



# Map4rdf - Faceted Browser for Geospatial Datasets

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@boricles

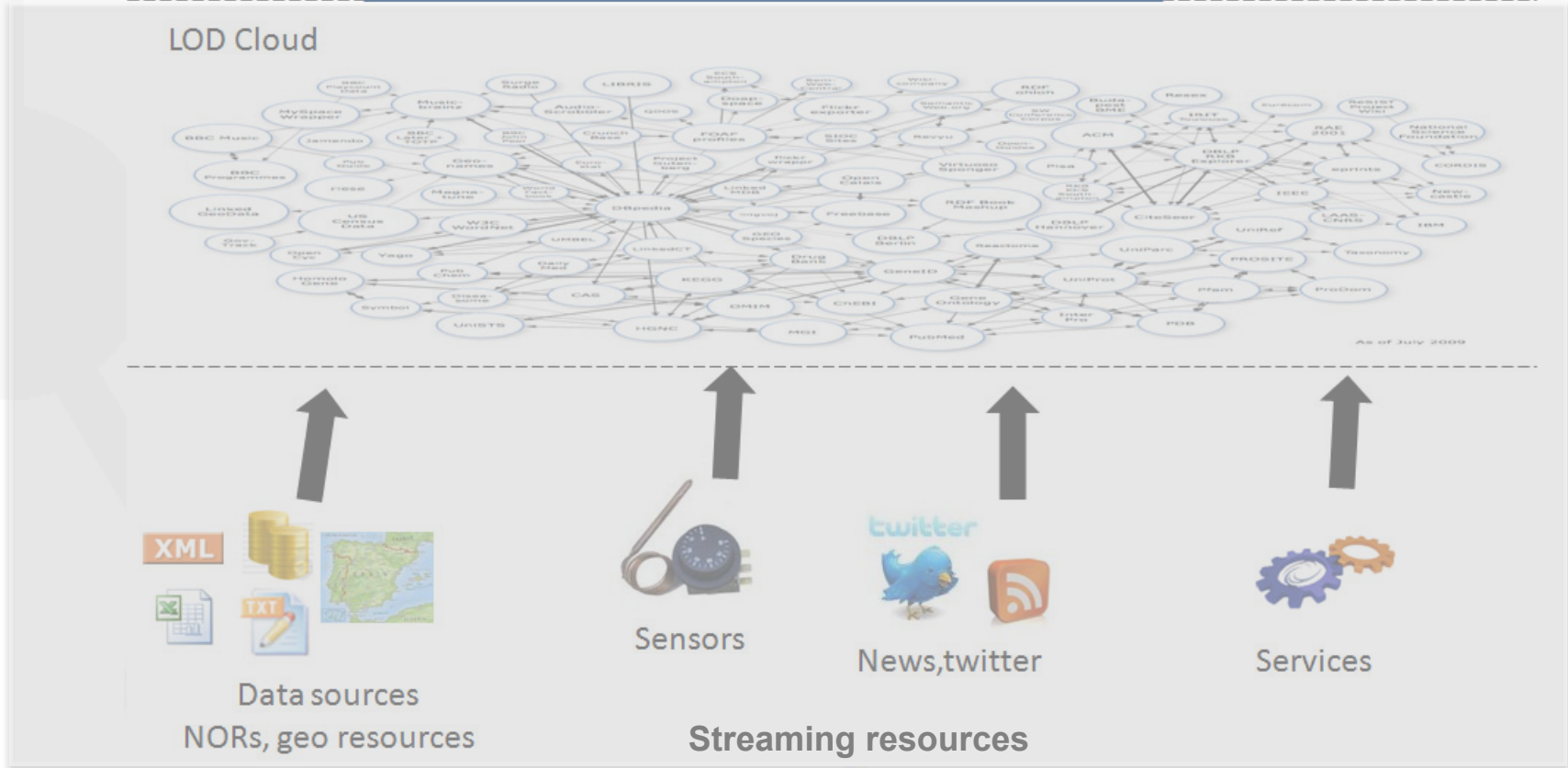
Slides available at: <http://www.slideshare.net/boricles/>

**Acknowledgements:** Daniel Garijo, Victor Saquicela, Asunción Gómez-Pérez, Luis M. Vilches, and all OEG members involved in the Linked Data initiatives

