Nomisma.org and Corpus Nummorum
-
Communication, NLP and Data Quality

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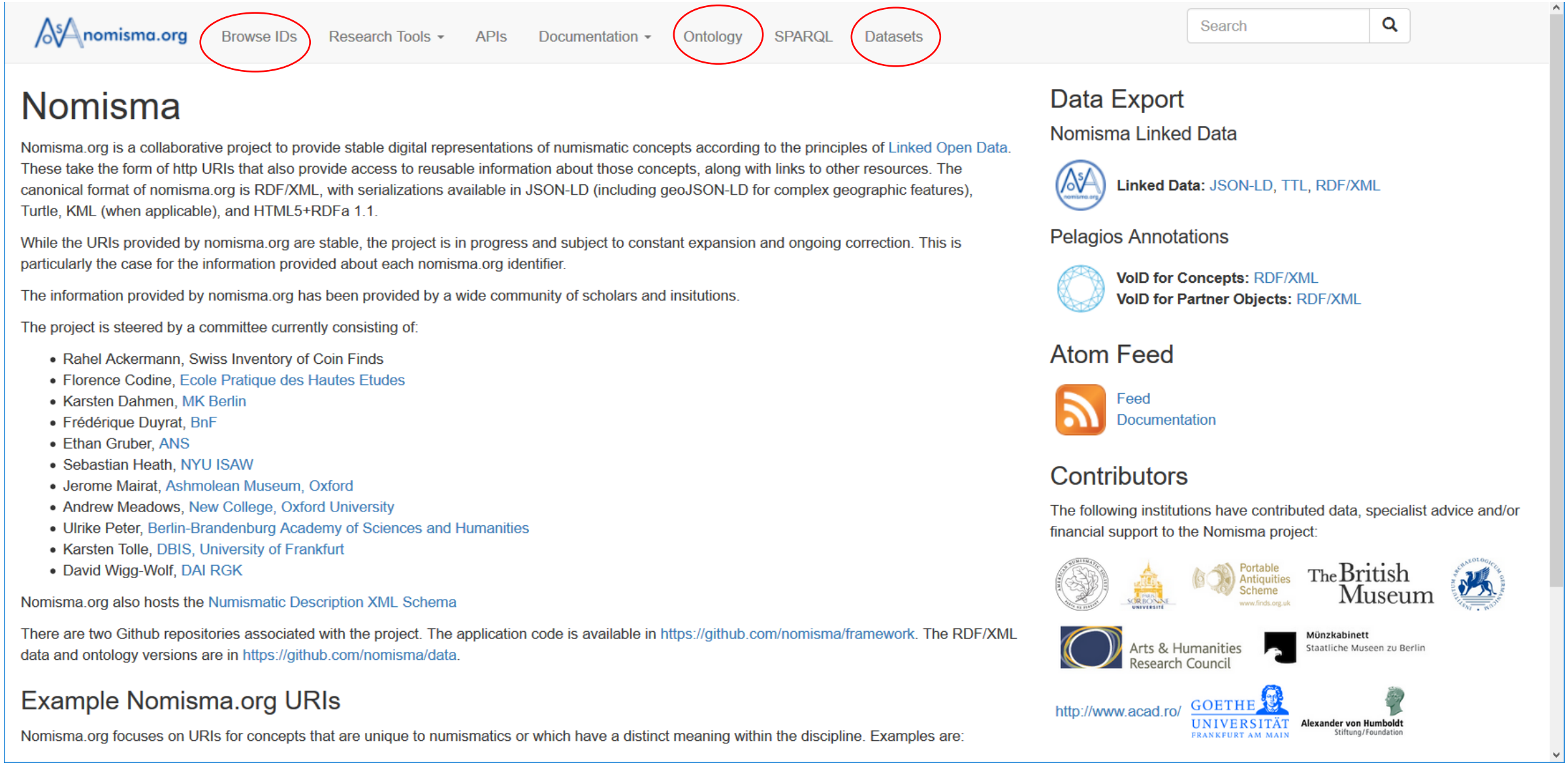
nomisma.org

CNT
CORPUS
NUMMORUM
THRACORUM

Frankfurt Big Data Lab
Databases and Information Systems (DBIS)

