OpenAtlas

A Database System for the Humanities and Beyond

CC-BY-SA 4.0

Alexander Watzinger, Bernhard Koschicek-Krombholz, Andreas Olschnögger, Nina Richards
ACDH-CH Research Lunch, 25. October 2022

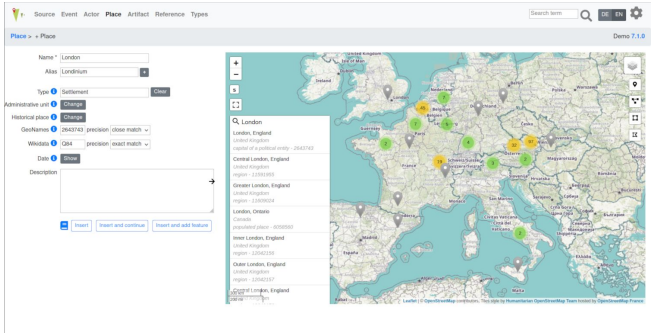
OpenAtlas – Alexander Watzinger (Alex)

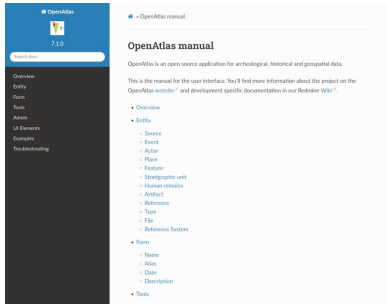
INDIGO workshop 2021

- Lead developer of OpenAtlas
- Since 2017 at the ACDH-CH
- Loves open source and scientific projects

About OpenAtlas

- Project website: https://openatlas.eu
- Initiated about 10 years ago by Stefan Eichert
- Mainly developed at the ACDH-CH
- Open source, browser based database software
- Acquire, edit and manage research data





OpenAtlas Collaborations

- With projects from all fields of the humanities
- Mostly historical, archaeological and prosopographic projects
- A lot of synergies between the projects

MAMEMS

indigo

connec

APPROACHING BYZANTIUM

Moving Byzantium

MEDCON

DPP Digitising Patterns of Power

OpenAtlas Team


CC-BY 4.0, Sandra Lehecka

Stefan Eichert
Idea, Concept and Data Modelling
stefan.eichert@nhm-wien.ac.at

Stefan is the the initiator and master mind behind the OpenAtlas project. His main research fields are Early Medieval archaeology and history as well as computer applications in archaeology and digital humanities.


CC-BY 4.0, Sandra Lehecka

Bernhard Koschiček-Krombholz
Software Development, API
bernhard.koschicek-krombholz@oeaw.ac.at

Bernhard is currently developing our API and studies Computer Sciences as well as History. His research interests include computer security, Python, digital preservation, historical geography, GIS, medieval and military history.


CC-BY 4.0, Andreas Olschnögger

Andreas Olschnögger
Frontend Development
andreas.olschnoegger@oeaw.ac.at

Andi is a frontend developer and studies computer science at the Technical University of Vienna. He mainly develops with VueJs and is also interested in UX design to make technology more accessible.


CC-BY 4.0, Jan Belik

Veronika Gründhammer
Project Administration
veronika.gruendhammer@oeaw.ac.at

Veronika provides essential support for cooperations in her role as project officer at the ACDH-CH.


CC-BY 4.0, Sandra Lehecka

Alexander Watzinger
Lead Developer and Concept
alexander.watzinger@oeaw.ac.at

Alex is the lead developer of OpenAtlas and has a special interest in data modeling and scientific web applications. His favorite tools are Python, PostgreSQL, Linux and open source software in general.


CC-BY 4.0, Jan Belik

Nina Richards
Bioarchaeological Expertise
nina.richards@oeaw.ac.at

Nina is an archaeologist and anthropologist, with a focus on Early Medieval burial grounds. With her expertise she provides essential support planning and implementing archeological, anthropological and scientific modules in OpenAtlas.


CC-BY 4.0, Moritz Großfurtner

Moritz "Mocca" Großfurtner
Frontend Development
moritz.großfurtner@oeaw.ac.at

Mocca is a frontend developer for OpenAtlas. He's currently studying computer science at the TU Vienna and interested in design that is useful and fun to use, be that software or real life objects.


CC-BY 4.0, Sandra Lehecka

Jan Belik
Logo Design and Design Consulting
buero@janbelik.com

Jan is a freelance graphic designer, illustrator and art director at janbelik.com in Vienna, Austria. He has plenty of experience working with local as well as international brands and has created a range of OpenAtlas project logos.

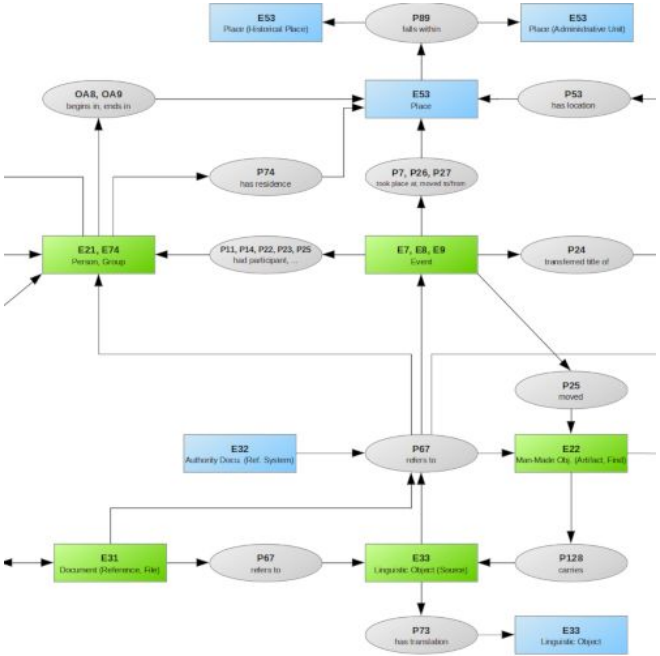
Contributors

These people supported us in many different ways. Our thanks goes to all of them.

