Unified CIDOC CRM mapping of the Extended Matrix and the LOD scenario

(Article begins on next page)

19 December 2025

Research and Innovation Action

Social Sciences & Humanities Open Cloud

Project Number: 823782   Start Date of Project: 01/01/2019   Duration: 40 months

Report on **Milestone 37**
Unified CIDOC CRM mapping of the Extended Matrix and the LOD scenario

Dissemination Level	PU
Due Date of Milestone	31/01/2022, M37
Actual Achievement Date	16/03/2022
Lead Beneficiary/LTP	14. DAI
Work Package	WP5 Innovations in Data Access
Task	T5.7 Open Linked Data. Archaeology Case Study
Version	V1.0
Number of Pages	p.1 – p.5

Abstract:

We report on the CIDOC CRM mapping of the work in Task 5.7, namely the mapping of LOD scenario and the Extended Matrix of the Roman theatre in Catania as well as their alignment.

Author List

Organisation	Name	Contact Information
DAI	Wolfgang Schmidle	wolfgang.schmidle@dainst.de
CNR (ITABC)	Emanuel Demetrescu	emanuel.demetrescu@cnr.it
Politecnico di Torino	Elisabetta Caterina Giovannini	elisabettacaterina.giovannini@polito.it

1. Introduction

In task 5.7 (Open Linked Data. Archaeology Case Study), a virtual reconstruction of the Roman theatre in Catania has been created as an example of a transition of archaeological data to the cloud, i.e., from data silos on individual computers to webservices. The case study is based on a unified workflow that starts with the archaeological documentation and results in a virtual reconstruction. The data was processed in the Extended Matrix (EM) system that has been developed by the ITABC.

The workflow is accompanied by a Linked Open Data scenario that connects the 3D data with systems for authority data such as gazetteers for place information and ChronOntology for temporal information.

Here we report on the CIDOC CRM mapping of the work in task 5.7, namely the mapping of LOD scenario and the Extended Matrix of the Roman theatre in Catania as well as their alignment.

2. Description of the Milestone

Due to the lack of space, we have to assume some familiarity with CIDOC CRM[1]. We also use two classes (*A2 Stratigraphic Volume Unit* for stratigraphic units at an archaeological excavation and *S19 Encounter Event*, which models an archaeologist who finds an object during the excavation) from its extension

---

[1]CIDOC CRM, https://cidoc-crm.org/ [accessed: March 2022].

CRMarchaeo[2] and one class (*D1 Digital Object*) from its CRMdig[3] for metadata about the provenance of digitisation products.

The CIDOC CRM mapping of the LOD scenario is demonstrated on the example described in Milestone 36: A marble block belonging to an architrave (i.e. a lintel that rests on the capitals of columns), documented in Wilson (1990) and DAI's Arachne database of archaeological objects and part of the EM of the Roman theatre. A drawing of a part of the architrave had already been depicted in volume V of "Le antichità della Sicilia esposte ed illustrate per Domenico Lo Faso Pietrasanta, duca di Serradifalco … Antichità di Catana", published in 1842 and documented in the Heidelberg Digital Library. However, this marble block had fallen in the orchestra of the theatre (the place where the chorus sings and dances) and was only discovered in the 1980s. The block contains an ornamental relief and can be likely dated to the early 3rd century CE. This corresponds to the second major building phase of the Roman theatre during the Severan dynasty (193 to 235), in particular to emperor Elagabalus (218–222) or Alexander Severus (222–235). This can be mapped like this:

E22 Human-Made Object "**Block**"
      P45 consists of E57 Material "**marble**"
      P56 bears feature E25 Human-Made Feature "**ornamental relief**"
      P70i is documented in E73 Information Object "**Arachne page**"
            P165i is incorporated in E73 Information Object "**Arachne**"
            P165 incorporates E31 Document "**Wilson, Sicily**"
      P53 has former or current location E53 Place "**the orchestra of the theatre**"
      P12i was present at E5 Event "**block falls down into the orchestra**"
      P46i forms part of E22 Human-Made Object "**architrave**"

