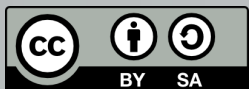


# Linked Open Data in Space and Time

A geodetic insight into  
humanities research using LOD

*Florian Thiery M.Sc.*

 @fthierygeo



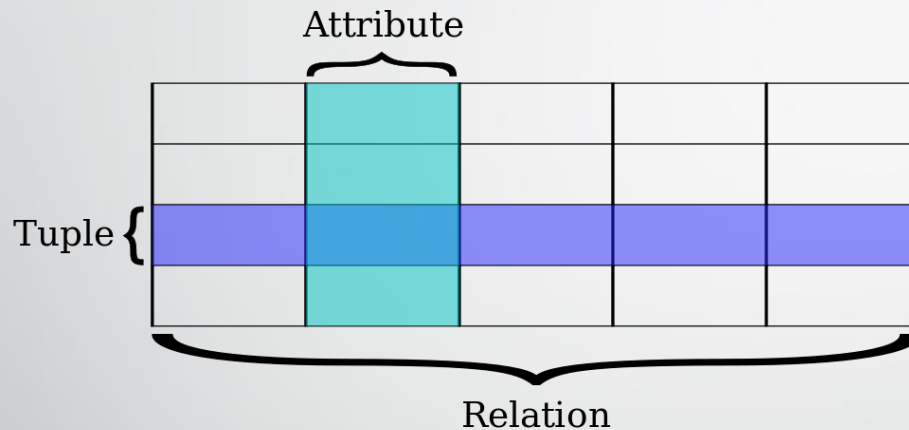
# That's me!

- hold a **Master Degree** (Master of Science) in **Geoinformatics and Surveying**
- Research Associate at **i3mainz**
  - Institute for Spatial Information and Surveying Technology
- Computer Scientist at **RGZM**
  - Archaeological Research Institute



@fthierygeo

# Geodesists usually deal with relational databases and semantical OGC-webservices!



# Beyond the classic techniques, the Web of Data can serve as an extension in research!



# Semantic Web?!

- *“The **Semantic Web** is the extension of the World Wide Web that enables people to **share content** beyond the boundaries of applications and websites.”*
- *“The Semantic Web is a **web of data**.”*

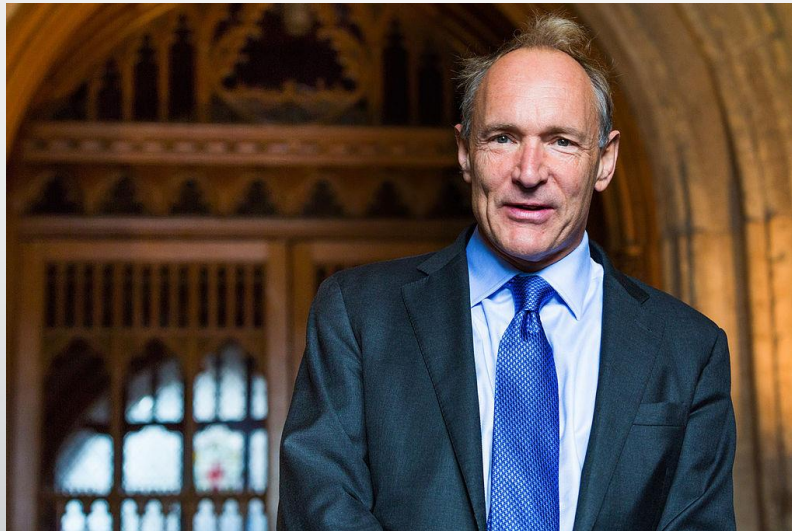
- “W3C Semantic Web Activity” by World Wide Web Consortium (W3C)



# Linked Data?!

- *“The Semantic Web **isn't just about putting data on the web**. It is about **making links**, so that a person or machine can **explore** the web of data.”*

