Research Squirrel Engineers

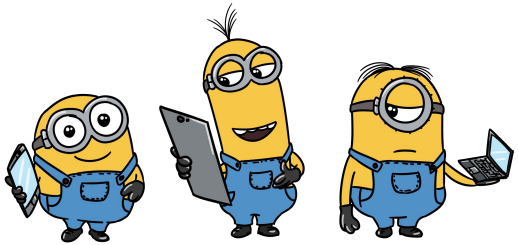
HOCHSCHULE MAINZ
UNIVERSITY OF
APPLIED SCIENCES

Mitglied der Leibniz-Gemeinschaft

Römisch-Germanisches Zentralmuseum Leibniz-Forschungsinstitut für Archäologie RGZM

mainzed

Timo Homburg M.Sc. & Florian Thiery M.Sc.



10 CAA Computer Anwendungen & Quantitative Methoden in der Archäologie
Sektion Deutschland

CAA Webcast “Unicorns”

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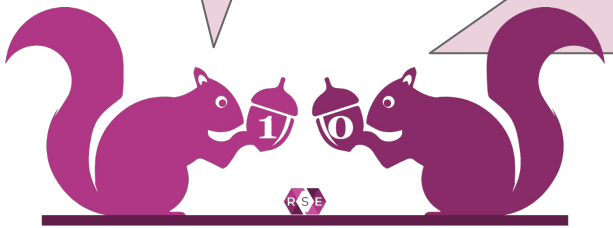
Research Squirrel Engineers

Digital Archaeologists & Research Software Engineers benötigen eine Community zur Vernetzung und Unterstützung.

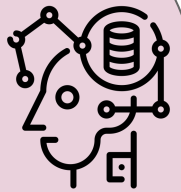
We are
Research Squirrels
and interested in
Open Science and
Linked Data.



Research Squirrel Engineers

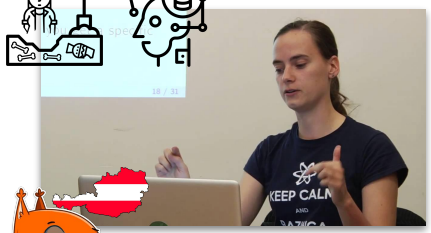
Wir haben derzeit einen
fachlichen Background in...

Research Software Engineering,



Geoinformatics

und
Cultural Heritage.



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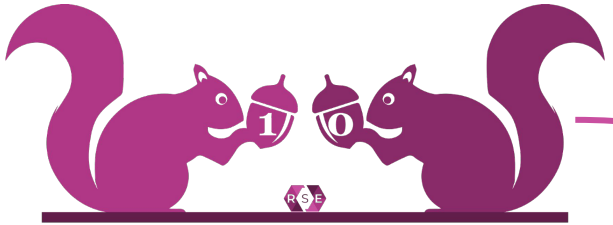
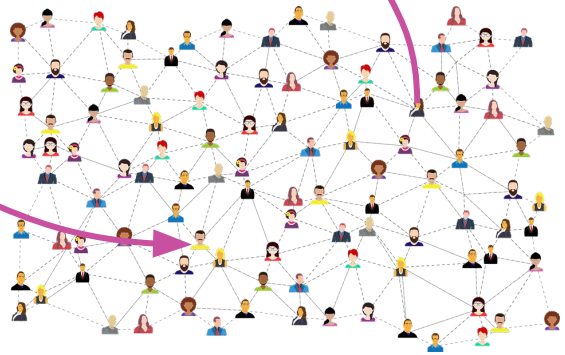
WIKIDATA RDF

Research Squirrel Engineers

deRSE e.V.
DH-RSE
CAA International & CAA Sektion Deutschland
CAA SIG Data-Dragon & CAA SIG Scientific Scripting Languages
CAA Little Minions Group
ISAAK - Initiative for Statistical Analysis in Archaeology Kiel
Linked Pasts (Linked Pipes Working Group)
Wikimedia Germany (Fellow-Program Freies Wissen Fellows)

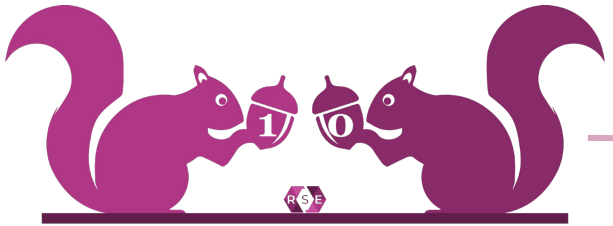


Research Squirrel Engineers

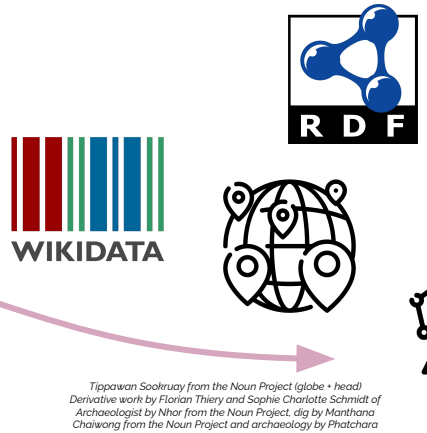


Research Squirrel Working Groups

* SPARQLing Unicorn QGIS Plugin
* Linked Open Ogham Data



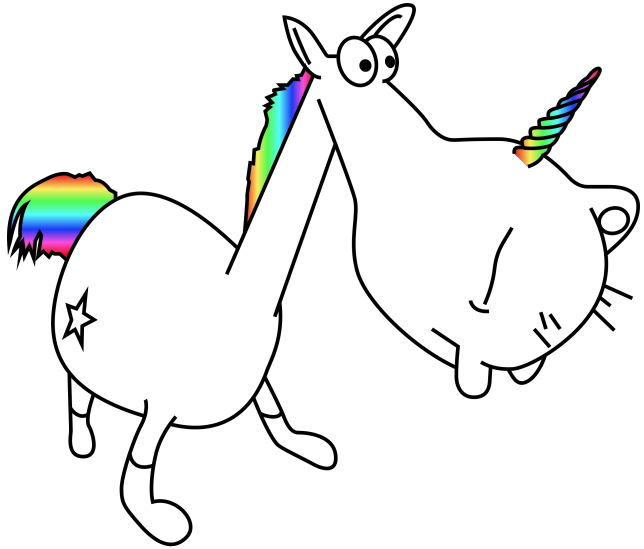
Research Squirrel Engineers



The *SPARQL Unicorn* was born at...

CHECK OBJECT INTEGRITY
CAA 2019
KRAKÓW 23-27 April

JAGIELLONIAN UNIVERSITY IN KRAKÓW



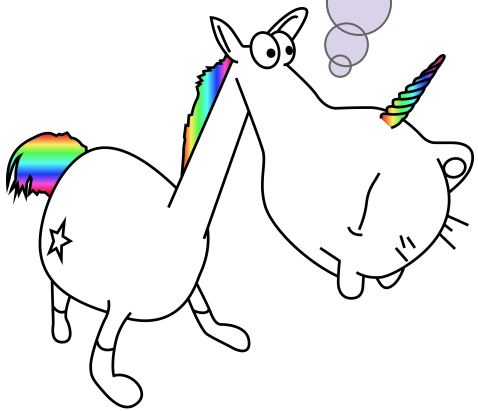
© Stary Port, Kraków

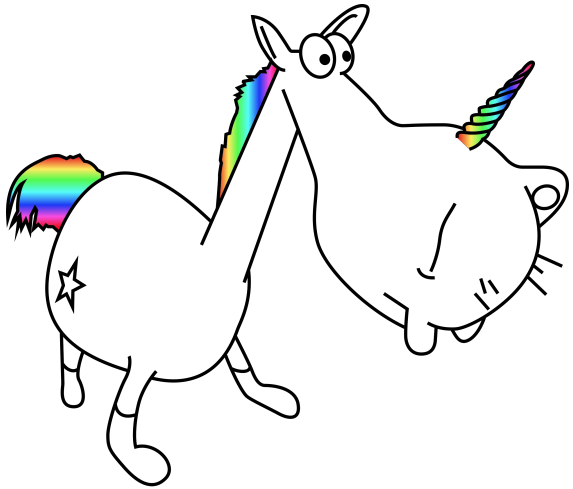
CAA
Computer Applications & Quantitative Methods in Archaeology

Community


```
SELECT ?date ?work ?workLabel ?topics (GROUP_CONCAT(DISTINCT
separator=" // ") AS ?places) (GROUP_CONCAT(?authorLabel; sepa
authorstrings) (GROUP_CONCAT(?editorLabel; separator= " - ") /
WITH {
  SELECT DISTINCT ?work WHERE {
    ?work wdt:P921 / (wdt:P361+ | wdt:P1269+ | (wdt:P31* / wdt
  }
} AS %works
WITH {
  SELECT (MIN(?dates) as ?datetime) ?work (GROUP_CONCAT(?topi
    INCLUDE %works
    ?work wdt:P921 ?topic .
          FILTER NOT EXISTS {
             ?topic wdt:P31 wd:Q839954} .
          FILTER NOT EXISTS {
            ?topic wdt:P31 wd:Q220659}
    OPTIONAL { ?work wdt:P577 ?dates . }

    ?topic rdfs:label ?topic_label .  FILTER (lang(?topic_labe
  }
  GROUP BY ?work
} AS %result
WHERE {
  INCLUDE %result

  OPTIONAL { ?work wdt:P50 ?author .
             ?author rdfs:label ?authorLabel . FILTER (lang(?a
           }
  # no extra label assignment here, because we already have a
  OPTIONAL { ?work wdt:P2093 ?authorstring . }
  OPTIONAL { ?work wdt:P98 ?editor .
             ?editor rdfs:label ?editorLabel . FILTER (lang(?e
           }
  OPTIONAL { ?work wdt:P123 ?publisher . }

  #collect related places (are in topic list; are instance of
  OPTIONAL {?work wdt:P921 ?place
```

Wie kann ich Forscher*innen ohne SPARQL-Kenntnisse bei der Nutzung von community-driven data aus dem Semantic Web helfen?





(1) Describe your data in well documented semantic structured open formats, acc. to the 5 Star data principles.

(2) Model, generate and publish your data as 5 Star Linked Open Data

(3) Publish your data in Wikidata and interlink them to other resources in the Linked Open Data Cloud

(4) Use existing tools to query Wikidata dynamically and to do real time data analysis and support developers or develop new tools to give people without any deeper knowledge in Linked Open Data (SPARQL Unicorn tools) the possibility to also do dynamical real time analysis

(5) Use Wikidata and the SPARQL Unicorn tools in your own research and promote the SPARQL Unicorn principles that other interested researchers in the community may start with principle 1!

SPARQL Unicorn idea and principles

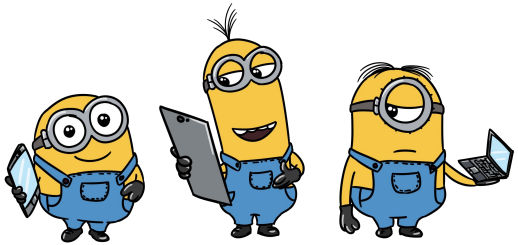
Es gibt einen Mangel an FLOSS GIS Tools für LOD und Archäologie. Das SPARQLing Unicorn QGIS Plugin zeigt eine Lösung für das Problem der mangelnden Verfügbarkeit von Tools für Semantic Web Geodaten.

QGIS

GitHub

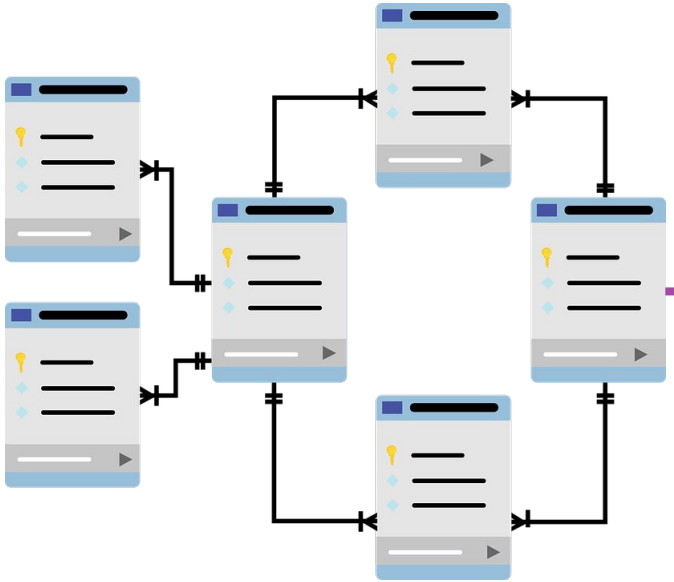
The SPARQLing Unicorn QGIS Plugin - a Linked Data Access Point for QGIS

Timo Homburg M.Sc. & Florian Thiery M.Sc.



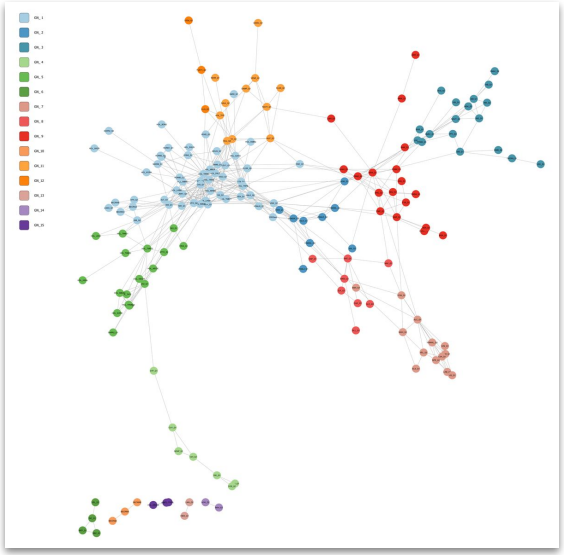
10 AAA Computer Anwendungen & Quantitative Methoden in der Archäologie
Sektion Deutschland

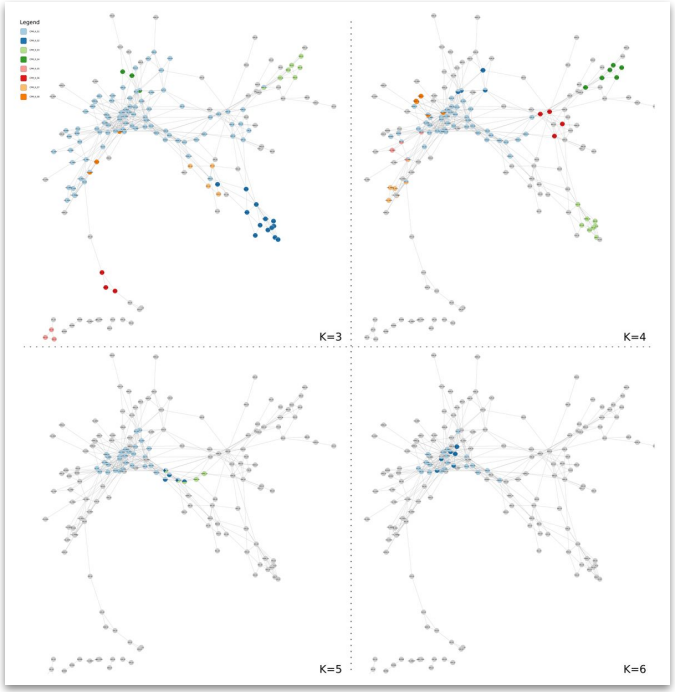
Was ist dieses LOD und SPARQL und wozu brauche ich das?



Relationale Datenmodellierung und RDBMS sind in der digitalen Archäologie nicht mehr wegzudenken und die de facto Standard-Datenstruktur für archäologische Daten.

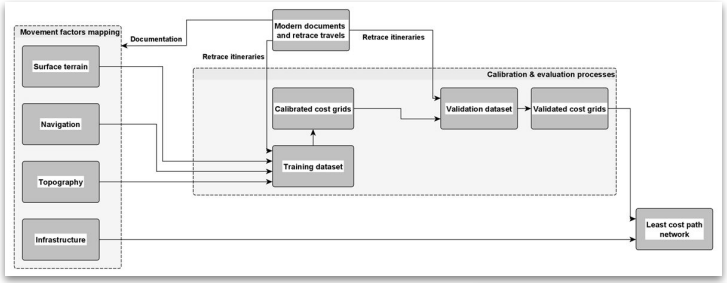
Darüber hinaus gibt es aber auch immer mehr Anwendungen und Datenmodellierungen, die als Grundlage eine Graphstruktur besitzen.

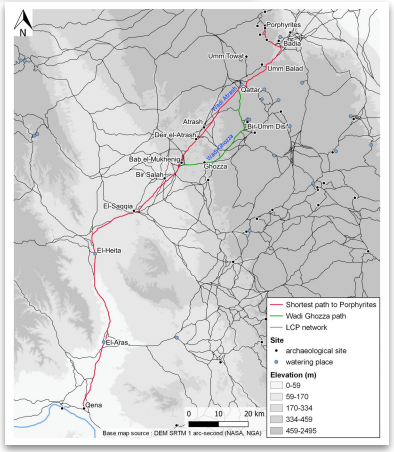


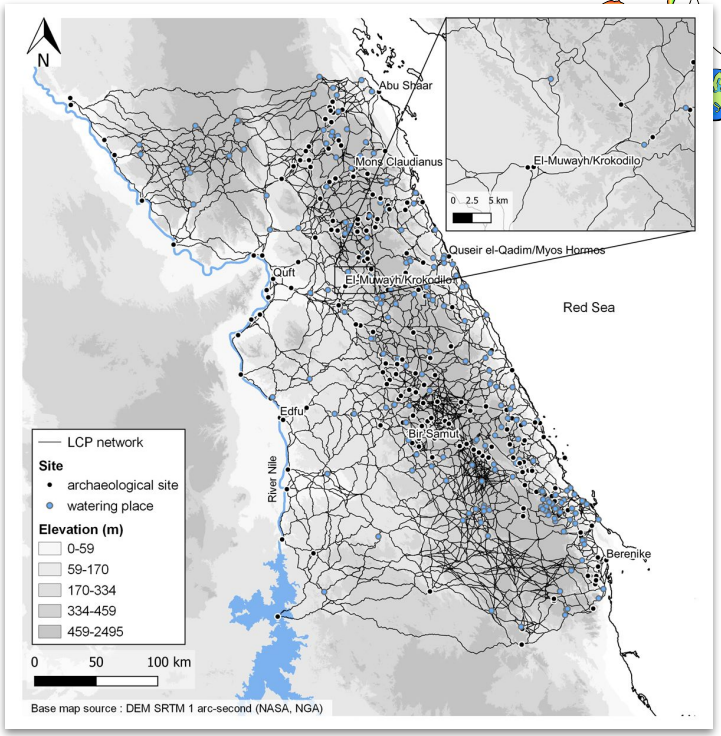


Visser, R.M., 2021. Dendrochronological Provenance Patterns. Network Analysis of Tree-Ring Material Reveals Spatial and Economic Relations of Roman Timber in the Continental North-Western Provinces. Journal of Computer Applications in Archaeology, 4(1), pp.230–253. DOI: http://doi.org/10.5334/jcaa.79

In der Archäologie sind dies z.B. Netzwerkanalysen...

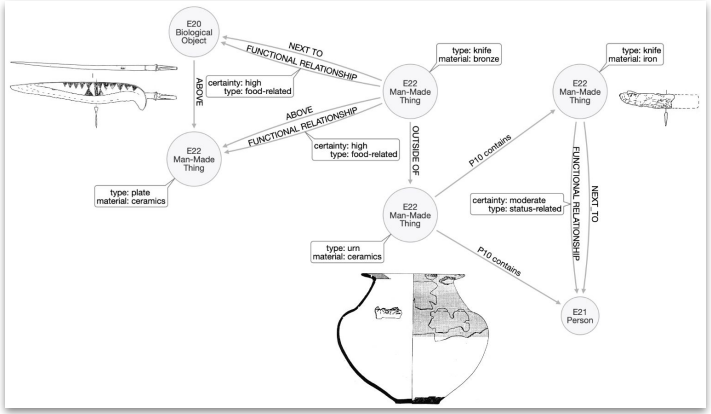


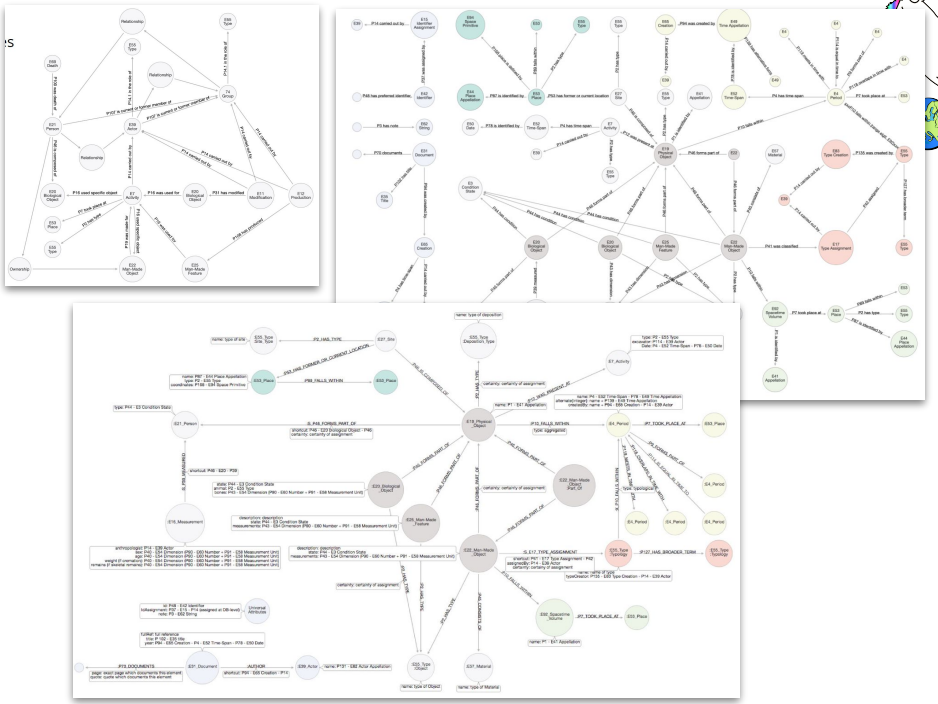




Manière, L., Crépy, M. and Redon, B., 2021. Building a Model to Reconstruct the Hellenistic and Roman Road Networks of the Eastern Desert of Egypt, a Semi-Empirical Approach Based on Modern Travelers' Itineraries. Journal of Computer Applications in Archaeology, 4(1), pp.20–46. DOI: http://doi.org/10.5334/jcaa.67

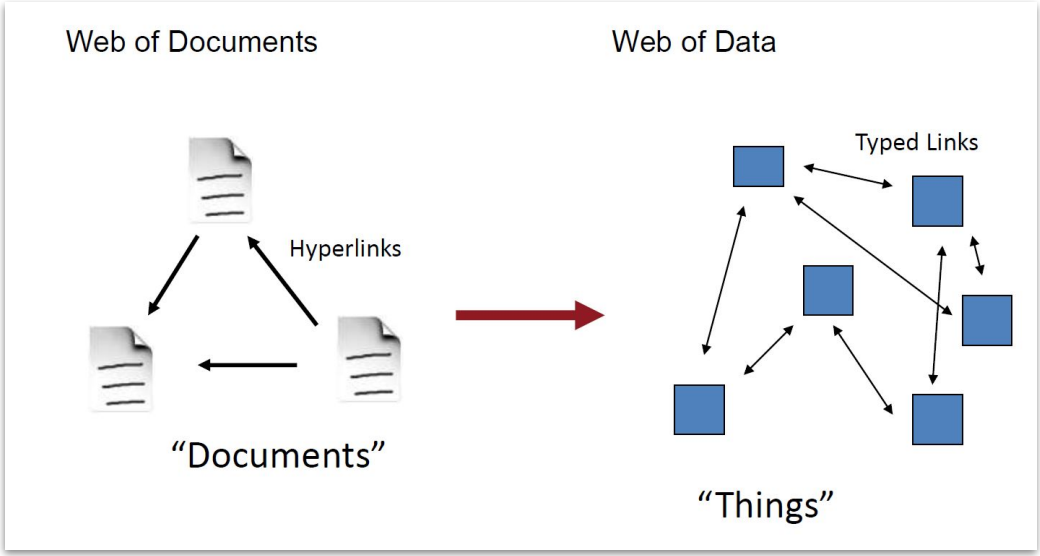
… Least Cost Routing …





Deicke, Aline. (2020, February 21). Modelling as a scholarly process. The impact of modelling decisions on data-driven research practices. Graph Technologies in the Humanities 2020 – Modelling the Scholarly Process, University of Vienna. Zenodo. https://doi.org/10.5281/zenodo.3686642

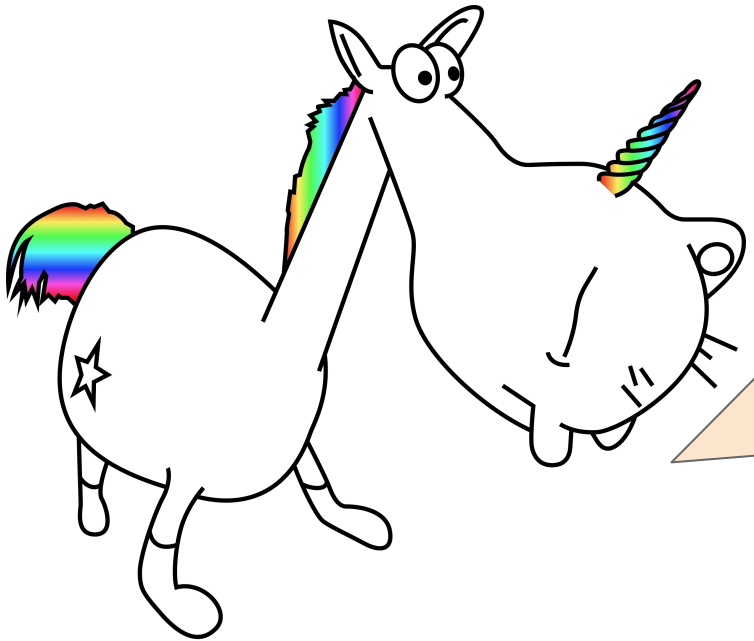
… oder semantische Netzwerke, z.B. auf Basis des CIDOC-CRM Referenzmodells …



Semantic Web, from web of documents to web of data. Source: Fensel 2013, slide 15.
more at https://devopedia.org/semantic-web

Semantic Web adds links data on the web and adds a layer of meaning to data.
Source: Petkova 2016.
more at https://devopedia.org/semantic-web

… bis hin zum Semantic Web, vom "Web of Documents" zum "Web of Data"!



Das **Semantic Web** erweitert das Web, um Daten zwischen Rechnern einfacher austauschbar und für sie einfacher verwertbar zu machen. Zur Realisierung dienen Standards zur Veröffentlichung und Nutzung maschinenlesbarer Daten (insbesondere RDF).

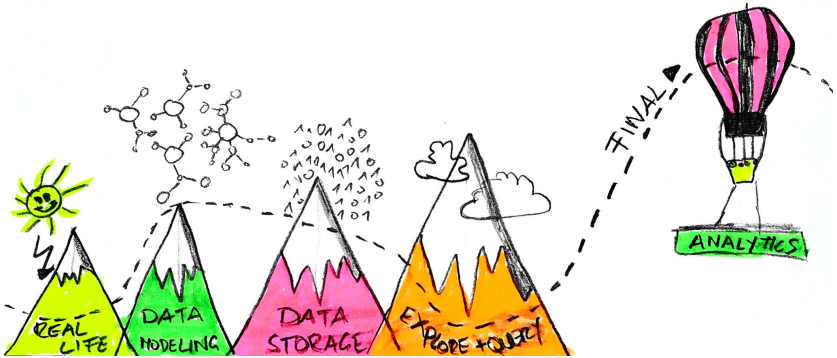
aus https://de.wikipedia.org/wiki/Semantic_Web

Sir Tim Berners-Lee

Paul Clarke, CC BY-SA 4.0, via Wikimedia Commons

The Semantic Web isn't just about putting data on the web. It is about making links, so that a person or machine can explore the web of data. With linked data, when you have some of it, you can find other, related, data.

aus https://www.w3.org/DesignIssues/LinkedData.html



Florian Thiery, CC BY 4.0, via Wikimedia Commons

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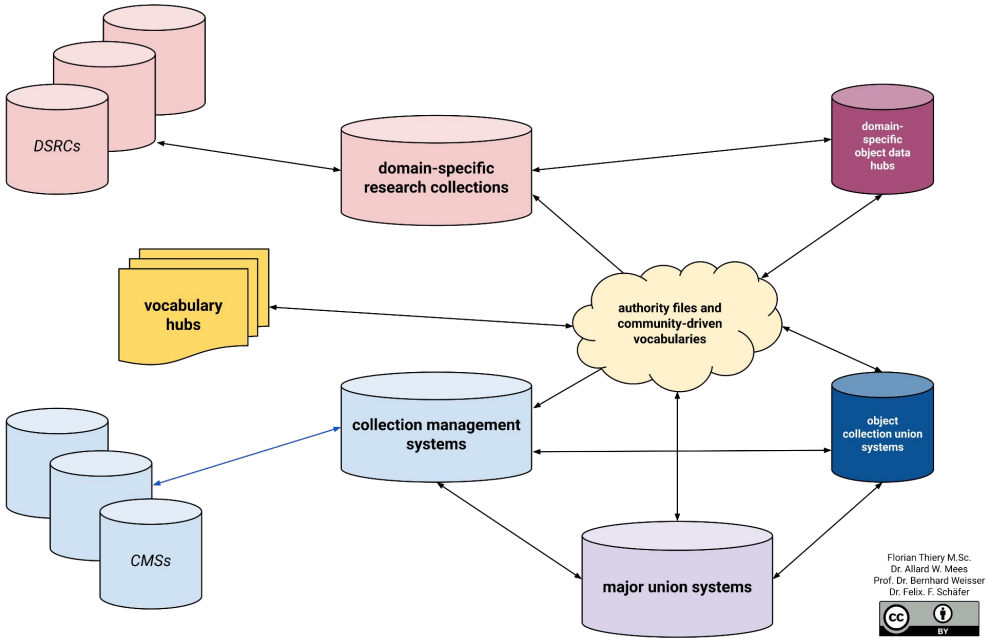
Semantic Web in der digitalen Archäologie

Was heißt das?



nfdi Nationale Forschungsdaten Infrastruktur

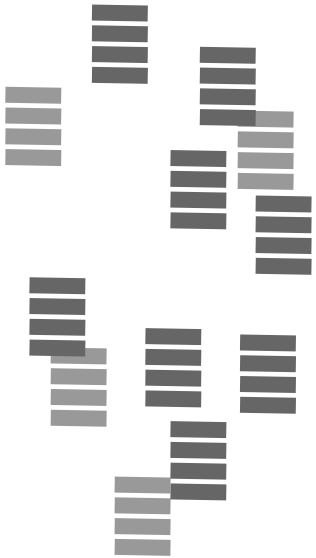
NFDI4Objects
Research Data Infrastructure for the Material Remains of Human History

Florian Thiery, Allard W. Mees, Bernhard Weisser, Felix F. Schäfer, CC BY 4.0 , via Wikimedia Commons

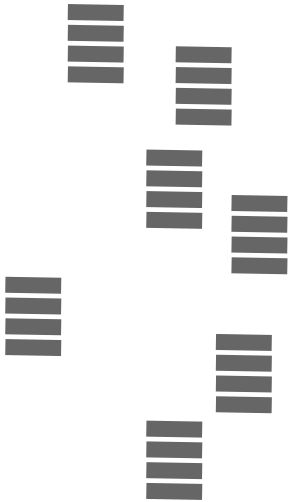
Collection Research Network

DB local (offline)

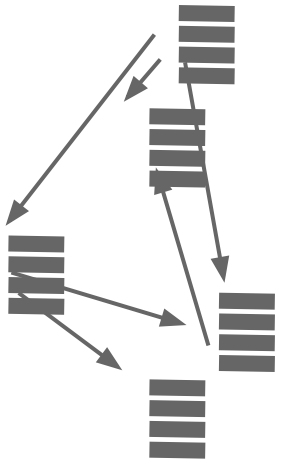
DB online



DBs online & open



DBs as part of LOD



Linked Open Data führt zu FAIRen Daten!

