

Naspeuringen van Paul Theelen: The gazetteer to Pelagios

Metadata is "data [information] that provides information about other data". Three distinct types of metadata exist: structural metadata, descriptive metadata, and administrative metadata.

Descriptive metadata describes a resource for purposes such as discovery and identification. It can include elements such as title, abstract, author, and keywords.

- 5 Structural metadata indicates how compound objects are put together, for example, how pages are ordered to form chapters. Administrative metadata provides information to help manage a resource, such as when and how it was created, file type and other technical information, and who can access it.

In many countries, the metadata relating to emails, telephone calls, web pages, video traffic, IP connections and cell phone locations are routinely stored by government organizations.

- 10 Web pages often include metadata in the form of meta tags. Description and keywords in meta tags are commonly used to describe the Web page's content. Meta elements also specify page description, key words, authors of the document, and when the document was last modified. Web page metadata helps search engines and users to find the types of web pages they are looking for.

In museums

- 15 Metadata in a museum context is the information that trained cultural documentation specialists, such as archivists, librarians, museum registrars and curators, create to index, structure, describe, identify, or otherwise specify works of art, architecture, cultural objects and their images. Descriptive metadata is most commonly used in museum contexts for object identification and resource recovery purposes.

- 20 Usage

Metadata is developed and applied within collecting institutions and museums in order to:

Facilitate resource discovery and execute search queries.

Create digital archives that store information relating to various aspects of museum collections and cultural objects, and serves for archival and managerial purposes.

- 25 Provide public audiences access to cultural objects through publishing digital content online.

Standards

Many museums and cultural heritage centers recognize that given the diversity of art works and cultural objects, no single model or standard suffices to describe and catalogue cultural works. For example, a sculpted Indigenous artifact could be

- 30 classified as an artwork, an archaeological artifact, or an Indigenous heritage item. The early stages of standardization in archiving, description and cataloging within the museum community began in the late 1990s with the development of standards such as Categories for the Description of Works of Art (CDWA), Spectrum, the Conceptual Reference Model (CIDOC), Cataloging Cultural Objects (CCO) and the CDWA Lite XML schema. These standards use HTML and XML markup languages for machine processing, publication and implementation. The Anglo-American Cataloguing Rules (AACR), originally developed for characterizing books,
- 35 have also been applied to cultural objects, works of art and architecture. Standards, such as the CCO, are integrated within a Museum's Collection Management System (CMS), a database through which museums are able to manage their collections, acquisitions, loans and conservation. Scholars and professionals in the field note that the "quickly evolving landscape of standards and technologies" create challenges for cultural documentarians, specifically non-technically trained professionals. Most collecting institutions and museums use a relational database to categorize cultural works and their images. Relational
- 40 databases and metadata work to document and describe the complex relationships amongst cultural objects and multi-faceted works of art, as well as between objects and places, people and artistic movements. Relational database structures are also beneficial within collecting institutions and museums because they allow for archivists to make a clear distinction between cultural objects and their images; an unclear distinction could lead to confusing and inaccurate searches.

- 45 Cultural objects and art works

An object's materiality, function and purpose, as well as the size (e.g., measurements, such as height, width, weight),

storage requirements (e.g., climate-controlled environment) and focus of the museum and collection, influence the descriptive depth of the data attributed to the object by cultural documentarians. The established institutional cataloging practices, goals and expertise of cultural documentarians and database structure also influence the information ascribed to cultural objects, and the ways in which cultural objects are categorized. Additionally, museums often employ standardized commercial collection management software that prescribes and limits the ways in which archivists can describe artworks and cultural objects. As well, collecting institutions and museums use Controlled Vocabularies to describe cultural objects and artworks in their collections. Getty Vocabularies and the Library of Congress Controlled Vocabularies are reputable within the museum community and are recommended by CCO standards. Museums are encouraged to use controlled vocabularies that are contextual and relevant to their collections and enhance the functionality of their digital information systems. Controlled Vocabularies are beneficial within databases because they provide a high level of consistency, improving resource retrieval. Metadata structures, including controlled vocabularies, reflect the ontologies of the systems from which they were created. Often the processes through which cultural objects are described and categorized through metadata in museums do not reflect the perspectives of the maker communities.

Museums and the Internet

Metadata has been instrumental in the creation of digital information systems and archives within museums, and has made it easier for museums to publish digital content online. This has enabled audiences who might not have had access to cultural objects due to geographic or economic barriers to have access to them. In the 2000s, as more museums have adopted archival standards and created intricate databases, discussions about Linked Data between museum databases have come up in the museum, archival and library science communities. Collection Management Systems (CMS) and Digital Asset Management tools can be local or shared systems. Digital Humanities scholars note many benefits of interoperability between museum databases and collections, while also acknowledging the difficulties achieving such interoperability.

See https://en.wikipedia.org/wiki/Resource_Description_Framework

The Resource Description Framework (RDF) is a family of World Wide Web Consortium (W3C) specifications originally designed as a metadata data model. It has come to be used as a general method for conceptual description or modeling of information that is implemented in web resources, using a variety of syntax notations and data serialization formats. It is also used in knowledge management applications.

[https://en.wikipedia.org/wiki/Turtle_\(syntax\)](https://en.wikipedia.org/wiki/Turtle_(syntax))

Turtle (Terse RDF Triple Language) is a format for expressing data in the Resource Description Framework (RDF) data model with a syntax similar to SPARQL. RDF, in turn, represents information using "triples", each of which consists of a subject, a predicate, and an object. Each of those items is expressed as a Web URI.

Turtle provides a way to group three URIs to make a triple, and provides ways to abbreviate such information, for example by factoring out common portions of URIs. For example:

```
<http://example.org/person/Mark_Twain>
```

```
<http://example.org/relation/author>
```

```
<http://example.org/books/Huckleberry\_Finn>.
```

https://en.wikipedia.org/wiki/Named_graph

Named graphs are a key concept of Semantic Web architecture in which a set of Resource Description Framework statements (a graph) are identified using a URI, allowing descriptions to be made of that set of statements such as context, provenance information or other such metadata.

Named graphs are a simple extension of the RDF data model through which graphs can be created but the model lacks an effective

means of distinguishing between them once published on the Web at large.

One conceptualization of the Web is as a graph of document nodes identified with URIs and connected by hyperlink arcs which are expressed within the HTML documents. By doing a HTTP GET on a URI (usually via a Web browser), a somehow-related document may be retrieved. This "follow your nose" approach also applies to RDF documents on the Web in the form of Linked Data, where typically an RDF syntax is used to express data as a series of statements, and URIs within the RDF point to other resources. This Web of data has been described by Tim Berners-Lee as the "Giant Global Graph".

Named graphs are a formalization of the intuitive idea that the contents of an RDF document (a graph) on the Web can be considered to be named by the URI of the document. This considerably simplifies techniques for managing chains of provenance for pieces of data and enabling fine-grained access control to the source data. Additionally trust can be managed through the publisher applying a digital signature to the data in the named graph. (Support for these facilities was originally intended to come from RDF reification, however that approach proved problematic.

While named graphs may appear on the Web as simple linked documents (i.e. Linked Data), they are also very useful for managing sets of RDF data within an RDF store. In particular, the scope of a SPARQL query may be limited to a specific set of named graphs.

Resource Description Framework

rdf:XMLLiteral - the class of XML literal values

rdf:Property - the class of properties

rdf:Statement - the class of RDF statements

rdf:Alt, rdf:Bag, rdf:Seq - containers of alternatives, unordered containers, and ordered containers (rdfs:Container is a super-class of the three)

rdf:List - the class of RDF Lists

rdf:nil - an instance of rdf:List representing the empty list

rdfs:Resource - the class resource, everything

rdfs:Literal - the class of literal values, e.g. strings and integers

rdfs:Class - the class of classes

rdfs:Datatype - the class of RDF datatypes

rdfs:Container - the class of RDF containers

rdfs:ContainerMembershipProperty - the class of container membership properties, rdf:_1, rdf:_2, ..., all of which are sub-properties of rdfs:member

rdf:type - an instance of rdf:Property used to state that a resource is an instance of a class

rdf:first - the first item in the subject RDF list

rdf:rest - the rest of the subject RDF list after rdf:first

rdf:value - idiomatic property used for structured values

rdf:subject - the subject of the subject RDF statement

rdf:predicate - the predicate of the subject RDF statement

rdf:object - the object of the subject RDF statement

rdf:Statement, rdf:subject, rdf:predicate, rdf:object are used for reification

rdfs:subClassOf - the subject is a subclass of a class

rdfs:subPropertyOf - the subject is a subproperty of a property

rdfs:domain - a domain of the subject property

rdfs:range - a range of the subject property

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rdfs:label - a human-readable name for the subject
140 rdfs:comment - a description of the subject resource
rdfs:member - a member of the subject resource
rdfs:seeAlso - further information about the subject resource
rdfs:isDefinedBy - the definition of the subject resource

145 Gazetteers form the backbone of the Pelagios initiative. Through shared gazetteer references, we create connections between otherwise disconnected datasets.

There are many gazetteers out there, and there are good reasons for this diversity: geographical and temporal coverage, granularity, cultural focus, technical emphasis (e.g. emphasis on names vs. geometry), scholarly quality, community,...

150 This is why Pelagios needs different gazetteers to interoperate with each other on their basic level, so that we can build tools and infrastructure that allows everyone to:

- search across different gazetteers
- find enough information in order to identify and disambiguate places
- annotate data with stable URIs to the most appropriate gazetteer

155 Our goal is not to define The One unified data model to represent gazetteers. What we aim for is simply a uniform way to build links between different gazetteers, along with just enough additional metadata to support the three requirements above.

