# Digital Galleries

## Digitising Movable Cultural Heritage

Interreg North Sea Region CUPIDO
European Regional Development Fund
EUROPEAN UNION

University of St Andrews | FOUNDED 1413

HIE
Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

XPONORTH

# Overview

- **Communicating heritage**
- Setting up a desktop studio
- Photogrammetry workflow
- Software processing
- Metadata and Archiving
- Making Digital Galleries
- Social Archiving and Social Media

# What are the benefits of digitising movable heritage

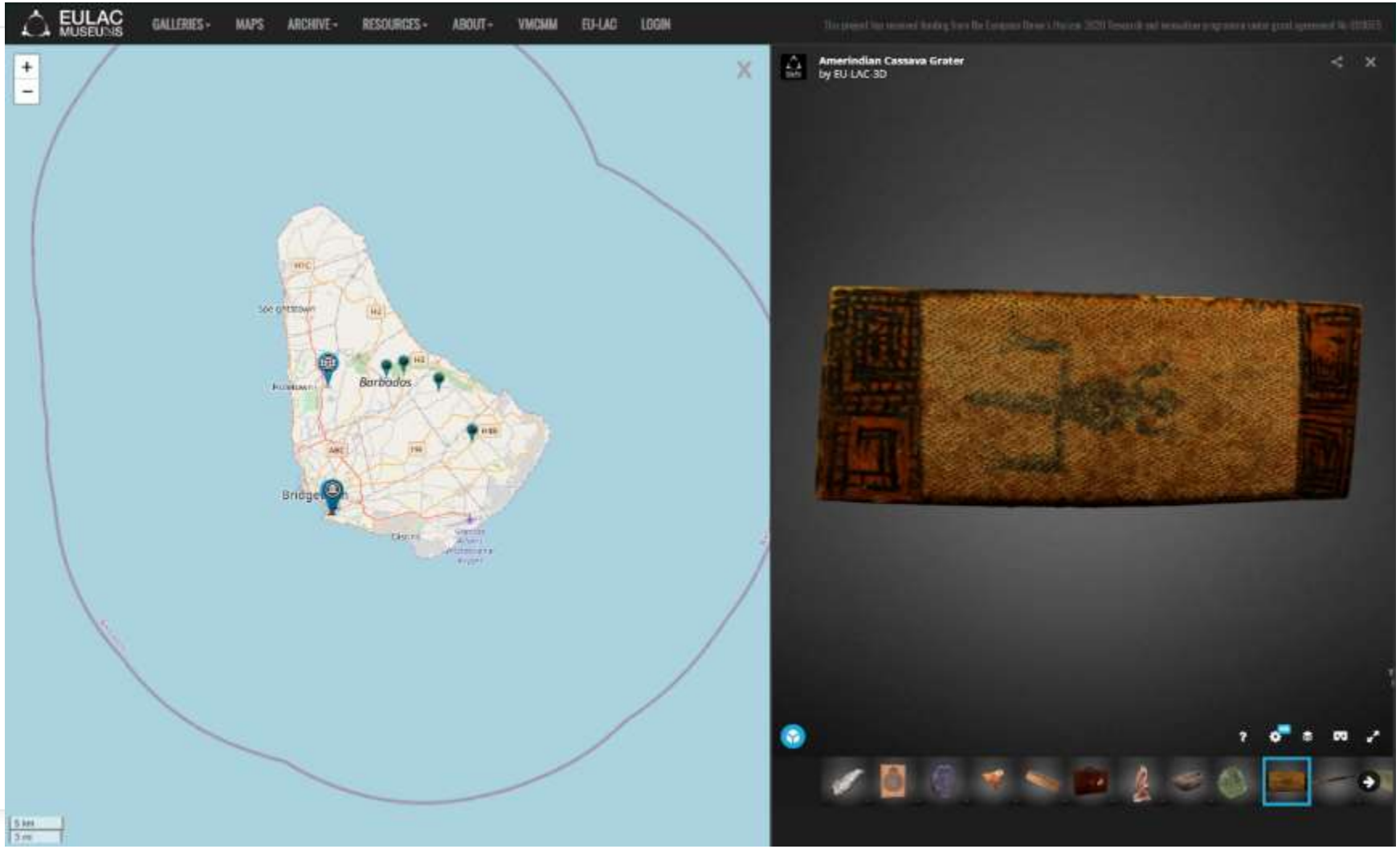
- Easy to share, disseminate and access remotely
- Be in more than one place at a time
- Provides a record of the state of the artefact at that given time
- Use for promotion of the museum and unique heritage
- Digital representation can be modified
  - Non-destructive
  - Adding colour
  - Reconstructing shape

# Type of Media

- Photograph
- 3D Model
- Video
- Preserving to former state
- Mixed media

# Context

- Timeline
- Map
- Gallery
- Scene



# Engagement

- Metadata
- Linear
- Gallery
- Interactive

# Overview

- Communicating heritage
- **Setting up a desktop studio**
- Photogrammetry workflow
- Software processing
- Metadata and Archiving
- Making Digital Galleries
- Social Archiving and Social Media

- Camera /mobile phone
- Tripod
- Clicker
- Turntable
- Lightbox
- Lights

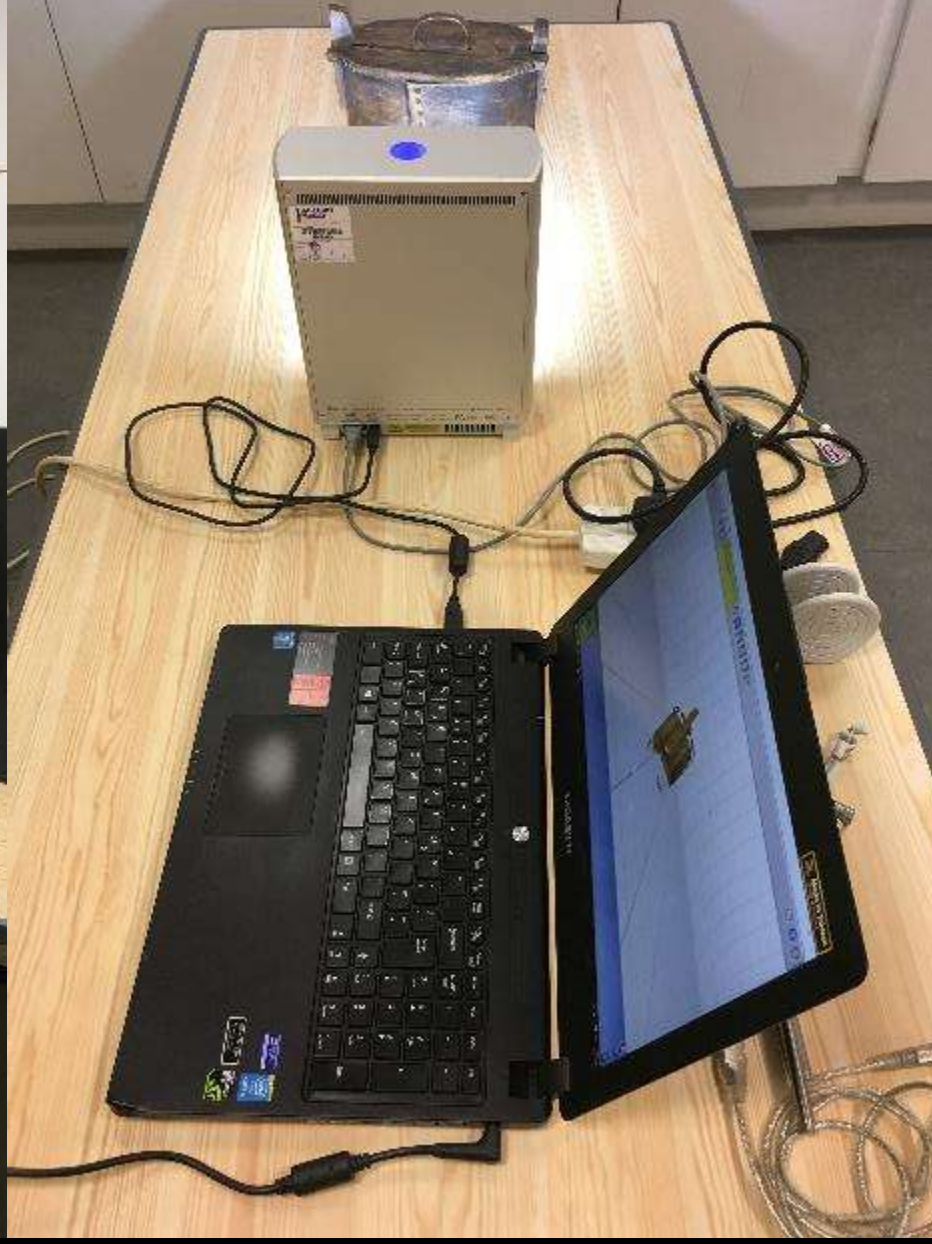
# Desktop Studio

# Overview

- Communicating heritage
- Setting up a desktop studio
- **Photogrammetry workflow**
- Software processing
- Metadata and Archiving
- Making Digital Galleries
- Social Archiving and Social Media

# Photogrammetry Workflow

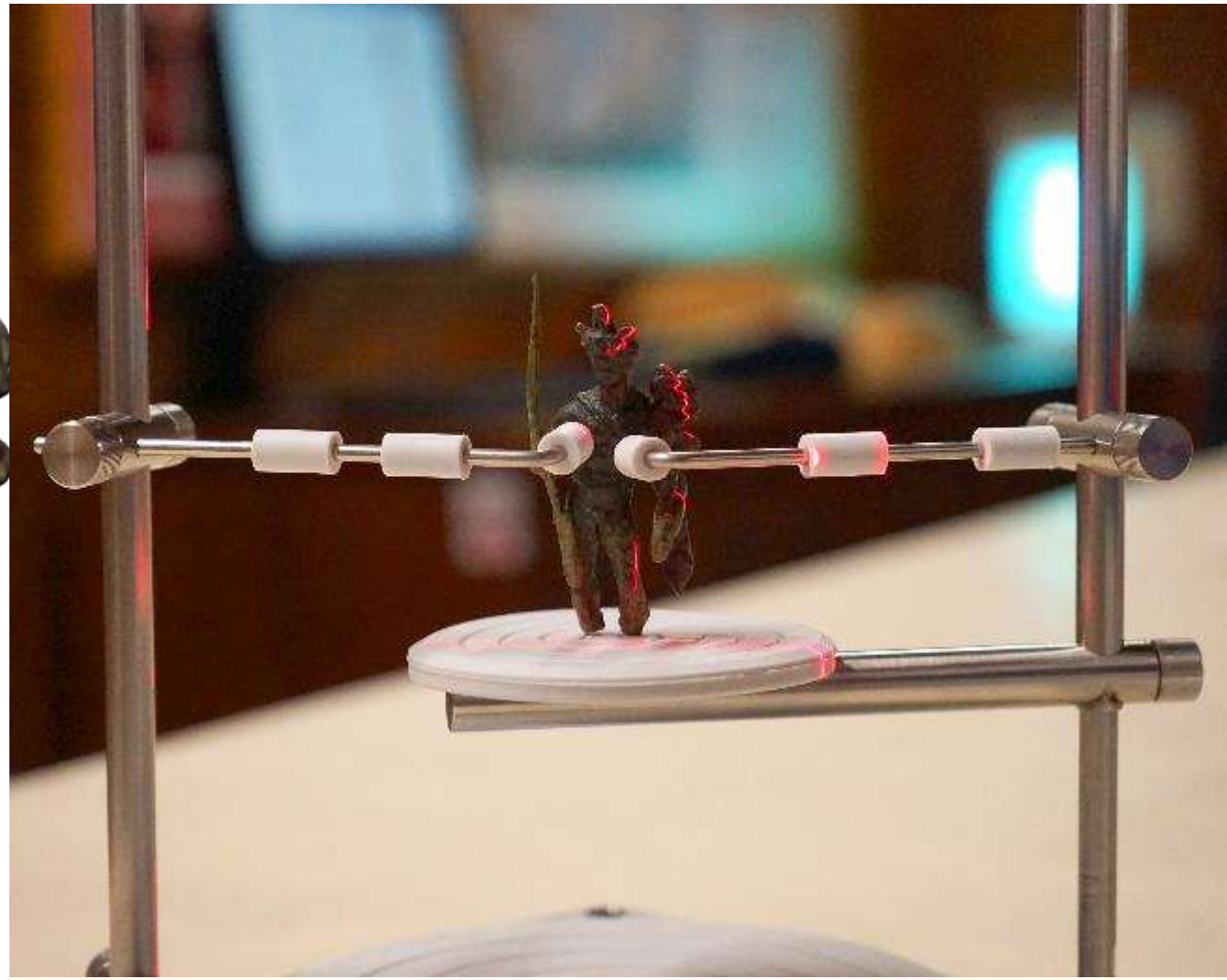
- Object Selection
- Camera set up
- Shoot photos
- Process photos

