



OpenAtlas

A Database System for the Humanities and
Beyond

June 14th, 2023 - Bernhard Koschiček-Krombholz



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 ACDH-CH through “THANADOS”
- Responsibilities
 - API
 - Backend development
 - Server administration



THANADOS

OpenAtlas Team

Project Lead



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Idea, Concept and Data Modelling
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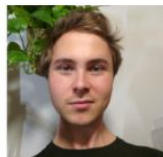
Development



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OpenAtlas

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

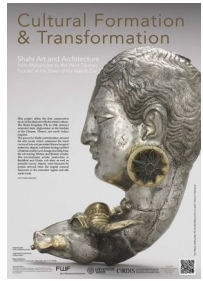


OpenAtlas Collaborations

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



THANADOS





Mission Statement

- Open source - open access



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- Transparent workflow and communication



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- Usability



Mission Statement

- Open source - open access
- Transparent workflow and communication
- High-quality data integrity and coding standards
- Usability
- Interoperable through
 - CIDOC CRM
 - API
 - FAIR principles
 - External references



Development

- Solely open source technology
- One release about every month
- Close cooperation with users
- No project branching
- 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

- REST(-like) API
- Only GET, no PUT/POST/DELETE
 - Presentation sites
 - Analytical tools (GIS, Network Analysis)
- Documentation
 - [Swagger](#)
 - [Manual](#)
- Versions
 - 0.2 discontinued
 - 0.3 stable
 - 1.0.0 white paper

Formats

- JSON
 - [Linked Places Format \(LPF\)](#)
 - [Linked Open Usable Data \(LOUD\)](#)
 - [GeoJSON](#)
- RDF
 - N3, Turtle, XML, NT

Features

- Spatial, object, actor and event centred

Features

- Spatial, Actor and Event centred
- Fully customizable type and reference system

Standard types Custom types Place types Value types System types

- Actor function
- Actor relation
- Artifact
- Bibliography
- Edition
- Event

Type to search + Type

Building activity 8

- Change of Property 5 (446)
 - Donation 446
 - Exchange 0
 - Sale 0
- Confirmation of Property 181
- Conflict 6
- Consecration of a church 0
- Extreme event 0
- Gathering 0
- Mentioned 84 (76)
- Movement of people or goods 1 (10)
- Photography 1
- Recognition of Title 0
- Wedding 0

Selection: single
Required: false (make required)
Classes: Acquisition, Activity, Creation, Event, Modification, Move, Production
Untyped entities: [show](#)

Description
Categories for the type of events like Change of property, Conflict, Movement, Attendance etc.

Event Type	Count
Change of Property	446
Mentioned	76
Building activity	10
Photography	1
Extreme event	0
Recognition of Title	0

Dimensions

 Type to search

Azimuth 0

Degrees 2,700

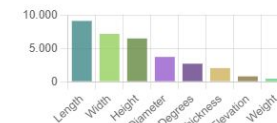
- Diameter 2,735 (983)
 - Bottom diameter 317
 - Max Diameter 321
 - Min Diameter 85
 - Top Diameter 260
- Distance 0
- Elevation 801
- Height 6,336 (150)
 - Height max 75
 - Height min 75
- Length 8,756 (356)

Classes: Artifact, Feature, Place, Stratigraphic unit

Multiple linked entities: [show](#)Untyped entities: [show](#)

Description

Physical dimensions like weight and height.



Show entriesSearch:

