



3D in Cultural Heritage

3D digitisation of sculptures in the context of GIVE
Flemish masterpieces project - June 6th 2023

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- **Meemoo as a service provider**
 - **The GIVE project**
 - **3D scanning of Flemish Masterpieces**

At **meemoo** we're here for the **archive**.
We help **cultural, media and government**
organisations with advice and practical
support, and want to make archival materials
accessible and **usable**.

Service provision

- **Digitisation, digital archiving and management** of archival materials
- Make content **accessible and usable**
- Actively **gather and share expertise** on digital archive operations
- **Advise** on digital heritage processes

The GIVE Project



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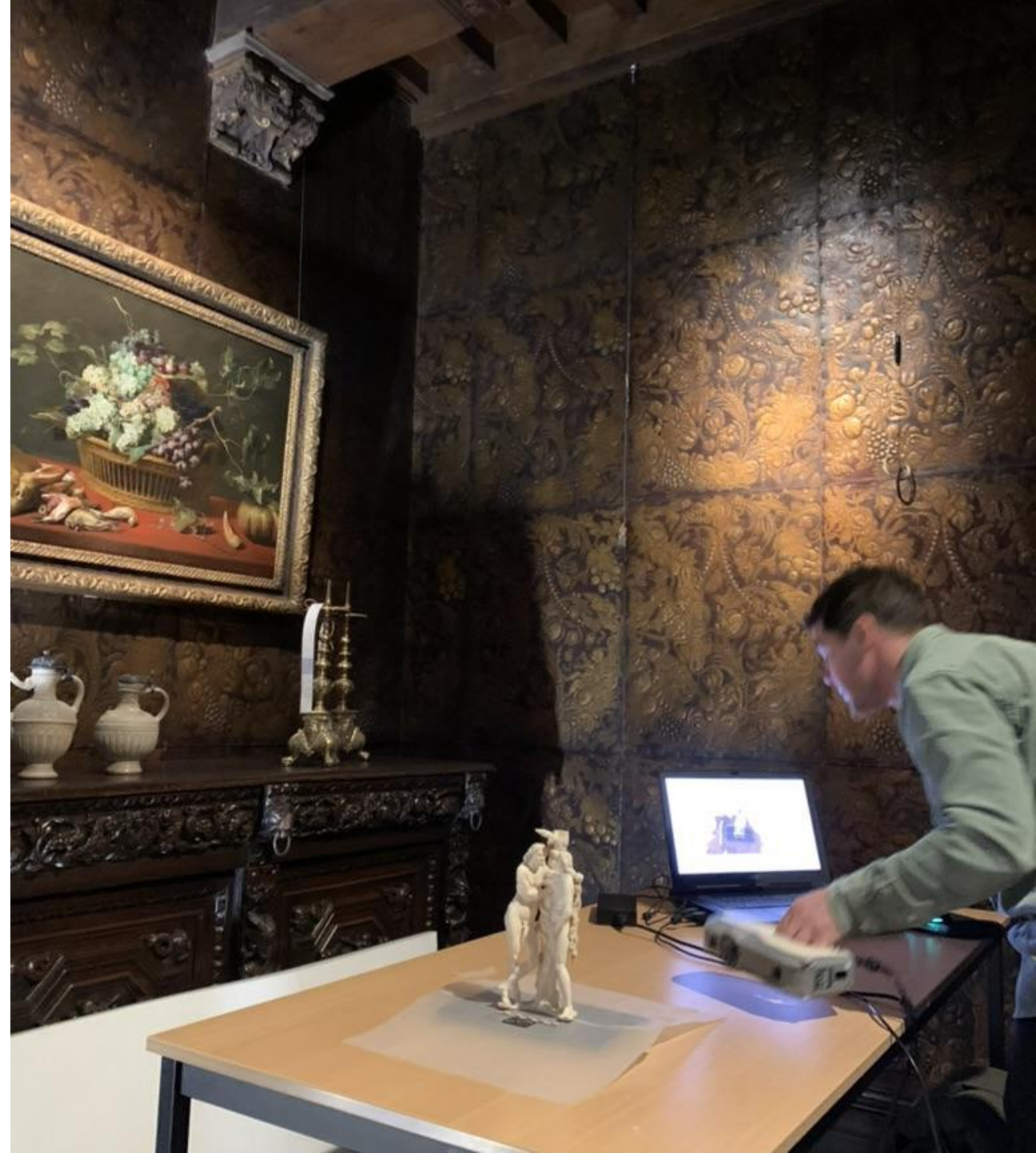
Europese Unie