Linked Open Data läuft nur in menschlichen Netzwerken!

Die Community spielt eine große Rolle!

http://datadragon.link

Computer Applications & Quantitative Methods in Archaeology

Data Dragon

CAA SIG Data-Dragon

Semantics and LOUD in Archaeology

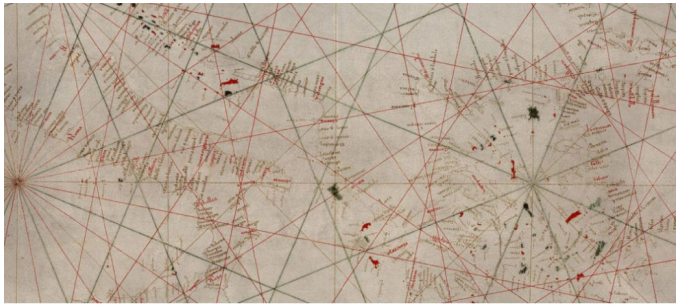
Data Dragon

CAA2022 OXFORD iNSIDE FORMATION

CAA Computer Applications & Quantitative Methods in Archaeology

geplante CAA LOUD in Archaeology Session

mit Florian, Brigit, Allard & Nicole



LP Network

While not the responsibility of the Linked Pasts Steering Committee, which is limited to the annual symposium, the Linked Pasts Network refers to a growing collection of historical datasets published as Linked Open Data and the community of researchers across the globe whose projects are producing and using them. The nature of this emerging network is discussed at the Linked Pasts series of international symposia.

This site and repo are just getting under way. This visualization is a partial view of the projects and supporting organizations within the "geospatial region" of the network. Further information about Linked Pasts can be found in a Dec 2017 white paper, "From Linking Places to a Linked Pasts Network".

The Linked Pasts Network was inspired by work such as the Pelagios Network and Association, the Linked Ancient World Data Institute (2012–13) and the LAWD Ontology.

https://www.ghentcdh.ugent.be/linked-pasts-vii-symposium

Linked Pasts

Linking the Past

digital humanities im deutschsprachigen raum

AGORA Login | Kontakt

Suche

AG Graphen & Netzwerke

1. AG-Name

AG Graphen & Netzwerke

2. AG-Arbeitsschwerpunkte

Die **Modellierung von Daten** in einer graphenbasierten Struktur ermöglicht es, Informationen in einer flexiblen Art und Weise in Bezug miteinander zu setzen. Modelliert werden nicht in Dokumenten zusammengesetzte Informationseinheiten (wie etwa Tabellen bei relationalen Datenbanken) sondern distinkte Entitäten, die durch Relationen miteinander verknüpft ein semantisches Netz bilden.

Graphdatenbanken zeigen beim Umgang mit Metadaten eine hohe Performanz und liefern qualitativ hochwertige Suchergebnisse. Die Visualisierung der Daten als Graph, oder auch semantisches Netz, bieten dem Betrachter eine intuitiv-zugängliche Darstellungsform und kann damit auch Ausgangspunkt für weitere Analyseansätze sein.

Graphs and Networks in the Humanities 2022

Technologies, Models, Analyses, and Visualizations

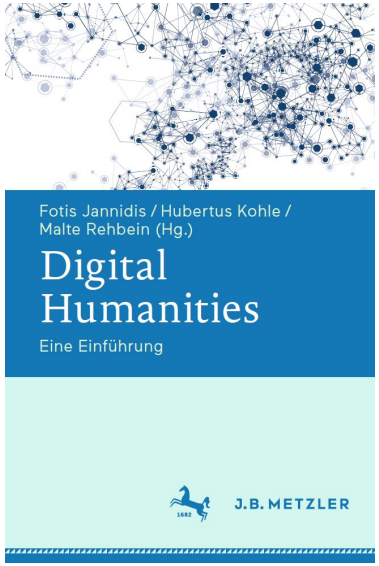
6th International Conference, 3. – 5. February 2022, Amsterdam

https://graphentechnologien.hypotheses.org

DHd AG

Graphen und Netzwerke

Linked Open Data



Jannidis, Fotis, Hubertus Kohle, and Malte Rehbein, eds. 2017. Digital Humanities. Stuttgart: J.B. Metzler. https://doi.org/10.1007/978-3-476-05446-3.

Als Einführung zu empfehlen:
“Digital Humanities *Eine Einführung”*
II Datenmodellierung, insb. Kapitel 10+11

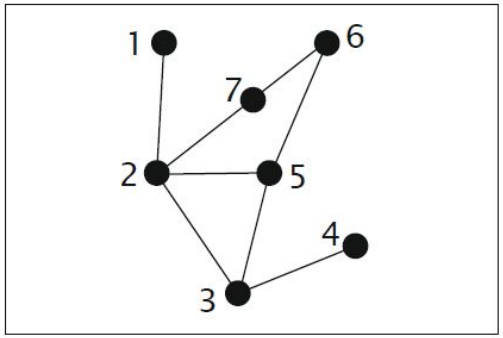
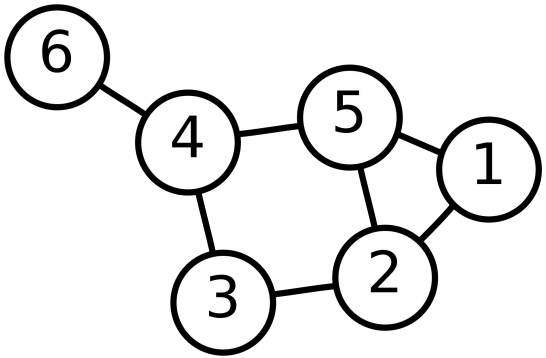


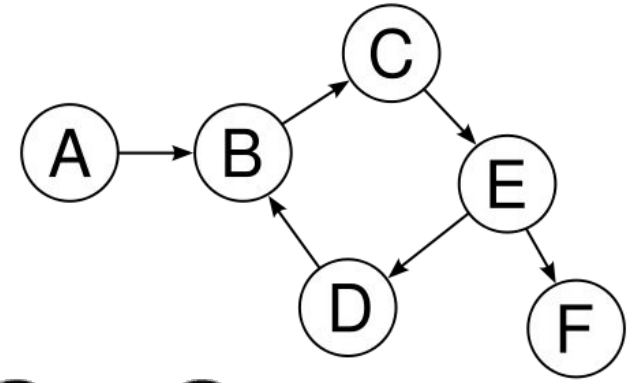
Abb. 29 Ein einfaches Netzwerk mit 7 Knoten und 8 Kanten. Die Länge der Kanten hat keine Bedeutung und verdankt sich nur der gewählten Visualisierung.

Jannidis, Fotis, Hubertus Kohle, and Malte Rehbein, eds. 2017. Digital Humanities. Stuttgart: J.B. Metzler. https://doi.org/10.1007/978-3-476-05446-3. Kapitel 10, S. 147 ff.

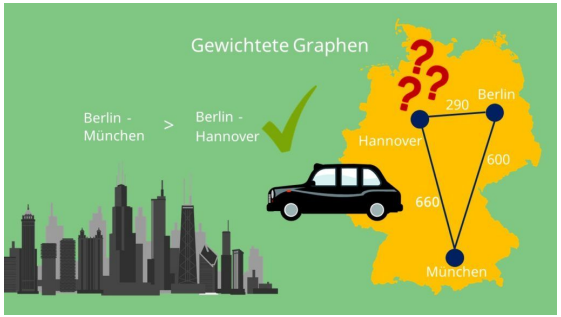
Grundlegende Bausteine der Graphentheorie sind Knoten und Kanten. Ein Graph besteht aus Knoten und Kanten, die einige oder alle Knoten verbinden.



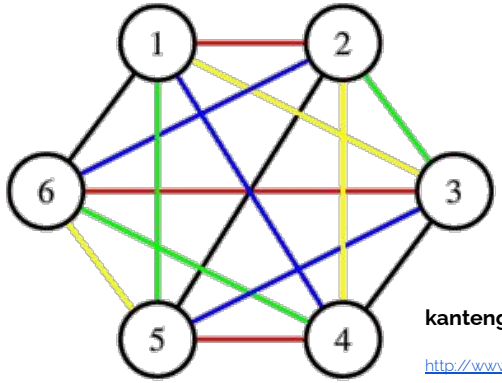
Ungerichteter Graph mit sechs Knoten



Gerichteter zyklischer Graph



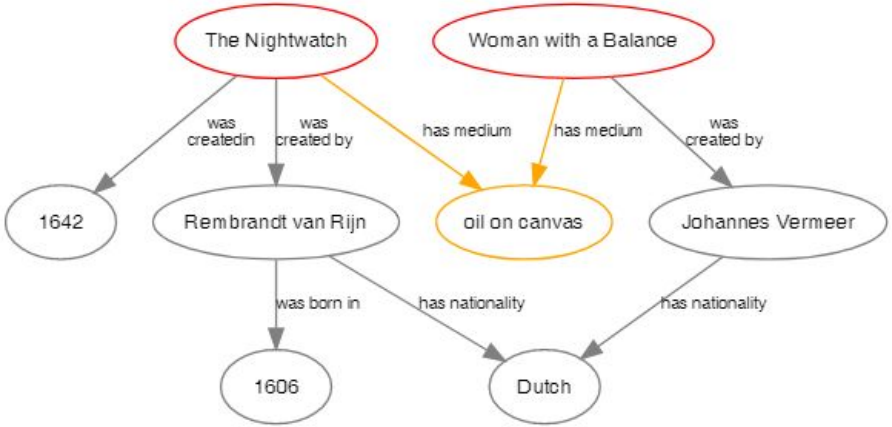
https://studyflix.de/informatik/grundbegriffe-der-graphentheorie-1285



kantengefärbter Graph

http://www2.informatik.uni-osnabrueck.de/kombopt/lehre/pga10/

Graphentheorie



https://programminghistorian.org/en/lessons/retired/graph-databases-and-SPARQL

LOD besteht aus einem kanten-gefärbten, gerichteten Graphen

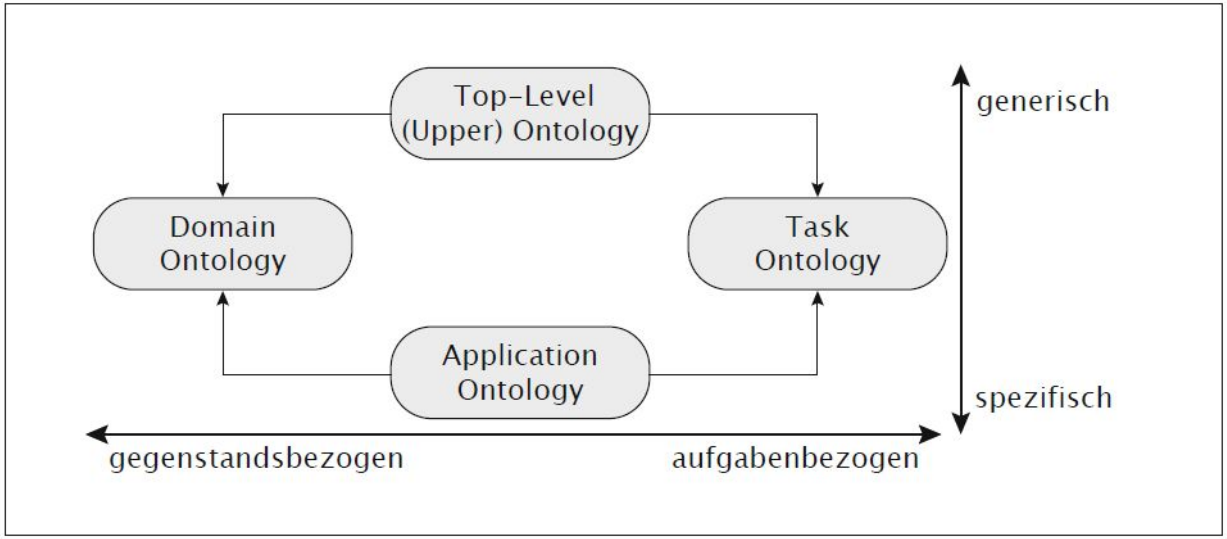
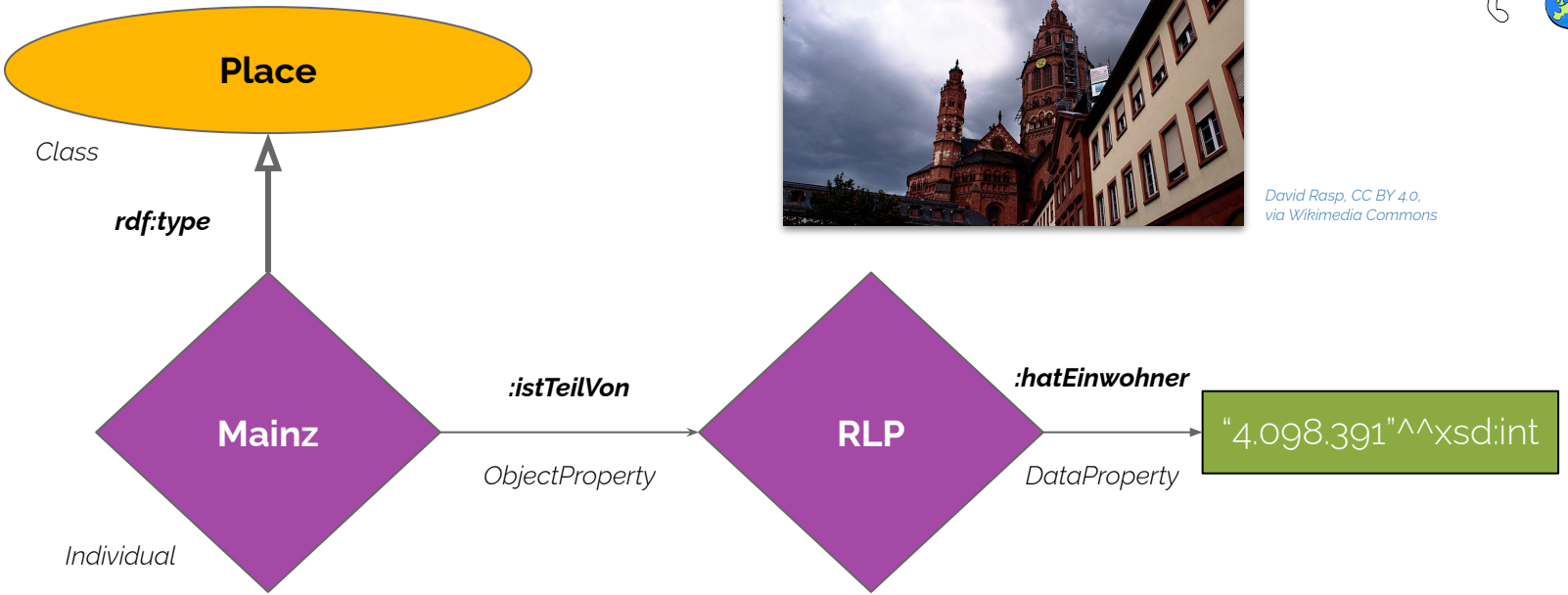


Abb. 38 Klassifizierungsansatz für Ontologien anhand des Grades ihrer Abhängigkeit von einem bestimmten Standpunkt oder einer spezifischen Aufgabestellung (in Anlehnung an Guarino 1998)

Jannidis, Fotis, Hubertus Kohle, and Malte Rehbein, eds. 2017. Digital Humanities. Stuttgart: J.B. Metzler. https://doi.org/10.1007/978-3-476-05446-3. Kapitel 11, S. 162 ff.

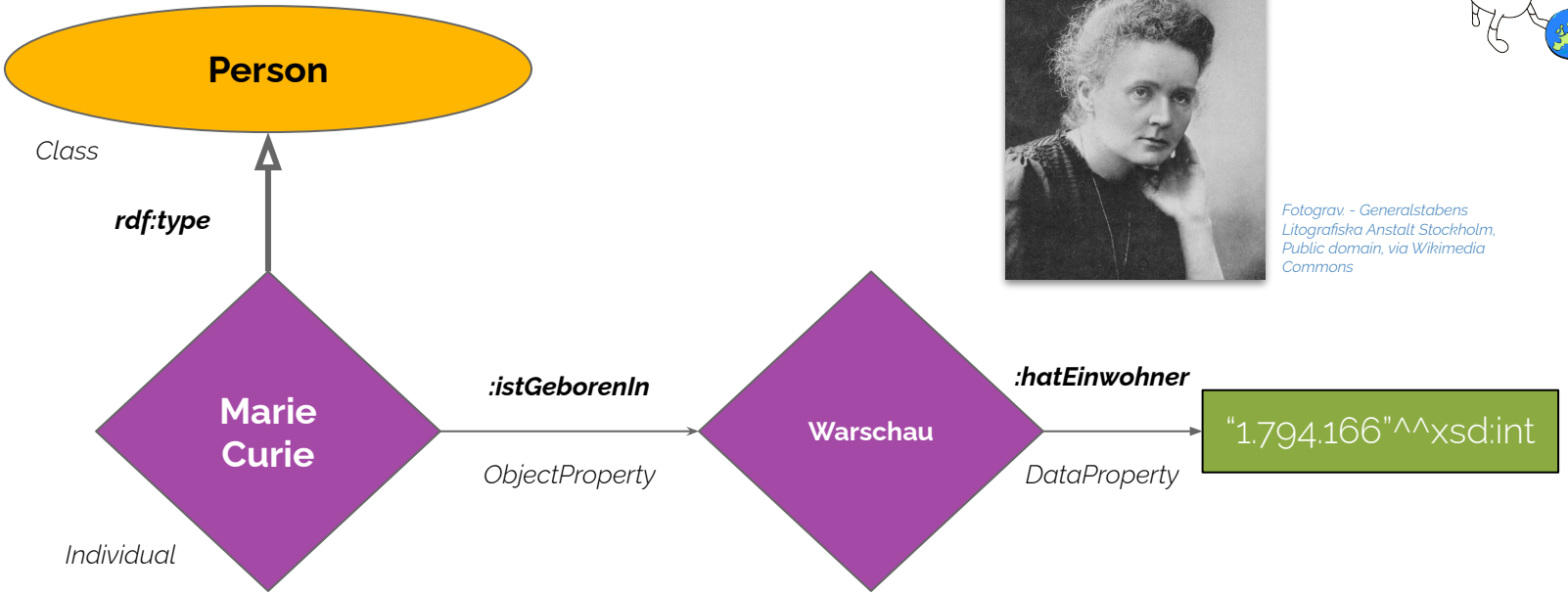
Semantische Netzwerke mit Regeln können in Ontologien modelliert werden

David Rasp, CC BY 4.0,
via Wikimedia Commons



Klassen, Instanzen und Properties

Fotograv. - Generalstabens Litografiska Anstalt Stockholm, Public domain, via Wikimedia Commons



Klassen, Instanzen und Properties

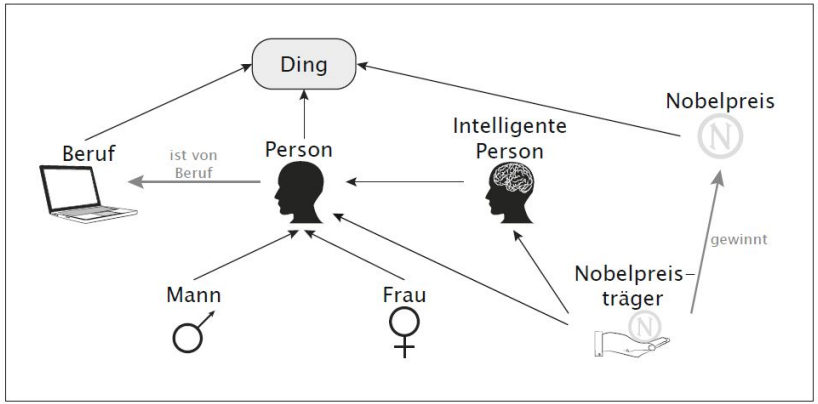


Abb. 39 Beispielmodell ›Welt des Nobelpreises‹. Die unbeschrifteten Relationen sind vom Typ ›ist Unterklasse von‹ und beschreiben die Klassenhierarchie.

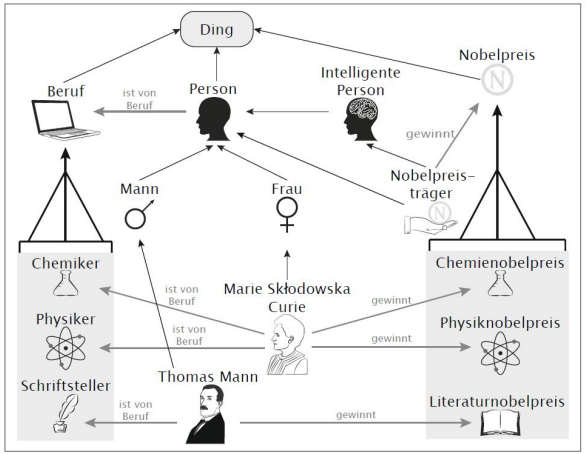
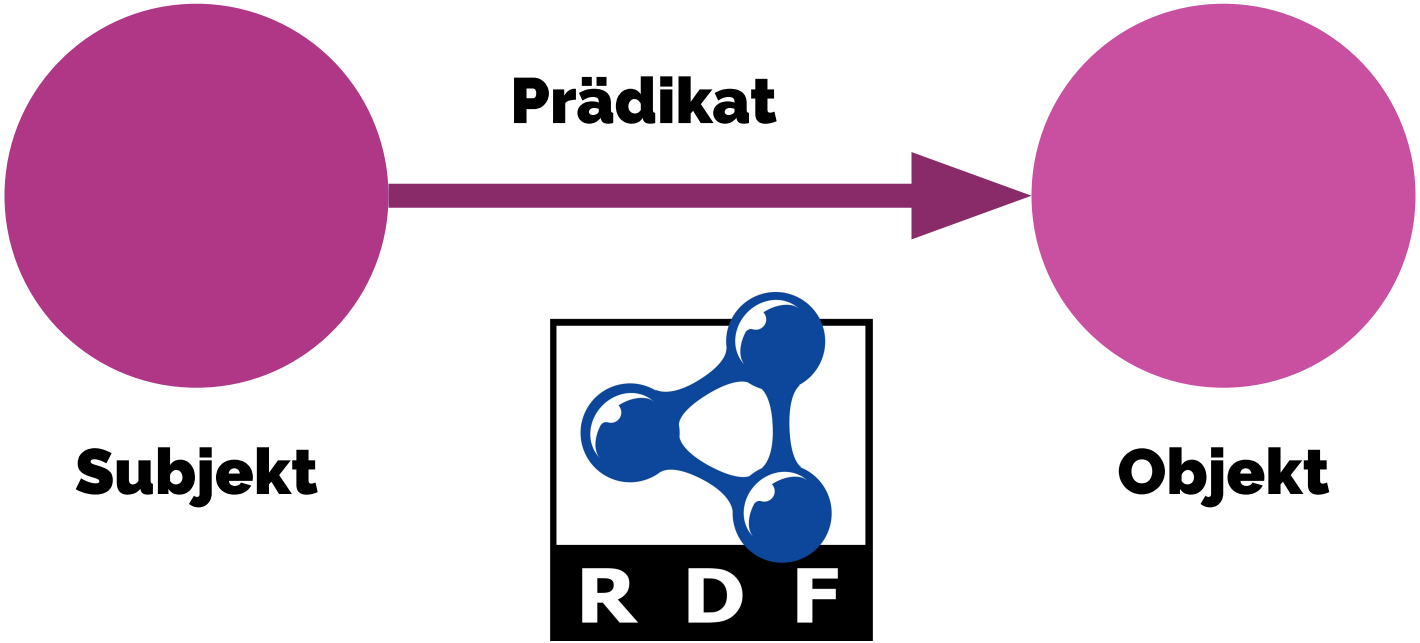


Abb. 40 Instanzen der Beispiel-Ontologie ›Welt des Nobelpreises‹

Jannidis, Fotis, Hubertus Kohle, and Malte Rehbein, eds. 2017. Digital Humanities. Stuttgart: J.B. Metzler. https://doi.org/10.1007/978-3-476-05446-3. Kapitel 11, S. 162 ff.

Eine Mini-Beispiel-Ontologie

Linked Data?



Linked Data

The Semantic Web isn't just about putting data on the web. It is about making links, so that a person or machine can explore the web of data. With linked data, when you have some of it, you can find other, related, data.

Like the web of hypertext, the web of data is constructed with documents on the web. However, unlike the web of hypertext, where links are relationships anchors in hypertext documents written in HTML, for data they links between arbitrary things described by RDF,. The URIs identify any kind of object or concept. But for HTML or RDF, the same expectations apply to make the web grow:

1. Use URIs as names for things
2. Use HTTP URIs so that people can look up those names.
3. When someone looks up a URI, provide useful information, using the standards (RDF*, SPARQL)
4. Include links to other URIs. so that they can discover more things.

aus
https://www.w3.org/DesignIssues/LinkedData.html

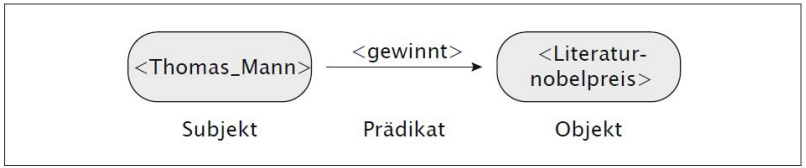


Abb. 41 RDF-Tripel (Beispiel)

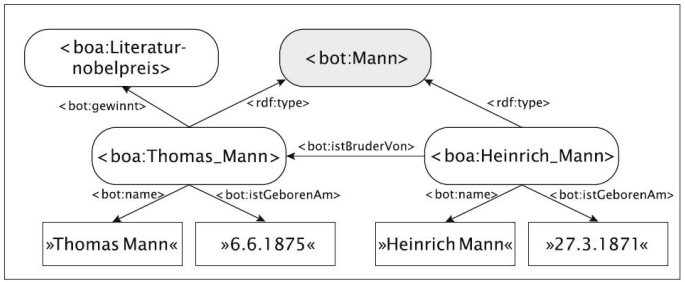


Abb. 42 RDF-Graph zur Beispiel-Ontologie ›Welt des Nobelpreises‹ (Auszug)

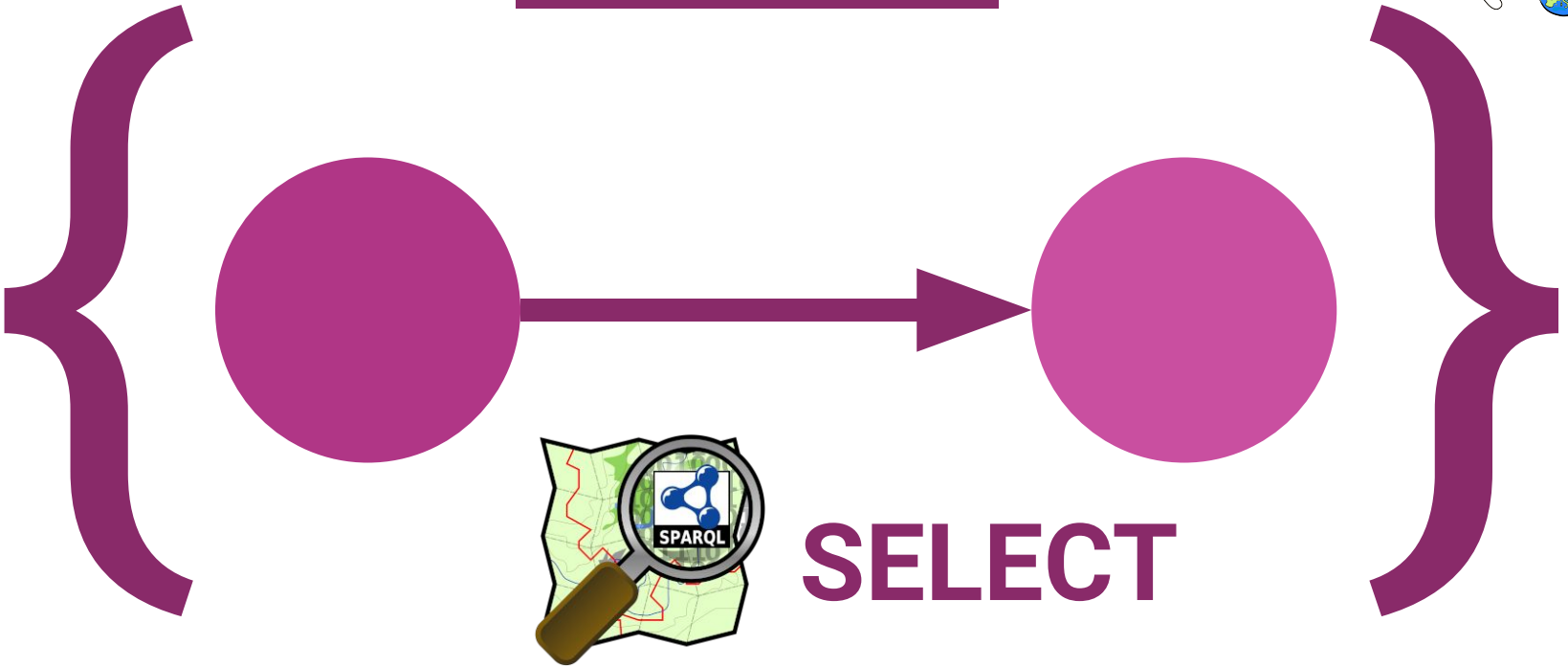
Bilder: Jannidis, Fotis, Hubertus Kohle, and Malte Rehbein, eds. 2017. Digital Humanities. Stuttgart: J.B. Metzler. https://doi.org/10.1007/978-3-476-05446-3, Kapitel 11, S. 162 ff.