E22 Human-Made Object "**Architrave**"
      P108i was produced by E12 Production
            P4 has time-span E52 Time-Span
                  P86 falls within E52 Time-Span "**probably early 3rd century CE**"
                  P70i is documented in E31 Document "**Wilson, Sicily**"
            P9i forms part of E7 Activity "the **second major building phase** of the Roman theatre"
      P62i is depicted by E31 Document "**Le antichità della Sicilia … Antichità di Catana**"

E8 Activity "the **second major building phase** of the Roman theatre"
      P9i forms part of E4 Period "the **Severan dynasty**"
            P4 has time-span: E52 Time-Span

---

[2] CRMarchaeo, https://cidoc-crm.org/crmarchaeo/ [accessed: March 2022].
[3] CRMdig, https://cidoc-crm.org/crmdig/ [accessed: March 2022].

P86 falls within: E52 Time-Span "**193 to 235**"

E31 Document "**Book**"
      "**Le antichità della Sicilia ... Antichità di Catana**"
      P70i is documented in E73 Information Object "**Heidelberg Digital Library**"

The mapping of the EM is still in a conceptual stage. But for now, it is sufficient to know that a **stratigraphic unit** is modelled as *A2 Stratigraphic Volume Unit* and a **virtual stratigraphic unit** (see the SSHOC deliverable D5.17[4]) as *D1 Digital Object*. The alignment with the EM mapping looks like this:

E22 Human-Made Object "**Block**"
      P53 has former or current location E53 Place "the orchestra of the theatre"
      O19i was object found by S19 Encounter Event
            O21 has found at A2 Stratigraphic Volume Unit "the orchestra of the theatre"
            P4 has time-span E52 Time-Span
                  P86 falls within E52 Time-Span "the 1980s"
      P12i was present at E5 Event "block falls down into the orchestra"
      P46i forms part of E22 Human-Made Object "architrave"

E22 Human-Made Object "**Architrave**"
      P108i was produced by E12 Production
            P9i forms part of E7 Activity "the second major building phase of the Roman theatre"
      P165i is incorporated in D1 Digital Object "Architrave" (a virtual stratigraphic unit)

E8 Activity "the **second major building phase** of the Roman theatre"
      P9i forms part of E4 Period "the Severan dynasty"
      P70i is documented in SHE1 Dataset "The EM of the Roman theatre"

The alignment happens, of course, at the **D1 Digital Object "Architrave"**, which is the original position of the marble block that no longer exist, and at the new position of the marble block **A2 Stratigraphic Volume Unit "the orchestra of the theatre"**, which still exists.

---

[4] Wolfgang Schmidle, Sofia Pescarin, Emanuel Demetrescu, Bruno Fanini, Francesco Gabellone, Alberto Bucciero, Alessandra Chirivì, Ivan Ferrari, & Francesco Giuri. (2020). D5.17 Implementation plan for the archeological case study. Zenodo. https://doi.org/10.5281/zenodo.3931706 [accessed: March 2022].

2.1. Role of the Milestone

The Milestone describes a step on the way to a broader contextualisation of the Roman theatre in a LOD scenario. It defines a conceptual starting point for the next steps toward a running triplestore.

2.2. Means of verification

More details can be found on GitHub[5].

2.3. Explanation on delay in achieving the Milestone

The small delay is due to the delay of an earlier work step, which was caused by a hiatus between two contracts of the Milestone lead author.

3. Conclusions and next steps

The alignment presented here is just a conceptual example. The mappings need to be completed and applied to the whole EM of the Roman theatre and a larger contextualisation. An RDF representation of the data can then be implemented in a triple store and queried via SPARQL.

4. Appendixes

n/a

---

[5] https://github.com/dainst/sshoc [accessed: March 2022].