[abstract](#), [accessRights](#), [accrualMethod](#), [accrualPeriodicity](#), [accrualPolicy](#), [alternative](#), [audience](#), [available](#), [bibliographicCitation](#), [conformsTo](#), [contributor](#), [coverage](#), [created](#), [creator](#), [date](#), [dateAccepted](#), [dateCopyrighted](#), [dateSubmitted](#), [description](#), [educationLevel](#), [extent](#), [format](#), [hasFormat](#), [hasPart](#), [hasVersion](#), [identifier](#), [instructionalMethod](#), [isFormatOf](#), [isPartOf](#), [isReferencedBy](#), [isReplacedBy](#), [isRequiredBy](#), [issued](#), [isVersionOf](#), [language](#), [license](#), [mediator](#), [medium](#), [modified](#), [provenance](#), [publisher](#), [references](#), [relation](#), [replaces](#), [requires](#), [rights](#), [rightsHolder](#), [source](#), [spatial](#), [subject](#), [tableOfContents](#), [temporal](#), [title](#), [type](#), [valid](#)

[contributor](#), [coverage](#), [creator](#), [date](#), [description](#), [format](#), [identifier](#), [language](#), [publisher](#), [relation](#), [rights](#), [source](#), [subject](#), [title](#), [type](#)
[DCMIType](#), [DDC](#), [IMT](#), [LCC](#), [LCSH](#), [MESH](#), [NLM](#), [TGN](#), [UDC](#)

[Box](#), [ISO3166](#), [ISO639-2](#), [ISO639-3](#), [Period](#), [Point](#), [RFC1766](#), [RFC3066](#), [RFC4646](#), [RFC5646](#), [URI](#), [W3CDTF](#)

[Agent](#), [AgentClass](#), [BibliographicResource](#), [FileFormat](#), [Frequency](#), [Jurisdiction](#), [LicenseDocument](#), [LinguisticSystem](#), [Location](#), [LocationPeriodOrJurisdiction](#), [MediaType](#), [MediaTypeOrExtent](#), [MethodOfAccrual](#), [MethodOfInstruction](#), [PeriodOfTime](#), [PhysicalMedium](#), [PhysicalResource](#), [Policy](#), [ProvenanceStatement](#), [RightsStatement](#), [SizeOrDuration](#), [Standard](#)

[Collection](#), [Dataset](#), [Event](#), [Image](#), [InteractiveResource](#), [MovingImage](#), [PhysicalObject](#), [Service](#), [Software](#), [Sound](#), [StillImage](#), [Text](#), [memberOf](#), [VocabularyEncodingScheme](#)

<http://www.w3.org/TR/xmlschema-2/>

<http://www.w3.org/TR/vcard-rdf/>

<http://dublincore.org/documents/dcmi-terms/>

160 <http://www.w3.org/TR/vocab-dcat/>

<http://xmlns.com/foaf/spec/>

<http://www.w3.org/TR/rdf-schema/>

<http://www.w3.org/TR/skos-reference/>

<http://dublincore.org/documents/dcmi-terms/>

165 <http://www.w3.org/TR/turtle/>

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- <http://www.theelen.info/>
<http://www.theelen.info/Dossier%20Peelhelm/%5B20111207%5D%20karikatuur%20Paul.jpg>
- 170 <http://www.theelen.info/%5B191110101%5D%20Museum%20in%20Maastricht.pdf>
<http://www.theelen.info/%5B20150303%5D%20Syedra.pdf>
<http://www.theelen.info/%5B20140121%5D%20Archeologische%20vondsten.pdf>
<http://www.theelen.info/%5B19110430%5D%20een%20Romeinsche%20helm%20uit%20de%20Peel.pdf>
<http://www.theelen.info/%5B20130719%5D%20oudheidkundige%20verzamelingen.pdf>
<http://www.theelen.info/%5B20130313%5D%20Brom,%20kantharos.pdf>
- 175 <http://www.theelen.info/%5B18370126%5D%20Germaanse%20begraafplaats%20te%20Deurne.pdf>
<http://www.theelen.info/%5B20130730%5D%20archeologische%20vondsten%20in%20Peel.pdf>
<http://www.theelen.info/%5B20141231%5D%20onderwerpen-cloud.pdf>
<http://www.theelen.info/%5B20140122%5D%20inhoudsopgaven%20en%20indices.pdf>
- 180 <http://www.theelen.info/Dossier%20Peelhelm/%5B20111023%5D%20GENA-villa%20te%20Helenaveen.pdf>
<http://www.theelen.info/Dossier%20Peelhelm/%5B20131104%5D%20rehabilitatie%20van%20A.%20Bos.pdf>
<http://www.theelen.info/Dossier%20Peelhelm/%5B20110124%5D%20ziekbed%20A.%20Bos%20te%20Helenaveen.pdf>
<http://www.theelen.info/Dossier%20Peelhelm/%5B20131027%5D%20Belgenhoek.pdf>
<http://www.theelen.info/Dossier%20Peelhelm/%5B20140121%5D%20Perikelen%20rond%20A.%20Bos.pdf>
- 185 <http://www.theelen.info/Dossier%20Peelhelm/%5B19910514%5D%20Johanna%20Groote-Bos.pdf>
<http://www.theelen.info/Dossier%20Peelhelm/%5B20130328%5D%20reactie%20Valkhof.jpg>
- <http://www.theelen.info/%5B19220101%5D%20Iranians%20and%20Greeks%20in%20South%20Russia.pdf>
<http://www.theelen.info/%5B20121215%5D%20Cavalry%20Equipment.pdf>
- 190 <http://www.theelen.info/%5B20120726%5D%20The%20Histories%20van%20Herodotus.pdf>
<http://www.theelen.info/%5B19240101%5D%20Historischer%20Schul-Atlas.pdf>
<http://www.ccel.org/ccel/schaff/npnf214.vii.vi.i.html>
https://en.wikipedia.org/wiki/Berthouville_Treasure
https://en.wikipedia.org/wiki/Mildenhall_Treasure
- 195 https://en.wikipedia.org/wiki/Corbridge_Lanx
https://en.wikipedia.org/wiki/Risley_Park_Lanx
<http://www.british-history.ac.uk/magna-britannia/vol5/cciii-ccxviii>
https://en.wikipedia.org/wiki/Hoxne_Hoard
<http://www.undiscoveredscotland.co.uk/eastlinton/traprainlaw/index.html>
- 200 https://en.wikipedia.org/wiki/Water_Newton_Treasure
https://en.wikipedia.org/wiki/Augusta_Raurica#Museum_and_Roman_house
https://en.wikipedia.org/wiki/Sevso_Treasure
https://en.wikipedia.org/wiki/Carthage_Treasure
<https://en.wikipedia.org/wiki/Viminacium>
- 205 http://www.medulinriviera.info/tzom/4/79/23992/Files/SCRvizula_GB_DE.pdf
https://www.youtube.com/watch?v=3qqd_D-8voI
<https://www.youtube.com/watch?v=pb5Z4f0AM4k>
<https://www.youtube.com/watch?v=fOxgRzElxd8>
https://www.youtube.com/watch?v=-r6_tDrtxuE
- 210 <https://www.youtube.com/watch?v=Fs4hb3O7IO8>
<http://epigraphy.packhum.org/text/62616>

<http://epigraphy.packhum.org/text/62623>

[file:///C:/Parallel%20Lives%20Alexandros%20Constantinus/\[20161115\]%20The%20Power%20and%20the%20Glory.pdf](file:///C:/Parallel%20Lives%20Alexandros%20Constantinus/[20161115]%20The%20Power%20and%20the%20Glory.pdf)

215 <http://www.theelen.info/Parallele%20levens/%5B20161117%5D%20Iliad.pdf>

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<http://www.theelen.info/Parallele%20levens/%5B20160925%5D%20Plutarchus%20over%20Alexander%20de%20Grote.pdf>

<http://www.theelen.info/Parallele%20levens/%5B20160925%5D%20Life%20of%20Alexander.pdf>

<http://www.theelen.info/Parallele%20levens/%5B20161123%5D%20Historiarum%20Alexandri.pdf>

220 <http://www.theelen.info/Parallele%20levens/%5B20161111%5D%20Alexander%20en%20leeuw.pdf>

<http://www.theelen.info/Parallele%20levens/%5B20161117%5D%20Moralia%20of%20Plutarch.pdf>

<http://www.theelen.info/Parallele%20levens/%5B20161023%5D%20Life%20of%20Constantine.pdf>

<http://www.theelen.info/Parallele%20levens/%5B20161123%5D%20Praise%20Constantine.pdf>

<http://www.theelen.info/Parallele%20levens/%5B20161127%5D%20inventories%20at%20Delos.pdf>

225 <http://www.attalus.org/translate/alexander1b.html>

<http://www.theelen.info/Parallele%20levens/%5B20161028%5D%20Crispus%20en%20Fausta.pdf>

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<http://www.theelen.info/Parallele%20levens/%5B20161026%5D%20kantharos.pdf>

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230 <http://www.theelen.info/Parallele%20levens/%5B20160923%5D%20vondsten%20tussen%20Rijn%20en%20Maas.pdf>

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235 <http://www.theelen.info/Parallele%20levens/%5B18170509%5D%20sarcofaag%20te%20Venlo.pdf>

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<http://www.theelen.info/Parallele%20levens/%5B18490101%5D%20debris%20dans%20Herten.pdf>

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[http://www.theelen.info/Parallele%20levens/\[18591103\] ontdekking te Mainz.pdf](http://www.theelen.info/Parallele%20levens/[18591103] ontdekking te Mainz.pdf)

[http://www.theelen.info/Parallele%20levens/\[19250101\] Nederlands vroegste geschiedenis.pdf](http://www.theelen.info/Parallele%20levens/[19250101] Nederlands vroegste geschiedenis.pdf)

[http://www.theelen.info/Parallele%20levens/\[19430526\] opgravingen Oekraïne door Bursch.pdf](http://www.theelen.info/Parallele%20levens/[19430526] opgravingen Oekraïne door Bursch.pdf)

245 [http://www.theelen.info/Parallele%20levens/\[20161019\] beschrijvingen Delphi.pdf](http://www.theelen.info/Parallele%20levens/[20161019] beschrijvingen Delphi.pdf)

[http://www.theelen.info/Parallele%20levens/\[20161027\] bekeringspolitiek Constantijn.pdf](http://www.theelen.info/Parallele%20levens/[20161027] bekeringspolitiek Constantijn.pdf)

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[http://www.theelen.info/Parallele%20levens/\[20161107\] Oration in praise of Constantine.pdf](http://www.theelen.info/Parallele%20levens/[20161107] Oration in praise of Constantine.pdf)

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250 [http://www.theelen.info/Parallele%20levens/\[20161028\] cameo of gemma.pdf](http://www.theelen.info/Parallele%20levens/[20161028] cameo of gemma.pdf)

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255 <http://www.theelen.info/Dossier%20Peelhelm/%5B19100699%5D%20Merkwaardige%20vondst.JPG>

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- <http://www.theelen.info/Dossier%20Peelhelm/%5B19100620%5D%20tekening%20van%20Beurden.JPG>
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270 <http://www.theelen.info/Parallele%20levens/%5B20161027%5D%20kantharos.jpg>
<http://www.theelen.info/Parallele%20levens/%5B18630101%5D%20mortier%20te%20Deurne.jpg>