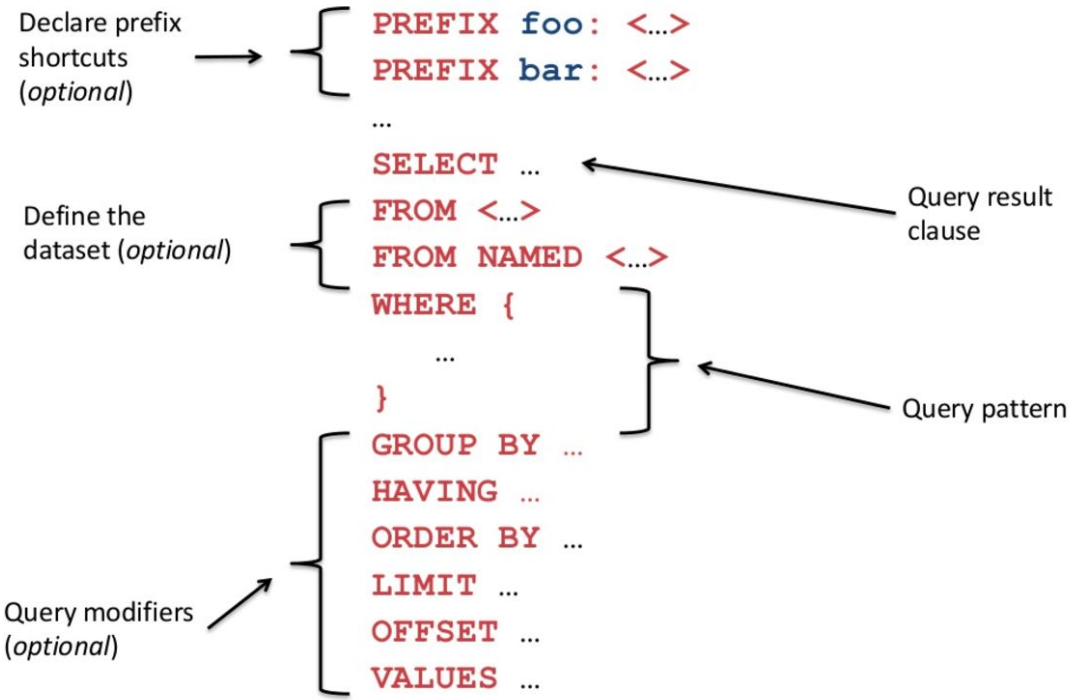
```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix bot: <http://beispielontologie.de/terminologie#> .
@prefix boa: <http://beispielontologie.de/instanzen#> .

bot:Ding              rdf:type           rdfs:Class .
bot:Person            rdfs:subClassOf    bot:Ding .
bot:Mann              rdfs:subClassOf    bot:Person .
bot:Frau              rdfs:subClassOf    bot:Person .
bot:Nobelpreis        rdfs:subClassOf    bot:Ding .
bot:istBruderVon      rdf:type           rdf:Property ;
                      rdfs:domain        bot:Mann ;
                      rdfs:range         bot:Person .
bot:Nobelpreisträger  rdfs:subClassOf    bot:Person .
bot:gewinnt           rdf:type           rdf:Property ;
                      rdfs:domain        bot:Person ;
                      rdfs:range         bot:Nobelpreisträger .
…
```

```
boa:Literaturnobelpreis     rdf:type           bot:Nobelpreis .

boa:Thomas_Mann             rdf:type           bot:Mann ;
                            bot:gewinnt        boa:Literaturnobelpreis .

boa:Heinrich_Mann           rdf:type           bot:Mann ;
                            bot:istBruderVon   boa:Thomas_Mann .
…
```

Ein LOD Beispiel mit Thomas Mann

SPARQL?!





aus https://wordlift.io/blog/en/entity/sparql/

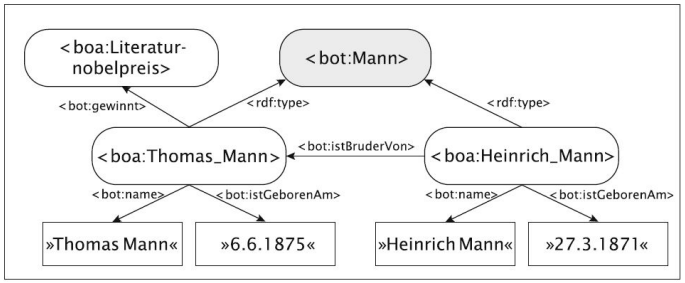
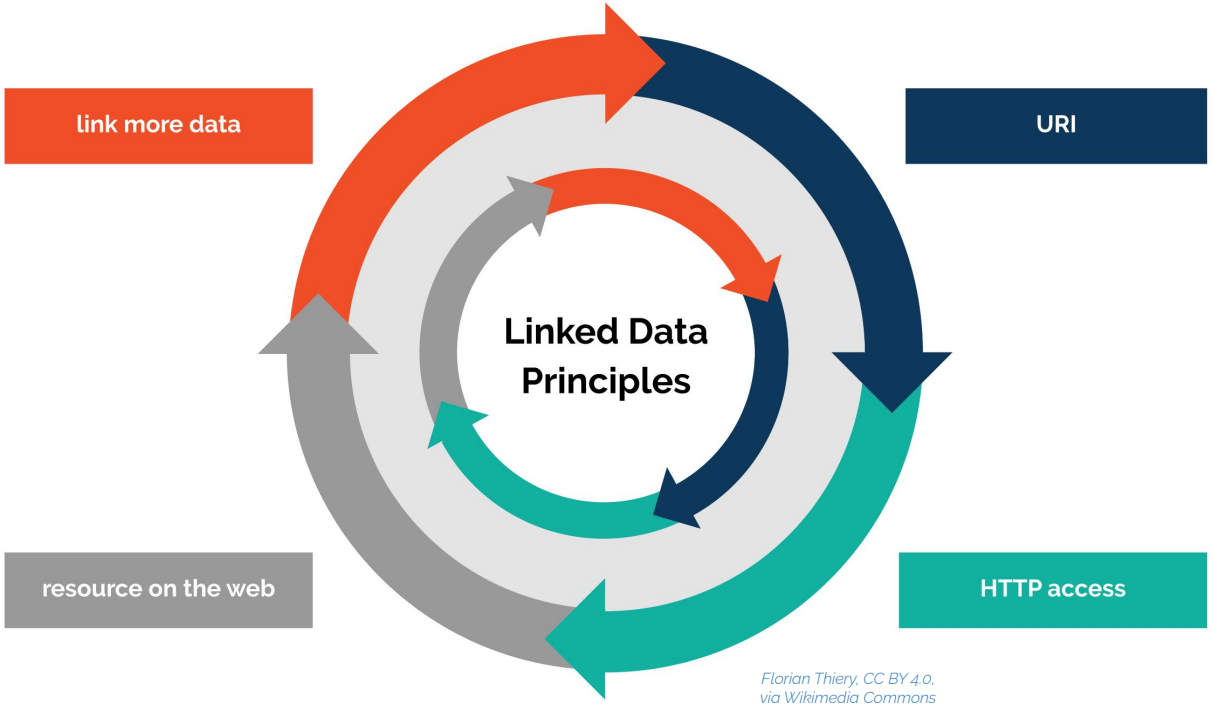


Abb. 42 RDF-Graph zur Beispiel-Ontologie ›Welt des Nobelpreises‹ (Auszug)

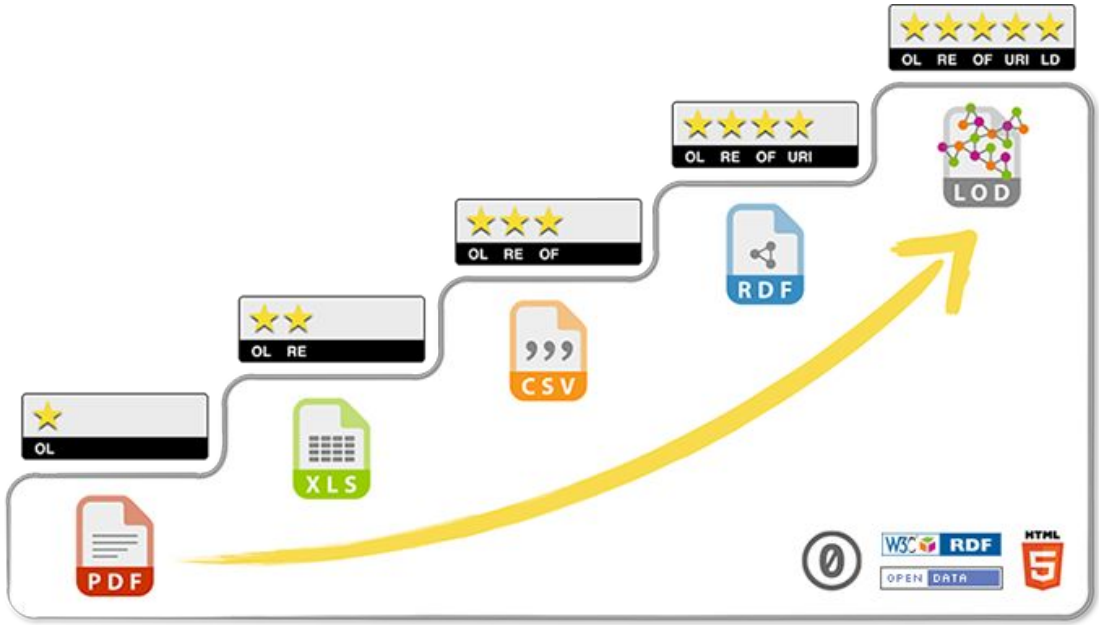
Bilder: Jannidis, Fotis, Hubertus Kohle, and Malte Rehbein, eds. 2017. Digital Humanities. Stuttgart: J.B. Metzler. https://doi.org/10.1007/978-3-476-05446-3. Kapitel 11, S. 162 ff.

```
SELECT ?personA ?personB
WHERE {
    ?personB        rdf:type            bot:Person ;
                    bot:gewinnt         bot:Nobelpreis .
    ?personA        bot:istBruderVon    ?personB .
    }
```

Ein SPARQL Beispiel mit Thomas Mann



Florian Thiery, CC BY 4.0, via Wikimedia Commons



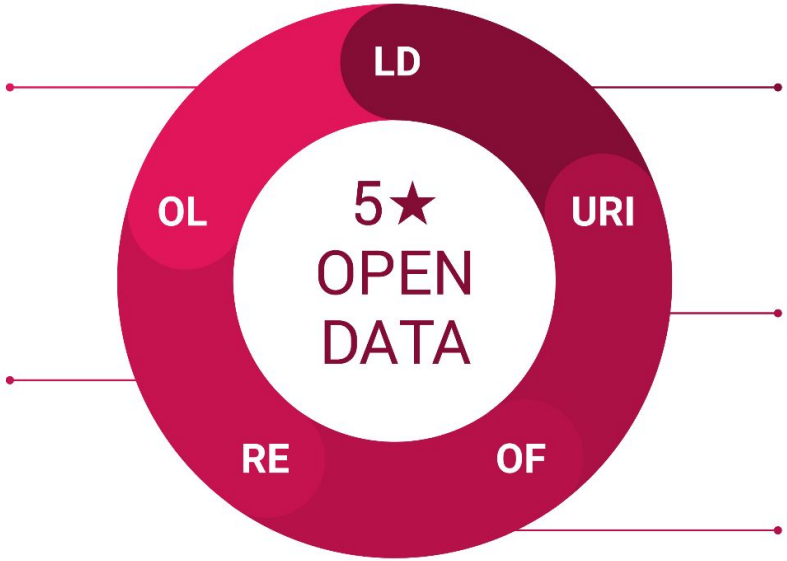
aus https://5stardata.info/de/

★ open licence *[PDF]*

available on the web (whatever format) but with an open licence, to be Open Data.

★★ machine readable *[XLS]*

available as machine-readable structured data.



Florian Thiery, CC BY 4.0, via Wikimedia Commons

★★★★★ Linked Open Data

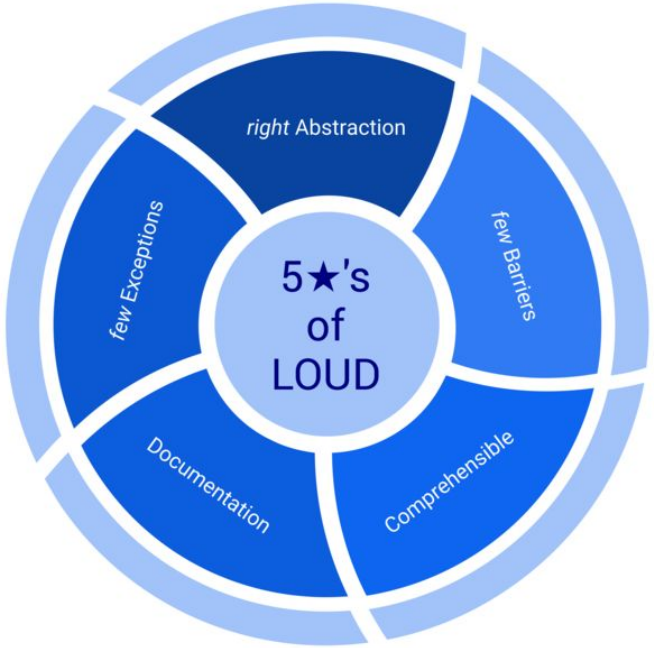
★★★★ plus: link your data to other people's data to provide context.

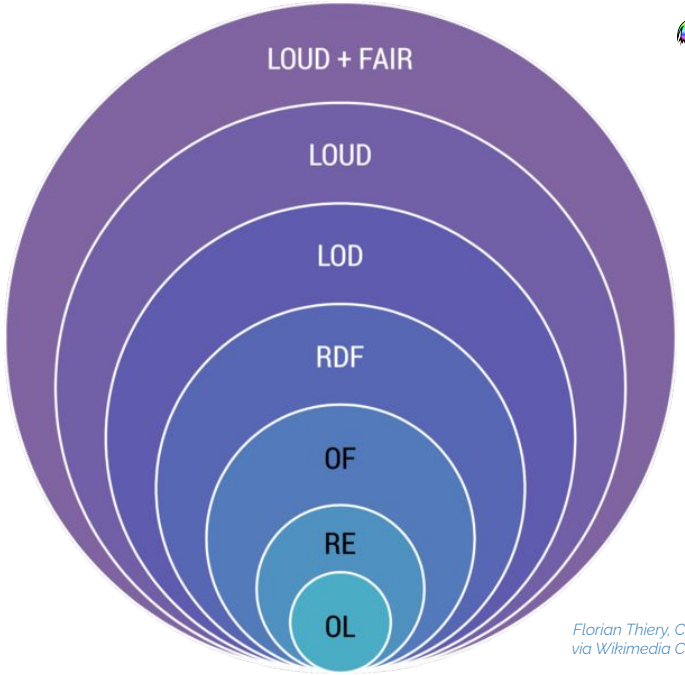
★★★★ use URIs *[RDF]*

★★★ plus: use open standards from W3C (RDF and SPARQL) to identify things, so that people can point at your stuff.

★★★ open format *[CSV]*

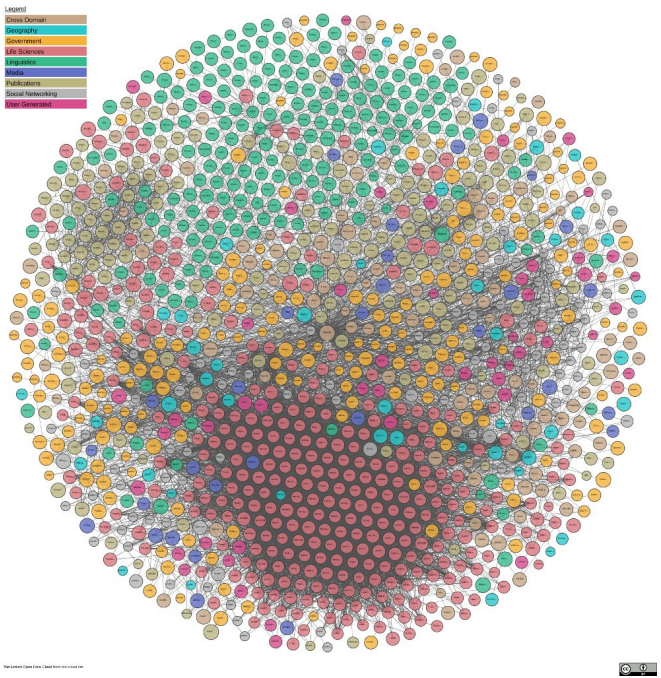
★★ plus non-proprietary format.





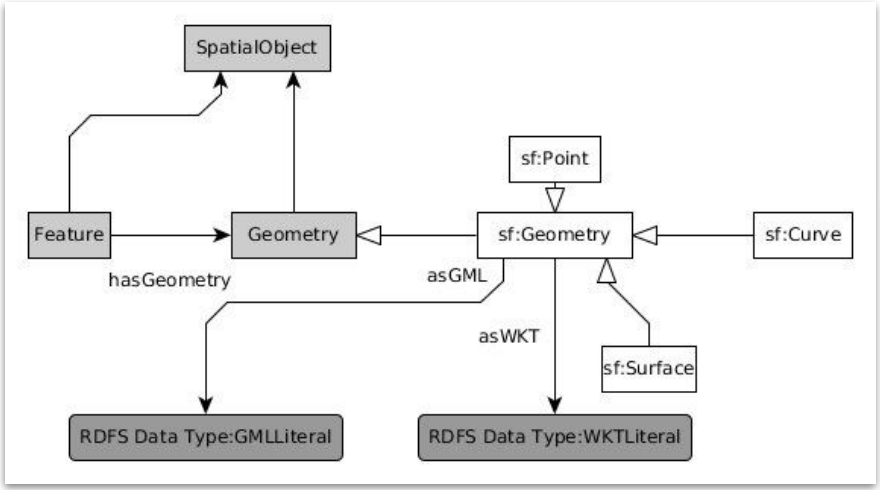
Linked Open (Usable) (Geo-)Data

plus FAIR + CARE

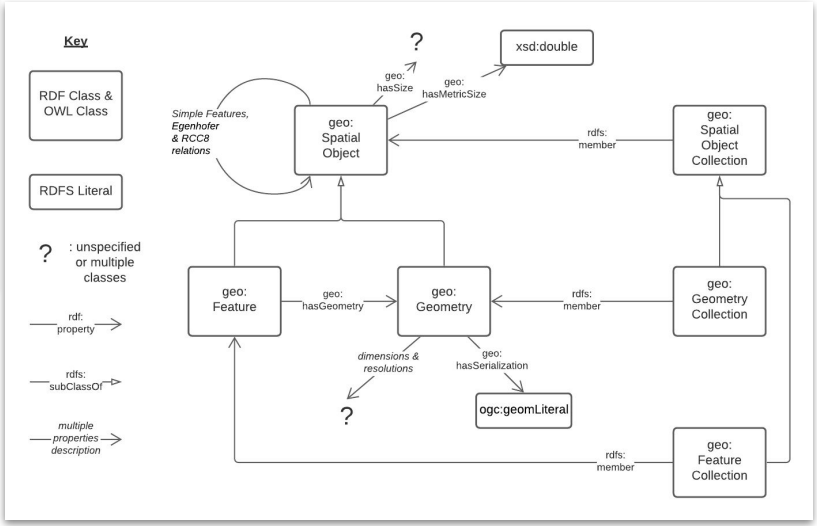


Florian Thiery, CC BY-SA 4.0, via Wikimedia Commons

Linked Open Data Cloud, Giant Global Graph, Knowledge Graph

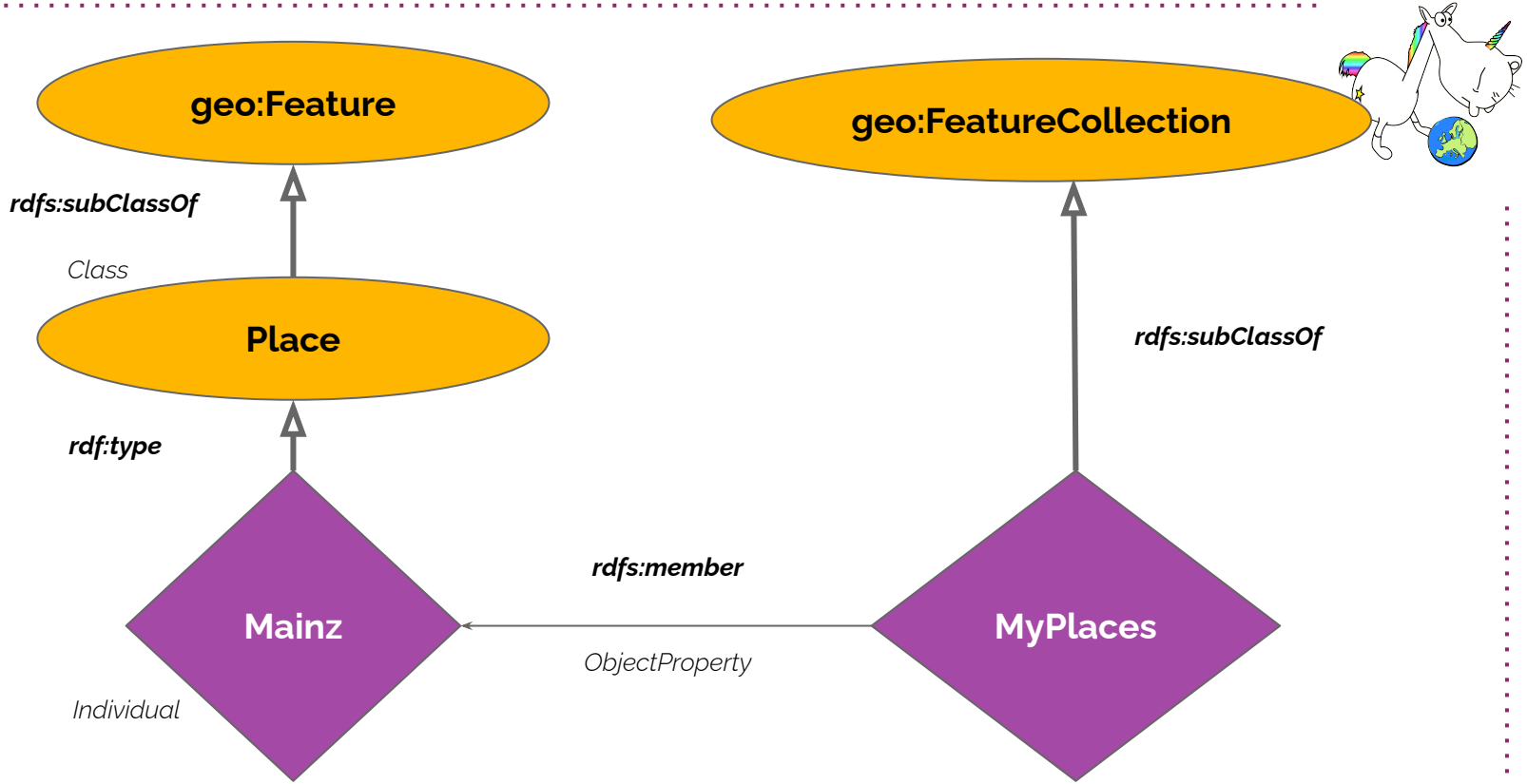


Med, Michal & Kremen, Petr. (2017). Context-based ontology for urban data integration. 457-461. DOI: 10.1145/3151759.3151838.



https://opengeospatial.github.io/ogc-geosparql/geosparql11/spec.html

OGC GeoSPARQL Ontologie



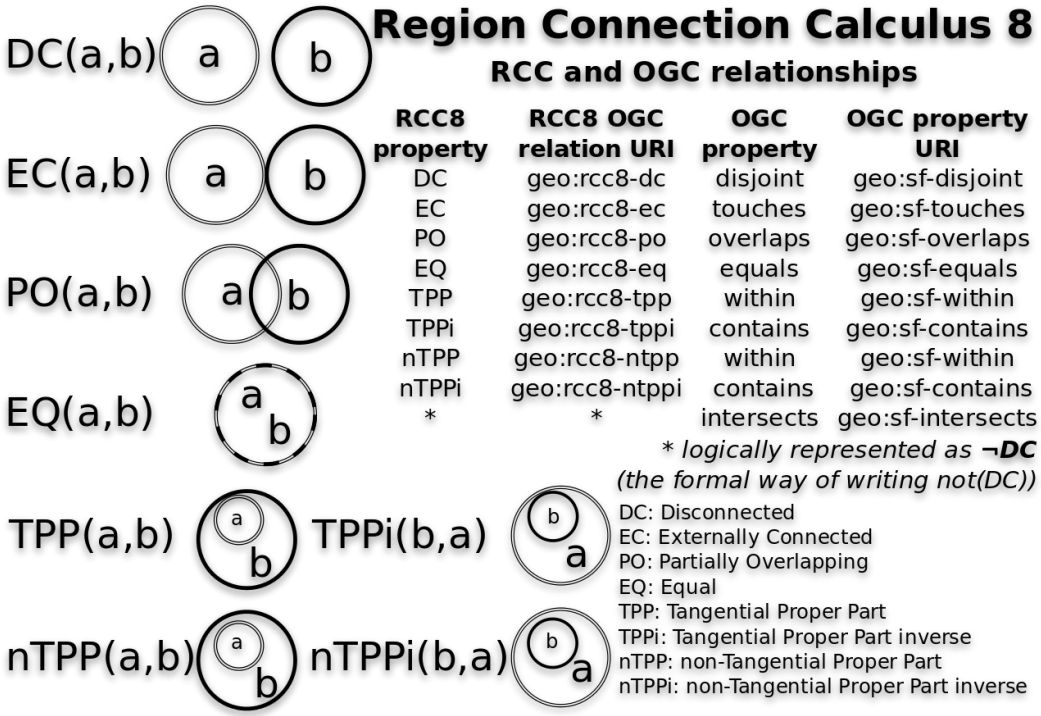
Klassen vs. Features vs. FeatureCollections

Es gibt jedoch auch noch mindestens 15 weitere Geo-Vokabulare:

- NeoGeo
- OpenStreetMap RDF/LinkedGeoData
- W3C Geo Vokabular
- Geonames
- Ordnance Survey - Spatial Relations Ontology
- CIDOC CRMgeo
- Schema.org Geometrien
- Wikidata Geovokabularien
- und so weiter.....

Eine ausführliche Liste der Äquivalenzen wird im GeoSPARQL 1.1 Standard veröffentlicht:

https://opengeospatial.github.io/ogc-geosparql/geosparql11/spec.html#_annex_e_alignments_informative



Region Connection Calculus 8

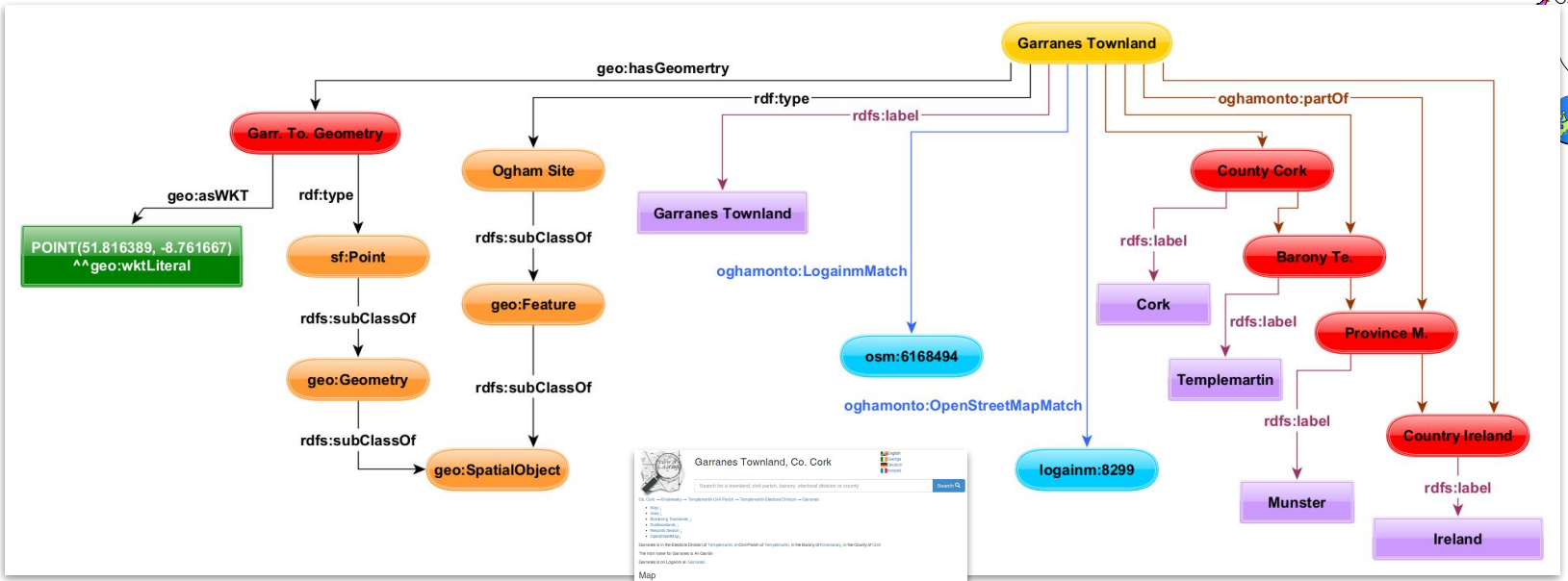
RCC and OGC relationships

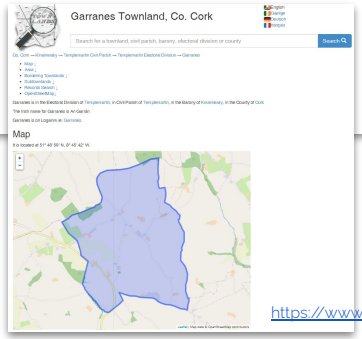
RCC8 property	RCC8 OGC relation URI	OGC property	OGC property URI
DC	geo:rcc8-dc	disjoint	geo:sf-disjoint
EC	geo:rcc8-ec	touches	geo:sf-touches
PO	geo:rcc8-po	overlaps	geo:sf-overlaps
EQ	geo:rcc8-eq	equals	geo:sf-equals
TPP	geo:rcc8-tpp	within	geo:sf-within
TPPi	geo:rcc8-tppi	contains	geo:sf-contains
nTPP	geo:rcc8-ntpp	within	geo:sf-within
nTPPi	geo:rcc8-ntppi	contains	geo:sf-contains
*	*	intersects	geo:sf-intersects

** logically represented as **¬DC***
(the formal way of writing not(DC))

DC: Disconnected
EC: Externally Connected
PO: Partially Overlapping
EQ: Equal
TPP: Tangential Proper Part
TPPi: Tangential Proper Part inverse
nTPP: non-Tangential Proper Part
nTPPi: non-Tangential Proper Part inverse

GeoSPARQL Query Language: Eine Erweiterung von SPARQL um Relationen zwischen Geometrien abzubilden

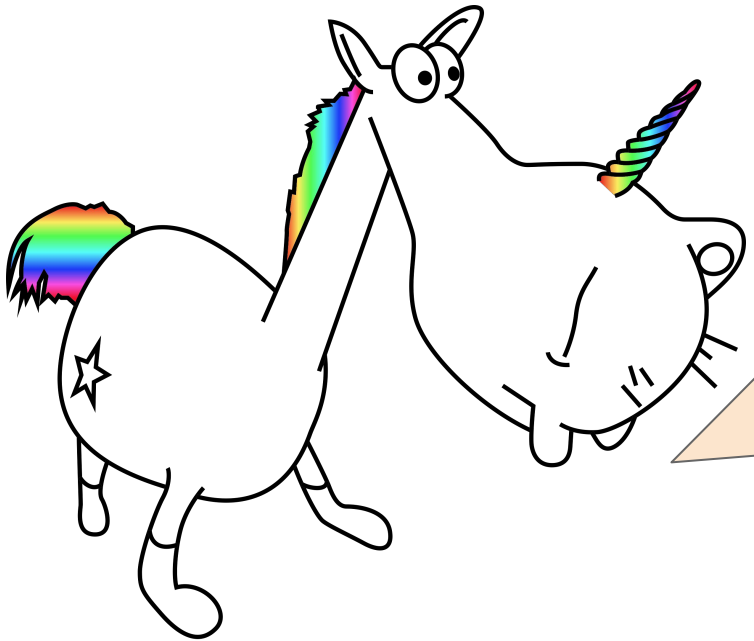




https://www.townlands.ie/cork/kinalmeaky/templemartin/templemartin/garranes/

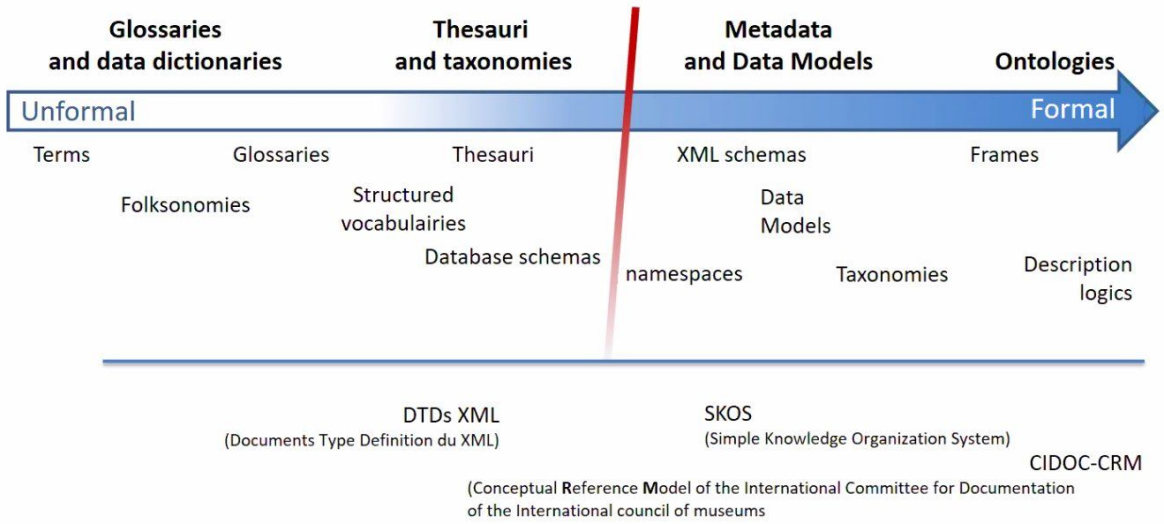
Florian Thiery und Timo Homburg, CC BY 4.0, via Wikimedia Commons

GeoSPARQL Beispiel zur Modellierung des irischen Townlands Garranes



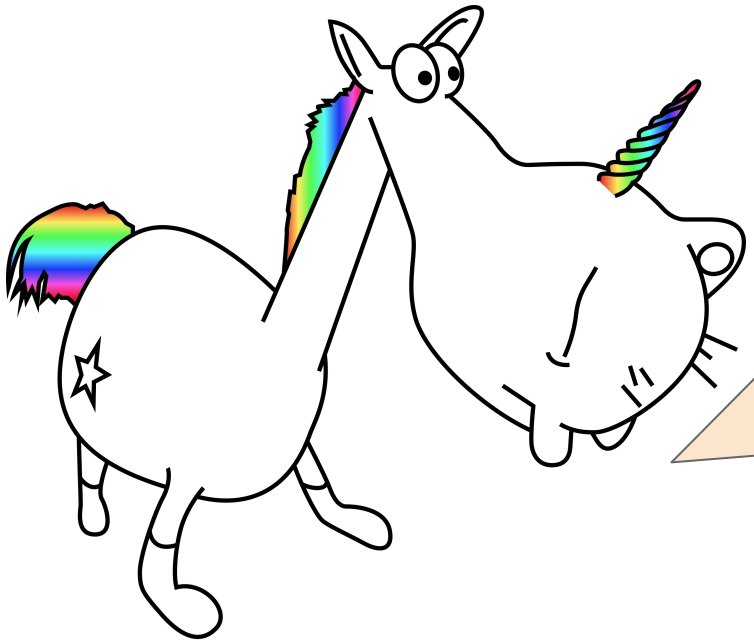
In der Welt der digitalen Archäologie und den Digital Humanities gibt es meistens den Wunsch nach einer **Verschlagwortung** um eindeutige Suchen nach Keywords zu ermöglichen und zu **Standardisieren**.

