

A faint background graphic showing a map of Europe with a large green triangle covering the central part. A pink location pin is placed on the northern edge of the green triangle.

# OpenAtlas

A Database System for Archaeological Data and Beyond



# Introduction

- Open source database software
- Acquire, edit, and manage research data
- First developed for use in archaeology
- Related scientific data:
  - Anthropological results
  - Radiocarbon dating
  - Isotopic analyses
  - aDNA
- History, prosopography





# Introduction

- Mainly developed at the Austrian Centre for Digital Humanities and Cultural Heritage (ACDH-CH) of the Austrian Academy of Sciences



# Introduction

- Small interdisciplinary team
  - IT specialists
  - Digital Humanities
  - Historians
  - (Osteo)Archaeologists



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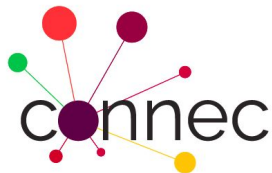
CC-BY 4.0, Sandra Lehecka



# Introduction

- Developed through cooperations with multiple projects from all fields of the humanities

# THANADOS



# MEDCEM



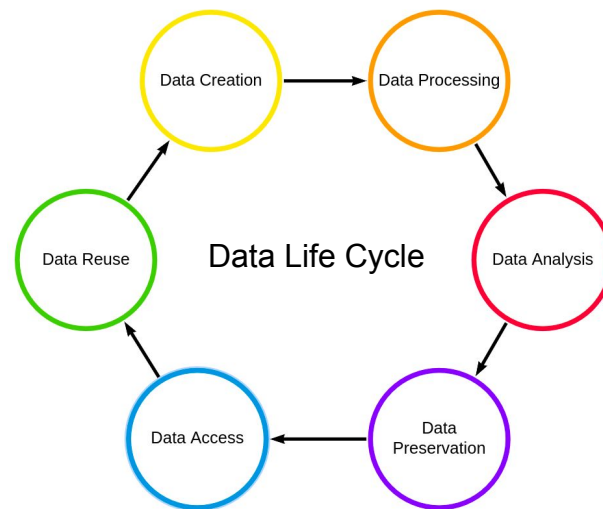
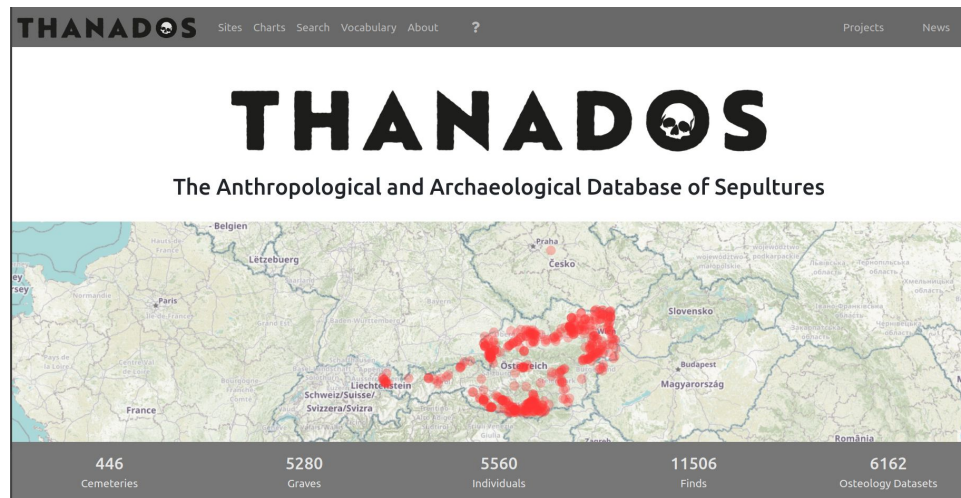
SHAH





# Being Open

- Completely developed as open source
- Code available on GitHub
- Cooperating projects are required to provide their data open access
- FAIR Data
  - Findable
  - Accessible
  - Interoperable
  - Reusable





# Model

- CIDOC CRM:
  - Widely used ontology in digital humanities
  - Recombination with other data
  - Interoperability and reusability
- Version 7.1.1, May 2021
- 99 Entities and 198 Properties





