Towards a Common Data Model for Semantic Annotation of Digital Media: A New FOSS Toolchain

nationale Forschungsdaten Infrastruktur *for CULTURE*

〈SEMANTIC〉 KOMPAKKT

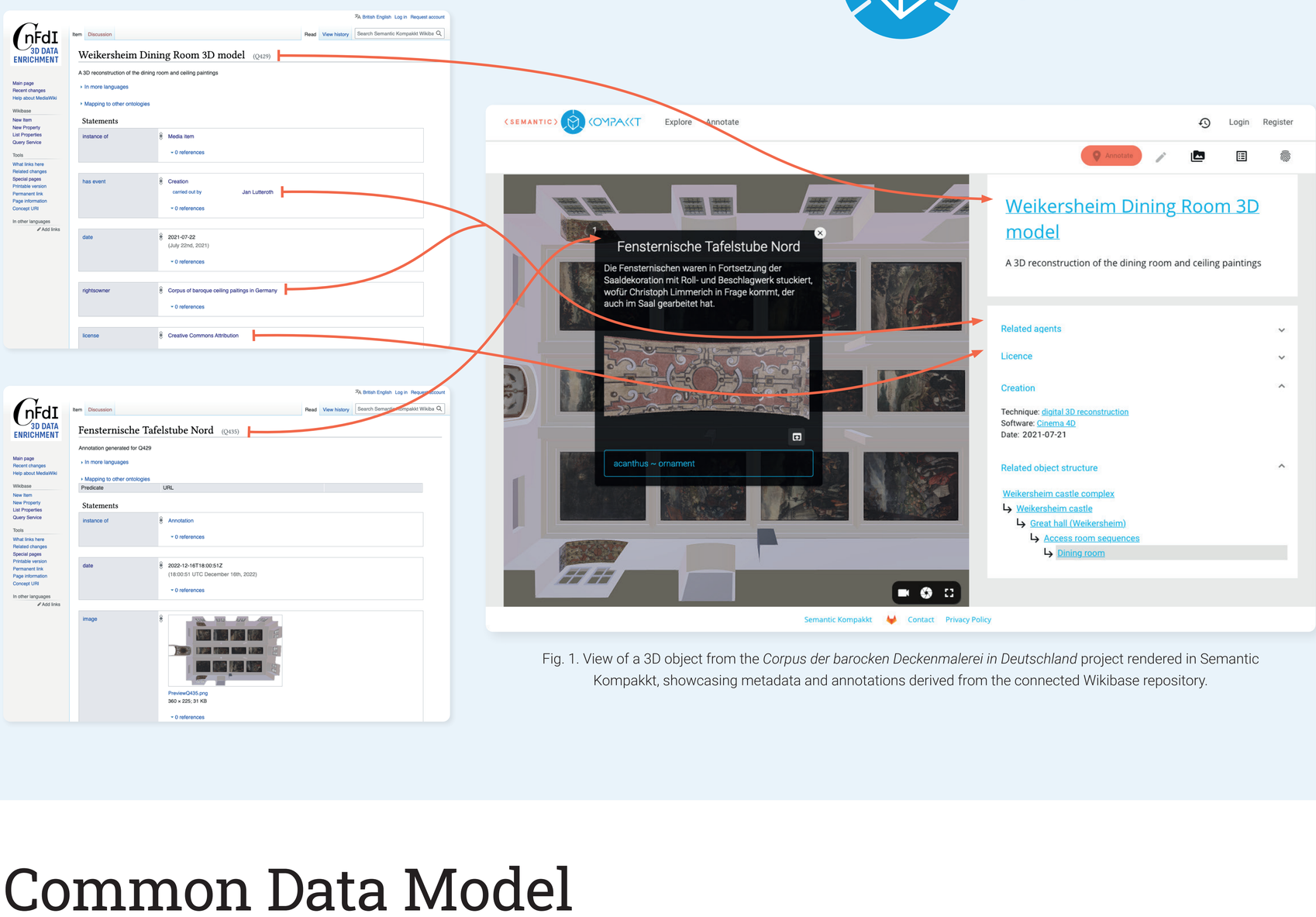

Fig. 1. View of a 3D object from the *Corpus der barocken Deckenmalerei in Deutschland* project rendered in Semantic Kompakkt, showcasing metadata and annotations derived from the connected Wikibase repository.