Aleksandra Apic
Asil Çetin
Britta Breuers
Christof Rauchenberger
Christoph Hoffmann
Dalibor Pančić
Daniel Kittel
Ekaterini Mitsiou
Eugen Hotwagner
Johannes Preiser-Kapeller
Judith Pucher
Katharina Winckler
Klaus Illmayer
Laura Kremser
Ludwig Maximilian Breuer
Mihailo Popović
Peter Andorfer
Petra Heinicker
Roland Filzwieser
Sandra Lehecka
Saranya Balasubramanian
Sebastian Majstorovic
Semra Kilic-Dinler
Seta Štuhec
Silvia Gómez-Senovilla
Stefan Probst

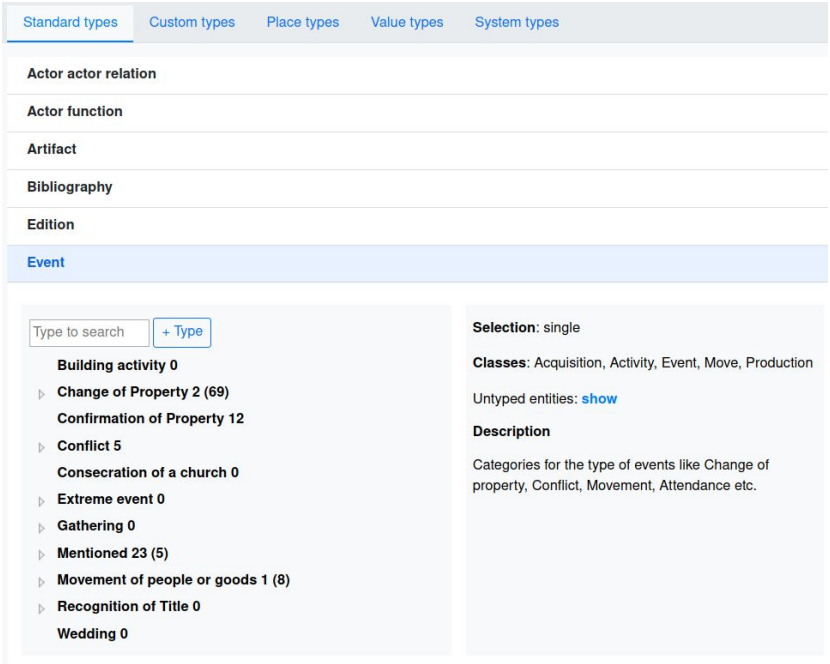
Model - CIDOC Conceptual Reference Model

- International standard (ISO)
- Developed by CIDOC CRM Special Interest Group
- Specifies classes for entities like actor, source, event, place and rules how to link them
- Stored in an object oriented network



Data enrichment with types and linked open data

- Standard types
- Custom types
- Value types
- Linked open data
  - Wikidata
  - GeoNames
  - Custom, e.g. Viaf, GND



OpenAtlas Development

- Solely open source technology
- One release about every month
- Close cooperation with users
- High quality
  - Coding standards
  - Tests and coverage
  - Bugs have the highest priority
  - Tools to test data integrity

Python is an interpreted, high-level, general-purpose programming language.
Website: https://www.python.org
Licence: Python Software Foundation License

Flask is a micro web framework, written in Python, with the ability to scale up to complex applications.
Website: https://palletsprojects.com/p/flask/
Licence: BSD

PostgreSQL is a free and open source relational database management system.
Website: https://www.postgresql.org/
Licence: PostgreSQL License

PostGIS is a spatial database extender for PostgreSQL and adds support for geographic objects.
Website: https://postgis.net
Licence: GPL 2 or later

Bootstrap is a free and open source CSS framework.
Website: https://getbootstrap.com/
Licence: MIT

Leaflet is an open source JavaScript library used to build web mapping applications.
Website: https://leafletjs.com/
Licence: BSD-2-Clause

Jinja is a full-featured template engine for Python with full unicode support.
Website: https://palletsprojects.com/p/jinja/
Licence: BSD

API – Bernhard Koschiček-Krombholz

- Studied
  - Computer Science at Applied University Technikum Vienna
  - History at University of Vienna
- First contact with OpenAtlas
  - “Digitising Pattern of Power” in 2015
  - Since 2019 developer at OpenAtlas through “THANADOS”
- Responsibilities
  - API
  - Backend development
  - Backup administrator

DPP Digitising Patterns of Power

THANADOS

API – Overview

- REST(-like) API
- Only GET, no PUT/POST/DELETE
  - Presentation sites
  - Analytical tools (GIS, Network Analysis)
- Documentation
  - Swagger: https://app.swaggerhub.com/apis/ctot-nondef/OpenAtlas/0.3
  - Redmine: https://redmine.openatlas.eu/projects/uni/wiki/API
  - Manual (will come)
- Versions
  - 0.2 deprecated/discontinued
  - 0.3 stable
  - 1.0.0 in development

API – Endpoints 1/2

- Entities
  - ID
  - CIDOC class
  - Menu item
  - OpenAtlas class
  - Linked to entity
  - Linked to type, also including subtypes

- Formats for Entities
  - Linked Places Format (LPF)
    - https://github.com/LinkedPasts/linked-places-format
  - RDF
    - N3, Turtle, XML, NT
  - Linked Open Usable Data (LOUD)
    - https://linked.art/
  - GeoJSON

API – Endpoints 2/2

- Types
  - Full hierarchy
  - List
- Administrative data
  - OpenAtlas classes
  - Content
  - Count of entities sorted by class
- Image
  - display (resized) image
- Special endpoints
  - Export database dump
  - Geometries (e.g. for leaflet or GIS)
  - Subunits (THANADOS)

API – Parameters

- Options
  - Download
  - Count
  - Format
  - Export
- (Seek) Pagination
  - Page
  - First
  - Last
  - Limit
  - Sort
  - Column
- Manipulate output format
  - Show
  - Relation type
- Filter
  - Type
  - Search
- Special
  - Lang
  - Geometry
  - Image size

API – Usage Examples

- {domain} / api / ({version}) / {endpoint} ? {parameter} & {parameter}

- https://demo-dev.openatlas.eu/api/0.3/entity/10608

- https://demo-dev.openatlas.eu/api/system_class/**person**?**type=25**&**sort=desc**&**column=id**&**limit=50**&**format=lp**

- https://demo-dev.openatlas.eu/api/system_class/**person**?search={"**typeID**":[{"operator":"**equal**","values":[**25**,**8247**],"logicalOperator":"**and**"}],"**entityName**":[{"operator":"**like**","values":["**Costa**","**Costo**"], "logicalOperator":"**or**"}]}