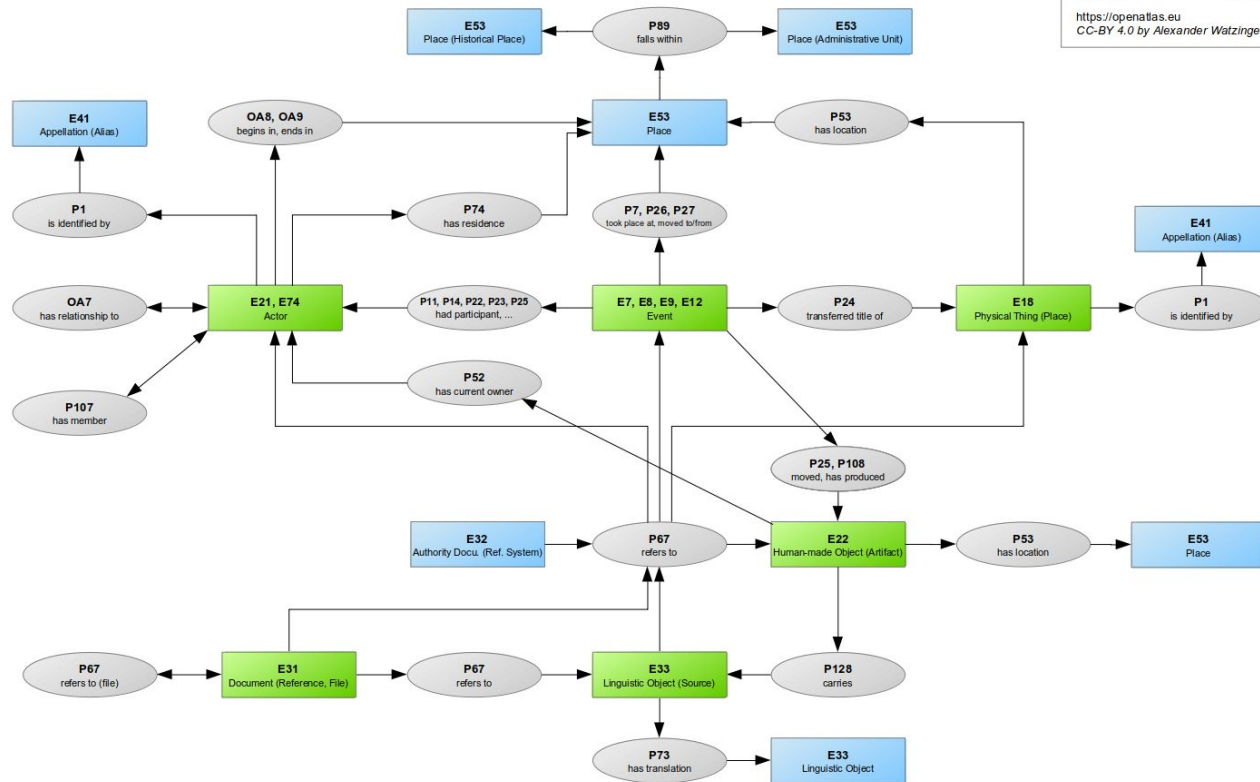
# Model



Author: Alexander Watzinger  
Concept: Stefan Eichert

OpenAtlas version 7.5.0  
CIDOC CRM version 7.1.1  
Modified 2022-06-15

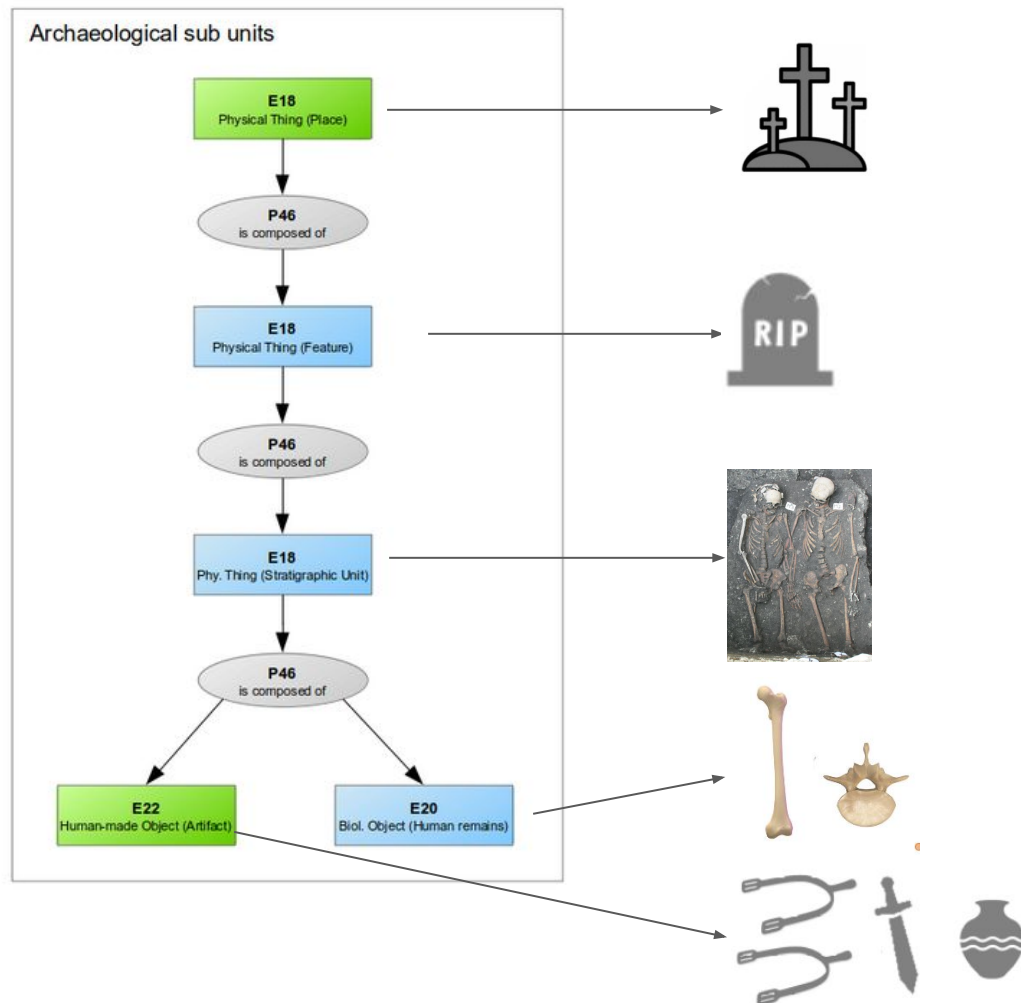
<https://openatlas.eu>  
CC-BY 4.0 by Alexander Watzinger







# Model





# User Interface

- No need to be proficient with the model
- Interface:
  - Accessible from any common web browser
  - Easy to use
  - Customizable via types
  - Vocabulary



