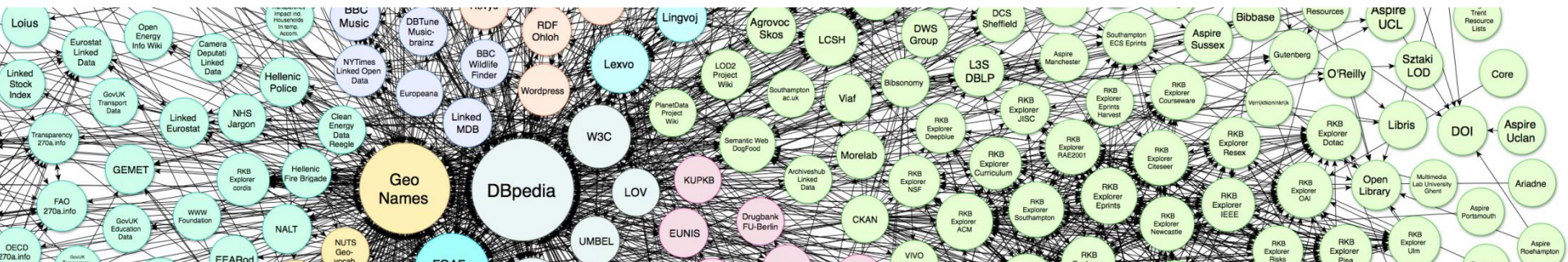


Interlinking on spatial criteria on the Geoweb

Abdelfettah FELIACHI.

Geodata on the Web Seminar – February 10th & 11th 2016



The Geoweb

Edit Lukaskirche

Name: Lukaskirche

Description:

Image:

Source_ref:

amenity: place_of_worship [-]

religion: christian [-]

denomination: lutheran [-]

created_by: xybot [-]

Search: [Login >>](#)

[Show updates in this area >>](#)

Properties

- [+] highway (15)
- [+] religion (3)
- [+] amenity (31)
- [+] denomination (3)
- [+] historic (1)
- [+] railway (2)
- [+] leisure (5)
- [+] man_made (1)
- [+] shop (4)
- [+] sport (1)
- [+] cuisine (1)

Instances

- Lukaskirche**
amenity: place_of_worship
religion: christian
denomination: lutheran
- Club 11**
amenity: nightclub
- amenity: recycling
- amenity: parking
- amenity: parking
- amenity: parking
- amenity: recycling
- Lukas-Apotheke**
amenity: pharmacy
- amenity: school
- amenity: parking
- Johanneskirche**
denomination: christian
community: christian
religion: christian
amenity:

This faceted Linked Geo Data browser was developed by [AKSW research group](#).

MAP4RDF
by Ontology Engineering Group

Facets

Type

- Aeroclub
- Aerodrome
- Airbase
- Airport
- Alberca
- Alberfa
- Aquifer
- Azarbe
- Beach
- Bicycle sharing system
- Bike station
- Boddn
- Branch, Channel
- Bus station
- Canal
- Captación
- Caz
- Cañada
- Caño
- Chorrera
- Cistem
- Collector

Overlays

Geoprocessing

Filters

Results

London

Map powered by OS OpenSpace

Core facts about "London"

Type	Value
European Region	London
Label	London
Pref Label	London
Northing	178392.3
Easting	629613.8
Lat	51.489632
Long	-0.134505

Objects related to "London"

Extent	Value
41428-1	Westminster Constituency
	Uxbridge and South Ruislip
	West Ham
	Feltham and Heston
	Romford
	Streatham
	Westminster North
	Chipping Barnet

DBpedia

Search DBpedia:

@ http://fr.dbpedia.org français, langue fr

Paris

Location, lieu, lieu habité, zone peuplée

Paris (prononcé [pa.ʁi]) est la capitale de la France. Elle se situe au cœur d'une vaste plaine fertile au climat tempéré, le Bassin parisien, sur une boucle de la Seine, entre les confluent de celle-ci avec la Marne et l'Oise. Ses habitants s'appellent les Parisiens. Paris est également le chef-lieu de la région Île-de-France et l'unique commune française qui est en même temps un département. Comme les villes de Lyon et de Marseille, elle est divisée en arrondissements (au nombre de vingt).

