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Mould Store: Exploring the Preservation of the former Spode Factory's Post-Industrial Heritage through Digital Technologies

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Spode Works Stoke-on-Trent





Ruins of an Ancient
Temple near Corinth
© Victoria and Albert
Musuem



Copper plates
Spode Museum Trust
Stoke-on-Trent



Copeland and Garrett period Pattern Numbers 6057, 6058 and 6059, c.1834
Spode Museum Trust



Pattern number 1979, c.1814
Spode Museum Trust



Pattern number 2573, c.1817
Spode Museum Trust



Sprig moulds
Spode Museum
Trust
Stoke-on-Trent





Mould stores, Spode Works
Stoke-on-Trent



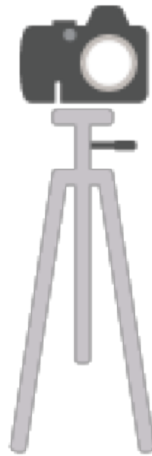
Digital surrogate: a possible solution?

- Documents and preserves vital information for the future.
- Allows for wider access and (re)use of digital content.



Artefact

+



Digitisation

=



Digital surrogate

Challenges

- Huge number of moulds.
- Choices as to how comprehensive the digital surrogate needs to be.
- IPR of the moulds.



Feasibility study

Access to a core sample of moulds selected for retention.

Aim was to **determine the most appropriate tools and workflow for digitisation to minimise cost and time.**

4 days of digitisation July 2018.

