

# DEEP TIME

# VIRTUAL REALITY

# ARCHAEOLOGY

# VISUALISATION



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IT Services

# IT SERVICES INNOVATION TEAM



THE UNIVERSITY OF  
NEWCASTLE  
AUSTRALIA

Enriching  
teaching and  
learning using  
new technology

[NEWCASTLE.EDU.AU/CURRENT-STAFF/WORKING-HERE/IT-AND-COMPUTING/INNOVATION](https://newcastle.edu.au/current-staff/working-here/it-and-computing/innovation)



## ABOUT THE TEAM

Enriching teaching and learning using new technology

Creating and responding to disruption

Founded in mid 2016

Dynamic, small team

28+ projects delivered

12 week, agile, MVP development

# WHY DEEP TIME?

- Excavation destroys the context of the artefacts
- With VR technology we can recreate that context
- Makes it easier for researchers to understand how artefacts relate to each other
- Makes history more accessible to laypersons
- Used in Work Integrated Learning





Data Download

NEWCASTLE NEW ENGLAND  
NSW HEALTH

CENTRE

Download Finished



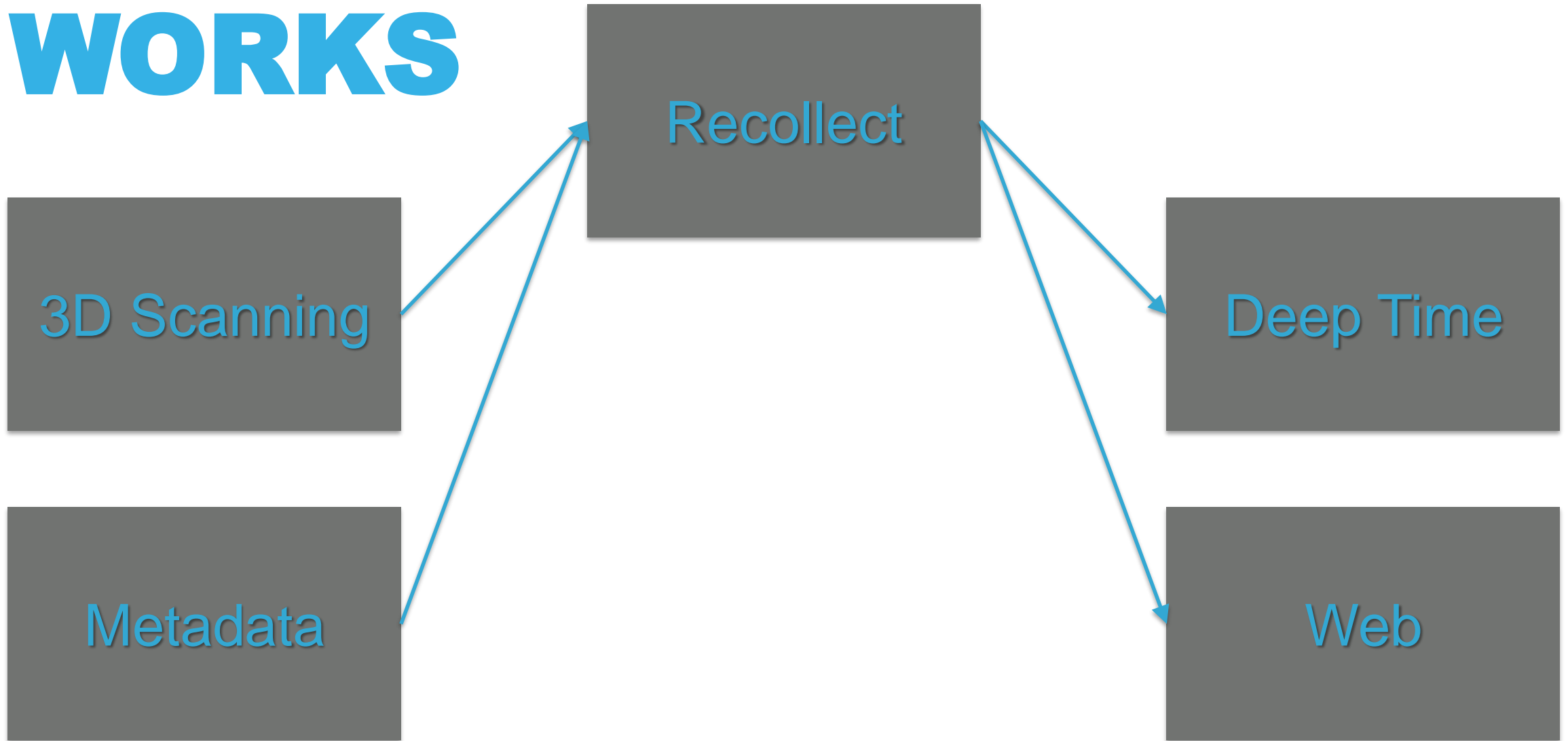
DEEP TIME



NEWCASTLE  
CITY COUNCIL

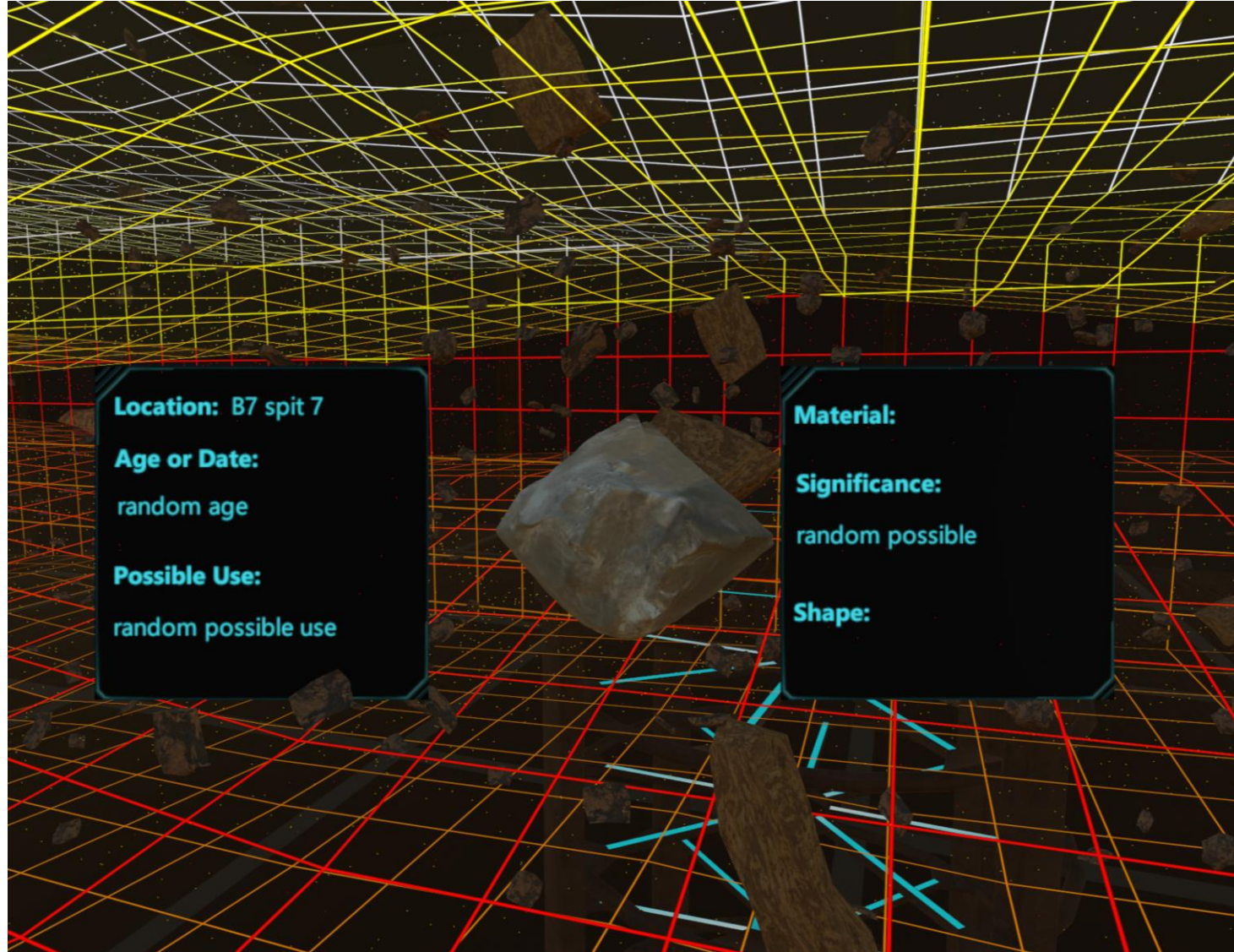
**PRESS TRENCH TO BEGIN**

# HOW IT WORKS





# 3D SCANNING



**Location:** B7 spit 7

**Age or Date:**

random age

**Possible Use:**

random possible use

**Material:**

**Significance:**

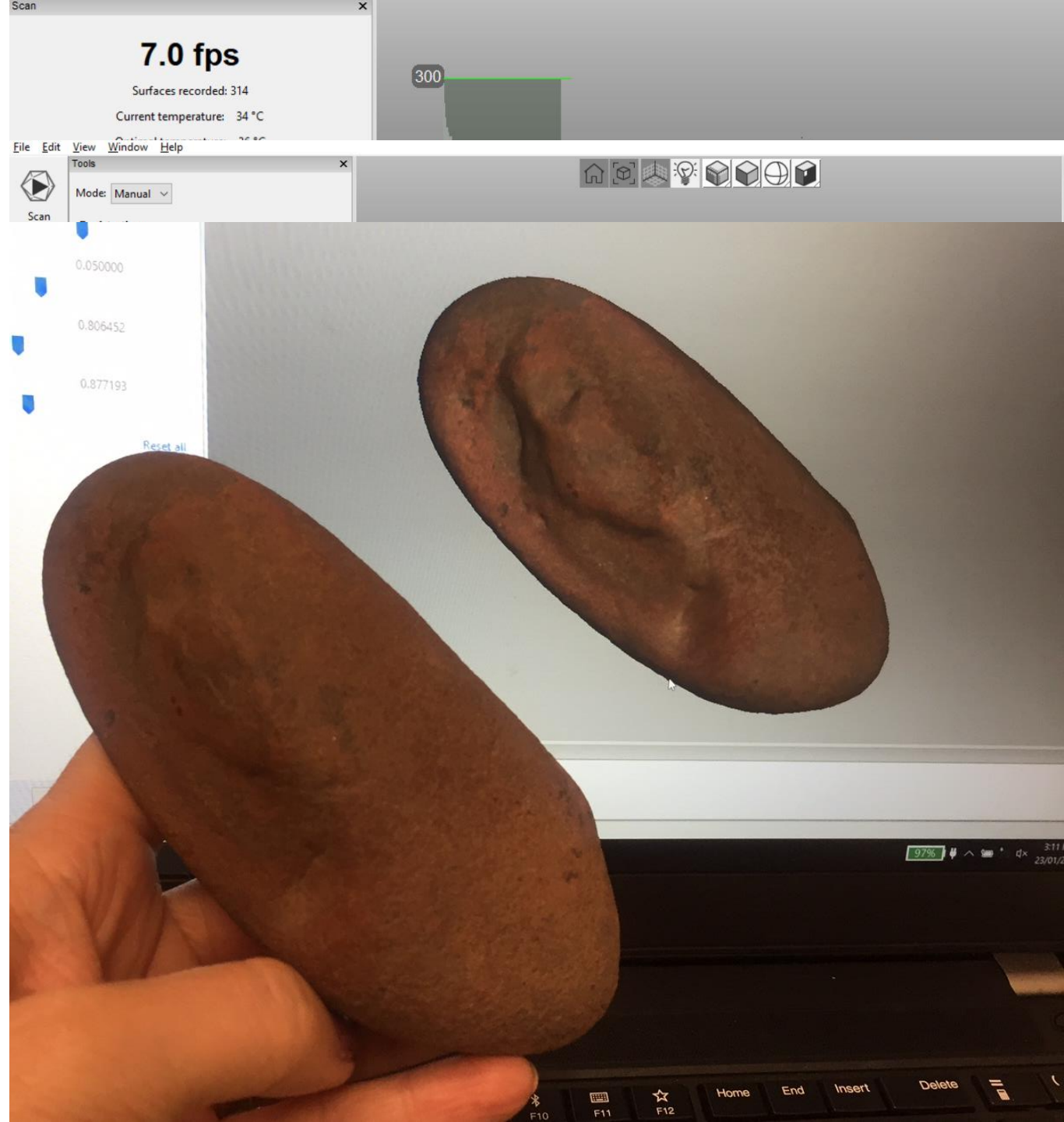
random possible

**Shape:**



# 3D SCANNING

- Each artefact captured in high resolution
- Stored as 3D model + texture image