SEMANTIC KOMPAKKT is a free and open source toolchain building on several existing tools:

→ **OPENREFINE**, a data cleaning, reconciliation and batch upload tool;
→ **WIKIBASE**, a suite of services for managing Linked Open Data;
→ **KOMPAKKT**, a 3D- and multimedia viewer with collaborative annotation features.

The toolchain is designed with a **modular architecture** wherein all data is uploaded to a Wikibase repository and it can be queried via a dedicated SPARQL endpoint.

Data across all stages of the data workflow is readily accessible and editable via **graphical user interfaces**.

It allows linking 3D objects and annotations, and their cultural context (e.g. historical people and places), to the broader **semantic web** and various national and international authority records (GND, Iconclass, VIAF and more).

A public instance of the software is available at: **https://semantic-kompakkt.de**

Common Data Model

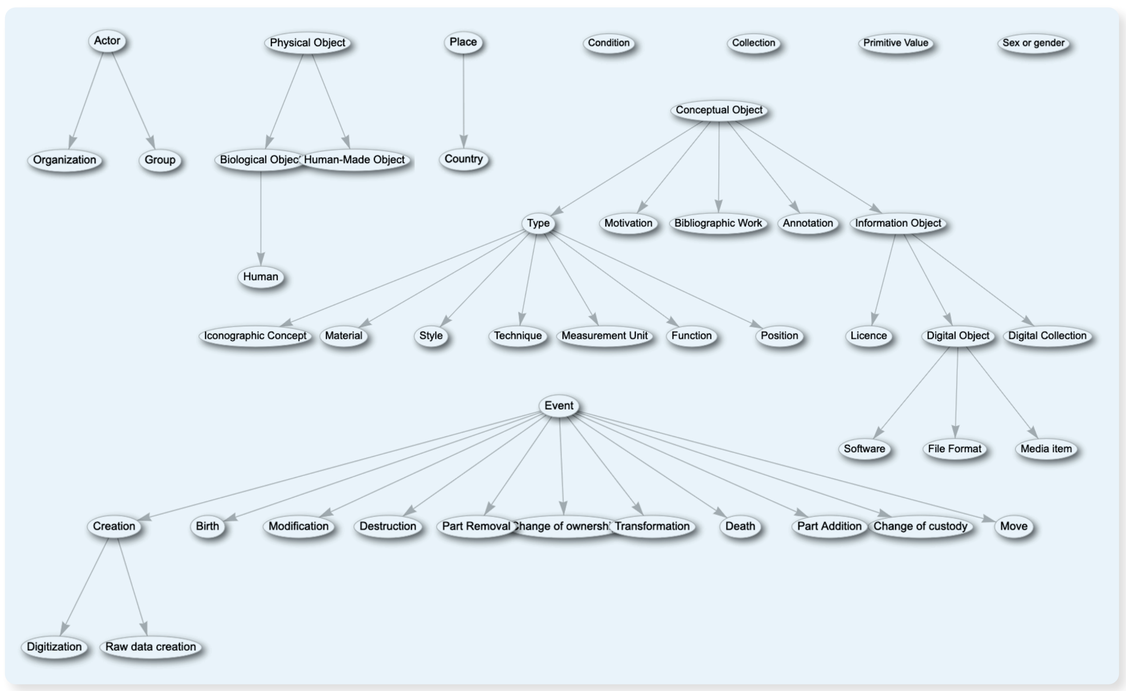

Fig. 2. Visual representation of classes and subclasses in the new common data model. See the query here: *https://tinyurl.com/2nt2o6tp* Note that some upper level classes such as *CRM Entity*, *Temporal Entity* or *Persistent Item* are not included, because they can be inferred if the CIDOC-CRM ontology is pre-loaded in the Wikibase triplestore.