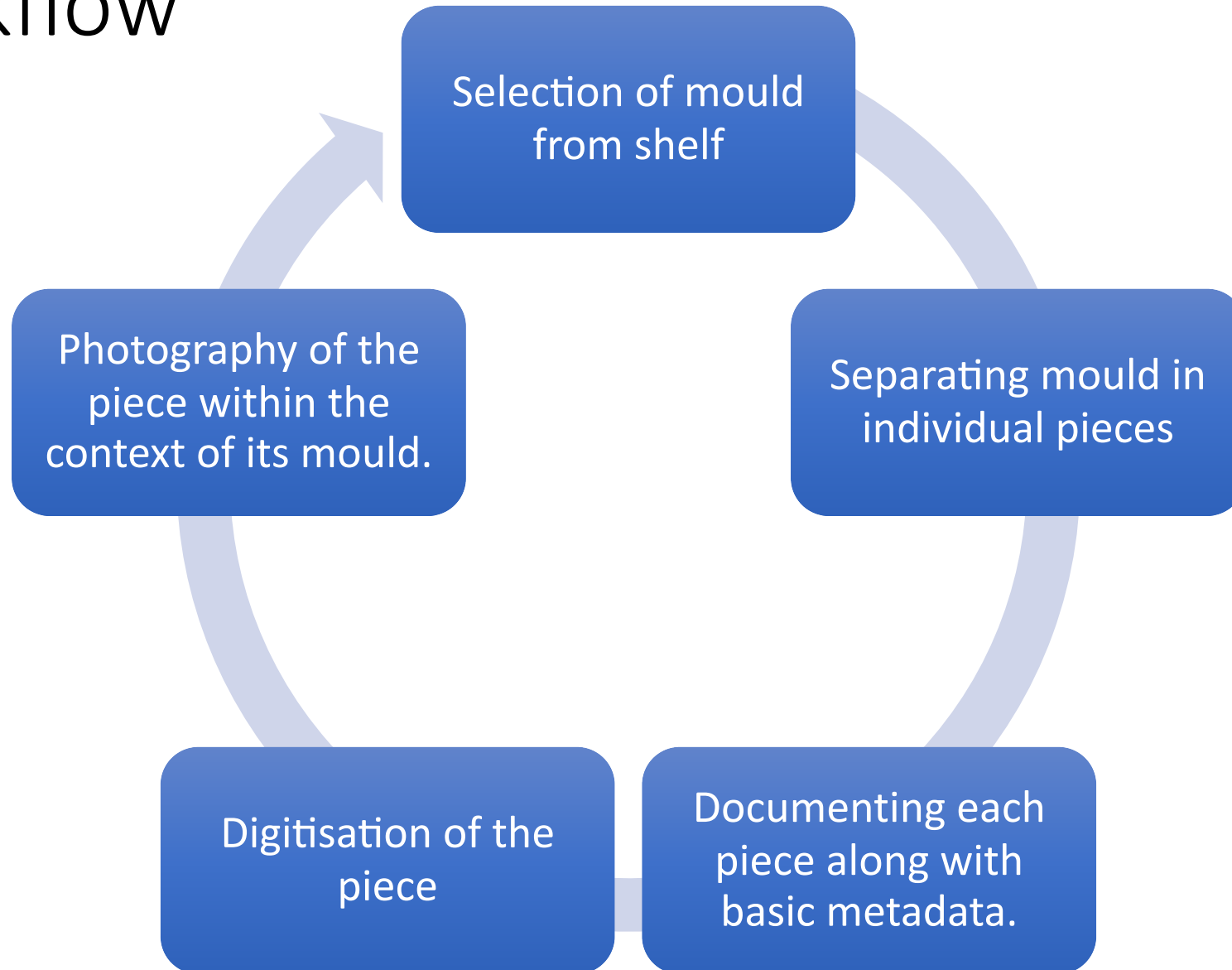


Equipment

- 3D scanners
- Canon 5D digital camera for photogrammetry
- Other included: generator, laptops, turntables and lights.



Workflow



Moulds selection

Moulds in shelves were visually inspected before being selected.



3D scanning



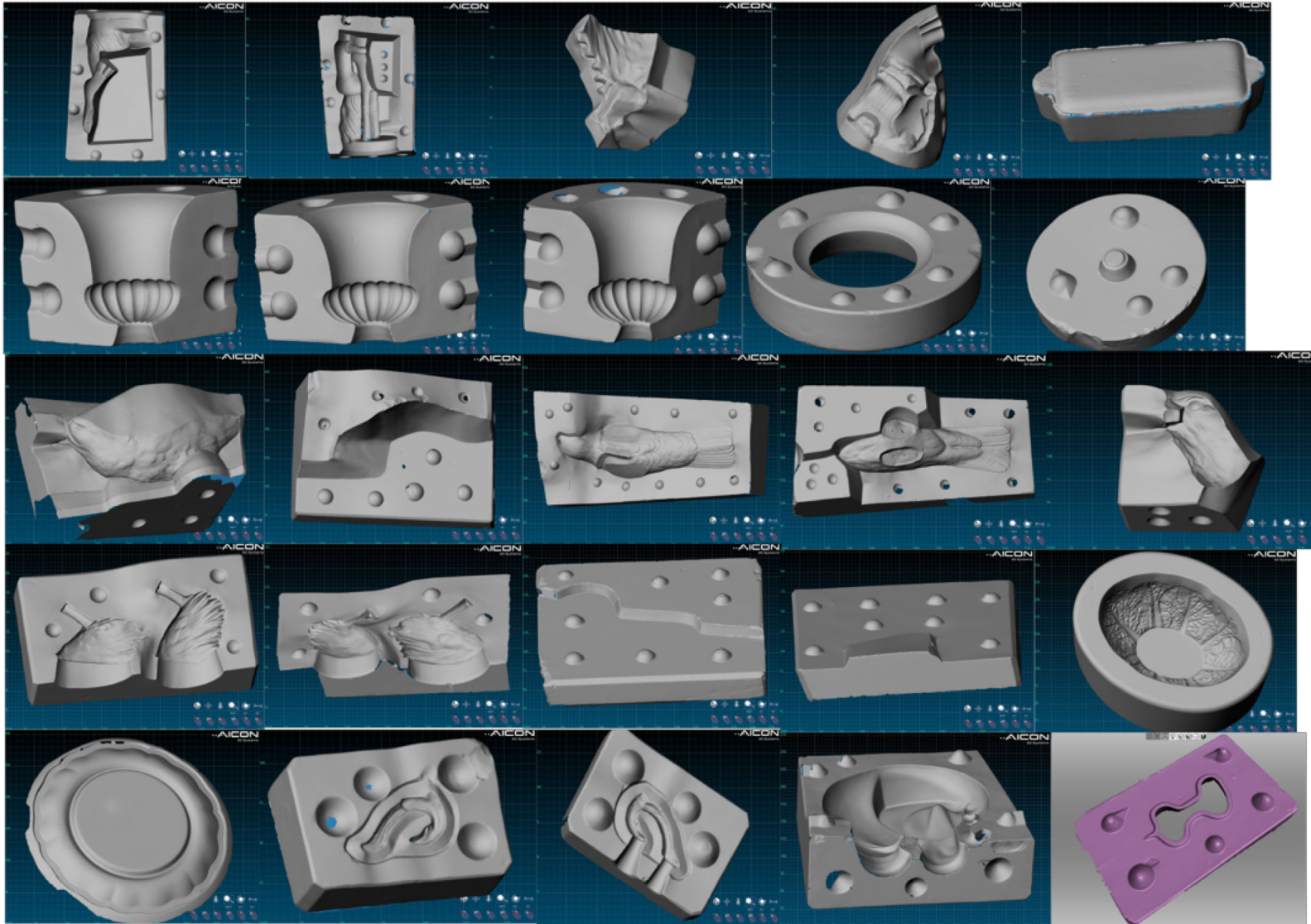
Digital photography

- All pieces were photographed:
 - Individually for photogrammetry
 - Within their mould context
- Visual documentation was important for the later post-processing of the data.