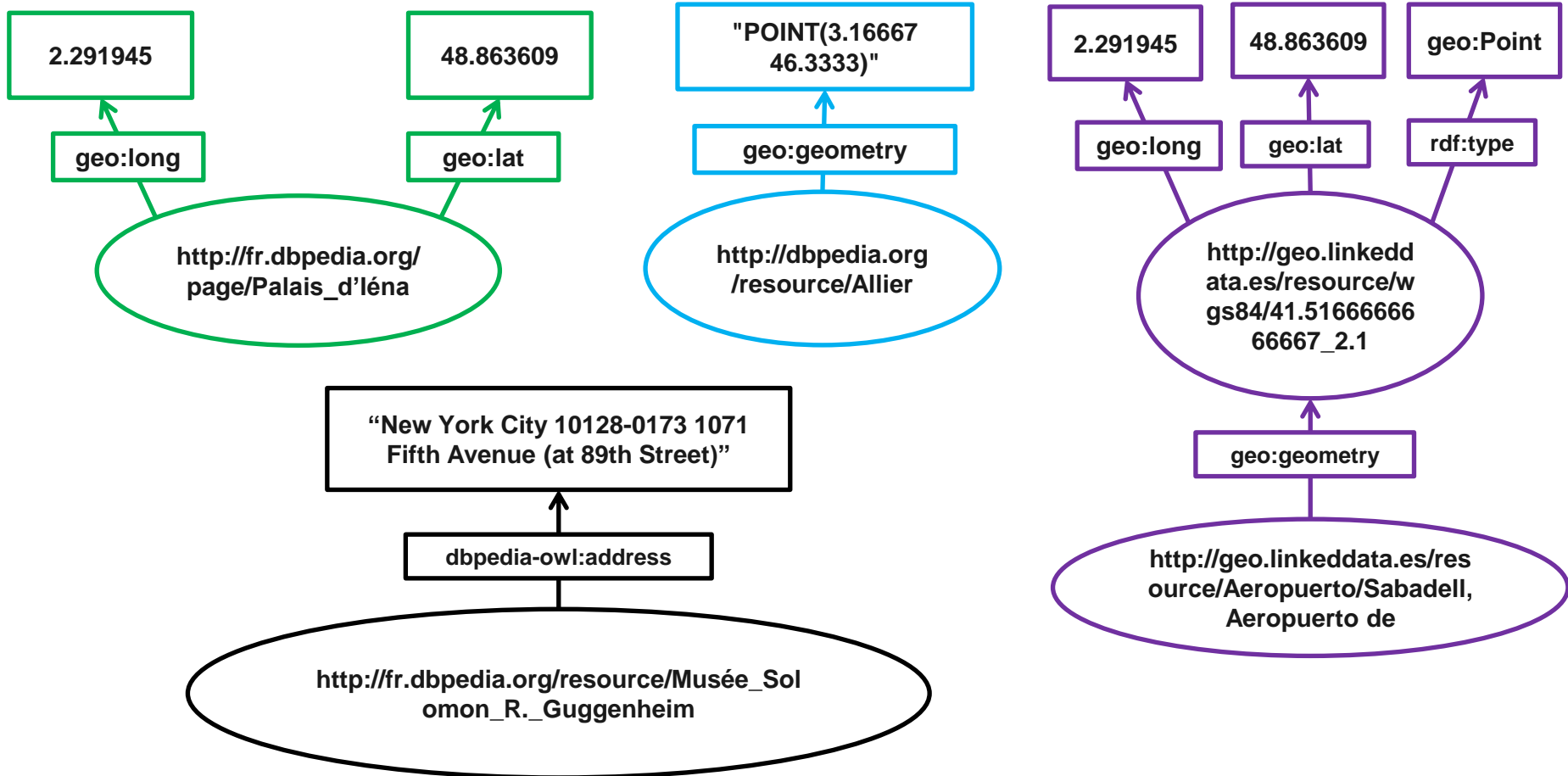
[dbpedia](#) [rdf](#) [freebase](#) [com/ns/m/05qjt](#) [fr](#) [wikipedia.org/wiki/Paris](#)

Property: dbpedia-owl:abstract

Value: Paris (prononcé [pa.ʁi]) est la capitale de la France. Elle se situe au cœur d'une vaste plaine fertile au climat tempéré, le Bassin parisien, sur une boucle de la Seine, entre les confluent de celle-ci avec la Marne et l'Oise.