From Term to Ontology



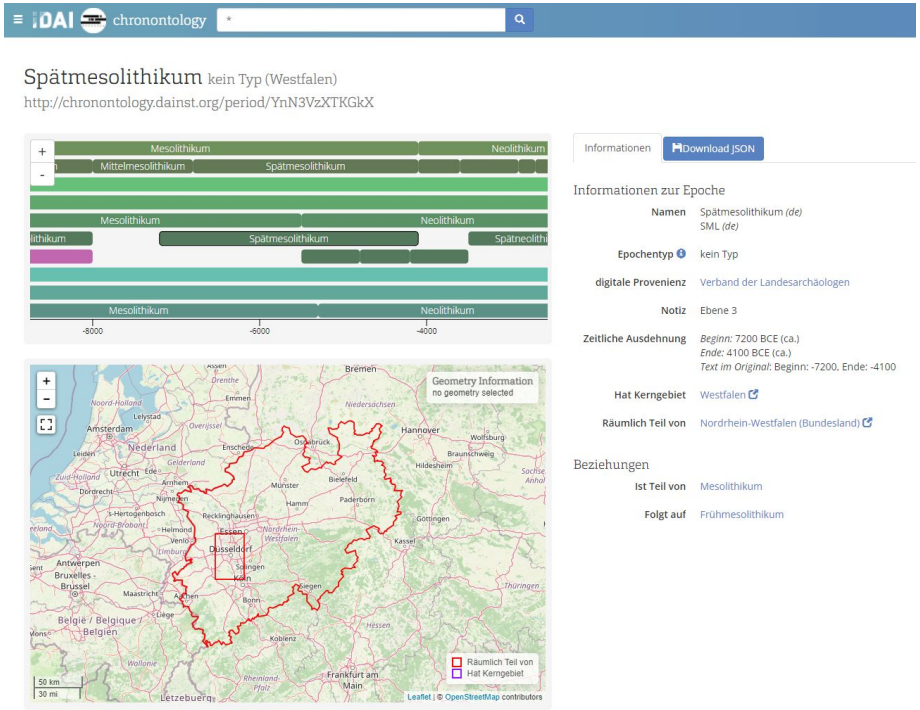
aus

https://twitter.com/pettulda/status/1323922097232662531

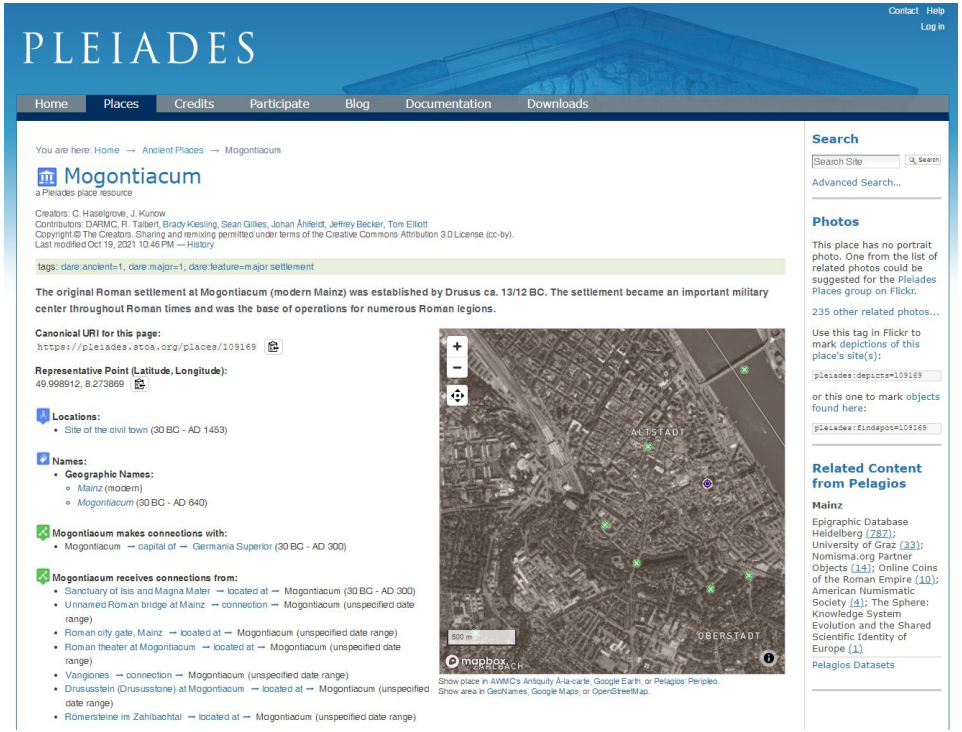


In verschiedenen Projekten werden LOD-Thesauri, Gazetteers, Space-Time-Gazetteers und Fachdaten erstellt.

ChronOntology | http://chronontology.dainst.org/period/YnN3VzXTKGkX



ChronOntology | http://chronontology.dainst.org/period/YnN3VzXTKGkX



Pleiades | https://pleiades.stoa.org/places/109169

nomisma.org | Browse IDs | Research Tools | APIs | Documentation | Ontology | SPARQL | Datasets | Search IDs

Laodicea ad Mare (Mint, Concept)

Canonical URI: http://nomisma.org/id/laodiceia_ad_mare

Labels

Preferred Label Laodicea ad Mare *(en)*, Lattaquié *(fr)*, Latakia *(es)*, Laodicea *(it)*, Latakia *(de)*, Λαττάκεια *(el)* *Additional labels*
Alternate Label Laodikeia pros Mare *(en)*

Definitions

en The mint at the ancient site of Laodiceia in Syria.

Geospatial Data

URI: http://nomisma.org/id/laodiceia_ad_mare#this
Latitude 35.516667
Longitude 35.783333
Part Of http://nomisma.org/id/seleucis_and_pieria#this

Relations

Broader Concept http://nomisma.org/id/seleucis_and_pieria
Close Match http://collection.britishmuseum.org/id/place/x48252
Close Match http://d-nb.info/gnd/4270543-5
Close Match http://dbpedia.org/resource/Latakia
Close Match http://sws.geonames.org/173576/
Close Match http://sws.geonames.org/8445122/
Close Match http://viaf.org/viaf/135413368
Close Match http://vocab.getty.edu/tgn/7002280
Close Match http://www.wikidata.org/entity/Q200030
Close Match https://pleiades.stoa.org/places/668290
Close Match https://www.freebase.com/m/01bsmp
Concept Scheme http://nomisma.org/id/

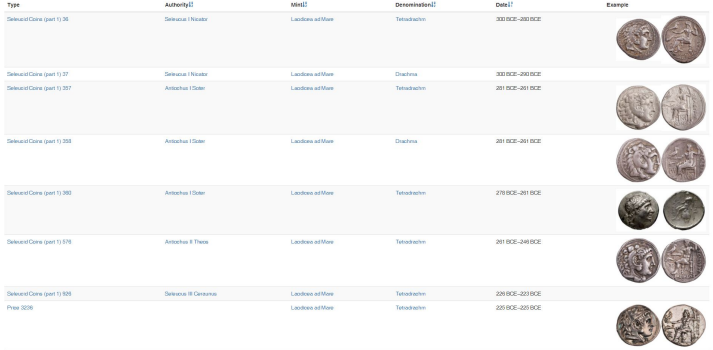
Miscellaneous

Part Of http://nomisma.org/id/greek_numismatics
Part Of http://nomisma.org/id/roman_numismatics
Part Of http://nomisma.org/id/roman_provincial_numismatics

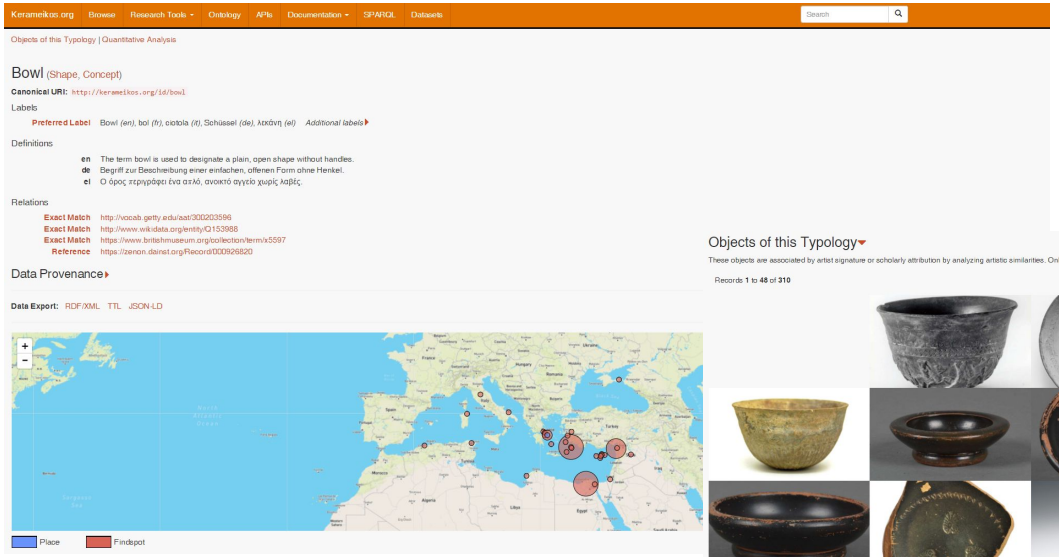
Export

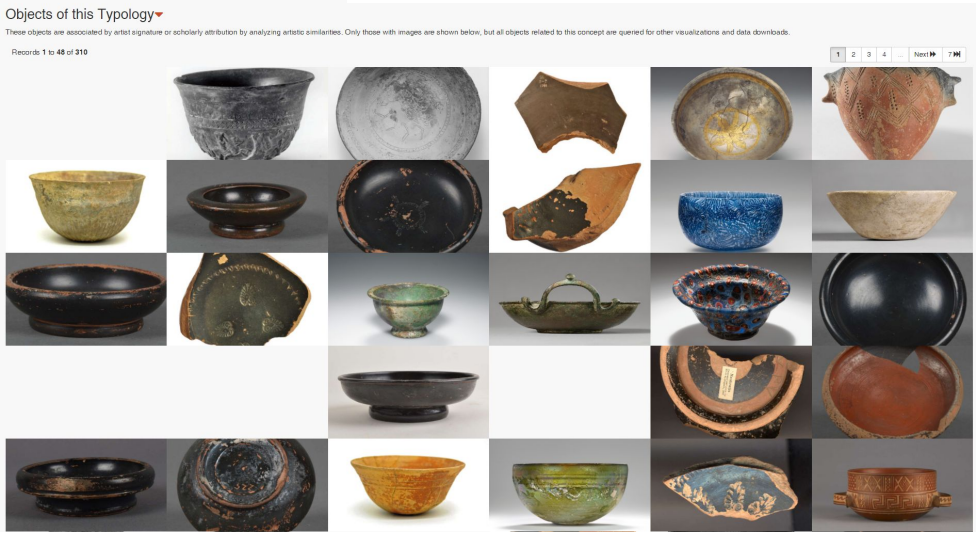
Linked Data GitHub File RDF/XML RDF/TTL JSON-LD
Geographic Data KML GeoJSON

Mints Hoards Finds

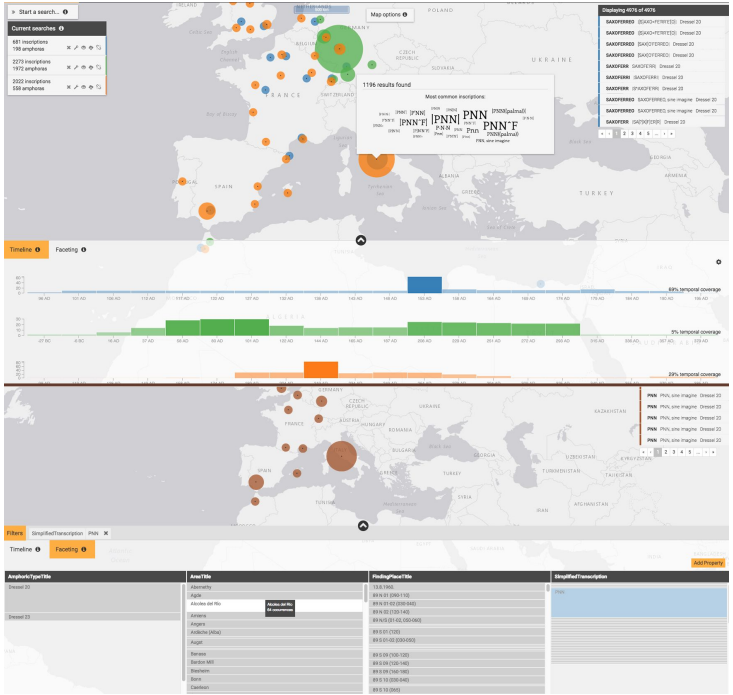


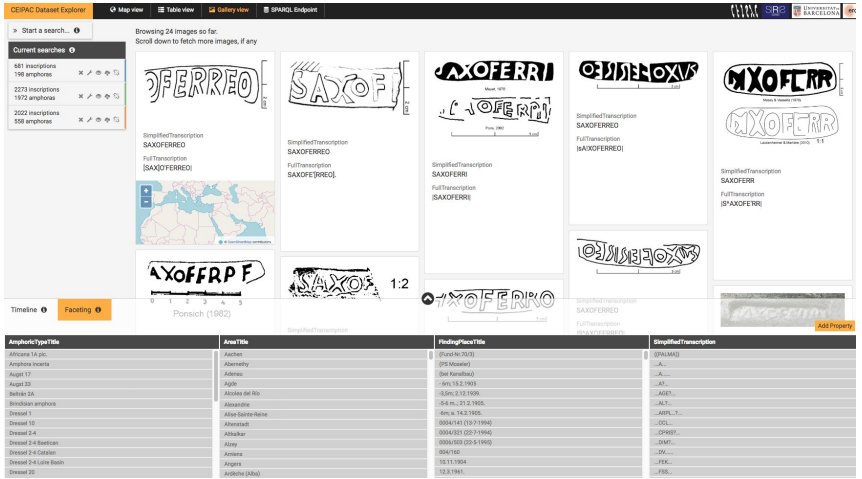
Nomisma | http://nomisma.org/id/laodiceia_ad_mare



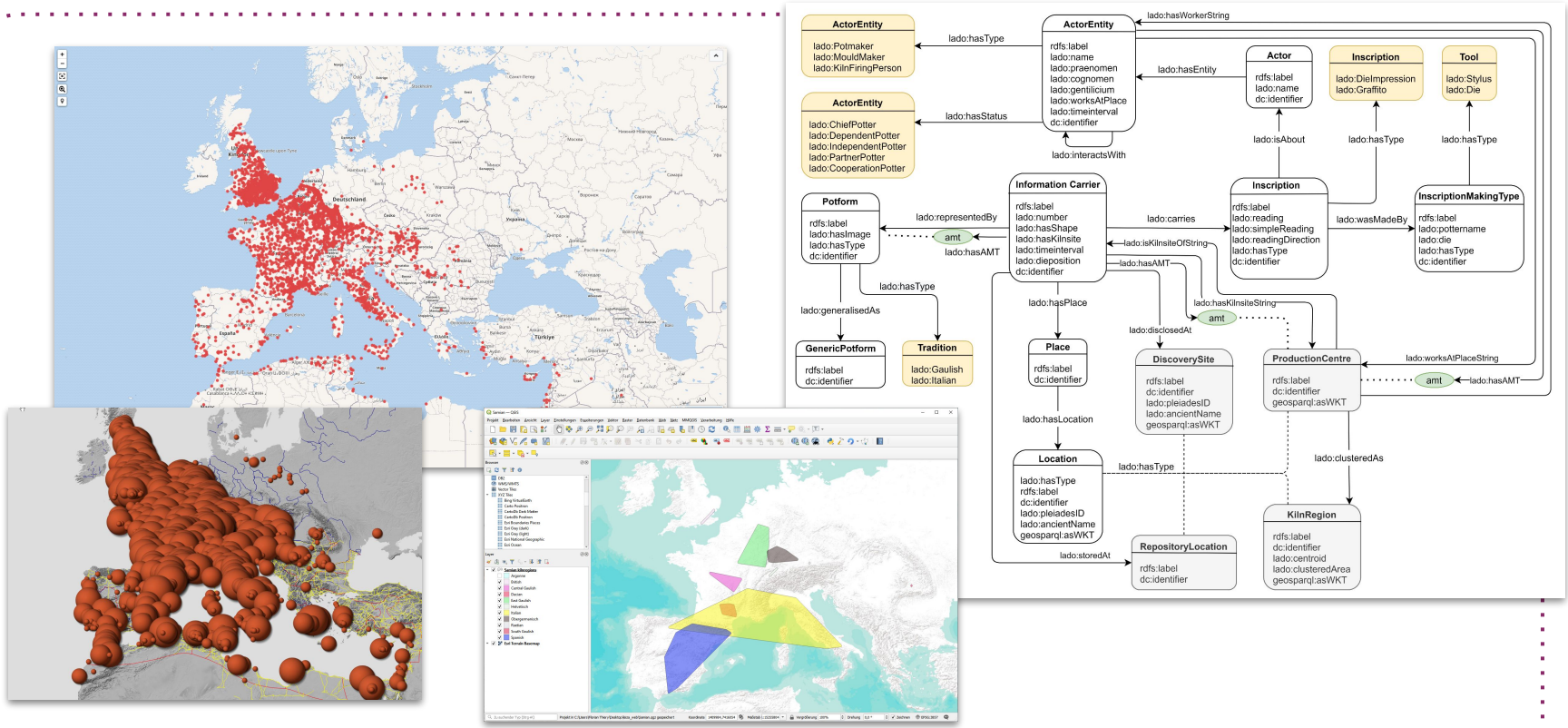


Kerameikos | http://kerameikos.org/id/bowl

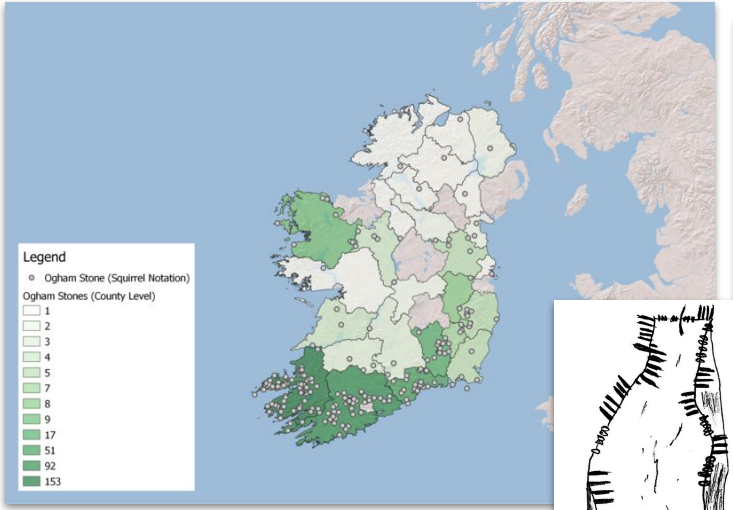


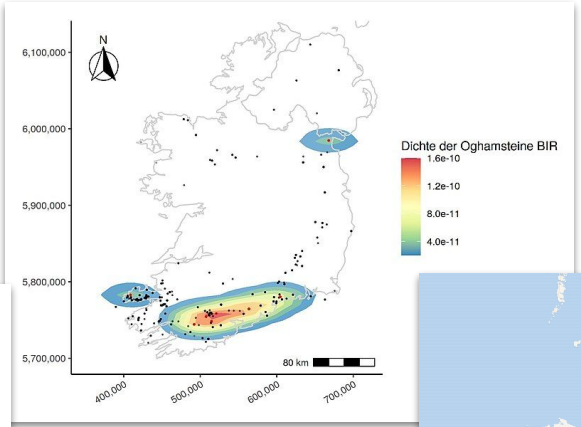


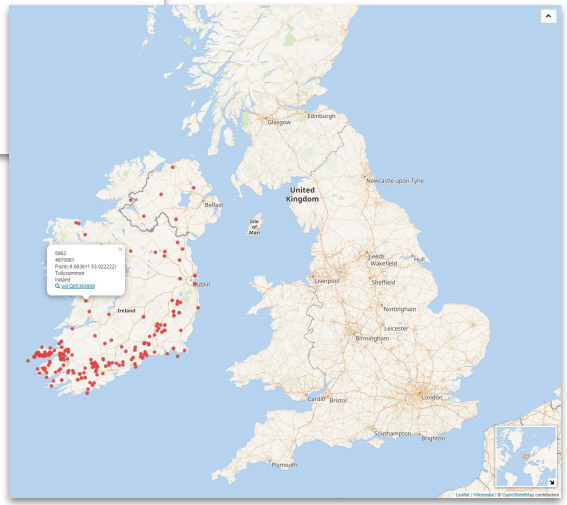
CEIPAC Roman Open Data | https://romanopendata.eu/#!/

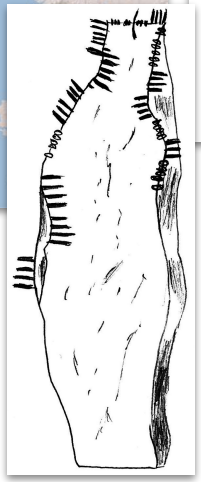


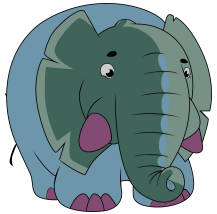
RGZM Linked Open Samian Ware | https://rgzm.github.io/samian-lod/











Linked Ogham Data | http://ogham.link

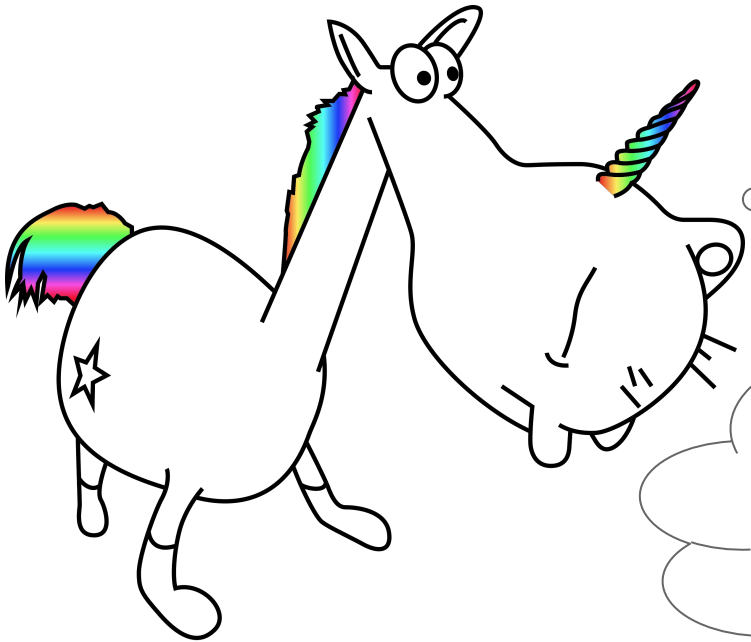
Vocabularies

We have used the STELLAR tools to convert the data to SKOS format, and each vocabulary has then undergone validation using the PoolParty SKOS validator service. There are direct links to the Linked Data vocabularies below, and the SKOS RDF files are also available for individual download. We have used the SKOS Play service to create additional downloadable alphabetical and hierarchical listings for each vocabulary.

Historic England

SCHEME	EXAMPLES	DOWNLOADS
FISH Archaeological Sciences Thesaurus Terminology used for recording the techniques, recovery methods and materials associated with archaeological sciences. Maintained by Historic England on behalf of the FISH Terminology Working Group.	MINERALOGY PEAT HUMIFICATION DENDROCHRONOLOGY	SKOS (RDF) Alphabetical (PDF) Hierarchical (PDF)
FISH Building Materials Thesaurus Terminology used for recording the main construction materials of monuments, buildings and structures relating to the built and buried heritage of the British Isles. Maintained by Historic England on behalf of the FISH Terminology Working Group	DOLOMITE FELT LEATHER	SKOS (RDF) Alphabetical (PDF) Hierarchical (PDF)

https://www.heritagedata.org/blog/vocabularies-provided/



WIKIDATA

wikidata.org

- **A free and open knowledge base and data hub**
  → everybody can add and edit

- central storage for structured data of **Wikimedia** projects

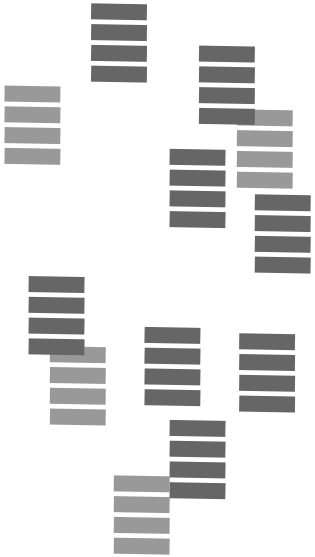
data in **Wikidata** is:

- ***available*** under a free license (CC 0)
- ***multilingual***
- ***accessible*** to humans and machines (GUI & API & SPARQL)
- ***exportable*** using standard formats (JSON, RDF, XML)
- ***interlinked*** to other open data sets on the LOD Cloud

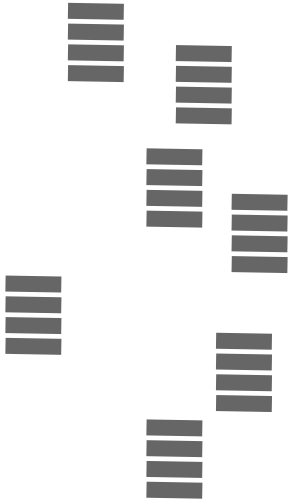
What is Wikidata?

local (offline)

