

# Photogrammetry

Background and Methodology

# Photogrammetry: what is it?

- Image measurement and interpretation in order to derive the shape and location of an object from one or more photographs of that object
- Today it is a computerized process that produces spatial accuracy from photographs
  - Creates an output: map, drawing, measurement, 3D model

# Types of Photogrammetry

- Aerial Photogrammetry: Plans, Maps, Models
- Field Photogrammetry (Complex subject): Architecture, Contexts, in-situ Objects
- Lab Photogrammetry (Simple subject): Objects, Artifacts

# Workflow



- Capture the Subject
  - Set-up
  - Good Photography
  - Good Geometry
- Image Preprocessing
- 3D Modeling

# Capture the Subject: Set-Up

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F1,4 F2 F2,8 F4 F5,6 F8 F11 F16 F22 F32



1/1000 1/500 1/250 1/125 1/60 1/30 1/15 1/8 1/4 1/2



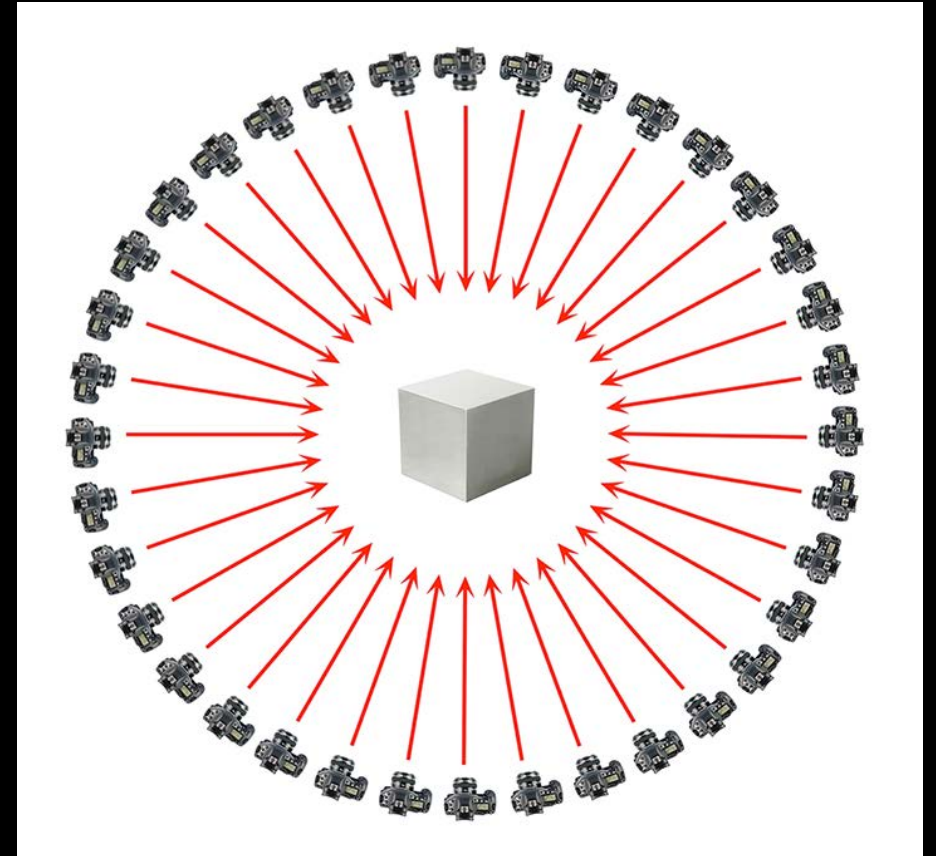
ISO 50 ISO 100 ISO 200 ISO 400 ISO 800 ISO 1600 ISO 3200 ISO 6400 ISO 12800 ISO 25600