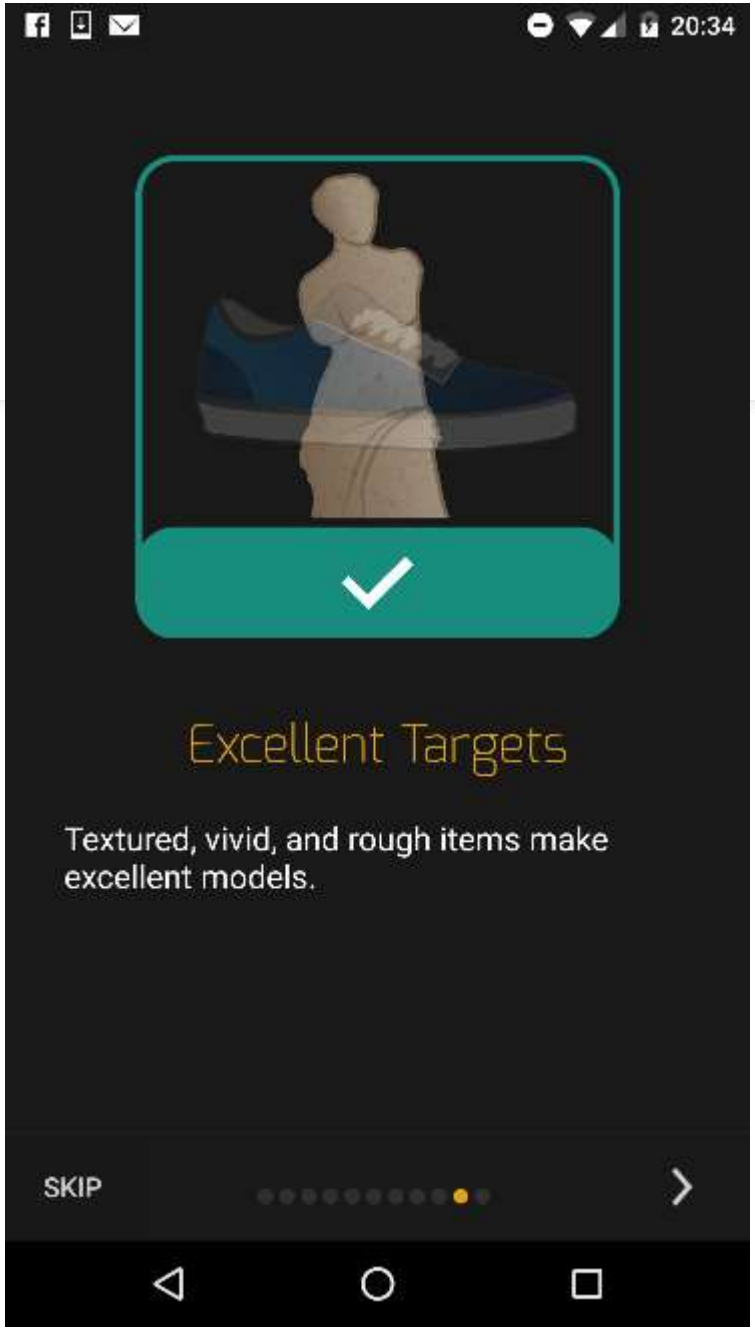


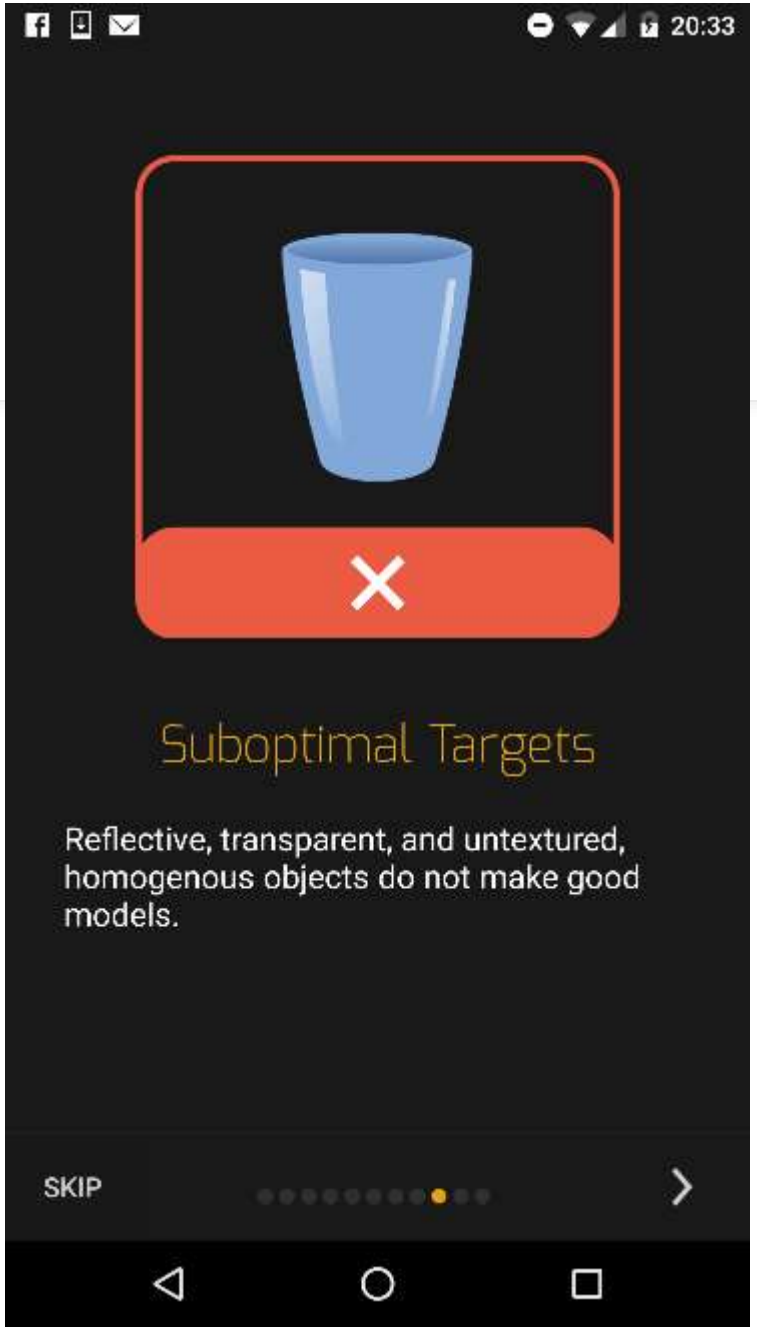
# Artefact Selection

# Artefact selection

- Digitises well
  - Matte surfaces
  - Fixed position
  - Little occlusions
  - Appropriate Size
  - Features
  - Robust
- Digitises with more difficulty
  - Highly reflective, moving parts, featureless
- Start with easy objects, can build to more difficult objects with more practice and successes



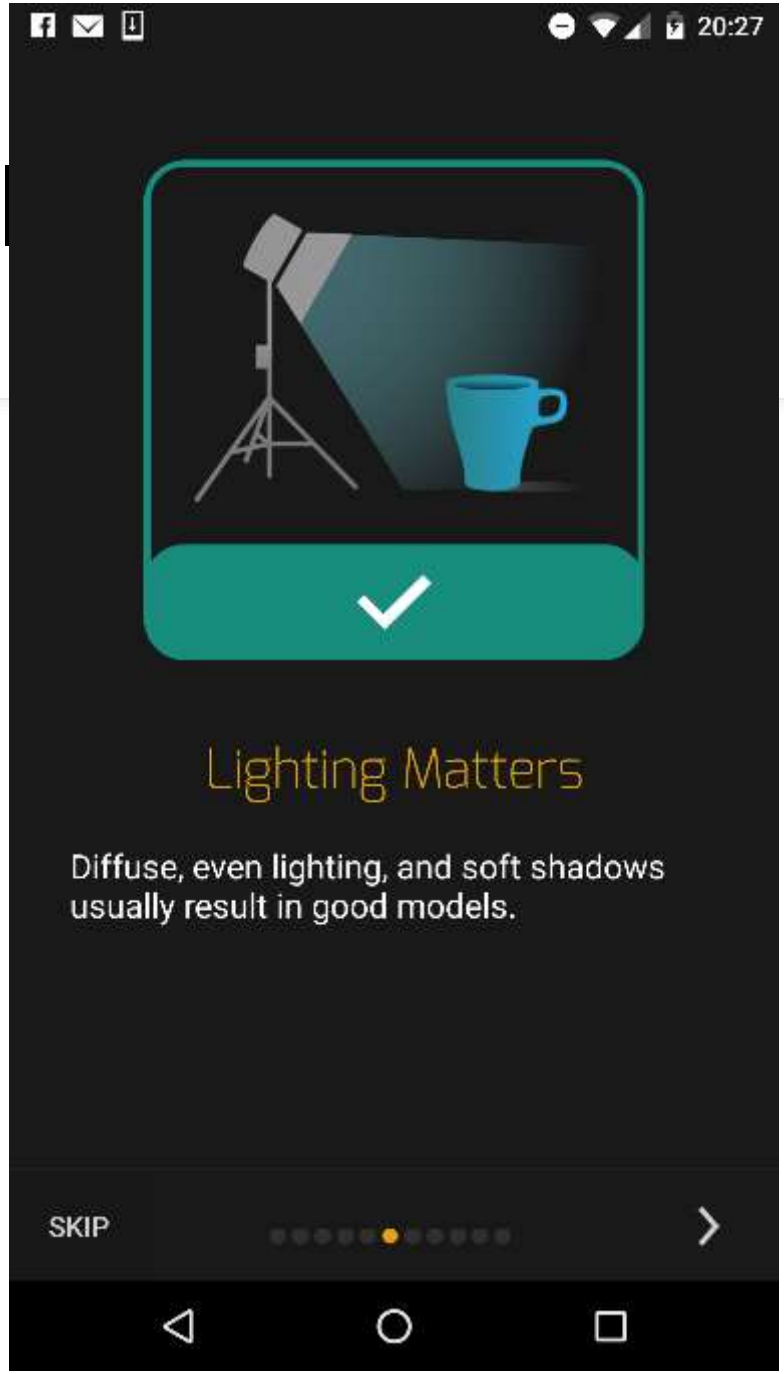

20:34
Excellent Targets
Textured, vivid, and rough items make excellent models.
SKIP

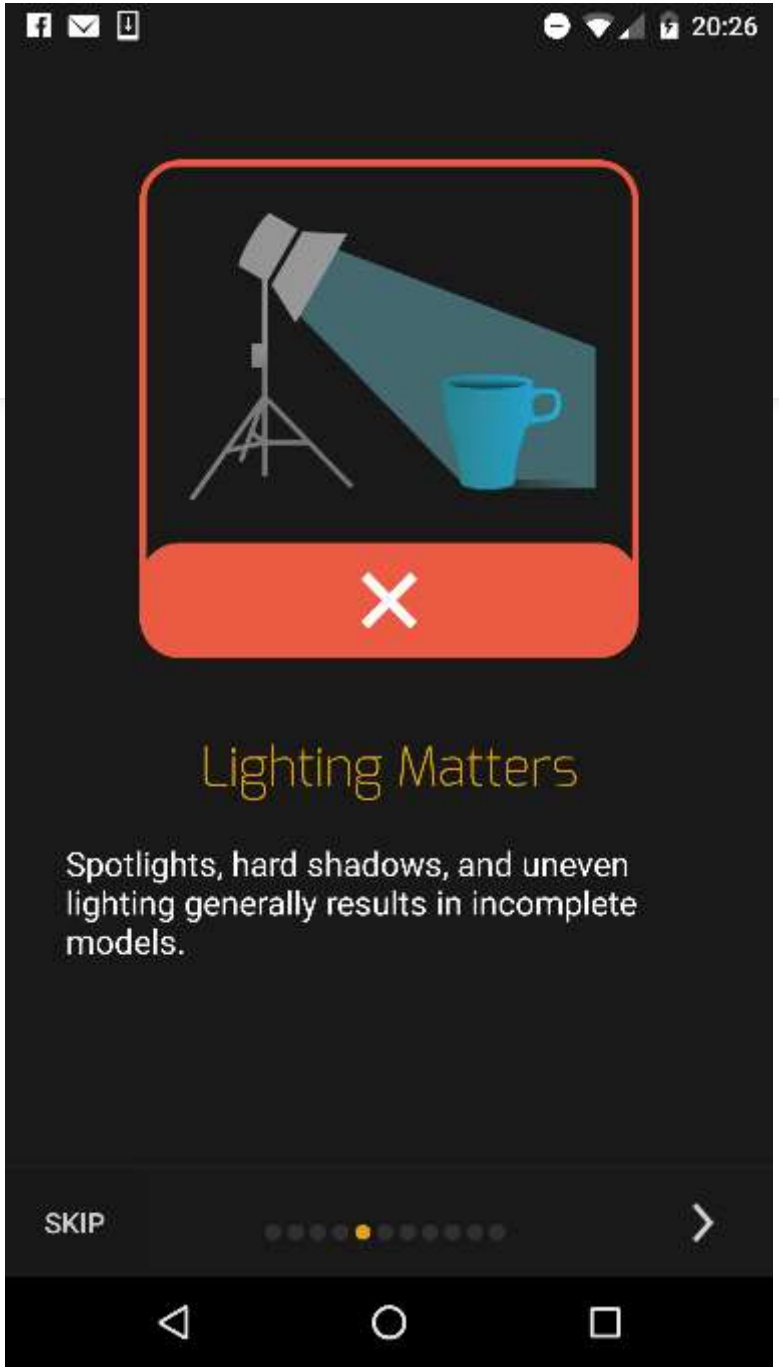

20:33
Suboptimal Targets
Reflective, transparent, and untextured, homogenous objects do not make good models.
SKIP