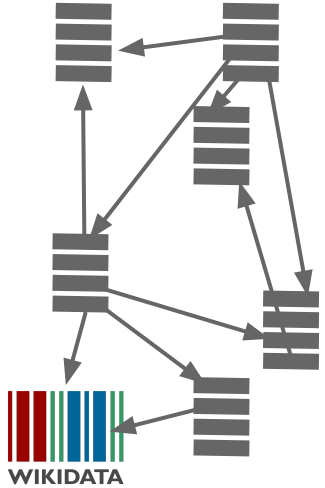
online

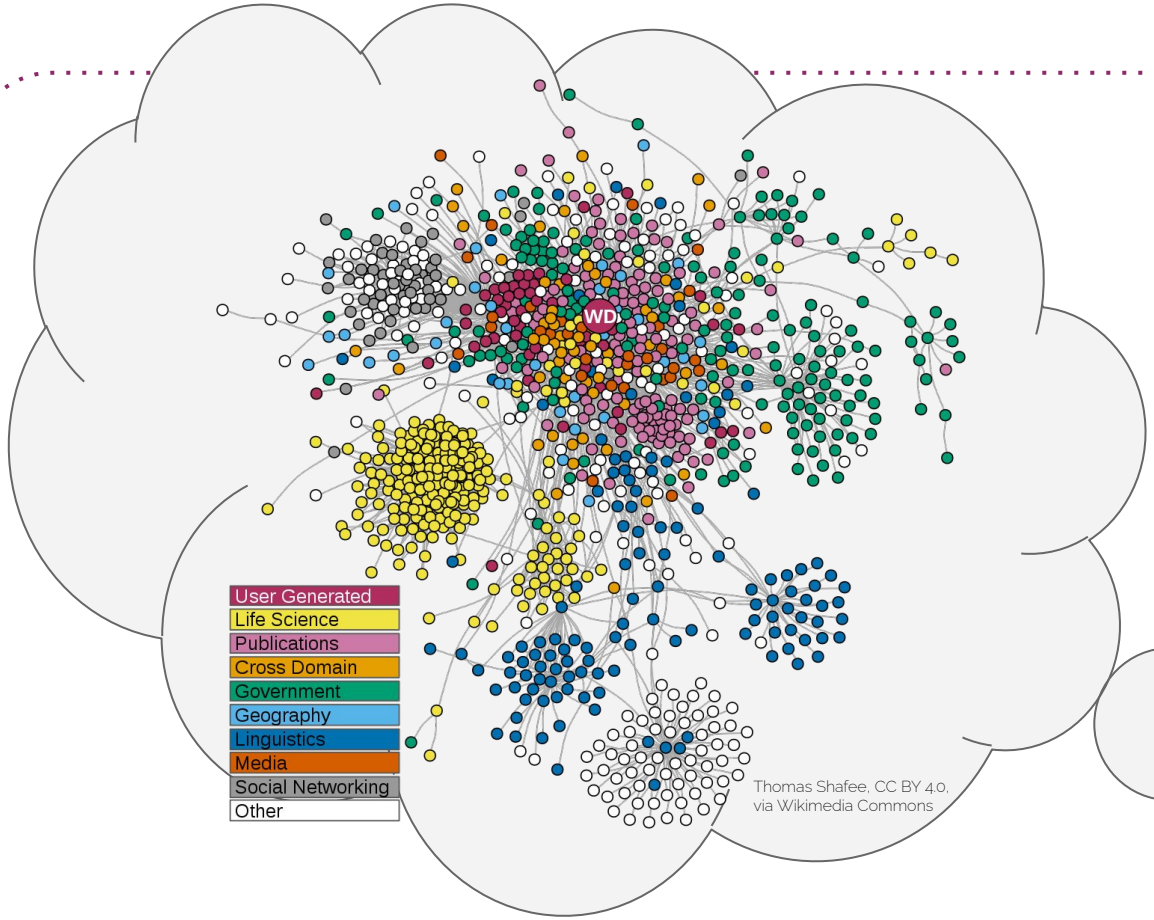


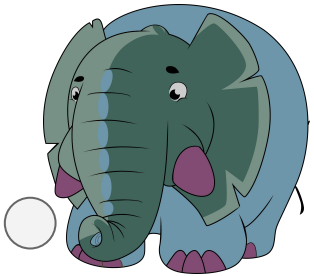
online & open



part of LOD

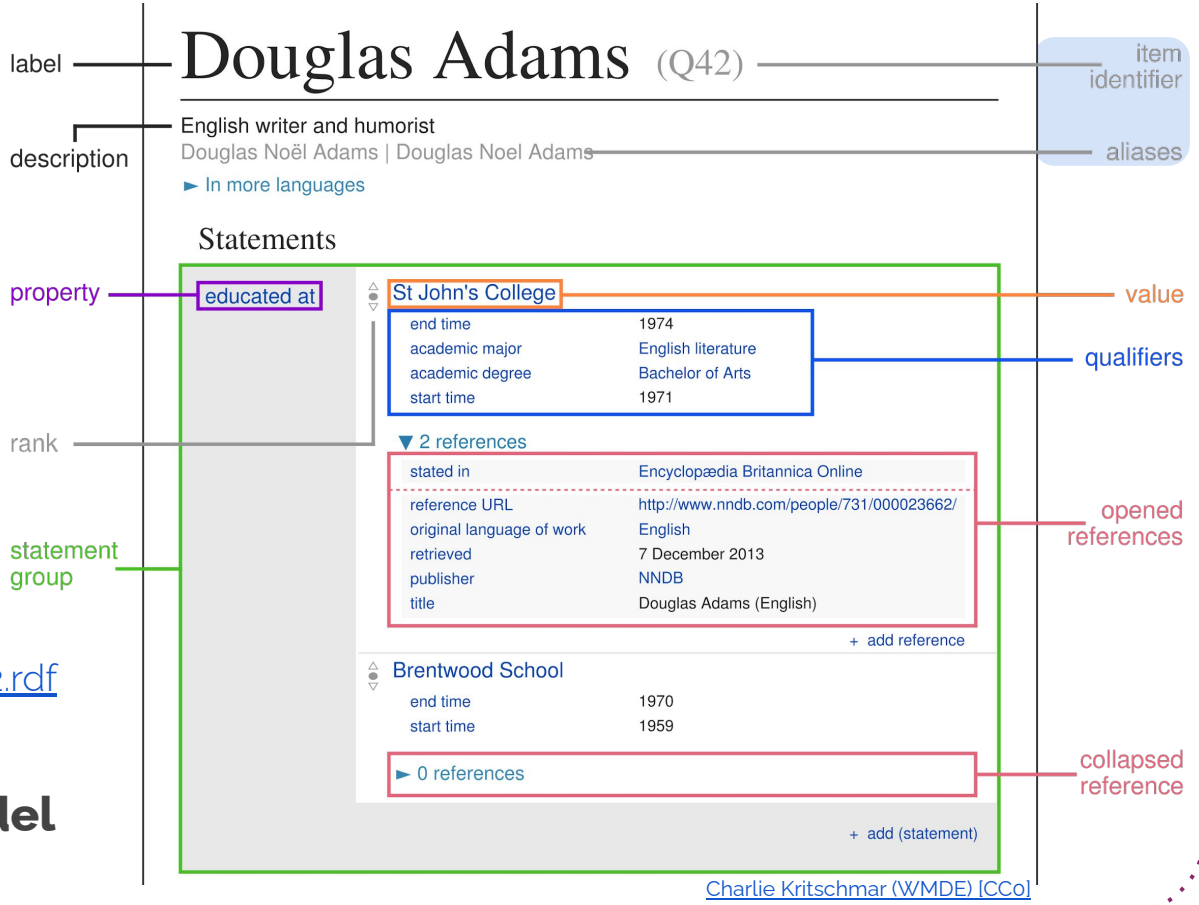






Wikidata in the Linked Open Data Cloud

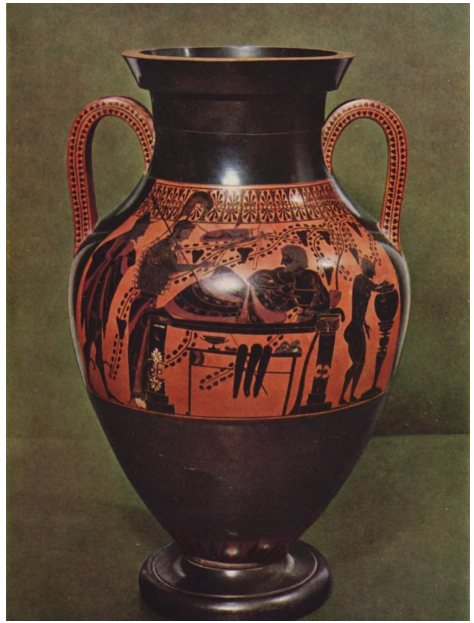
- Items
  - Label
  - Description
  - Alias
  - Identifier
- Statements
  - Property
  - Value
  - Qualifier
  - Reference
- In RDF
  wikidata.org/wiki/Q42.rdf



Wikidata's Data Model

- Amphora (Q178401)
- Shapes and types
  - ***Panathenaic*** (Q1277842)
  - Belly (Q11077005)
  - ...
- Individual Objects
  - Q1572162
  - ...

Amphoras in Wikidata



Antikensammlung Berlin (2301) CC 0

panathenaic amphora (Q1277842)

special shape of attic amphoras

https://www.wikidata.org/wiki/Q170478

Statements

instance of	ancient Greek vase-form 0 references	edit add reference add value
subclass of	neck amphora 0 references	edit add reference add value
image	 Panathenaic amphora BM B130.jpg 1,900 × 2,880; 2.95 MB 0 references	edit add reference add value

Identifiers

AAT ID — 300200366

0 references

Research

Research Home ▸ Tools ▸ Art & Architecture Thesaurus ▸ Full Record Display

Art & Architecture Thesaurus® Online
Full Record Display

New Search | Previous Page | Help

Click the icon to view the hierarchy.

Semantic View (JSON, RDF, N3/Turtle, N-Triples)

ID: 300200366 **Record Type:** concept

Page URL: http://vocab.getty.edu/page/aat/300200366

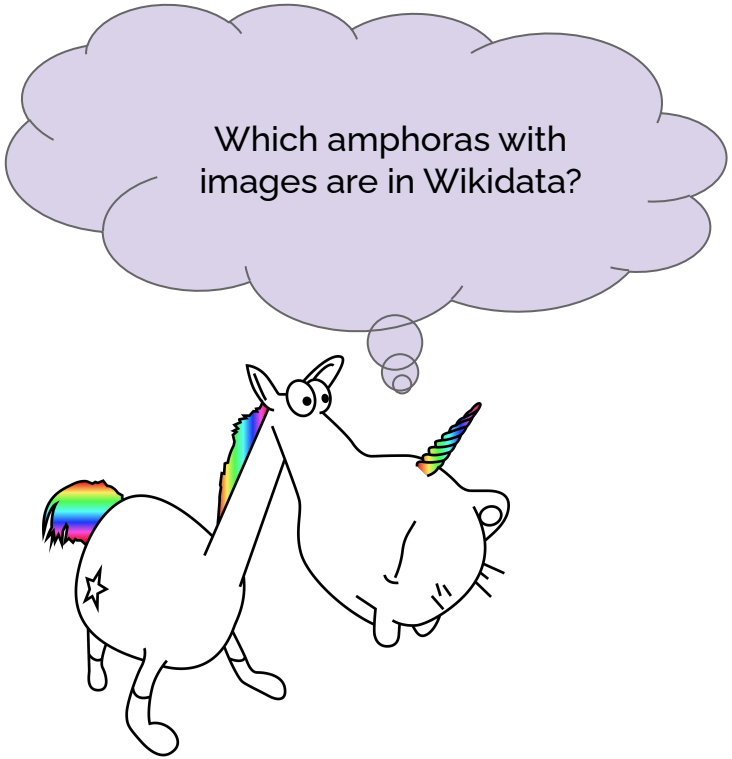
Panathenaic amphorae (neck amphorae, amphorae (storage vessels), ... Furnishings and Equipment (hierarchy name))

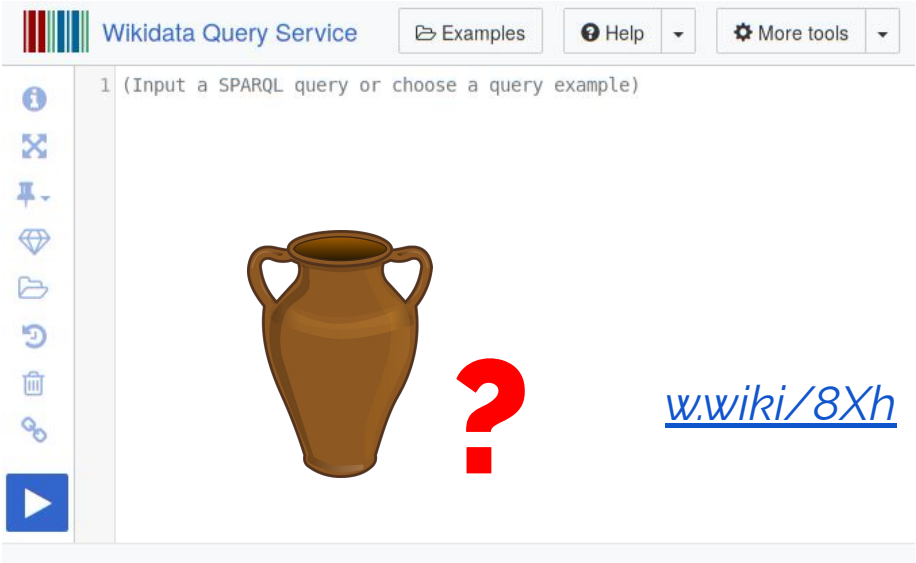
Note: Refers to amphorae that were filled with olive oil from the sacred trees of Athena, given as prizes in the Panathenaic Games. They were neck amphorae with a large, broad body sharply tapering downward and a relatively thin neck. The standard decoration included images of Athena on one side and the contest at which the prize was won on the other, usually in the Black-figure technique.

Terms:

Panathenaic amphorae (**preferred**,C,U,English-P,D,U,PN)
Panathenaic amphora (C,U,English,AD,U,SN)
Panathenaic amphorai (C,U,English,UF,U,N)
amphorae (Panathenaic amphorae) (C,U,English,UF,U,N)
amphorae, Panathenaic (C,U,English,UF,U,N)
amphorae, type c neck (C,U,English,UF,U,N)
amphorae, type IIc (C,U,English,UF,U,N)
amphorae type IIc (C,U,English,UF,U,N)
amphorai type IIc (C,U,English,UF,U,N)
neck amphorae type c (C,U,English,UF,U,N)
neck amphorai type c (C,U,English,UF,U,N)
panathenaic amphorae (C,U,English,UF,U,N)
Panathenaic amphoras (C,U,English,UF,U,N)
type c neck amphorae (C,U,English,UF,U,N)
type IIc amphorae (C,U,English,UF,U,N)
Panatheneïsche amforen (C,U,Dutch-P,D,U,U)
Panatheneïsche amfoor (C,U,Dutch,AD,U,U)
ánforas panatenaica (C,U,Spanish-P,D,U,PN)
ánfora panatenaica (C,U,Spanish,AD,U,SN)

http://vocab.getty.edu/aat/300200366





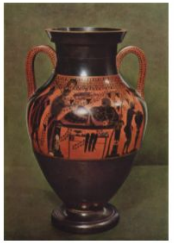
query.wikidata.org

w.wiki/8Xh

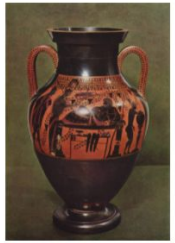
commons:Dipylon amphora close front...
Dipylon-Amphora

commons:Great-Amphora-of-Ness...
Bauchamphora des Nessos-Malers

commons:Hermonax amphor...
Amphora des Hermonax in W...



commons:Athena Herakles Staatlic...
Bauchamphora des Andokides-Mal...



commons:Athena Herakles Staatlic...
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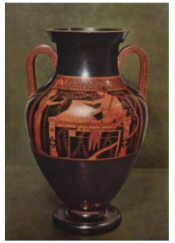
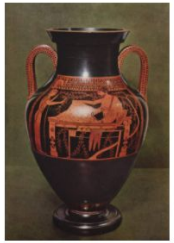


commons:Athena Herakles Staatli...
Bauchamphora des Andokides-Ma...



commons:Athena Herakles Staatli...
Bauchamphora des Andokides-Ma...

commons:Panathenaic amphora ...
Burgon-Vase

commons:Plate Euphorbos BM GR1860.4-4....
Euphorbos-Teller

commons:Altes Museum - Anti...
Halsamphora des Exekias (Be...

commons:Altes Museum - Ant...
Halsamphora des Exekias (B...

commons:Melian Horse a...
Pferde-Amphore

commons:Nama 912 Melian Ri...
Reiter-Amphore

commons:Exekias Dionysos Staatlich...
Dionysos-Schale

commons:Pinax prothesis Louvre MNB905.jpg
Pinax mit Prothesisdarstellung des Sappho-Malers

commons:Panathenaic amphora Louvre MN7...
Q9491803

commons:Panathenaic a...
Louvre MN705

commons:Hoplitodromos Louvre MN704.jpg
Louvre MN704

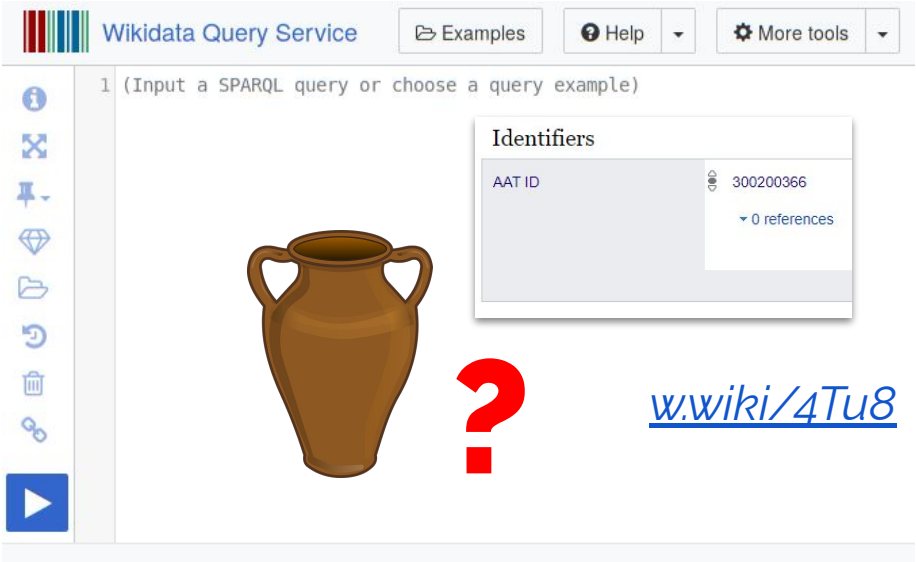
commons:Panathenaic amphora Kl...
Q9497847

commons:Louvre-Len...
Q12882780

commons:Louvre-Len...
Q12882780

commons:Apobates race (1) - Getty Villa Collection.jpg
Panathenaic amphora, Getty Villa Collection, Nr. 79.AE.147

Which amphoras with images are in Wikidata having Getty AAT ID 300200366?



w.wiki/4Tu8

query.wikidata.org

Wikidata Query Service | Beispiele | Abfragegenerator | Hilfe | Weitere Werkzeuge

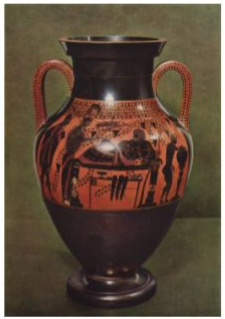
```
#Greek Amphoras identified with Getty AAT

#defaultView:ImageGrid
SELECT ?item ?itemLabel ?pic WHERE {
  ?item wdt:P1014 ?o.
  VALUES ?item {
    wd:Q41971267
    wd:Q19899872
    wd:Q178401
    wd:Q11076343
    wd:Q11077005
    wd:Q1277842
  }
  ?item wdt:P18 ?pic
  SERVICE wikibase:label { bd:serviceParam wikibase:language "[AUTO_LANGUAGE],en". }
}
```

w.wiki/4Tu8

Image grid

commons:Amphorae stacking.jpg
Amphore

commons:Panathenaic amphora BM ...
Panathenäische Preisamphore



commons:Athena Herakles Staatliche A...
Amphore vom Typ A

commons:Exekias, anfora con ac...
Amphore vom Typ A

AtlantGIS

Faked GIS-Datasets, simulating an island in the Atlantic for educational purposes in using GIS in archaeology.
All AtlantGIS data are published under a CC-BY-SA 4.0 license.

The idea is to create artificial data creatively referring to the story of Atlantis as told by Platon. We believe that simple datasets with a narrative are most qualified to impart knowledge and skills to students.

Whoever likes the idea is invited to contribute data using the repository on GitHub. We ask every contributor to link to documents that put the dataset in context of a special GIS-related task and make the tutorials/workshop documents available under an open licence.

DISCLAIMER: These data are not in any way based on any "identification" of Platon's concept of Atlantis in geographical sense. They should and cannot be used to argue in favour or against any scientific of unscientific hypotheses.

Datenherkunft

Reale Geodaten stammen von der Insel Sokotra im Indischen Ozean und wurden in den Atlantik "verschoben".

Viele Layer, insbesondere thematische Vektordaten, beziehen sich inhaltlich auf die Schilderungen von Plato im Kritias-Dialog

sites

10 "Hauptstädte" der Söhne von Kleito und Poseidon, gegründet in Periode IIb.

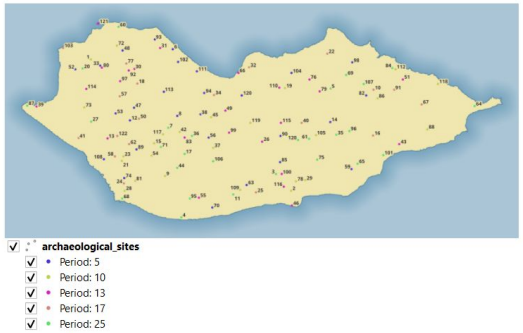
archaeological_sites

123 zufällig auf der Insel verteilte archäologische Fundplätze mit Zuweisung einer Zeitstufe (vgl. `\tables\atlantgis_periods.csv`)

Hinweis: ID_AR_SITE: 120 ist doppelt vergeben!

120	120	5	35,6260219999...	-15,1583950000...
121	120	25	35,5329380000...	-15,0150330000...

`Geometrietyp: MultiPoint`



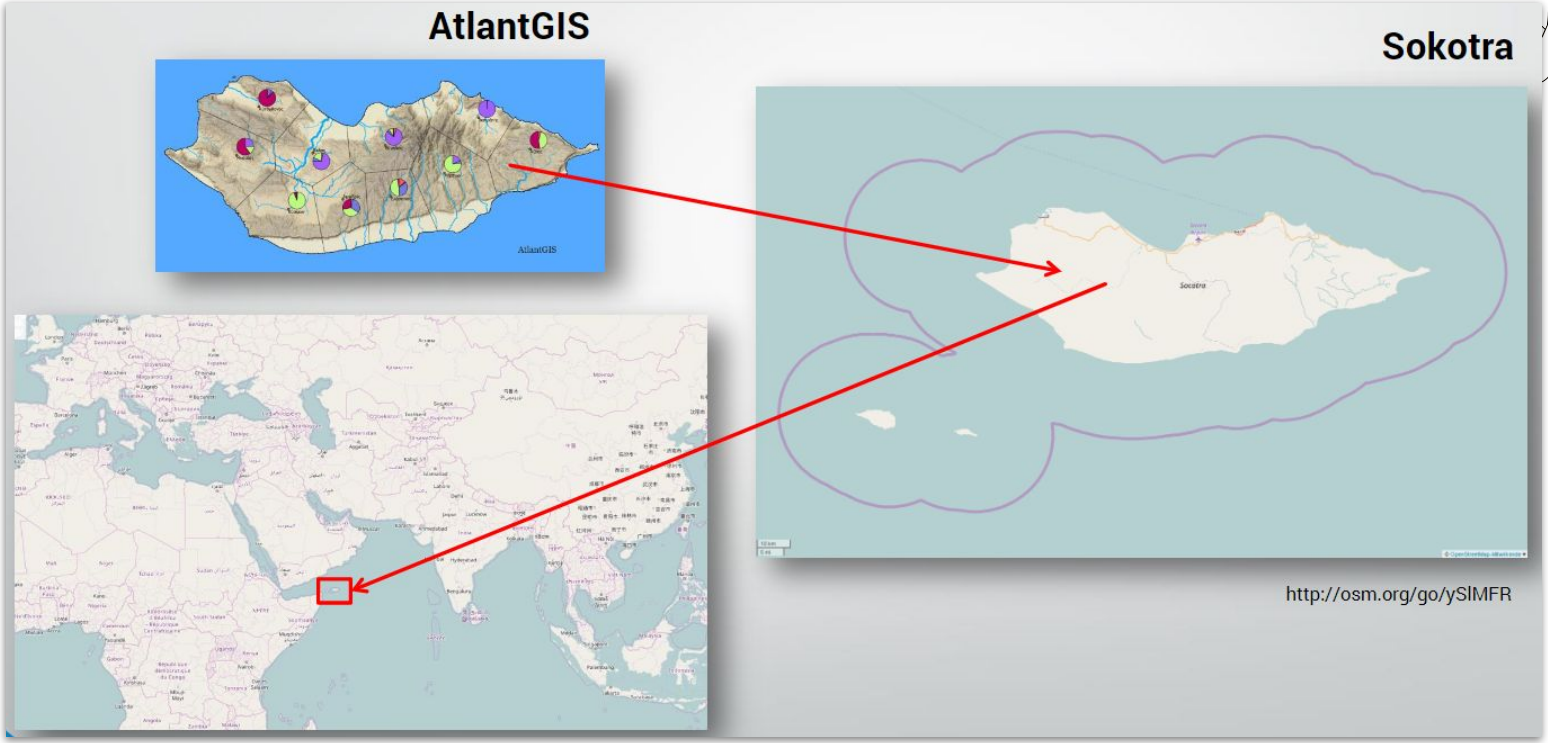
Datenstruktur

Das zip-Archiv auf GitHub

- AtlantGIS-master
  - gettingstarted
    - geophys
    - sqlite
    - vector
      - dxf
      - shp
  - linkeddata
    - ontology
      - index_files
    - pyscripts
    - rdf
  - project_datasets
    - barrow
  - raster
    - dem
    - geophys
    - screenshots
    - tables
    - templates
  - vector
    - db
    - geojson
    - shp

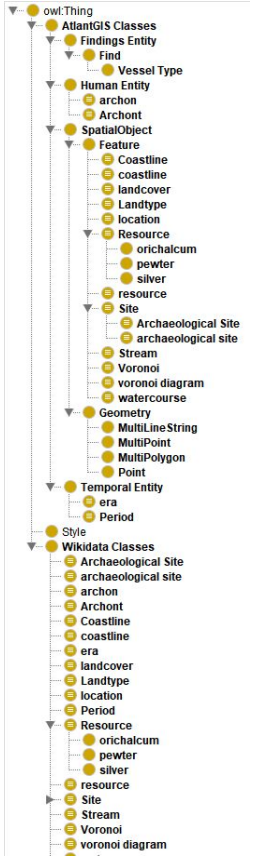
Der AtlantGIS Datensatz

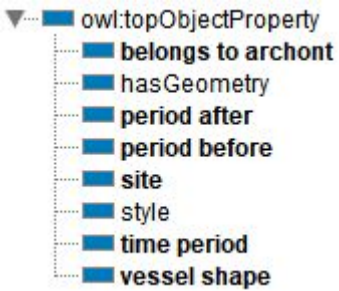
https://hackmd.io/@KaCeBe/atlantgis-dataset

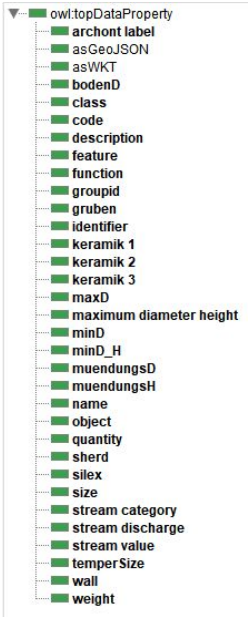


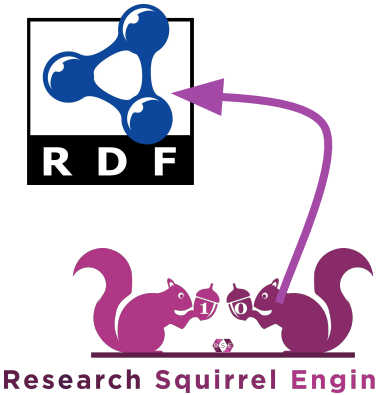
Thiery, Florian, & Taani, Rania. (2017, June 23). Avalanches on Atlantis - Real or Fake? The "true" story!. XXX. International Geodetic Student Meeting, Zagreb, Croatia. Zenodo. https://doi.org/10.5281/zenodo.817495

LOD und AtlantGIS

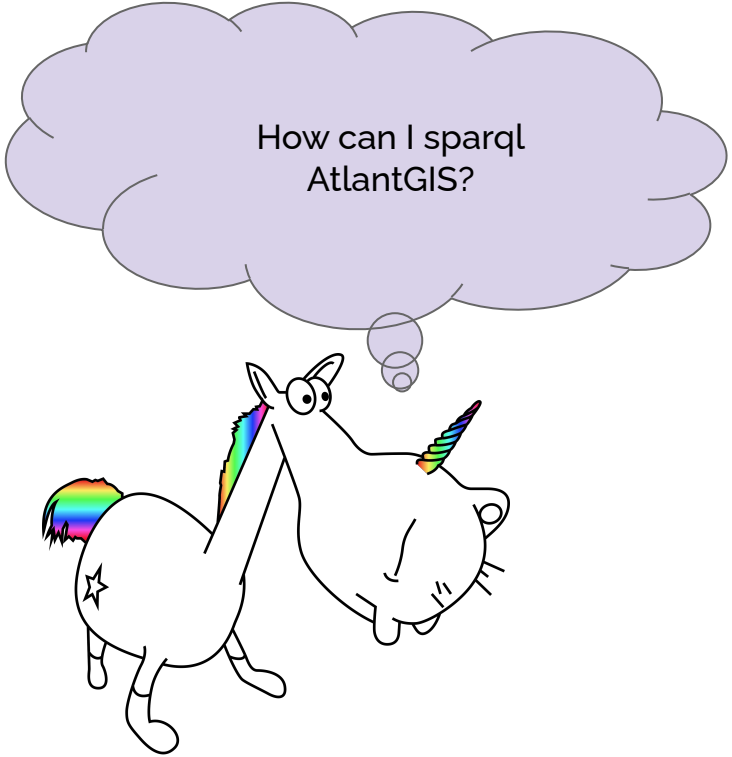


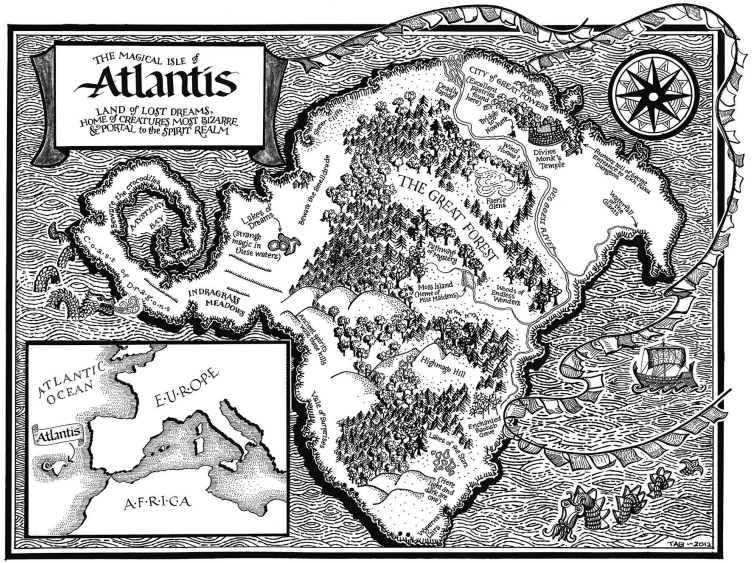






Einblick in die AtlantGIS Ontologie in Protegé





ATLANTIS LOST: Book 3 from The Atlantis Saga

AtlantGIS Vessel-Types

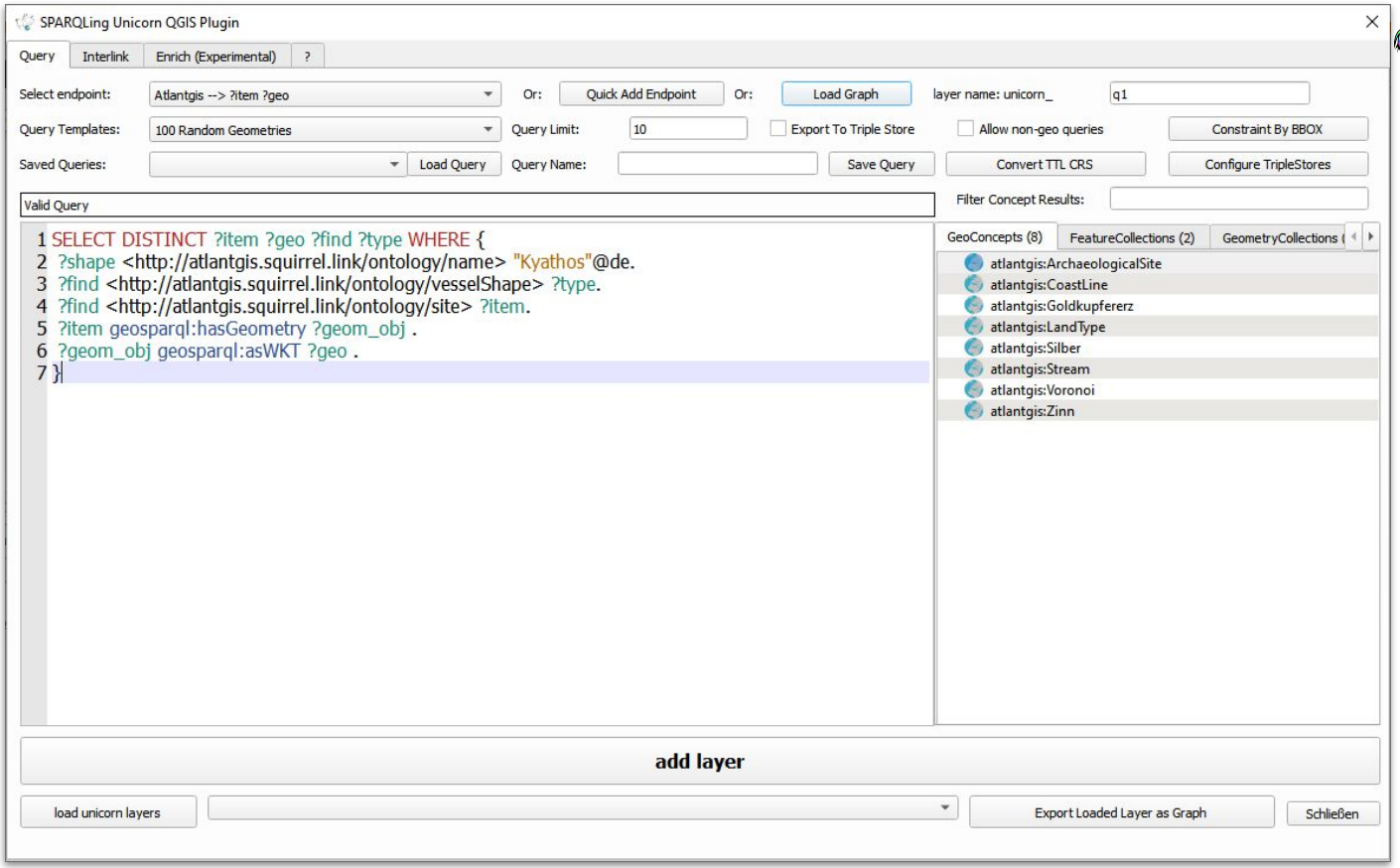
vesselShape	vesselName	vesselFunction	vesselDescription
1	Amphora	Vorratsgefäß	bauchiges enghalsiges Gefäß mit zwei Henkeln
2	Lekanis	Vorratsgefäß	flache Schüssel mit horizontalen Henkeln
3	Stamnos	Vorratsgefäß	dickbauchiges Vorratsgefäß mit kurzem Hals und seitlichen, horizontalen Henkeln
4	Psykter	Symposionsgefäß	pilzähliches Gefäß
5	Nestoris	Kultgefäß	Gefäß mit ovoidem Körper und stark über die Gefäßlippe gezogenen Seitenhenkeln
6	Kyathos	Symposionsgefäß	Schöpfkelle mit langem Henkel
7	Kalathos	Vorratsgefäß	Lilienförmiges Vorratsgefäß mit steiler Wandung und ausbiegendem Rand
8	Kernos	Kultgefäß	Schale, die während der eleusinischen Mysterienkulte als Opfergefäß für Nahrungsmittel benutzt wurde
9	Rhyton	Kultgefäß	Trinkgefäß oder Spendegefäß zum Ausgießen von Trankopfern