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```
@prefix cito: <http://purl.org/spar/cito>.
@prefix cnt: <http://www.w3.org/2011/content#>.
275 @prefix dcterms: <http://purl.org/dc/terms/>.
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
@prefix geo: <http://www.w3.org/2003/01/geo/wgs84_pos#>.
@prefix geosparql: <http://www.opengis.net/ont/geosparql#>.
@prefix gn: <http://www.geonames.org/ontology#>.
280 @prefix lawd: <http://lawd.info/ontology/>.
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>.
@prefix skos: <http://www.w3.org/2004/02/skos/core#>.
<http://www.mygazetteer.org/place/Athens> a lawd:Place;
# Don't think of label and description in terms of a 'primary name' or detailed abstract. Think of this in terms of UI:
285 # what do you want users to see about your place in a list of search results?
rdfs:label "Athens"@en;
dcterms:description "A major Greek city-state"@en;
# Optional: a present-day (ISO-3166 alpha2) country code
gn:countryCode "GR";
290 # Dont' think of this in terms of 'how long your place existed'. Use it to specify the period your gazetteer is concerned with
# it and/or provides attestations. In terms of format, use ISO 8601 (YYYY[-MM-DD) or time interval (<start>/<end>).
dcterms:temporal "-750/640";
# Additionally, we encourage the use of (one or multiple) PeriodO identifiers to denote time periods
dcterms:temporal <http://n2t.net/ark:/99152/p03wskd389m>;# Greco-Roman
295 # Use closeMatch to express 'vague' matches, e.g. to link to a modern-day town now located there
skos:closeMatch <http://sws.geonames.org/264371/>;
# Use exactMatch to express (geographical, temporal, cultural) identity
skos:exactMatch <http://pleiades.stoa.org/places/579885>;
# Attestions can apply to individual names (as in the example below). But they may also apply to the place as a whole.
300 # You can also provide variant names using lawd:variantForm. For language encoding, use RFC 5646 format.
lawd:hasName [lawd:primaryForm "Athens"@en];
lawd:hasName [lawd:primaryForm "Athenae"];
lawd:hasName [lawd:primaryForm "Αθήνα"@el];
lawd:hasAttestation <http://www.mygazetteer.org/att/0001>;
305 # Optional: a representative point coordinate geo:location [geo:lat 5.16;geo:long 52.05];
# Optional: detail geometry as WKT string (alternatively, use osgeo:asGeoJSON for a GeoJSON string)
geosparql:hasGeometry [geosparql:asWKT "LINESTRING (5.16 52.05, 5.16 52.05, 5.16 52.06)"];];
foaf:primaryTopicOf <http://www.mygazetteer.org/place/Athens.html>;
dcterms:isPartOf <http://www.mygazetteer.org/place/Greece>;.
310 <http://www.mygazetteer.org/att/0001> a lawd:Attestation;
dcterms:publisher <http://www.mygazetteer.org/>;
cito:citesAsEvidence
<http://www.mygazetteer.org/documents/01234>;
cnt:chars "Αθήνα"
315
# The following example defines 3 prefixes ("rdf", "dc", and "ex"), and uses them in expressing a statement about the
editorship of the RDF/XML document:
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
```


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```
320 @prefix dc: <http://purl.org/dc/elements/1.1/>.
    @prefix ex: <http://example.org/stuff/1.0/>.
    <http://www.w3.org/TR/rdf-syntax-grammar>
    dc:title "RDF/XML Syntax Specification (Revised)" ;
    ex:editor [ex:fullname "Dave Beckett";ex:homePage <http://purl.org/net/dajobe/>].

325 # Here are the triples made explicit in N-Triples notation:
    <http://www.w3.org/TR/rdf-syntax-grammar> <http://purl.org/dc/elements/1.1/title> "RDF/XML Syntax Specification (Revised)".
    <http://www.w3.org/TR/rdf-syntax-grammar> <http://example.org/stuff/1.0/editor> _:bnode.
    _:bnode <http://example.org/stuff/1.0/fullname> "Dave Beckett".
    _:bnode <http://example.org/stuff/1.0/homePage> <http://purl.org/net/dajobe/>.

330 # Assume the following (Turtle) RDF document has been placed in a SPARQL-capable store with the name http://example.org/joe.
    @prefix foaf: <http://xmlns.com/foaf/0.1/>.
    <http://example.org/joe#me> a foaf:Person.
    <http://example.org/joe#me> foaf:homepage <http://example.org/joe/index.html>.
335 <http://example.org/joe#me> foaf:mbox <mailto:joe@example.org>.
    <http://example.org/joe#me> foaf:name "Joe Lambda".
    # This data has been written in a more verbose form than necessary to show the triple structures
    # The homepage of the person with the email address mailto:joe@example.org can be obtained using the SPARQL query:
    PREFIX foaf: <http://xmlns.com/foaf/0.1/>
340 SELECT ?homepage
    FROM NAMED <http://example.org/joe>
    WHERE {GRAPH ?g {?person foaf:homepage ?homepage. ?person foaf:mbox <mailto:joe@example.org>.}}
```

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```
<http://www.mygazetteer.org/place/0001> a lawd:Place;
rdfs:label "The Roman Theatre"@en;
345 # Various other data about your place...
foaf:depiction <http://www.example.com/images/place0001_img001.jpg>;
foaf:depiction <http://www.example.com/images/place0001_img002.jpg>;.
<http://www.example.com/images/place0001_img001.jpg> a foaf:Image;
dcterms:title "The Roman Theatre";
350 dcterms:license <http://creativecommons.org/licenses/by-sa/3.0/>;.
<http://www.example.com/images/place0001_img002.jpg> a foaf:Image;
dcterms:title "The Roman Theatre from far away";
dcterms:license <http://creativecommons.org/licenses/by-sa/3.0/>;.

355 @prefix paul: <http://www.w3.org/People/EM/contact#>.
@prefix contact: <http://www.w3.org/2000/10/swap/pim/contact#>.
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
paul:me contact:fullName "Paul Theelen".
360 paul:me contact:mailbox <mailto:l.theelen@on.nl>.
paul:me contact:personalTitle "Mr.".
paul:me rdf:type contact:Person.

<urn:x-states:New%20York> <http://purl.org/dc/terms/alternative> "NY".
365 @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
@prefix dc: <http://purl.org/dc/elements/1.1/>.

370 <http://en.wikipedia.org/wiki/Tony_Benn>
dc:publisher "Wikipedia";dc:title "Tony Benn";foaf:primaryTopic [a foaf:Person;foaf:name "Tony Benn"].

<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:void="http://rdfs.org/ns/void#"
xmlns:dcterms="http://purl.org/dc/terms/" xmlns:oac="http://www.openannotation.org/ns/"
375 xmlns:owl="http://www.w3.org/2002/07/owl#" xmlns:nm="http://nomisma.org/id/" xmlns:skos="http://www.w3.org/2004/02/skos/core#"
xmlns:foaf="http://xmlns.com/foaf/0.1/">
<void:Dataset rdf:about="https://finds.org.uk">
<dcterms:title>finds.org.uk</dcterms:title>
<dcterms:description>
380 # Pleiades annotations for data contained within the Portable Antiquities Scheme (mostly numismatic material)
</dcterms:description>
<dcterms:license rdf:resource="http://creativecommons.org/licenses/by/3.0/">
<dcterms:subject rdf:resource="http://dbpedia.org/resource/Annotation"/>
<dcterms:publisher>The Trustees of the British Museum</dcterms:publisher>
385 <foaf:homepage resource="https://finds.org.uk/">
<void:dataDump rdf:resource="http://finds.org.uk/rdf/pelagios.rdf"/>
</void:Dataset>
</rdf:RDF>
```

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```

390 <?xml version="1.0" encoding="UTF-8"?><rdf:RDF xmlns:nm="http://nomisma.org/id/" xmlns:oa="http://www.w3.org/ns/oa#"
xmlns:dcterms="http://purl.org/dc/terms/" xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#" xmlns:foaf="http://xmlns.com/foaf/0.1/"
xmlns:void="http://rdfs.org/ns/void#" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:skos="http://www.w3.org/2004/02/skos/core#">
395 <void:Dataset>
<dcterms:title>The Fralin|UVa Art Museum Numismatic Collection</dcterms:title>
<foaf:homepage rdf:resource="http://coins.lib.virginia.edu/"/>
<dcterms:description>The Fralin Museum of Art at the University of Virginia numismatic collection contains about 600 coins of
mainly Greco-Roman origin.</dcterms:description>
400 <dcterms:publisher>University of Virginia Library</dcterms:publisher>
<dcterms:license rdf:resource="http://opendatacommons.org/licenses/odbl/"/>
<dcterms:subject rdf:resource="http://dbpedia.org/resource/Annotation"/>
<void:dataDump rdf:resource="http://coins.lib.virginia.edu/pelagios.rdf"/>
</void:Dataset>
405 </rdf:RDF>

@prefix : <http://edh-www.adw.uni-heidelberg.de/>.
@prefix void: <http://rdfs.org/ns/void#>.
@prefix dcterms: <http://purl.org/dc/terms/>.
410 @prefix foaf: <http://xmlns.com/foaf/0.1/>.
: a void:Dataset;
dcterms:title "Epigraphic Database Heidelberg";
dcterms:publisher "Heidelberger Akademie der Wissenschaften";
dcterms:license <http://creativecommons.org/licenses/by-sa/3.0/>;
415 dcterms:description "The Epigraphic Database Heidelberg contains the texts of Latin and bilingual (i.e. Latin-Greek)
inscriptions of the Roman Empire.";
foaf:homepage <http://edh-www.adw.uni-heidelberg.de/projekt/konzept>;
void:dataDump <http://edh-www.adw.uni-heidelberg.de/download/edh.inscriptions.n3>;.

420 <?xml version="1.0" encoding="utf-8"?>
<rdf:RDF xmlns:foaf="http://xmlns.com/foaf/0.1/"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:oa="http://www.w3.org/ns/oa#"
425 xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:skos="http://www.w3.org/2004/02/skos/core#"
xmlns:nm="http://nomisma.org/id/"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:dcterms="http://purl.org/dc/terms/"
xmlns:void="http://rdfs.org/ns/void#">
430 <void:Dataset rdf:about="http://numismatics.org/search/">
<dcterms:title>American Numismatic Society</dcterms:title>
<foaf:homepage rdf:resource="http://numismatics.org/search/"/>
<dcterms:description>MANTIS: A Numismatic Technologies Integration Service</dcterms:description>
<dcterms:publisher>American Numismatic Society</dcterms:publisher>

```

```

435 <dcterms:license rdf:resource="http://opendatacommons.org/licenses/odbl/" />
    <dcterms:subject rdf:resource="http://dbpedia.org/resource/Annotation" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=1" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=2" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=3" />
440 <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=4" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=5" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=6" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=7" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=8" />
445 <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=9" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=10" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=11" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=12" />
450 <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=13" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=14" />
    <void:dataDump rdf:resource="http://numismatics.org/search/pelagios.rdf?page=15" />
  </void:Dataset>
</rdf:RDF>

```

455 See <http://journal.code4lib.org/articles/11144>

Making data that differ vastly in terms of size, content type and theme uniformly accessible under a single user interface requires agreements on some of the basic principles of how we express it. Pelagios's approach to this challenge is simple and pragmatic: rather than getting everyone to agree on how to represent the data, Pelagios provides a set of lightweight conventions for how to express links between the data and the things described in it. We refer to this approach as "connectivity through common references". Pelagios uses this approach specifically with regard to places. But the approach as such is, of course, equally applicable to other "ordering dimensions" such as people, time periods, events or classification schemes.