- IDEAL SETTINGS:
- Aperture: f/16-f/22
- Shutter: 1/60-1/125
- ISO: 100=200

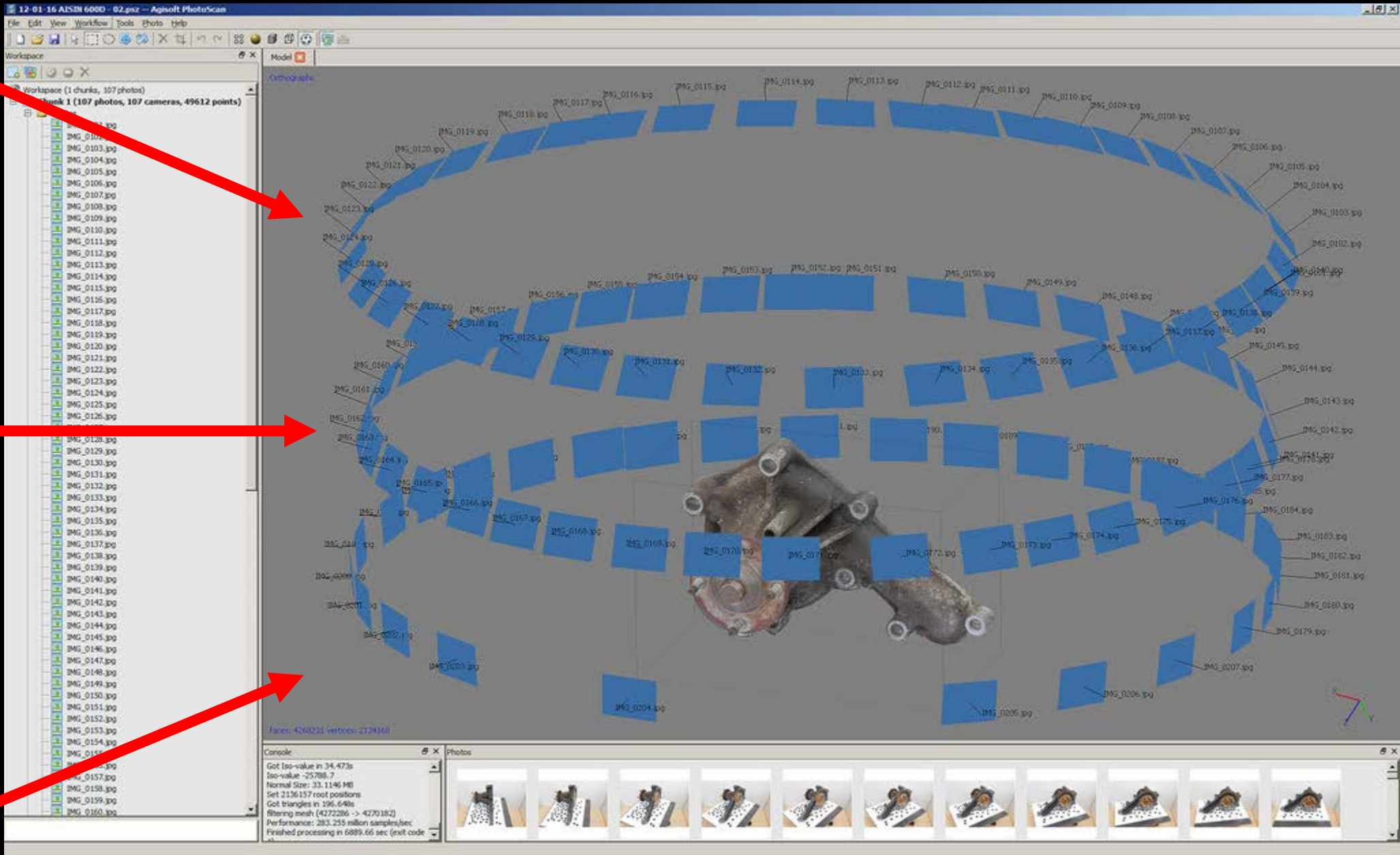
Capture the Subject: Good  
Photography

# Capture the Subject: Good Geometry

- Can be done in the lab or in the field
- 360° in the round; 36 photos every 10°
- Subject on a turntable, at least 3 angles
  - Straight
  - Top angled down
  - Bottom angled up
  - 38 photos – 36 per circuit + 1 with color card + 1 of background
- Include a “flat run” with scale bars for accuracy and color card for color correction