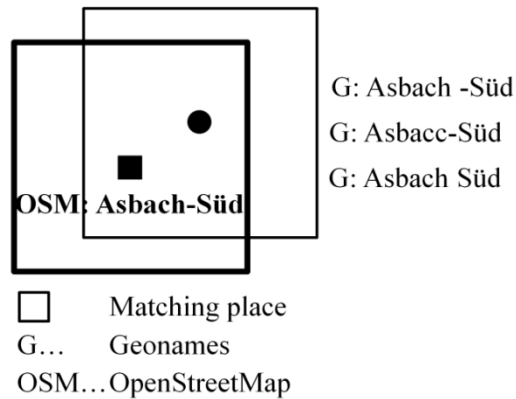
The Geoweb

Different vocabularies for the representation of spatial references

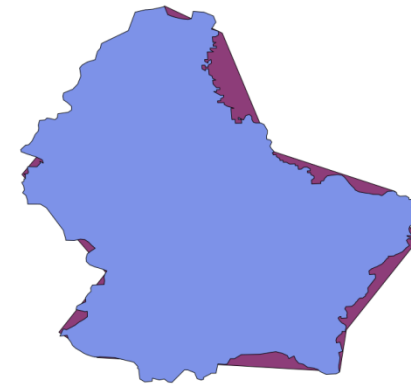


Spatial references as an interlinking Criterion

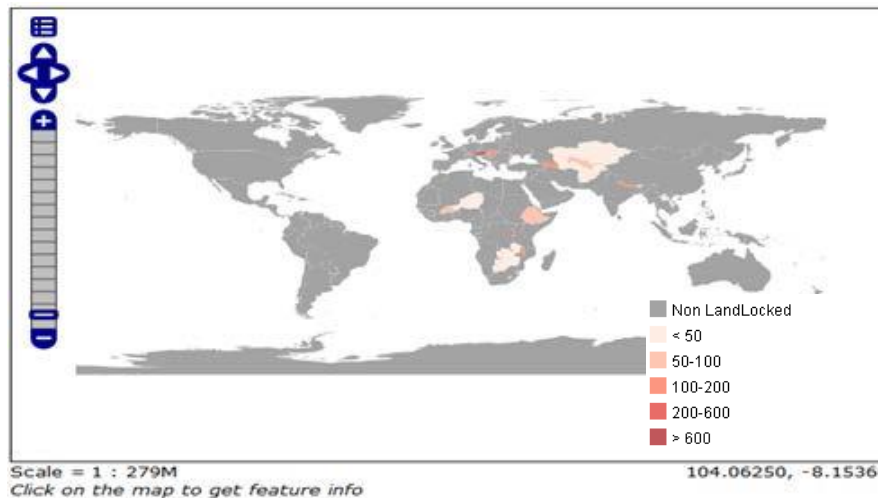
Many state of the art approaches are based on the spatial criterion for interlinking data



source: Hahmann and Burghardt (2010)



source: Salas and Harth (2011)



source: Owusu-Banahene and Coetzee (2013)

Spatial references as an interlinking Criterion

Spatial criterion may be used as part of more general multicriteria approaches

LIMES: Link discovery framework for METric Spaces

Examples (toggle)
Drugbank
Vacations
Duplicate Cities

Download:
Manual | Distribution

Source:
Endpoint:
Graph:
Var:
Pagesize:
Restriction:
Property: (+)

Target:
Endpoint:
Graph:
Var:
Pagesize:
Restriction:
Property: (+)

Metric:
Output:
Execution:

Acceptance: Threshold: Relation:
Review: Threshold: Relation:

Detected prefixes:
rdf: (-)
rdfs: (-)
owl: (-)
dc-terms: (-)
dbpedia-o: (-)
dbpedia-p: (-)

Silk Workbench Start Workspace Editor Generate Links Learn Reference Links Status About

Undo Redo Help Precision: 1,00 | Recall: 1,00 | F-measure: 1,00

Property Paths
Source: (custom path) ?a/<http://xmlns.com/foaf/0.1/n...
Target: (custom path) ?b/rdfs:label

