Archaeological Excavation Semantic Modelling Workgroup Scope and Activities

Markos Katsianis, University of Patras, GR

59th joint meeting of the CIDOC CRM SIG,
52nd FRBR/LRMoo SIG and ISO/TC46/SC4/WG9
24-27 September 2024, Plovdiv, Bulgaria

Excavation Modelling Group

- Established within A+ WP 4.4.12 Archaeological fieldwork
- Activity since 5/2020
- >15 people actively involved
- 8 meetings within A+ & another 3 post A+
- Strategies for excavation data mappings
- Consolidation of different levels of expertise and interest

Baseline & research routes

Q: *Does archaeological fieldwork require a separate Application Profile?*

- Excavation research is central to archaeological data production and availability
- Excavation interfaces with several sub-disciplinary data production and enhancement procedures
- The conceptual analysis of the *Excavation Universe* should be complemented with synthetic work and practical examples

Virtual workshop

Virtual Workshop on semantic mapping of excavation data
15th June 2022
Presenters: 12 - Participants: 104 - Countries: 23

- **Models** - what vocabulary to use to describe the excavation domain?
- **Questions** - what to ask aggregated excavation datasets?
- **Methods** - how to achieve compatible semantic descriptions of excavation datasets?
- **Workflows & tools** - what workflow and tools exist for achieving semantic interoperability?
- **Learning & training** - how to familiarize oneself with semantic data workflows?

Produced documents

- Virtual Workshop on Semantic mapping of archaeological excavation data (1.0). 2022. Zenodo. https://doi.org/10.5281/zenodo.7112918
- Bringing Excavation Data Together. Are We There Yet and Where is That? 2022. 28th EAA Annual Meeting (EAA 2022), Budapest, Hungary. Zenodo. https://doi.org/10.5281/zenodo.7117049
- Archaeological Excavation Modelling Working Group: WP 4.4.12 excavation data. 2022. Zenodo. https://doi.org/10.5281/zenodo.7377910
- D4.4 – Final report on ontology implementation. 2022. Zenodo. https://doi.org/10.5281/zenodo.7636720

Group publication

Semantic Modelling of Archaeological Excavation Data. A review of the current state of the art and a roadmap of activities

Markos Katsianis, George Bruseker, Denitsa Nenova, Olivier Marlet, Florian Hivert, Gerald Hiebel, Christian-Emil Ore, Paola Derudas, Rachel Opitz and Espen Uleberg

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Summary

Archaeological data repositories usually manage excavation data collections as project-level entities with restricted capacities to facilitate search or aggregation of excavation data at the sub-collection level (trenches, finds, season reports or excavation diaries etc.). More granular access to excavation data collections would enable layered querying across their informational content. In the past decade, several attempts to adapt CIDOC CRM in order to provide more explicit descriptions of the excavation universe have resulted in the use of domain-specific model extensions (e.g. CRMarchaeo, CRMsci, CRMba). Each focuses on corresponding aspects of the excavation research process, while their combined usage has potential to support

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Main findings and future work

Key enabling technologies / research areas	TRL	Description	Example
Conceptual models and semantic data structures	7	System prototype demonstration in operational environment	*e.g. CIDOC-CRM, CRMarchaeo in particular, AO-Cat, ARIADNEplus Knowledge base, GraphDB*
Conceptual modelling patterns	4	Technology validated in a lab	*e.g. Semantic Reference Data Models, Zellij Semantic Pattern Platform*
Data mapping workflows and tools	6	Technology demonstrated in a relevant environment	*e.g. Karma, Protégé-Ontop, SHACL, X3ML toolkit, Vocabulary Matching Tool, PeriodO*
Learning technologies	5	Technology validated in a relevant environment	*e.g. CIDOC CRM periodic table, OntoMatchGame*
Semantic queries	5	Technology validated in a relevant environment	*e.g. Openarcheo, Sparnatural*

Technology Readiness Levels (TRLs) for key enabling technologies or research areas involved in archaeological excavation modelling