Coordinated Initiative for Flemish Heritage Digitisation

- GIVE is supported by EFRO, The European Fund for Regional Development.
- The GIVE project within meemoo consists of 4 sub-projects:
 - a. digitising Newspapers
 - b. digitising Glass Negatives (plus the tool knowyourcarrier.com)
 - c. Metadata project based on AI
 - d. **Digitising Flemish Masterpieces: 2D- and gigapixelphotography, 3D-scanning** and digitising manuscripts

→ [more info on meemoo.be](https://meemoo.be)

3D scanning of Protected Flemish Masterpieces

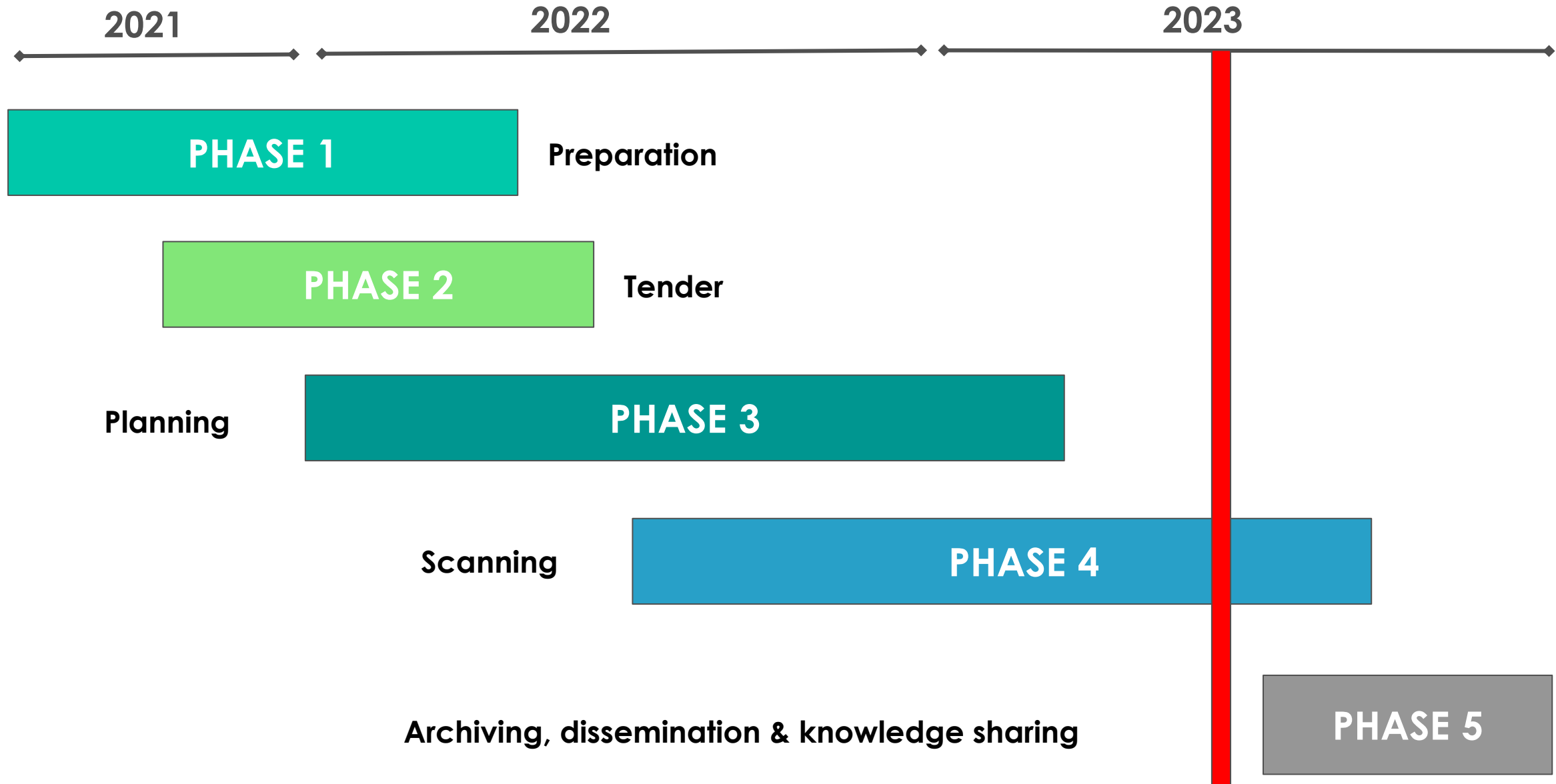


Selection and Scope

- **list of 'Protected Flemish Masterpieces'**
 - very diverse, often hard to reach collections
- **Selection criteria:**
 - sculptures
 - geographical distribution, type of collection and diversity in materials and size
- **Scope:**
 - **Collection Van Herck:**
 - 116 terracotta statues - bozetti in depot at The Royal Museum of Fine Arts Antwerp
 - **Selection of 20 sculptures at different locations-collections in Flanders**