ONTOLOGY ALIGNMENT TO CIDOC-CRM

The classification of objects in Semantic Kompakkt aligns to and extends CIDOC-CRM and its structure of classes and subclasses. Functions, Positions, Styles and Iconographic Concepts extend CIDOC-CRM's E55 Type class as subclasses. Software, file formats and media items are specified via the CRMdig extended model for provenance data.

Further ontology mappings:

→ schema.org
→ Wikidata
→ W3C Web Annotation Data Model
→ NFDI Core Ontology

Ontology IRI:

https://gitlab.com/nfdi4culture/ta1-data-enrichment/wikibase-model/

EVENT-BASED APPROACH IN WIKIBASE

Event classes mapped to CIDOC-CRM, such as Creation, Modification, or Digitization (CRMdig), can be qualified with agents and places within the framework of RDF statements natively supported by Wikibase, providing the foundation for a new event-based approach.

Thanks to the implementation of the RDF extension for Wikibase, mapped classes and properties can be queried directly using their CIDOC-CRM IRI's via the SPARQL endpoint.

RDF extension: https://github.com/ProfessionalWiki/WikibaseRDF

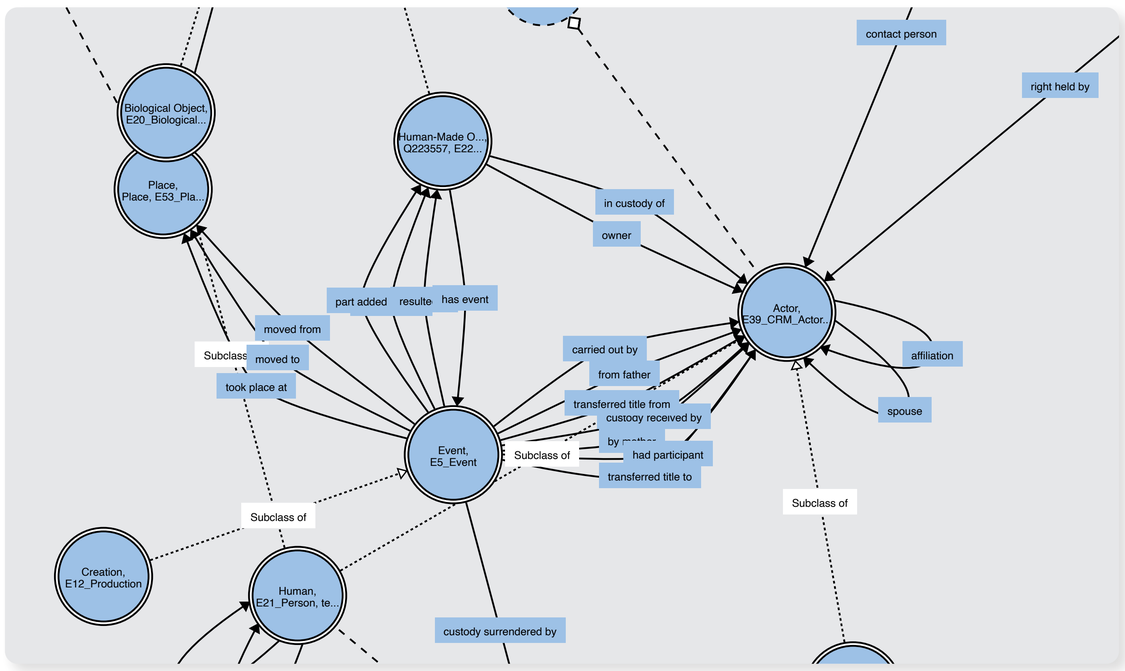

Fig. 3. Visual representation of relations between Events and several other classes in the new common data model for Wikibase shown via the WebVOWL service at *http://vowl.visualdataweb.org/webvowl.html*

CREDITS AND ACKNOWLEDGEMENTS

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