Semantic Modelling Workshops

Archaeological Excavation
Semantic Modelling Workgroup

Semantic Modelling Workshop Series

Tuesday
20/2/2024

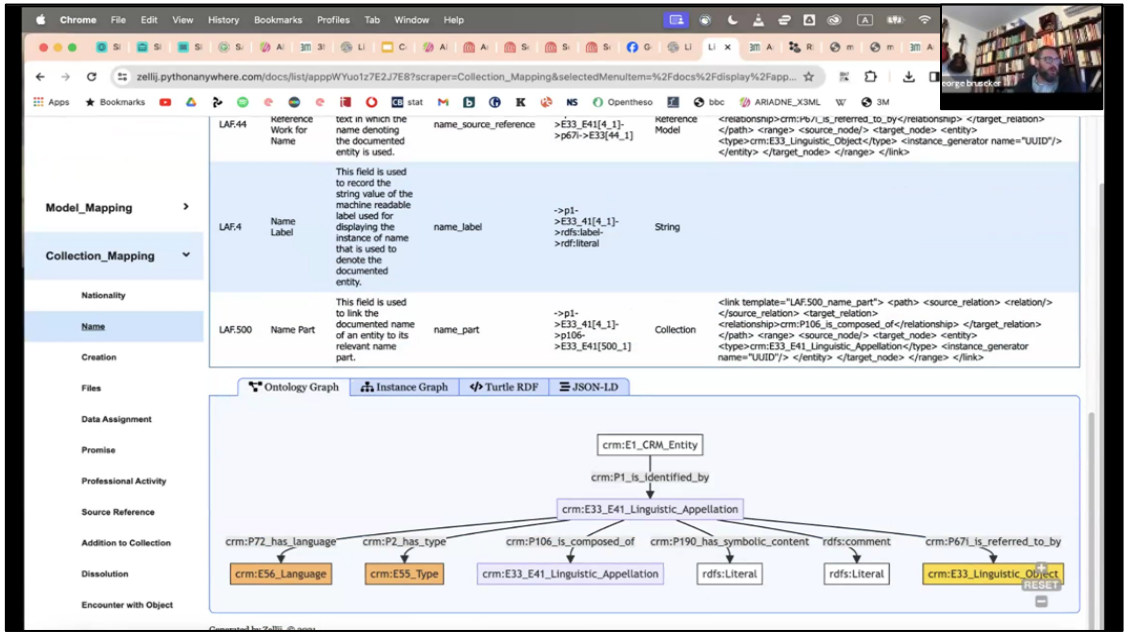
Workshop ONE

Controlled Representation of Linked Archaeological Datasets: A Semantic Reference Data Model (SRDM) Approach

Denitsa Nenova & George Bruseker

Takin.solutions

Participants: 38



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Semantic Modelling Workshop Series

Wednesday
24/4/2024

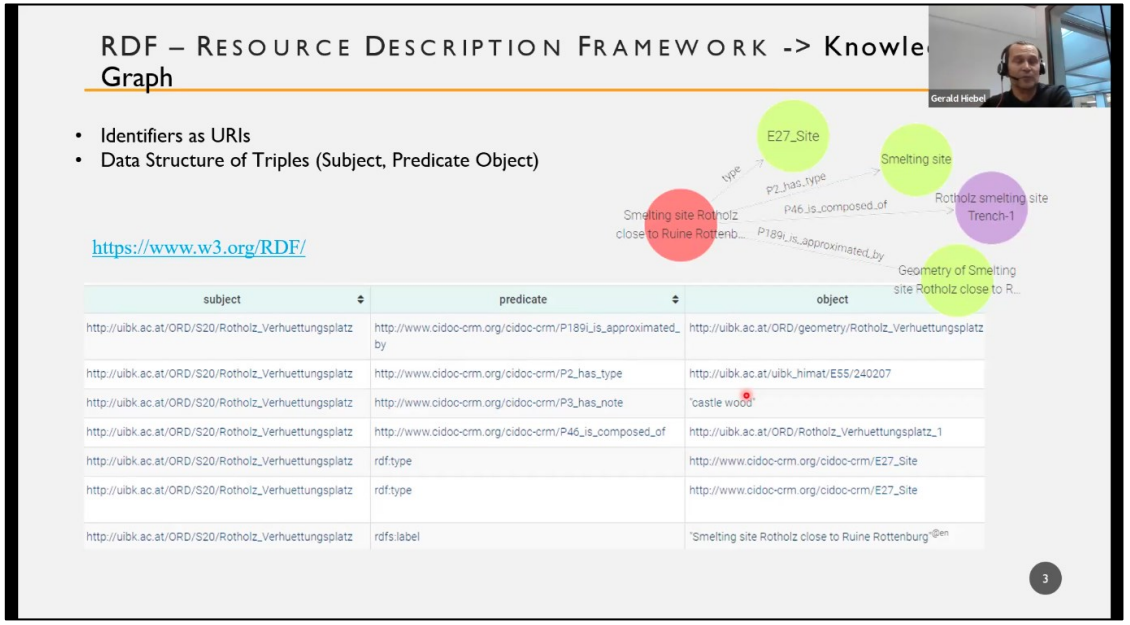
Workshop TWO

RDF Creation Pipeline - A Workflow to transform Archaeological Data Sets from Tabular Data to RDF using RDFstar and Named Graphs

Gerald Hiebel & Milena Peralta Friedburg

universität innsbruck

Participants: 32



Present and future scope of the group

- Share relevant activity from members of the group
- Attract further participation *(meetings, conference sessions, online workshops..)*
- Initiate new collaborative work of different research strands *(patterns, AI, education..)*
- Contribute to the further development of CRMarchaeo
- Produce material for helping modelers model *(modelling cookbook, implementation examples, tutorials, workshop videos..)*
- Make such material available & link with existing resources
- Keep the community alive!

→ ***Work closer and link to CIDOC-SIGs is key to approach these goals***

on behalf of the

Archaeological Excavation Semantic Modelling Workgroup