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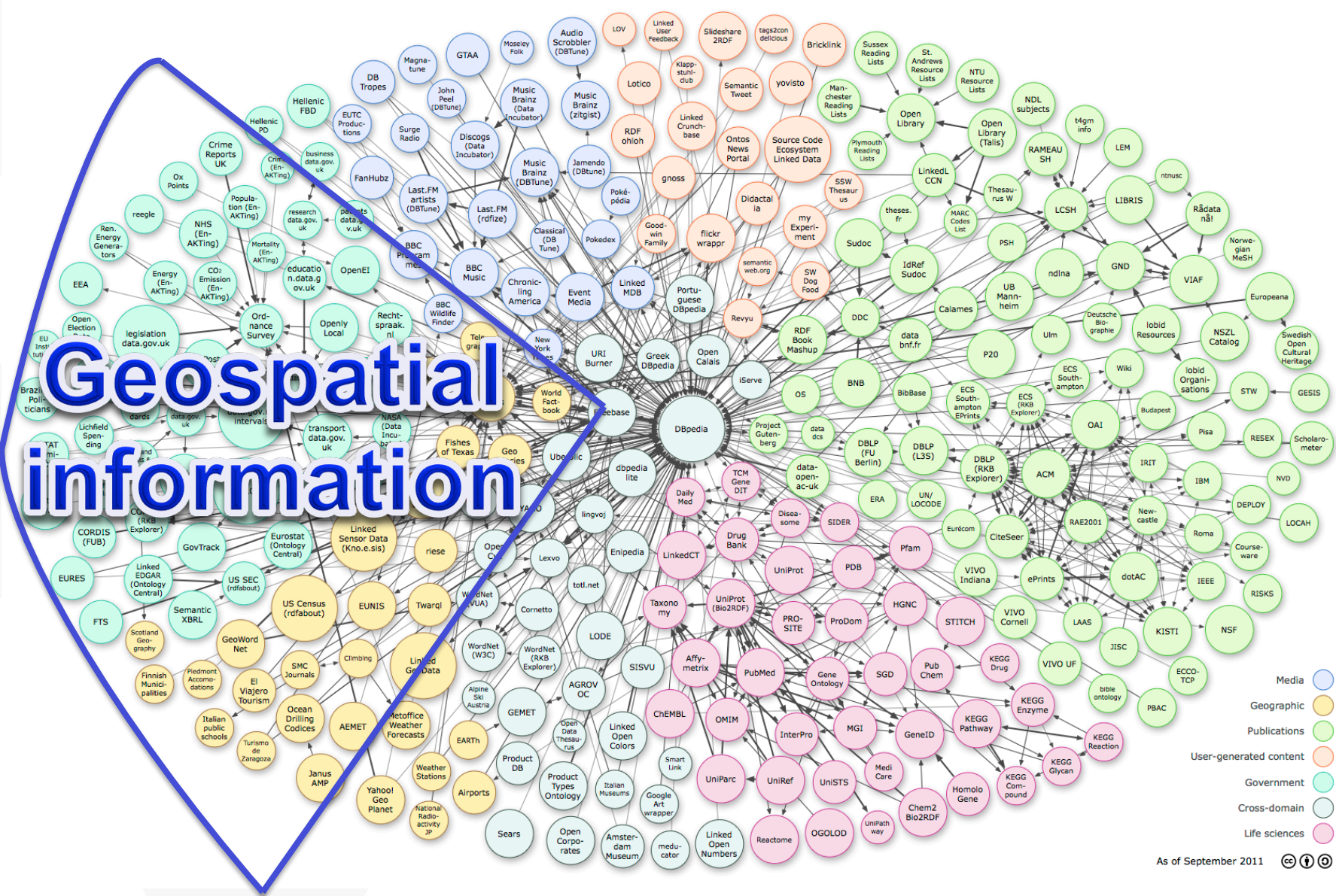
- Motivation
- Map4rdf overview
- Use cases
- Conclusions and future work

Effective usage, develop applications that exploit these data



# Linked Open Data Cloud

# Geospatial information



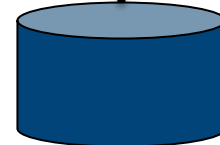
As of September 2011

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- Faceted browsing tool for exploring and visualizing RDF datasets enhanced with geospatial information.