In principle, any object that is published online, under a stable URI - and which contains references to places - can be made discoverable through Peripleo. What is needed for integration is a dataset summary: a data file that lists all objects, along with basic Dublin Core metadata (title, description, date, provenance information, etc.), and information about the places each object is related to (and, optionally, how it is related to them). To encode the latter, we have chosen the Open Annotation Data Model. The metaphor of annotation is not only appropriate for the act of identifying (or "tagging") a place reference in arbitrary digital content with a gazetteer URI. It also has the connotation that, in general, the identification (or "tag") is not to be considered certain fact, but rather that someone (a human editor, an automated geo-parsing script) is making a claim about some kind of relationship between part of the source document and the place. The RDF snippet below provides a "minimum dataset summary" example of a dataset with a single object, expressed in RDF/Turtle notation.

```

@prefix cnt: <http://www.w3.org/2011/content#>.
@prefix dcterms: <http://purl.org/dc/terms/>.
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
475 @prefix oa: <http://www.w3.org/ns/oa#>.
@prefix pelagios: <http://pelagios.github.io/vocab/terms#>.
@prefix relations: <http://pelagios.github.io/vocab/relations#>.
@prefix xsd: <http://www.w3.org/2001/XMLSchema>.
# An object you want to link to Pelagios
480 <http://example.org/pelagios/dump.ttl#items/001> a pelagios:AnnotatedThing;

```

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```
# Title and homepage URL are MANDATORY
dcterms:title "Honorific inscription of Ostia";
foaf:homepage <http://edh-www.adw.uni-heidelberg.de/...>;
# Everything else OPTIONAL (but highly encouraged)
485 dcterms:description "Honorific inscription, findspot Ostia";
# Use ISO 8601 (YYYY[-MM-DD) or time interval (<start>/<end>) for dates
dcterms:temporal "366/402";
# We encourage the use of PeriodO identifiers to denote time periods
dcterms:temporal <http://n2t.net/ark:/99152/p03wskd389m>;# Greco-Roman
490 # Use RFC 5646 for the object's language (e.g. literature, inscriptions, etc.)
dcterms:language "la";
# Feel free to assign 'tags' to your data
dcterms:subject "inscription";.
# Objects are 'annotated' with any number of gazetteer references
495 <http://example.org/pelagios/dump.ttl#items/001/annotations/1> a oa:Annotation;
# MANDATORY: the 'annotation target' is the URI of your object;
oa:hasTarget <http://example.org/pelagios/dump.ttl#items/001>;
# MANDATORY: the 'annotation body' is the gazetteer reference
oa:hasBody <http://pleiades.stoa.org/places/422995>;
500 # OPTIONAL: extra metadata about the nature of the place reference
pelagios:relation relations:foundAt;
oa:hasBody [cnt:chars "POINT (41.755740099 12.290938199)"];
dcterms:format "application/wkt";
oa:annotatedAt "2014-11-05T10:18:00Z"^^xsd:date;.
```

505

Along with the dataset summary, Peripleo also requires a small RDF file that describes the dataset as a whole (what's inside, who the publisher is, under what license the metadata is published, etc.) and which acts as machine-readable entrypoint to the – potentially large – summary file. We use the RDF Vocabulary of Interlinked Datasets (VoID) to encode this information. A minimum example is shown below.

```
510 @prefix: <http://my-domain.org/my-data/>.
@prefix dcterms: <http://purl.org/dc/terms/>.
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
@prefix void: <http://rdfs.org/ns/void#>.
:my-dataset a void:Dataset;
515 dcterms:title "My Archaeological Dataset";
dcterms:publisher "My Institution or Project";
foaf:homepage <https://my-domain.org/>;
dcterms:description "A dataset of archaeological items.";
dcterms:license <http://opendatacommons.org/licenses/by/>;
520 # This is VERY important - location of the dataset summary file
void:dataDump <http://my-domain.org/downloads/pelagios.ttl>;.
```

Depending on the nature of the data, different gazetteers may be suitable as annotation vocabulary. In our current demo installation of Peripleo we have, so far, included seven gazetteers from our partners: the Pleiades Gazetteer of the Ancient World, the Digital Atlas of the Roman Empire, Vici.org, iDAI.gazetteer, the China Historical GIS, nomisma.org, and place records from the Trismegistos project, along with all links to GeoNames, Wikipedia and Wikidata that these gazetteers have

525

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included in their data exports. Importing gazetteers works in a similar fashion to adding data; that is to say, through a lightweight "gazetteer summary" data format. It is therefore perfectly possible to set up an installation of Peripleo with a different combination of gazetteers, or a single institutional one. A minimum example for a gazetteer summary with a single place is shown in the RDF snippet below.

```
530 @prefix cito: <http://purl.org/spar/cito>.
    @prefix cnt: <http://www.w3.org/2011/content#>.
    @prefix dcterms: <http://purl.org/dc/terms/>.
    @prefix foaf: <http://xmlns.com/foaf/0.1/>.
535 @prefix geo: <http://www.w3.org/2003/01/geo/wgs84_pos#>.
    @prefix geosparql: <http://www.opengis.net/ont/geosparql#>.
    @prefix gn: <http://www.geonames.org/ontology#>.
    @prefix lawd: <http://lawd.info/ontology/>.
540 @prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>.
    @prefix skos: <http://www.w3.org/2004/02/skos/core#>.
    <http://www.mygazetteer.org/place/Athens> a lawd:Place;
    # Don't think of label and description in terms of a 'primary name' or detailed abstract. Think of it in terms of UI:
    # what do you want users to see about your place in a list of search results?
    rdfs:label "Athens"@en;
545 dcterms:description "A major Greek city-state"@en;
    # Optional: a present-day (ISO-3166 alpha2) country code
    gn:countryCode "GR";
    # Don't think of dates in terms of 'how long the place existed'. Use dates to specify the period your gazetteer is concerned
    # with the place and/or provides attestations for it. Use ISO 8601 (YYYY[-MM-DD]) or time interval (<start>/<end>).
550 dcterms:temporal "-750/640";
    # We encourage the use of PeriodO identifiers for time periods
    dcterms:temporal <http://n2t.net/ark:/99152/p03wskd389m>;# Greco-Roman
    # Use skos:closeMatch to express 'vague' matches, e.g. to link to a modern-day town now located there
    skos:closeMatch <http://sws.geonames.org/264371/>;
555 # Use skos:exactMatch to express (geographical, temporal, cultural) identity
    skos:exactMatch <http://pleiades.stoa.org/places/579885>;
    # Express names for the place using lawd:variantForm. For language encoding, use RFC 5646.
    lawd:hasName [lawd:primaryForm "Athenae"];
    lawd:hasName [lawd:primaryForm "Athens"@en];
560 # You can provide attestations (e.g. bibliographic reference) for individual names as in the example below).
    lawd:hasName [
    lawd:primaryForm "?????"@el;
    lawd:hasAttestation <http://www.mygazetteer.org/att/0001>];
    # OPTIONAL: a representative point coordinate
565 geo:location [geo:lat 5.16;geo:long 52.05];
    # OPTIONAL: detail geometry as WKT string. Alternatively, use osgeo:asGeoJSON for a GeoJSON string
    geosparql:hasGeometry [
    geosparql:asWKT "LINESTRING (5.16 52.05, 5.17 52.05, 5.16 52.06)";;
    foaf:primaryTopicOf
570 <http://www.mygazetteer.org/place/Athens.html>;
    # OPTIONAL: express hierarchical relations, if they exist in your gazetteer
    cterms:isPartOf <http://www.mygazetteer.org/place/Greece>;.
```

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```
# Example: metadata of an attestation  
<http://www.mygazetteer.org/att/0001> a lawd:Attestation;  
575 dcterms:publisher <http://www.mygazetteer.org/>;  
cito:citesAsEvidence <http://www.mygazetteer.org/documents/01234>;  
cnt:chars "?????".
```

580 <http://recogito.pelagios.org/help/tutorial>

This quick tutorial will give you an overview of Recogito's most important features. You will learn how to:

Upload texts and images

Create annotations

Identify and map places in your documents

585 Export your data in order to re-use it outside of Recogito

Invite other users to work with you

What is Recogito?

590 Recogito is an online platform for collaborative document annotation. It is maintained by Pelagios Commons, a Digital Humanities initiative aiming to foster better linkages between online resources documenting the past.

Recogito provides a personal workspace where you can upload, collect and organize your source materials - texts and images - and collaborate in their annotation and interpretation. Recogito enables you to make your work more visible on the Web more easily, and to expose the results of your research as Open Data.

595 This tutorial will teach you the essentials of working with Recogito. To complete it, you need a Recogito account, and two sample documents: a plain.txt file with some text, and an image file.

Step 1. Upload a Document

Documents are used to organize your materials in Recogito. Each document can consist of multiple files. But for now, we are just going to upload a document consisting of a single text file.

600 To upload a new text document

Enter a title for your document and click Next.

Upload your text file. You can either click Choose a File to Attach and select it in the file browser, or you can drag and drop it into the upload area with your mouse.

605 Recogito can run Named Entity Recognition (NER) on your text. This means it will attempt to identify and pre-annotate places and persons automatically. Check Apply automatic annotation and click Next.

Depending on the length of your text, NER may take a while. Once completed, click Done. Congratulations! You have imported your first document into your workspace.

To upload a new image document

610 Repeat the steps above to create another document from your image file. In the last upload step, Recogito may take few seconds to convert your image into a zoomable image.

Step 2. Create Annotations

Open your text document by double-clicking it in the list. This will take you to the annotation view.

To create a text annotation


615 Select text like you would in any word processing tool: either by clicking and dragging with your mouse, or by double clicking a word. You can add text comments and tags, as well as identify the selected text as a Place, Person or Event. (We will learn more about how to deal with places in a minute.)

Try experimenting with the annotation editor. You can change or delete each part of an annotation separately, after you have

620 created it. (To delete a tag, click on it first to get a delete button.) Deleting all parts of an annotation will also remove the highlight from the text.

To create an image annotation

Open your image document. Recogito has a zoomable view so you can navigate even highest-resolution images easily. Zoom using your mousewheel or the + - buttons in the upper right corner. On touch devices you can also use a "pinch" gesture. Pan by dragging and releasing the image.

625 You can rotate the image at arbitrary angles. On a desktop computer, hold SHIFT + Alt while dragging with your mouse. On touch devices, use a pinch gesture. Use the button with the single arrow  to quickly rotate the image back to its original orientation.

630 Let's create our first image annotation. In the toolbar, there is a drop-down menu where you can switch between Recogito's different selection modes: Point, Rectangle and Tilted Box. Select Point and create an annotation by clicking somewhere in your image. Switch back to Move to resume standard image navigation.

Now try annotating an area: pick the Rectangle tool. Click once to select the starting corner of the area. Then click again for the opposite corner.

635 The Tilted Box tool may take a bit more practice: select it from the menu. Click and hold the mouse button to draw the baseline of the box. Then release the mouse button. Move the mouse to define the height of the box, and click when you are happy with the height.

Tip: the Tilted Box tool is especially useful for annotating labels in maps. Because there is an explicit baseline, the data you generate will also retain information about the orientation of the label.


Step 3. Identify and Map Places

640 You already know how to annotate a word or phrase in a document, and identify it as a reference to a place. Now let's assign this reference to a gazetteer, so that Recogito can plot it on the map.

Click Place in the annotation editor. Recogito will attempt to provide an automatic suggestion from its supported gazetteers. You can either confirm this suggestion, or try to find a better match in the gazetteer search. If you can't find a suitable match, you also have the option to flag this reference, as an indication that no suitable match was available.

645 To speed up your work, Recogito will automatically search the text for identical phrases and give you the option to re-apply the gazetteer assignment to all other matches.

Step 4. Export Your Data

650 Select the  icon in the main navigation bar. This will take you to the available export options for your document. In addition to the options listed on this page, you can also download a backup package of your work from the ! document settings page. We recommend to download backups for archiving and as an added security measure.

Step 5. Invite Other Users

655 In this final step we are going to learn how you can share your documents with other users on Recogito, so that you can work as a team. Select the ! icon in the main navigation bar. This will take you to the Document Settings page. In the left sidebar, select Sharing.