- *“<https://www.w3.org/DesignIssues/LinkedData.html>”*



**Tim Berners-Lee, Inventor of the World Wide Web!**

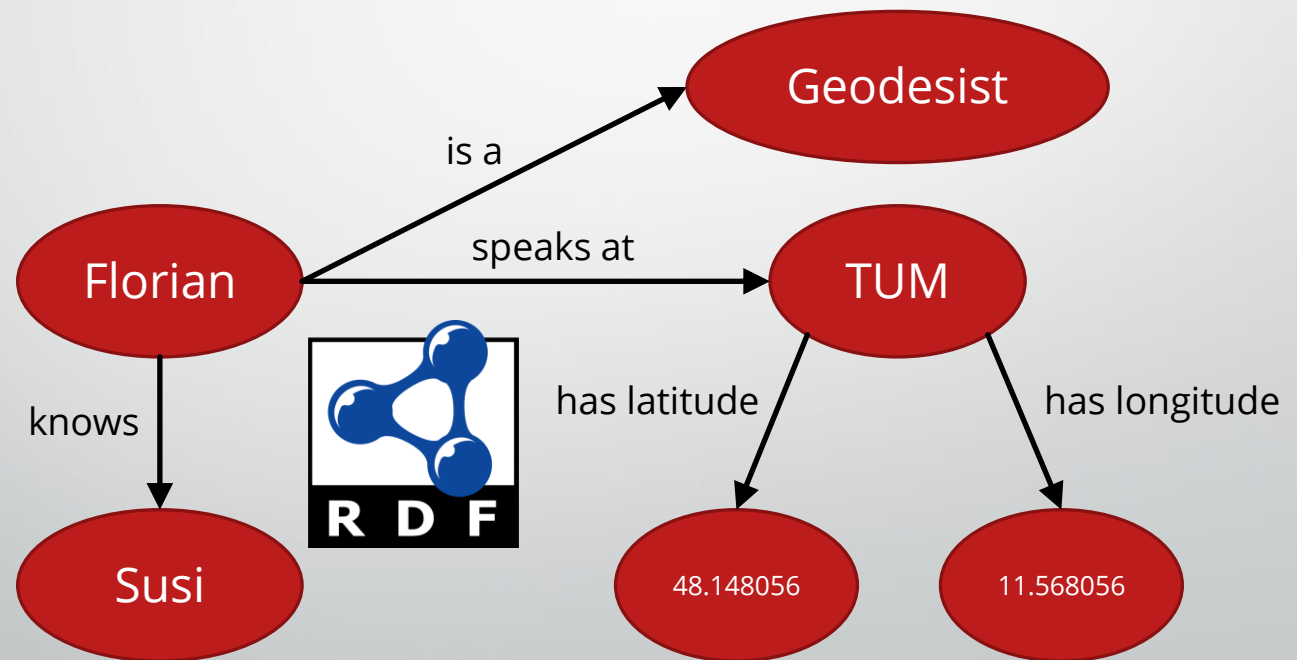
# 4 Linked Data rules!!!

- Use **URIs** as names for things.
- Use **HTTP URIs** so that people can look up those names.
- When someone looks up a URI, provide useful **information**, using the **standards**.
- Include **links** to other URIs.  
So that they can discover more things.

- <https://www.w3.org/DesignIssues/LinkedData.html>

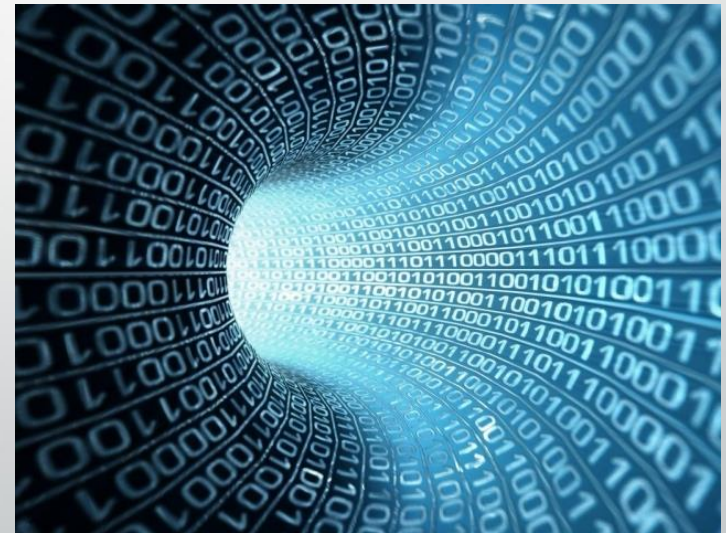
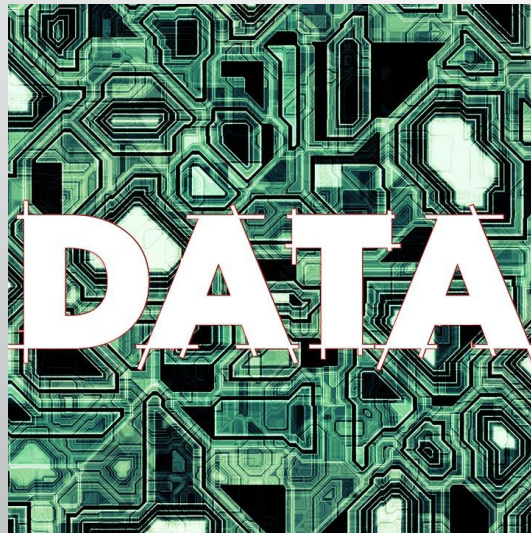