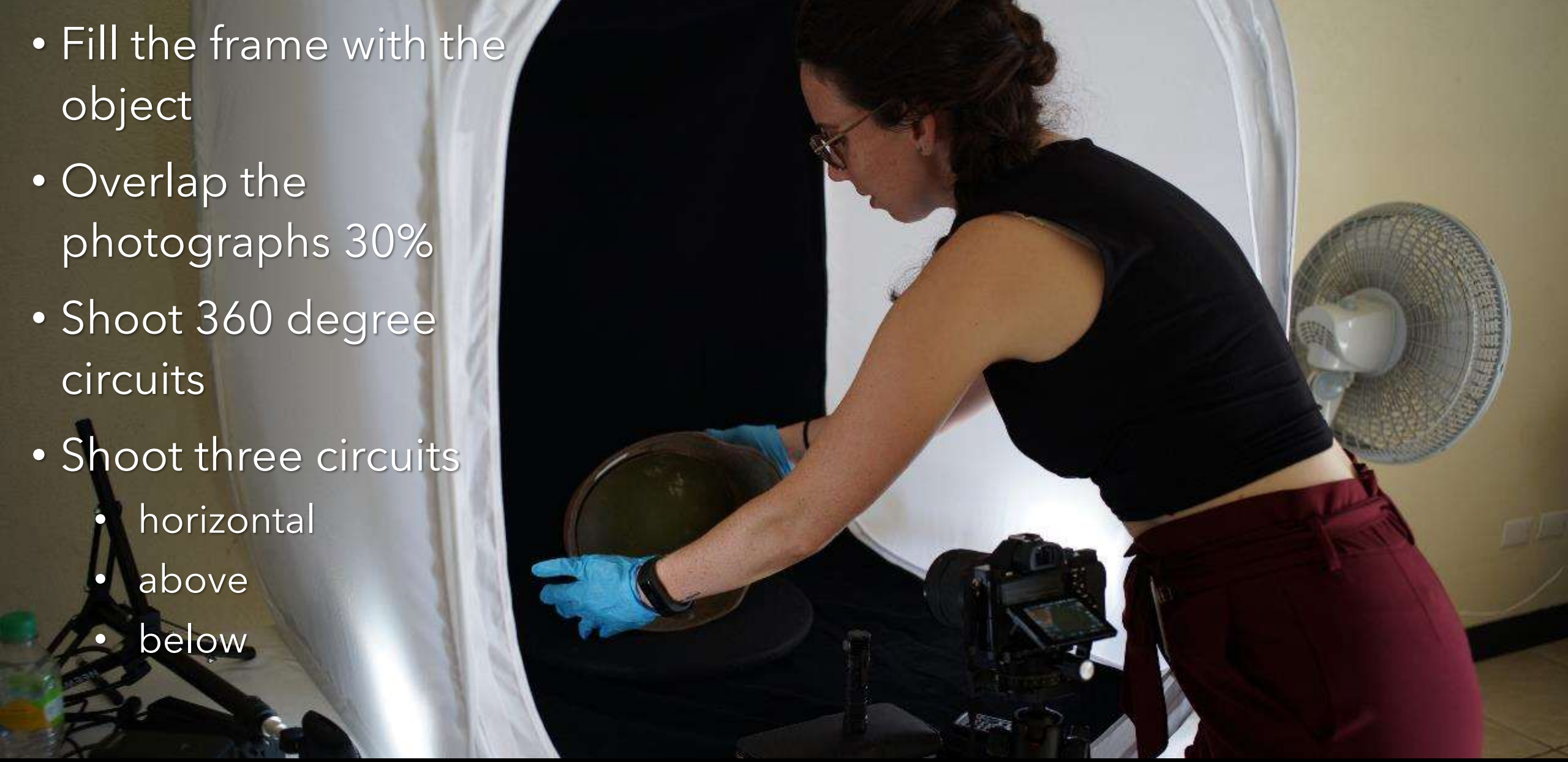
- Soft Flat Lighting
- Camera on fixed manual settings
  - Mobile phone (Pro settings Android, 3rd party app IOS – ProCam6, VSCO)
    - Narrow aperture (higher f-number, f/)
    - Low ISO
    - Long exposure
    - Fixed white balance
- Use a tripod for stability

# Camera Set Up

# Sel


20:27
Lighting Matters
Diffuse, even lighting, and soft shadows usually result in good models.
SKIP


20:26
Lighting Matters
Spotlights, hard shadows, and uneven lighting generally results in incomplete models.
SKIP



- Fill the frame with the object
- Overlap the photographs 30%
- Shoot 360 degree circuits
- Shoot three circuits
  - horizontal
  - above
  - below

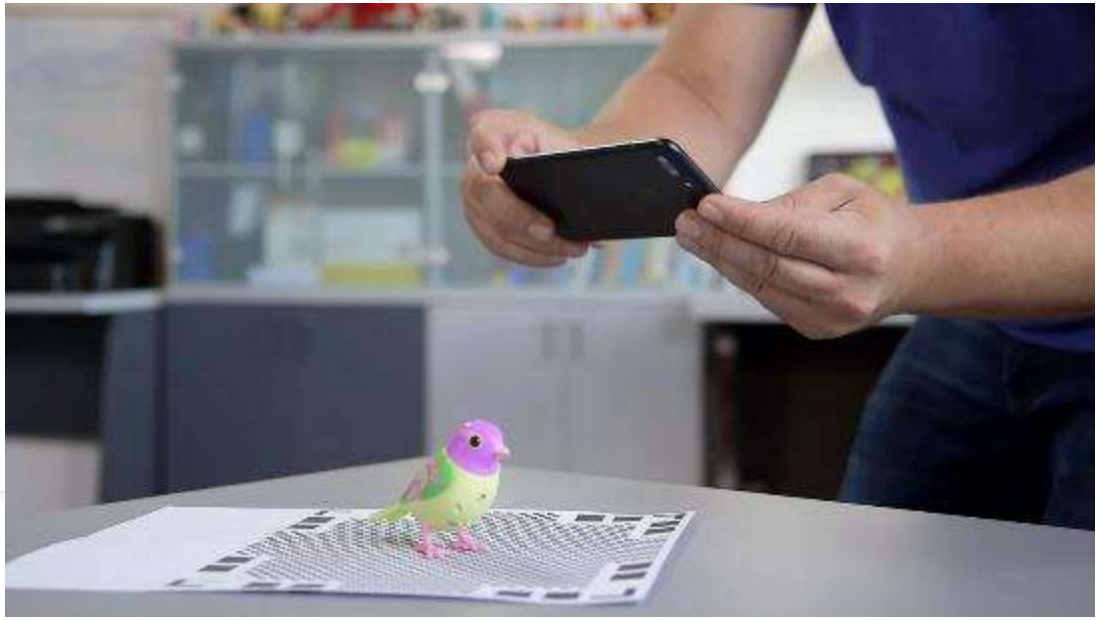
# Shoot

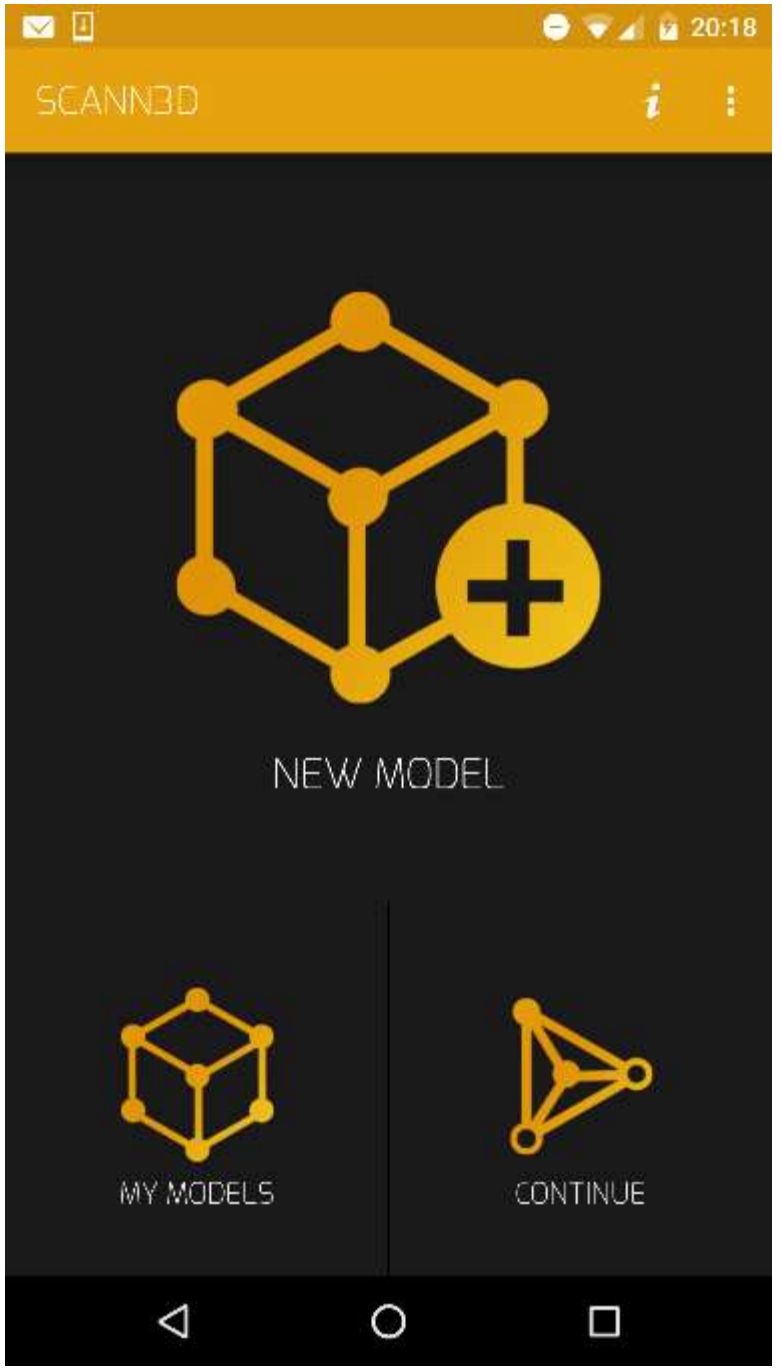
- Set of photographs after shooting
- Remove bad or duplicate photos
- Mask if needed (in 3D software, or another ie. Photoshop)
- Save all photos for future re-use

# Process Photos

# 3D Scanning Mobile Apps

- Trnio
- Qlone
- Scandy Pro
- Sony 3D Creator
- SCANN3D





# Overview

- Communicating heritage
- Setting up a desktop studio
- Photogrammetry workflow
- **Software processing**
- Metadata and Archiving
- Making Digital Galleries
- Social Archiving and Social Media

# Processing artefacts

- Select and sort images
- Align photos (mask or unmasked)
- Create a sparse points cloud
- Create a dense points cloud
- (Export to Meshlab if in Visual SFM)
- Trim dense point cloud
- Create mesh
- Apply textures