# User Interface



Source Event Actor **Place** Artifact Reference Types

Search term

DE EN

Place > + Place

Demo 7.5.0

Name \*

Alias  +

-

Type City

Administrative unit

Historical place

GeoNames 3054643 precision exact match

Wikidata Q1781 precision exact match

Date

Begin

End

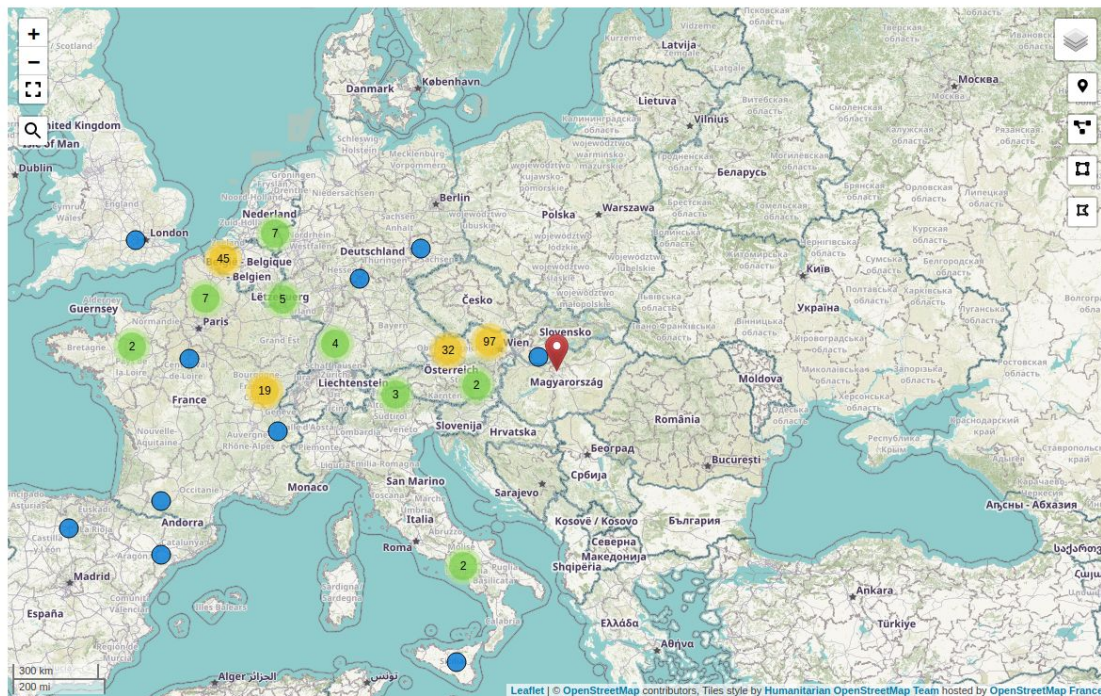
Description



Insert

Insert and continue

Insert and add feature



# User Interface

Source Event Actor **Place** Artifact Reference Types

Search term   DE EN

Place > + Place Demo 7.5.0

Name \*

Alias

Type

Administrative unit

Historical place

GeoNames  precision exact match

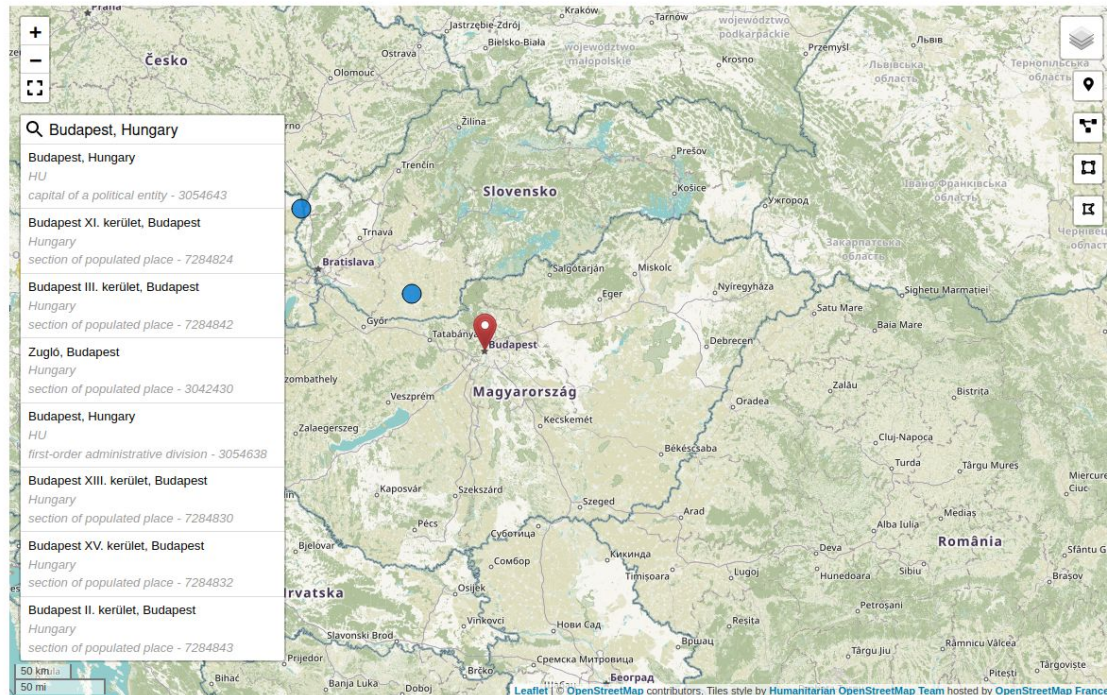
Wikidata  precision exact match

Date

Begin

End

Description Venue of the Annual Meeting of the EAA 2022. Capital of Hungary.