# The language of the Semantic Web & Linked Data is simple: Subject, Predicate and Object! Using Edges and Nodes...





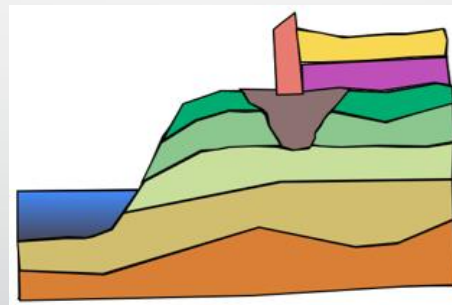
**Geodesists deal with large amount of data. Without semantic information and links between datasets information is useless.**



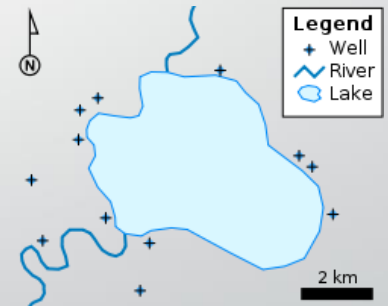
# Data stored in databases, modelled as LOD, can benefit from information in the WWW and reach a common understanding of terms.



**feature**  
(software)

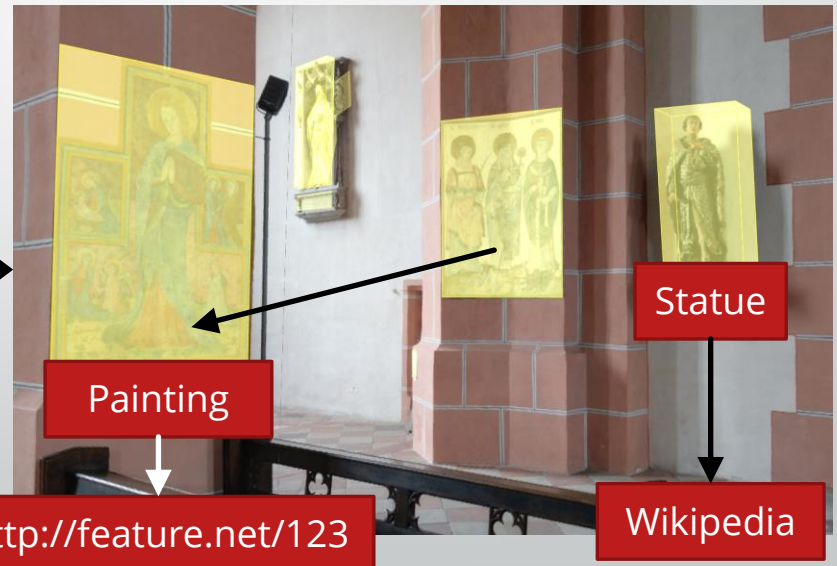
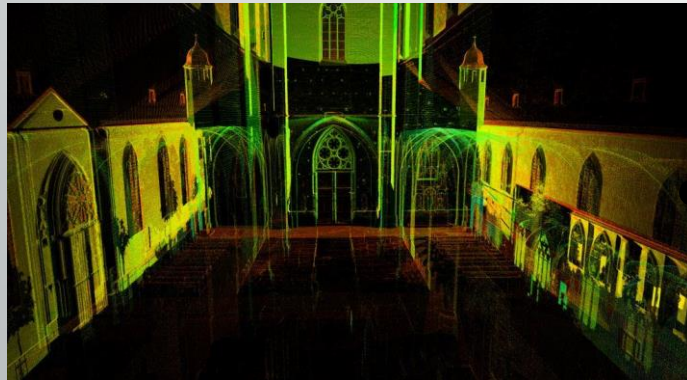