Open source

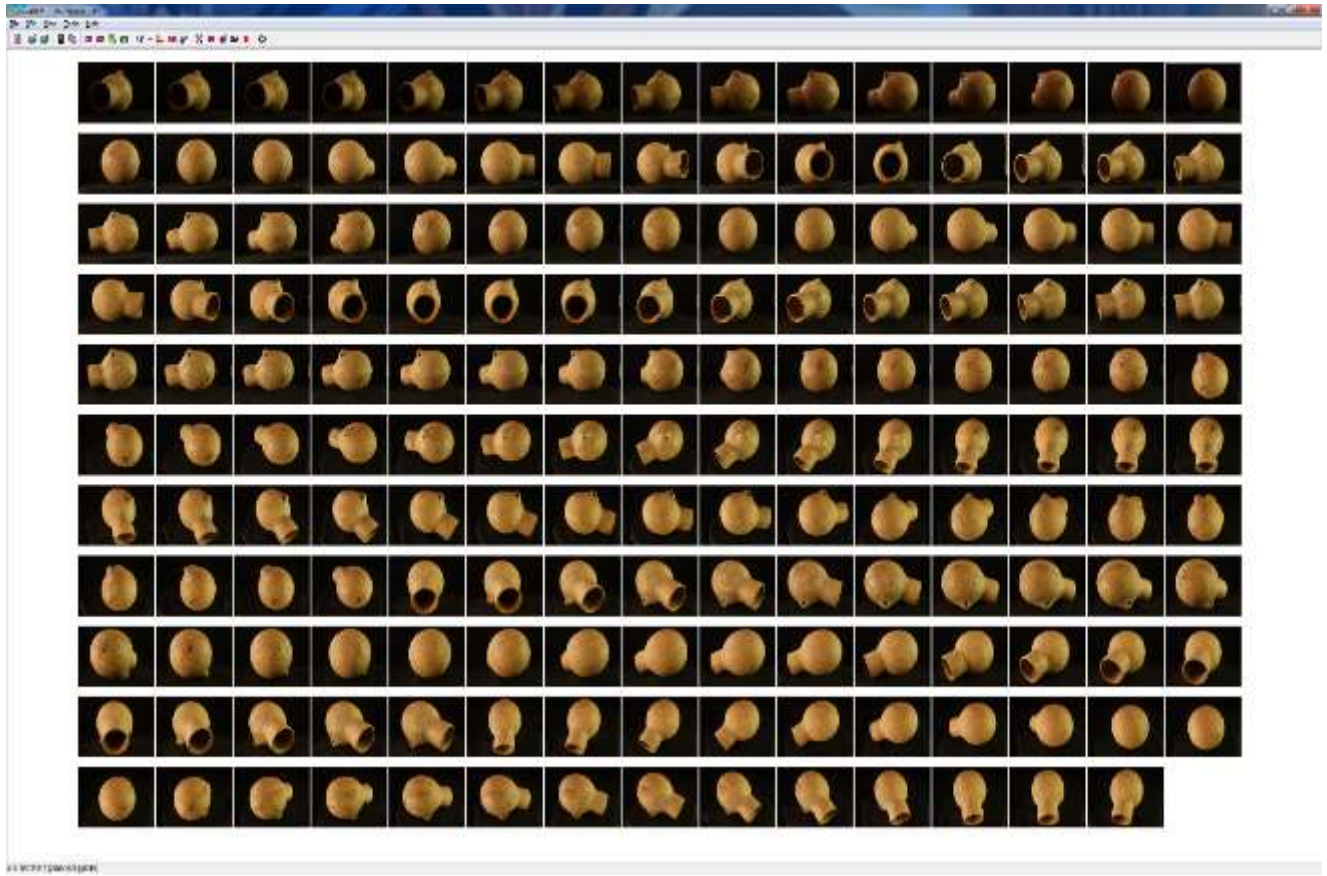
- Visual SFM & MeshLab

Free/Educational License/Professional

- Agisoft Metashape

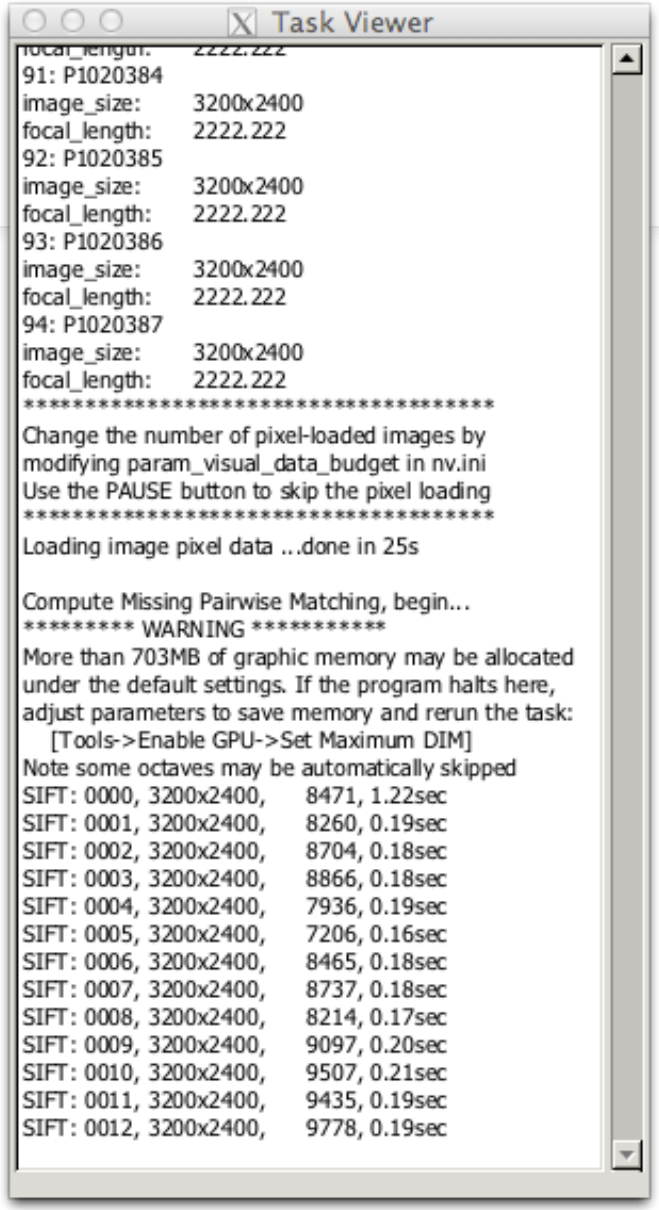
# Processing: artefacts with Visual SFM & Meshlab

- Download Select and import pictures
- Remove bad pictures
- Ensure complete coverage and overlap
- 60-100 should be plenty, depending on object structure
- Lower resolution images (1280*980) may work better



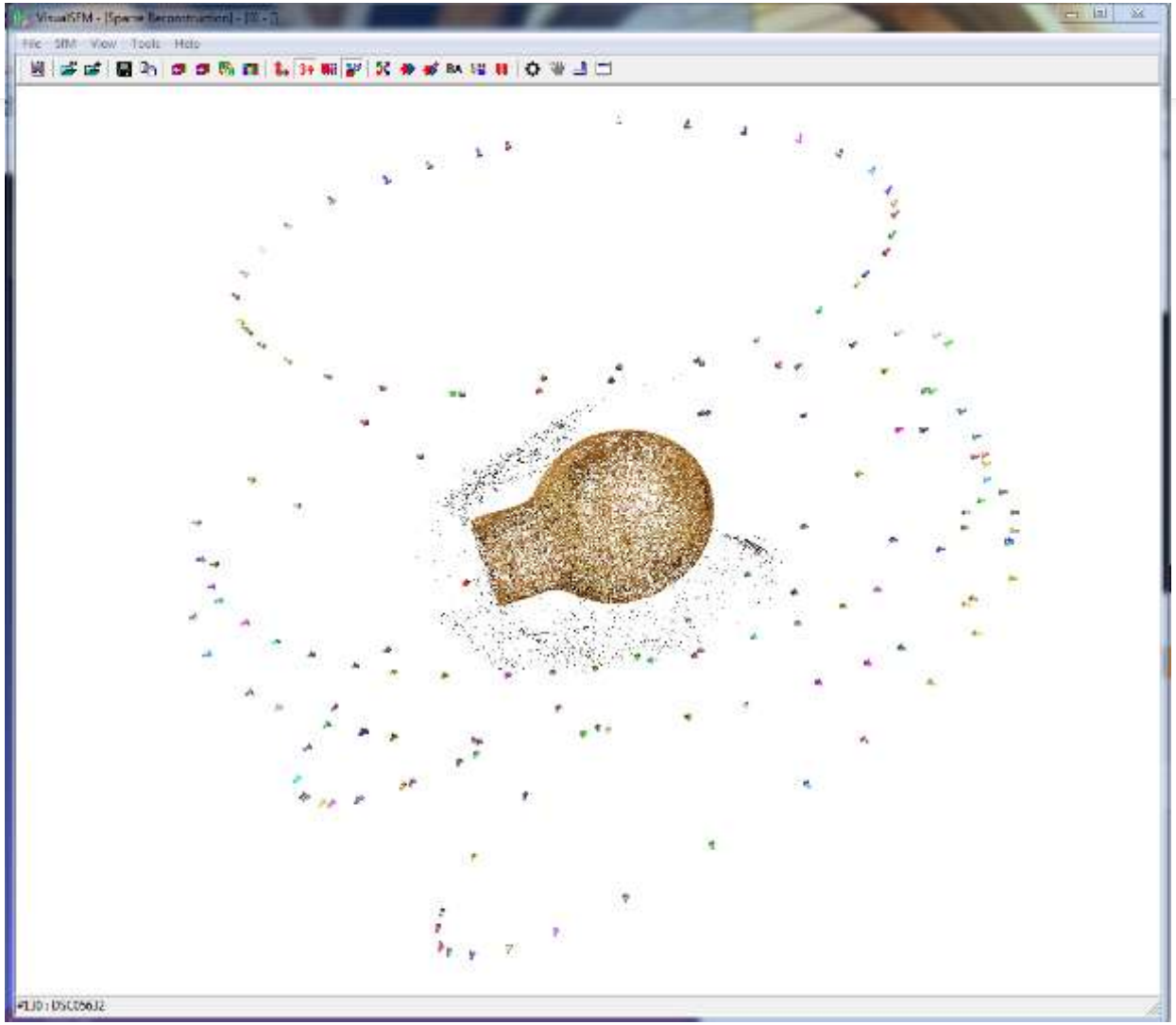
# Processing: artefacts with Visual SFM and Meshlab

- Sift and match
- Create a Sparse points cloud
  - Check and remove bad camera locations
- Create a Dense points cloud



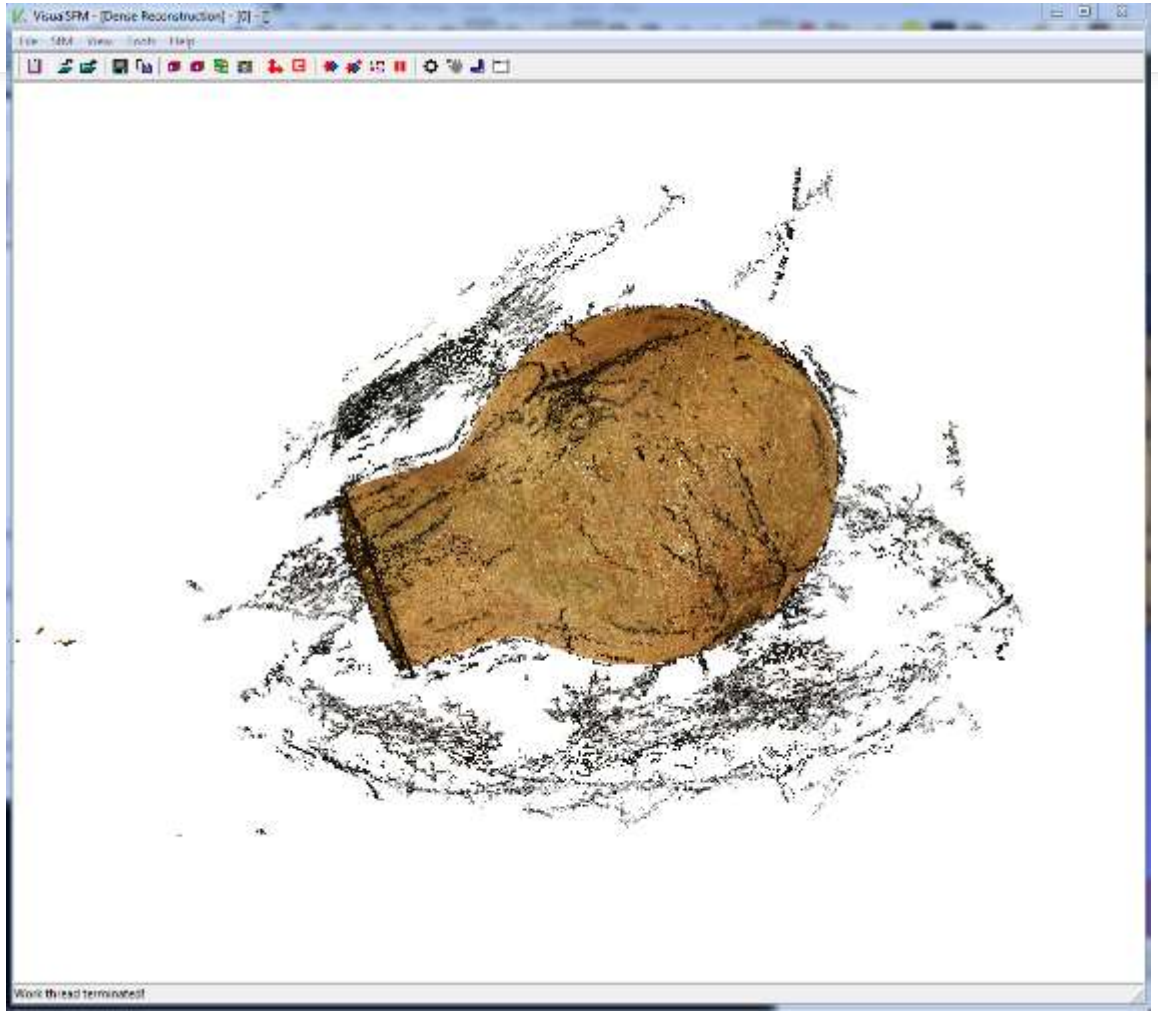
# Processing artefacts

- Sift and match
- Create a Sparse points cloud
  - Check and remove bad camera locations
- Create a Dense points cloud