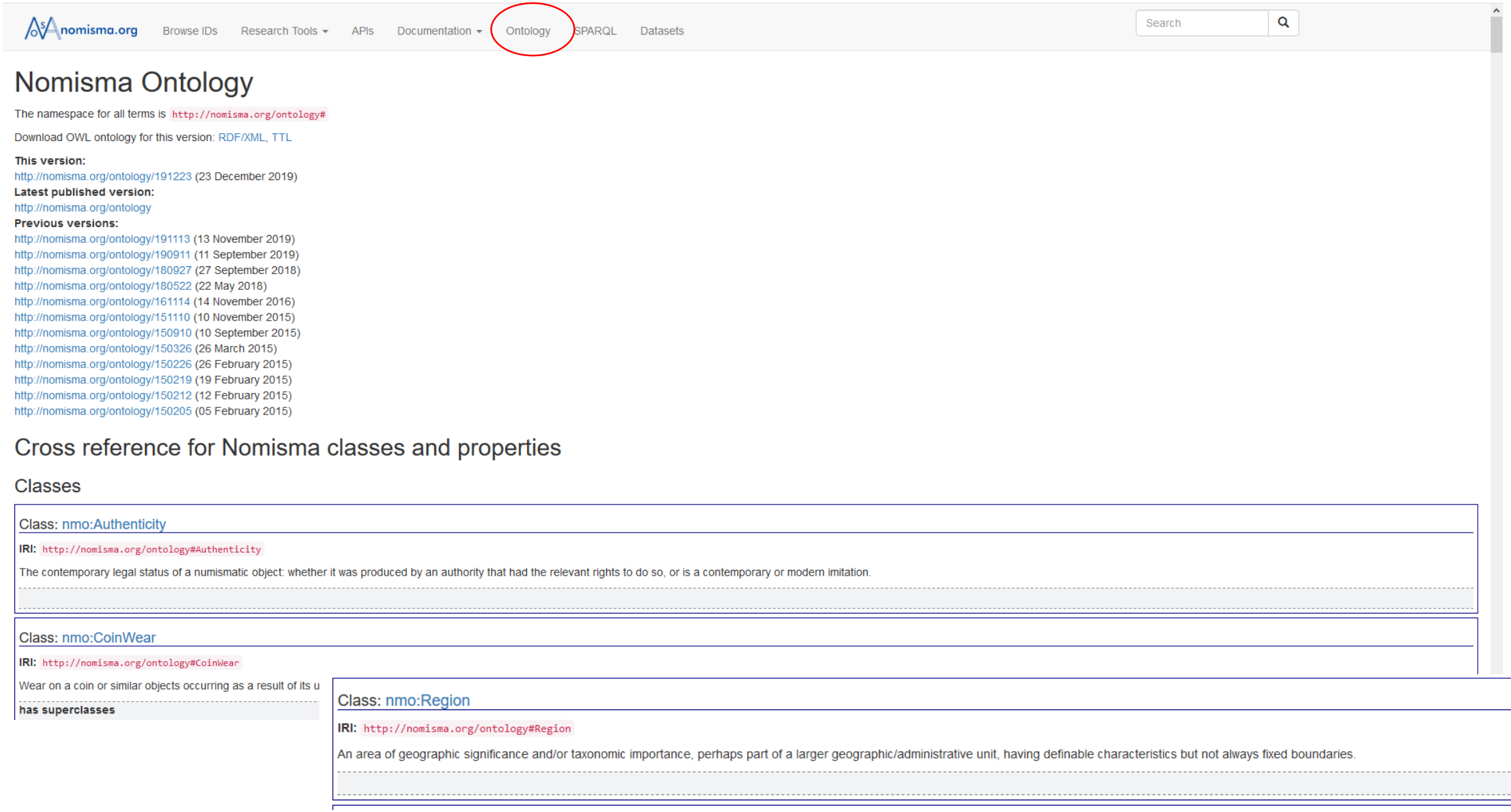
GOETHE UNIVERSITÄT FRANKFURT AM MAIN

Nomisma.org

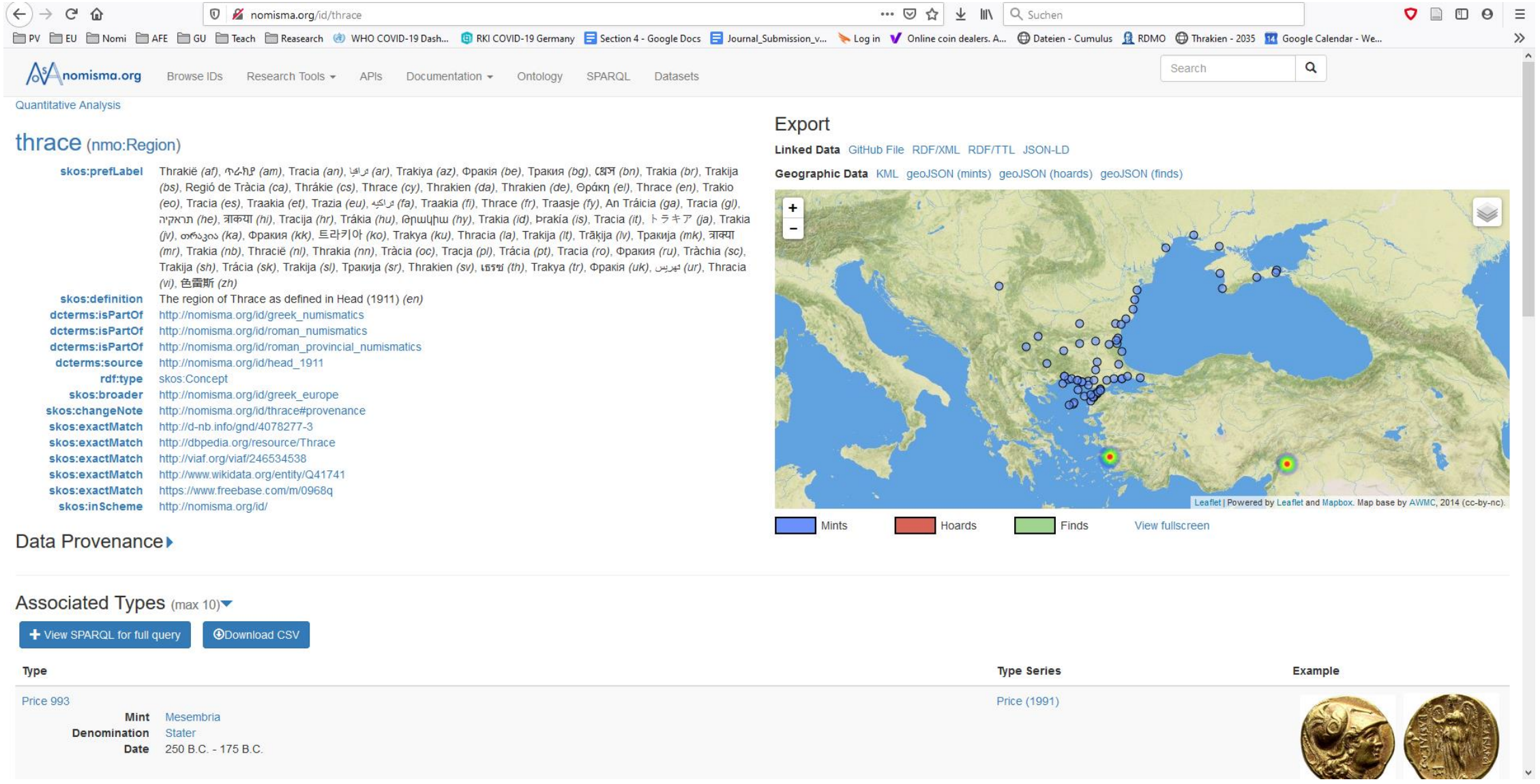

nomisma.org
Browse IDs
Research Tools
APIs
Documentation
Ontology
SPARQL
Datasets
Search
Nomisma
Nomisma.org is a collaborative project to provide stable digital representations of numismatic concepts according to the principles of Linked Open Data. These take the form of http URIs that also provide access to reusable information about those concepts, along with links to other resources. The canonical format of nomisma.org is RDF/XML, with serializations available in JSON-LD (including geoJSON-LD for complex geographic features), Turtle, KML (when applicable), and HTML5+RDFa 1.1.
While the URIs provided by nomisma.org are stable, the project is in progress and subject to constant expansion and ongoing correction. This is particularly the case for the information provided about each nomisma.org identifier.
The information provided by nomisma.org has been provided by a wide community of scholars and insitutions.
The project is steered by a committee currently consisting of:
Rahel Ackermann, Swiss Inventory of Coin Finds
Florence Codine, Ecole Pratique des Hautes Etudes
Karsten Dahmen, MK Berlin
Frédérique Duyrat, BnF
Ethan Gruber, ANS
Sebastian Heath, NYU ISAW
Jerome Mairat, Ashmolean Museum, Oxford
Andrew Meadows, New College, Oxford University
Ulrike Peter, Berlin-Brandenburg Academy of Sciences and Humanities
Karsten Tolle, DBIS, University of Frankfurt
David Wigg-Wolf, DAI RGK
Nomisma.org also hosts the Numismatic Description XML Schema
There are two Github repositories associated with the project. The application code is available in https://github.com/nomisma/framework. The RDF/XML data and ontology versions are in https://github.com/nomisma/data.
Example Nomisma.org URIs
Nomisma.org focuses on URIs for concepts that are unique to numismatics or which have a distinct meaning within the discipline. Examples are:
Data Export
Nomisma Linked Data
Linked Data: JSON-LD, TTL, RDF/XML
Pelagios Annotations
VoID for Concepts: RDF/XML
VoID for Partner Objects: RDF/XML
Atom Feed
Feed
Documentation
Contributors
The following institutions have contributed data, specialist advice and/or financial support to the Nomisma project:
Portable Antiquities Scheme
The British Museum
Arts & Humanities Research Council
Münzkabinett
Staatliche Museen zu Berlin
http://www.acad.ro/
GOETHE UNIVERSITÄT FRANKFURT AM MAIN
Alexander von Humboldt Stiftung/Foundation

Ontology == Communication

class hierarchy and property hierarchy

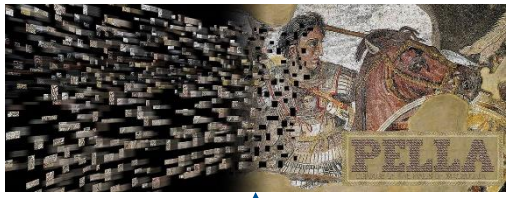


http://nomisma.org/id/thrace



Datasets

Dataset	Description	Publisher	License	Count	Data Dump