API – Perspective

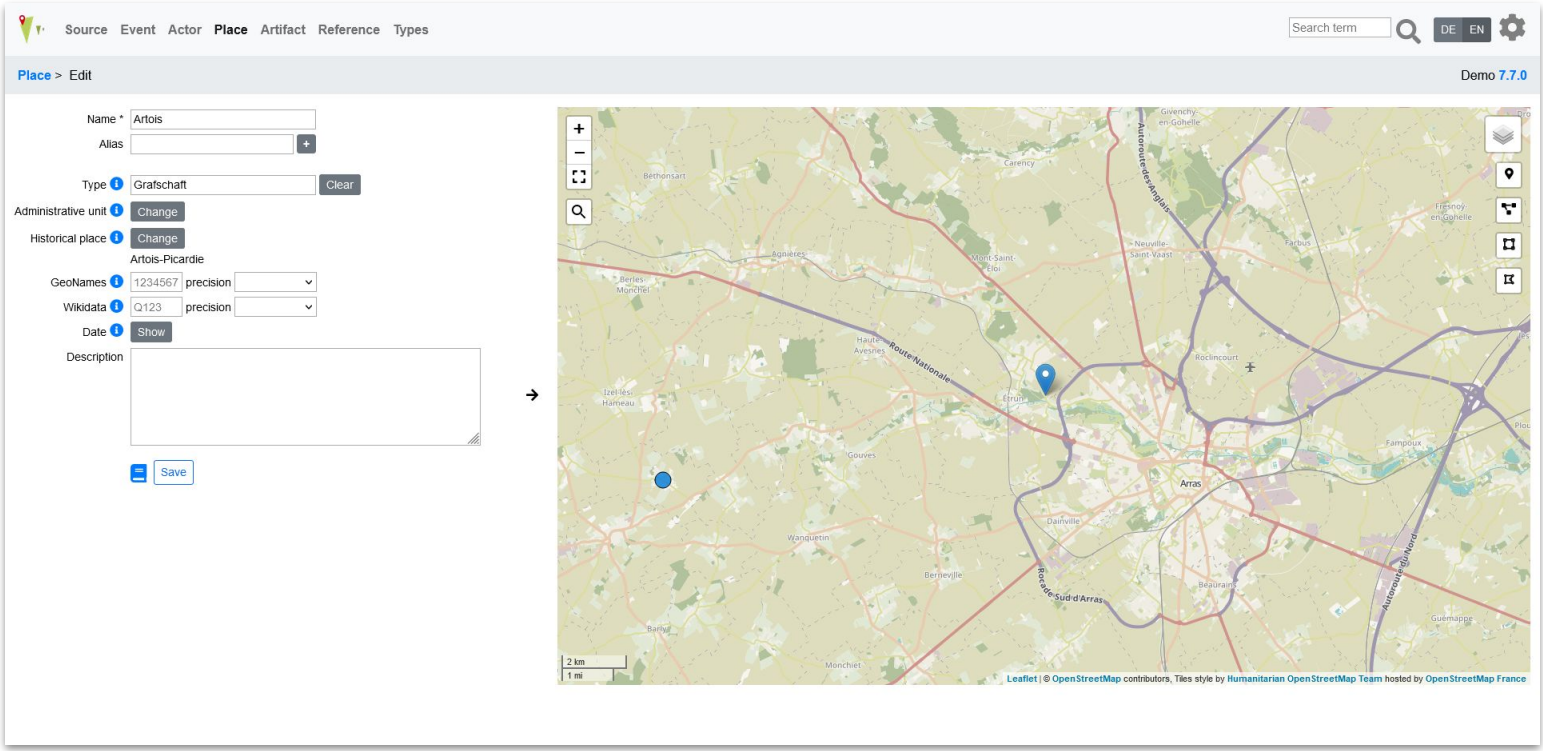
- Fetching data from ARCHE
- New major version 1.0.0
- Implement LOUD

Front End

- Andreas Olschnögger
  - Studies
    Bachelorstudium Software & Information Engineering
    Masterstudium Software Engineering & Internet Computing
  - since January 2022 Developer for OpenAtlas

- Moritz Großfurtner
  - Studies
    Bachelorstudium Medieninformatik und Visual Computing
  - since October 2022 Developer for OpenAtlas