- **TOTAL SCOPE = 135 objects to be digitised with 3D scanning**



Timeline



Preparation of the project

- Selection by thorough analysis of protected Flemish Masterpieces database
- Creation of internal database with relevant information for the project
- Consultation, feedback and input on the selection in collaboration with the special “Masterpieces Council”
- Agreements concerning rights and reuse with collection managers

Method and approach

Specific Choice made in the context of the project

Photogrammetry

- Multiple images by professional photographer
- Postprocessing to 3D model is intensive
- More time-consuming
- Not possible to return to location if photography is insufficient
- Less accurate geometry

Scanning

- High-speed results
- Outstanding accuracy
- Additional Photography can be added to the 3D model
- Guarantee of complete coverage on the spot

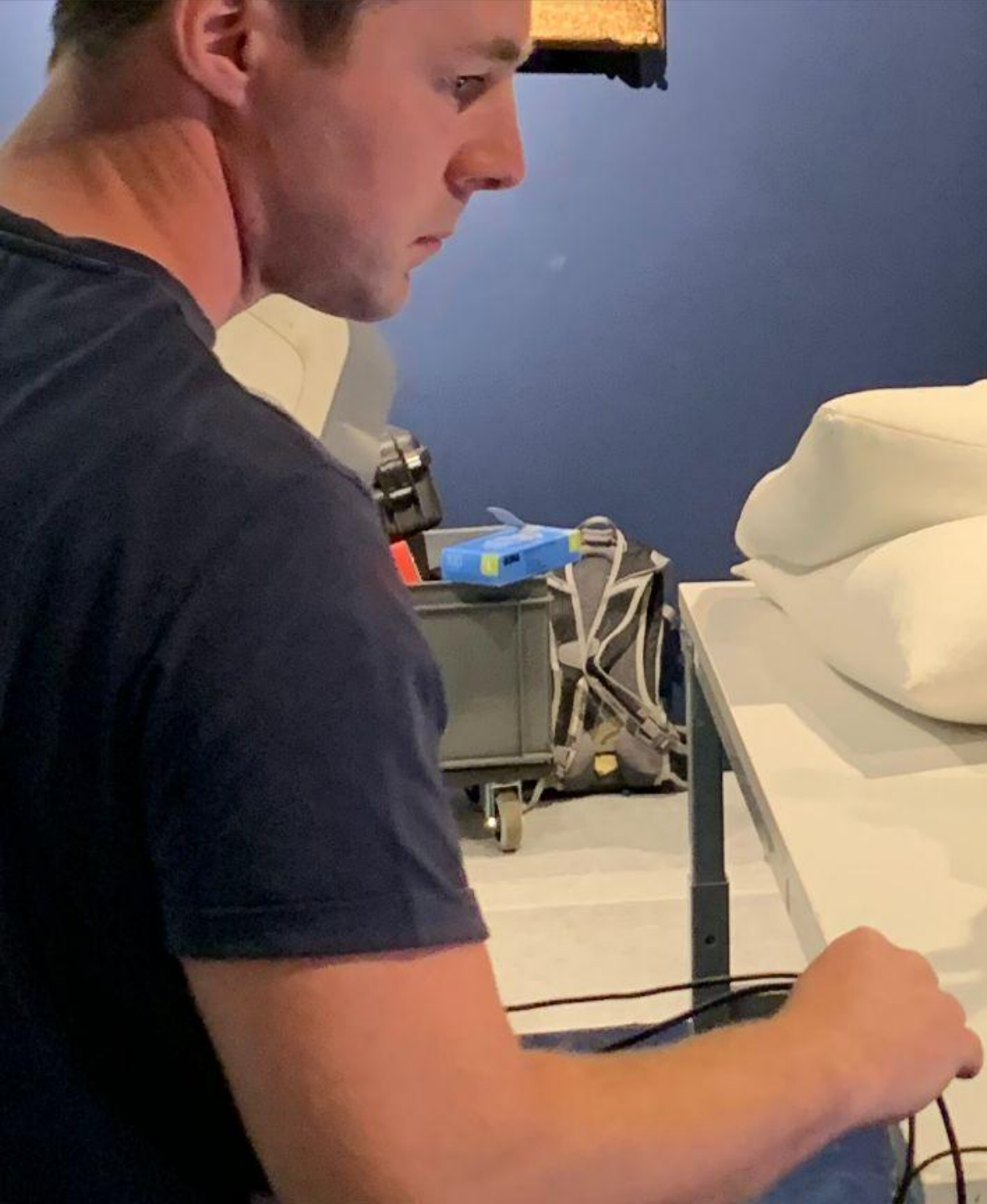
⇒ meemoo opted for **structured light scanning** because it guarantees a sustainable result and it is less time-consuming