# User Interface



Source Event Actor **Place** Artifact Reference Types

Search term

DE EN



[Place](#) > + Place

Demo 7.5.0

Name \*

Alias

Type **City**

Administrative unit **Change**

Historical place **Change**

GeoNames **3054643** precision exact match

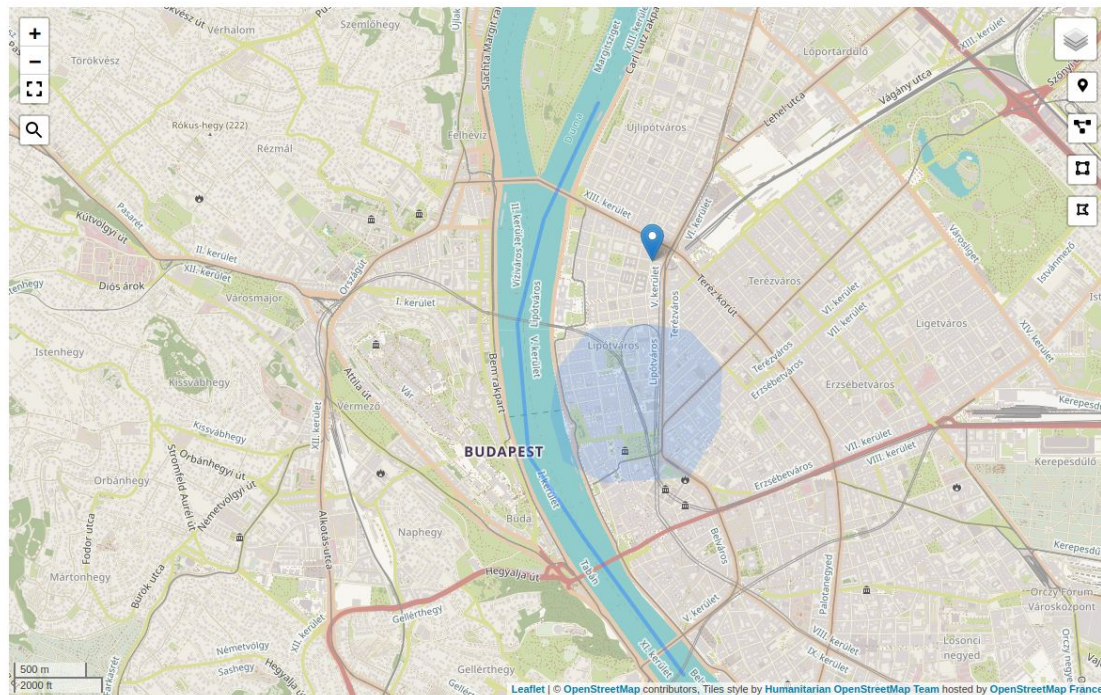
Wikidata **Q1781** precision exact match

Date **Hide**

Begin

End

Description





# External References

- Wikidata and GeoNames
- Freely choose additional ones
  - Digital/analogue
  - Vocabularies
  - Gazetteers
  - Inventory numbers
  - Card catalogues



# External References

**THANADOS**

Source Event Actor **Place** Artifact Reference Types

Search term



DE EN



Place > + Place

Thanados 7.6.0

Name \*

Alias

Type

Administrative unit

Case Study

Country

Dimensions

Evidence

Hilltop Classification HTC

Historical place

JenaTübingen Value Types

Stylistic Classification

TypesJenaTübingen

GeoNames  precision close match

Wikidata  precision exact match

Date

Description

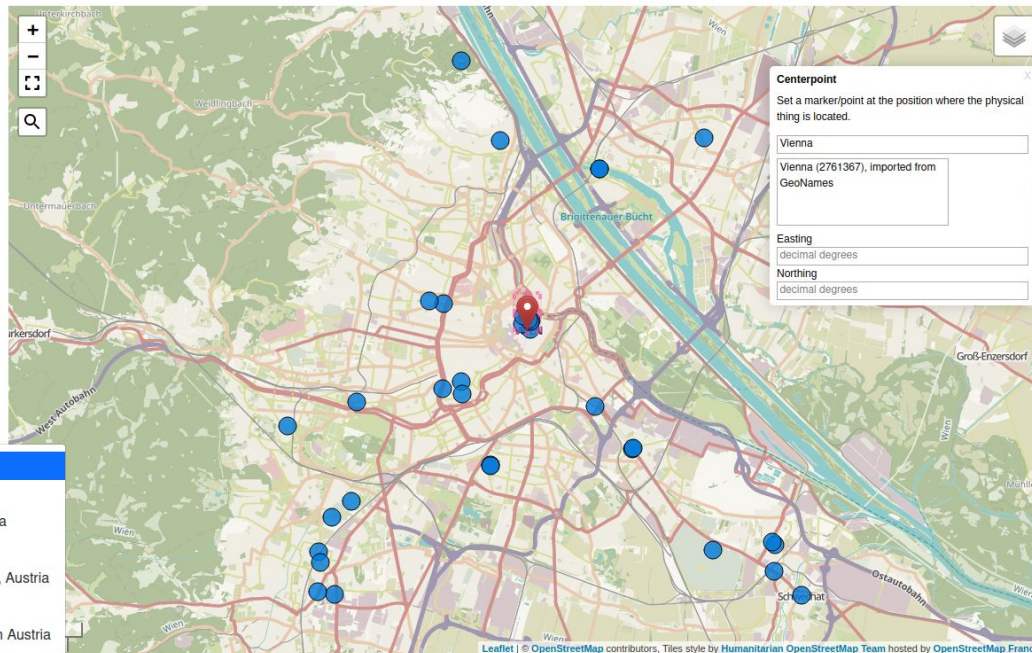
Q689400 - TU Wien - university of technology in Vienna, Austria