Front End – User Interface for data entry



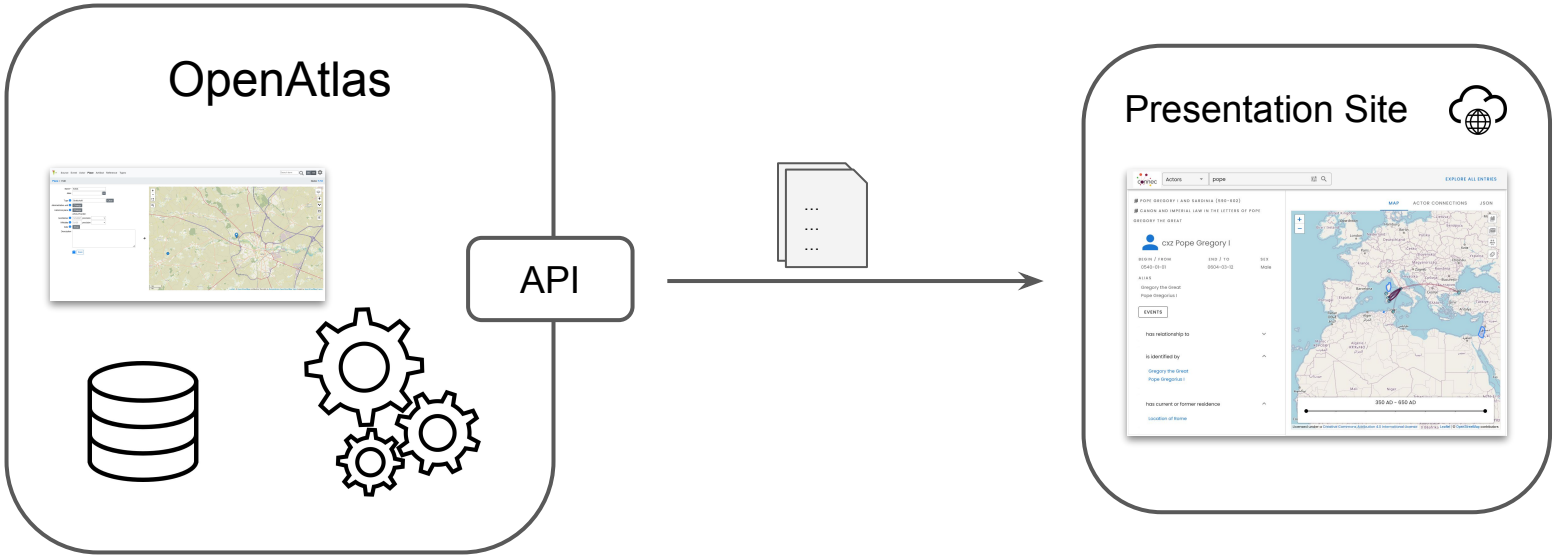
Leaflet

Flask

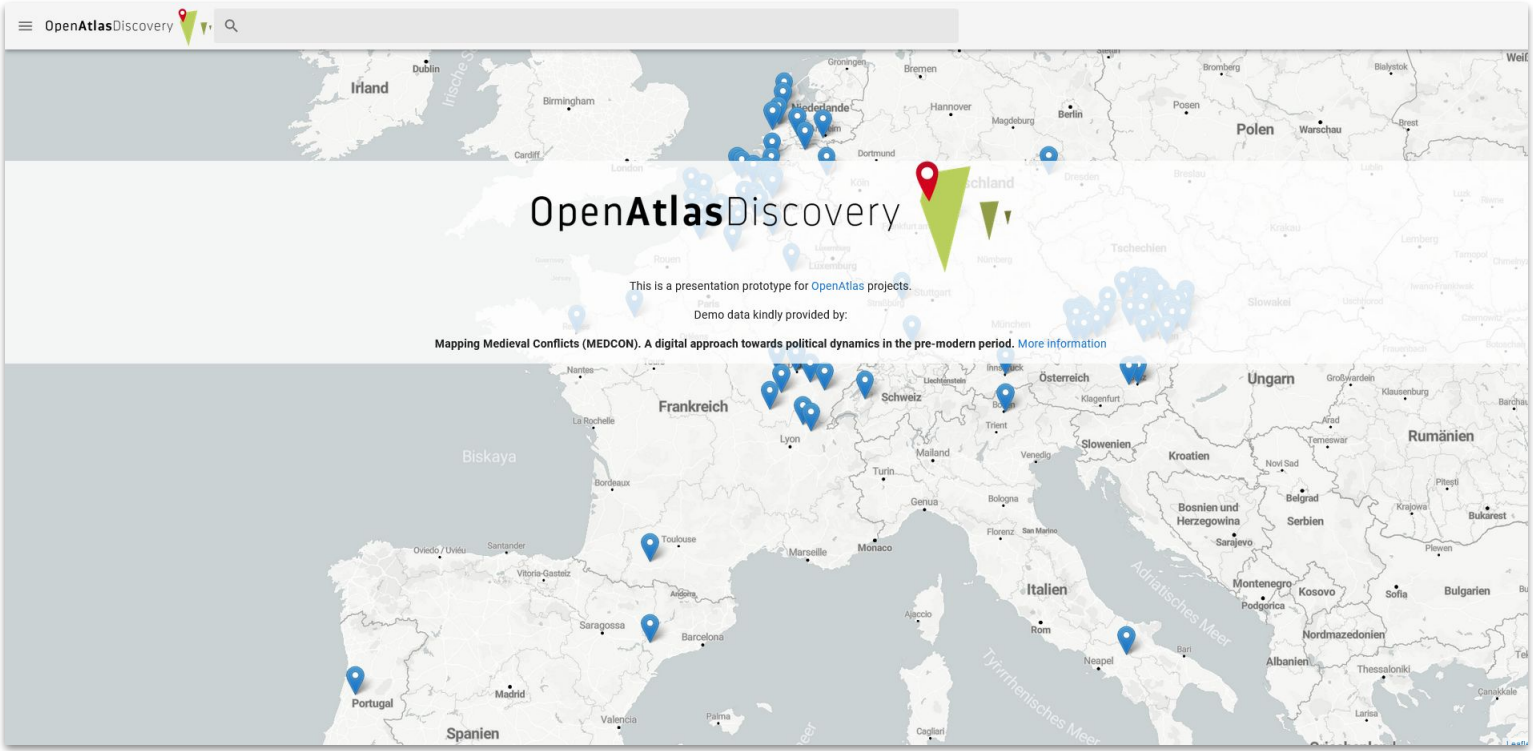
Jinja

Bootstrap

Front End – Presentation Website



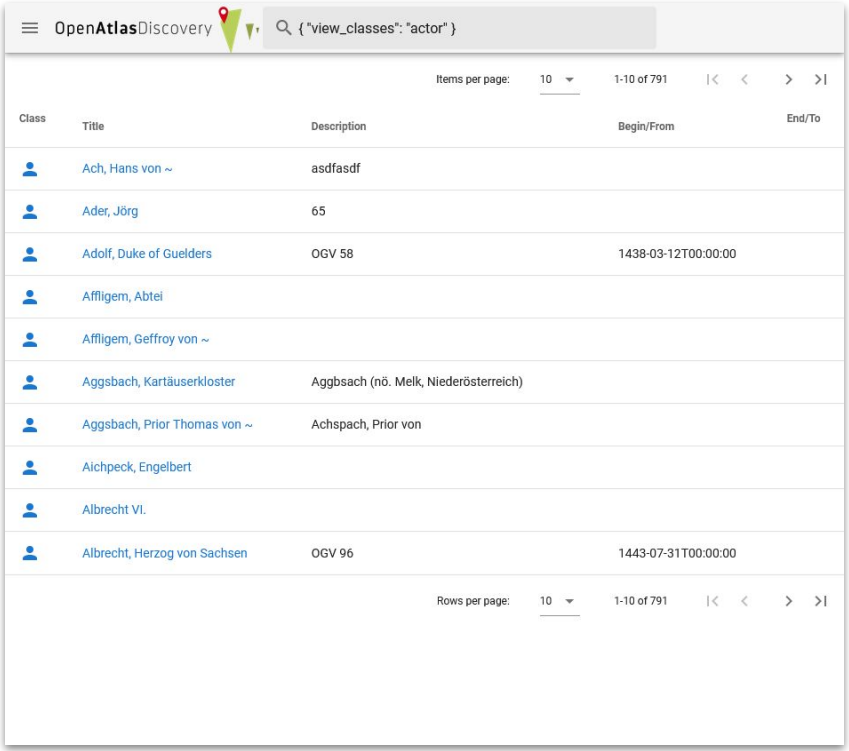
Front End – OpenAtlasDiscovery

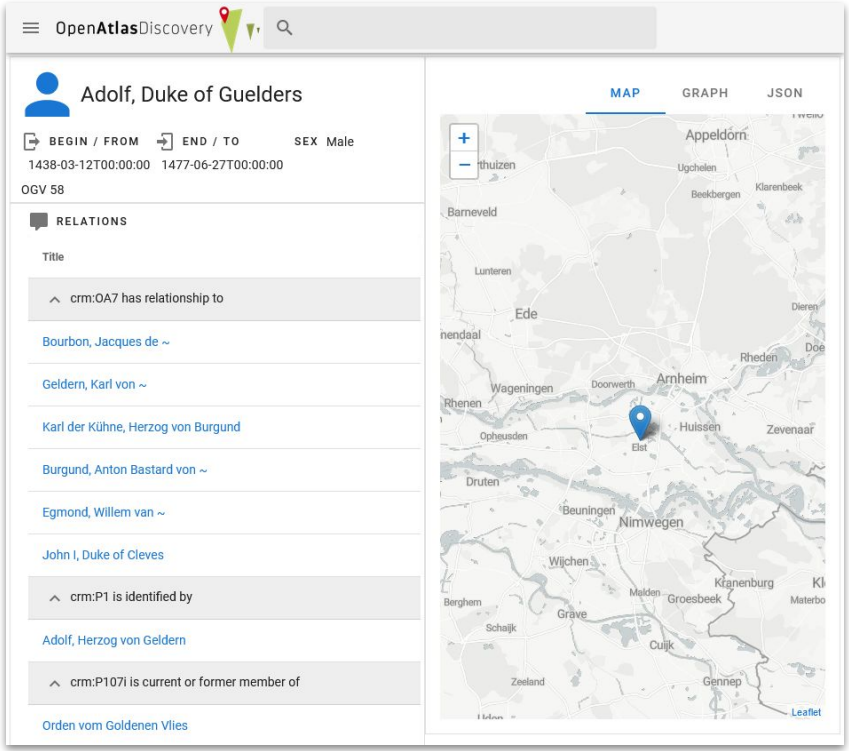


developed by Christoph Hoffmann