American Numismatic Society	MANTIS: A Numismatic Technologies Integration Service	American Numismatic Society	ODC-ODbL	63781	
Art of Devastation	The Art of Devastation (AoD) is a new research tool designed to help in the identification, cataloguing, and contextualization of the abundant and varied types of non-monetary numismatic items issued during and immediately after the First World War (1914-1918).	American Numismatic Society	ODC-ODbL	1992	
Coin Hoards of the Roman Republic	Coin Hoards of the Roman Republic (CHRR) is an actively updated index of gold and silver hoards mainly composed of coins of the Roman Republican period.	American Numismatic Society	CC BY NC	493	
Coinage of the Roman Republic Online	An online type corpus based upon the numbering system defined in Michael Crawford's 1974 publication, Roman Republican Coinage (RRC).	American Numismatic Society	ODC-ODbL	2295	
Online Coins of the Roman Empire	A corpus of coin types from the Roman Empire, from Augustus (27 B.C.) to Zeno (A.D. 491).	American Numismatic Society	ODC-ODbL	50698	
PELLA	PELLA is a coin type corpus of Macadonian kings of the Argead dynasty (c. 700-310 B.C.).	American Numismatic Society	ODC-ODbL	8253	
Ptolemaic Coins Online	A type corpus of all Ptolemaic coinage from Ptolemy I as satrap to the end of the Ptolemaic Kingdom under Cleopatra.	American Numismatic Society	ODC-ODbL	3589	
Seleucid Coins Online	Seleucid Coins Onine is a type corpus based on Oliver Hoover's two part volume, Seleucid Coins. It includes all Seleucid types from the foundation of the empire until the late Roman Republic/early Augustan period.	American Numismatic Society	ODC-ODbL	11705	
Bibliothèque nationale de France, département Monnaies, médailles et antiques	The Bibliothèque nationale de France is the National Library of France, located in Paris. It is the national repository of all that is published in France. It holds one of the most significant numismatic collections.	Bibliothèque nationale de France	CC BY	27549	
Fitzwilliam Museum	Roman Republican and Imperial coins from the Fitzwilliam Museum, University of Cambridge	Fitzwilliam Museum	CC BY NC ND	5337	
Furman University Libraries | Coin Collection	Furman University Libraries provides online access to more than 700 coins from their collection. The majority of the coins were created during the Roman Republic and Roman Empire. The collection also contains coins created in the 18th, 19th, and 20th centuries. These coins are predominately from European kingdoms and Latin American mints.	Furman University Libraries	ODC-ODbL	18	
Harvard Art Museums	The Roman Republican, Imperial and Hellenistic Argead coinage (struck in the name of Alexander the Great and Philip III Arrhidaeus) in the Harvard Art Museums.	Harvard Art	http://www.harvardartmuseums.org/terms-of-use	2299	