# Image Pre-Processing: Color Correction



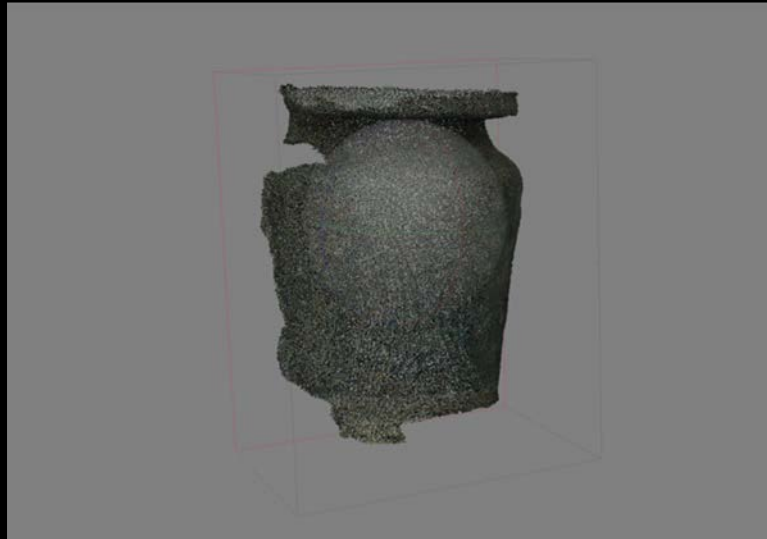
Raw Photo, No Processing



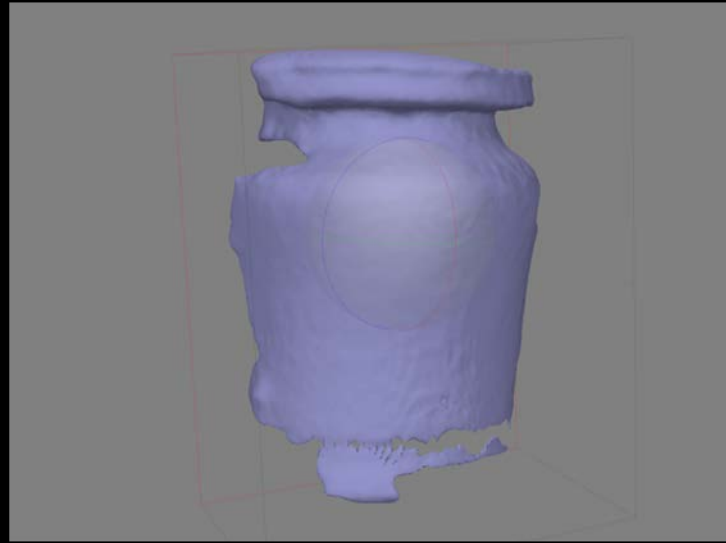
Tif after pre-processing



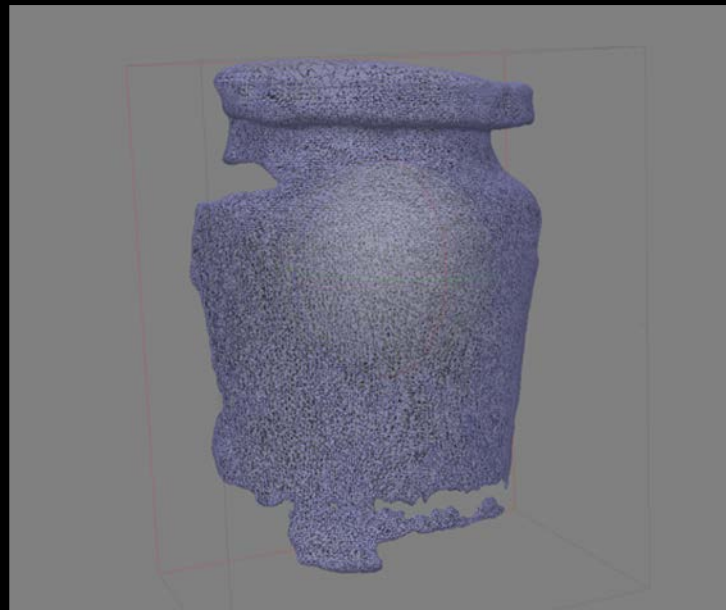
# 3D Modeling



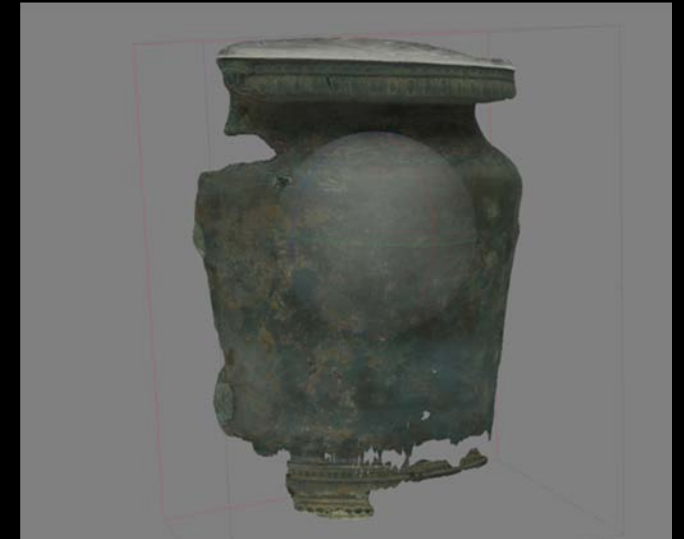
Dense Cloud



Solid Mesh



Wireframe Mesh



Textured and Tiled Model

# Output

- 3D PDF
- Sketchfab
- <https://sketchfab.com/BrynMawrCollege>