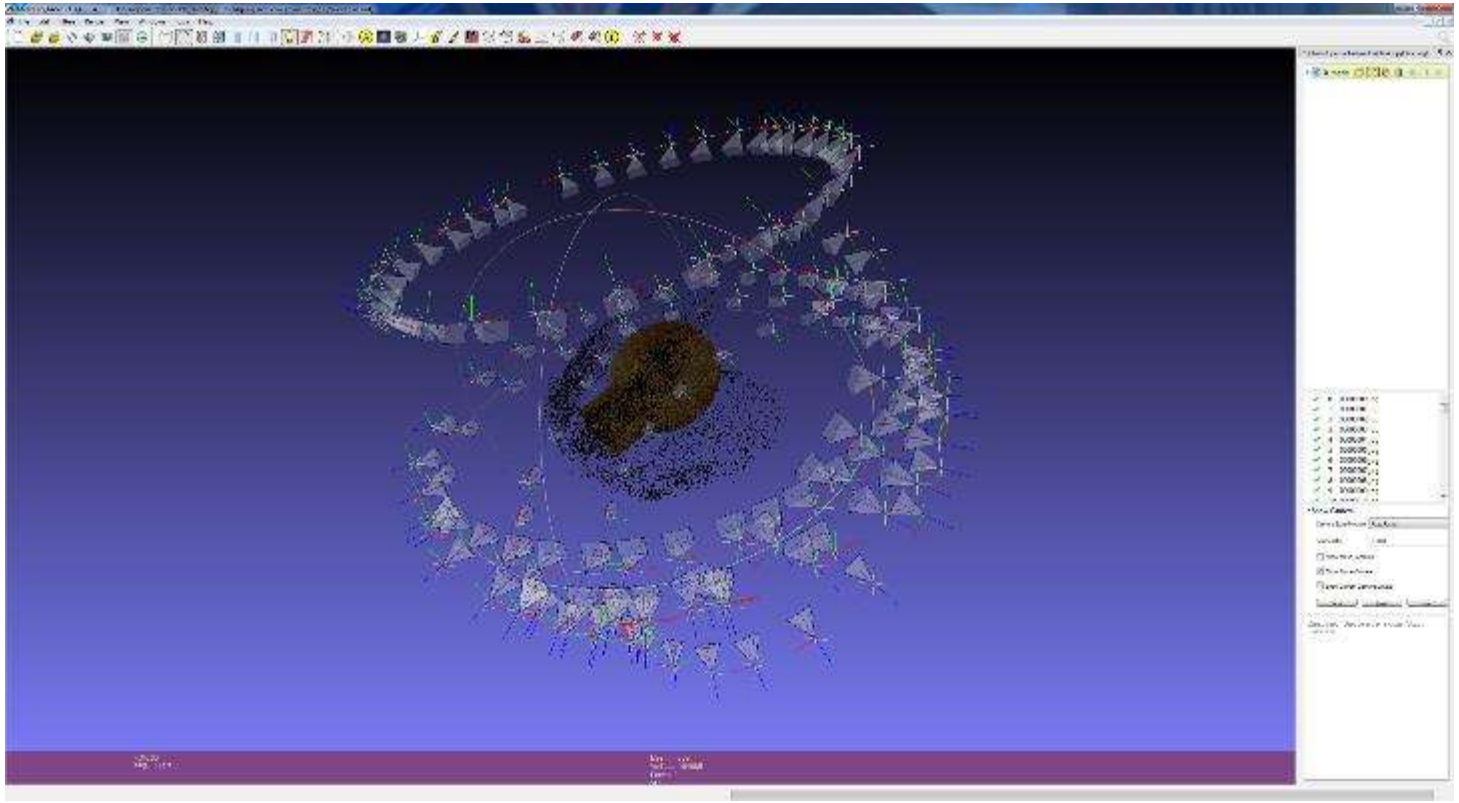
# Processing artefacts

- Sift and match
- Create a Sparse points cloud
  - Check and remove bad camera locations
- Create a Dense points cloud.



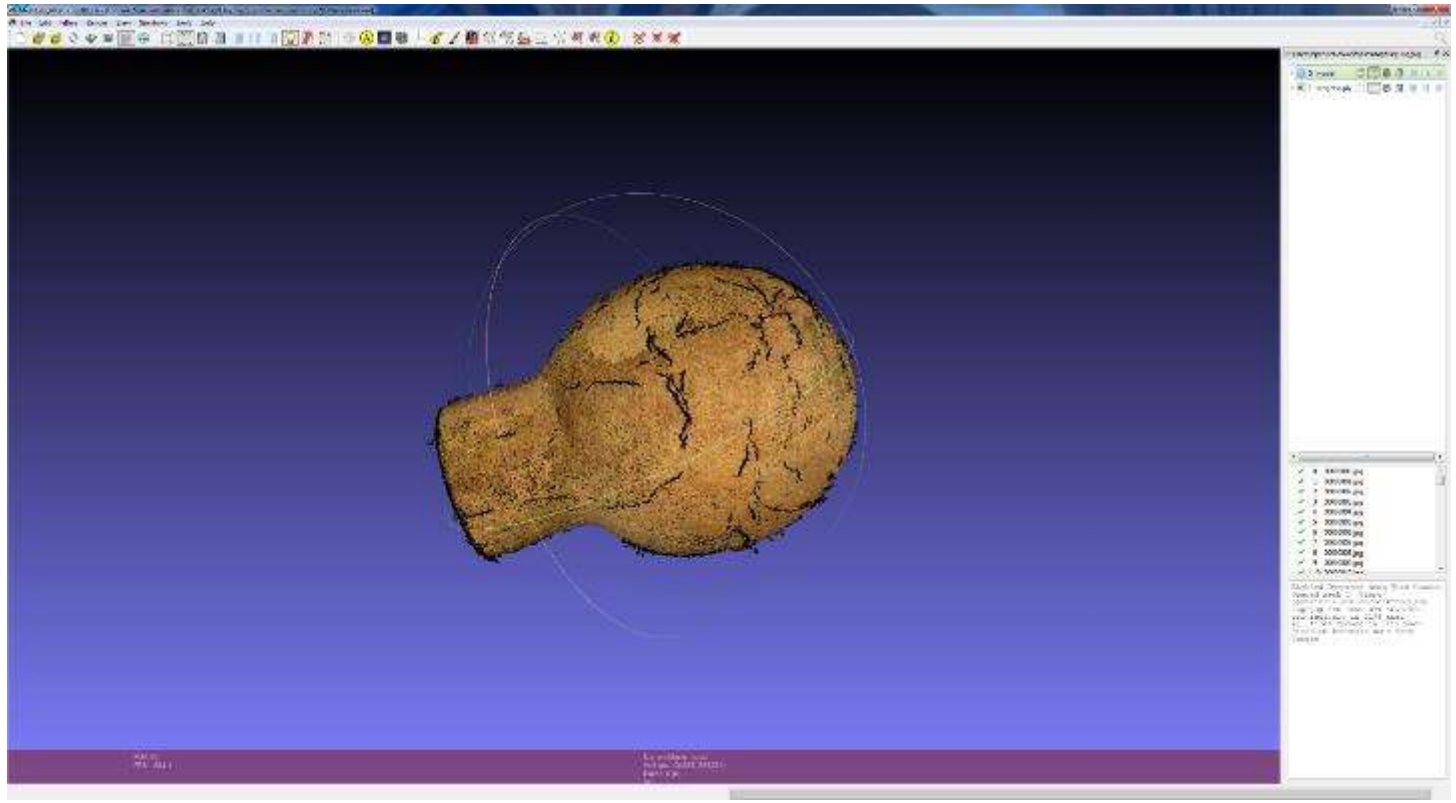
# Processing artefacts: Meshlab

- Import points clouds into meshlab
- Delete unwanted points
- Create mesh from points
- Clean up mesh
- Apply textures
- Export model



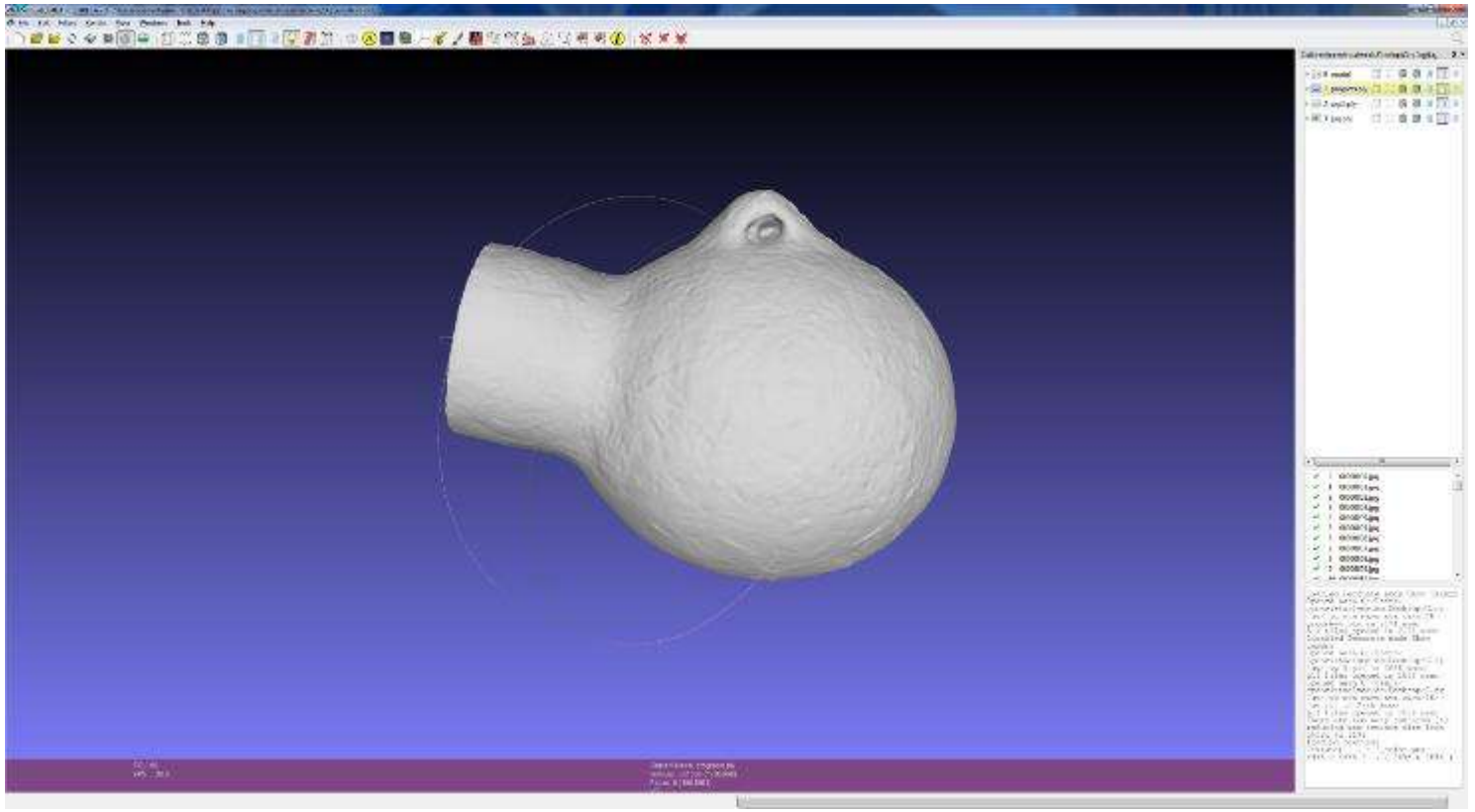
# Processing artefacts: Meshlab

- Import points clouds into Meshlab
- Delete unwanted points
- Create mesh from points
- Clean up mesh
- Apply textures
- Export model



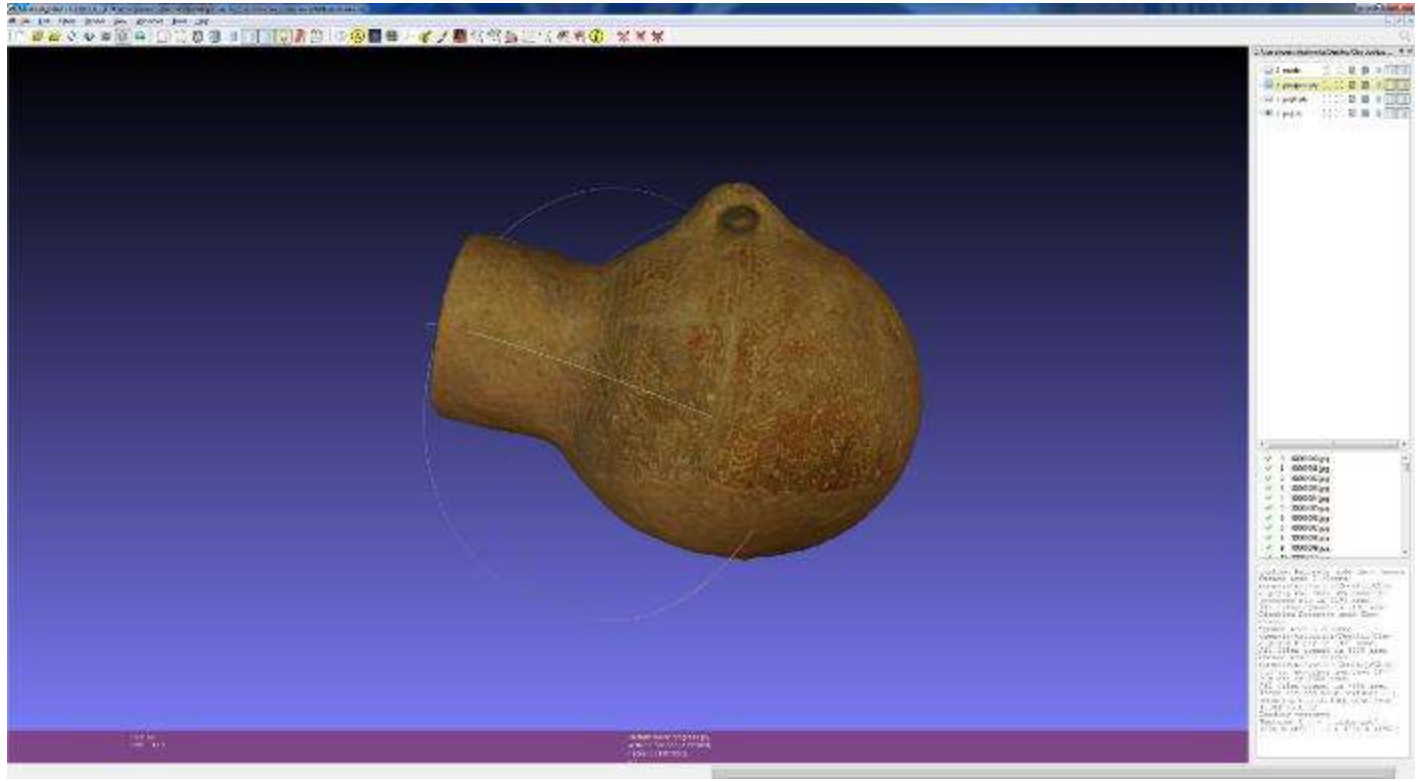
# Processing artefacts: Meshlab

- Import points clouds into Meshlab
- Delete unwanted points
- Create mesh from points
- Clean up mesh
- Apply textures
- Export model