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Anomisma.org

IDs

Ontology

Datasets

used to generage RDF dump

RDF dump

Antike Fundmünzen Europa

AFE-RGK

AFE-PL

AFE-HD

The British Museum

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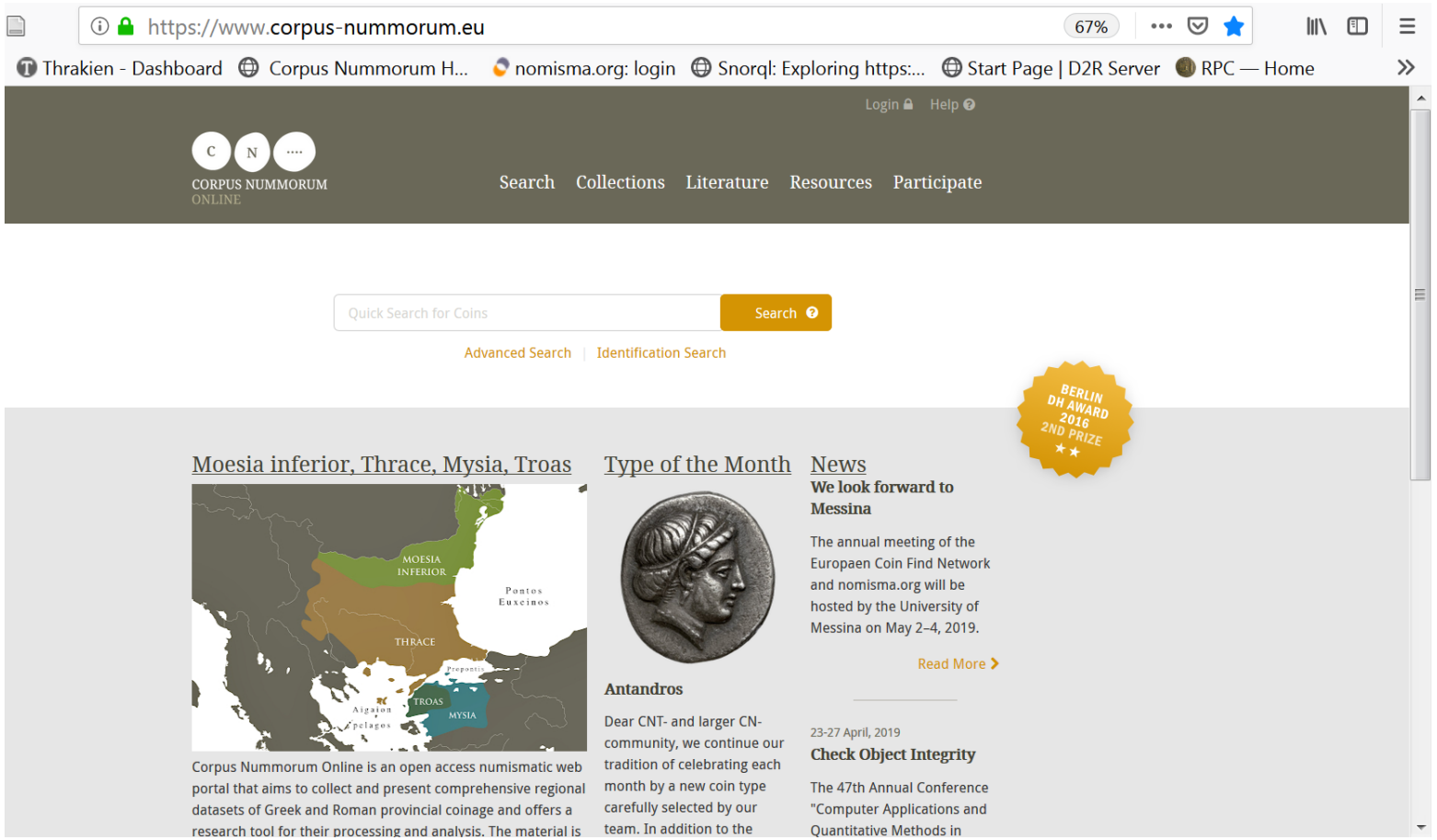
… and many more …

berlin-brandenburgische
AKADEMIE DER WISSENSCHAFTEN

Münzkabinett
Staatliche Museen zu Berlin

GOETHE
UNIVERSITÄT
FRANKFURT AM MAIN



www.corpus-nummorum.eu

Gefördert durch
DFG Deutsche Forschungsgemeinschaft

GEFÖRDERT VOM
Bundesministerium
für Bildung
und Forschung

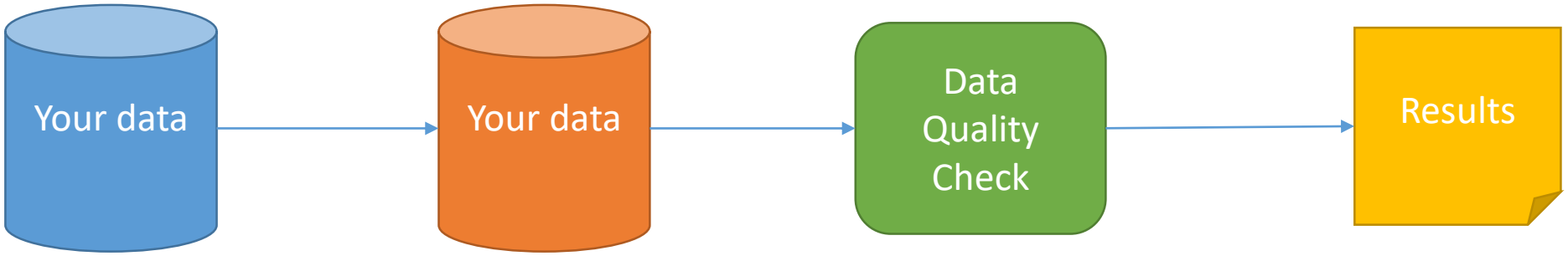
Quality checks …

Original Data

Data represented in Nomisma.org ontology

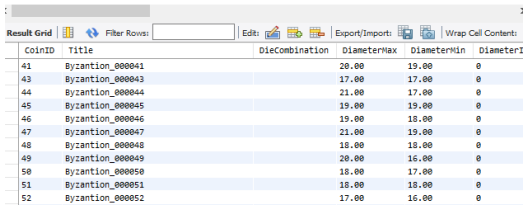
execute rules check (SPARQL-queries)

results in Excelsheets



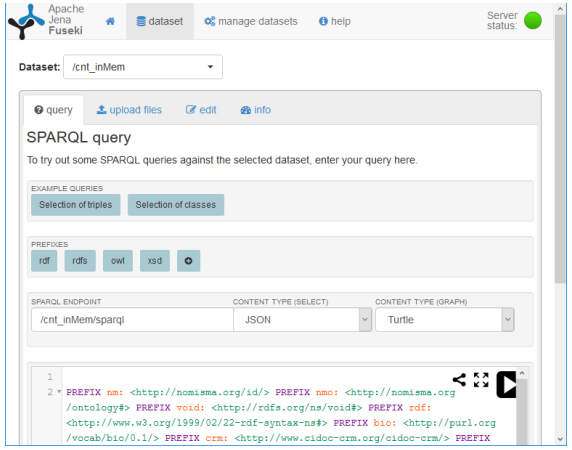
Relational MySQL/MariaDB

```
1 •  SELECT * FROM thrakien_cnt.individualcoins;
```



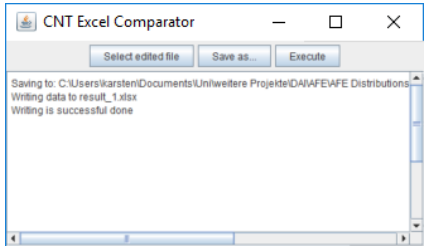
CoinID	Title	DieCombination	DiameterMax	DiameterMin	DiameterI
41	Byzantion_000041		20.00	19.00	0
43	Byzantion_000043		17.00	17.00	0
44	Byzantion_000044		21.00	17.00	0
45	Byzantion_000045		19.00	19.00	0
46	Byzantion_000046		19.00	18.00	0
47	Byzantion_000047		21.00	19.00	0
48	Byzantion_000048		18.00	18.00	0
49	Byzantion_000049		20.00	16.00	0
50	Byzantion_000050		18.00	17.00	0
51	Byzantion_000051		18.00	18.00	0
52	Byzantion_000052		17.00	16.00	0