**feature**  
(archaeology)



**feature**  
(geometry)

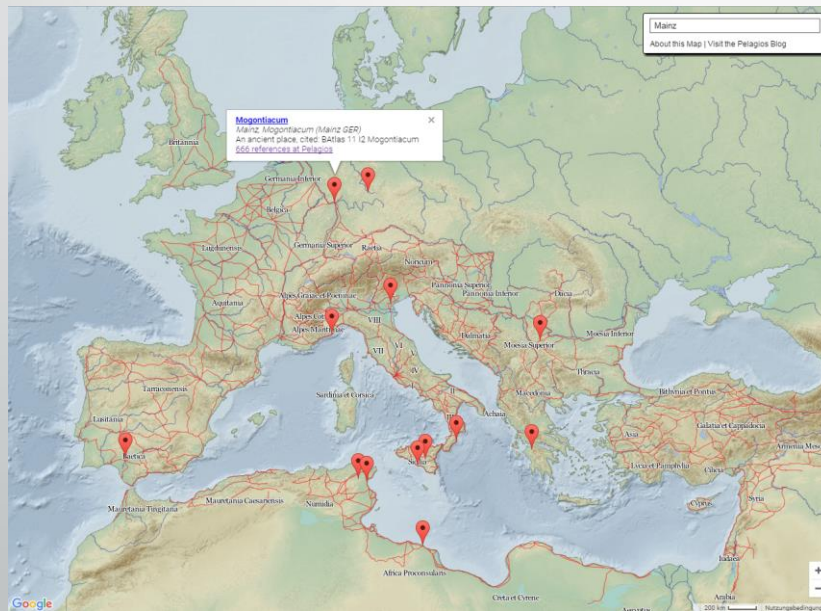
# Sets of stupid points in a point cloud can be classified and linked to each other reaching a common under-standing of spatial objects.



**Other disciplines like the humanities are developing generic LOD solutions. Use it!**



# In the humanities, gazetteers like Pleiades and data hubs like Pelagios are growing to interlink research data!



## Mogontiacum

An ancient place, cited: BATLAS 11 12 Mogontiacum  
<http://pleiades.stoa.org/places/109169>