Use the search field at the bottom of the Collaborators box to grant a user access to your document. You can choose between different levels of access:

Read allows users to view document and annotations, but not add annotations and comments themselves.

660 Write allows users to view and annotate the document.

Admin provides write access, and additionally allows users to edit document metadata, invite other collaborators, and perform administrative actions like downloading backups.

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- 665 Ancient placename (major places) e.g. Herculaneum 7
Ancient placename (all other places) e.g. Stabiae 9
Ancient rivername e.g. Aufidus (repeated) 6
Ancient lakename e.g. Lemannus 7
Modern placename e.g. Terzigno 9
- 670 Major settlement (capital, colonia, municipium) 6
Major fort (legionary fortress) 6
Major sanctuary or temple 7
Settlement (civitas, vicus, other settlement) 8
Fort (castrum, castellum) 8
- 675 Road or coastal station 8
Oasis 9
Sanctuary or temple 9
Bath 9
Tumulus 10
- 680 Cemetery 10
Monastery or church 10
Villa 10
Mine, quarry or production 10
Pass 10
- 685 Bridge 10
Province, e.g. Raetia 5-7
Major road 5
Minor road 7
Aqueduct 7
- 690 Limes, citywall 7
Perennial/Permanent lakes and rivers 5
Non-Perennial/Intermittent/Fluctuating lakes and rivers 8

The making of the map

- 695 The software Mapnik 2.0 for Windows, has been used to create the map tiles. It creates tiles at 256x256 pixels projected in Spherical Mercator Projection (EPSG:3857) and organizes them in a directory structure according to zoom, x and y position. Mapnik takes as input various data sources. From the Shuttle Radar Topography Mission (SRTM) dataset, elevation at 90m resolution, raster data (in geotiff format) like hillshade, color-relief and elevation contour lines (shapefile) have been created using the Geospatial Data Abstraction Library (GDAL) commandline utilities. They all depict the topography of the
- 700 Roman Empire. On top of that, modern coastline, rivers and lakes (in shapefile format) have been added. The Pleiades dataset was improved, extended with new content compiled manually from the Barrington Atlas and imported to a PostGIS SQL database, used by Mapnik as input source.
- Sources
- 705 The point of departure for this project has been the Pleiades dataset, which is a digitization of the Barrington Atlas and the accompanying map by map directory, carried out by Pleiades and the Digital Atlas of Roman and Medieval Civilization (DARMC) project at Harvard. The dataset is available in different formats at the Pleiades website and licenced under Creative Commons CC-BY 3.0. The feature data and coordinates have been improved to make it possible to successfully render the digital map, with special focus on the 1478 places considered as most important by the Barrington Atlas. Data about ancient name and importance of place has been derived from careful and repeated study of the original atlas; that is, I manually checked the Atlas and its
- 710 maps several times for the occurrence of important places depicted with capital letters, and modern names depicted with a

sans-serif font.

The Roman roads network, also digitized from the Barrington Atlas, is courtesy of the DARMC project, Harvard university. Another important source of geodata is the Antiquity à la carte online GIS application, with downloadable data of aqueducts, ancient coastlines and roads. Most of the map symbols have been derived from this website. All content from Antiquity à la

715

carte is CC BY-NC 3.0. It has been our aim to georeference places on the map as precisely as possible using modern cartographic and georeferencing tools (Google Earth/Maps, Bing satellite imagery, Google geocoder service, maps from national geographic agencies). At best, it is possible to gain an accuracy of a few meters where lucky circumstances make it possible to spot individual sites on satellite imagery for verification, around 1000 sites. Identifying and labelling locations accurately has become quite a big

720

topic in several online communities and through efforts by individuals - Wikipedia, Pleiades, Megalithic Portal, OpenStreetMap, History Illustrated group (Google Earth Community), Livius.org: articles on ancient history, Viae Romanae, Histolia - Die türkische Südküste in der Antike, Ancient Near East on Google Earth (ANE), Vias Romanas em Portugal - to name but the most important ones for this work. For everyone with an interest in North Africa, and for a degree of detail greater than most online maps, the North Africa AMS Topographic Maps are available as scans from the PCL Map Collection.

725

<https://github.com/pelagios/pelagios-cookbook/wiki/List-of-Dataset-Summary-Examples>

```
<?xml version="1.0" encoding="utf-8"?>
```

730

```
<rdf:RDF xmlns:dcmitype="http://purl.org/dc/dcmitype/"
  xmlns:skos="http://www.w3.org/2004/02/skos/core#"
  xmlns:nm="http://nomisma.org/id/"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:dcterms="http://purl.org/dc/terms/"
  xmlns:oa="http://www.w3.org/ns/oa#"
  xmlns:pelagios="http://pelagios.github.io/vocab/terms#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:relations="http://pelagios.github.io/vocab/relations#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  xmlns:nmo="http://nomisma.org/ontology#"
  xmlns:void="http://rdfs.org/ns/void#">
```

735

```
<foaf:Organization rdf:about="http://numismatics.org/chrr/pelagios.rdf#agents/me">
  <foaf:name>American Numismatic Society</foaf:name>
```

745

```
</foaf:Organization>
<pelagios:AnnotatedThing rdf:about="http://numismatics.org/chrr/pelagios.rdf#VIG">
  <dcterms:title>Vigatto (Italy; VIG)</dcterms:title>
  <foaf:homepage rdf:resource="http://numismatics.org/chrr/id/VIG"/>
  <dcterms:temporal>start=-154; end=-27</dcterms:temporal>
```

750

```
</pelagios:AnnotatedThing>
<oa:Annotation rdf:about="http://numismatics.org/chrr/pelagios.rdf#VIG/annotations/001">
  <oa:hasBody rdf:resource="http://pleiades.stoa.org/places/423025#this"/>
  <oa:hasTarget rdf:resource="http://numismatics.org/chrr/pelagios.rdf#VIG"/>
  <pelagios:relation rdf:resource="http://pelagios.github.io/vocab/relations#attestsTo"/>
  <oa:annotatedBy rdf:resource="http://numismatics.org/chrr/pelagios.rdf#agents/me"/>
  <oa:annotatedAt rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2013-09-11T15:23:23.393Z</oa:annotatedAt>
```

755

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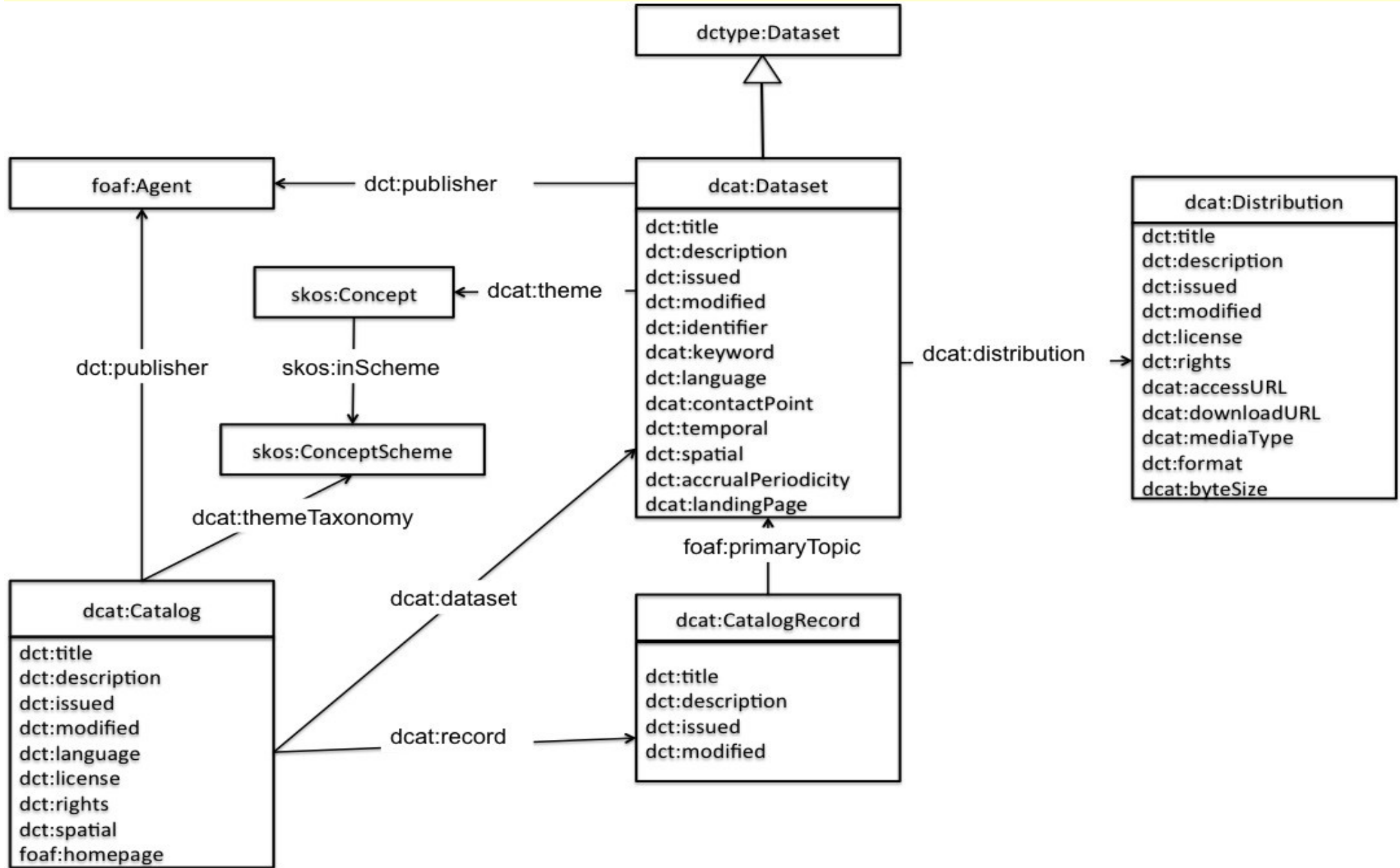
```

</oa:Annotation>
760 <oa:Annotation rdf:about="http://numismatics.org/chrr/pelagios.rdf#VIG/annotations/002">
    <oa:hasBody rdf:resource="http://pleiades.stoa.org/places/246347#this"/>
    <oa:hasTarget rdf:resource="http://numismatics.org/chrr/pelagios.rdf#VIG"/>
    <pelagios:relation rdf:resource="http://pelagios.github.io/vocab/relations#attestsTo"/>
    <oa:annotatedBy rdf:resource="http://numismatics.org/chrr/pelagios.rdf#agents/me"/>
    <oa:annotatedAt rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2013-09-11T15:23:23.393Z</oa:annotatedAt>
</oa:Annotation>
765 <oa:Annotation rdf:about="http://numismatics.org/chrr/pelagios.rdf#VIG/annotations/003">
    <oa:hasBody rdf:resource="http://pleiades.stoa.org/places/452346#this"/>
    <oa:hasTarget rdf:resource="http://numismatics.org/chrr/pelagios.rdf#VIG"/>
    <pelagios:relation rdf:resource="http://pelagios.github.io/vocab/relations#attestsTo"/>
    <oa:annotatedBy rdf:resource="http://numismatics.org/chrr/pelagios.rdf#agents/me"/>
770 <oa:annotatedAt rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2013-09-11T15:23:23.393Z</oa:annotatedAt>
</oa:Annotation>
<oa:Annotation rdf:about="http://numismatics.org/chrr/pelagios.rdf#VIG/annotations/004">
    <oa:hasBody rdf:resource="http://pleiades.stoa.org/places/148127#this"/>
    <oa:hasTarget rdf:resource="http://numismatics.org/chrr/pelagios.rdf#VIG"/>
775 <pelagios:relation rdf:resource="http://pelagios.github.io/vocab/relations#attestsTo"/>
    <oa:annotatedBy rdf:resource="http://numismatics.org/chrr/pelagios.rdf#agents/me"/>
    <oa:annotatedAt rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2013-09-11T15:23:23.393Z</oa:annotatedAt>
</oa:Annotation>
780 <oa:Annotation rdf:about="http://numismatics.org/chrr/pelagios.rdf#VIG/annotations/005">
    <oa:hasBody rdf:resource="http://pleiades.stoa.org/places/1027#this"/>
    <oa:hasTarget rdf:resource="http://numismatics.org/chrr/pelagios.rdf#VIG"/>
    <pelagios:relation rdf:resource="http://pelagios.github.io/vocab/relations#attestsTo"/>
    <oa:annotatedBy rdf:resource="http://numismatics.org/chrr/pelagios.rdf#agents/me"/>
785 http://www.fastionline.org/data/downloads/pelagios.ttl
@prefix pelagios: <http://pelagios.github.io/vocab/terms#>.
    @prefix dcterms: <http://purl.org/dc/terms/>.
    @prefix foaf: <http://xmlns.com/foaf/0.1/>.
    @prefix oa: <http://www.w3.org/ns/oa#>.
790 <http://www.fastionline.org/data/downloads/pelagios.ttl#agents/me> a foaf:Person;
    foaf:name "Stuart Eve" ;.
<http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0001> a pelagios:AnnotatedThing;
dcterms:title "S. Maria a Vico";
    foaf:homepage <http://www.fastionline.org/micro_view.php?item_key=fst_cd&fst_cd=AIAC_1824>;.
795 <http://www.fastionline.org#sites/0001/annotations/001> a oa:Annotation;
oa:hasTarget <http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0001> ;
oa:hasBody <http://pleiades.stoa.org/places/442776#this> ;.
<http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0002> a pelagios:AnnotatedThing;
dcterms:title "Ospedale degli Infermi di Santa Maria della Scala";
800 foaf:homepage <http://www.fastionline.org/micro_view.php?item_key=fst_cd&fst_cd=AIAC_2758>;.
<http://www.fastionline.org#sites/0002/annotations/001> a oa:Annotation;
oa:hasTarget <http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0002> ;