Graph/RDF Data Fuseki

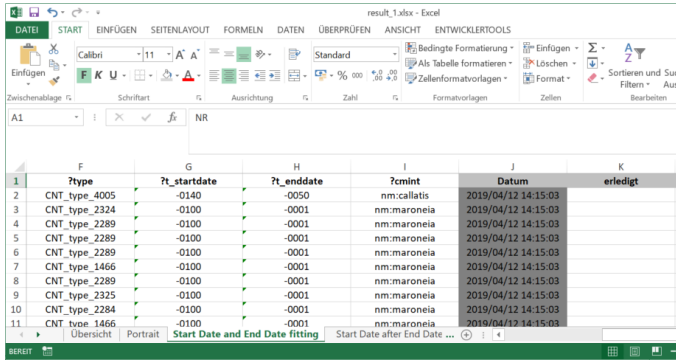


Quality Check

Java tool containing SPARQL queries

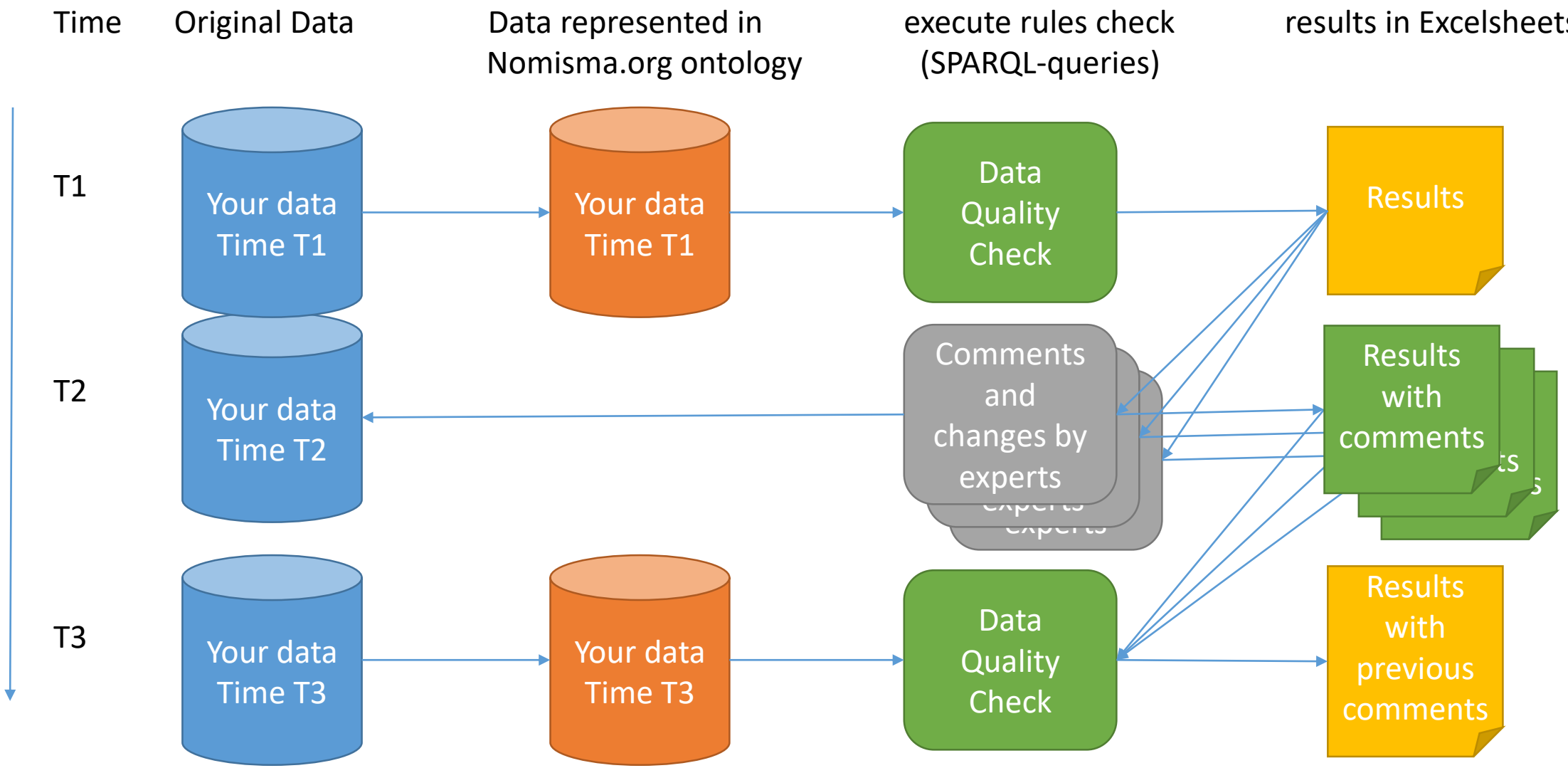


Excelsheet

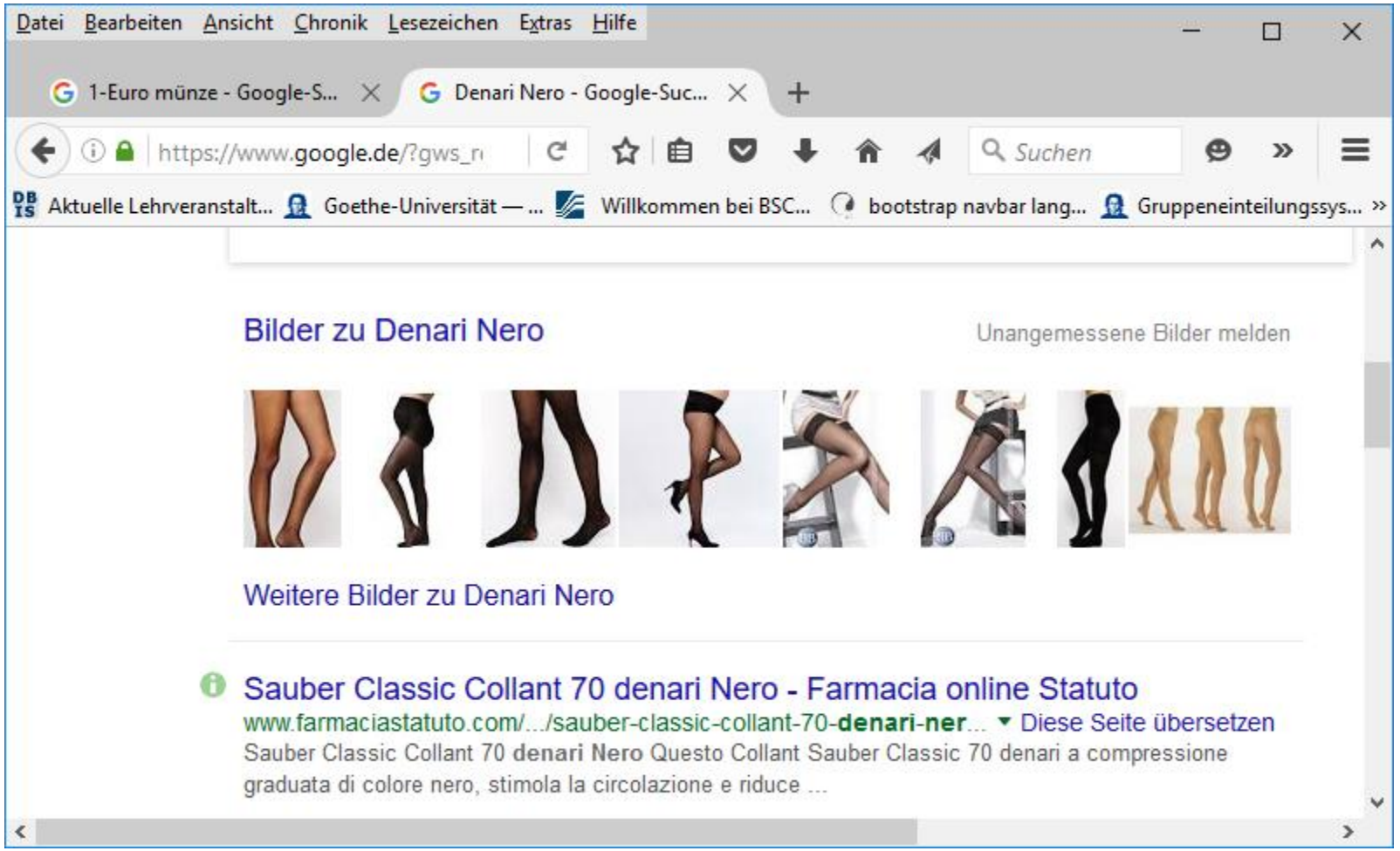


	F	G	H	I	J	K
1	?type	?t_startdate	?t_enddate	?cmint	Datum	erledigt
2	CNT_type_4005	-0140	-0050	nm:callatis	2019/04/12 14:15:03	
3	CNT_type_2324	-0100	-0001	nm:maroneia	2019/04/12 14:15:03	
4	CNT_type_2289	-0100	-0001	nm:maroneia	2019/04/12 14:15:03	
5	CNT_type_2289	-0100	-0001	nm:maroneia	2019/04/12 14:15:03	
6	CNT_type_2289	-0100	-0001	nm:maroneia	2019/04/12 14:15:03	
7	CNT_type_1466	-0100	-0001	nm:maroneia	2019/04/12 14:15:03	
8	CNT_type_2289	-0100	-0001	nm:maroneia	2019/04/12 14:15:03	
9	CNT_type_2325	-0100	-0001	nm:maroneia	2019/04/12 14:15:03	
10	CNT_type_2284	-0100	-0001	nm:maroneia	2019/04/12 14:15:03	
11	CNT_type_1466	-0100	-0001	nm:maroneia	2019/04/12 14:15:03	