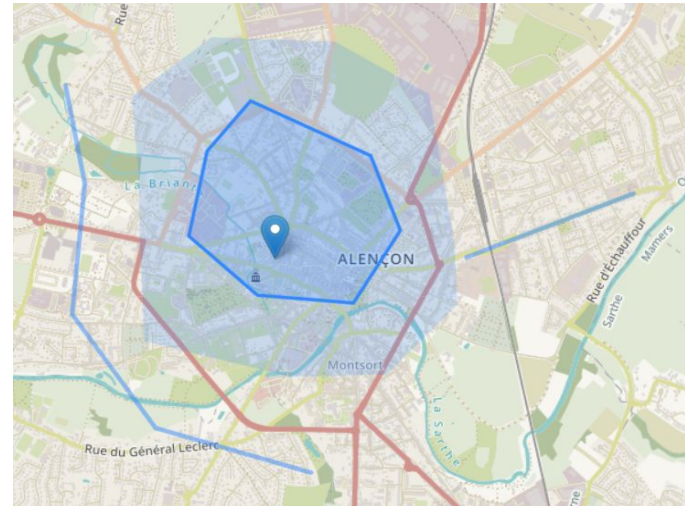
Name	Count	Website URL	Resolver URL	Example ID	Default precision	Description
AMA number	2424				exact match	Fortlaufende ...
Archaeologi...			https://diglar...	C-TX-20220...	exact match	
ArchWort	4	https://archw...	https://archw...	2873	exact match	
English Tra...	83			english name	exact match	EN
GeoNames	798	https://www....	https://www....	1234567	close match	Geographical...
German Tra...	85			Name auf De...	exact match	DE
Getty AAT	327	http://vocab....	http://vocab....	300400650	exact match	The Getty Re...
GND	4	https://gnd.n...	https://d-nb.i...	119338467	exact match	
NHMW Prae...	425			1234	exact match	Inventory Nu...
PeriodO	38	https://perio...	http://n2t.net/	p0qbh66dr9	exact match	

Showing 1 to 10 of 12 entries

Features

- Spatial, Actor and Event centred
- Fully customizable type system
- Uncertainty in space and time

Begin	1011	01	01	comment
	1020	12	31	
End	1425	08	01	destruction
	1425	10	31	



Features

- Spatial, Actor and Event centred
- Fully customizable type system
- Uncertainty in space and time
- Archaeological features
 - subunits
 - radiocarbon dating
 - sex estimation