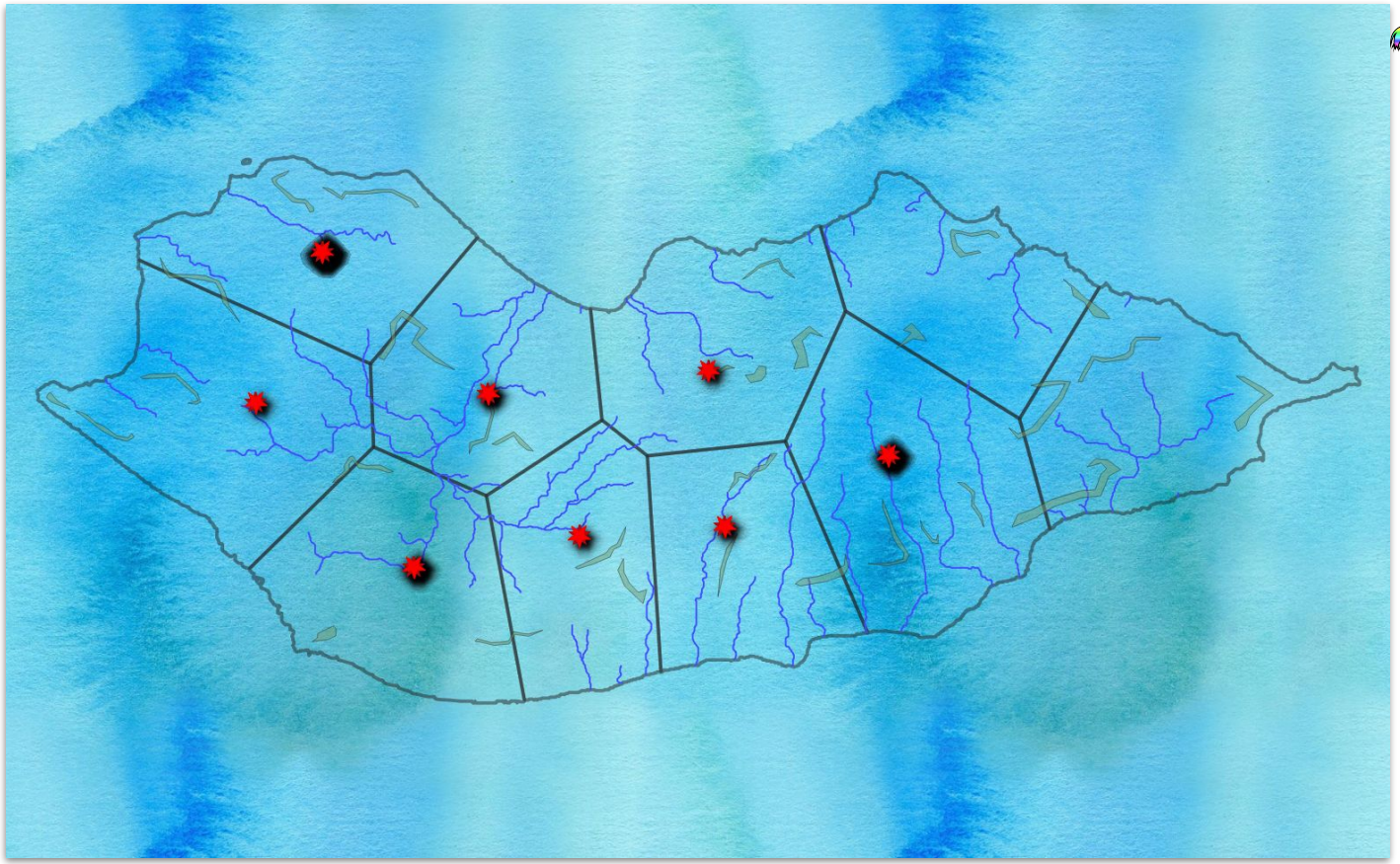
https://github.com/kacebe/AtlantGIS/blob/master/tables/Finds_VesselTypes.csv

```
PREFIX geosparql: <http://www.opengis.net/ont/geosparql#>
PREFIX atlantgis: <http://atlantgis.squirrel.link/ontology/>

SELECT DISTINCT ?item ?geo ?find ?type WHERE {
 ?type atlantgis:name "Kyathos"@de.
 ?find atlantgis:vesselShape ?type.
 ?find atlantgis:site ?item.
 ?item geosparql:hasGeometry ?geom_obj .
 ?geom_obj geosparql:asWKT ?geo .
 }
```

Item	Geo	Find	Type
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:55	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:56	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:57	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:58	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:61	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:62	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:63	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:64	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:66	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:67	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:79	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:80	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:81	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:82	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:83	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:84	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:85	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:86	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:87	vesseltype:6
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	find:88	vesseltype:6
site:H	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-14.930234892454264 35.553705947902735)"^^geosparql:wktLiteral	find:111	vesseltype:6

AtlantGIS: Funde und Fundorte vom Typ Kyathos

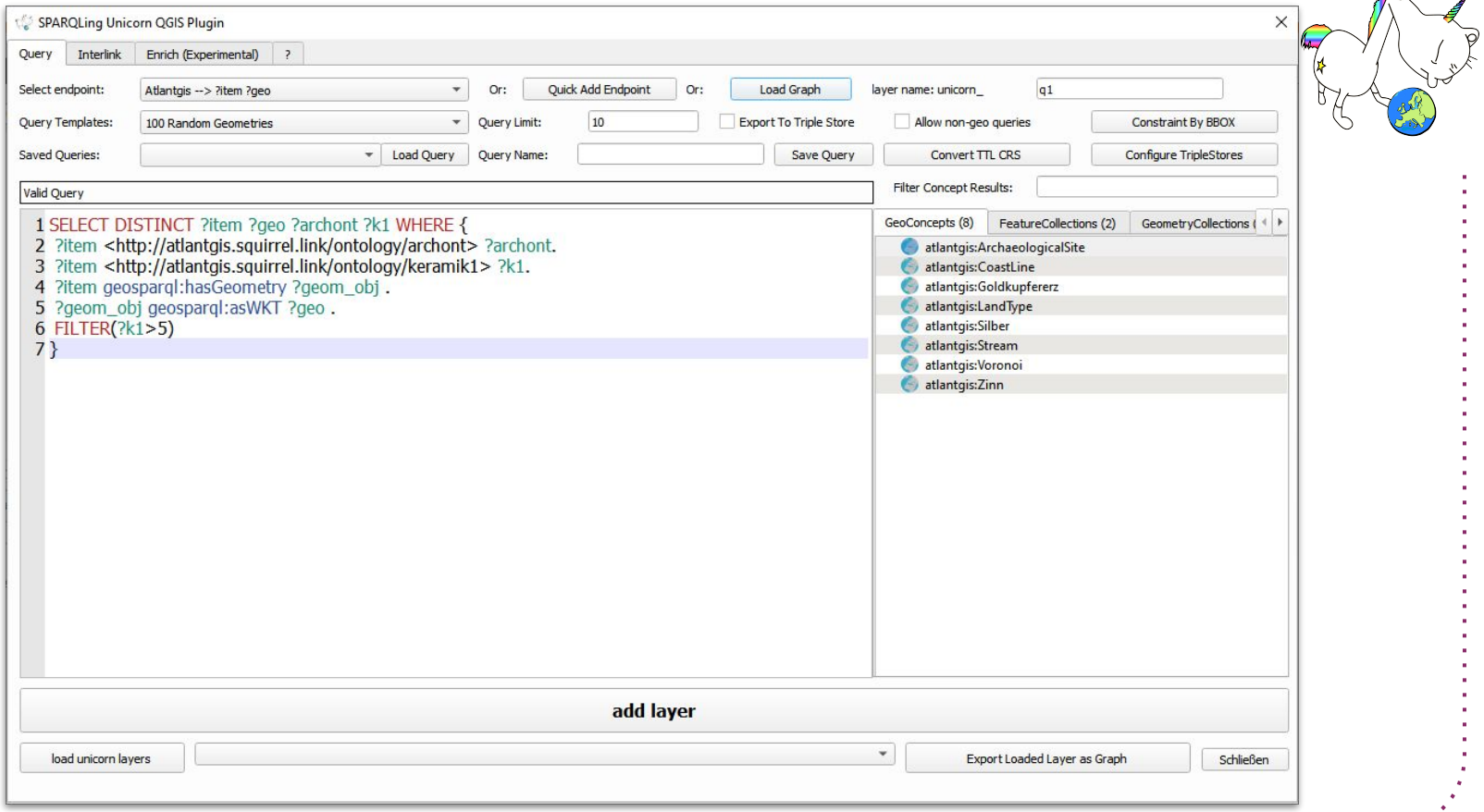

SPARQLing Unicorn QGIS Plugin
Query
Interlink
Enrich (Experimental)
?
Select endpoint:
Atlantgis --> ?item ?geo
Or:
Quick Add Endpoint
Or:
Load Graph
layer name: unicorn_
q1
Query Templates:
100 Random Geometries
Query Limit:
10
Export To Triple Store
Allow non-geo queries
Constraint By BBOX
Saved Queries:
Load Query
Query Name:
Save Query
Convert TTL CRS
Configure TripleStores
Valid Query
Filter Concept Results:
1 SELECT DISTINCT ?item ?geo ?find ?type WHERE {
2 ?shape <http://atlantgis.squirrel.link/ontology/name> "Kyathos"@de.
3 ?find <http://atlantgis.squirrel.link/ontology/vesselShape> ?type.
4 ?find <http://atlantgis.squirrel.link/ontology/site> ?item.
5 ?item geosparql:hasGeometry ?geom_obj .
6 ?geom_obj geosparql:asWKT ?geo .
7 }
GeoConcepts (8)
FeatureCollections (2)
GeometryCollections
atlantgis:ArchaeologicalSite
atlantgis:CoastLine
atlantgis:Goldkupfererz
atlantgis:LandType
atlantgis:Silber
atlantgis:Stream
atlantgis:Voronoi
atlantgis:Zinn
add layer
load unicorn layers
Export Loaded Layer as Graph
Schließen

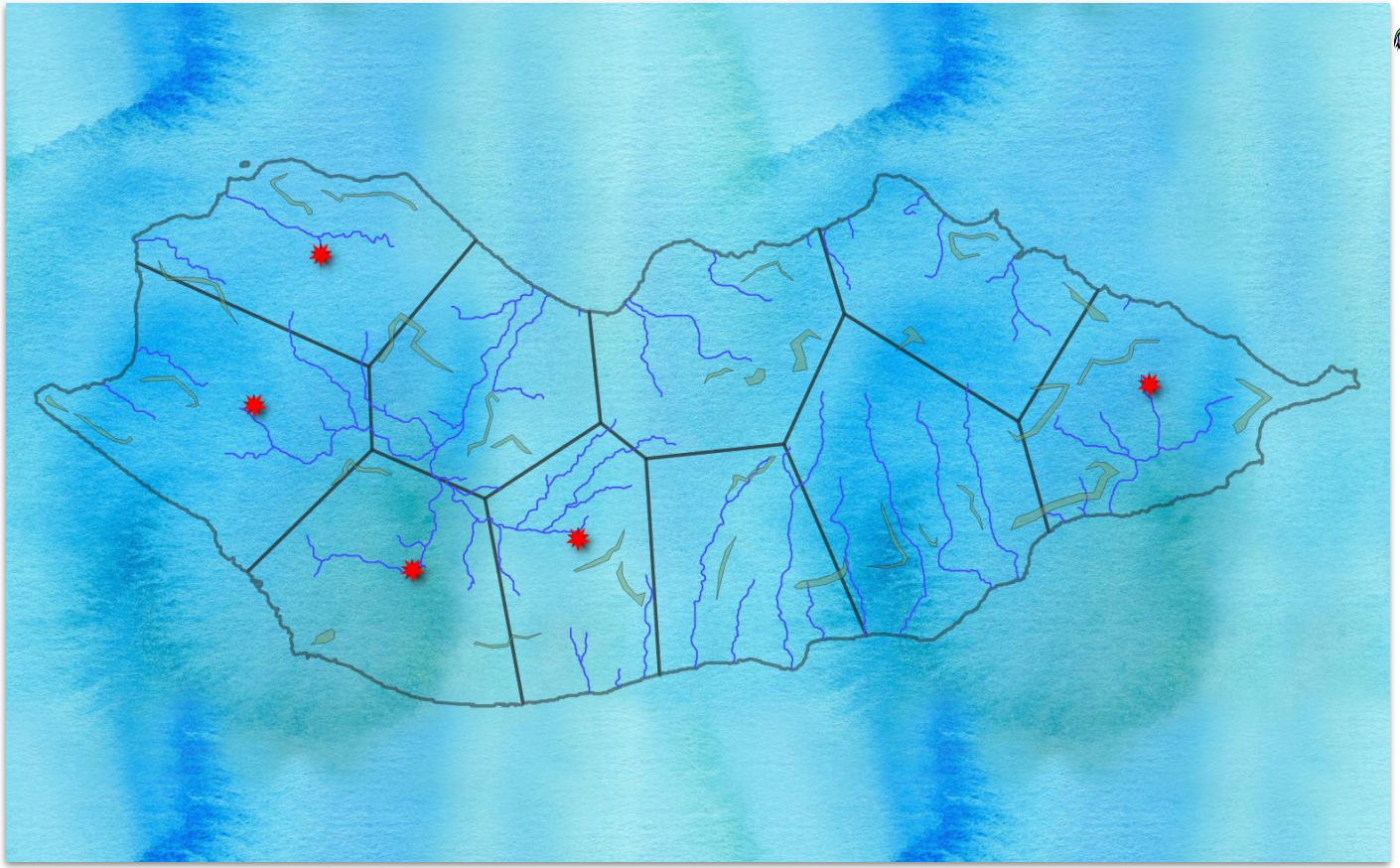


```
PREFIX geosparql: <http://www.opengis.net/ont/geosparql#>
PREFIX atlantgis: <http://atlantgis.squirrel.link/ontology/>

SELECT DISTINCT ?item ?geo ?archont ?k1 WHERE {
 ?item atlantgis:archont ?archont.
 ?item atlantgis:keramik1 ?k1.
 ?item geosparql:hasGeometry ?geom_obj .
 ?geom_obj geosparql:asWKT ?geo .
 FILTER(?k1>5)
 }
```

Item	Geo	Archont	K1
site:C	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.217615254608273 35.49271252696867 4)"^^geosparql:wktLiteral	atlantgis:Ampheres	17
site:D	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.371528093603208 35.46912790260880 4)"^^geosparql:wktLiteral	atlantgis:Euaimon	6
site:E	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.518729450350849 35.59317541219059)"^^geosparql:wktLiteral	atlantgis:Mneseus	24
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520510 6)"^^geosparql:wktLiteral	atlantgis:Autochthon	232
site:I	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-14.686962557998 25 35.60893374227 79)"^^geosparql:wktLiteral	atlantgis:Azaes	12

AtlantGIS: Site und Archonts keramik1 > 5


SPARQLing Unicorn QGIS Plugin
Query
Interlink
Enrich (Experimental)
?
Select endpoint:
Atlantgis --> ?item ?geo
Or:
Quick Add Endpoint
Or:
Load Graph
layer name: unicorn_
q1
Query Templates:
100 Random Geometries
Query Limit:
10
Export To Triple Store
Allow non-geo queries
Constraint By BBOX
Saved Queries:
Load Query
Query Name:
Save Query
Convert TTL CRS
Configure TripleStores
Valid Query
Filter Concept Results:
1 SELECT DISTINCT ?item ?geo ?archont ?k1 WHERE {
2 ?item <http://atlantgis.squirrel.link/ontology/archont> ?archont.
3 ?item <http://atlantgis.squirrel.link/ontology/keramik1> ?k1.
4 ?item geosparql:hasGeometry ?geom_obj .
5 ?geom_obj geosparql:asWKT ?geo .
6 FILTER(?k1>5)
7 }
GeoConcepts (8)
FeatureCollections (2)
GeometryCollections
atlantgis:ArchaeologicalSite
atlantgis:CoastLine
atlantgis:Goldkupfererz
atlantgis:LandType
atlantgis:Silber
atlantgis:Stream
atlantgis:Voronoi
atlantgis:Zinn
add layer
load unicorn layers
Export Loaded Layer as Graph
Schließen



Wikidata Query Service | Beispiele | Abfragegenerator | Hilfe | Weitere Werkzeuge

```
#fictive archaeological period from AntlantGIS
SELECT ?item ?itemLabel
WHERE
{
  ?item wdt:P31 wd:Q109881420.
  ?item wdt:P361 wd:Q109881478.
  SERVICE wikibase:label { bd:serviceParam wikibase:language "[AUTO_LANGUAGE],en". }
}
```

5 Ergebnisse in 723 ms | Code | Herunterladen | Link

item	itemLabel
wd:Q109881323	Atlantis Period I
wd:Q109881808	Atlantis Period II
wd:Q109881947	Atlantis Period IIa
wd:Q109882050	Atlantis Period IIb
wd:Q109882128	Atlantis Period III

https://w.wiki/4VDq

“Fiktive Perioden” aus AtlantGIS in Wikidata

```
PREFIX geosparql: <http://www.opengis.net/ont/geosparql#>
PREFIX atlantgis: <http://atlantgis.squirrel.link/ontology/>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT DISTINCT ?item ?geo WHERE {
 ?period owl:sameAs <http://www.wikidata.org/entity/Q109881947>.
 ?item <http://atlantgis.squirrel.link/ontology/timeperiod> ?period.
 ?item geosparql:hasGeometry ?geom_obj .
 ?geom_obj geosparql:asWKT ?geo .
}
```

Rudolf Schlichter: Kleito und Poseidon (um 1934)

WIKIDATA

Item | Discussion

Atlantis Period IIa (Q109881947)

Period of Kleito and Poseidon — edit

In more languages

Configure

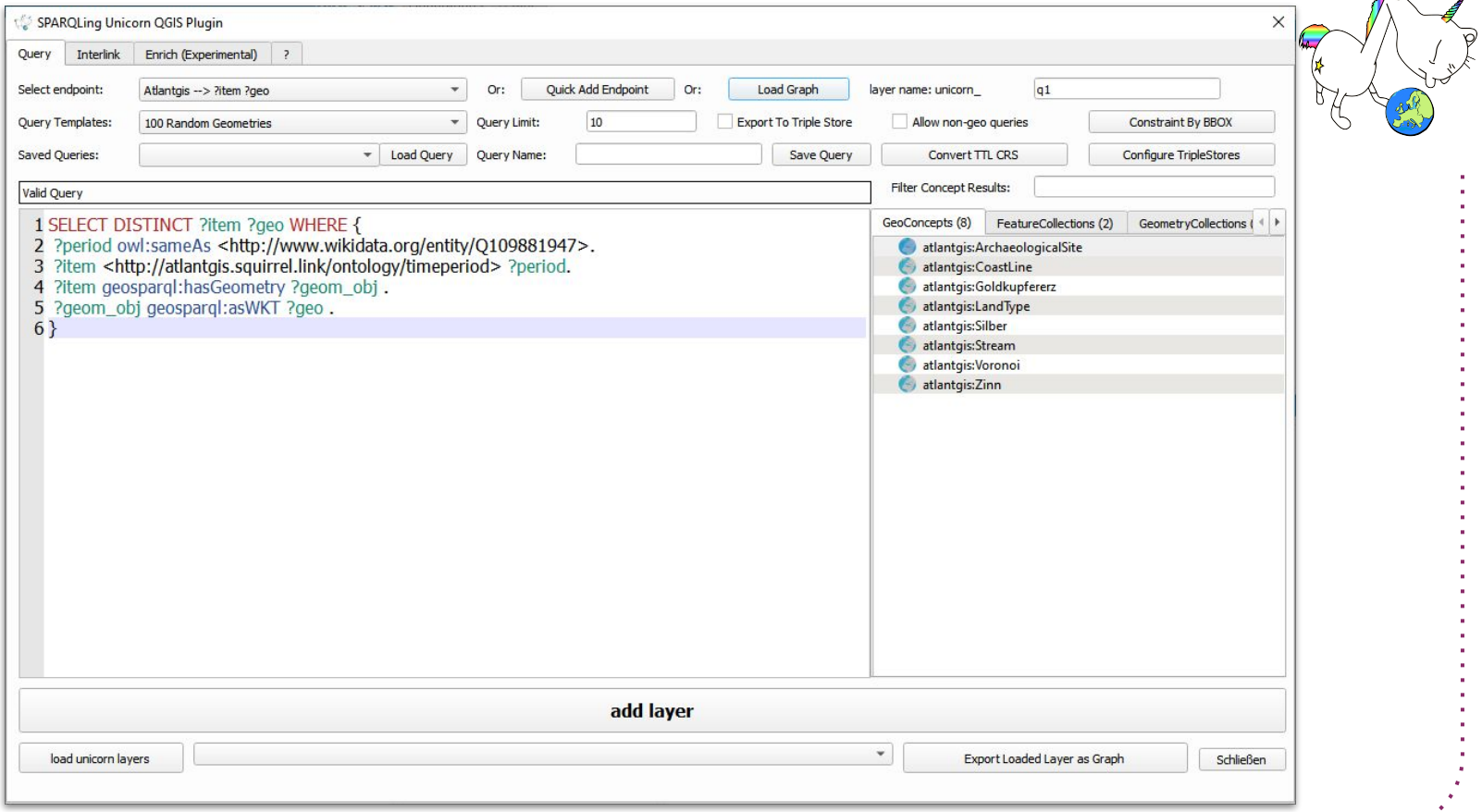
Language	Label	Description	Also known as
English	Atlantis Period IIa	Period of Kleito and Poseidon	
German	No label defined	No description defined	
Polish	No label defined	No description defined	
French	No label defined	No description defined	

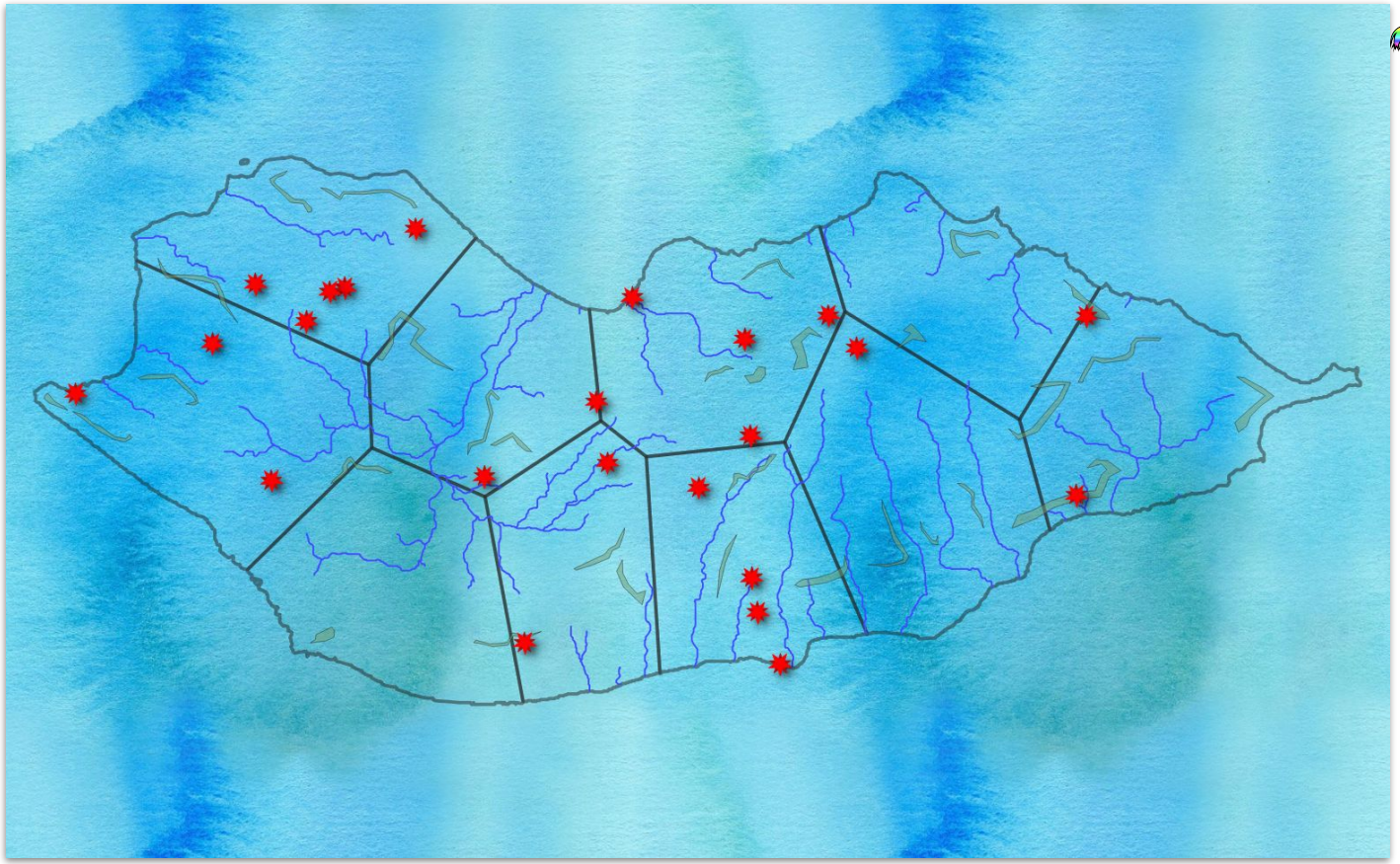
Main page
Community portal
Project chat
Create a new Item
Recent changes
Random Item
Query Service
Nearby
Help
Donate

Lexicographical data

Item	Geo
<http://atlantgis.squirrel.link/data/ar_site/100>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.05676158 35.46200772000126)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/432>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-14.77570305 35.52432301000113)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/51>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-14.74625766 35.65920963000134)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/116>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.05151177 35.45360703000012?6)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/302>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.43415358000011 35.68055036000134)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/80>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.51725043000011 35.68296339000135)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/46>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.03046419 35.96658696000128)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/81>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.30493102 35.63807026000131)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/1142>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.55700168000015 35.6384666400133)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/49>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.20084267 35.5947162000132)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/99>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.1906604?6 35.54844977000130?)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/31>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.36838798 35.72484234000136)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/39>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.68384917000032 35.60076645000131)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/26>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.10618114 35.52982314000131)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/97>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.46984878000014 35.65511114000134)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/76>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-14.98575476 35.65942360000135?)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/55>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.26722395 35.41265107000127?)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/13>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.50220548000015 35.53537473000131)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/92>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.44827195 35.67753300000135?)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/1152>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.05818363 35.56898029000131)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/79>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-14.95933873 35.63493662000132?)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/66>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.16775529 35.67295574000134)"^^geosparql:wktLiteral
<http://atlantgis.squirrel.link/data/ar_site/110>	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.06523?64 35.64187260000133?)"^^geosparql:wktLiteral

AtlantGIS: Arch. Sites der ‘Period of Kleito and Poseidon’


SPARQLing Unicorn QGIS Plugin
Query
Interlink
Enrich (Experimental)
?
Select endpoint:
Atlantgis --> ?item ?geo
Or:
Quick Add Endpoint
Or:
Load Graph
layer name: unicorn_
q1
Query Templates:
100 Random Geometries
Query Limit:
10
Export To Triple Store
Allow non-geo queries
Constraint By BBOX
Saved Queries:
Load Query
Query Name:
Save Query
Convert TTL CRS
Configure TripleStores
Valid Query
Filter Concept Results:
1 SELECT DISTINCT ?item ?geo WHERE {
2 ?period owl:sameAs <http://www.wikidata.org/entity/Q109881947>.
3 ?item <http://atlantgis.squirrel.link/ontology/timeperiod> ?period.
4 ?item geosparql:hasGeometry ?geom_obj .
5 ?geom_obj geosparql:asWKT ?geo .
6 }
GeoConcepts (8)
FeatureCollections (2)
GeometryCollections
atlantgis:ArchaeologicalSite
atlantgis:CoastLine
atlantgis:Goldkupfererz
atlantgis:LandType
atlantgis:Silber
atlantgis:Stream
atlantgis:Voronoi
atlantgis:Zinn
add layer
load unicorn layers
Export Loaded Layer as Graph
Schließen



Beschreibung des Datensatzes `Finds.csv`

Spalte	Beschreibung
site	Fundstelle aus `vector/sites.shp`
feature	Befund
object	Individuum
class	Fundgattung (K: Keramik)
sherd	Art der Scherbe (G: Gefäß, R: Rand, W: Wand, B: Boden)
qty	Anzahl
wt	Gewicht (g)
size	Größenklasse (nach Clist 2004/05: 30: <30x30mm, 70: <70x70mm, 120: <120x120mm, 200: <200x200mm, 500: >200x200mm)
wall	Wandungsdicke (mm)
muendungsD	Mündungsdruchmesser (cm)
muendungsH	Höhe des Mündungsdruchmessers (cm)
minD	Minimaler Durchmesser (cm)
minD_H	Höhe des minimalen Durchmessers (cm)
maxD	Maximaler Durchmesser (cm)
maxD_H	Höhe des maximalen Durchmessers (cm)
bodenD	Bodendruchmesser (cm)
temperSize	Größe nicht-plastischer Martikel (Magerung; nach 'Wentworth grain size classification', VF: Very fine 0.0625-0.125mm, F: Fine 0.125-0.25mm, M: Medium 0.25-0.5mm, C: Coarse 0.5-1mm, VC: Very Coarse 1-2mm)
vesselShape	Gefäßform (siehe `tables/Finds_VesselTypes.csv`)