```

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oa:hasBody <<http://pleiades.stoa.org/places/383611#this>> ;.
<<http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0003>> a pelagios:AnnotatedThing;
805 dcterms:title "Le Gardirole";
foaf:homepage <http://www.fastionline.org/micro_view.php?item_key=fst_cd&fst_cd=AIAC_2693>;.
<<http://www.fastionline.org#sites/0003/annotations/001>> a oa:Annotation;
oa:hasTarget <<http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0003>> ;
oa:hasBody <<http://pleiades.stoa.org/places/432772#this>> ;.
810 <<http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0004>> a pelagios:AnnotatedThing;
dcterms:title "Novae";
foaf:homepage <http://www.fastionline.org/micro_view.php?item_key=fst_cd&fst_cd=AIAC_2027>;.
<<http://www.fastionline.org#sites/0004/annotations/001>> a oa:Annotation;
oa:hasTarget <<http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0004>> ;
815 oa:hasBody <<http://pleiades.stoa.org/places/216899#this>> ;.
<<http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0005>> a pelagios:AnnotatedThing;
dcterms:title "Durostorum - Necropolis";
foaf:homepage <http://www.fastionline.org/micro_view.php?item_key=fst_cd&fst_cd=AIAC_2699>;.
<<http://www.fastionline.org#sites/0005/annotations/001>> a oa:Annotation;
820 oa:hasTarget <<http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0005>> ;
oa:hasBody <<http://pleiades.stoa.org/places/216800#this>> ;.
<<http://www.fastionline.org/data/downloads/pelagios.ttl#sites/0006>> a pelagios:AnnotatedThing;
dcterms:title "Proprietà Russo";



```

825 Basic Example 4.1 http://www.w3.org/TR/vocab-dcat/
# This example provides a quick overview of how DCAT might be used to represent a government catalog and its datasets.
First, the catalog description:
:catalog
a dcat:Catalog;
830 dct:title "Imaginary Catalog";
rdfs:label "Imaginary Catalog";
foaf:homepage <http://example.org/catalog>;
dct:publisher:transparency-office;
dct:language <http://id.loc.gov/vocabulary/iso639-1/en>;
835 dcat:dataset:dataset-001,:dataset-002,:dataset-003;.
# The publisher of the catalog has the relative URI:transparency-office. Further description of the publisher can be provided
as in the following example:
:transparency-office
a foaf:Organization;
840 rdfs:label "Transparency Office";.
# The catalog lists each of its datasets via dcat:dataset property. In the example above, an example dataset was mentioned
with the relative URI:dataset-001. A possible description of it using DCAT is shown below:
:dataset-001
a dcat:Dataset;
845 dct:title "Imaginary dataset";
dcat:keyword "accountability","transparency" ,"payments";
dct:issued "2011-12-05"^^xsd:date;
dct:modified "2011-12-05"^^xsd:date;
dcat:contactPoint <http://example.org/transparency-office/contact> ;
850 dct:temporal <http://reference.data.gov.uk/id/quarter/2006-Q1> ;
dct:spatial <http://www.geonames.org/6695072> ;
dct:publisher:finance-ministry;
dct:language <http://id.loc.gov/vocabulary/iso639-1/en>;
dct:accrualPeriodicity <http://purl.org/linked-data/sdmx/2009/code#freq-W>;
855 dcat:distribution:dataset-001-csv;.
# In order to express frequency of update in the example above, we chose to use an instance from the Content-Oriented
Guidelines developed as part of the W3C Data Cube Vocabulary efforts. Additionally, we chose to describe the spatial and
temporal coverage of the example dataset using URIs from Geonames and the Interval dataset from data.gov.uk, respectively. A
contact point is also provided where comments and feedback about the dataset can be sent. Further details about the contact
860 point, such as email address or telephone number, can be provided using VCard [vcard-rdf].
The dataset distribution :dataset-001-csv can be downloaded as a 5Kb CSV file. This information is represented via an RDF
resource of type dcat:Distribution.
:dataset-001-csv
a dcat:Distribution;
865 dcat:downloadURL <http://www.example.org/files/001.csv>;
dct:title "CSV distribution of imaginary dataset 001";
dcat:mediaType "text/csv" ;
dcat:byteSize "5120"^^xsd:decimal;.

870 4.2 Classifying datasets

```

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```
# The catalog classifies its datasets according to a set of domains represented by the relative URI:themes. SKOS can be used
to describe the domains used:
:catalog dcat:themeTaxonomy:themes.
:themes
875 a skos:ConceptScheme;
skos:prefLabel "A set of domains to classify documents";.
:dataset-001 dcat:theme:accountability.
# Notice that this dataset is classified under the domain represented by the relative URI:accountability. It is recommended to
define the concept as part of the concepts scheme identified by the URI:themes that was used to describe the catalog domains.
880 An example SKOS description:
:accountability
a skos:Concept;
skos:inScheme:themes;
skos:prefLabel "Accountability";.
885
4.3 Describing catalog records metadata
# If the catalog publisher decides to keep metadata describing its records (i.e. the records containing metadata describing
the datasets), dcat:CatalogRecord can be used. For example, while :dataset-001 was issued on 2011-12-05, its description on
Imaginary Catalog was added on 2011-12-11. This can be represented by DCAT as in the following:
890 :catalog dcat:record :record-001.
:record-001
a dcat:CatalogRecord;
foaf:primaryTopic :dataset-001;
dct:issued "2011-12-11"^^xsd:date;.
895
4.4 A dataset available only behind some Web page
# :dataset-002 is available as a CSV file. However :dataset-002 can only be obtained through some Web page where the user
needs to click some links, provide some information and check some boxes before accessing the data
dataset-002
900 a dcat:Dataset ;
dcat:landingPage <http://example.org/dataset-002.html> ;
dcat:distribution :dataset-002-csv ;.
:dataset-002-csv
a dcat:Distribution ;
905 dcat:accessURL <http://example.org/dataset-002.html> ;
dcat:mediaType "text/csv";.
# Notice the use of dcat:landingPage and the definition of the dcat:Distribution instance.

4.5 A dataset available as download and behind some Web page
910 # On the other hand, :dataset-003 can be obtained through some landing page but also can be downloaded from a known URL.
:dataset-003
a dcat:Dataset ;
dcat:landingPage <http://example.org/dataset-003.html> ;
dcat:distribution :dataset-003-csv ;.
915 :dataset-003-csv
a dcat:Distribution ;
```

```
dcat:downloadURL <http://example.org/dataset-003.csv>.
```

```
dcat:mediaType "text/csv";.
```

920 # Notice that we used dcat:downloadURL with the downloadable distribution and that the other distribution through the landing page does not have to be defined as a separate dcat:Distribution instance.

1. Introduction

This document defines Turtle, the Terse RDF Triple Language, a concrete syntax for RDF [RDF11-CONCEPTS].

925 A Turtle document is a textual representations of an RDF graph. The following Turtle document describes the relationship between Green Goblin and Spiderman.

Example 1

```
@base <http://example.org/>.
```

930 @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.