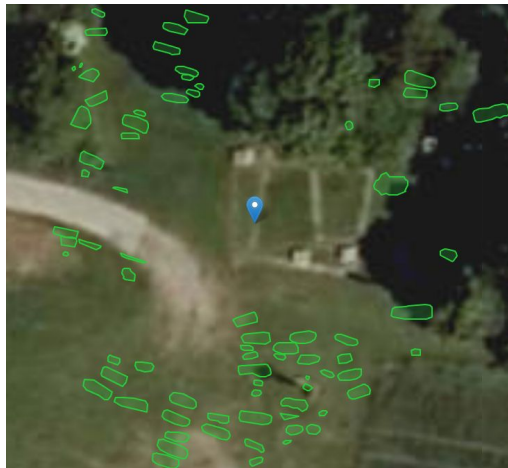
Radiocarbon dating

Laboratory ID *

Specimen ID *

Radiocarbon year *

Range *

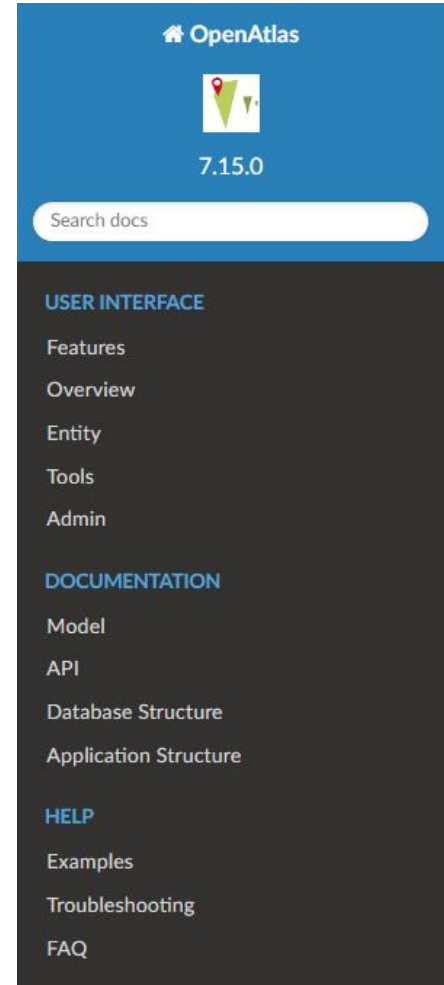


Sex estimation

Skull		
Glabella	3	Not preserved
Arcus superciliaris	2	Not preserved
Tuber frontalis and parietalis	2	Not preserved
Inclinatio frontalis	1	Not preserved
Processus mastoideus	3	Not preserved
Relief of planum nuchale	3	Not preserved
Protuberantia occipitalis externa	2	Not preserved
Processus zygomaticus	3	Not preserved
Os zygomaticum	2	Not preserved
Crista supramastoideum	2	Not preserved
Margo supraorbitalis	1	Not preserved
Shape of orbita	1	Not preserved
Mandible		
Overall appearance	3	Not preserved
Mentum	2	Not preserved
Angulus	1	Not preserved

Features

- Spatial, Actor and Event centred
- Fully customizable type system
- Solutions for uncertainty in space and time
- Archaeological features
 - subunits
 - radiocarbon dating
 - sex estimation
- Extensive (up-to-date) [user manual](#)



The screenshot shows the OpenAtlas web application interface. At the top, there is a blue header with the OpenAtlas logo and the version number 7.15.0. Below the header is a search bar labeled "Search docs". The main content area is dark grey and contains a navigation menu with the following sections:

- USER INTERFACE**
 - Features
 - Overview
 - Entity
 - Tools
 - Admin
- DOCUMENTATION**
 - Model
 - API
 - Database Structure
 - Application Structure
- HELP**
 - Examples
 - Troubleshooting
 - FAQ

Features

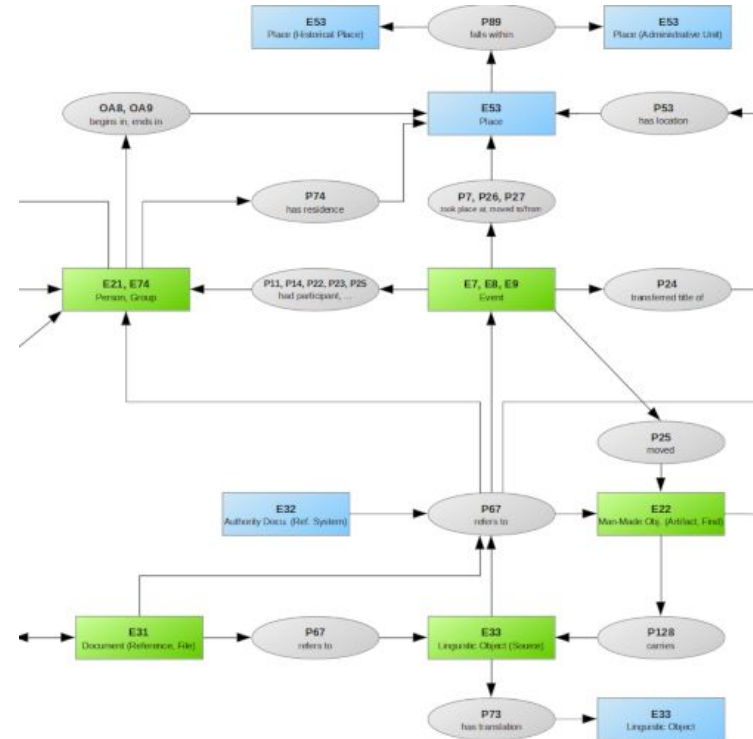
- Spatial, Actor and Event centred
- Fully customizable type system
- Solutions for uncertainty in space and time
- Archaeological features
 - subunits
 - radiocarbon dating
 - sex estimation
- Extensive (up-to-date) [user manual](#)
- User management

	Admin	Manager	Editor	Contributor	Readonly	Guest
Browse data	yes	yes	yes	yes	yes	
Edit data	yes	yes	yes	yes*		
Edit types	yes	yes	yes			
Add custom types	yes	yes				
Add reference systems	yes	yes				
Import/Export	yes	yes				
User management	yes	yes				
System settings	yes					



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



CIDOC CRM example



E18 Mes Aynak



E18 Mes Aynak

P53 current or
former location



E53 Location

**E55 Type**

- Settlement
- Collection
- Kingdom
- ...