Tender

- Main principles
 - Importance of capturing color and texture while scanning
 - heritage context vs industry
 - experimenting with scales and color charts
 - Importance of open and sustainable file formats
 - Delivered files must be widely usable for the most demanding applications
- Technical Requirements
 - external consultancy with extensive experience in processing 3D models in various digital applications

⇒ **General question: What is the purpose of the digitisation?**

⇒ **A balancing act in predetermined requirements and realistic implementation to find the right service provider**







Implementation:

- The scan 'sessions' are brought together by the software into one 3D model
- Most of the processing is done on site
- Total time needed per object:
 - 1 - 1,5 hour per object
 - 8 - 10 objects per day

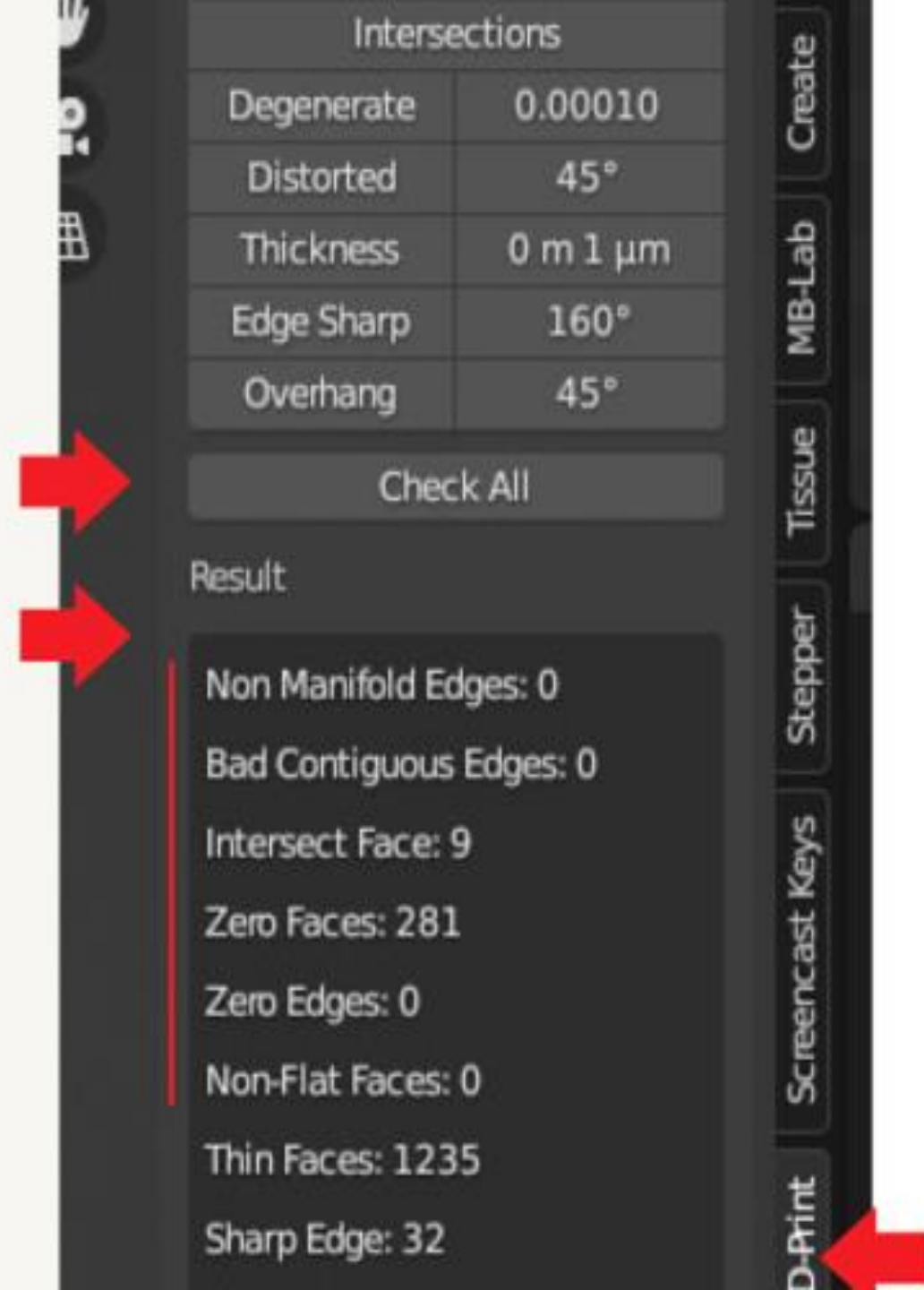


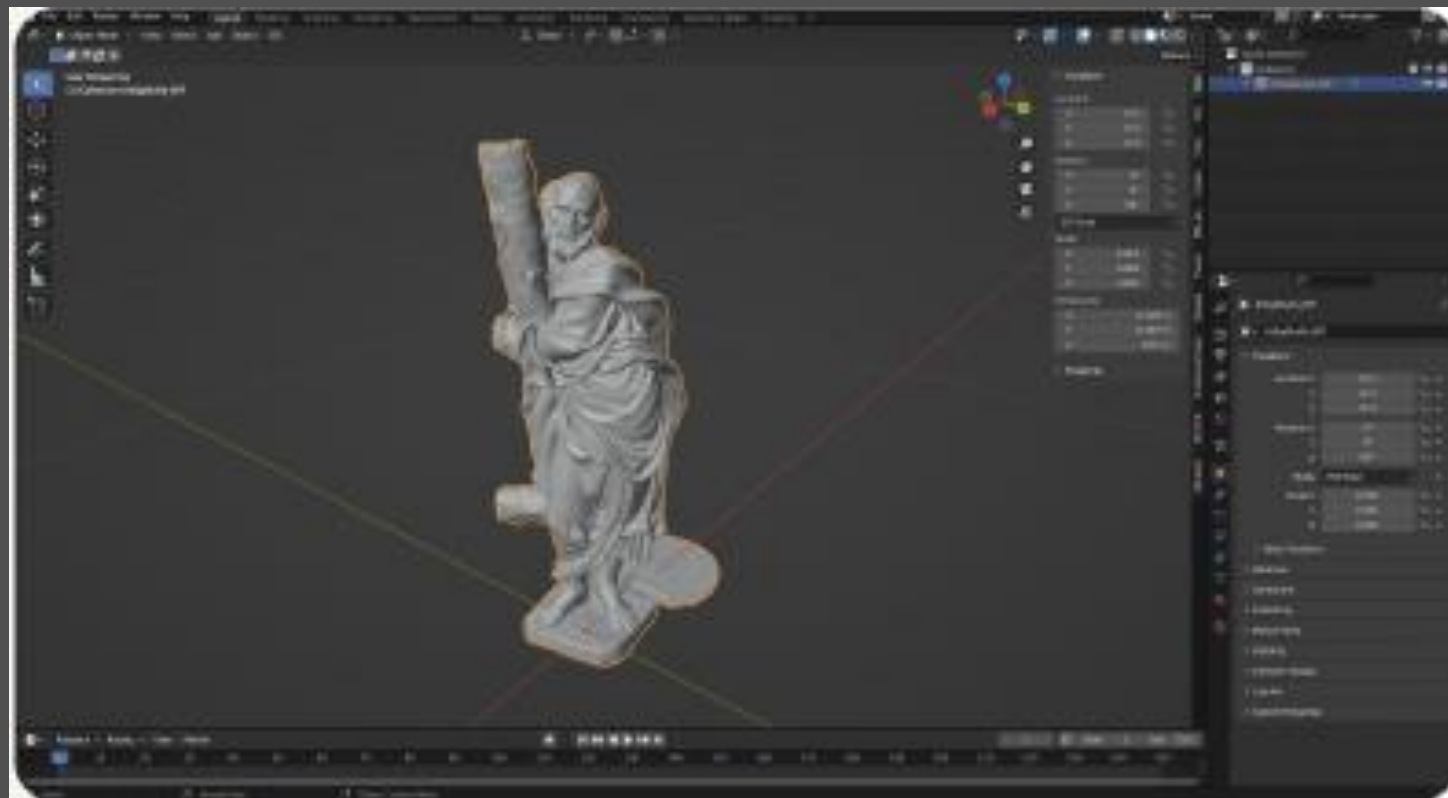
Processing and delivery

- Files to be delivered
 - an OBJ hires copy intended for archiving;
 - an OBJ copy intended for wide distribution;
 - an OBJ copy with calibration scale and color chart for possible quality control;