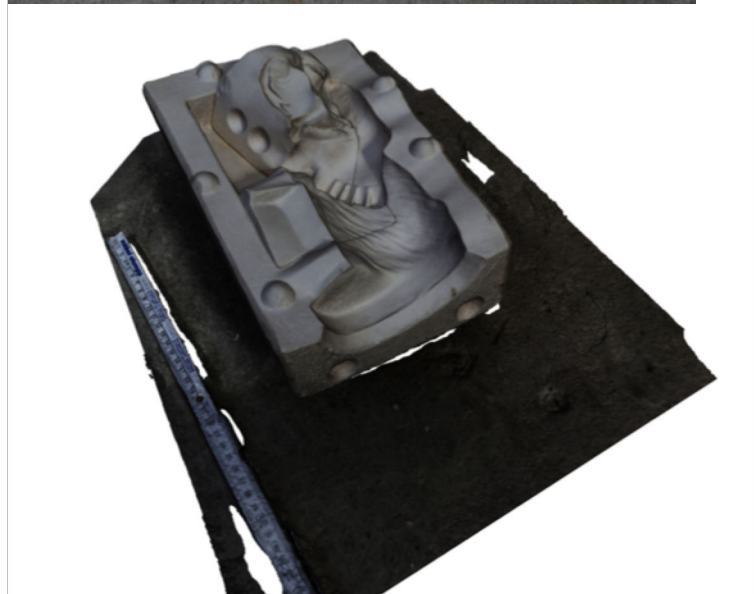


Digital outcomes

- ~18 hours of digitisation
- 25 digital mould pieces
- 8 moulds
- Photogrammetry was faster on site than 3D scanning, but required more time of post-processing.



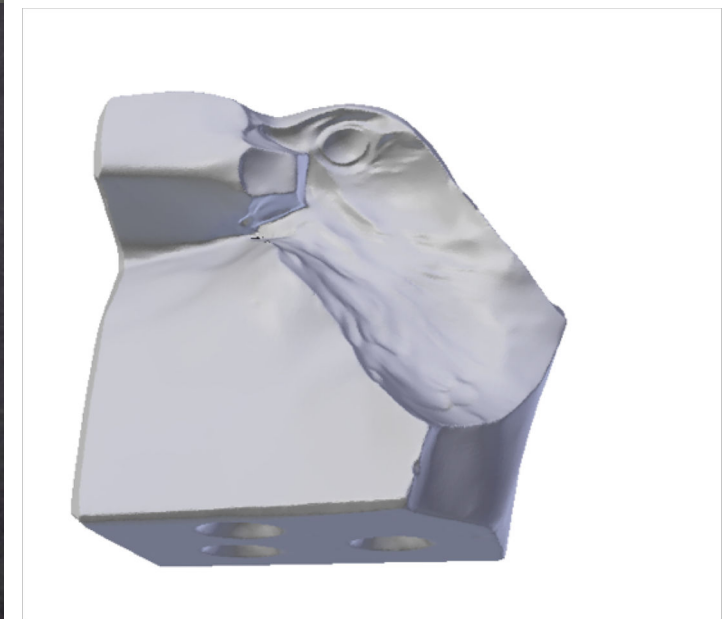
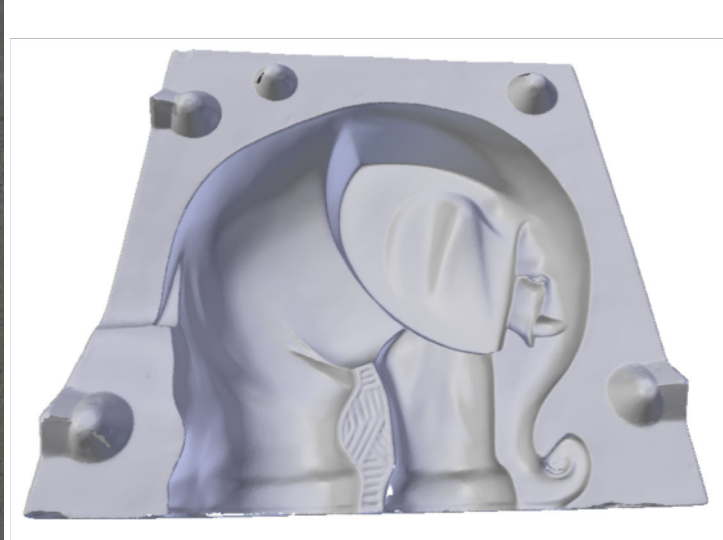
Digital models