Quality checks …

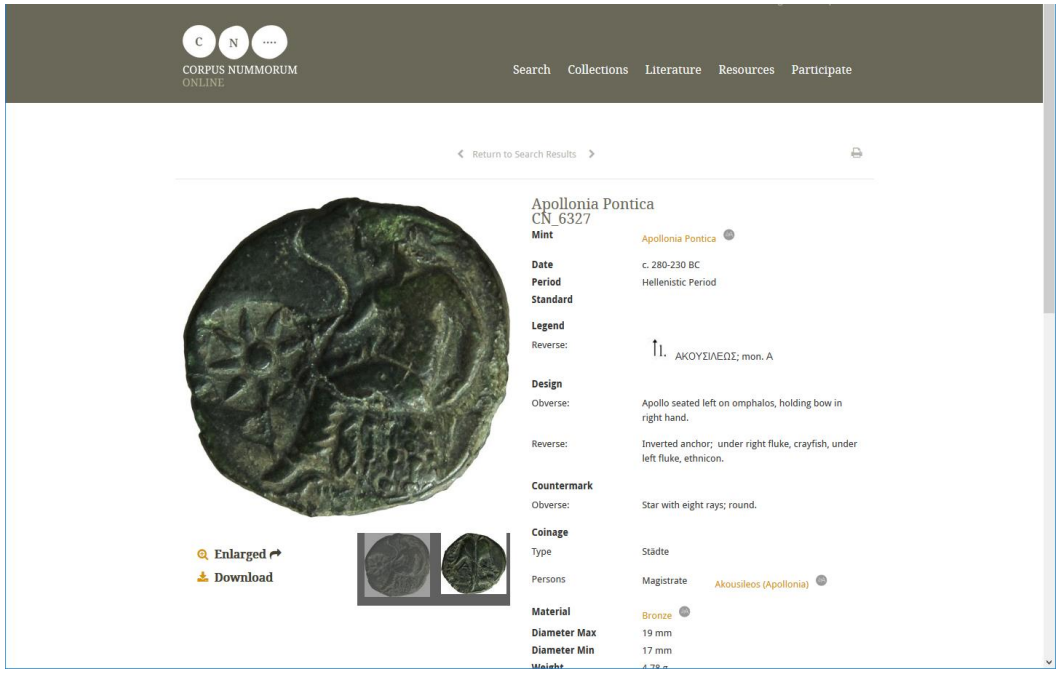


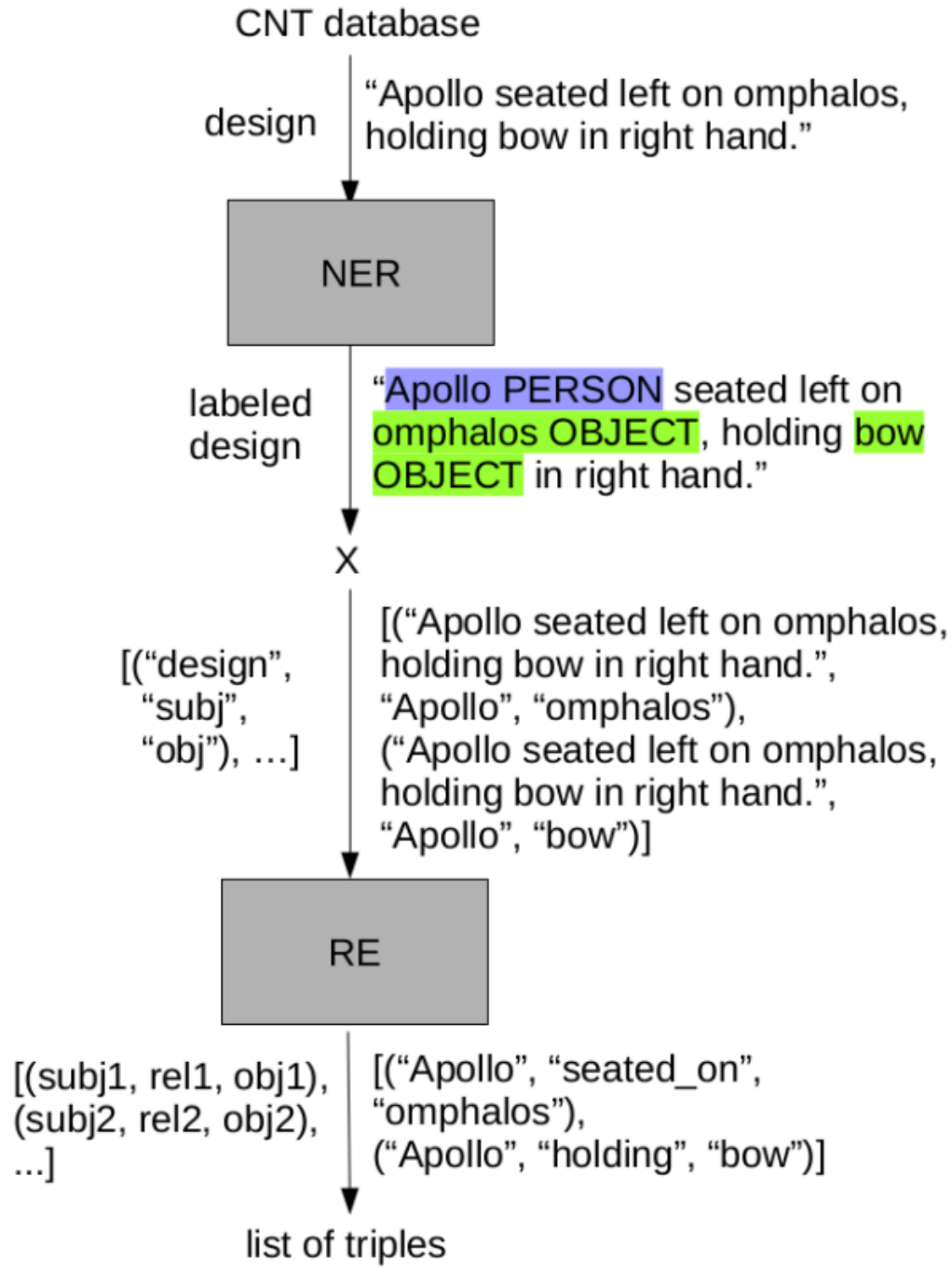
„Denari Nero“ als Google-Suche?



Coin image description …

“Apollo seated left on omphalos, holding bow in right hand.”





NER great – but not 100%!

Nude bearded Heracles PERSON standing right, strangling with both hands the attacking Nemean lion ANIMAL to left; club OBJECT in exergue.

