



GRAVITATE

Discovering relationships
between artefacts using 3D
and semantic data

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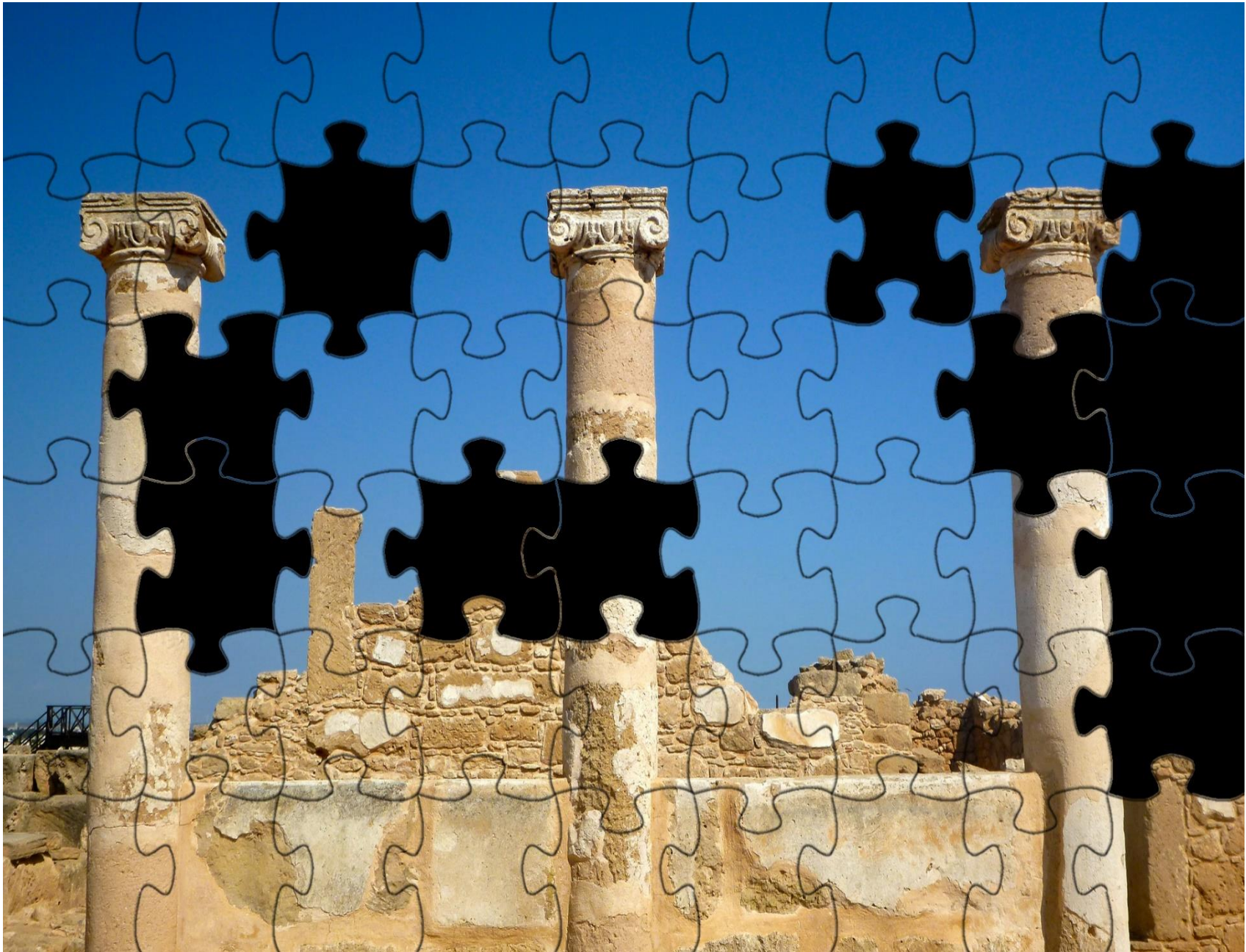
RICHES Networking Session 2015
19th October 2015