P2 has type



E18 Mes Aynak

P53 current or
former location



E53 Location



E22 Artifact



Buddha



Bowl



Coin

P46 composed of



E18 Mes Aynak

P2 has type



E55 Type

- Settlement
- Collection
- Excavation
- ...

P53 current or former location



E53 Location



E18 Feature

E22 Artifact



Buddha



Bowl

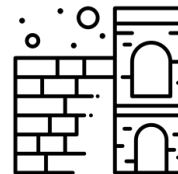


Coin

P46 composed of



Monastery



Walls

P2 has type



E18 Mes Aynak



E55 Type

- Settlement
- Collection
- Excavation
- ...

P53 current or former location



E53 Location



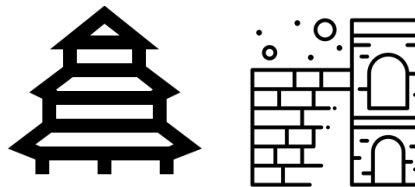
E18 Feature

E22 Artifact



Buddha Bowl Coin

P46 composed of



Monastery Walls

P2 has type



E18 Mes Aynak

P67 refers to



E31 References



E55 Type

- Settlement
- Collection
- Excavation
- ...

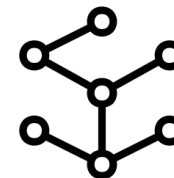
P53 current or former location



E53 Location



E31 Image files



E32 Authority Document

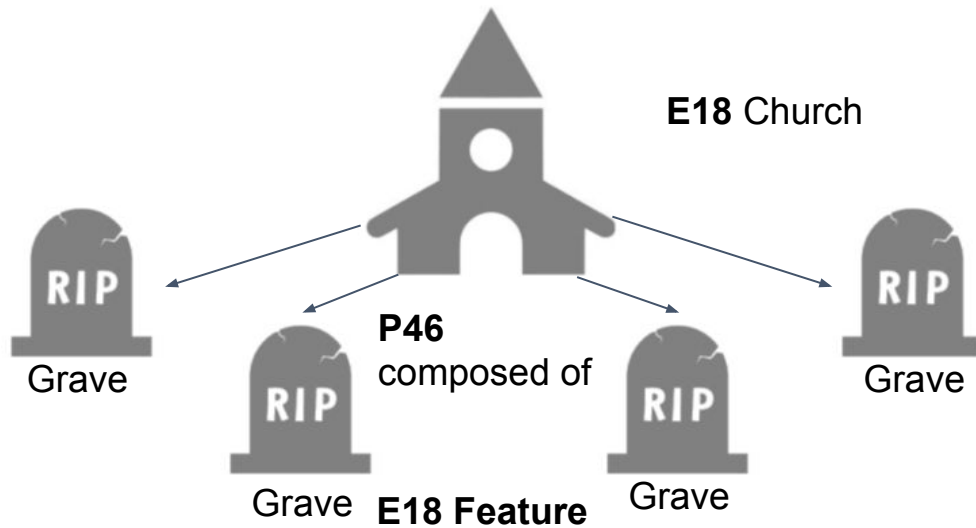


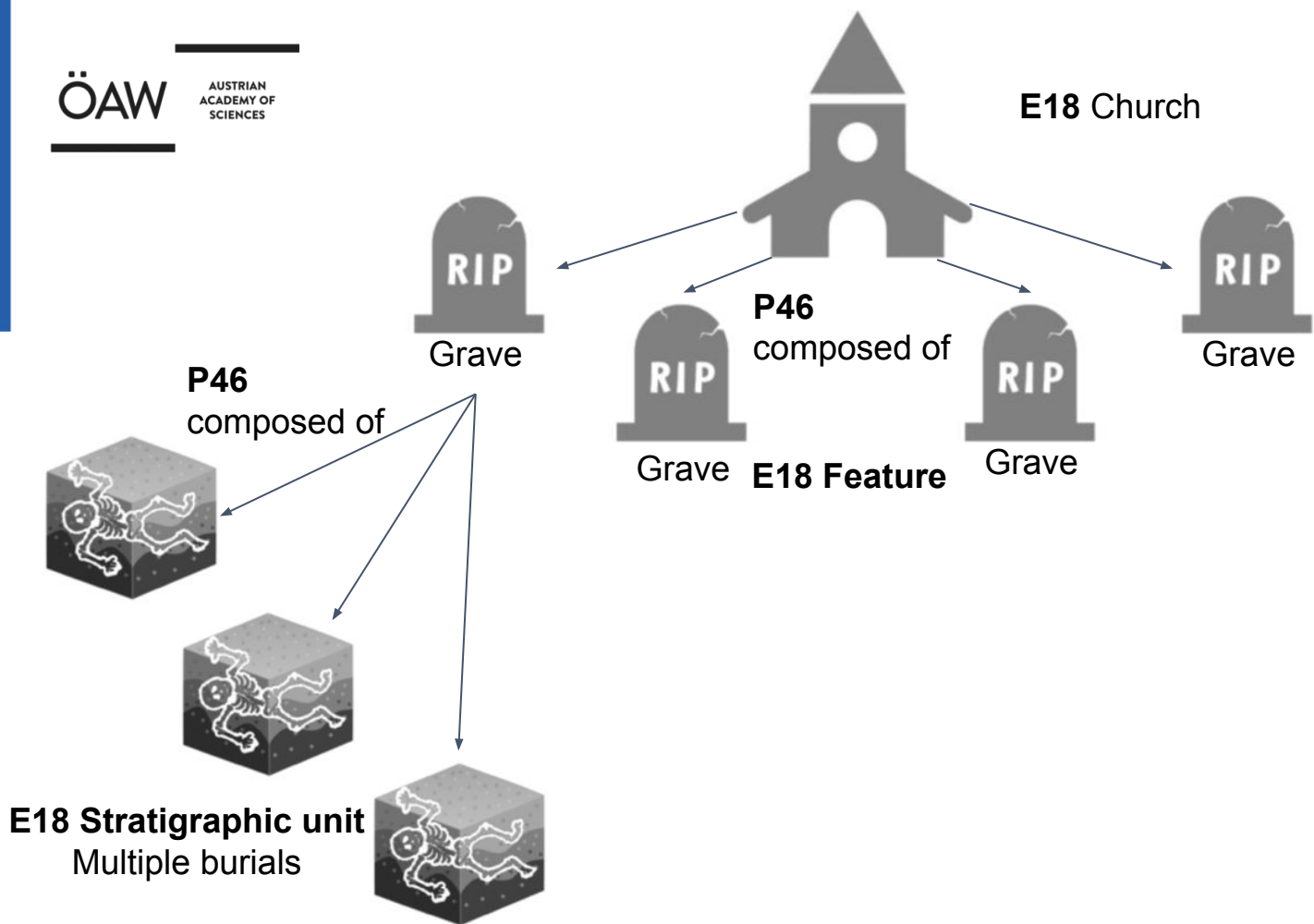


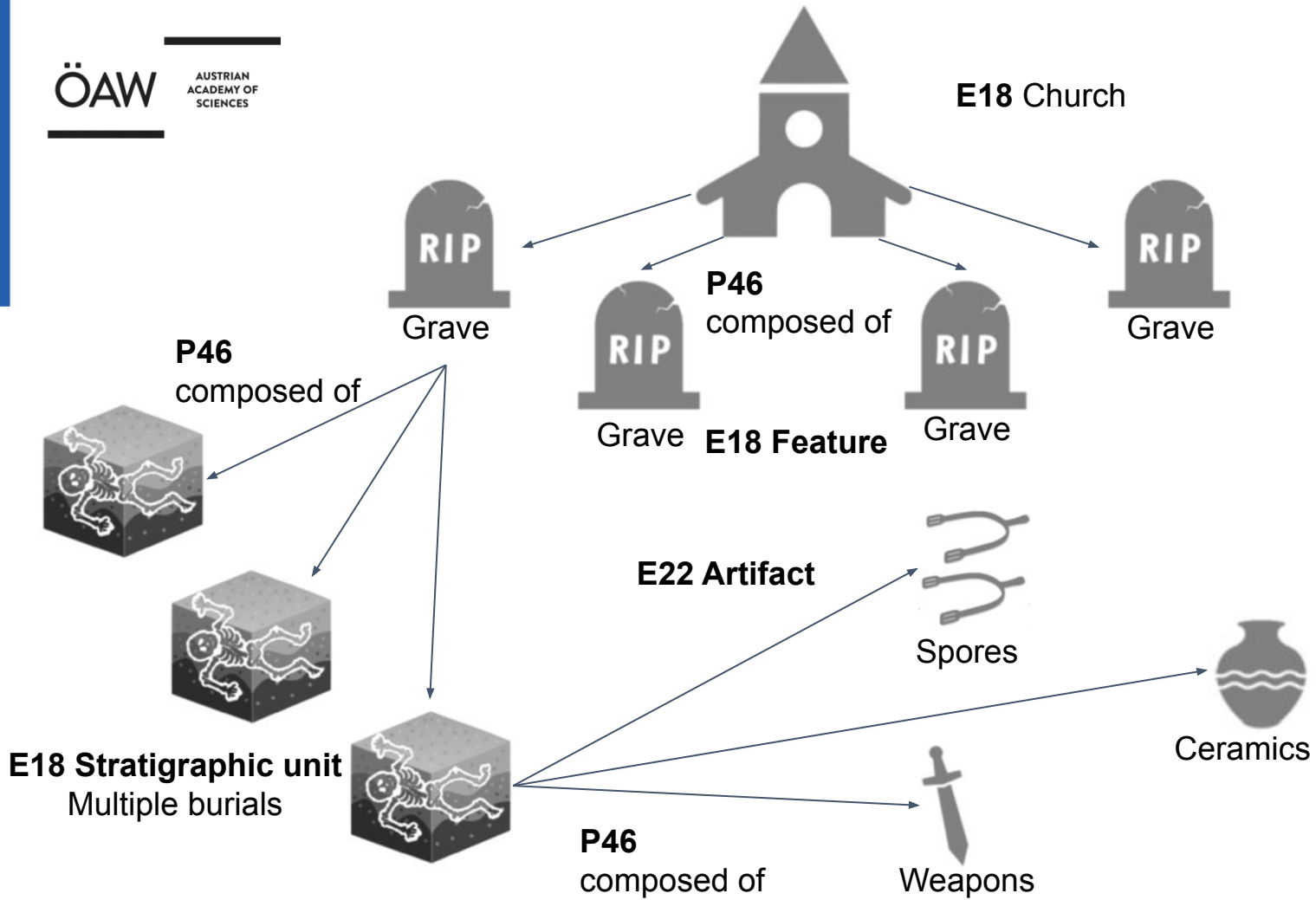


E18 Church



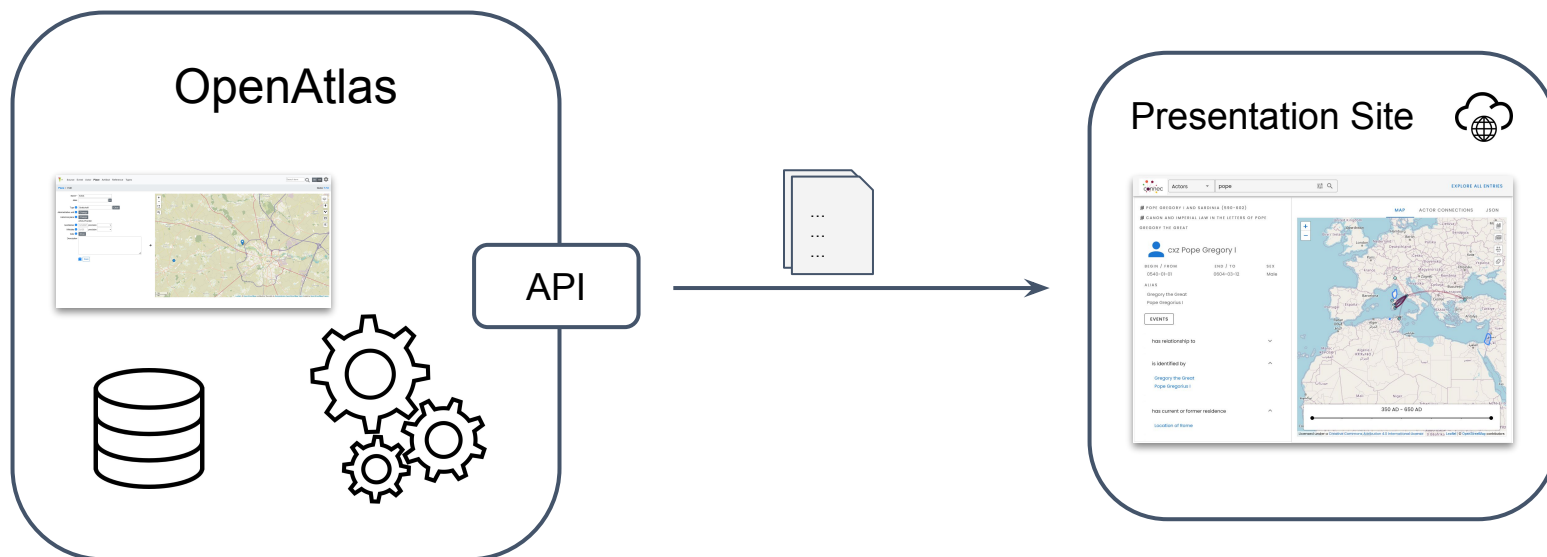








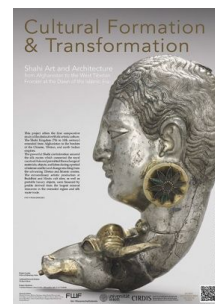
Presentation Website





Presentation Website

- <https://discover-connec.openatlas.eu/>
- <https://discover-mammes.openatlas.eu/>
- <https://shahi.acdh.oeaw.ac.at/>
- <https://thanados.net/>



THANADOS



Conclusion of OpenAtlas