Q26849 - Vienne - commune in Isère, France

Q414219 - Academy of Fine Arts Vienna - art school in Vienna, Austria

Q240744 - Vienna Central Cemetery - cemetery in Vienna

Q299015 - Austrian Academy of Sciences - science academy in Austria





# Customizable Types

- New types can be added to existing type trees
- New type trees can be added
- Making the user interface highly customizable
- Possible to use in different projects

## Artifact

Type to search

- └ Accessories 177 (6,094)
  - └ Bag fastener 4
  - └ Bells 38
  - └ Belts 85 (1,123)
    - └ Belt Buckle 290 (192)
      - └ Belt Fitting 270
      - └ Belt Loop 36
      - └ Belt Pendant 8
      - └ Decorative knob 4
      - └ Hole Protector 33
      - └ Propeller 21
    - └ Strap-End 157 (112)
  - └ Buckle 269 (37)
    - └ Decorative Disc 20
  - └ Garment 14 (216)
  - └ Garter Set for Leg Bindings 5 (33)
    - └ Hair clasp 8
    - └ Hairpin 6
  - └ Jewellery 31 (4,205)
- └ Building Component 3 (60)
- └ Coins 24 (89)
- └ Container 6 (1,574)
- └ Cult Object 5 (485)
- └ Equipment 48 (2,358)
- └ Fabrics 6 (1)
- └ Grave Component 15 (138)
- └ Toiletries 0 (203)
  - └ unidentified 311
- └ Varia 539 (624)
- └ WeaponsArmourRiding 1 (1,035)



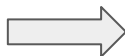


# Customizable Types

Artifact

Type to search

- Accessories 177 (6,094)
  - Bag fastener 4
  - Bells 38
- Belts 85 (1,123)
  - Belt Buckle 290 (192)
  - Belt Fitting 270
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- Grave Component 15 (138)
- Toiletries 0 (203)
- unidentified 311
- Varia 539 (624)
- WeaponsArmourRiding 1 (1,035)



THANADOS Source Event Actor Place Artifact

Artifact > + Artifact

Name \*

Type

Animals

Botany

Case Study

Color

Count

Dimensions

Kettchen und Halbmonde

Material

Position of Find in Grave

Stylistic Classification

TexTechTypology

TexTech Value Types

Owned by

Date

Description

Artifact

Type to search

- Accessories
  - Bag fastener
  - Bells
- Belts
  - Belt Buckle
  - Belt Fitting
  - Belt Loop
  - Belt Pendant
  - Decorative knob
  - Hole Protector
  - Propeller
  - Strap-End
- Buckle
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- Jewellery
- Building Component
- Coins
- Container
- Cult Object
- Equipment
- Fabrics
- Grave Component
- Toiletries
- unidentified
- Varia
- WeaponsArmourRiding

<https://thanados.openatlas.eu/insert/artifact#>



# Customizable Types

- Value types
  - Material composition
  - Results of isotopic analyses
  - Dimensions

**THANADOS** Source Event Actor Place **Artifact** Reference Types

Artifact > + Artifact

Name \* Find 001

Type Belt Fitting

Animals

Botany

Case Study

Color

Count  >

Dimensions  >

Kettchen und Halbmonde


Material  ▾

- > Artificial
- > Geological
- ▾ Metal 
  - Iron  weight percentage (0 = unknown)
  - ▾ Non-Ferrous Metal  weight percentage (0 = unknown)
    - Copper  weight percentage (0 = unknown)
    - Copper Alloy  weight percentage (0 = unknown)
    - Lead  weight percentage (0 = unknown)
    - > Precious Metal  weight percentage (0 = unknown)
      - Tin  weight percentage (0 = unknown)
      - Zinc  weight percentage (0 = unknown)
  - > Organic

Position of Find in Grave

Stylistic Classification

Text/Tech/Timeline





# Fuzzy Data

- 100% confidence
- Make range big enough
- Dates
  - Add exact dates or time spans
  - Ranges for beginning and end
- Location
  - Precise location or area

Date ⓘ

Hide

Begin

900

MM

DD

comment

950

MM

DD

End

1200

MM

DD

comment

1299

MM

DD



# What else?

- Add images and photos
- Add citation and related sources
- Add scientific data to features, subunits and finds
- Manual and technical documentation
- Download options and API
- Transparent workflow
- Roadmap and tickets on redmine

Home My page Projects Help

## OpenAtlas

+ Overview Activity **Roadmap** Issues Spent time News Wiki Files Settings

### Roadmap

👉 **7.6.0**

14 issues (3 closed — 11 open) 17%

Related issues

- Feature #1090: Radiocarbon Dating
- Feature #1400: Make specific types required at data entry
- Feature #1587: Link artifacts and human remains to places directly
- Feature #1641: Use acquisition in combination with artifacts
- Feature #1647: Composition of Artifacts
- Feature #1699: Manual: time span examples
- Feature #1701: API: documentation
- Feature #1736: Keep form map data after failed backend validation
- Feature #1751: Manual: add model documentation
- Feature #1778: Manual: system class and menu item entries
- Feature #1781: Import for bibliographies and editions
- Feature #1785: Forms: add places dynamically
- Feature #1788: Forms: filter invalid options
- Feature #1792: Refactoring and improvements