Transformations
Lower case
Tokenize

Comparators
Equality
Jaccard

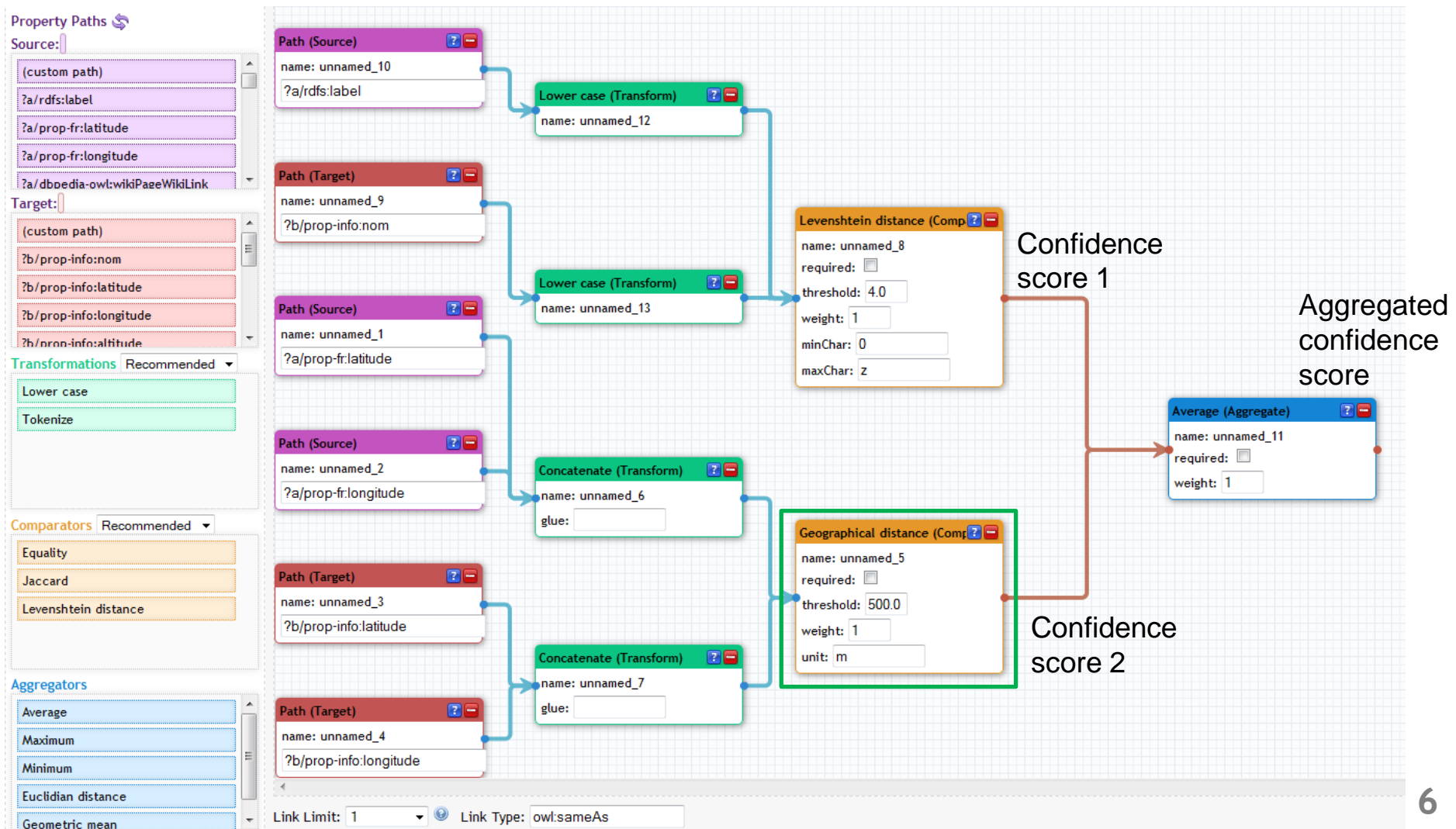
Aggregators
Average
Maximum

Path (Source) name: unnamed_1 ?a/<http://xmlns.com/foaf/0.1/n...
Lower case (Transf) name: unnamed_8
Levenshtein distance name: unnamed_6 required: threshold: 0.0 weight: 1 minChar: 0 maxChar: z
Path (Target) name: unnamed_2 ?b/rdfs:label
Lower case (Transf) name: unnamed_9
Path (Source) name: unnamed_4 ?a/dbpediaowl:releaseDate
Path (Target) name: unnamed_3 ?b/linkedmdb:initial_release_d...
Date (Compare) name: unnamed_5 required: threshold: 400.0 weight: 1
Minimum (Aggregate) name: unnamed_7 required: weight: 1

Link Limit: unlimited Link Type: owl:sameAs

Spatial references as interlinking Criterion

Each pair of matching candidates may include a spatial comparison



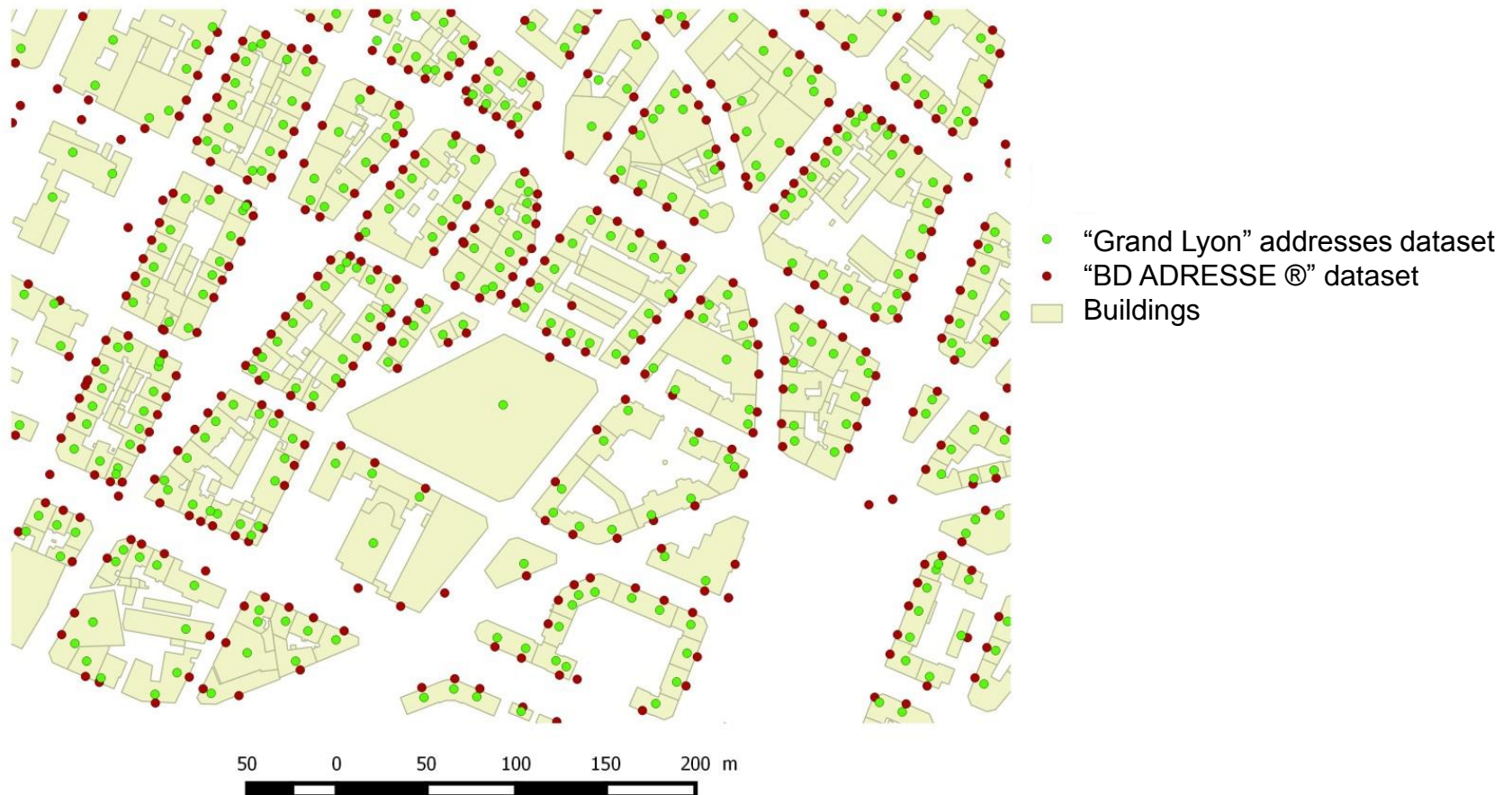
An example of a linking configuration using Silk Link Discovery Framework

