-Virtuality Continuum**

Guest Editors: Tim Collins and Sandra Woolley

Call and Scope:
There are new and exciting opportunities for user experience and engagement across the reality-virtuality continuum of virtual-, augmented-, mixed-, mediated- and shared-reality. But the gaps between expectations and perceptions, the technology demands, and the increased information flow and degrees of freedom create unprecedented usability and user experience challenges. Solutions to these challenges will benefit from innovations in extended reality (XR) sensing and display technology, interface and system design; insights from behavioural studies and user experience evaluations; and from the development of new tools and techniques that support content creation, virtual presence, narrative and appeal, and engaging experiences amongst diverse cohorts of users.

Topics: In this special issue, we aim to present exciting innovations and showcase new research in user experience and engagement across the reality-virtuality continuum. The scope of the special issue includes, but is not limited to, the following topics:

- Usability and user experience studies in the R-V continuum.
- Design for playful engagement.
- Gamification and immersive reality gaming
- Mobile and pervasive interaction.
- Engagement in augmented, virtual and mixed reality environments.
- Human-computer interaction in the R-V continuum
- Technology advances for enhanced user experience.
- Co-creation and participatory user design.
- Engaging narratives and shared experiences.
- Mobile and pervasive gaming in virtual and augmented reality.
- Advances in visualization techniques.
- Virtual storytelling.
- Portals and innovative reality interfaces.