👉 **7.7.0**

5 issues (0 closed — 5 open) 0%

Related issues

- Feature #1541: Linking references to multiple subunits
- Feature #1648: Relative Chronological/Spatial relation between two artifacts
- Feature #1750: Linking movements with line objects, e.g. roads
- Feature #1753: Make a copy of an entry
- Feature #1770: API: using linked.art

👉 **7.8.0**

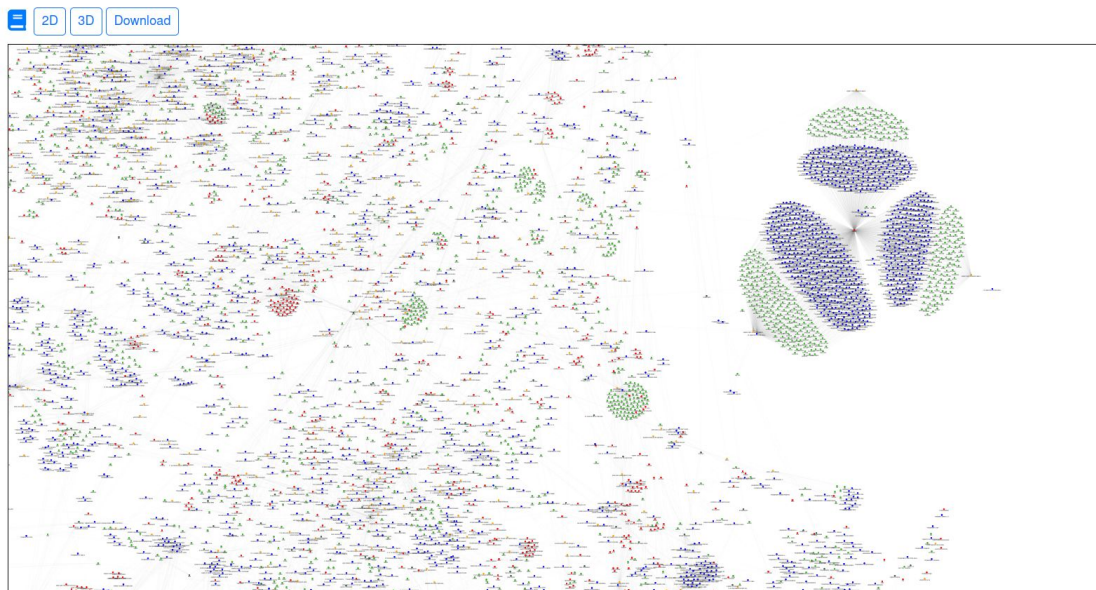
6 issues (0 closed — 6 open) 0%

Related issues



# What to do with the data?

- Network visualizations
- Data can serve as base for frontend
  - THANADOS





THANADOS Frontend

# THANADOS

The Anthropological and Archaeological Database of Sepultures

- 2019-2021: Present all published data on early medieval burial grounds from nowadays Austria online
- <https://thanados.net>



# THANADOS Frontend

## - Catalogues and tables

THANADOS

[Sites](#) [Charts](#) [Search](#) [Vocabulary](#) [About](#) [?](#)

[Oberleisenberg](#) (Site)

Length: 38.0 cm

Asimuth: 85 °

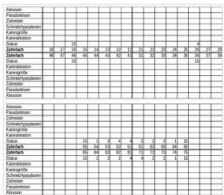


Width: 26.0 cm

Nearest Neighbour: 1.05 m

G003501

Skeleton

900 to 1100



Child aged 1,5-2,75 years (Infans I). Oriented: WNW-ESE. Viewing direction: east. Only skulls and bones of the upper body, as well as the left femur, preserved. Left femur dislocated. Upper arms straight and along the body.

Properties:

Age according to long bones: 1.75 years

Long Bones Age max.: 2.0 years

Long Bones Age min.: 1.5 years

Dental Age: 2.0 years

Dental Age max.: 2.6 years

Dental Age min.: 1.3 years

maximum age: 2.75 years

minimum age: 1.5 years

Infans I

Schmid/Kühnle: 79.5 cm

Schmid/Kühnle max.: 89.0 cm

Schmid/Kühnle min.: 70.0 cm

Supine position

Head straight:

Delta13C: -15.56 per mil

Delta15N: 10.91 per mil

Delta24S: -2.52 per mil

undetermined

Medieval

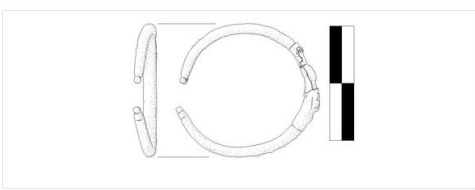

Dimensions:

Degrees: 270.0 °

Length: 29.0 cm

G003501F01

Wire Ring with Button End



Wire ring with button ends made out of brass wire. Cross-section round. Ring body might have been slightly thickened, but is to corroded to tell with certainty. Cylindrical button end on both sides. They show a slightly smaller diameter than the body of the wire ring. Wire ring and button ends are separated by a constriction. Found on the left side of the skull.