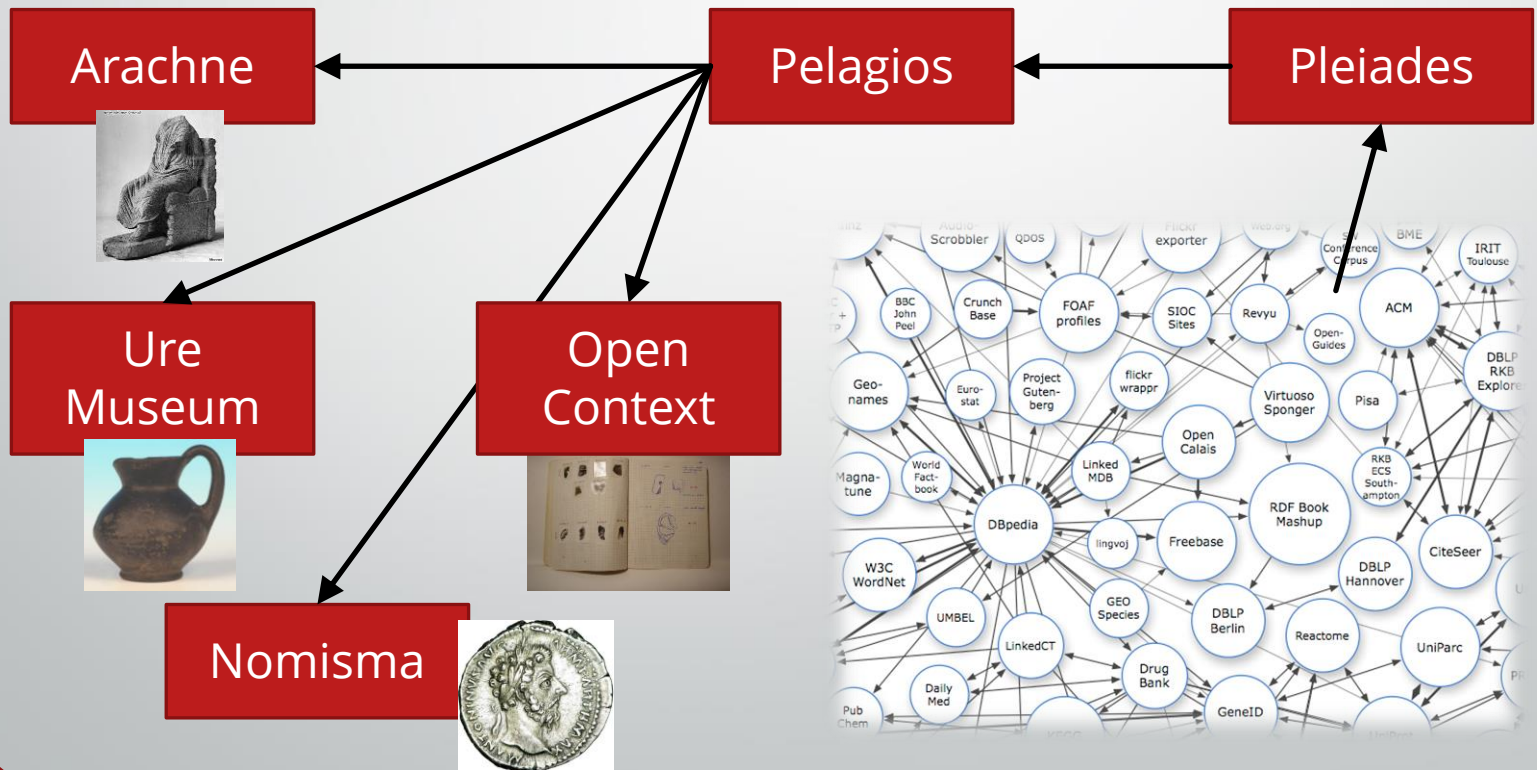
Alternative Names: Mainz, Mogontiacum  
Coverage: Mainz GER  
Has Connections to: Sanctuary of Isis and Magna Mater  
Unnamed Roman bridge at Mainz

[JSON](#) | [RDF/XML](#) | [Turtle](#)

### 666 References to Mogontiacum

Dataset	No. of References
Arachne (in 2 subsets)	7 (of 128180 total in set)
Nomisma.org	1 (of 7396 total in set)
Epigraphic Database Heidelberg	653 (of 41639 total in set)