<https://www.flickr.com/photos/lunamodule/>





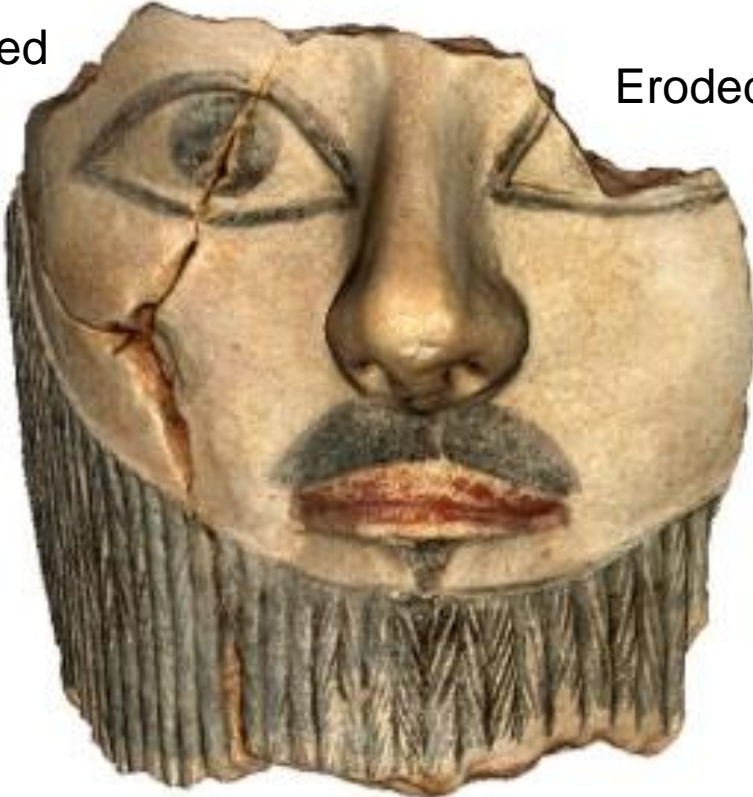




Cracked

Faded

Eroded



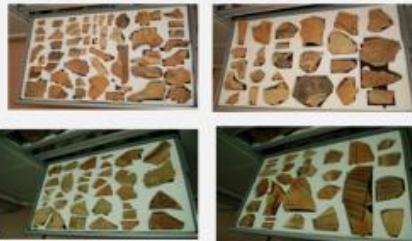
Front

Back

British Museum



160



Cyprus Museum



19



20




Ashmolean Museum



12



Fitzwilliam Museum



Jigsaw in 3D

most pieces missing
all the edges worn off

many puzzles jumbled together
pieces spread across many countries



Re-Assembly
Re-Unification
Re-Association

Re-Assembly

you have some (eroded) pieces
the computer fits them together

Hard!

Re-Unification

Re-Association

Re-Unification



Head in the British
Museum

Statue in the Cyprus
Museum



Re-Unification

- Re-unify 3D models of the statue
- 3D print copies for re-unification
- Re-unify statue in virtual tour



Re-Association

Data in another museum catalogue



Semantic Description
Material, decoration, size, shape, period, style, glaze,
...



Coarseware Transport Amphora



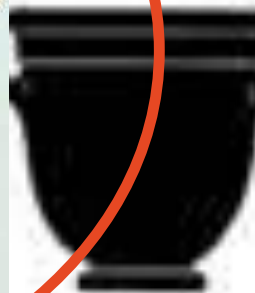
Fine ware Amphora



Colonna Krater



Volute Krater



Bell Krater

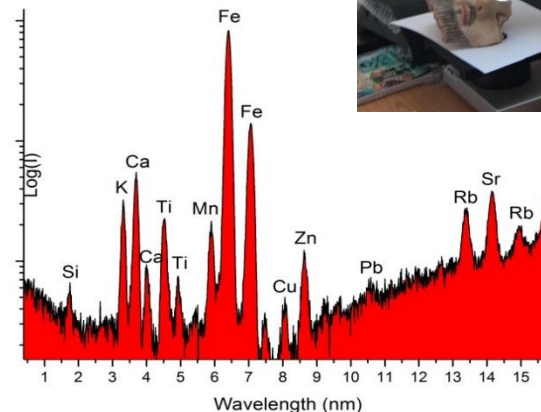




How?