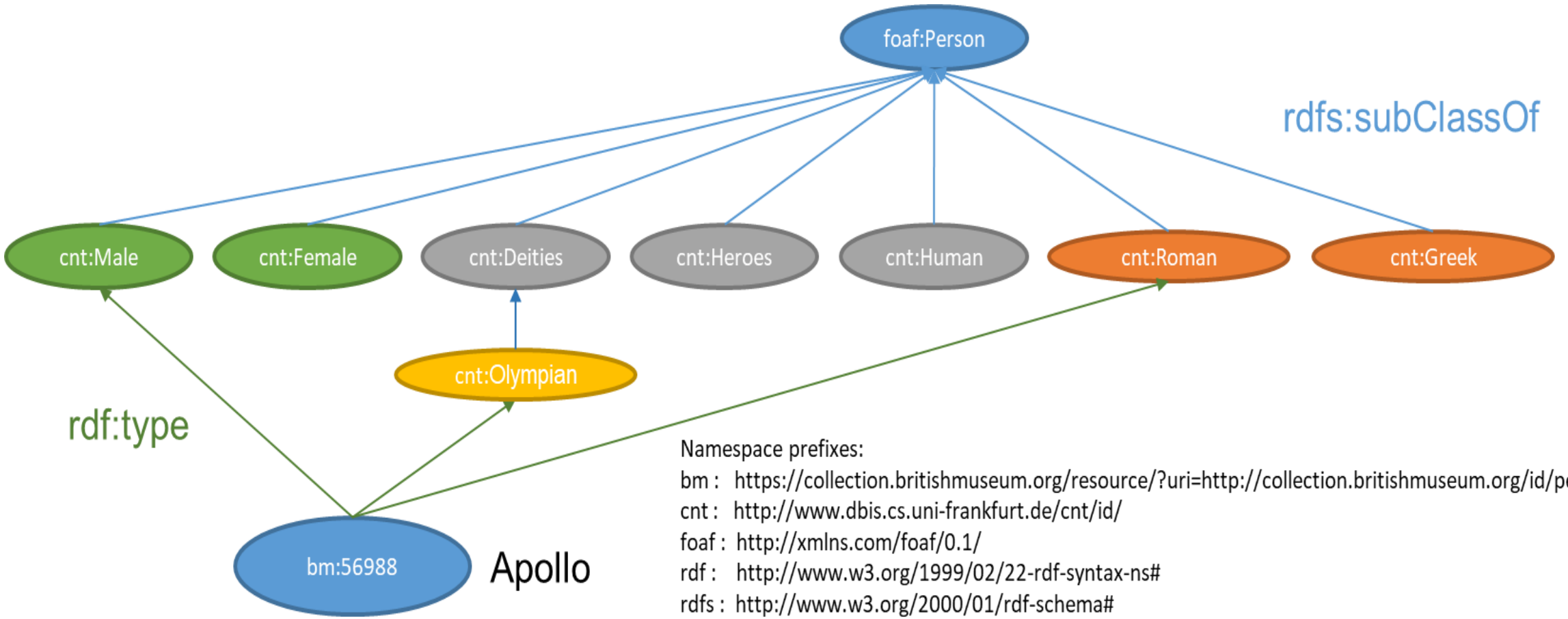
Eros PERSON on lion ANIMAL stepping right.

Veiled Demeter PERSON seated left on a cista OBJECT , from which a serpent ANIMAL entwines, wearing stephane OBJECT , holding a poppy PLANT between to grain PLANT ears PLANT in right hand and a torch OBJECT in left arm. Border of dots.