AWMC - Ancient World Mapping Center	1 (of 34608 total in set)
Digital Atlas of the Roman Empire	1 (of 19916 total in set)
Google Ancient Places (in 1 subsets)	1 (of 41053 total in set)
Omines Vae	1 (of 2983 total in set)
Vici.org - Classical antiquity nearby	1 (of 4928 total in set)

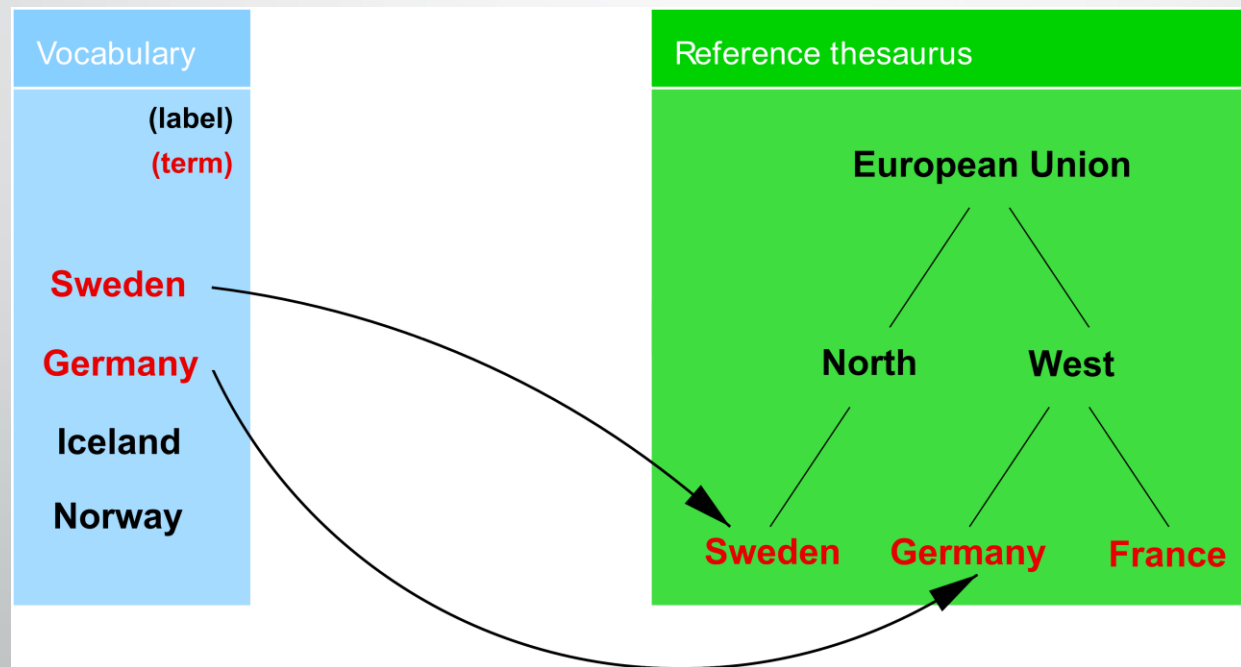
# Get easily archaeological objects through interlinked places out of the LOD cloud!