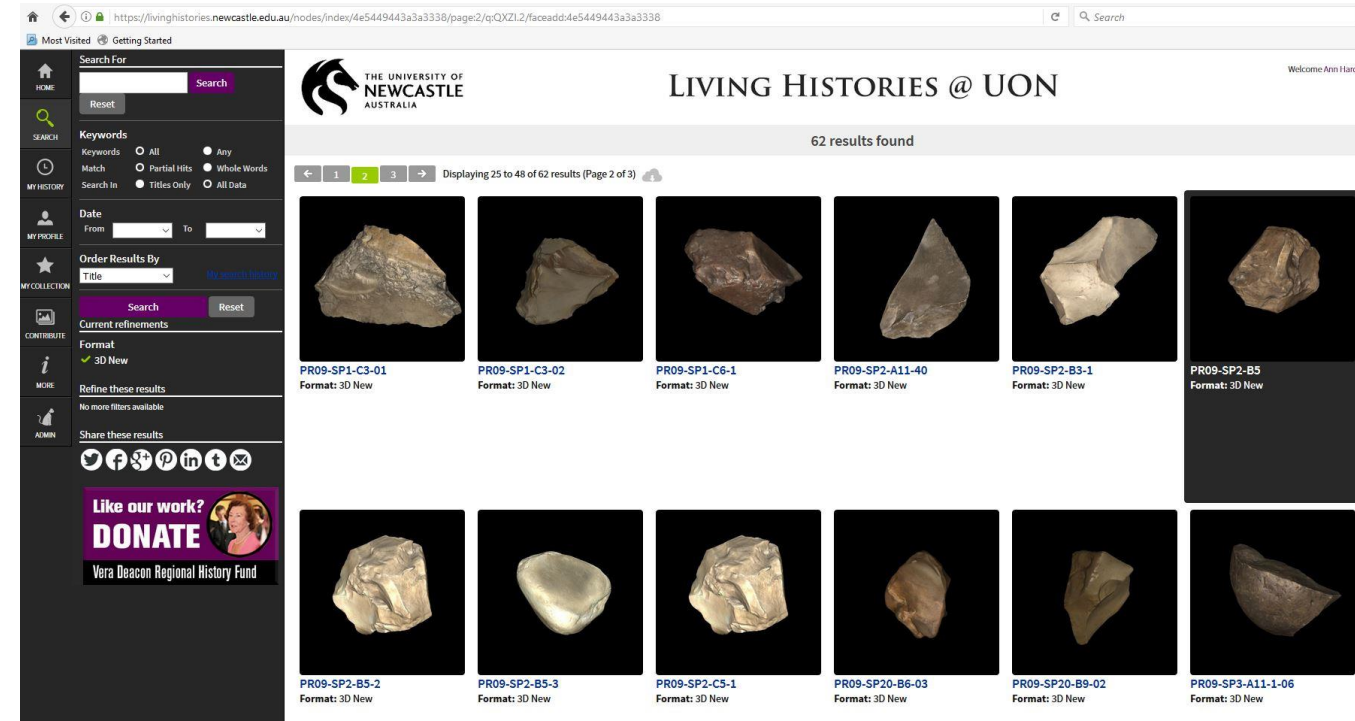


# USING RECOLLECT

- Scanned objects can be uploaded along with relevant metadata
- 3D objects can then be viewed on the web

<https://livinghistories.newcastle.edu.au/nodes/view/86569>

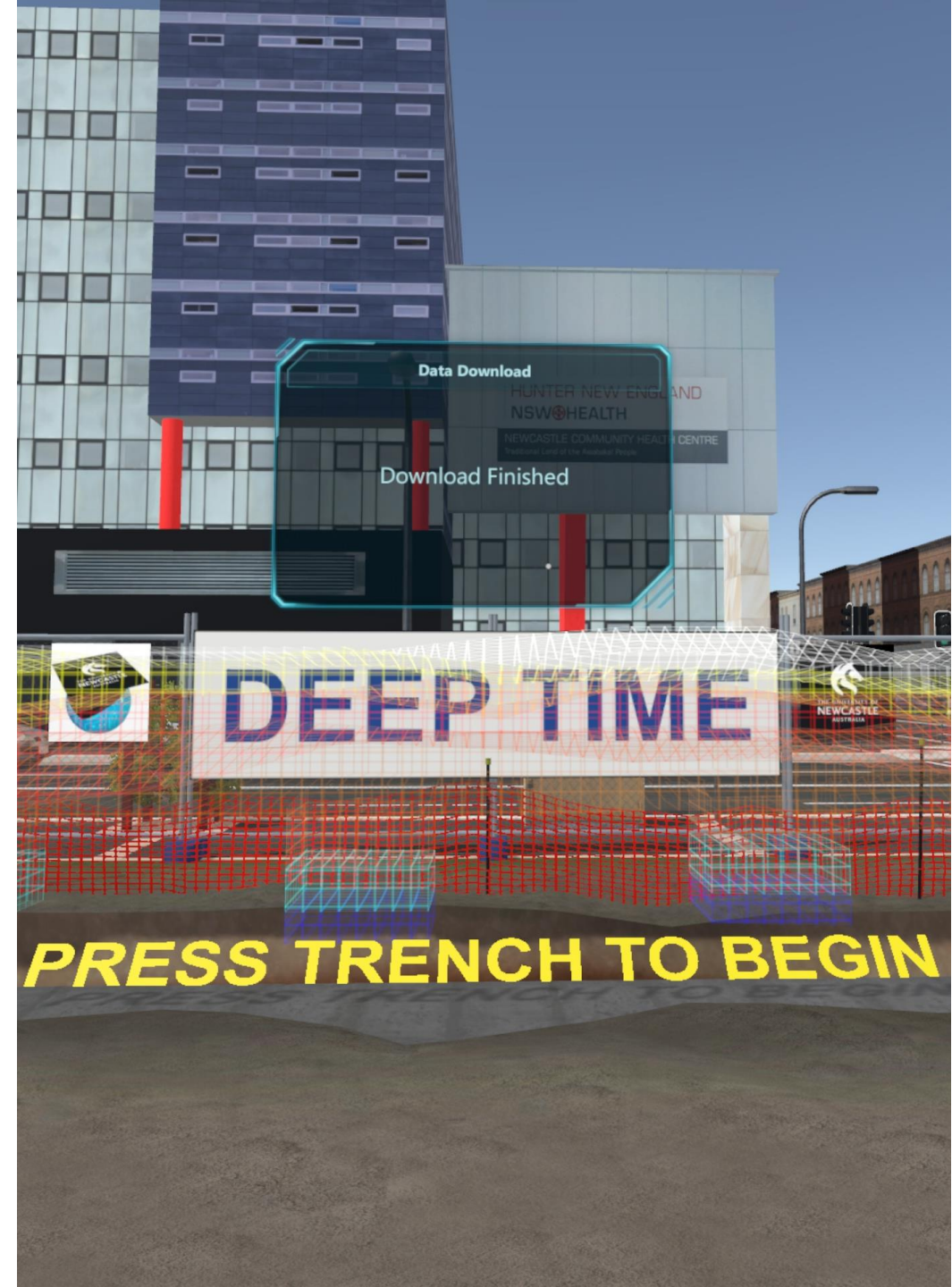
The screenshot shows the 'LIVING HISTORIES @ UON' interface. On the left is a vertical navigation menu with icons for Home, Search, My History, My Profile, My Collection, Contribute, More, and Admin. The main content area is titled 'Item Title: PR09-SP1-A8-02' with 'Save', 'Save & Exit', and 'Exit' buttons. The form is divided into two main sections: 'ITEM SETTINGS' and 'OBJECT DETAILS'.  
 The 'ITEM SETTINGS' section includes fields for 'Item type' (3D Object), 'Item Access Level' (Public), 'Copyright / Creative Commons' (CC General), 'Parent Item ID' (73775), 'Child Weighting' (68511), 'ACL RIGHTS', and a 'DELETE' button.  
 The 'OBJECT DETAILS' section includes fields for 'Identifier' (PR09-SP1-A8-02), 'Length mm', 'Width mm', 'Height mm', 'Material' (stone), 'Shape' (amorphous), 'Possible Use', 'Other Use', 'Pit Column' (A), 'Pit Row' (8), 'Spit' (1), 'Dig Location' (Former Palais at Hunter Street, Newcastle West), 'Age or Date', 'Notes', and 'Current Ownership'. Each field has a corresponding 'Save' icon (green checkmark) and a 'Delete' icon (red X).  
 On the right side, there is a 'PROFILE PICTURE' section with options to 'Picture from the Internet', 'Upload a (smallish) picture to use', and 'Current Picture' (nil).





