

## Cultural artefacts and 3D modelling – Romanian study case

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## Who are we?



## Romanian National History Museum

**Saint Michael Romano-Catholic Cathedral, Alba Iulia**, one of the most important medieval architectural monuments from Transylvania, candidate on the UNESCO lists



## Romanian National History Museum



**Sarmizegetusa Regia**, the Dacian fortress from the Orăștie Mountains, UNESCO monument, together with the archaeological finds from its neighborhood



## Romanian National History Museum

### Lapidarium and the Collections of the Romanian National History Museum



## Data acquisition

- **Canon EOS 5D Mk II** ISO 100,  $t=1/60/$  zoom lens EF 24-105 AF IS @ 35 mm f: 22
- 2 Studioflash 1000w
- 2 Studioflash 300w



- **Fuji XS-1**  $f=6.1 - 158.6$  mm, equivalent to 24 - 624 mm on a 35 mm camera, full-aperture F2.8 (Wide) - F5.6 (Telephoto)



## Processing and post processing

**Hardware:** a. APPLE MAC 2.3GHz quad-core Intel Core i7 (Turbo Boost up to 3.3GHz) cu 6MB L3 cache (2 buc.), Intel HD Graphics 4000, 32GB 1600MHz DDR3

b. “Monster”: Motherboard Gigabyte G1.Sniper3  
Processor Intel Core i7 3770, 3400 MHz overclocked at 4000 MHz  
RAM memory Dual DDR3 1333MHz Corsair 32GB  
Video Nvidia GTX 660 Ti 1GB

**Software:** Agisoft Photoscan  
MeshLab v.1.3.2  
Cinema 4D

**Output:** Artefacts from Saint Michael Romano Catholic Cathedral



Sarcophagus of Isabela Zapollya, marble

Detail of a lion, marble





**Output:** Artefacts from Saint Michael Romano Catholic  
Cathedral



Statue of a  
King,  
marble, app.  
2 m high



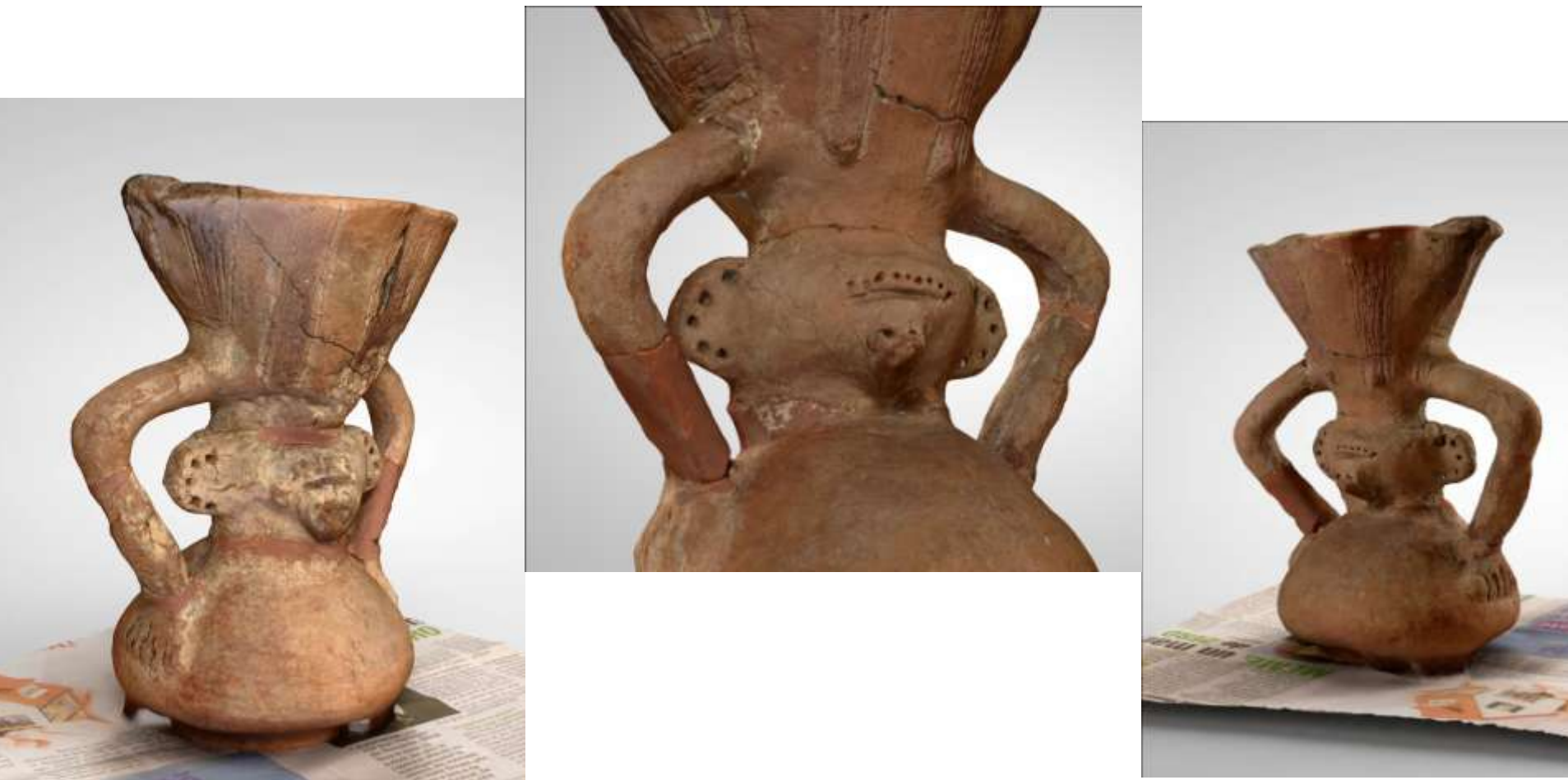
Bas-relief of  
Virgin Mary,  
wood, app. 1 m  
high

**Output:** Architectural details from Saint Michael Romano Catholic Cathedral

Northern entrance  
of Saint Michael  
Romano Catholic  
Cathedral



**Output:** Artefacts from MNIR's Collections



Neolithic idol, clay, Sultana Malu-Roșu archaeological site, Romania, ©MNIR

**Outcome:** Artefacts from MNIR's Collections



Neolithic idol, clay, Sultana Malu-Roșu archaeological site, Romania, ©MNIR

**Output:** Artefacts from MNIR's Collections

The Baril from Khorsabad, ©MNIR

Clay baril, offering informations regarding the reign of King Sargon II (721-705 BC), written with cuneiform alphabet



## Conclusions

Method	Photogrammetry
Operators	3 @data aquisitions
	2 @data processing
Data aquisitions	25-200 images/ model
Distance from objects	0,5-1 m
Aquisition time	30"-1h
Processing time	5h to 2 days
Problems	Poor lightning, background