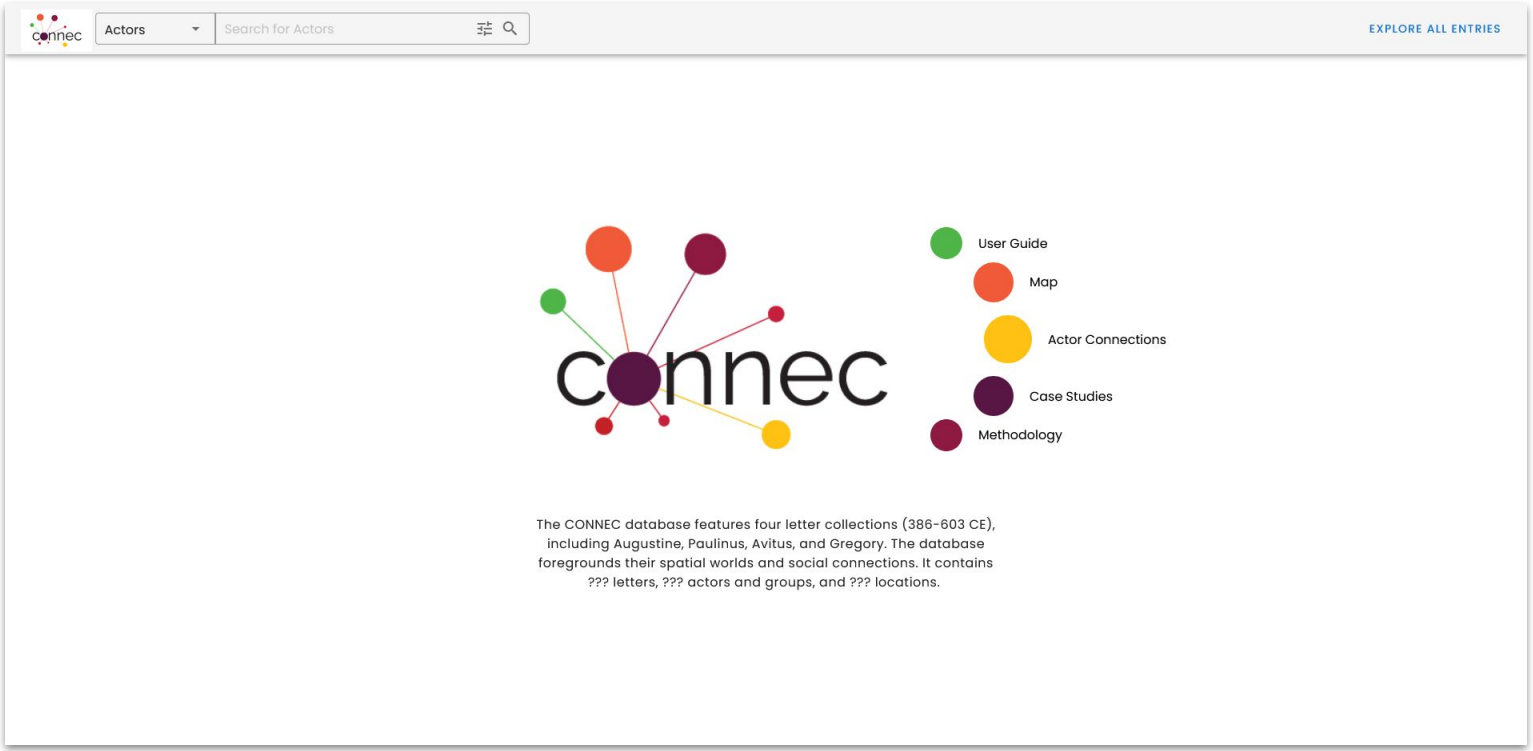
Leaflet
Vuetify
NUXTJS
Vue.js

Front End – OpenAtlasDiscovery





Front End – Connec



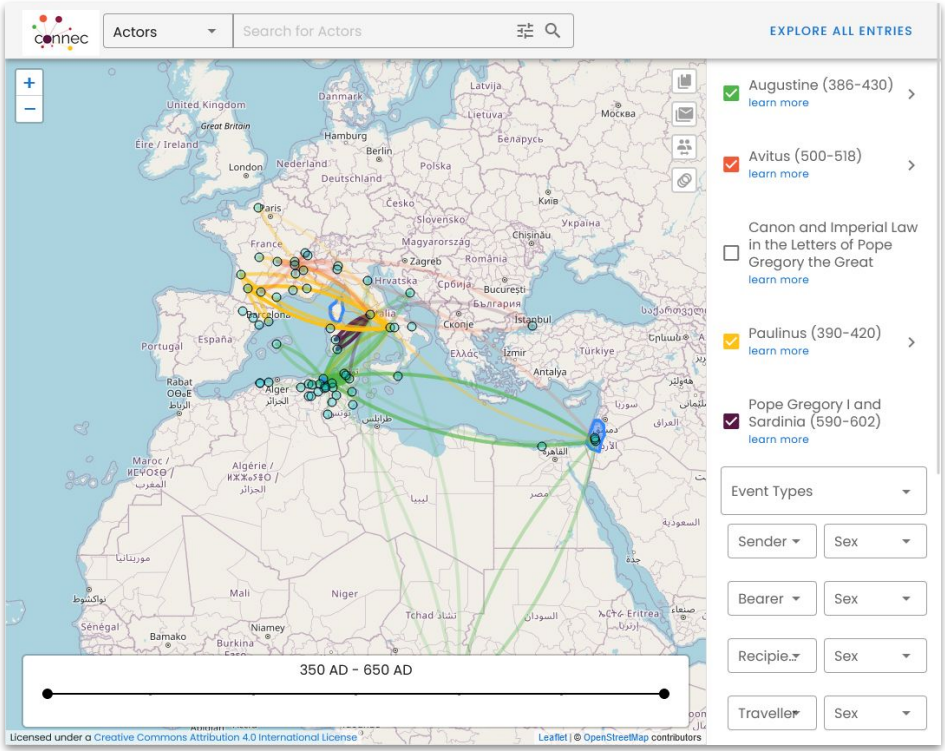
Leaflet

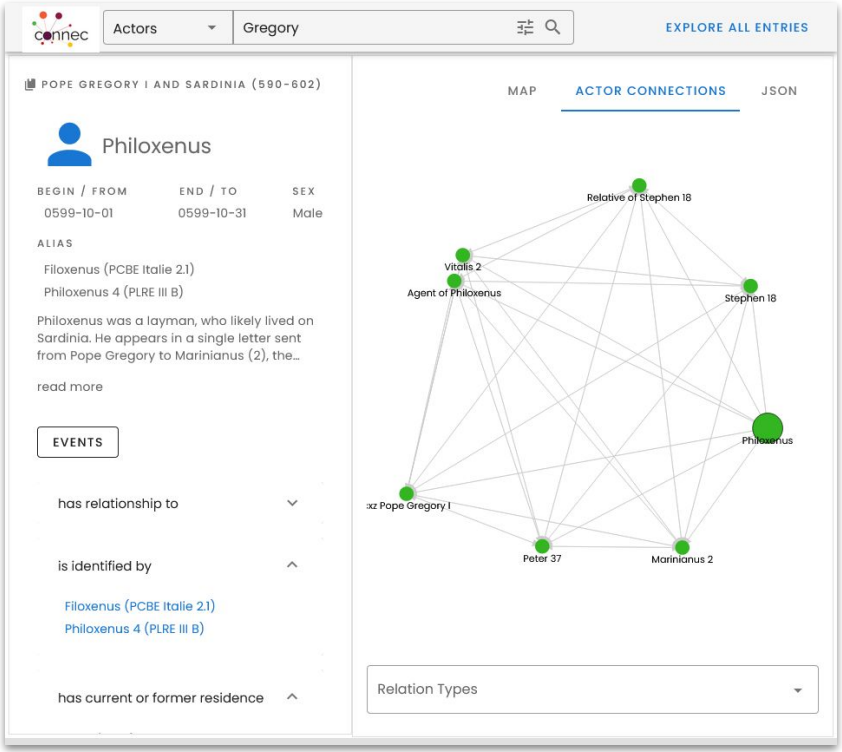
Vuetify

NUXTJS

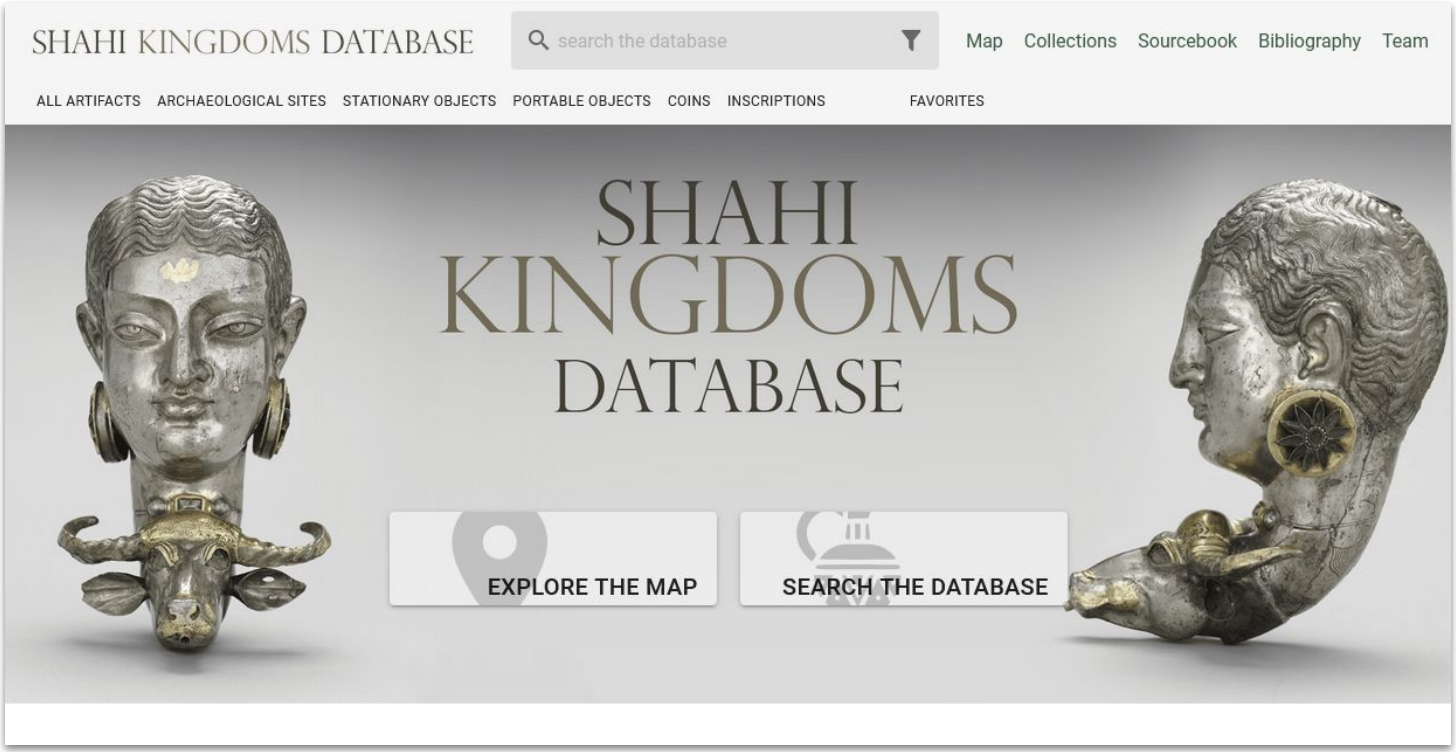
Vue.js

Front End – Connec



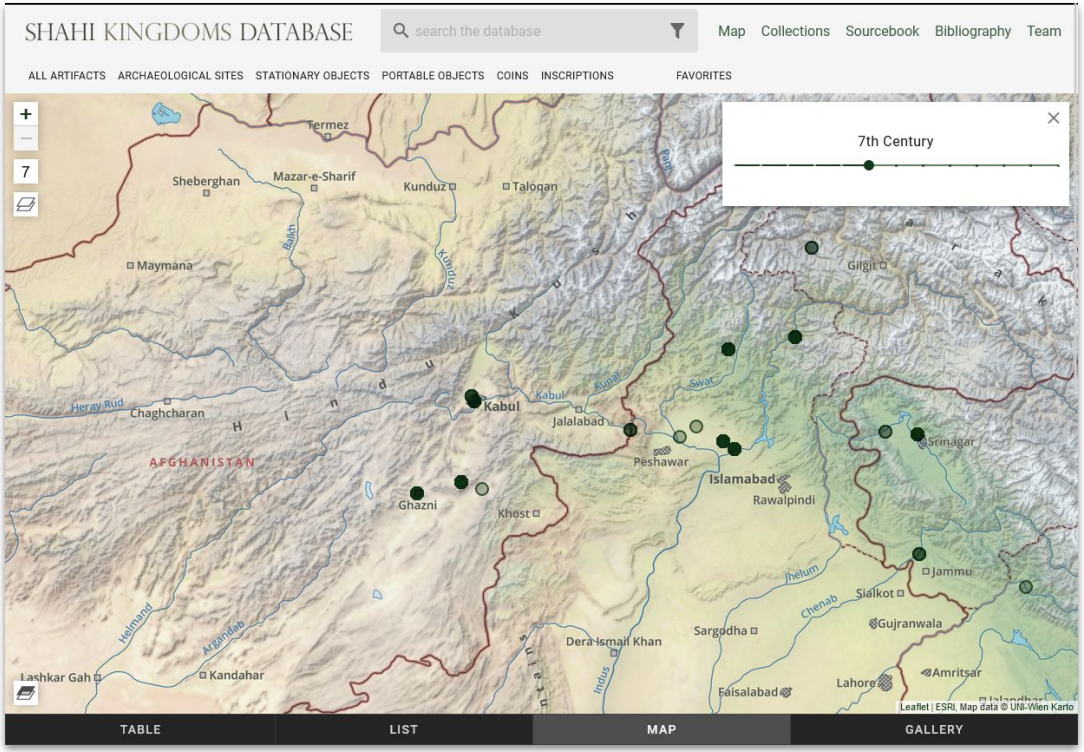