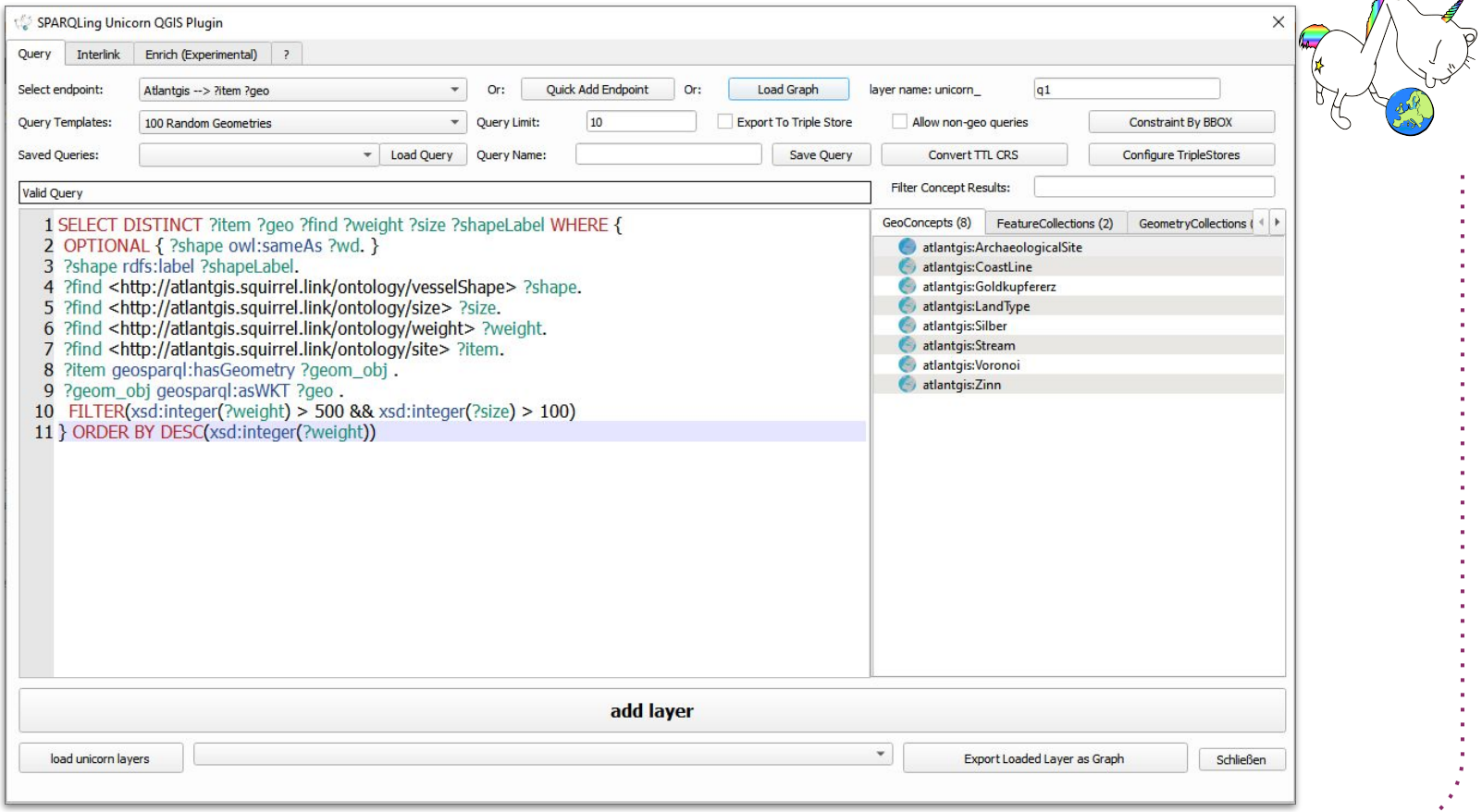
https://github.com/kacebe/AtlantGIS/blob/master/tables/Finds.md

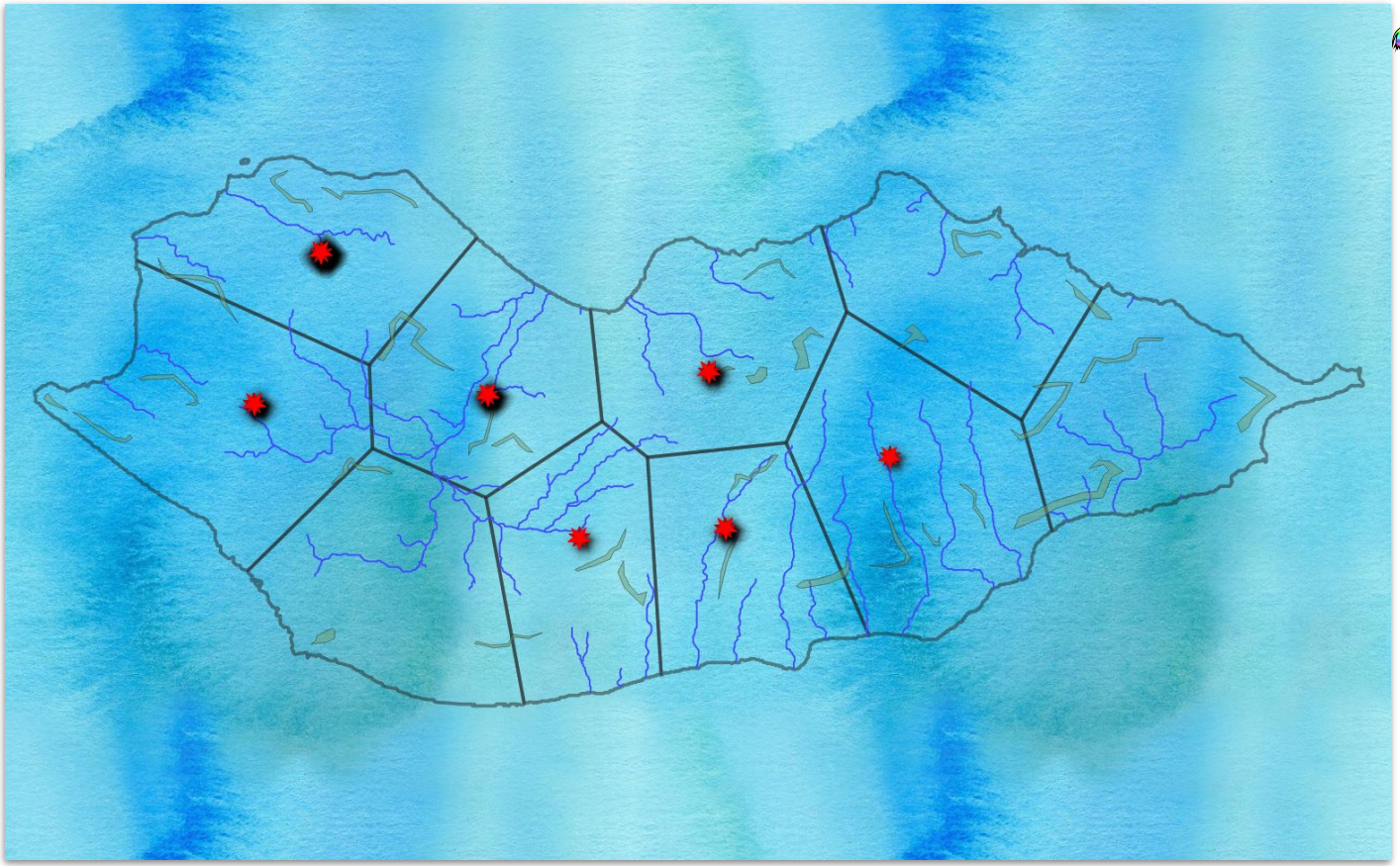
```
PREFIX geosparql: <http://www.opengis.net/ont/geosparql#>
PREFIX atlantgis: <http://atlantgis.squirrel.link/ontology/>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT DISTINCT ?item ?geo ?find ?weight ?size ?shapeLabel ?wd WHERE {
 OPTIONAL { ?shape owl:sameAs ?wd. FILTER ( !strstarts(str(?wd), "http://vocab.getty.edu/aat/") ) }
 ?shape rdfs:label ?shapeLabel.
 ?find atlantgis:vesselShape ?shape.
 ?find atlantgis:size ?size.
 ?find atlantgis:weight ?weight.
 ?find atlantgis:site ?item.
 ?item geosparql:hasGeometry ?geom_obj .
 ?geom_obj geosparql:asWKT ?geo .
  FILTER(xsd:integer(?weight) > 500 && xsd:integer(?size) > 100)
} ORDER BY DESC(xsd:integer(?weight))
```

AtlantGIS: Finds mit VesselType und WikidataID + Sites and Koordinaten having weight > 500 & size > 100

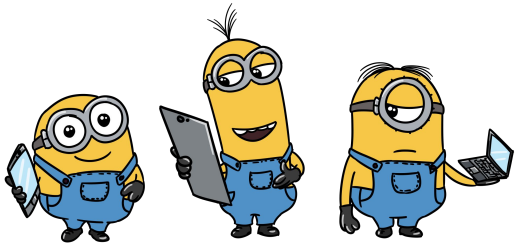
Item	Geo	Find	Weight	Size	ShapeLabel	Wd
site:B	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.097823661232606 35.617442563836114)"^^geosparql:wktLiteral	find:135	"4500"	"500"	"Amphora"@de	wd:Q178401
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:60	"3000"	"500"	"Amphora"@de	wd:Q178401
site:E	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.518729450350849 35.59317541219059)"^^geosparql:wktLiteral	find:7	"2046"	"500"	"Kernos"@de	wd:Q180119
site:A	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.302889902401944 35.59993416253471)"^^geosparql:wktLiteral	find:127	"2000"	"500"	"Stamnos"@de	wd:Q1421582
site:A	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.302889902401944 35.59993416253471)"^^geosparql:wktLiteral	find:128	"1997"	"500"	"Kernos"@de	wd:Q180119
site:G	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.082751326646484 35.49973307220563)"^^geosparql:wktLiteral	find:89	"1914"	"500"	"Amphora"@de	wd:Q178401
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:38	"1803"	"500"	"Stamnos"@de	wd:Q1421582
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:30	"1671"	"500"	"Amphora"@de	wd:Q178401
site:A	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.302889902401944 35.59993416253471)"^^geosparql:wktLiteral	find:130	"1572"	"500"	"Amphora"@de	wd:Q178401
site:H	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-14.930234892454264 35.55370594790273 5)"^^geosparql:wktLiteral	find:107	"1540"	"200"	"Amphora"@de	wd:Q178401
site:C	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.217615254608273 35.49271252696886 74)"^^geosparql:wktLiteral	find:10	"1448"	"500"	"Stamnos"@de	wd:Q1421582
site:E	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.518729450350849 35.59317541219059)"^^geosparql:wktLiteral	find:4	"1398"	"500"	"Kernos"@de	wd:Q180119
site:B	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.097823661232606 35.617442563836114)"^^geosparql:wktLiteral	find:134	"1118"	"500"	"Amphora"@de	wd:Q178401
site:A	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.302889902401944 35.59993416253471)"^^geosparql:wktLiteral	find:129	"1012"	"200"	"Amphora"@de	wd:Q178401
site:A	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.302889902401944 35.59993416253471)"^^geosparql:wktLiteral	find:126	"991"	"500"	"Lekanis"@de	wd:Q1246179
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:42	"861"	"200"	"Amphora"@de	wd:Q178401
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:32	"829"	"500"	"Amphora"@de	wd:Q178401
site:E	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.518729450350849 35.59317541219059)"^^geosparql:wktLiteral	find:6	"814"	"200"	"Stamnos"@de	wd:Q1421582
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:43	"750"	"500"	"Kernos"@de	wd:Q180119
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:27	"691"	"500"	"Amphora"@de	wd:Q178401
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:36	"684"	"200"	"Nestoris"@de	wd:Q942612
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:61	"670"	"200"	"Kyathos"@de	wd:Q1755627
site:E	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.518729450350849 35.59317541219059)"^^geosparql:wktLiteral	find:5	"667"	"200"	"Amphora"@de	wd:Q178401
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:33	"663"	"200"	"Amphora"@de	wd:Q178401
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:46	"653"	"200"	"Amphora"@de	wd:Q178401
site:A	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.302889902401944 35.59993416253471)"^^geosparql:wktLiteral	find:125	"642"	"500"	"Stamnos"@de	wd:Q1421582
site:B	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.097823661232606 35.617442563836114)"^^geosparql:wktLiteral	find:133	"638"	"200"	"Lekanis"@de	wd:Q1246179
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:47	"626"	"200"	"Amphora"@de	wd:Q178401
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:28	"623"	"500"	"Amphora"@de	wd:Q178401
site:G	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.082751326646484 35.49973307220563)"^^geosparql:wktLiteral	find:91	"623"	"200"	"Lekanis"@de	wd:Q1246179
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:35	"618"	"500"	"Amphora"@de	wd:Q178401
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:50	"578"	"500"	"Amphora"@de	wd:Q178401
site:G	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.082751326646484 35.49973307220563)"^^geosparql:wktLiteral	find:93	"525"	"500"	"Amphora"@de	wd:Q178401
site:A	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.302889902401944 35.59993416253471)"^^geosparql:wktLiteral	find:131	"524"	"200"	"Amphora"@de	wd:Q178401
site:F	"<http://www.opengis.net/def/crs/EPSG/0/4326> POINT (-15.456620280793723 35.70687079520506)"^^geosparql:wktLiteral	find:25	"504"	"200"	"Amphora"@de	wd:Q178401

AtlantGIS: Finds mit VesselType und WikidataID + Sites and Koordinaten having weight > 500 & size > 100


SPARQLing Unicorn QGIS Plugin
Query
Interlink
Enrich (Experimental)
?
Select endpoint:
Atlantgis --> ?item ?geo
Or:
Quick Add Endpoint
Or:
Load Graph
layer name: unicorn_
q1
Query Templates:
100 Random Geometries
Query Limit:
10
Export To Triple Store
Allow non-geo queries
Constraint By BBOX
Saved Queries:
Load Query
Query Name:
Save Query
Convert TTL CRS
Configure TripleStores
Valid Query
Filter Concept Results:
1 SELECT DISTINCT ?item ?geo ?find ?weight ?size ?shapeLabel WHERE {
2 OPTIONAL { ?shape owl:sameAs ?wd. }
3 ?shape rdfs:label ?shapeLabel.
4 ?find <http://atlantgis.squirrel.link/ontology/vesselShape> ?shape.
5 ?find <http://atlantgis.squirrel.link/ontology/size> ?size.
6 ?find <http://atlantgis.squirrel.link/ontology/weight> ?weight.
7 ?find <http://atlantgis.squirrel.link/ontology/site> ?item.
8 ?item geosparql:hasGeometry ?geom_obj .
9 ?geom_obj geosparql:asWKT ?geo .
10 FILTER(xsd:integer(?weight) > 500 && xsd:integer(?size) > 100)
11 } ORDER BY DESC(xsd:integer(?weight))
GeoConcepts (8)
FeatureCollections (2)
GeometryCollections
atlantgis:ArchaeologicalSite
atlantgis:CoastLine
atlantgis:Goldkupfererz
atlantgis:LandType
atlantgis:Silber
atlantgis:Stream
atlantgis:Voronoi
atlantgis:Zinn
add layer
load unicorn layers
Export Loaded Layer as Graph
Schließen



Timo Homburg M.Sc. & Florian Thiery M.Sc.



10 AAA Computer Anwendungen & Quantitative Methoden in der Archäologie
Sektion Deutschland

QGIS Linked Geo-Data Workshop

“

Ich bin ein/e Archäolog*in und habe einen SPARQL Endpoint gefunden. Was mache ich jetzt?

Triplestore

Query Input:
1 Example Queries:
All Geometries

```
1  PREFIX geosparql:
   <http://www.opengis.net/ont/geosparql#>
2  PREFIX geosf:
   <http://www.opengis.net/def/function/geosp
   arql/>
3  PREFIX cito: <http://purl.org/spar/cito/>
4  PREFIX rdf: <http://www.w3.org/1999/02/22-
   rdf-syntax-ns#>
5  PREFIX dcterms:
   <http://purl.org/dc/terms/>
6  PREFIX foaf: <http://xmlns.com/foaf/0.1/>
7  PREFIX geo:
```

Explore Triple Store

Note: Query variables ending in "_geom" are rendered in the map view.

Note2: Egenhofer relation functions beginning with ST can take both raster and vector data as input.

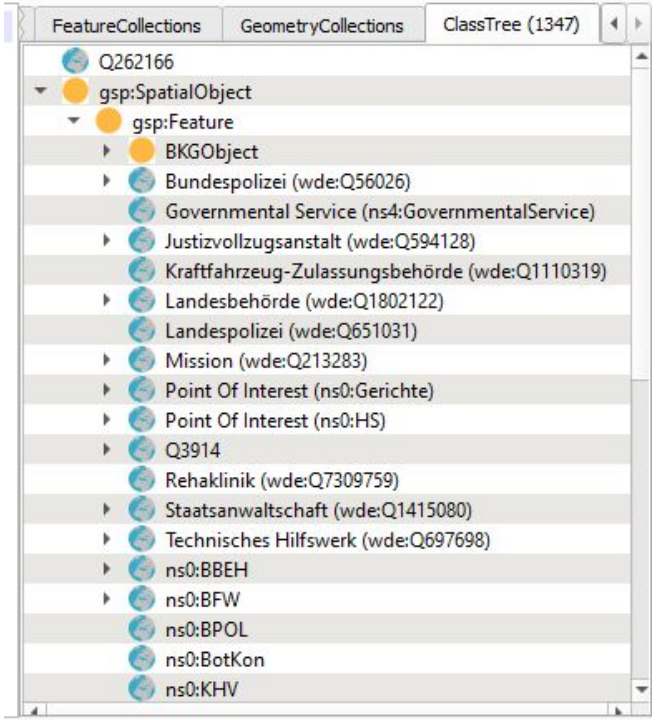
Query | Query with GeoJSON result

QueryResult:

Der Normalzustand… ein Query Interface…
..ok… aber was kann ich anfragen?

“

aber eigentlich
will ich doch ein:
“*user-friendly discovery*”

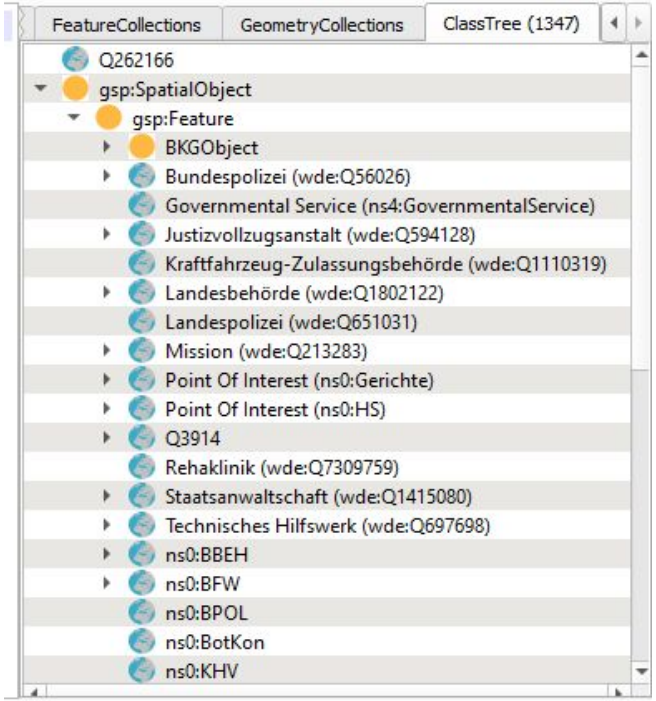


Eine Navigation wäre nett...

“

und ich will… einfachen Zugriff auf Dateninhalte!

Ein LOD-Konzept To Layer Button wäre ganz nett

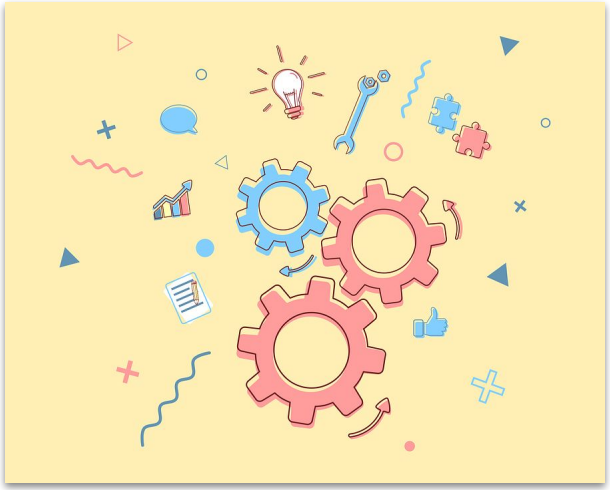


Ähnlich wie ein WFS Service: Lade thematisch gruppierte Layer

“

und ich will...
Intuitive Queries nach bekannten Konzepten!

- **Was sind Queries die für die Community interessant sind?**
- **Andere User die diesen Triple Store verwendet haben fragten auch nach….?**
- **Eine Sammlung von Best Practices**



Das SPARQLing Unicorn …

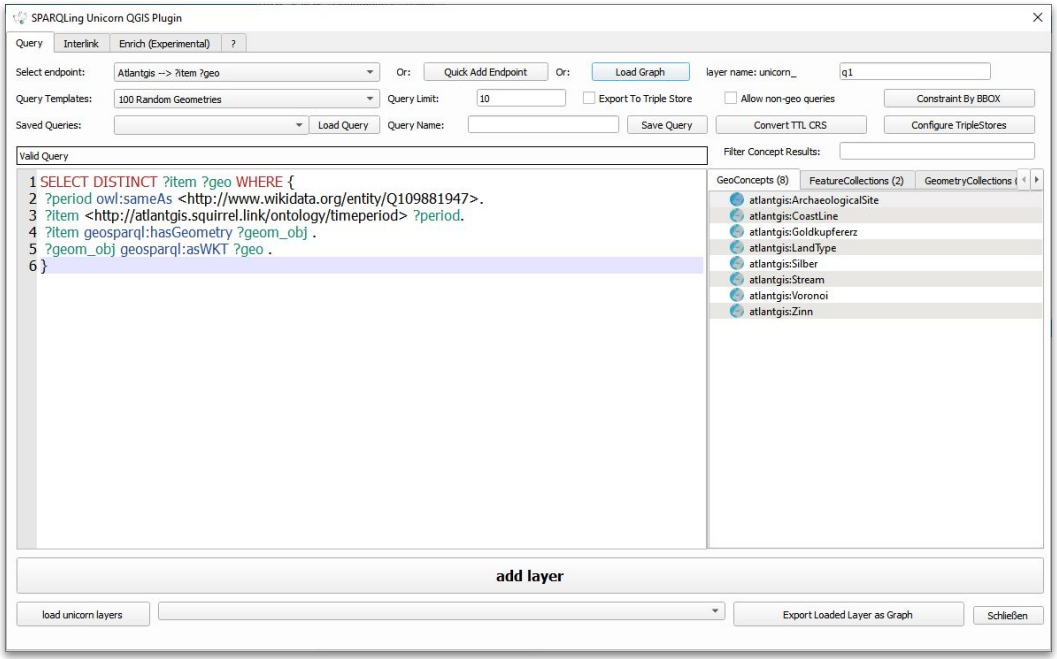
QGIS

GitHub

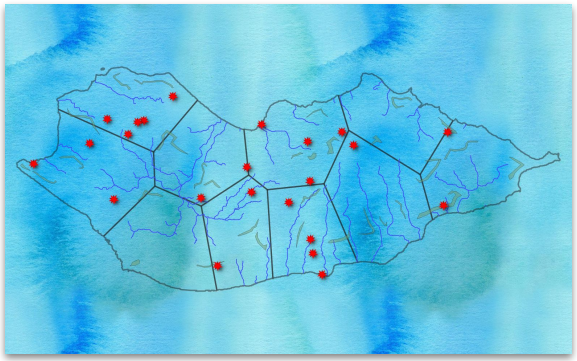
Das SPARQLing Unicorn QGIS Plugin - ein Linked Data Access Point für QGIS

Das **SPARQL Unicorn** erlaubt es Linked Data queries in (Geo)SPARQL an ausgewählte Triple Stores zu senden und bereitet die Ergebnisse für die Geocommunity in QGIS auf.

Das Plugin bietet aktuell drei Hauptfunktionen: (A) Vereinfachtes Querying von Semantic Web Datenquellen (B) Anreicherung von Geodaten und (C) Transformation von QGIS Vektorlayern nach RDF.



Version v0.13.1

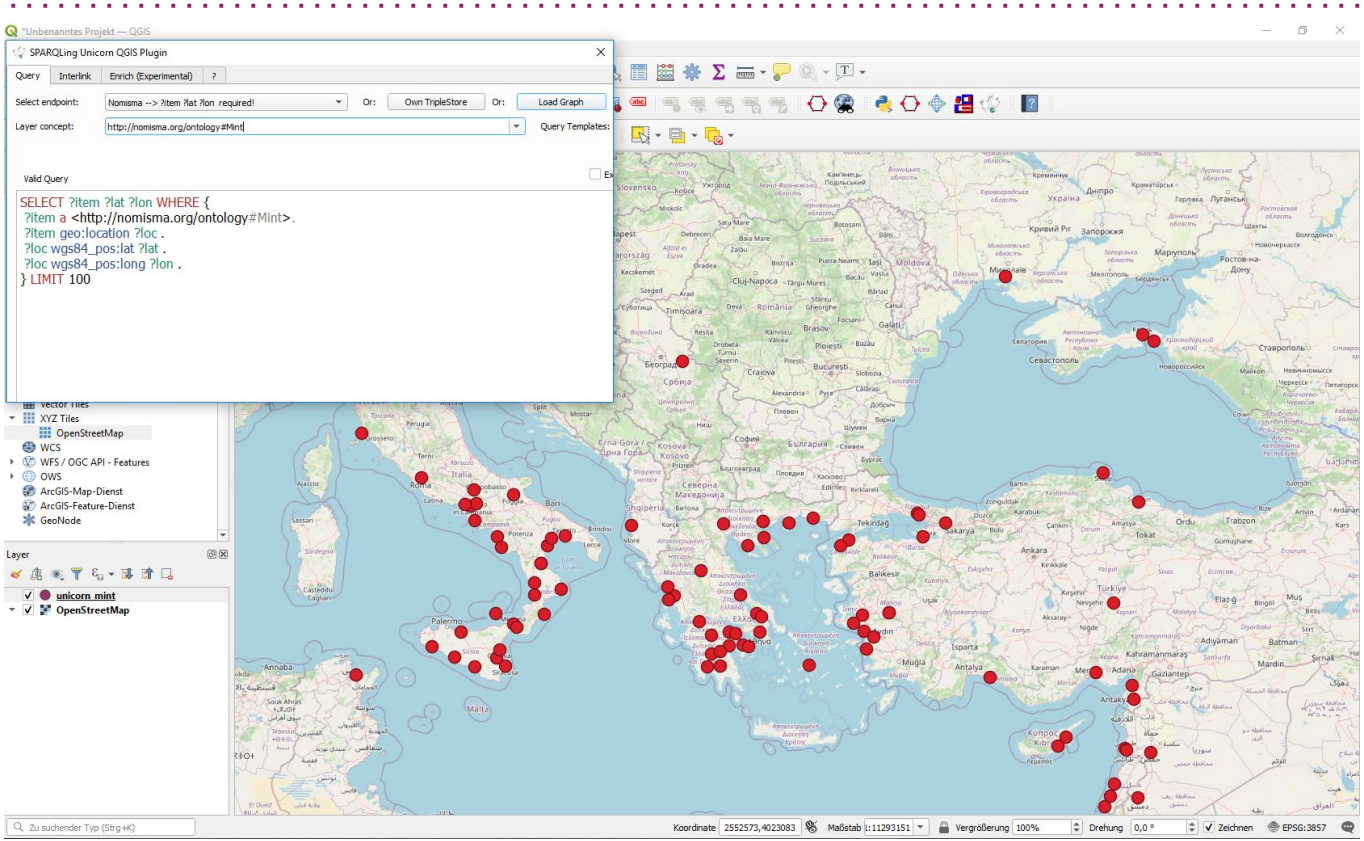


Funktion A: Vereinfachtes Querying von Semantic Web Datenquellen

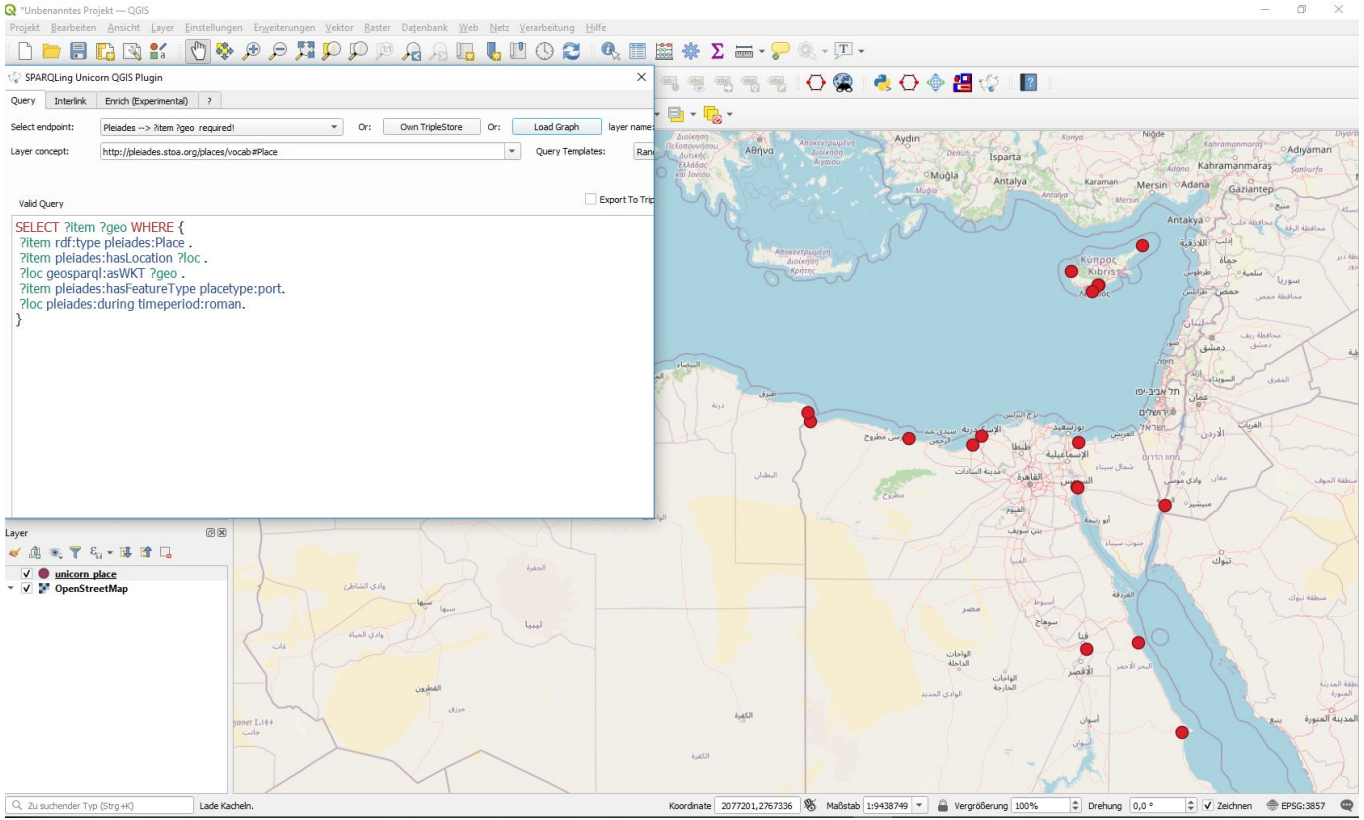
Funktion B: Anreicherung von Geodaten
Funktion C: Anreicherung und Konvertierung von RDF Daten

Funktion A

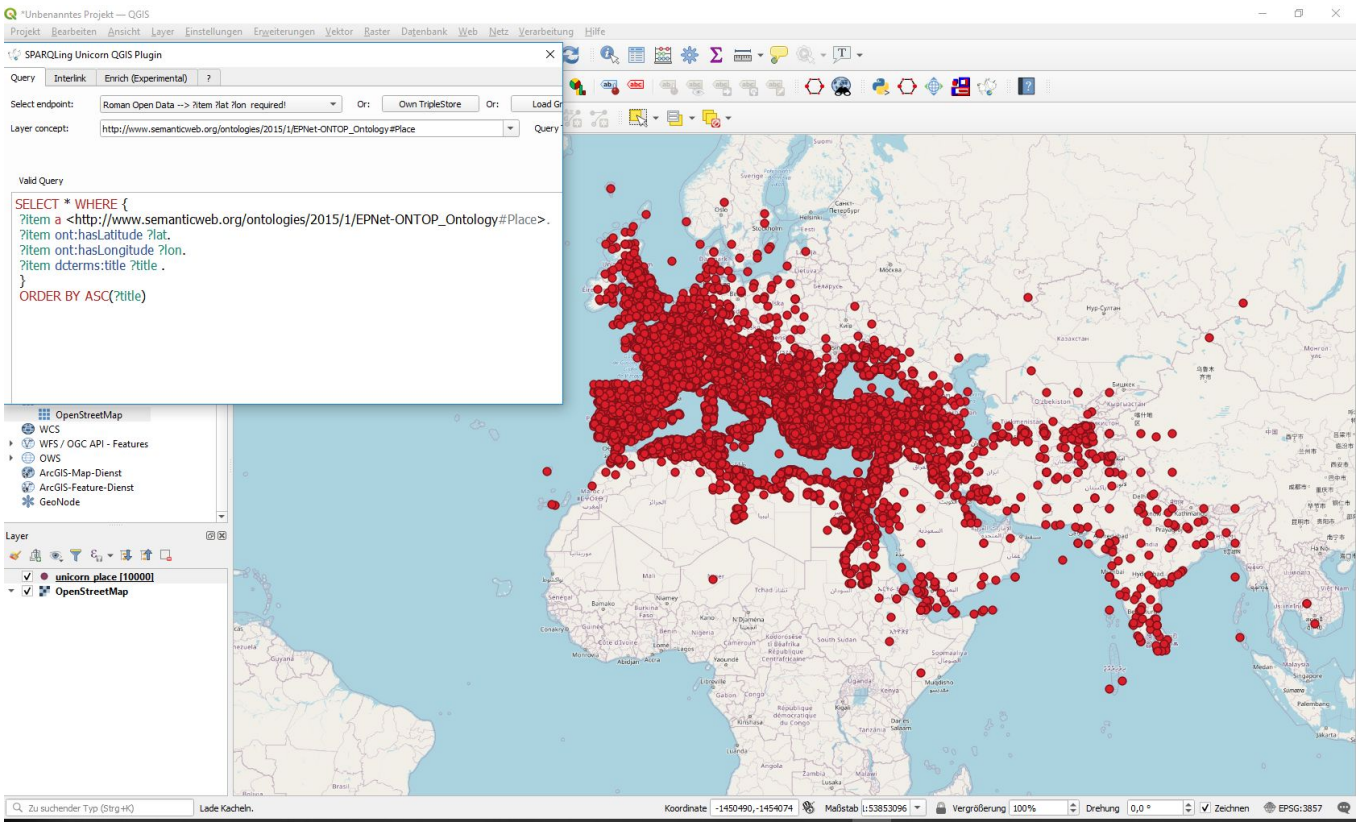
Funktion A erlaubt assistiertes SPARQL Querying von einigen archäologisch relevanten Triple Store wie Wikidata, Nomisma, Kerameikos, Pleiades und Roman Open Data. Das Plugin bietet eine Konzeptsuche, Beispielqueries und Templates um dem Benutzer zu assistieren.