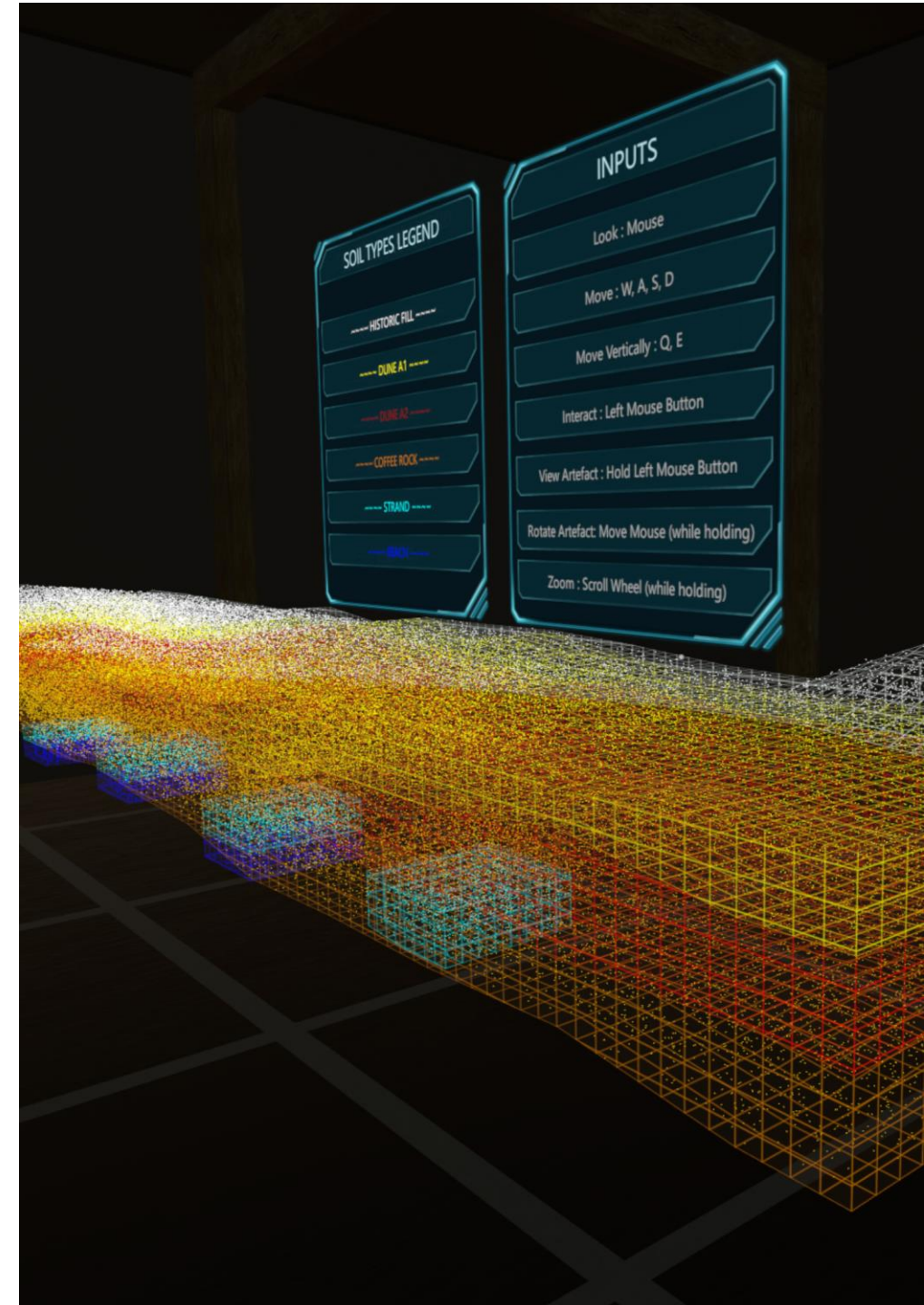
# LOADING THE DATA

- The 3D VR application holds a local copy of scanned artefacts
- On start-up it checks for new artefacts from Recollect
- This keeps the application up to date with minimal download time