 - an STL file suitable for 3D printing.
- Each OBJ file is delivered as a package consisting of:
 - OBJ file itself
 - MTL file
 - TIFF or BMP with color and texture
- Files are imported onto the meemoo servers

Quality control

- Quality control of the supplied files
 - Via Blender (free software)
- Control of, among other things:
 - non-manifold geometry
 - broken normals and bad continuous edges
 - degenerative geometry
 - double vertices and overlapping
- Manual created with guidelines for object control





Metadata

- **Technical metadata**

- supplied by the Service Provider in a shared scope list
 - general object-level metadata
 - file-specific metadata

- **Descriptive metadata**

- supplemented by meemoo on the basis of information administrators

- Metadata is processed by meemoo in **one xml file**

- Processing in Submission Information Package (**SIP**) at meemoo

- essence files and metadata



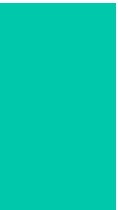
Archiving

- Ongoing project @meemoo to investigate standards in sustainable archiving of 3D models
- Results will be published on the meemoo website in 2024

Dissemination:

- 3D models will be available on future meemoo platforms
- All files will be uploaded to Sketchfab and the Europeana share3d platform
 - Looking for other ways to make 3D models available on platforms
- Available under public domain licence
- Supporting the partners with initiatives to stimulate reuse





General challenges

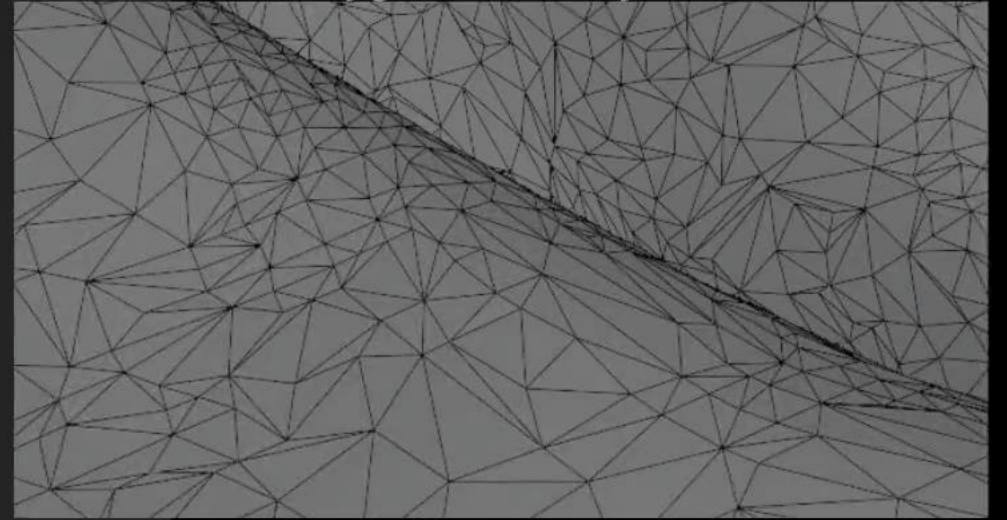
- **Consultancy** was crucial in drawing up the technical requirements of the tender
- Lack of international **standards** (such as Metamorfoze of Fadgi)
- Often **challenging situations**
- Professional **arthandling** is often needed
- Tackle **security issues**



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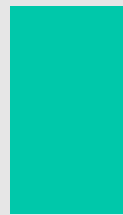
Polygon Density



Albedo Map



questions
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Thank you!

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This project is part of the Flemish Resilience recovery plan and is being realized with the support of the European Regional Development Fund.