Geometric data, material data

- Point cloud, mesh
- Photos
- Shape, geometry
 - reassembly
- Curvature
- Colour(s)
 - UV light, pigments
- Pattern
- Texture
 - markings front & back
 - manufacturing methods
- Chemical composition
 - x-ray fluorescence
- Microscopic composition
 - clay matrix, porosity



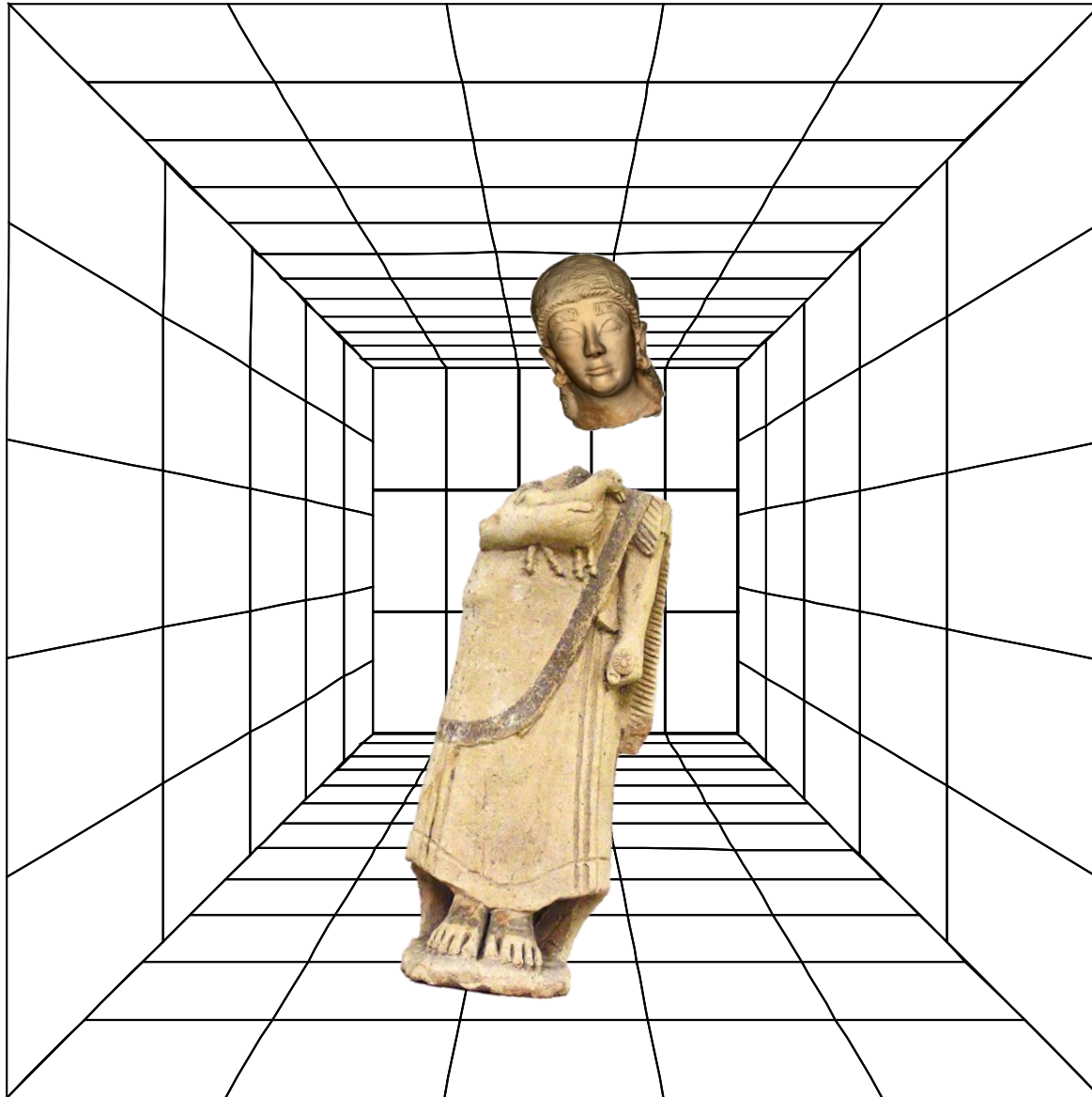
Semantic data, natural language data

- CIDOC-CRM (“conceptual reference model”)
 - ISO 21127:2006

“ provides definitions and a formal structure for describing the implicit and explicit concepts and relationships used in cultural heritage documentation.

- Object type, place, date, material, style, people, institution, bibliography, dimensions, school, production technique, ...
- Object → hasNote → “...lots of free-form text added by the curator”
 - Natural Language Processing (NLP) required to extract further information
- The CRM harmonises *knowledge* to support *discovery* and enables *knowledge collaboration*
- The British Museum has **2.5M objects** described in CRM

And...



Search

Date

Colour

Size

Origin

Find similar
items

Further work?





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The British
Museum



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