Properties:

Head left side

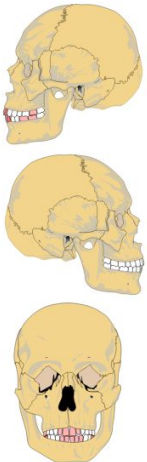
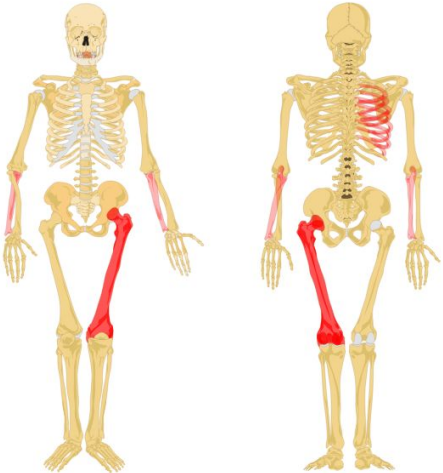
# THANADOS Frontend

- Catalogues and tables

**THANADOS** [Sites](#) [Charts](#) [Search](#) [Vocabulary](#) [About](#) [?](#)

[Hemmaberg](#) > [Grave 001](#) > [Burial 001](#) (Burial/Stratigraphic Unit)

Osteology



Calculus

[Remains 001\\_12](#)  
Skeleton > Cranium > Dentition > Maxilla > MAX Second Molar (M2) > Deciduous: left  
Calculus

[Remains 001\\_20](#)  
Skeleton > Post Cranium > Lower Body > Lower Limbs > Femur: left  
New Bone Formation

[Remains 001\\_21](#)  
Skeleton > Post Cranium > Upper Body > Thorax > Ribs > R03-10: right  
A right rib end shows flaring and deformation, likely related to a healed fracture of the bone.  
Deviant shape   Deviating thickness   Healed

