How to be flexible - OpenAtlas as Highly Adaptable Database Software in the Scope of Digital Humanities

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OpenAtlas (https://openatlas.eu/), developed mainly at the Austrian Center of Digital Humanities and Cultural Heritage (ACDH-CH) of the Austrian Academy of Sciences (ÖAW), is an open source database software (https://github.com/craws/OpenAtlas).

It is used to acquire, edit, and manage research data from various fields of humanities as well as related scientific data such as results of radiocarbon dating or isotopic analyzes. By using OpenAtlas, information entered into the user interface is mapped to CIDOC CRM version 7.1.1 (https://cidoc-crm.org/) in the background, so users do not have to get familiar with ontologies and their rules. Furthermore, OpenAtlas takes care of today's requirements regarding data standards, data management and aims for FAIR principles (https://www.go-fair.org/fair-principles/) and the creation of Linked Open Data. The integrated map application allows for an easy acquisition of geographic data and subsequently the creation of cemetery plots and distribution maps.

The user interface - accessible via any common web browser - is highly adaptable to each project's research questions and needs by using so-called "types". Types classify and describe entities through a terminological hierarchy, and are subdivided into:

- **Standard types** - Only one standard type as single choice per entity; they uniquely characterise an entity
- **Custom types** - Multiple custom types as single or multiple choice per entity; they describe an entity as comprehensively as possible and provide further information
- **Value types** - Used to track dimensions such as height, weight, or material composition but can also be used to e.g. describe temperature with degree
- **System types** - These types can't be changed and are used to e.g. describe the precision of links to external reference systems

Types can be added dynamically in forms and therefore make OpenAtlas usable for many different projects concerned with various research fields within the scope of humanities. The use of types supports standardised data entry, even across multiple different projects, into OpenAtlas which results in structured information for further research, e.g. social network analysis, or applications using OpenAtlas as backend, e.g. presentation sites.

A well-thought-out system of types and subtypes can subsequently be published as a project's own vocabulary, as demonstrated by THANADOS (https://thanados.net/vocabulary/) - a collaborative project of OpenAtlas.

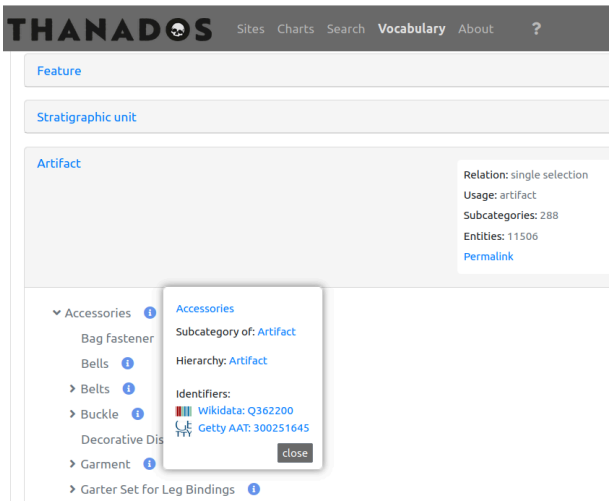

Fig. 01: THANADOS vocabulary based off of the types used by the project within their OpenAtlas instance.

Each type, as well as other entities, can be linked to gazetteers and controlled vocabularies - freely chosen by the collaborating project - to unambiguously define them and create Linked Open Data. OpenAtlas already provides linking to Wikidata and GeoNames out of the box while making use of their APIs, e.g. to search and add their identifiers via the OpenAtlas user interface. Furthermore, additional external reference systems - digital or analog – can be added by each of the projects using the database system.

Data created within the OpenAtlas system can further be used to create presentation sites for state-of-the-art dissemination (compare for example https://thanados.net).

By following the CIDOC CRM format and making the whole application as well as data Open Access and Open Source, OpenAtlas aids in creating an open workflow that is easily comprehensible and reproducible. This enables adaptation and expansion when building upon existing projects, as well as new projects.