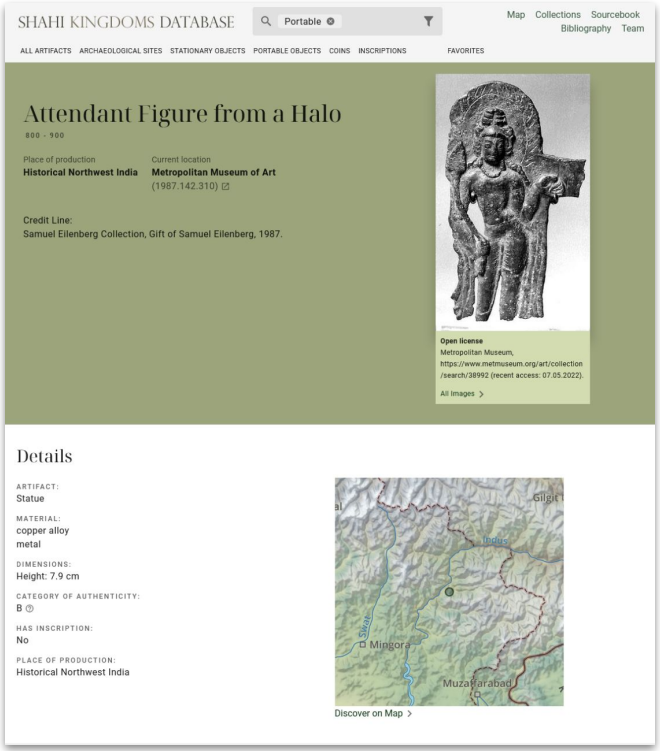
Front End – Shahi Kingdoms Database



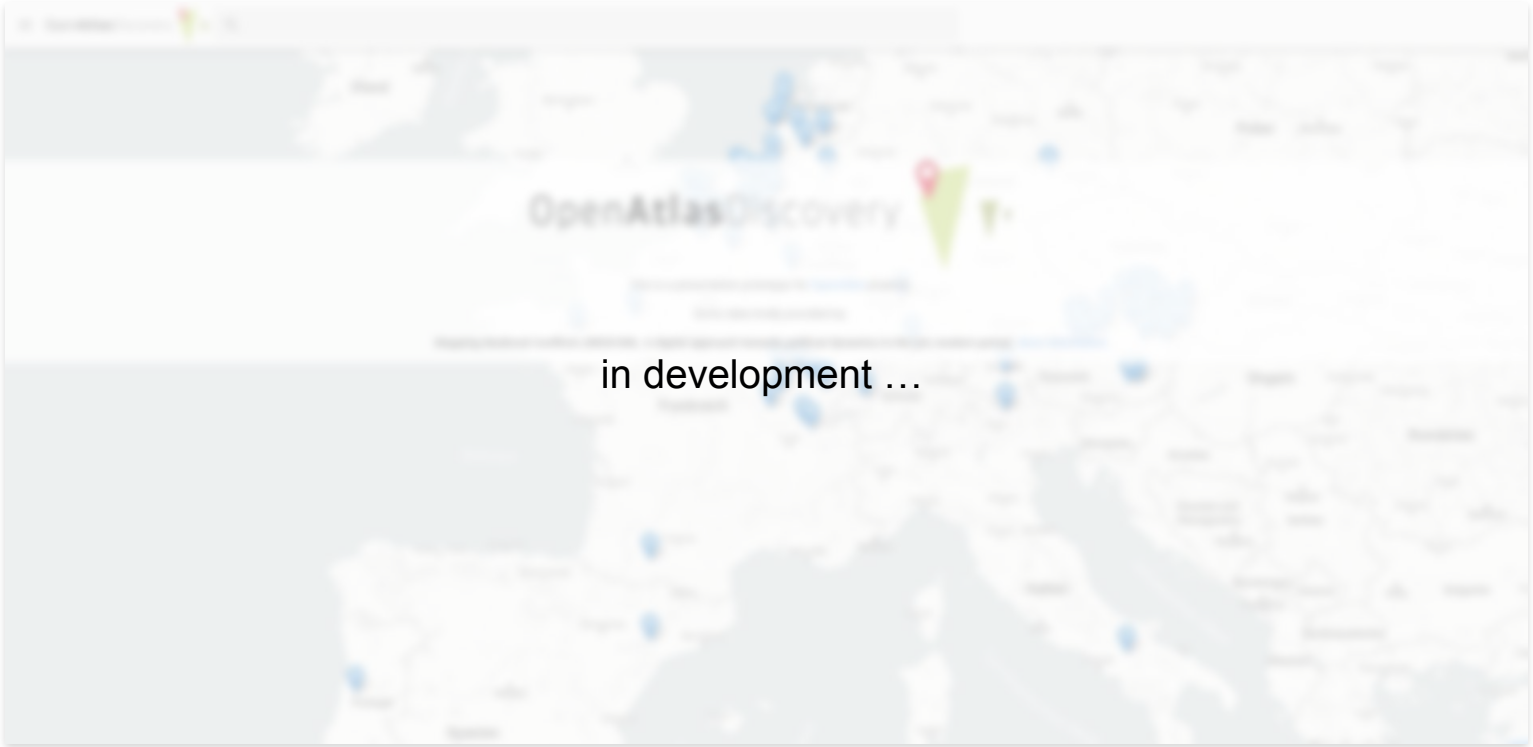
Leaflet
Vuetify
NUXTJS
Vue.js

Front End – Shahi Kingdoms Database





Front End – OpenAtlasDiscovery 2.0



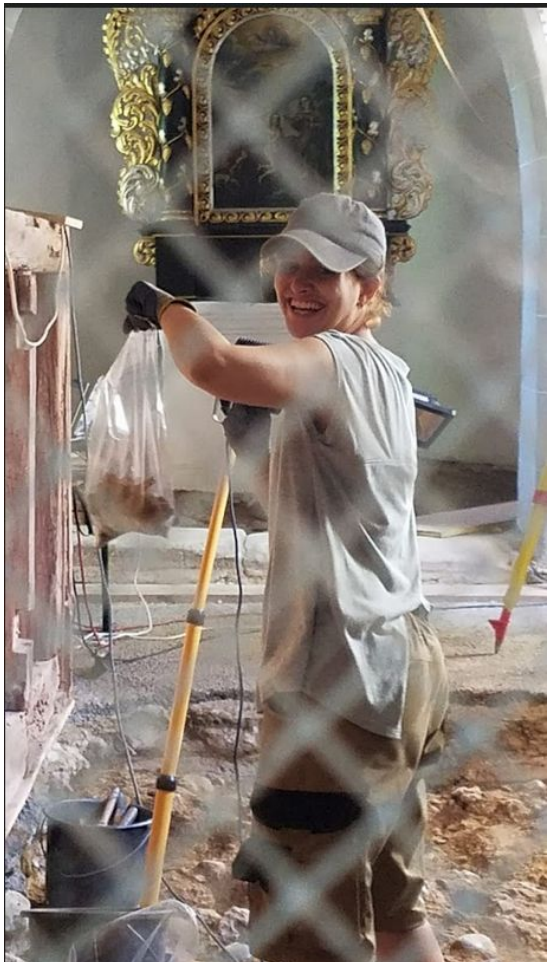
Leaflet
VUETIFY
Content
Nuxt3
Vue.js

THANADOS - Nina Richards

- Studied:
  - Medieval and Modern Times Archaeology in Bamberg (DE)
  - Biology with a focus on Biological Anthropology at the University of Vienna
- Came to DH through THANADOS
- Osteoarchaeological expertise for OpenAtlas
- Involved in RELEVEN (PI: Tara Andrews) - Data modelling and archaeology of the 11th century