Statue OBJECT of nude Marsyas PERSON standing right, right foot stepping forward, holding wineskin over left shoulder, raising right arm.

Currently supported relations …

Relation	Semantic Cluster
holding	“holding”, “carrying” (garment), “brandishing” (spear), “shouldering” (rudder), “playing” (lyre, aulos), “raising” (shield), “cradling” (torch)
wearing	“wearing”, “covered with” (lion-skin)
resting_on	“resting on”, “leaning on”
seated_on	“seated on”, “seated in”
standing	“standing in” (biga), “driving” (biga), “standing on” (galley)
drawing	“drawing” (arrow)
stepping_on	“stepping on” (helmet)
grasping	“scooping” (gold), “reach out for” (person), “plucking” (chiton)
lying	“lying on”
hurling	“hurling” (thunderbolt)
no_existing_relation	



Namespace prefixes:
bm : https://collection.britishmuseum.org/resource/?uri=http://collection.britishmuseum.org/id/person-institution/
cnt : http://www.dbis.cs.uni-frankfurt.de/cnt/id/
foaf : http://xmlns.com/foaf/0.1/
rdf : http://www.w3.org/1999/02/22-rdf-syntax-ns#
rdfs : http://www.w3.org/2000/01/rdf-schema#

→ New search options (iconographic search):

nm:hadrian – holding --> sword

mn:hadrian – holding --> arms

emperor – holding --> arms

… more details at: **Semantic Search based on Natural Language Processing – a Numismatic example**.
Patricia Klinger, Sebastian Gampe, Karsten Tolle, Ulrike Peter (2018).
Journal of Ancient History and Archaeology (JAHA) Vol 5 No. 3 (2018) 68-79 (DOI: 10.14795/j.v5i3.334, Link)

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Coin Designs

NER Pipeline

TypeID, Entity, Label

Ground Truth

TypeID, Ground Truth

Coin images

Image Recognition

TypeID, Portrait1, P1_Percentage, Portrait2,…

D2RQ Server

RDF Dump

Fuseki

SPARQL Result

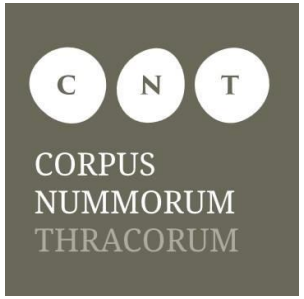
Analysis

DesignID	Entity	Label_Entity
http://numismatics.org/ocre/id/ric.1(2).aug.9A#obverse	Head	OBJECT
http://numismatics.org/ocre/id/ric.1(2).aug.9A#obverse	Augustus	PERSON
http://numismatics.org/ocre/id/ric.1(2).aug.9B#obverse	Head	OBJECT
http://numismatics.org/ocre/id/ric.1(2).aug.9B#obverse	Augustus	PERSON
http://numismatics.org/ocre/id/ric.1(2).d.1#obverse	Head	OBJECT
http://numismatics.org/ocre/id/ric.1(2).d.1#obverse	Claudius	PERSON
http://numismatics.org/ocre/id/ric.1(2).d.10#obverse	Head	OBJECT
http://numismatics.org/ocre/id/ric.1(2).d.10#obverse	Claudius	PERSON
http://numismatics.org/ocre/id/ric.1(2).d.100#obverse	Head	OBJECT
http://numismatics.org/ocre/id/ric.1(2).d.100#obverse	Claudius	PERSON
http://numismatics.org/ocre/id/ric.1(2).d.101#obverse	Head	OBJECT
http://numismatics.org/ocre/id/ric.1(2).d.101#obverse	Augustus	PERSON
http://numismatics.org/ocre/id/ric.1(2).d.102#obverse	Bust	OBJECT
http://numismatics.org/ocre/id/ric.1(2).d.102#obverse	Agrippina t…	PERSON

DesignID	Portrait_1	P1_Percentage	Portrait_2	P2_Percentage
http://numismatics.org/ocre/id/ric.1(2).aug.99	augustus	0.77807015	licinius_ii	0.17131719
http://numismatics.org/ocre/id/ric.1(2).aug.9A	augustus	0.99860173		
http://numismatics.org/ocre/id/ric.1(2).aug.9A	faustina_ii	0.7144587	augustus	0.19842112
http://numismatics.org/ocre/id/ric.1(2).aug.9A	augustus	0.99928147		
http://numismatics.org/ocre/id/ric.1(2).aug.9A	augustus	0.99996793		
http://numismatics.org/ocre/id/ric.1(2).aug.9A	augustus	0.99475634		
http://numismatics.org/ocre/id/ric.1(2).aug.9B	augustus	0.99555016		
http://numismatics.org/ocre/id/ric.1(2).aug.9B	augustus	0.9980108		
http://numismatics.org/ocre/id/ric.1(2).aug.9B	augustus	0.99937797		
http://numismatics.org/ocre/id/ric.1(2).aug.9B	augustus	0.9986929		
http://numismatics.org/ocre/id/ric.1(2).aug.9B	augustus	0.9990256		
http://numismatics.org/ocre/id/ric.1(2).aug.9B	augustus	0.98718643		
http://numismatics.org/ocre/id/ric.1(2).aug.9B	augustus	0.9999435		
http://numismatics.org/ocre/id/ric.1(2).d.100	maxentius	0.51153165	augustus	0.12647429

	design	groundTruth	nipPerson
1	<http://numismatics.org/ocre/id/ric.7.sir.2 0#obverse>	nm:constantine_ii	nm:crispus
2	<http://numismatics.org/ocre/id/ric.7.sir.2 0#obverse>	nm:constantine_ii	cnt:Victory_person
3	<http://numismatics.org/ocre/id/ric.7.sir.2 0#obverse>	nm:constantine_ii	nm:crispus
4	<http://numismatics.org/ocre/id/ric.7.sir.2 0#obverse>	nm:constantine_ii	cnt:Victory_person
5	<http://numismatics.org/ocre/id/ric.7.sir.2 0#obverse>	nm:crispus	nm:crispus
6	<http://numismatics.org/ocre/id/ric.7.sir.2 0#obverse>	nm:crispus	cnt:Victory_person
7	<http://numismatics.org/ocre/id/ric.7.sir.2 0#obverse>	nm:crispus	nm:crispus
8	<http://numismatics.org/ocre/id/ric.7.sir.2 0#obverse>	nm:crispus	cnt:Victory_person

Found and reported some errors in OCRE or in the dumps uploaded.

End

Thank you!