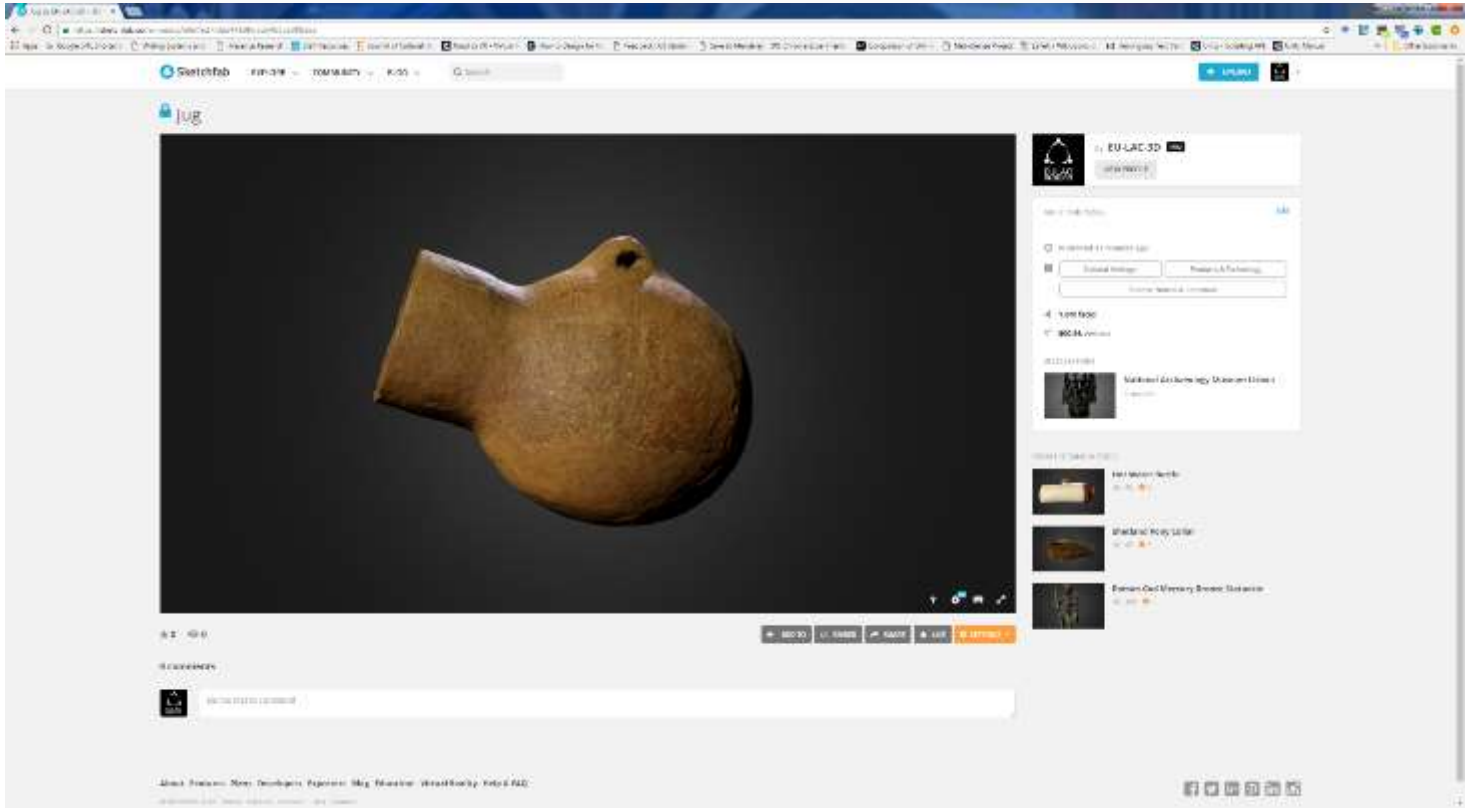
# Processing artefacts: Meshlab

- Import points clouds into Meshlab
- Delete unwanted points
- Create mesh from points
- Clean up mesh
- Apply textures
- Export model



# Processing artefacts: Meshlab

- Import points clouds into Meshlab
- Delete unwanted points
- Create mesh from points
- Clean up mesh
- Apply textures
- Export model



# Overview

- Communicating heritage
- Setting up a desktop studio
- Photogrammetry workflow
- Software processing
- **Metadata and Archiving**
- Making Digital Galleries
- Social Archiving and Social Media

# Metadata

- metadata
- ˈmɛtədeɪtə/
- *noun*
- noun: **meta-data**
- a set of data that describes and gives information about other data.

- Contains relevant information
- Easy to enter/make
- Provide context
- Provides meaning
- Make the data discoverable
- Consistent with open standards

# Requirements

# Interpretation

# Dublin Core Meta Data Initiative

- http://dublincore.org/
- http://dublincore.org/documents/dces/
- ISO Standard 15836:2009 of February 2009 [ISO15836]
- ANSI/NISO Standard Z39.85-2012 of February 2013 [NISOZ3985]
- IETF RFC 5013 of August 2007 [RFC5013]

LOGIN

UPLOAD

# CUPIDO

## EXHIBITS

# Movable Heritage Upload Form

**Form Type** Movable Heritage

**Name:** Name

**Media:** Biscuit Box

**Primary Media:** Biscuit Box

Add Media

Refresh List

**Subject:** Culture

**Tags:**

**Description:** Description

**Maker/Creator:** Person, Organization or Culture

**Creation Date:** Date or Era of Creation

**Material:** The material the object is made of

**Source:** Information source

**References:** References

**Size:** width height depth cm

**Language:** English

**Location:**

**Current:** Latitude Longitude

**Origin:** Latitude Longitude

**Find:** Latitude Longitude

# Add Media

**File:**

Drag & drop files here …

Select files...

Browse …

**URL:** Sketchlab or Roundme embed URL for objects

**Reporting Period:** Reporting 1

**Name:** Title

**Type:** 3D Objects

**Format:** Select of Format

**Layers:** Nothing selected

**Media Creator:** Media Creator

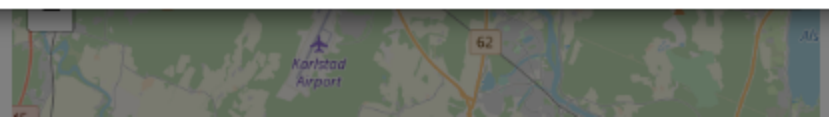
**License to End User:** In Copyright (InC)

**Media Creator URL:** URL

**License Chooser**

**Source:**

Cancel




**Find:**

Latitude

Longitude

Latitude

Longitude

Dashboard
Items
Collections
Item Types
Tags
Exhibits
Simple Pages
Dropbox
BagIt
Bulk Editor
Comments
CSV Import
Embedded Items
Fedora Connector
Map
OAI-PMH Harvester

# Add an Item

Press F11 to exit full screen

Dublin Core | Item Type Metadata | Scripto | Files | Zoom | Tags | Fedora | Map | ImageMap

## Dublin Core

The Dublin Core metadata element set is common to all Omeka records, including items, files, and collections. For more information see, http://dublincore.org/documents/dces/.

Title — A name given to the resource

Add Input

Use HTML

Subject — The topic of the resource

Add Input

Use HTML

Description — An account of the resource

Add Input

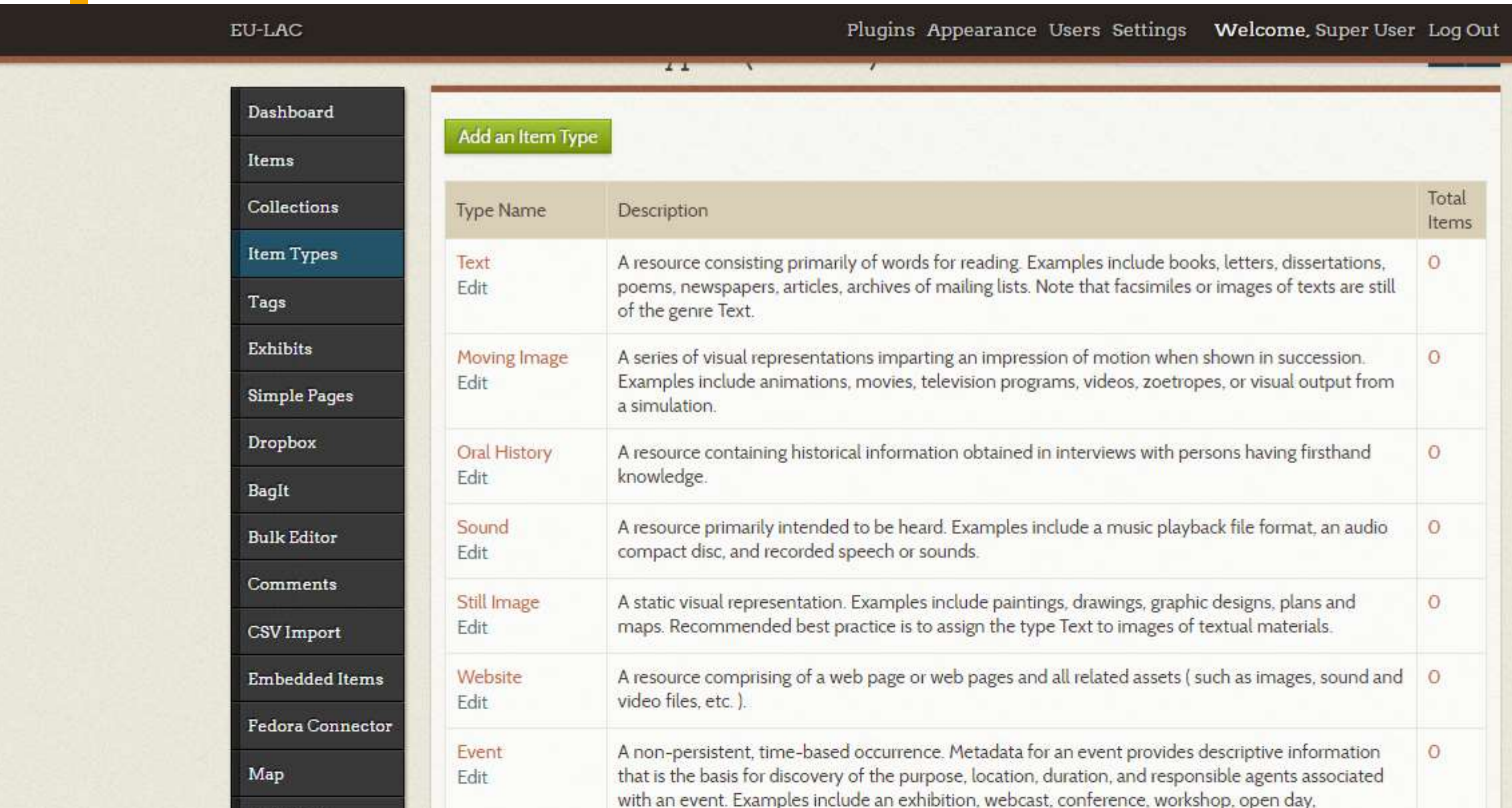
Add Item

Public: Featured:

Collection

Select Below

# Item Types


EU-LAC
Plugins Appearance Users Settings Welcome, Super User Log Out
Dashboard
Items
Collections
Item Types
Tags
Exhibits
Simple Pages
Dropbox
BagIt
Bulk Editor
Comments
CSV Import
Embedded Items
Fedora Connector
Map
Add an Item Type
Type Name
Description
Total Items
Text
Edit
A resource consisting primarily of words for reading. Examples include books, letters, dissertations, poems, newspapers, articles, archives of mailing lists. Note that facsimiles or images of texts are still of the genre Text.
0
Moving Image
Edit
A series of visual representations imparting an impression of motion when shown in succession. Examples include animations, movies, television programs, videos, zoetropes, or visual output from a simulation.
0
Oral History
Edit
A resource containing historical information obtained in interviews with persons having firsthand knowledge.
0
Sound
Edit
A resource primarily intended to be heard. Examples include a music playback file format, an audio compact disc, and recorded speech or sounds.
0
Still Image
Edit
A static visual representation. Examples include paintings, drawings, graphic designs, plans and maps. Recommended best practice is to assign the type Text to images of textual materials.
0
Website
Edit
A resource comprising of a web page or web pages and all related assets ( such as images, sound and video files, etc. ).
0
Event
Edit
A non-persistent, time-based occurrence. Metadata for an event provides descriptive information that is the basis for discovery of the purpose, location, duration, and responsible agents associated with an event. Examples include an exhibition, webcast, conference, workshop, open day,
0

# Archiving

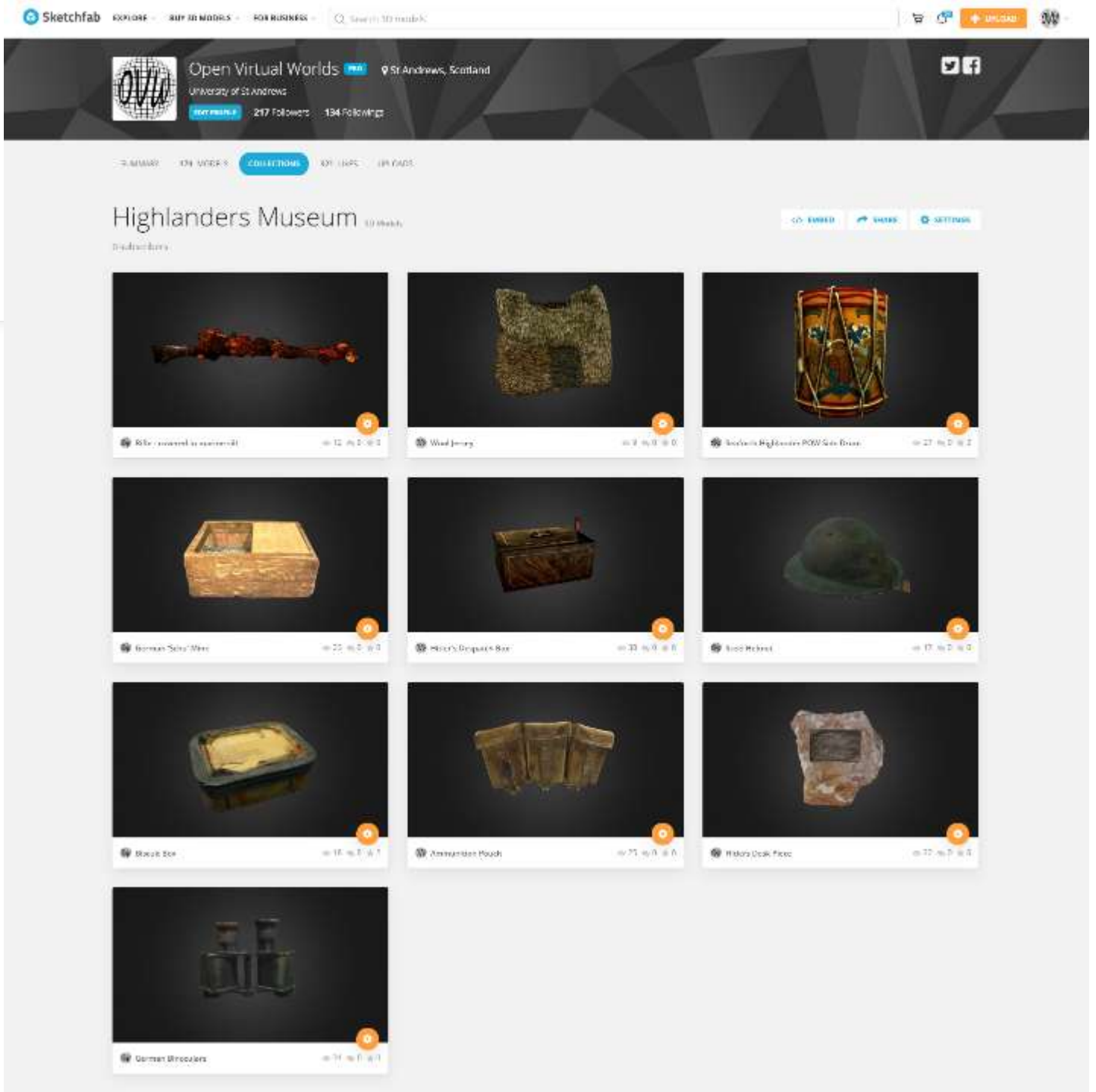
- Archive high definition model
- Where possible include original photographs
  - This will future proof the artefact and enable it to be used in future platforms
  - Use for 2D digital collections
- Make accessible through upload:
  - SketchFab
- Include metadata in particular location

# Overview

- Communicating heritage
- Setting up a desktop studio
- Photogrammetry workflow
- Software processing
- Metadata and Archiving
- **Making Digital Galleries**
- Social Media

# Exhibits

- Virtual
  - Artefact Galleries
  - Virtual Reality
  - Museum without walls
  - Wiki
- Physical
  - 3D Printing



# CUPIDO

FOLLOW 0 Followers 2 Followings

SUMMARY 0 MODELS COLLECTIONS 5 LIKES

## Highlanders Museum 3D Models

0 subscribers

SUBSCRIBE EMBED SHARE REPORT COLLECTION

Rifle - covered in marine silt 12 0 0

Seaforth Highlander POW Side Drum 27 0 2

Wool Jersey 9 0 0

# Taigh Chearsabhagh Museum and Arts Centre Scotland

3D Models

EMBED SHARE SETTINGS

0 subscribers

Taigh Chearsabhagh Museum & Arts Centre is the arts and heritage centre for the Uists. Throughout the year we have visual art exhibitions, poetry and literary events, traditional music events and small festivals. We host world class contemporary art exhibitions, we have an award winning museum, we work with local and international artists, academics and writers. We also have a strong and growing specialism in film.

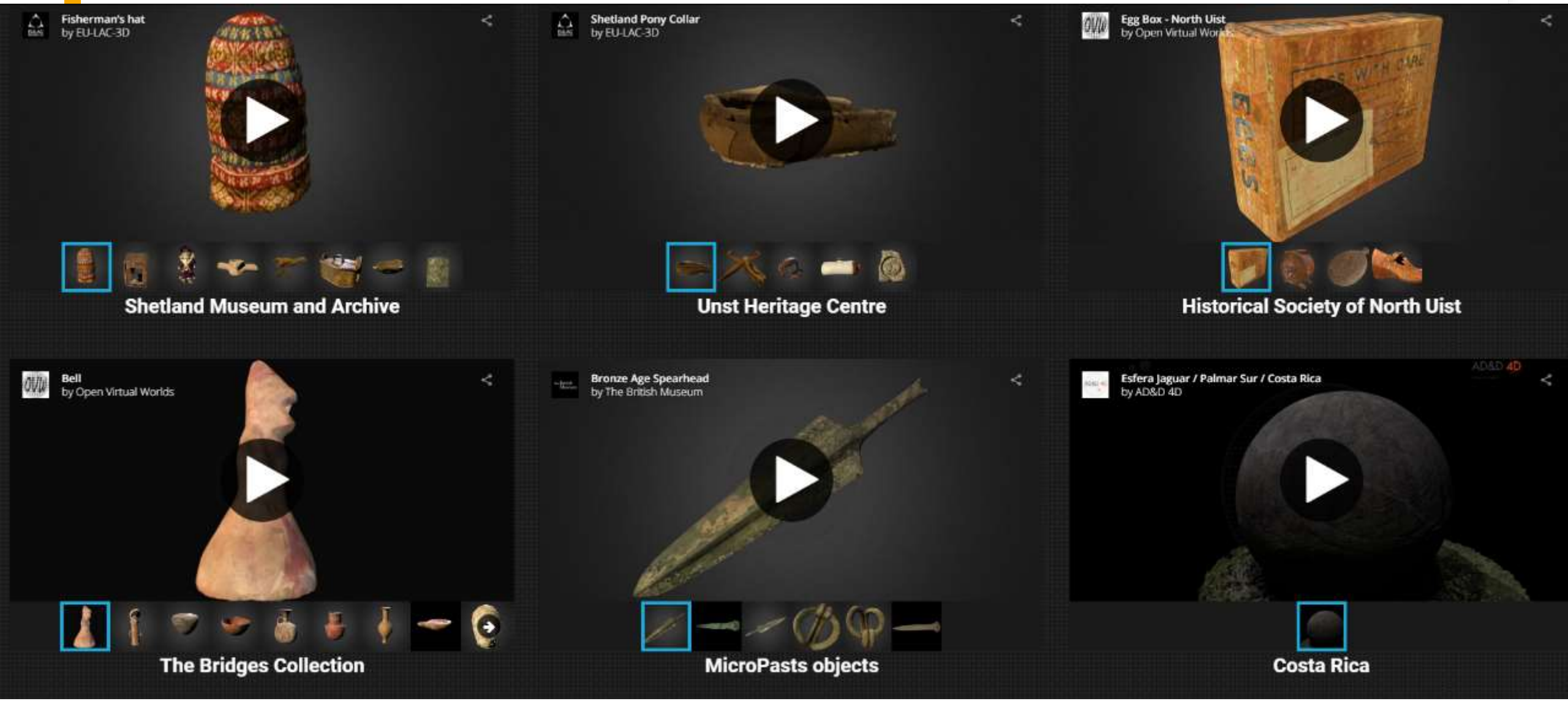
Taigh Chearsabhagh sits on the solid rock overlooking the tidal bay that is Lochmaddy (Loch nam Madadh – the Loch of the Dogs). Our organisation is community focused, offering a stimulating and dynamic cultural programme of activities all year round for the people of Uist and visitors. We are proud of our reputation as a haven for visitors and creative practitioners.