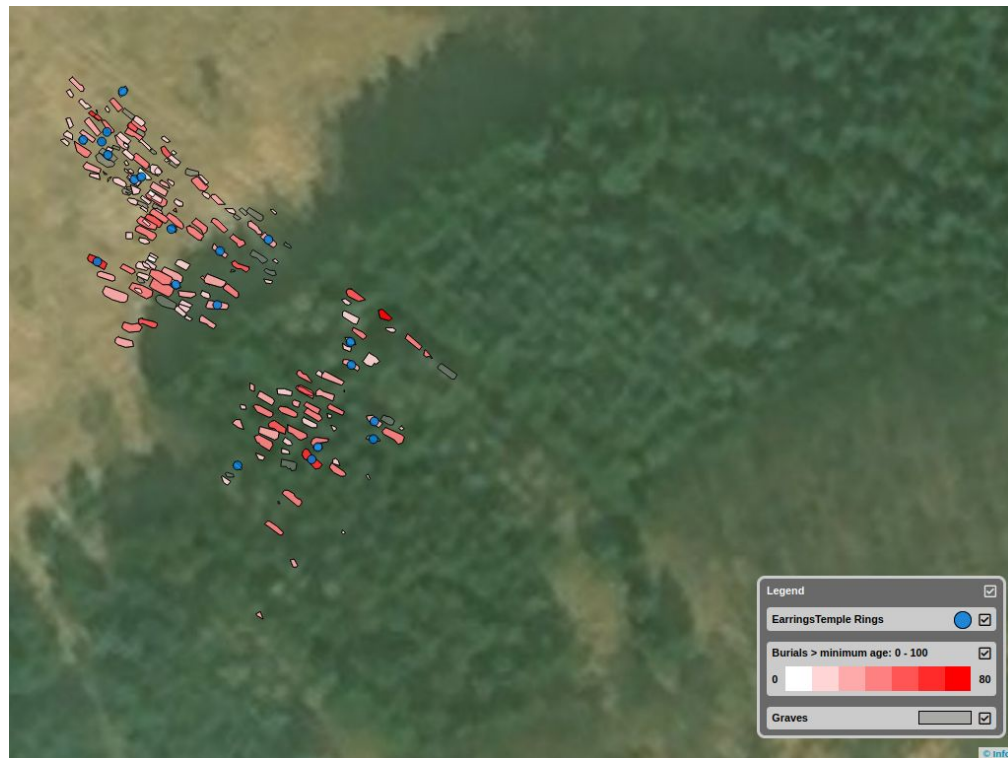




- Interactive maps and queries

# THANADOS Frontend

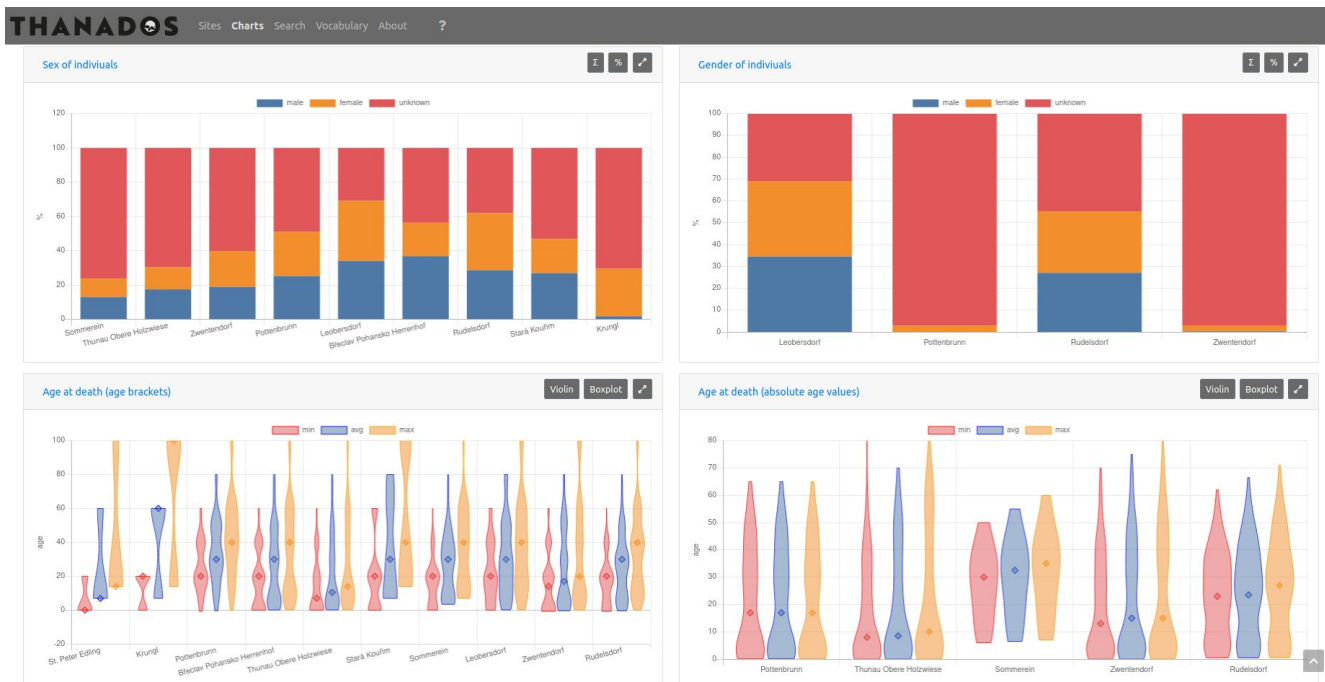
- Interactive maps and queries





# THANADOS Frontend

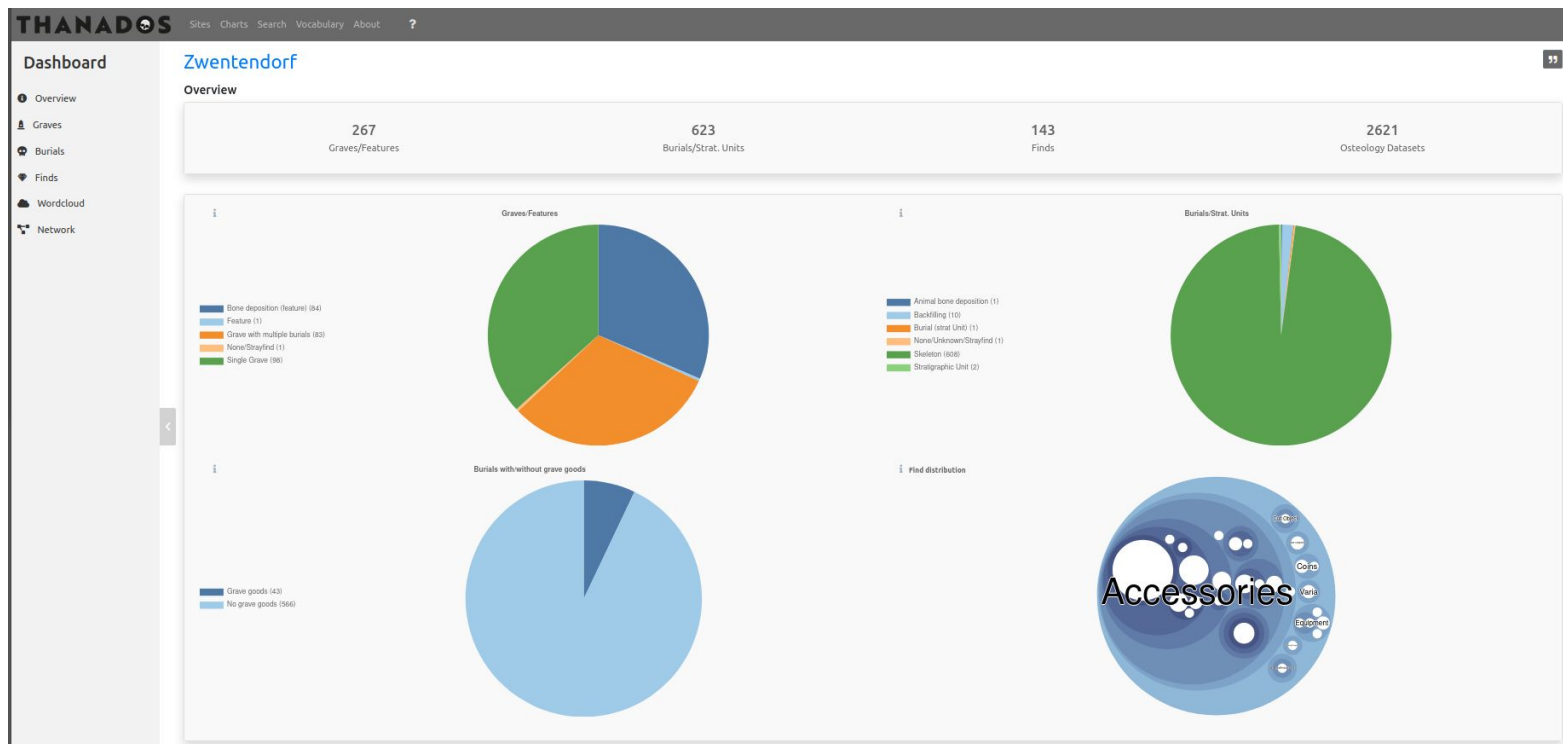
## - Dashboards





# THANADOS Frontend

## - Dashboards





## Upcoming

- Tool for anthropological analyses
- More convenient way to track 14C dates
- Track kinship (aDNA)
- General frontend for all projects
- New release monthly





Thank You for Your Kind  
Attention