Beispiel: Nomisma (Mints)

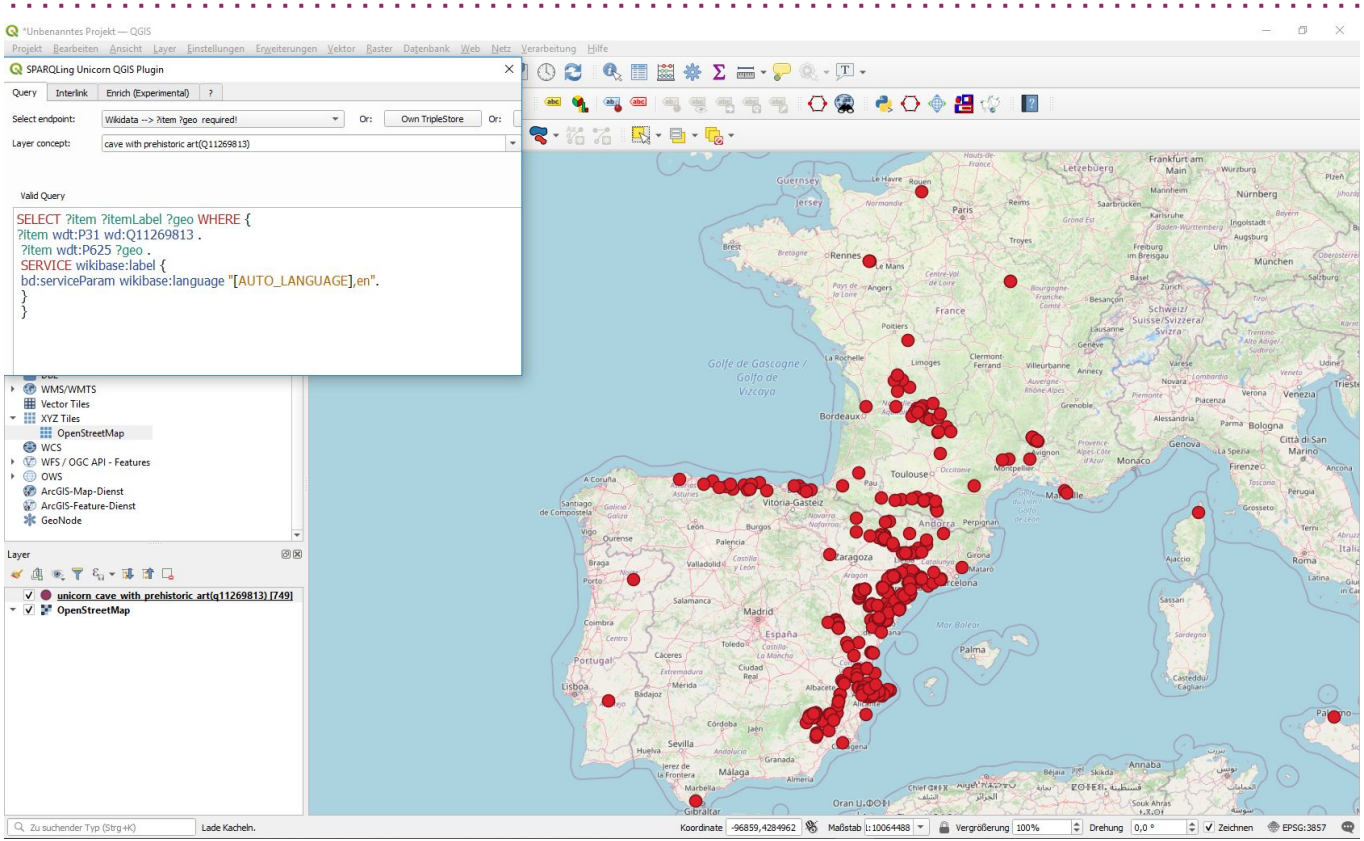


Beispiel: Pleiades (Häfen aus der römischen Zeit)

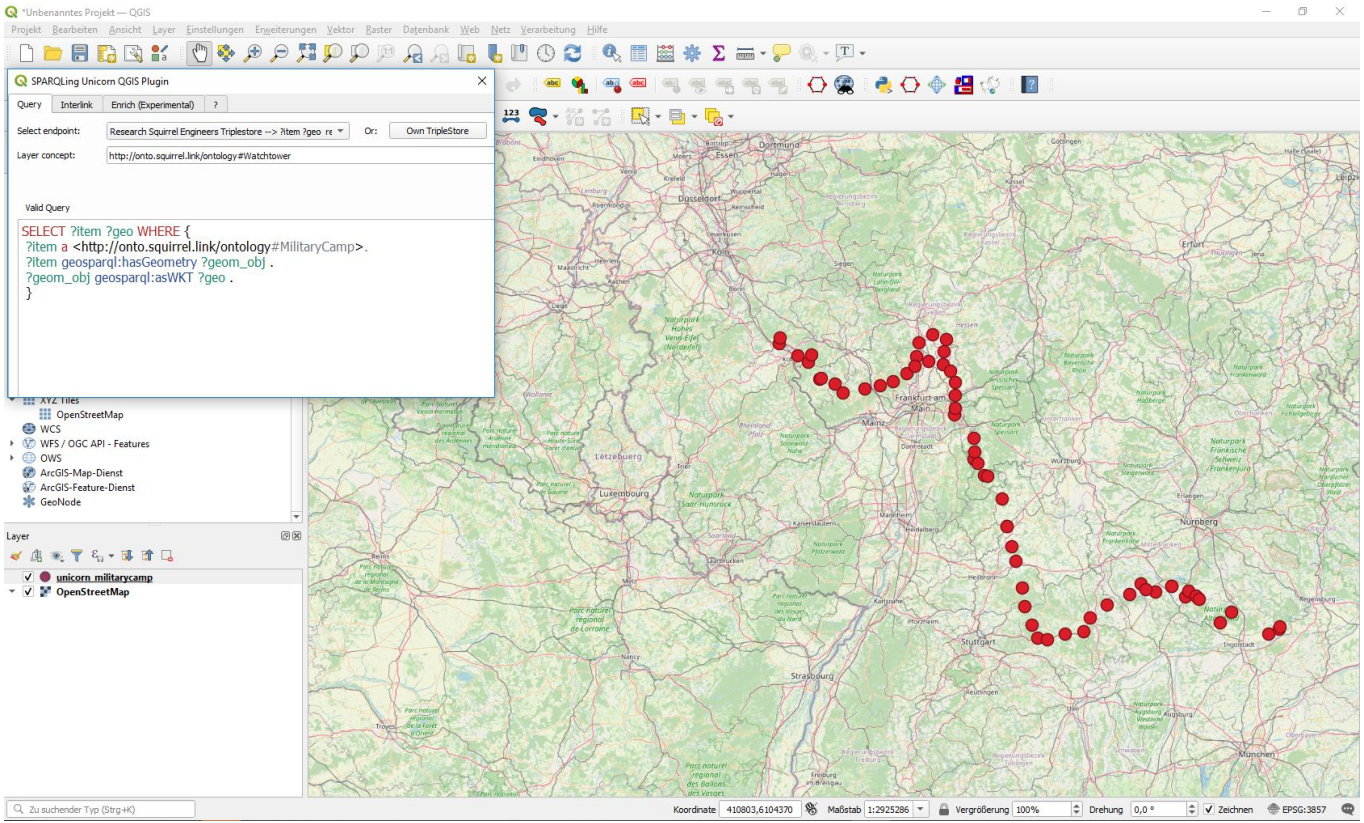


Beispiel: Roman Open Data (places)

Beispielsweise könnten wir den Wikidata triple store für prähistorische Kunst oder den Research Squirrel Triple Store für Militärcamps entlang des Limes anfragen. Die Ergebnisse dieser Anfragen werden als QGIS Layer gespeichert.



Beispiel: Wikidata Höhlen mit prähistorischer Kunst



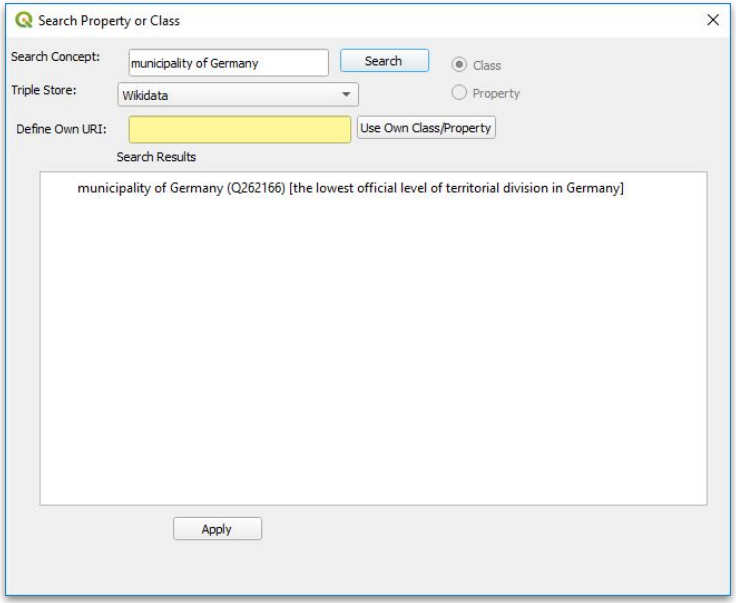
Beispiel: Limes Militärcamps

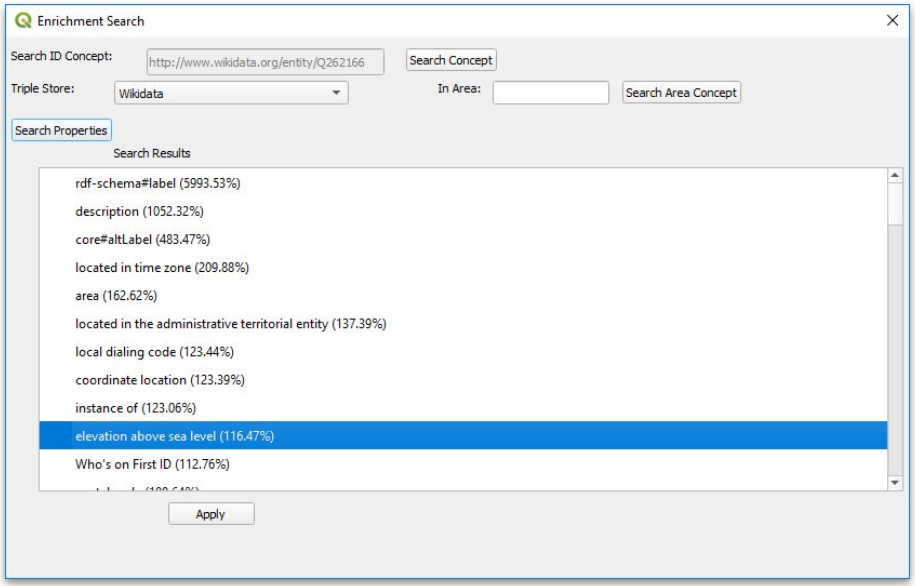
Funktion B

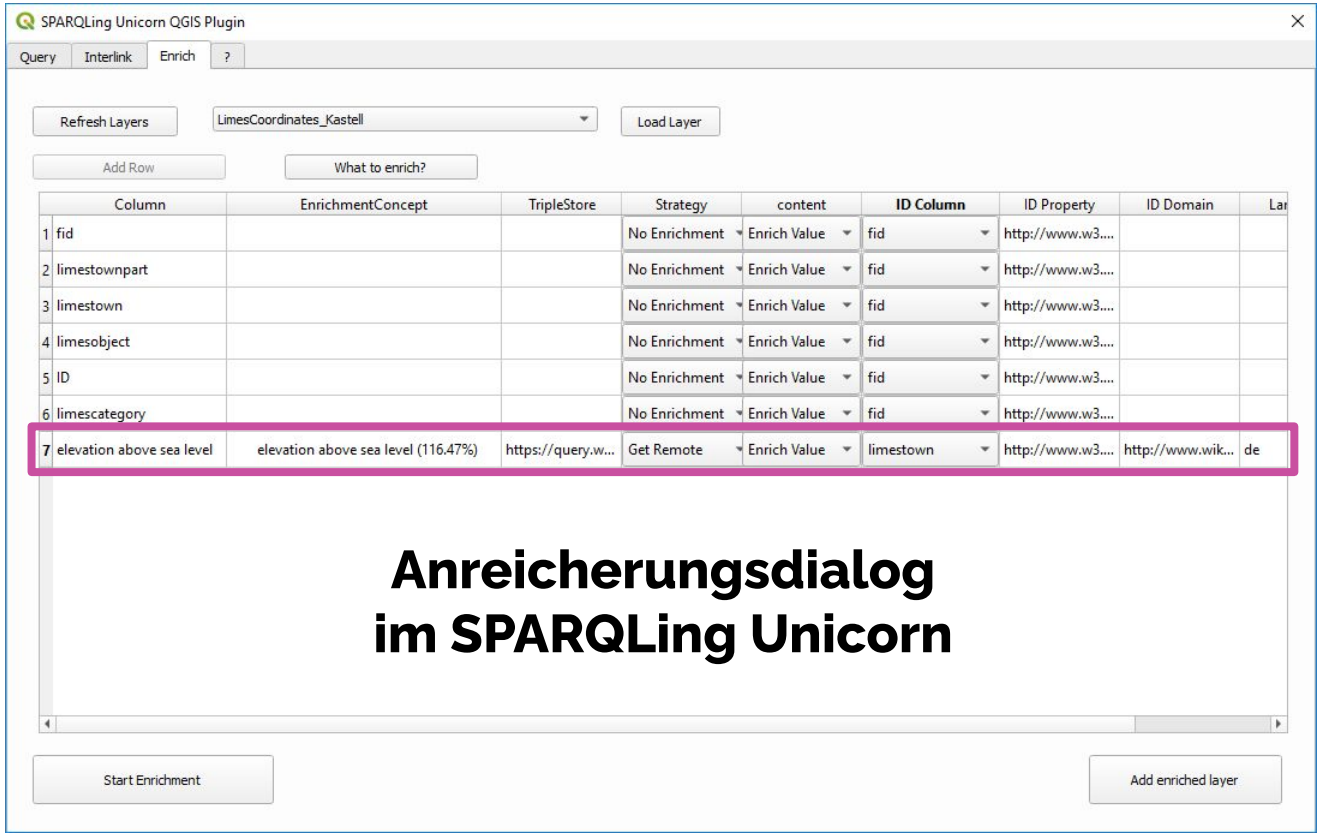
Funktion B erlaubt die Anreicherung von einem gegebenen Geodatenset mit Semantic Web Ressourcen aus der LOD Cloud, z.B. Wikidata (elevation levels von Städten entlang des Limes)
Geodaten werden immer in einem gewissen Kontext betrachtet und benötigen daher Wissen aus anderen Domänen. Semantisch beschriebene Daten stellen eine ideale Ressource für eine Anreicherung dar.

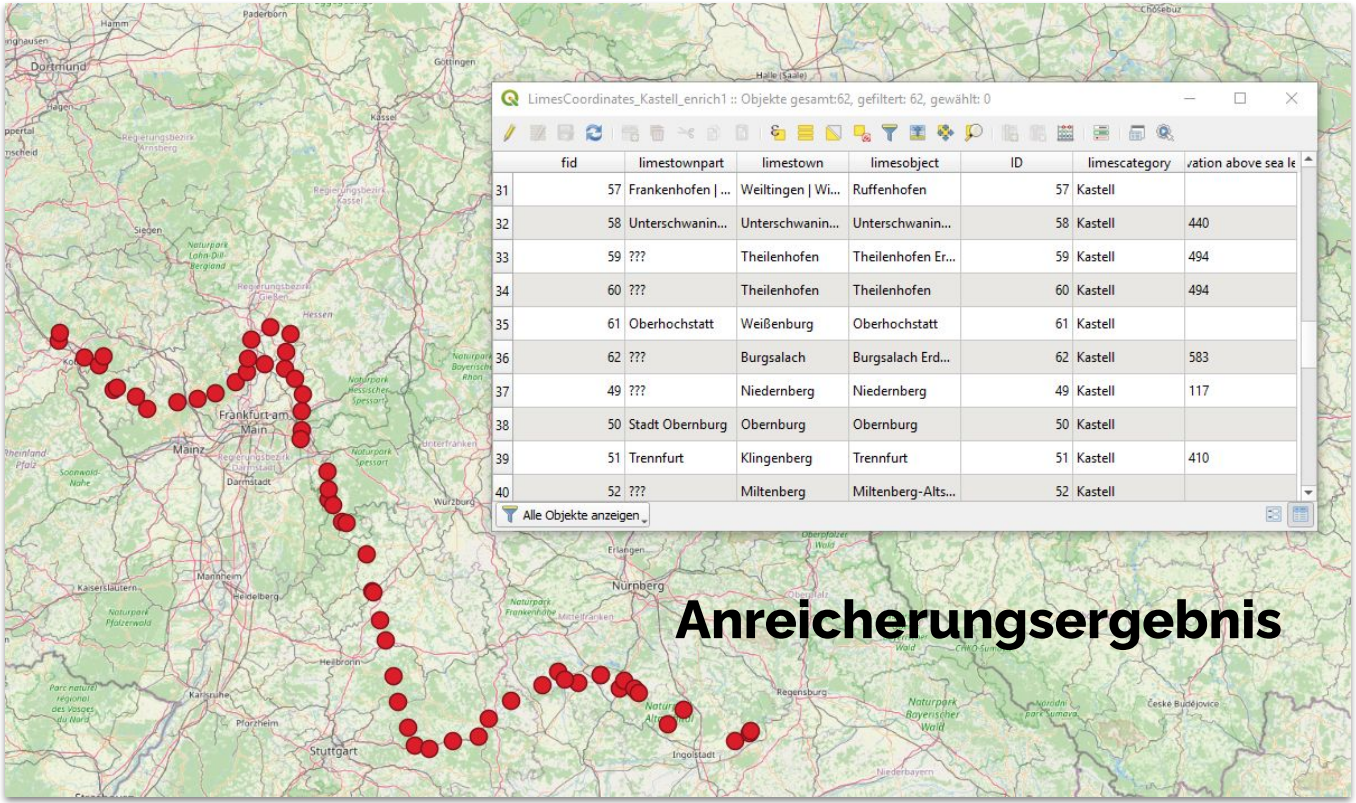
limestownpard	limestown	limesobject	ID	limescategory
Orlen	Taunusstein	Zugmantel	1	Kastell
Heftrich	Idstein	Alteburg-Heftrich	2	Kastell
Niederreifenberg	Schmitten	Feldberg	3	Kastell
	Bad Homburg	Saalburg	4	Kastell
Ober-Rosbach	Rosbach	Kapersburg	5	Kastell

Anreicherungsquery mit dem SPARQLing Unicorn






SPARQLing Unicorn QGIS Plugin
Query
Interlink
Enrich
?
Refresh Layers
LimesCoordinates_Kastell
Load Layer
Add Row
What to enrich?
Column
EnrichmentConcept
TripleStore
Strategy
content
ID Column
ID Property
ID Domain
1 fid
2 limestownpart
3 limestown
4 limesobject
5 ID
6 limescategory
7 elevation above sea level
elevation above sea level (116.47%)
https://query.w...
Get Remote
Enrich Value
limestown
http://www.w3....
http://www.wik...
de
Anreicherungsdialog
im SPARQLing Unicorn
Start Enrichment
Add enriched layer



	fid	limestownpart	limestown	limesobject	ID	limescategory	vation above sea le
31	57	Frankenhofen | ...	Weiltingen | Wi...	Ruffenhofen	57	Kastell	
32	58	Unterschwanin...	Unterschwanin...	Unterschwanin...	58	Kastell	440
33	59	???	Theilenhofen	Theilenhofen Er...	59	Kastell	494
34	60	???	Theilenhofen	Theilenhofen	60	Kastell	494
35	61	Oberhochstatt	Weißenburg	Oberhochstatt	61	Kastell	
36	62	???	Burgsalach	Burgsalach Erd...	62	Kastell	583
37	49	???	Niedernberg	Niedernberg	49	Kastell	117
38	50	Stadt Obernburg	Obernburg	Obernburg	50	Kastell	
39	51	Trennfurt	Klingenberg	Trennfurt	51	Kastell	410
40	52	???	Miltenberg	Miltenberg-Alts...	52	Kastell	

Funktion C

Funktion C konvertiert Geodaten von z.B. GeoJSON nach RDF, sodass diese Informationen in einem Linked Data Repository gespeichert werden können.

Semantic Uplift using the SPARQLing Unicorn

SPARQLing Unicorn QGIS Plugin

Query | Interlink | Enrich | ?

Refresh Layers — LimesCoordinates_Kastell_enrich1 — Load Layer

OWL Class: http://www.wikidata.org/entity/Q146924 — Search Class

Target Namespace: http://www.github.com/sparqlunicorn#

Table Colums to Concepts: Export To Triple Store — Import Mapping — Export Mapping

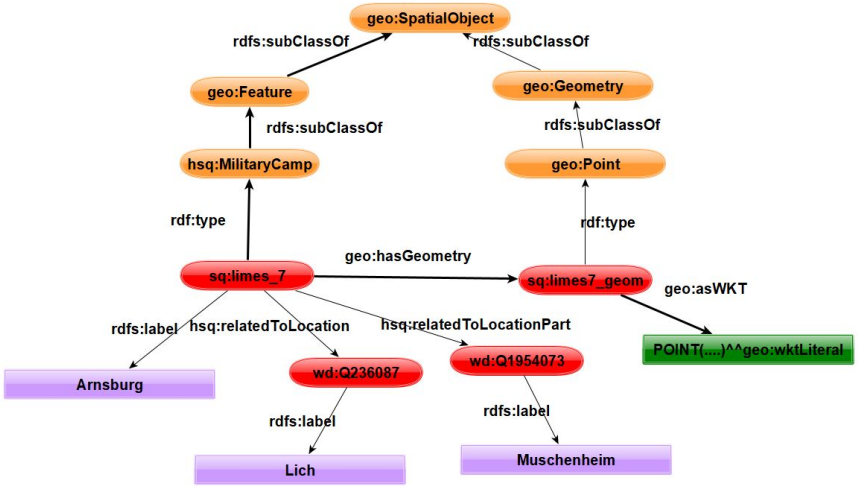
	Export?	IDColumn?	GeoColumn?	Column	ColumnProperty	PropertyType	ColumnConcept	ValueConcepts
1	☐	☐	☐	fid		Automatic		
2	☐	☐	☐	limestownpart		Automatic		
3	■	☐	☐	limestown		DataProperty		
4	☐	☐	☐	limesobject		DataProperty		
5	■	☑	☐	ID		DataProperty		
6	■	☐	☐	limescategory		SubClass		
7	■	☐	☐	elevation above...		DataProperty		

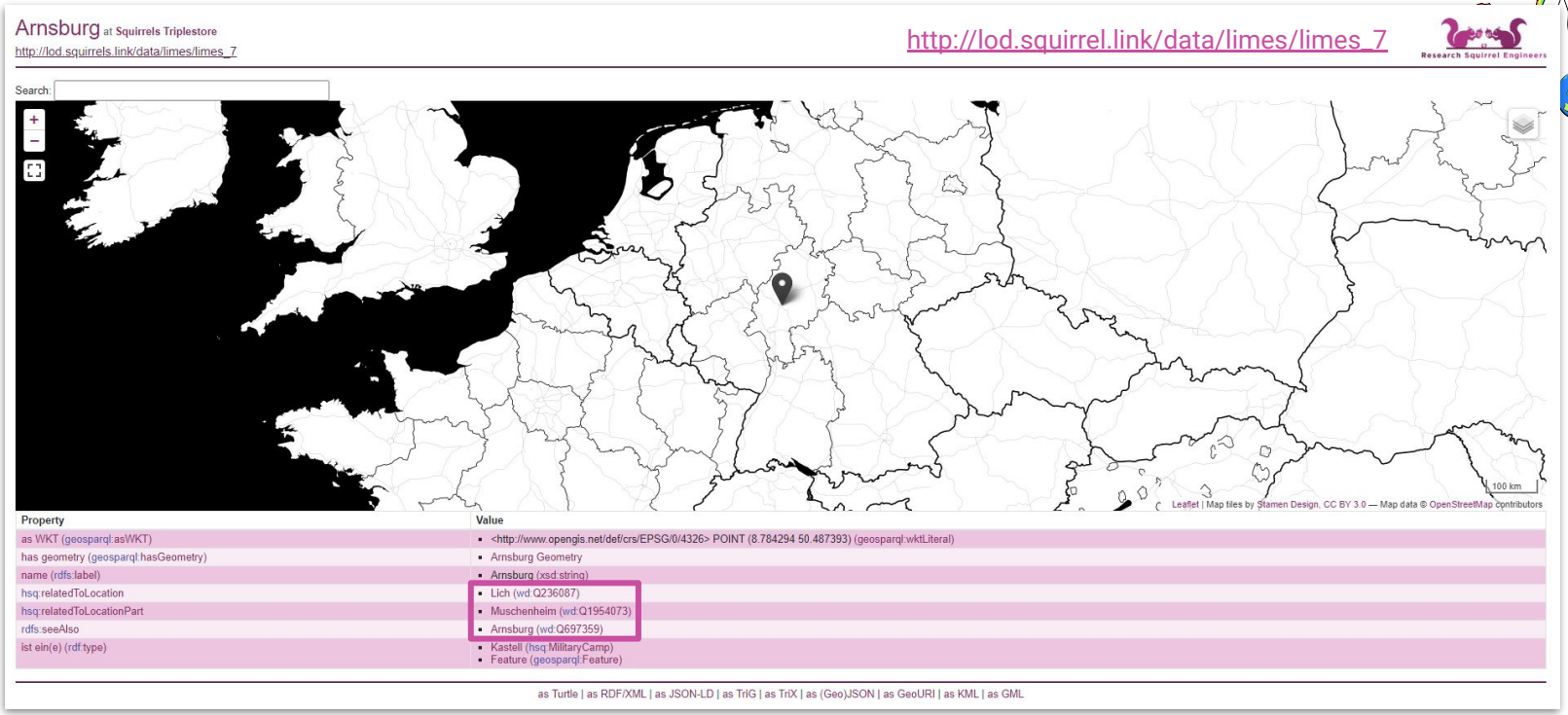
Export Result

```
<?xml version="1.0" ?>
<data>
<file class="http://www.wikidata.org/entity/Q146924" namespace="http://www.github.com/sparqlunicorn#"  indid="ID" >
<column name="limestown" prop="data" >
</column>
<column name="limescategory" prop="subclass" >
</column>
<column name="elevation above sea level" prop="data" >
</column>
</file>
</data>
```

limestownpard	limestown	limesobject	ID	limescategory
	Friedberg	Friedberg	6	Kastell
Muschenheim	Lich	Arnsburg	7	Kastell
	Großkrotzenburg	Gross-Krotzenburg	8	Kastell

Semantic Uplift Transformationsprozess





Semantic Uplift Ergebnis von einem Teil des Limes

Conclusio

Fazit

- Linked Data Ressourcen bieten interessante Daten für die Archäologen Community
- Aber: Wir brauchen die richtigen Tools um diese einfach nutzbar zu machen
- Das SPARQLing Unicorn QGIS Plugin leistet in diesem einen Beitrag für die GIS Community
- Weitere Tools könnten Linked Data noch einfach erschließbar machen
- Dies ist kein Rocket Science, aber es braucht eine Community von Entwicklern!
- Ihr wollt einen Beitrag leisten? Kontaktiert uns!

Weitere Entwicklungen

- CRS Repräsentierung in Linked Data (in Review)
- Map Style Repräsentierung in Linked Data in QGIS
- RDF File Validierung
- UI Verbesserungen
- Einpflegen von GeoSPARQL 1.2 Änderungen
- Einfache Modifikationen von RDF Geodatensets
- Einbindung von Solid Pods als Datenquelle
- Support für Multi-Language Triple Stores
- Support für Layer welche aus mehreren (Geo)konzepten zusammengesetzt sind
- Automatisierungsansätze für Enrichment/Interlinking

Danke!

Fragen?

timo.homburg@hs-mainz.de
rse@fthiery.de

http://sparqlunicorn.link

https://plugins.qgis.org/plugins/sparqlunicorn/

Research Squirrel Engineers

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