- OpenAtlas is open source and completely based on open source software
- Data is structured according to the international standard of CIDOC CRM (v7.1.2)
- Actively developed with high quality standards in mind
- Emphasis on documentation and close contact with users
 - [User manual](#)
 - [Technical wiki and issue tracker](#)
 - [Public meeting protocols](#)
- API to connect with external systems
- Great synergies between projects using OpenAtlas
- Tested and proven in many productive systems and projects



Conclusion of OpenAtlas

- OpenAtlas is an open source software
- Data is integrated with the CIDOC CRM (v7.1.2)
- Actively maintained
- Employs a REST API
- API to connect with external systems
- Great synergies between projects using OpenAtlas
- Tested and proven in many productive systems and projects



www.oeaw.ac.at

Thank you!

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Exercise



- <https://demo-dev.openatlas.eu/>
- Create a **Person**
- Make the **Person** *member of* the **Group** “Interns”
- Create a **Place** and make it the *Residence* of that **Person**
- Link the **Person** to the “Meet the Researcher” event
- Make a **subevent** of “Meet the Researcher” called “[Person] ate a cookie” and link the created **Person** to it
- Add a new **Artifact** to **Person** (most likely a cookie)
- Make a new **Type** to better describe the **Artifact**
- Upload a **File** to that **Artifact**