Example of 3D model of mould acquired using photogrammetry

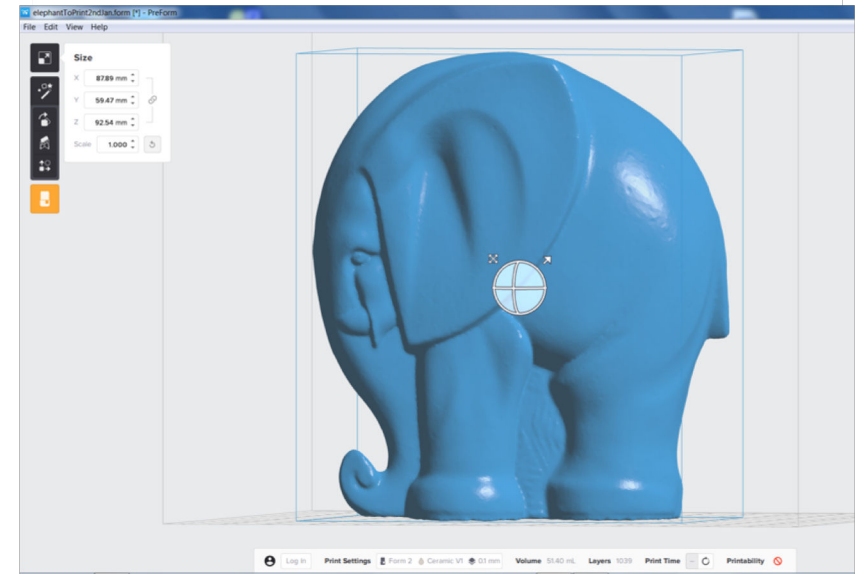
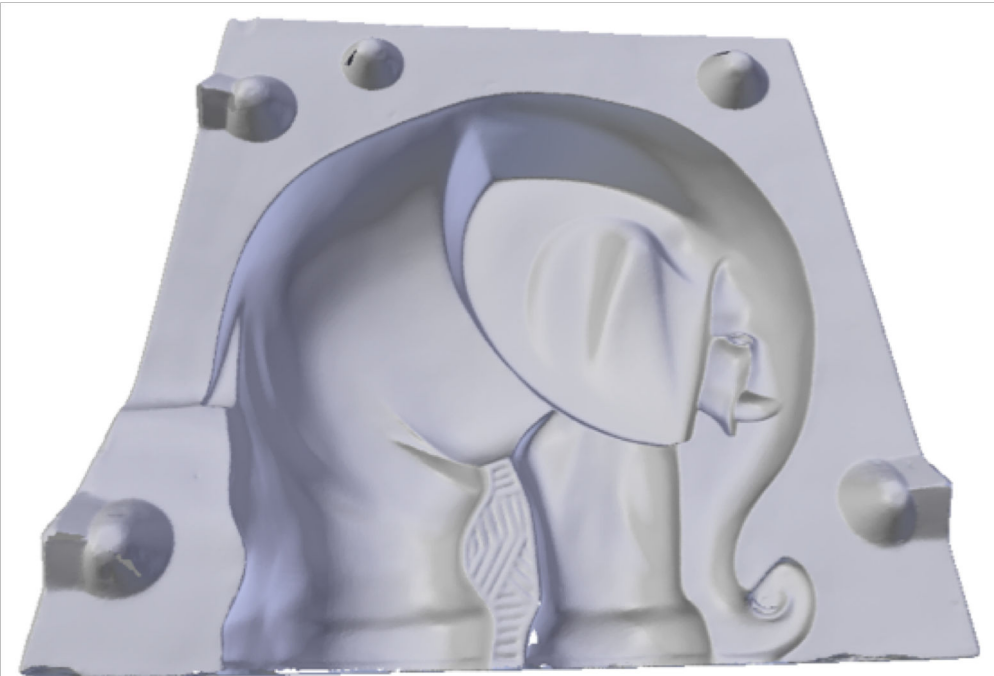