# THE TRENCH

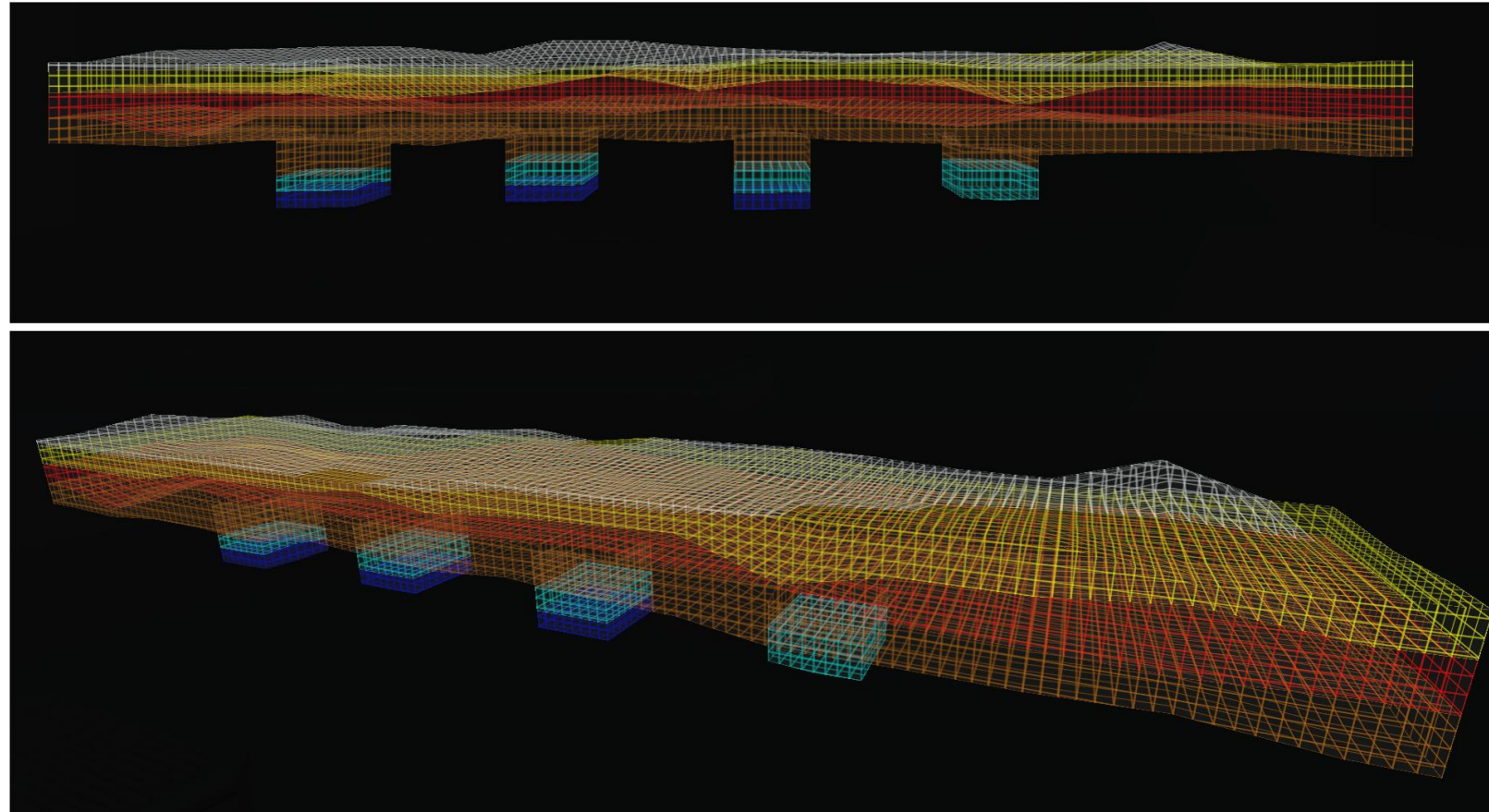
- The holographic trench is modelled by hand
- Based on archaeological report
- Accurate to the centimetre at key points
- Colour coded for different soil types / time periods