Challenges related to the spatial criterion

- The spatial references present some heterogeneities that need to be handled in order to reliably use spatial criterion for interlinking

Challenges related to the spatial criterion

- Different data capture rules from one source to another



Example of addresses of the city of Lyon in two data sources

Challenges related to the spatial criterion

- Difference levels of positional accuracy



Challenges related to the spatial criterion

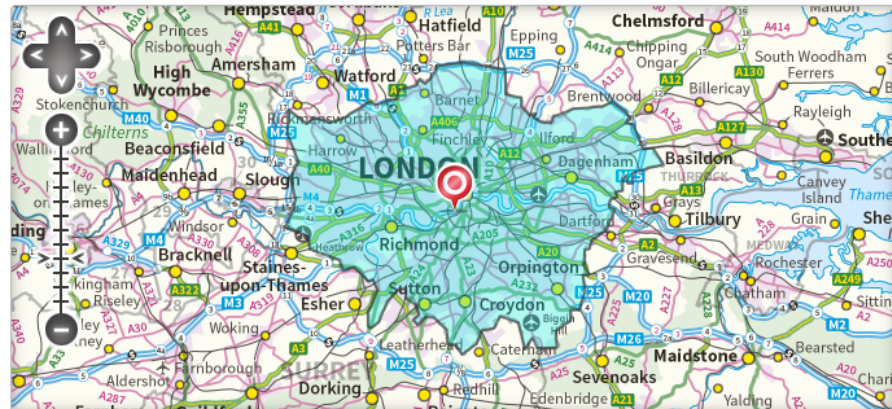
- Different levels of details



You are here: [linked-data](#) » [ordnance-survey-linked-data](#) » [london](#)

London

Map powered by OS OpenSpace



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London is a European Region.

Core facts about "London"

Type European Region

Label London

Objects related to "London"

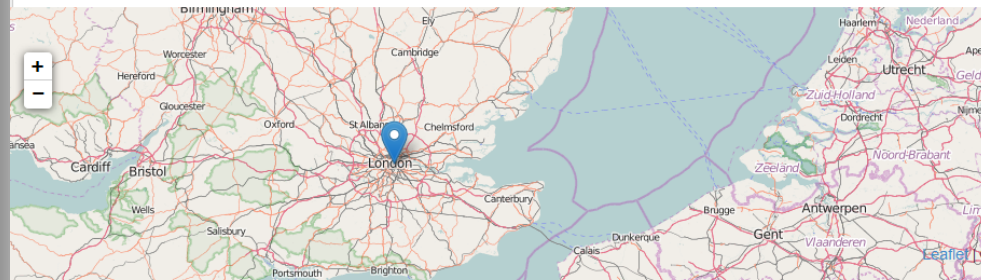


Londres

ville, Location, lieu, lieu habité, zone peuplée

Londres (prononcé [lɔ̃dʁs] ; en anglais London [ˈlʌn.dən]), située au sud-est de la Grande-Bretagne, est la capitale et la plus grande ville du Royaume-Uni ; longtemps capitale de l'Empire britannique, elle est désormais le siège du Commonwealth. Fondée il y a presque 2 000 ans par les Romains sous le nom de Londinium, Londres était au XIXe siècle la ville la plus peuplée du monde.

[dbpedia](#) ▾ [rdf.freebase.com/ns/m.04jpl](#) [fr.wikipedia.org/wiki/Londres](#)



Property:

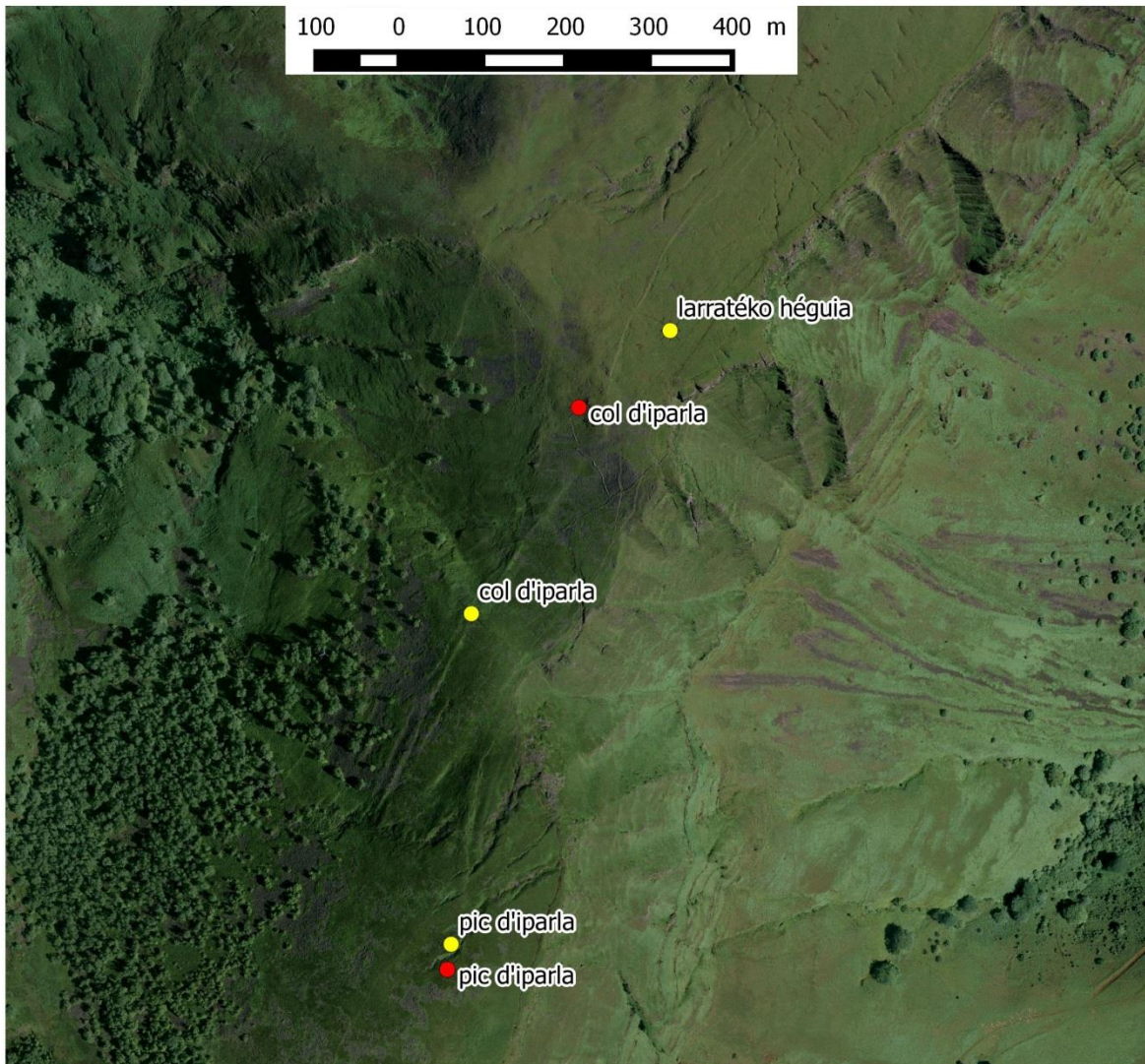
Value:

dbpedia-owl:abstract :

Londres (prononcé [lɔ̃dʁs] ; en anglais London [ˈlʌn.dən]), située au sud-est de la Grande-Bretagne, est la capitale et la plus grande ville du Royaume-Uni ; longtemps capitale de l'Empire britannique, elle est désormais le siège du Commonwealth. Fondée il y a presque 2 000 ans par les Romains sous le nom de Londinium, Londres était au XIXe siècle la ville la plus peuplée du monde. Bien que largement dépassée dans ce domaine par de nombreuses mégapoles, elle reste une métropole de tout premier plan, en raison de son rayonnement et de sa puissance économique, due notamment à sa place de premier centre financier mondial. La région de Londres, composée de Inner London et Outer London, comptait 8 416 525 habitants.

Challenges related to the spatial criterion

- Vagueness of some geographic entities



Legend

- BD CARTO: remarkable relief points
- BD TOPO: oronyms

Proposition

- The heterogeneities of spatial references may make them not very helpful for understanding and interlinking the data
- We identify the main elements that allow representing the meaning of a spatial reference (the XY semantics)
- We suggest to formally represent the elements that allow a better understanding of the spatial references.