**The Labeling System creates HTTP addressable terms as URIs, stored in controlled vocabularies provided by a RESTful API.**

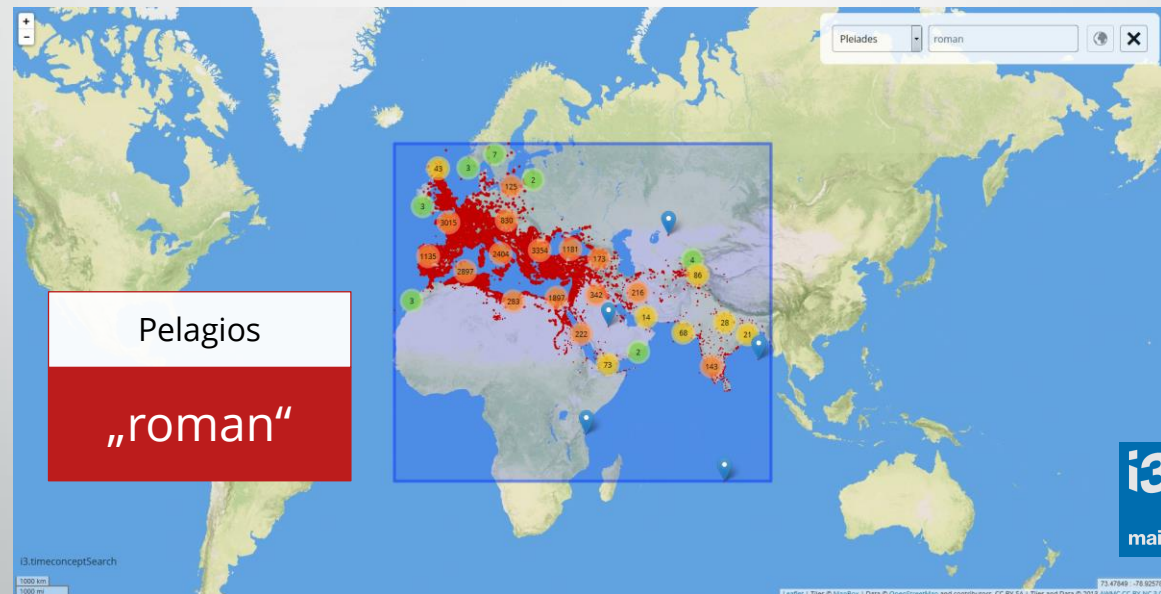


# The »Labeling Approach« is very easy: A term is only clearly described by linking it to a online available resource!

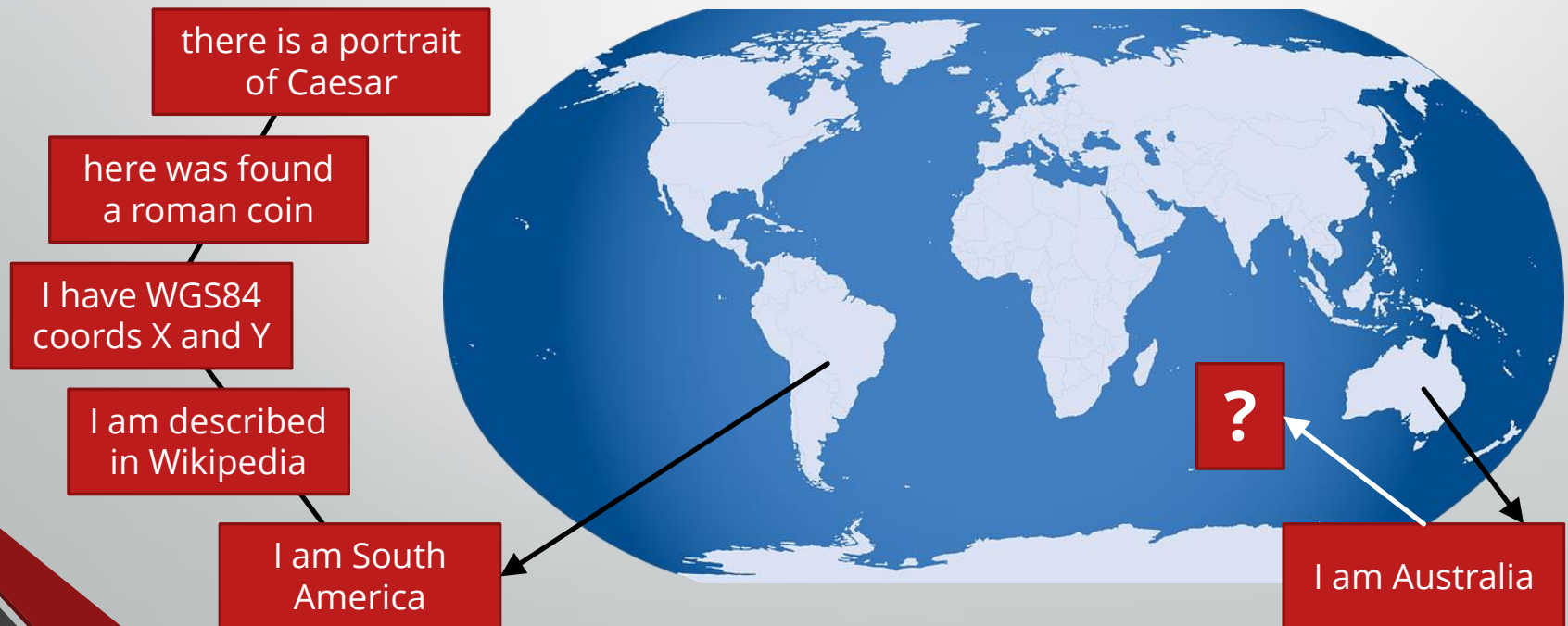




**ChronOntology is creating URIs for time-concepts in their spatial extent as well as their fuzzy wobbling relative relations between each other.**







# Let us build a geodetic linked open data cloud, creating a common understanding of our blue planet in all its facets!




# A pioneer for geospatial data as LOD is Great Britain's Ordnance Survey!



Current Datasets

	<b>Ordnance Survey Linked Data</b> 36,773,687 triples
	<b>Code-Point Open Linked Data</b> 33,750,456 triples
	<b>50K Gazetteer Linked Data</b> 2,368,655 triples
	<b>Boundary Line Linked Data</b> 653,433 triples





# Linked Open Data in Space and Time

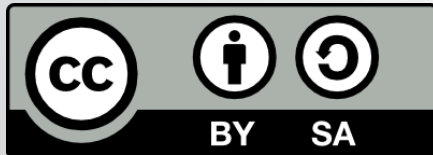
**[mail@florian-thiery.de](mailto:mail@florian-thiery.de)**

**<http://linkedgeodesy.org>**

 **@fthierygeo**

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- Slide 14
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  - © <http://data.ordnancesurvey.co.uk> [04.04.2016]
  - © <https://geovation.uk/wp-content/uploads/2013/04/OS-Linked-Data.jpg>



# See also...

- <https://www.w3.org/DesignIssues/LinkedData.html>
- <http://5stardata.info/en/>
- <http://linkeddata.org>
- <http://pelagios-project.blogspot.de>
- <http://data.ordnancesurvey.co.uk>
- <http://lod-cloud.net>
- <http://i3mainz.hs-mainz.de/de/projekte/labelingsystem>
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