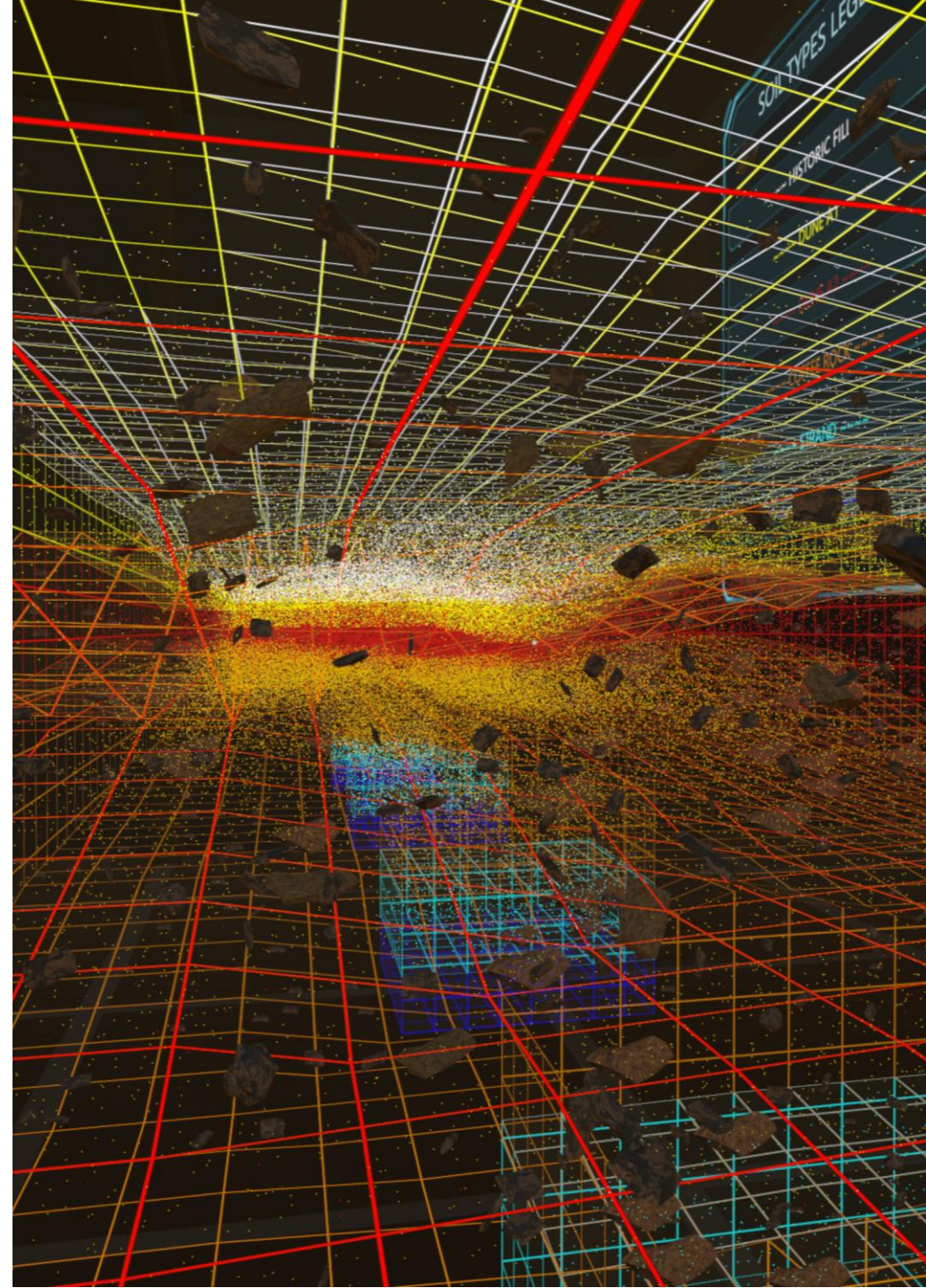
# THE TRENCH

- Historical Fill
- Dune A1
- Dune A2
- Coffee Rock
- Strand
- Beach Deposit



# ARTEFACT DISTRIBUTION

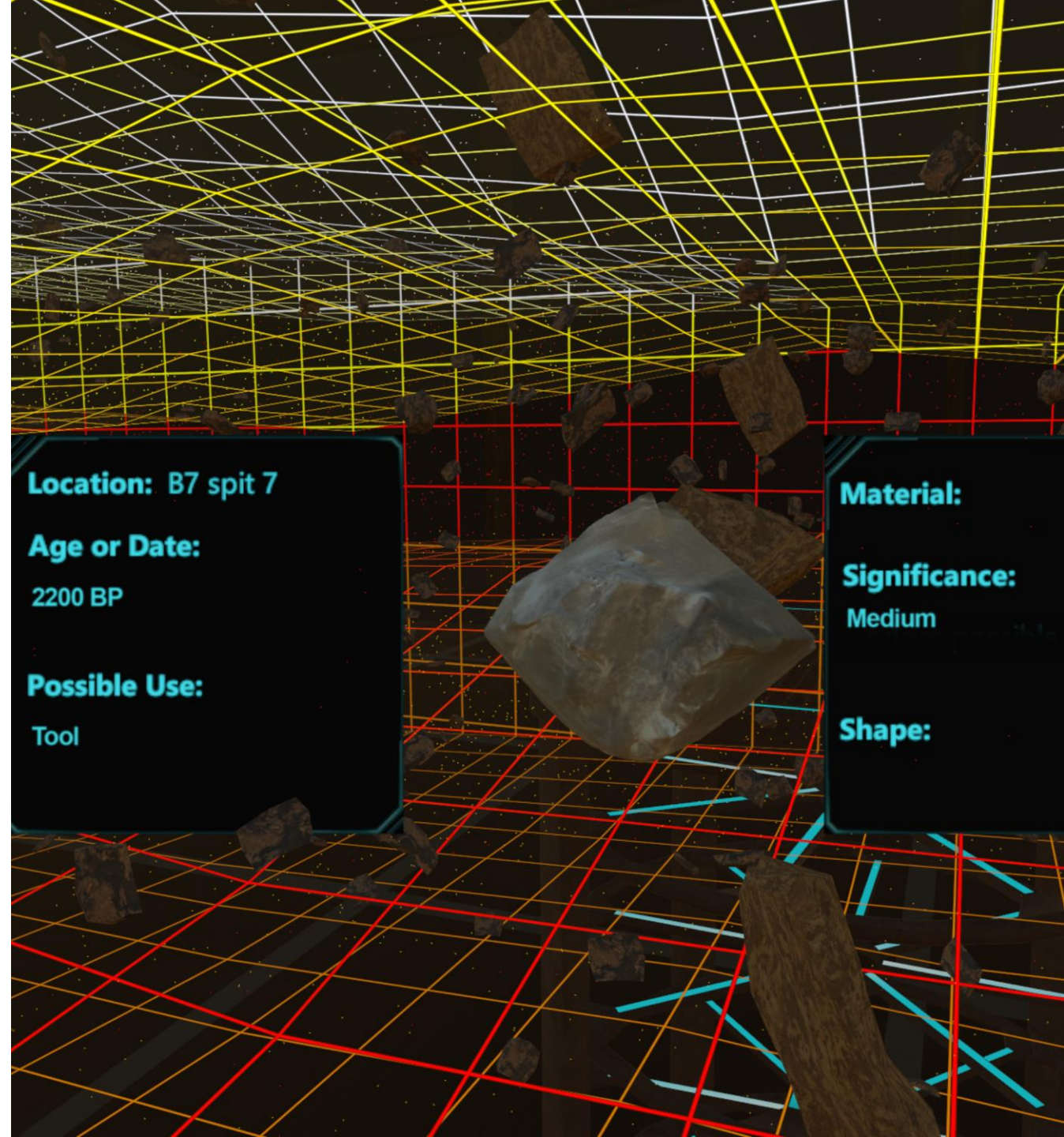
- Artefacts are distributed in the trench based on their metadata
- Accurate to 10cm in height, 1x1 meter in x/y
- Allows you to see density and distribution of artefacts throughout the trench





# EXAMINING ARTEFACTS

- Hold individual artefacts in VR
- As if you are holding the real thing
- Displays metadata
- Magnifying glass available



Q&A