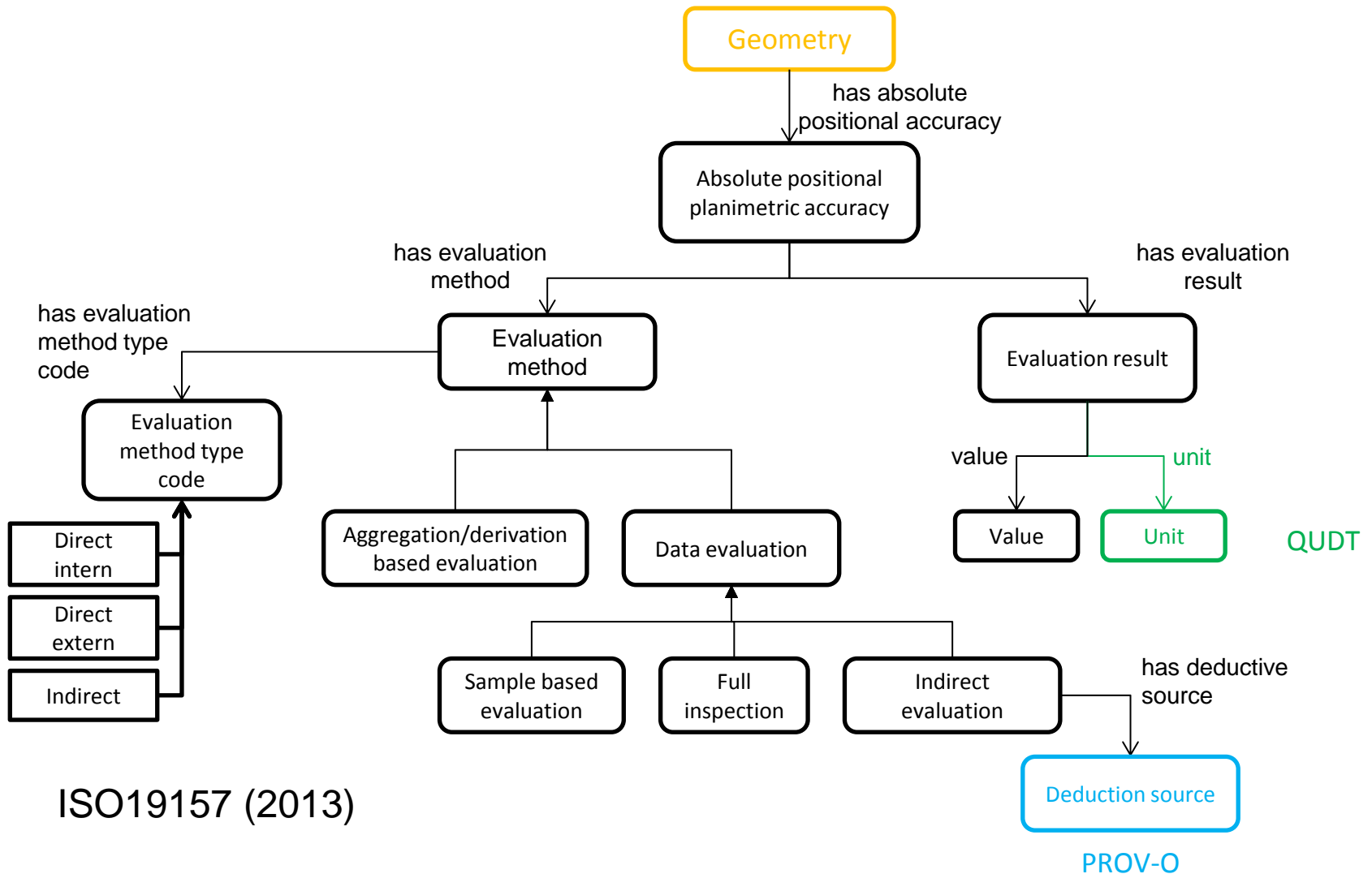
Planimetric
accuracy

Geometric
modelling

Vague aspect of
some geographic
entities

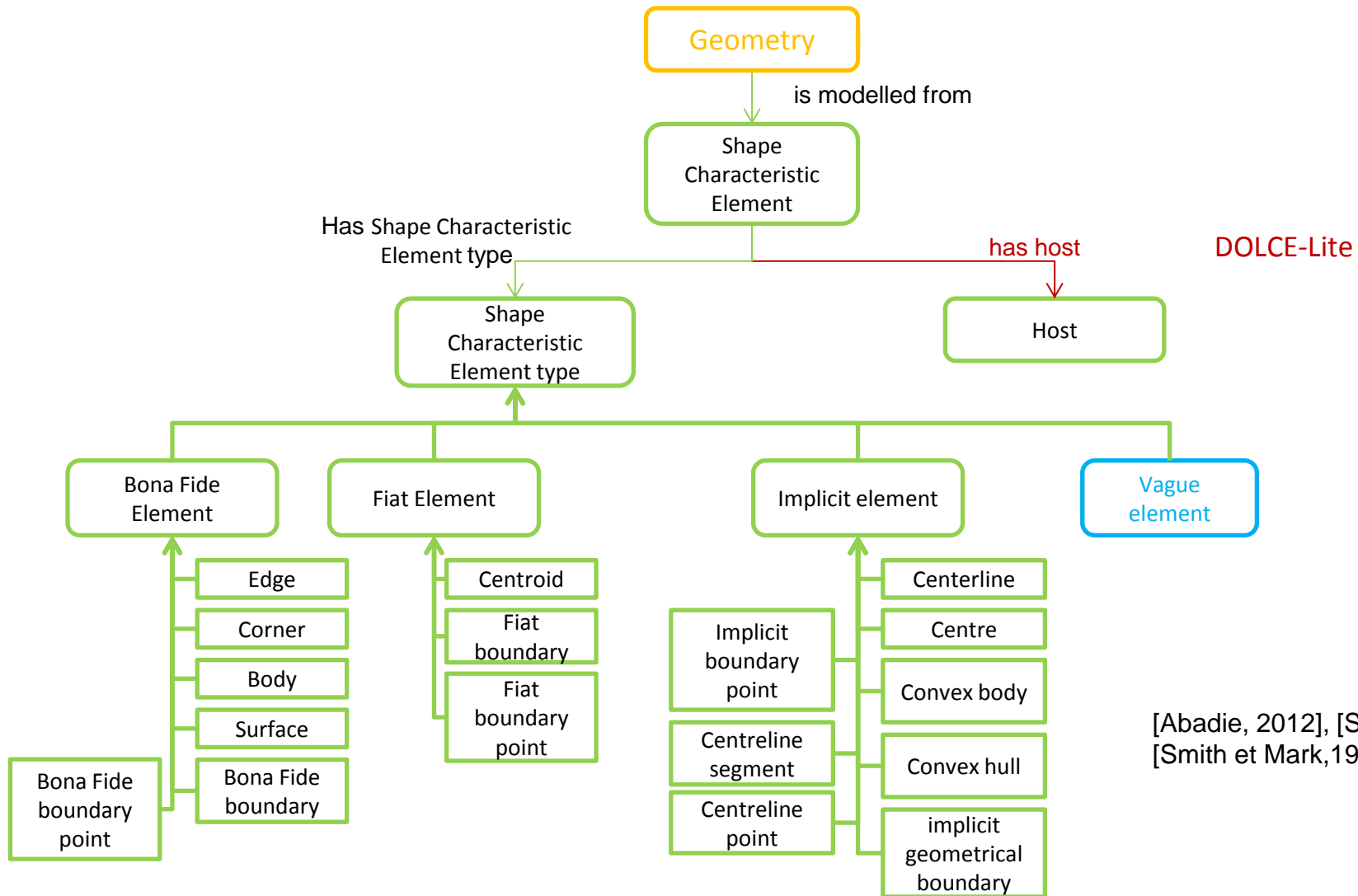
Representing the planimetric accuracy of a spatial reference