```
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>.
```

```
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
```

```
@prefix rel: <http://www.perceive.net/schemas/relationship/>.
```

935 <#green-goblin> rel:enemyOf <#spiderman>; a foaf:Person;# in the context of the Marvel universe

```
foaf:name "Green Goblin".
```

```
<#spiderman> rel:enemyOf <#green-goblin>;a foaf:Person;foaf:name "Spiderman","Человек-паук"@ru.
```

This example introduces many of features of the Turtle language: @base and Relative IRIs, @prefix and prefixed names, predicate lists separated by ';', object lists separated by ',', the token a, and literals.

940 The Turtle grammar for triples is a subset of the SPARQL 1.1 Query Language [SPARQL11-QUERY] grammar for TriplesBlock. The two grammars share production and terminal names where possible.

The construction of an RDF graph from a Turtle document is defined in Turtle Grammar and Parsing.

2. Turtle Language

945 A Turtle document allows writing down an RDF graph in a compact textual form. An RDF graph is made up of triples consisting of a subject, predicate and object.

Comments may be given after a '#' that is not part of another lexical token and continue to the end of the line.

2.1 Simple Triples

950 The simplest triple statement is a sequence of (subject, predicate, object) terms, separated by whitespace and terminated by '.' after each triple.

Example 2

955 <http://example.org/#spiderman> <http://www.perceive.net/schemas/relationship/enemyOf> <http://example.org/#green-goblin>.

2.2 Predicate Lists

Often the same subject will be referenced by a number of predicates. The predicateObjectList production matches a series of predicates and objects, separated by ';', following a subject. This expresses a series of RDF Triples with that subject and each predicate and object allocated to one triple. Thus, the ';' symbol is used to repeat the subject of triples that vary only in predicate and object RDF terms.

960 These two examples are equivalent ways of writing the triples about Spiderman.

Example 3

965 <http://example.org/#spiderman> <http://www.perceive.net/schemas/relationship/enemyOf> <http://example.org/#green-goblin> ;
 <http://xmlns.com/foaf/0.1/name> "Spiderman".

Example 4

970 <http://example.org/#spiderman> <http://www.perceive.net/schemas/relationship/enemyOf> <http://example.org/#green-goblin>.
 <http://example.org/#spiderman> <http://xmlns.com/foaf/0.1/name> "Spiderman".

2.3 Object Lists

975 As with predicates often objects are repeated with the same subject and predicate. The objectList production matches a series of objects separated by ',' following a predicate. This expresses a series of RDF Triples with the corresponding subject and predicate and each object allocated to one triple. Thus, the ',' symbol is used to repeat the subject and predicate of triples that only differ in the object RDF term.

These two examples are equivalent ways of writing Spiderman's name in two languages.

Example 5

980 <http://example.org/#spiderman> <http://xmlns.com/foaf/0.1/name> "Spiderman","Человек-паук"@ru.

Example 6

<http://example.org/#spiderman> <http://xmlns.com/foaf/0.1/name> "Spiderman".
 <http://example.org/#spiderman> <http://xmlns.com/foaf/0.1/name> "Человек-паук"@ru.

985 There are three types of RDF Term defined in RDF Concepts: IRIs (Internationalized Resource Identifiers), literals and blank nodes. Turtle provides a number of ways of writing each.

2.4 IRIs

990 IRIs may be written as relative or absolute IRIs or prefixed names. Relative and absolute IRIs are enclosed in '<' and '>' and may contain numeric escape sequences (described below). For example <http://example.org/#green-goblin>.

Relative IRIs like <#green-goblin> are resolved relative to the current base IRI. A new base IRI can be defined using the '@base' or 'BASE' directive. Specifics of this operation are defined in section 6.3 IRI References

995 The token 'a' in the predicate position of a Turtle triple represents the IRI http://www.w3.org/1999/02/22-rdf-syntax-ns#type. A prefixed name is a prefix label and a local part, separated by a colon ":". A prefixed name is turned into an IRI by concatenating the IRI associated with the prefix and the local part. The '@prefix' or 'PREFIX' directive associates a prefix label with an IRI. Subsequent '@prefix' or 'PREFIX' directives may re-map the same prefix label.

Note

1000 The Turtle language originally permitted only the syntax including the '@' character for writing prefix and base directives. The case-insensitive 'PREFIX' and 'BASE' forms were added to align Turtle's syntax with that of SPARQL. It is advisable to serialize RDF using the '@prefix' and '@base' forms until RDF 1.1 Turtle parsers are widely deployed.

To write http://www.perceive.net/schemas/relationship/enemyOf using a prefixed name:

Define a prefix label for the vocabulary IRI http://www.perceive.net/schemas/relationship/ as somePrefix

Then write somePrefix:enemyOf which is equivalent to writing <http://www.perceive.net/schemas/relationship/enemyOf>

1005 This can be written using either the original Turtle syntax for prefix declarations:

Example 7

@prefix somePrefix: <http://www.perceive.net/schemas/relationship/>.
 <http://example.org/#green-goblin> somePrefix:enemyOf <http://example.org/#spiderman>.

1010 or SPARQL's syntax for prefix declarations:

Example 8

```
PREFIX somePrefix: <http://www.perceive.net/schemas/relationship/>
<http://example.org/#green-goblin> somePrefix:enemyOf <http://example.org/#spiderman>.
```

1015

Note

Prefixed names are a superset of XML QNames. They differ in that the local part of prefixed names may include: leading digits, e.g. leg:3032571 or isbn13:9780136019701 non leading colons, e.g. og:video:height

1020 reserved character escape sequences, e.g. wgs:lat\ -long

The following Turtle document contains examples of all the different ways of writing IRIs in Turtle.

Example 9

A triple with all absolute IRIs

1025 <http://one.example/subject1> <http://one.example/predicate1> <http://one.example/object1>.

@base <http://one.example/>.

<subject2> <predicate2> <object2>. # relative IRIs, e.g. http://one.example/subject2

BASE <http://one.example/>

<subject2> <predicate2> <object2>. # relative IRIs, e.g. http://one.example/subject2

1030 @prefix p: <http://two.example/>.

p:subject3 p:predicate3 p:object3. # prefixed name, e.g. http://two.example/subject3

PREFIX p: <http://two.example/>

p:subject3 p:predicate3 p:object3. # prefixed name, e.g. http://two.example/subject3

@prefix p: <path/>. # prefix p: now stands for http://one.example/path/

1035 p:subject4 p:predicate4 p:object4. # prefixed name, e.g. http://one.example/path/subject4

@prefix : <http://another.example/>. # empty prefix

:subject5 :predicate5 :object5. # prefixed name, e.g. http://another.example/subject5

:subject6 a :subject7. # same as :subject6 <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> :subject7.

<http://اخبار.example/?user=أكرم&channel=R%26D> a :subject8. # a multi-script subject IRI.

1040

Note

The '@prefix' and '@base' directives require a trailing '.' after the IRI, the equivalent 'PREFIX' and 'BASE' must not have a trailing '.' after the IRI part of the directive.

1045 2.5 RDF Literals

Literals are used to identify values such as strings, numbers, dates.

Example 10

@prefix foaf: <http://xmlns.com/foaf/0.1/>.

1050 <http://example.org/#green-goblin> foaf:name "Green Goblin".

<http://example.org/#spiderman> foaf:name "Spiderman".

2.5.1 Quoted Literals

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Quoted Literals (Grammar production RDFLiteral) have a lexical form followed by a language tag, a datatype IRI, or neither.
1055 The representation of the lexical form consists of an initial delimiter, e.g. " (U+0022), a sequence of permitted characters or numeric escape sequence or string escape sequence, and a final delimiter. The corresponding RDF lexical form is the characters between the delimiters, after processing any escape sequences. If present, the language tag is preceded by a '@' (U+0040). If there is no language tag, there may be a datatype IRI, preceded by '^' (U+005E U+005E). The datatype IRI in Turtle may be written using either an absolute IRI, a relative IRI, or prefixed name. If there is no datatype IRI and no
1060 language tag, the datatype is xsd:string.
'\' (U+005C) may not appear in any quoted literal except as part of an escape sequence. Other restrictions depend on the delimiter:
Literals delimited by ' (U+0027), may not contain the characters ', LF (U+000A), or CR (U+000D).
Literals delimited by ", may not contain the characters ", LF, or CR.
1065 Literals delimited by ''' may not contain the sequence of characters '''.
Literals delimited by "" may not contain the sequence of characters "".

Example 11

```
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>.
1070 @prefix show: <http://example.org/vocab/show/>.
@prefix xsd: <http://www.w3.org/2001/XMLSchema#>.
show:218 rdfs:label "That Seventies Show"^^xsd:string. # literal with XML Schema string datatype
show:218 rdfs:label "That Seventies Show"^^<http://www.w3.org/2001/XMLSchema#string>. # same as above
show:218 rdfs:label "That Seventies Show". # same again
1075 show:218 show:localName "That Seventies Show"@en. # literal with a language tag
show:218 show:localName 'Cette Série des Années Soixante-dix'@fr. # literal delimited by single quote
show:218 show:localName "Cette Série des Années Septante"@fr-be. # literal with a region subtag
show:218 show:blurb '''This is a multi-line # literal with embedded new lines and quotes
literal with many quotes ("''''''')
1080 and up to two sequential apostrophes ('').'''.
```

2.5.2 Numbers

Numbers can be written like other literals with lexical form and datatype (e.g. "-5.0"^^xsd:decimal). Turtle has a shorthand syntax for writing integer values, arbitrary precision decimal values, and double precision floating point values.
1085 Data Type
Abbreviated
Lexical
Description
xsd:integer
1090 -5
"-5"^^xsd:integer
Integer values may be written as an optional sign and a series of digits. Integers match the regular expression "[+-]?[0-9]+".
xsd:decimal
-5.0
1095 "-5.0"^^xsd:decimal
Arbitrary-precision decimals may be written as an optional sign, zero or more digits, a decimal point and one or more digits. Decimals match the regular expression "[+-]?[0-9]*\.[0-9]+".
xsd:double
4.2E9

- 1100 "4.2E9"^^xsd:double
Double-precision floating point values may be written as an optionally signed mantissa with an optional decimal point, the letter "e" or "E", and an optionally signed integer exponent. The exponent matches the regular expression "[+-]?[0-9]+" and the mantissa one of these regular expressions: "[+-]?[0-9]+\.[0-9]+", "[+-]?\. [0-9]+" or "[+-]?[0-9]".
- 1105 Example 12
@prefix : <http://example.org/elements>.
<http://en.wikipedia.org/wiki/Helium>
 :atomicNumber 2;# xsd:integer
 :atomicMass 4.002602;# xsd:decimal
1110 :specificGravity 1.663E-4. # xsd:double
- 2.5.3 Booleans
Boolean values may be written as either 'true' or 'false' (case-sensitive) and represent RDF literals with the datatype xsd:boolean.
- 1115 Example 13
@prefix : <http://example.org/stats>.
<http://somecountry.example/census2007>
 :isLandlocked false. # xsd:boolean
- 1120 2.6 RDF Blank Nodes
RDF blank nodes in Turtle are expressed as _: followed by a blank node label which is a series of name characters. The characters in the label are built upon PN_CHARS_BASE, liberalized as follows:
The characters _ and digits may appear anywhere in a blank node label.
1125 The character . may appear anywhere except the first or last character.
The characters -, U+00B7, U+0300 to U+036F and U+203F to U+2040 are permitted anywhere except the first character.
A fresh RDF blank node is allocated for each unique blank node label in a document. Repeated use of the same blank node label identifies the same RDF blank node.
- 1130 Example 14
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
_:alice foaf:knows _:bob.
_:bob foaf:knows _:alice.
- 1135 2.7 Nesting Unlabeled Blank Nodes in Turtle
In Turtle, fresh RDF blank nodes are also allocated when matching the production blankNodePropertyList and the terminal ANON. Both of these may appear in the subject or object position of a triple (see the Turtle Grammar). That subject or object is a fresh RDF blank node. This blank node also serves as the subject of the triples produced by matching the predicateObjectList production embedded in a blankNodePropertyList. The generation of these triples is described in Predicate Lists. Blank nodes
1140 are also allocated for collections described below.
- Example 15
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
Someone knows someone else, who has the name "Bob".
1145 [] foaf:knows [foaf:name "Bob"].

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The Turtle grammar allows blankNodePropertyLists to be nested. In this case, each inner [establishes a new subject blank node which reverts to the outer node at the], and serves as the current subject for predicate object lists. The use of predicateObjectList within a blankNodePropertyList is a common idiom for representing a series of properties of a node.

1150 Abbreviated:

Example 16