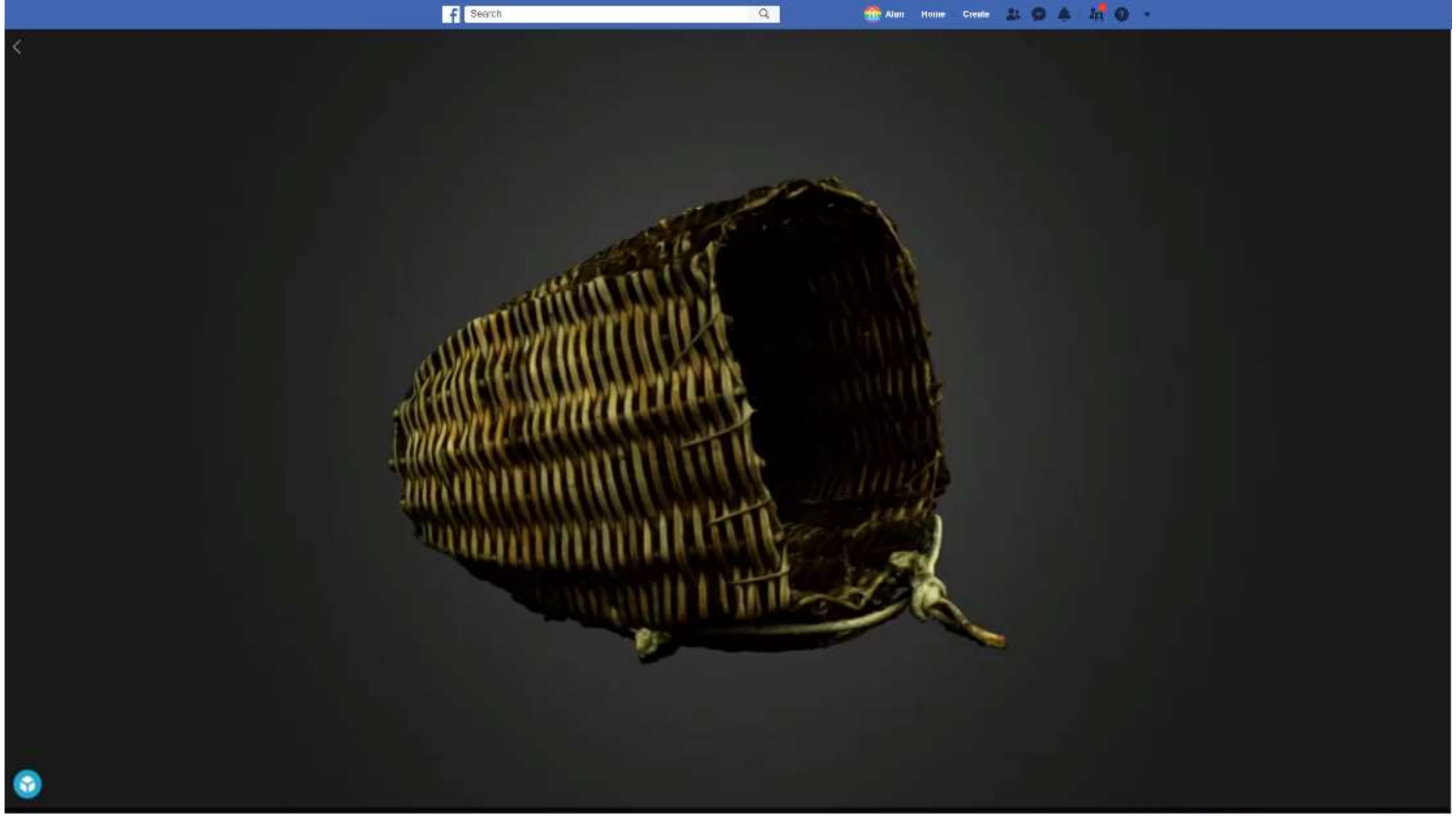
WW1 Water Bottle

Butter Churn

Egg Box - North Uist

# Artefact Galleries






## Creel Basket

Like Comment Share

Open Virtual Worlds

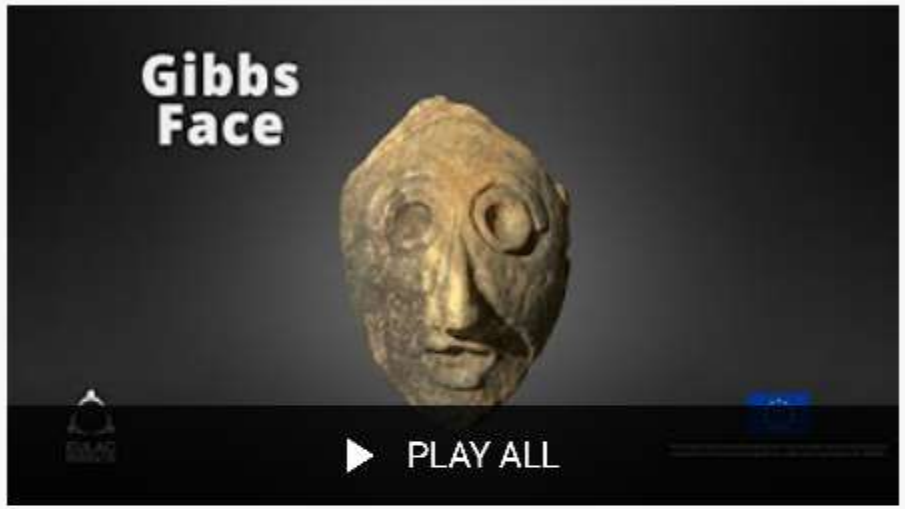
2 1 share 30 views

30 views · about a month ago ·

A large basket worn on the back to carry fish usually made from larch or willow branches. The fishwife would sell fish to the surrounding community or barter for fresh dairy produce. Dated c. early 20th century.

# Overview

- Communicating heritage
- Setting up a desktop studio
- Using a desktop studio
- Photogrammetry workflow
- Software processing
- Metadata and Archiving
- Making Digital Galleries
- **Social Archiving and Social Media**




# Barbados Museum & Historical Society - St Michael, Barbados

24 videos • 488 views • Last updated on 23 Apr 2020

EULAC MUSEUMS 3D EU-LAC MUSEUMS in 3D SUBSCRIBE

1


**Gibbs Face**
EU-LAC MUSEUMS in 3D

2


**Giant South American Snail shell**
EU-LAC MUSEUMS in 3D

3


**"Margaret's Head" by Karl Broodhagen terracotta bust**
EU-LAC MUSEUMS in 3D

4


**Toothkey / Turnkey**
EU-LAC MUSEUMS in 3D

5


**"Barbara" by Karl Broodhagen Terracotta bust**
EU-LAC MUSEUMS in 3D

Museo Histórico y Antropológic...

Museum

PLACE DETAILS

Museums Hill AC

★★★★★ just now

Great museum focusing on the works of @@Mauricio van de Maele

Like Share

Add a photo

Photo 1 of 79

Photo 2 of 79

Google

Taigh Chearsabhagh Trust
All
Street View & 360°
By you
Lochmaddy, Scotland
Google
Google

Museo Histórico y Antropológic...

Museum

PLACE DETAILS

Museums Hill AC

★★★★★ just now

Great museum focusing on the works of @@Mauricio van de Maele

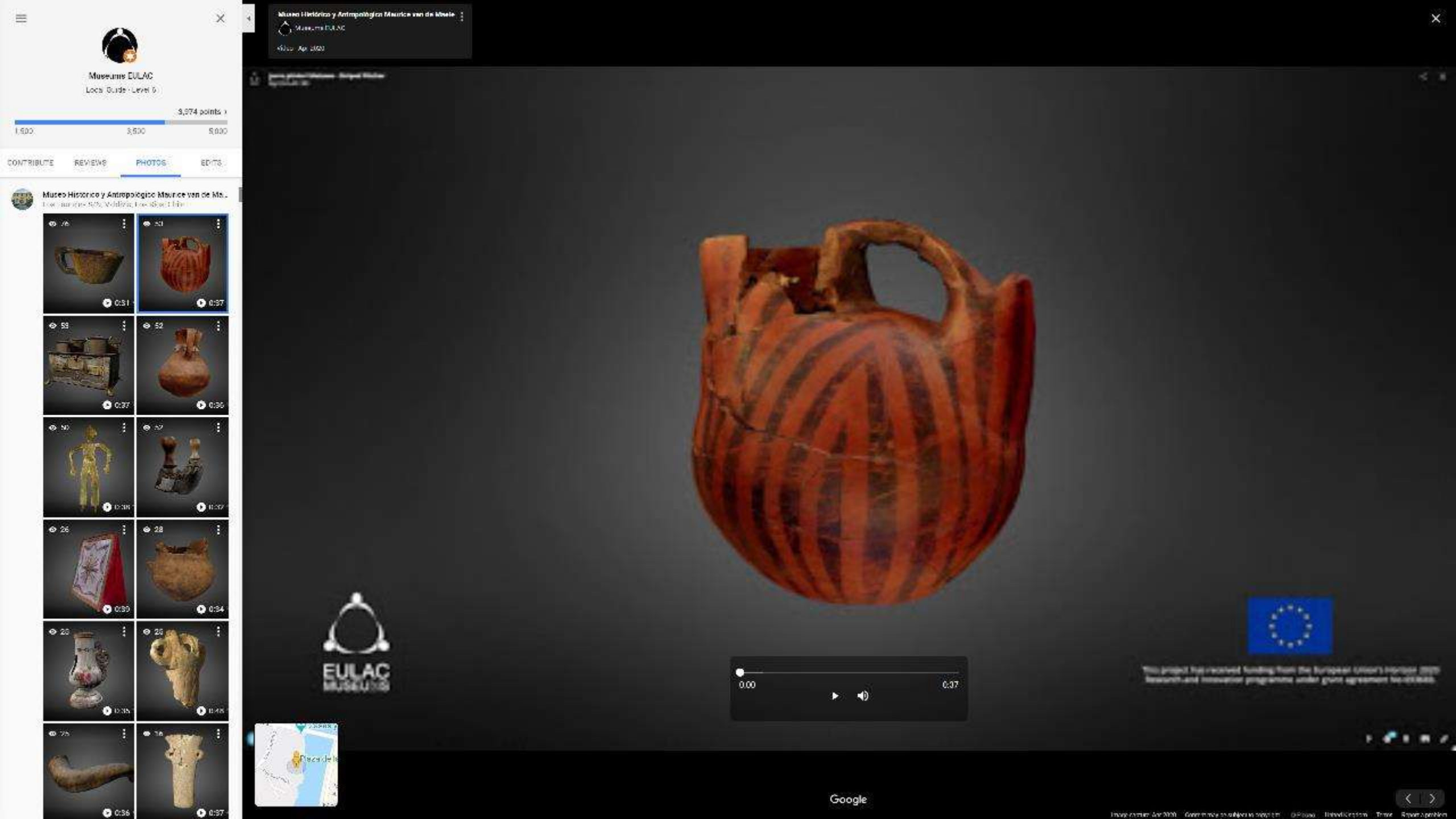
Like Share

Add a photo

Photo 1 of 79

Photo 2 of 79

Google


Museums EULAC
Local Guide · Level 6
3,074 points ›
1,500
3,500
5,000
CONTRIBUTE
REVIEWS
PHOTOS
EDITS
Museo Histórico y Antropológico Maurice van de Ma...
0:31
0:37
0:37
0:36
0:36
0:39
0:34
0:35
0:36
0:36
0:37
Museo Histórico y Antropológico Maurice van de Maele
Museums EULAC
EULAC MUSEUMS
0.00
0:37
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 693669.
Google

Expand side panel
A Historical Society
Street View · Apr 2020
Google

Taigh Chearsabhagh Trust
All
Street View & 360°
By you
Lochmaddy, Scotland
Google
Google

CINE NPA

Local Guide · Level 5

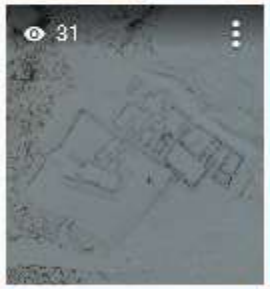
1,146 points ›

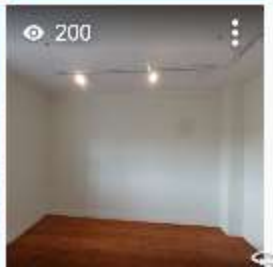
500 1,000 1,500

CONTRIBUTE REVIEWS PHOTOS EDITS

Skriduklaustur

Fljótsdalsvegur, 701 Egsl, Iceland



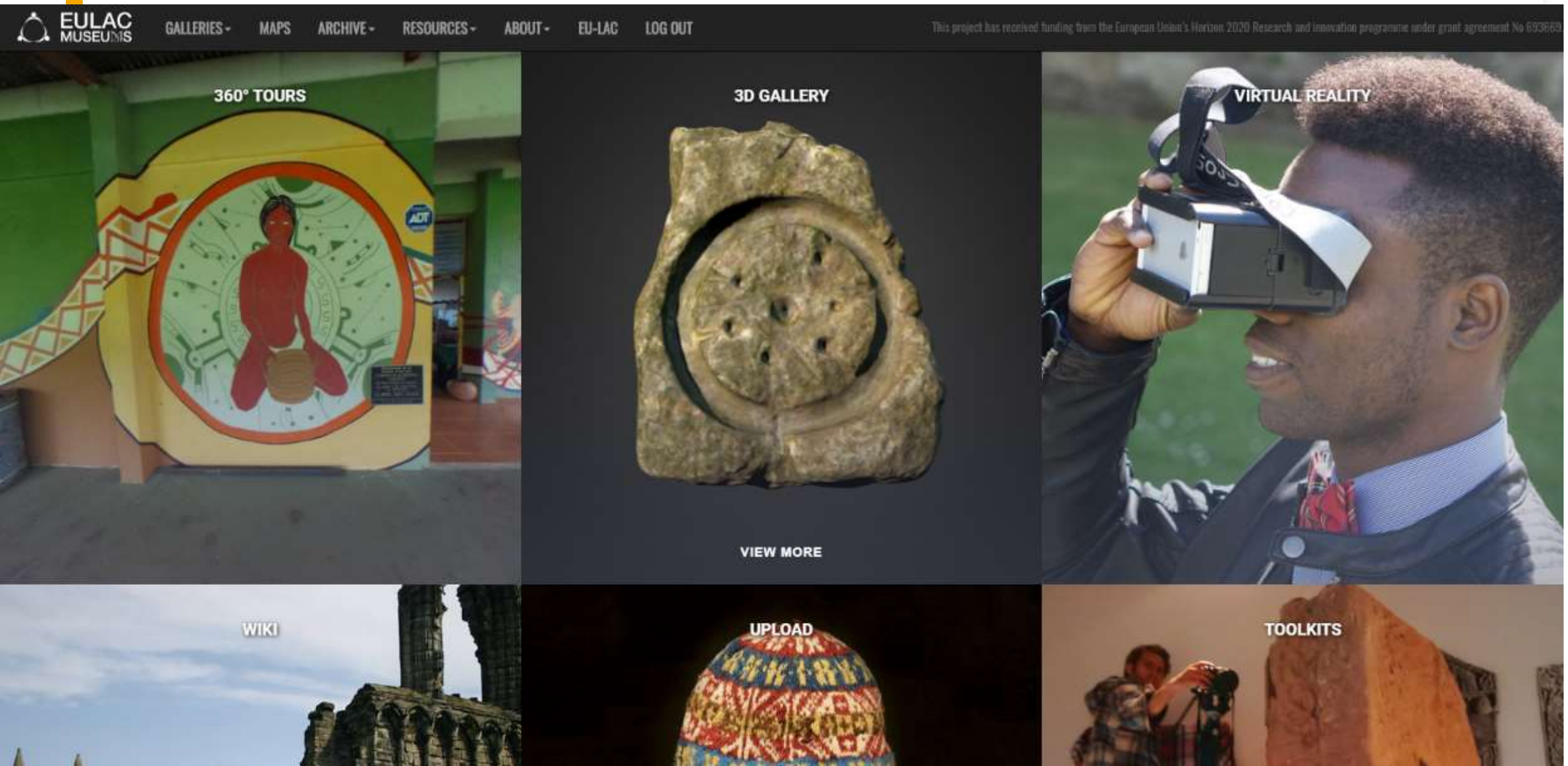



Skriduklaustur

CINE NPA

Video - Mar 2020

Google

Image capture: Mar 2020 Content may be subject to copyright. Picasa United Kingdom Terms Report a problem

# Virtual Museums