<http://data.ign.fr/def/geometrie>



Representing the **geometric modelling** and the **vagueness** of the spatial references

<http://data.ign.fr/def/geometrie>

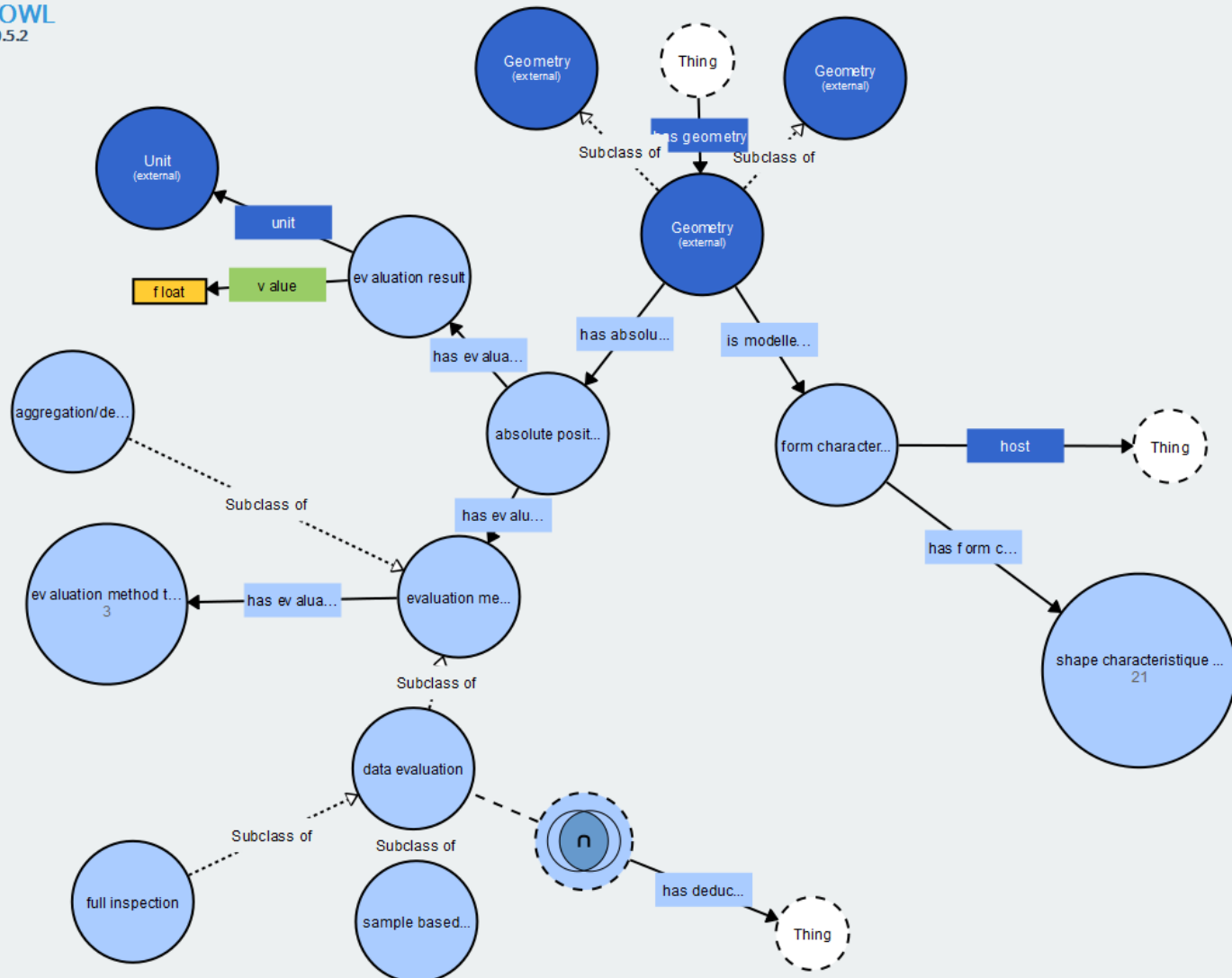


[Abadie, 2012], [Shade,2010] et [Smith et Mark,1998]

Published OWL vocabulary

<http://data.ign.fr/def/xysemantics>

WebVOWL
beta 0.5.2



Thank you