```
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
[foaf:name "Alice" ] foaf:knows [
1155   foaf:name "Bob" ;
   foaf:knows [
     foaf:name "Eve" ] ;
   foaf:mbox <bob@example.com> ].
```

Corresponding simple triples:

1160

Example 17

```
_:a <http://xmlns.com/foaf/0.1/name> "Alice".
_:a <http://xmlns.com/foaf/0.1/knows> _:b.
_:b <http://xmlns.com/foaf/0.1/name> "Bob".
1165 _:b <http://xmlns.com/foaf/0.1/knows> _:c.
_:c <http://xmlns.com/foaf/0.1/name> "Eve".
_:b <http://xmlns.com/foaf/0.1/mbox> <bob@example.com>.
```

2.8 Collections

1170

RDF provides a Collection [RDF11-MT] structure for lists of RDF nodes. The Turtle syntax for Collections is a possibly empty list of RDF terms enclosed by (). This collection represents an rdf:first/rdf:rest list structure with the sequence of objects of the rdf:first statements being the order of the terms enclosed by (). The (...) syntax MUST appear in the subject or object position of a triple (see the Turtle Grammar). The blank node at the head of the list is the subject or object of the containing triple.

1175

Example 18

```
@prefix : <http://example.org/foo>.
# the object of this triple is the RDF collection blank node
:subject :predicate ( :a :b :c ).
1180 # an empty collection value - rdf:nil
:subject :predicate2 ().
```

3. Examples

1185

This example is a Turtle translation of example 7 in the RDF/XML Syntax specification (example1.ttl):

Example 19

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
@prefix dc: <http://purl.org/dc/elements/1.1/>.
@prefix ex: <http://example.org/stuff/1.0/>.
1190 <http://www.w3.org/TR/rdf-syntax-grammar>
  dc:title "RDF/XML Syntax Specification (Revised)" ;
```

```
ex:editor [
  ex:fullname "Dave Beckett";
  ex:homePage <http://purl.org/net/dajobe/>].
```

1195 An example of an RDF collection of two literals.

Example 20

```
PREFIX : <http://example.org/stuff/1.0/>
:a :b ( "apple" "banana" ).
```

1200 which is short for (example2.ttl):

Example 21

```
@prefix : <http://example.org/stuff/1.0/>.
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
```

1205 :a :b

```
[ rdf:first "apple";
  rdf:rest [ rdf:first "banana";
             rdf:rest rdf:nil ]].
```

1210 An example of two identical triples containing literal objects containing newlines, written in plain and long literal forms. The line breaks in this example are LINE FEED characters (U+000A). (example3.ttl):

Example 22

```
@prefix : <http://example.org/stuff/1.0/>.
:a :b "The first line\nThe second line\n more".
:a :b ""The first line
The second line
more"".
```

1220 As indicated by the grammar, a collection can be either a subject or an object. This subject or object will be the novel blank node for the first object, if the collection has one or more objects, or rdf:nil if the collection is empty. For example,

Example 23

```
@prefix : <http://example.org/stuff/1.0/>.
(1 2.0 3E1) :p "w".
```

1225 is syntactic sugar for (noting that the blank nodes b0, b1 and b2 do not occur anywhere else in the RDF graph):

Example 24

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
```

```
1230   _:b0  rdf:first  1 ;
        rdf:rest   _:b1.
        _:b1  rdf:first  2.0 ;
        rdf:rest   _:b2.
        _:b2  rdf:first  3E1 ;
1235   rdf:rest   rdf:nil.
        _:b0  :p      "w".
```

RDF collections can be nested and can involve other syntactic forms:

Example 25

1240 PREFIX : <http://example.org/stuff/1.0/>
 (1 [:p :q] (2)) :p2 :q2.
 is syntactic sugar for:

Example 26

1245 @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
 _:b0 rdf:first 1 ;
 rdf:rest _:b1.
 _:b1 rdf:first _:b2.
 _:b2 :p :q.
 1250 _:b1 rdf:rest _:b3.
 _:b3 rdf:first _:b4.
 _:b4 rdf:first 2 ;
 rdf:rest rdf:nil.
 _:b3 rdf:rest rdf:nil.

1255

<https://vici.org/widget.php>

De kaart van Vici.org kan als een javascript widget op iedere website geplaatst worden. Dit kan in drie eenvoudige stappen.
 1. Laad de benodigde bibliotheken

1260 De Vici-widget heeft drie bibliotheken nodig om te kunnen functioneren. Dit zijn Google Maps, jQuery en Vici. Laad deze
 bibliotheken in door de volgende code tussen de <head>-tags van je pagina te zetten:

```
<script type="text/javascript" src="http://maps.googleapis.com/maps/api/js?sensor=true"></script>
<script type="text/javascript" src="//ajax.googleapis.com/ajax/libs/jquery/1.8.3/jquery.min.js" ></script>
<script type="text/javascript" src="http://vici.org/js/vici-latest.min.js"></script>
```

1265 2. Bepaal waar de kaart op de pagina moet komen

Zet op de gewenste plek op de pagina een <div>-tag met het gewenste formaat. Geeft dit element een id mee, bijvoorbeeld "map".
 Bijvoorbeeld zoals hier gedaan:

```
<div id="map" style="width:600px; height:400px"></div>
```

1270 3. Activeer de widget

Activeer de widget door de volgende code onderaan de pagina te plaatsen, net voor de </body>-tag:

```
<script type="text/javascript">
var mapObj=new ViciWidget(document.getElementById('map'), {"zoom":14});
</script>
```

1275

Gebruik hier het id van element het waarin de kaart getoond moet worden. In dit voorbeeld begint de kaart met een zoom van 14.
 Er kan ook aangegeven worden welke breedte- en lengtegraad in het midden van de kaart getoond moet worden. Doe dit door {"zoom":
 14} te vervangen door bijvoorbeeld {"center":{"lat": 50.84,"lng":5.69},"zoom":8}.

1280 Er is meer mogelijk. Met de volgende aanroep worden interessante punten uitgelicht. Standaard toont de kaart in dit voorbeeld
 alleen zichtbare locaties, zowel archeologische locaties als ook toeristische locaties als musea, maar de gebruiker kan met
 een menu dat linksonder getoond wordt zelf een andere keuze maken.

```
<script type="text/javascript">
var mapObj=new ViciWidget(document.getElementById('map'), {"highlights":2,"showPrefbox":true,"preferences":{"visibility":
```

1285 `"onlyVisible", "era": "RomanAndContemporary"}));</script>`

`"zoom"`
Initial zoomlevel.
Integer: values 5 to 18. Defaults to 10
1290 If user changes the zoom of the map, the new zoom be kept (using a cookie) and used next time the map is displayed.

`"center"`
Initial center of the map.
Object containing values for latitude `"lat"` and longitude `"lng"`: values 5 to 18. For example `{"lat":50.84,"lng":5.69}`. If none given, the previous location is used (stored in a cookie) or otherwise the center of Rome.

1295 `"mapTypeId"`
Map background
Possible values: `"SATELLITE"` (default), `"HYBRID"` or `"HYBRID"` for the Digital Atlas of the Roman Empire (DARE) map.

`"lang"`
Language of the interface
1300 A containing a two letter languagecode. Supported values are `"de"`, `"en"`, `"fr"`, `"nl"`. Defaults to the language setting of the webbrowser, with a fallback to English (`"en"`).

`"highlights"`
Featured locations
An integer value that sets the maximum number of locations that are given extra attention by showing them in a 'featured' box.
1305 For example, the value 2 will highlight upto two locations. Defaults to 0, meaning no locations are highlighted.

`"showPrefbox"`
User customizable views
A boolean, the value true will show a clickable menu in the lower left corner that allows the user to select what objects are shown on the map and what map to use. Default value is false (no menu).

1310 `"preferences"`
Customizable views
Using the preferences object one can define what is shown on the map. These setting can be altered by the user using the preferences menu. So when the preference menu is disabled (showPrefbox set to false) these setting cannot be overridden by the user. Two aspects can be controlled, the kind of objects to be shown, archeological or touristic (the `"era"` property, possible
1315 values are `"onlyContemporary"`, `"RomanAndContemporary"` and `"onlyRoman"`) and whether invisible objects should displayed or not (the `"visibility"` property, possible values are `"onlyVisible"` and `"anyVisibility"`).

Het staat uiteraard vrij om links te maken naar Vici.org. Zoals op deze pagina uitgelegd wordt kan er op een aantal manieren
1320 een link naar een specifiek deel van de kaart gemaakt worden. Het is ook mogelijk om de kaart te integreren in een andere site. Dit kan met de widget. Voor andere vormen van gebruik of hergebruik van de data zijn dataservices beschikbaar.

Links naar een specifieke plaats op de kaart
Om te linken naar een marker of plaats naar keuze, te tonen midden op de kaart, verwijst u naar het `'/selectview.php'`-script en geeft u de parameter `'focus'` als waarde de numerieke identifier van de plaats. De identifier van een plaats is het
1325 numerieke deel van de url van de bijbehorende pagina. Zo geeft `http://vici.org/vici/7859` de pagina over de Porta Negra. De identifier is hier dus 7859. De link `http://vici.org/selectview.php?focus=7859` zo naar een kaart met centraal daarop de Porta Negra.

Er wordt automatisch een schaal gekozen die afhankelijk is van de aard van het object. Optioneel kan er een `'zoom'`-waarde opgegeven worden om zo de schaal vast te leggen. Ook is het mogelijk om aan te geven of de kaart de hedendaagse plaatsnamen en

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- 1330 infrastructuur moet tonen. Dit kan met de parameter 'labels'.
Hier volgen nog een paar voorbeelden van links naar een kaart met in het midden een geselecteerd object:
<http://vici.org/selectview.php?focus=7863>
Toont de Herculestoren van A Coruña. De schaal wordt automatisch gekozen. Hedendaagse labels worden niet getoond.
<http://vici.org/selectview.php?focus=4255&zoom=15&labels=1>
- 1335 Toont een kaart met het colosseum van Rome centraal. De schaal is hier met 'zoom' zo gekozen dat het Forum Romanum getoond wordt. Ook de hedendaagse aanduidingen worden getoond ('labels=1').
Links naar een specifiek punt op de kaart
Een andere manier om naar een kaart te linken is door de coördinaten van het centrale punt samen met de schaal door te geven aan het '/selectview.php'-script. Ook hier kan gekozen worden of de hedendaagse kaartlabels getoond moeten worden.
- 1340 Een paar voorbeelden van links naar een specifiek gedeelte van de kaart:
<http://vici.org/selectview.php?center=55.012333,-2.337620&zoom=10>
Linkt naar een kaart met in het midden het punt 55.012333, -2.337620 (breedtegraad, lengtegraad) en als schaal zoomfactor '10'. Hedendaagse kaartlabels worden niet getoond. Dit specifieke voorbeeld geeft een overzicht van de Hadrian wall.
<http://vici.org/selectview.php?center=50.520889,8.725101&zoom=6&labels=1>
- 1345 Dit voorbeeld geeft een kaart waarop het Germaanse deel van de limes goed in beeld is. Hedendaagse plaatsaanduidingen worden getoond.