THANADOS

RELEVEN



THANADOS

Project:

- “go!digital next generation” call of the Austrian Academy of Sciences
- Goal: Online dissemination of all early medieval burial grounds in nowadays Austria
- Goal: State of the art presentation of the data as open access

THANADOS

Data source:

- Graves as most important source for Early Medieval Archaeology and Anthropology
- Settlements almost entirely missing
- (Published) sites between 600 and 1100 AD
- Catalogs and tables
- Translation of data into English

THANADOS

Team:

Österreichisches Archäologisches Institut

Nina Richards

Bernhard Koschicek

Alexander Watzinger

naturhistorisches museum wien

Stefan Eichert

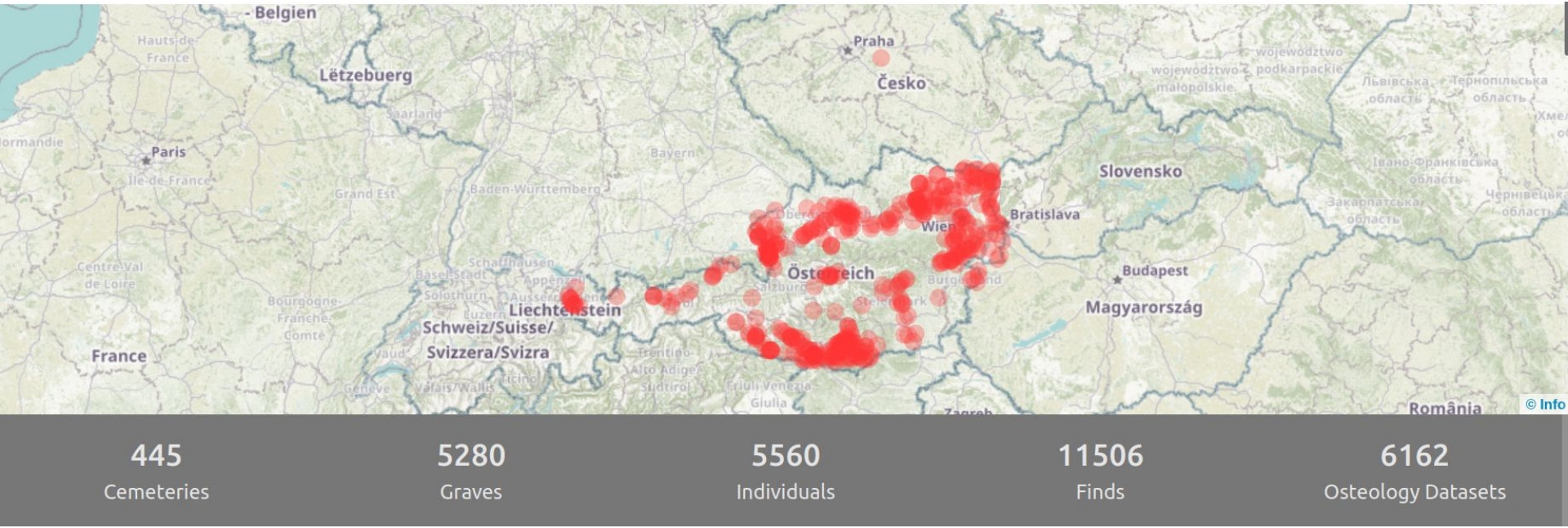
Jennifer Portschy

Roland Filzwieser

Sonja Mayer

THANADOS

Status quo:



445	5280	5560	11506	6162
Cemeteries	Graves	Individuals	Finds	Osteology Datasets

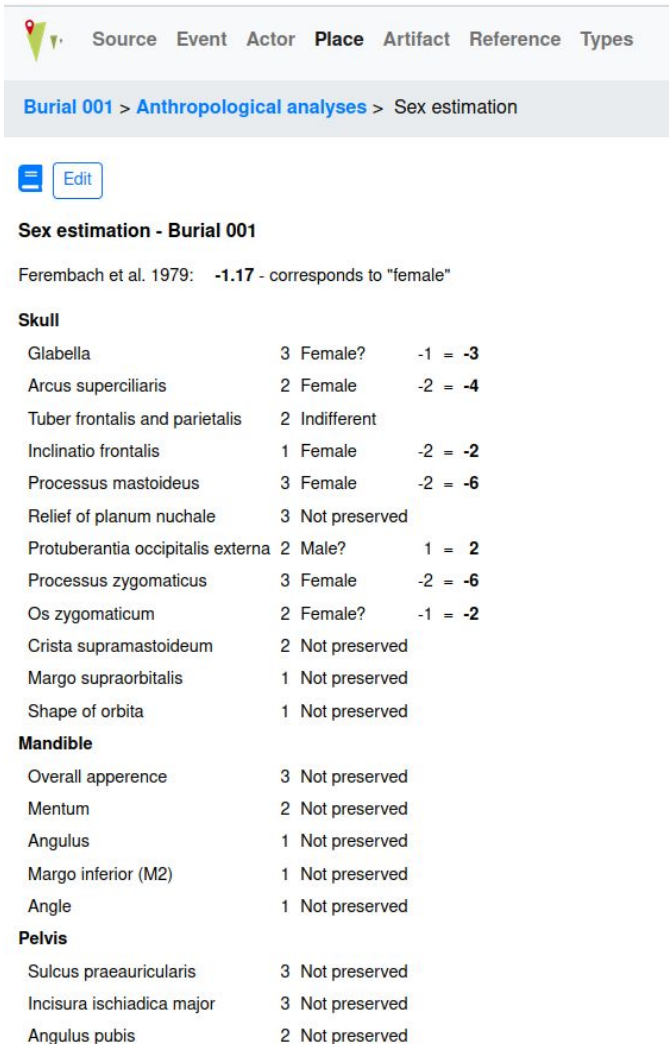
https://thanados.net/

THANADOS

Osteoarchaeological features:

- Need for an up to date way to do anthropological analyses
- Implementing those methods in OpenAtlas
- Possibility to work with projects with anthropological research questions

Sex estimation:



Conclusion - Advantages of OpenAtlas

- OpenAtlas is open source and completely based on open source software
- Data is structured according to the international standard of CIDOC CRM (v7.1)
- Actively developed with high quality standards in mind
- Emphasis on documentation and close contact with users
  - User manual: https://manual.openatlas.eu
  - Technical wiki and issue tracker: https://redmine.openatlas.eu
  - Public meeting protocols: https://redmine.openatlas.eu/projects/uni/wiki/Project_meetings
- API to connect with external systems
- Great synergies between projects using OpenAtlas
- Tested and proven in many productive systems and projects

Thank you for your kind attention!

OpenAtlas:
Web: https://openatlas.eu
GitHub: https://github.com/craws/OpenAtlas
Twitter: @OpenAtlas_eu