Session
Research Data Management in an agile, semantically interlinked, data-driven and AI-biased world of Knowledge Hubs — A re-return for FAIR reuse of archive data?

Chairpersons:

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Description and Motivation:

In recent years, the importance of digital Research Data Management (RDM) has grown significantly across disciplines, including Cultural Heritage (CH) and archaeology. As inherently interdisciplinary fields grounded in data-driven practices, they require robust infrastructures, standards, and collaborative frameworks to interlink diverse research data effectively. This session examines emerging approaches, challenges, and opportunities for building interconnected, sustainable, and open RDM ecosystems. This discussion is critical to the FAIR reuse of archival data, particularly in archaeology, where excavation records, oral history, and legacy datasets hold significant research value. While digital archives have expanded access to such data, ensuring Findability, Accessibility,

Interoperability, and Reusability (FAIR) remains challenging. Principles and ontologies such as CIDOC CRM and its extension CRMarchaeo provide structured methodologies for linking, documenting, and contextualising archaeological information. However, practical implementation requires further refinement to enable seamless integration into broader knowledge infrastructures.

This session explores strategies to enhance semantic modelling, AI integration, and knowledge graph development to maximise the potential of research data. We invite contributions addressing the following:

- Data Documentation and Semantic Modelling: Innovative methods for data capture, qualification, and integration using semantic frameworks such as CIDOC CRM and its extensions, BFO, or OBOE and graph-based technologies (RDF, RDF*, LPG), supporting sustainability and the FAIR/CARE/TRUST principles. Special emphasis will be placed on ontologies for structuring archival and excavation datasets to enhance their interoperability and reuse.
- Reuse of Archival Data in Archaeology: Approaches to making excavation records, oral histories, and other legacy data more accessible and usable within modern research infrastructures. This includes methods for linking archival datasets through semantic technologies, ontologies, and FAIR-aligned principles, as well as strategies for overcoming data semantics, standardisation, and integration challenges. CRMarchaeo, an extension of the CIDOC CRM, is one way to link a wide range of existing documentation from archaeological investigations. It was created to promote a shared formalisation of the knowledge extracted from archaeological observations.
- Computational Approaches: Applications of research software, small R/Python scripts, and tools for data processing, statistical modelling, and scientific analysis, supporting sustainability, the FAIR4RS principles and FAIR-aligned archival data reuse.
- AI Integration and Knowledge Graphs: Strategies for leveraging AI techniques to analyse, integrate, and interlink research data within domain-specific and overarching Knowledge Hubs. Contributions may explore the creation and use of Knowledge Graphs to enable semantic relationships, data enrichment, and interoperability across heterogeneous datasets.
- Citizen Science Contributions: Frameworks for integrating public efforts and volunteer contributions through platforms like Wikidata, OpenStreetMap, and other open repositories, fostering inclusive participation in CH research.

- Legacy Data and Sustainability: Approaches to managing archival and excavation datasets, ensuring long-term data preservation, FAIRification, and sustainable archiving.
- Best and Worst Practices: Sharing experiences—both successes and failures—to promote transparent, reusable, and open data processes.

This session aims to foster dialogue on establishing interdisciplinary standards and "community norms" for RDM within the CH domain. By integrating FAIR-aligned archival data strategies, AI methodologies, and collaborative models, we can develop more interconnected Knowledge Hubs that amplify the accessibility and impact of cultural heritage research.

Target Audience:

- digital archaeologists, computational archaeologists (archaeological computer scientists), digital humanists
- researchers in the Cultural Heritage domain
- researchers from the natural sciences, geosciences, geodesy (incl. geoinformatics), conservation sciences, …
- Research Data Management (RDM) staff
- Citizen Science
- Archaeologists who deposit or reuse archival material

Keywords:

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