Examples of 3D models of mould acquired using 3D scanning



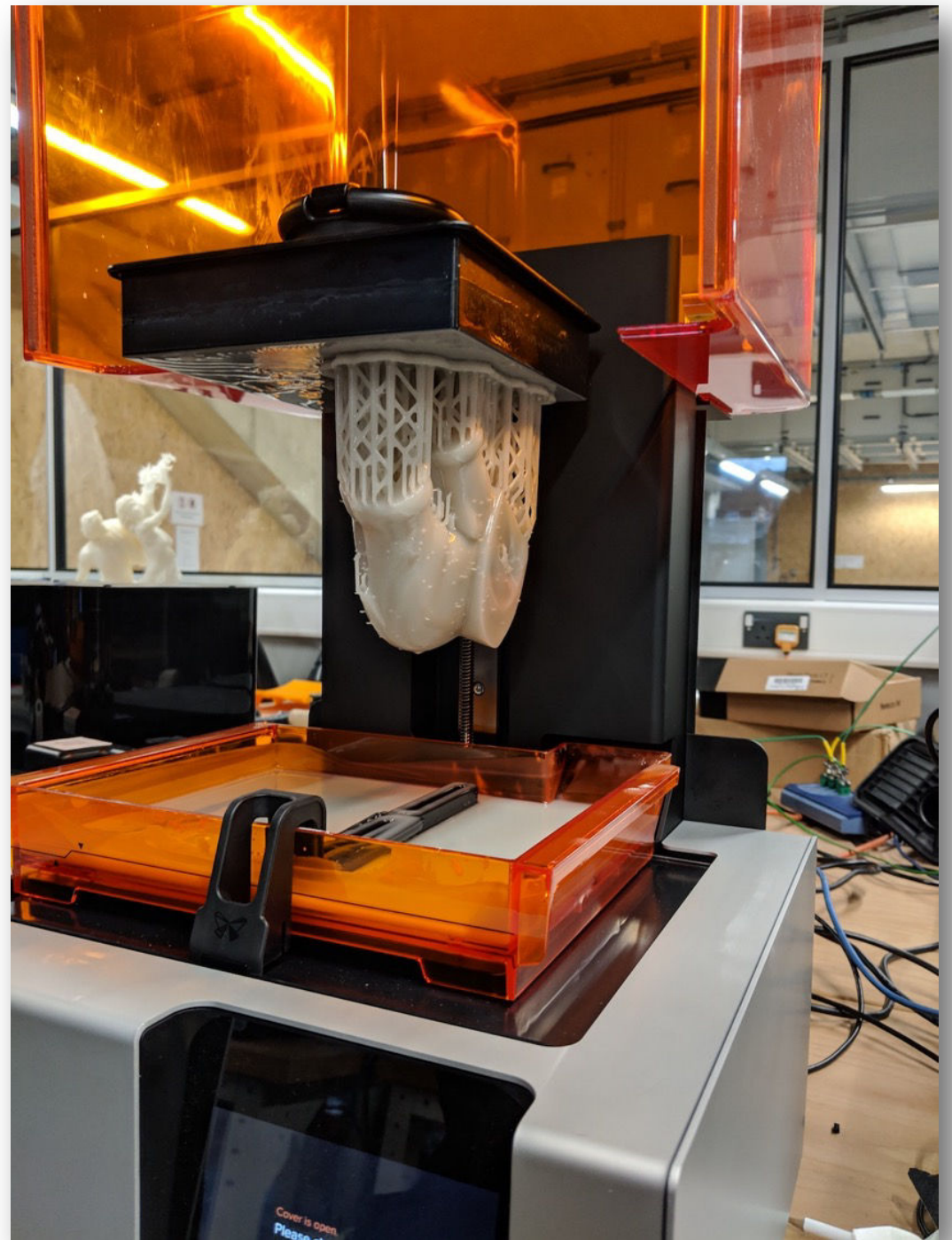
Reconstruction of shapes

- Digital and physical
- 3D shape of the ceramic artefact can be created when enough information is available.



Ongoing experimentation

- Desktop stereolithography using FormLab2.
- Process based on binding molecules of resin by light.
- Ceramic resin material.
- Workflow involves printing, cleaning and firing in a kiln.



Cleaning 3D print



Print is washed in isopropyl alcohol



Support material is removed

Firing



3D printed shape at the kiln, University of Brighton

Initial fired objects

- Complexity of the process and material is high.
- More experiments on firing timings are required.



Further work

- Prioritisation of moulds to focus further effort.
- Exploration of re-use of digital surrogates. Currently exploring the British Ceramics Biennial.



Acknowledgments



University of Brighton

Centre for Secure,
Intelligent and Usable
Systems



City of
Stoke-on-Trent