SPARQL



Triplestore

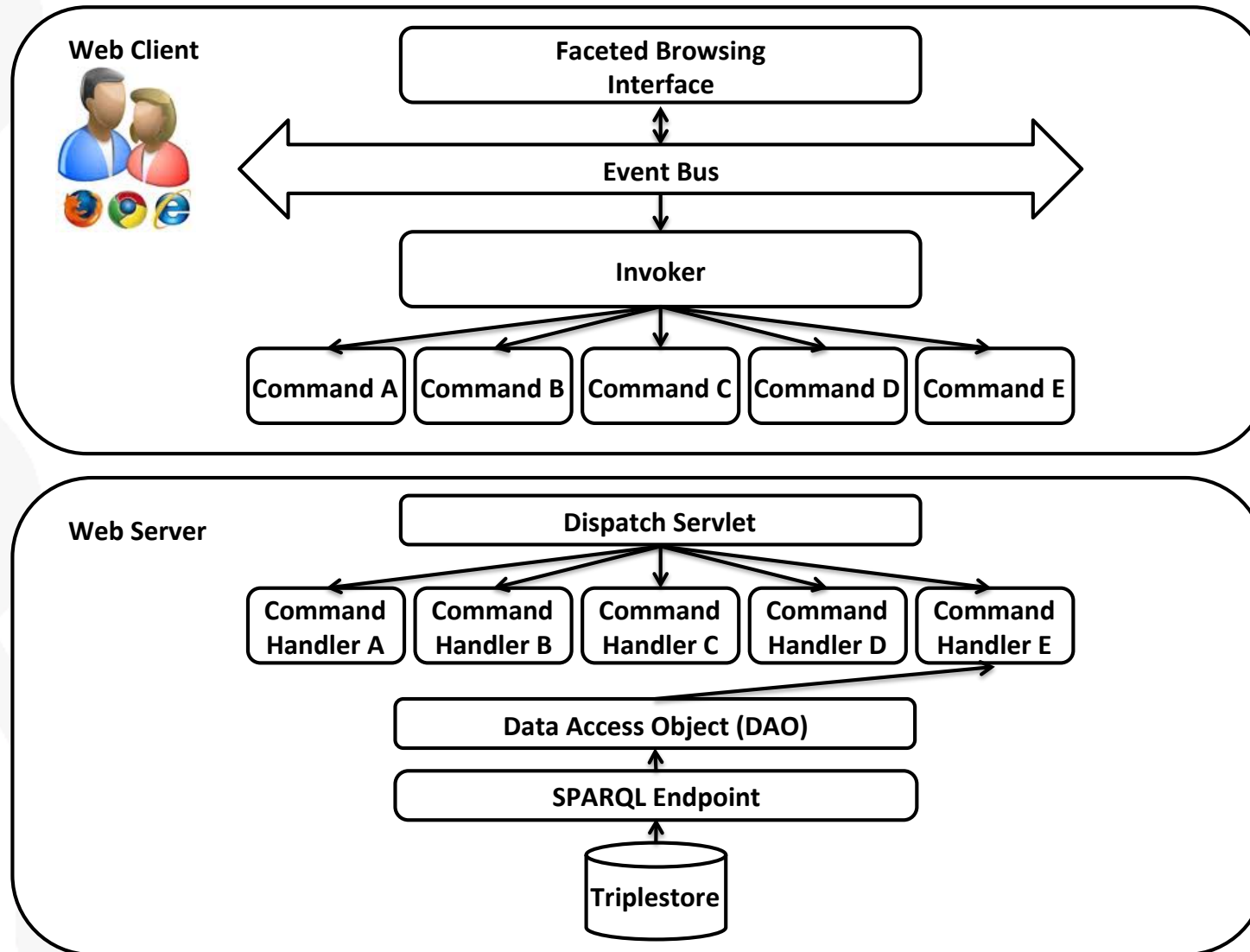


map4rdf

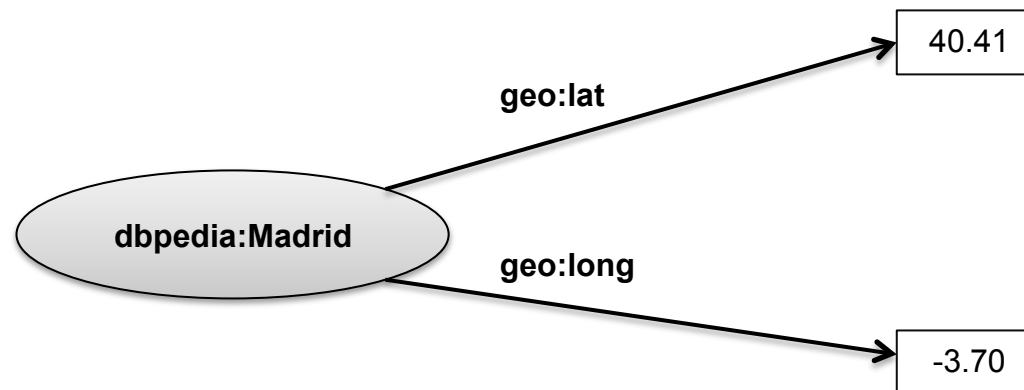
<http://oegdev.dia.fi.upm.es/projects/map4rdf/>

<http://github.com/pejot/linkeddata-visualization-tools/>

# Basic architecture



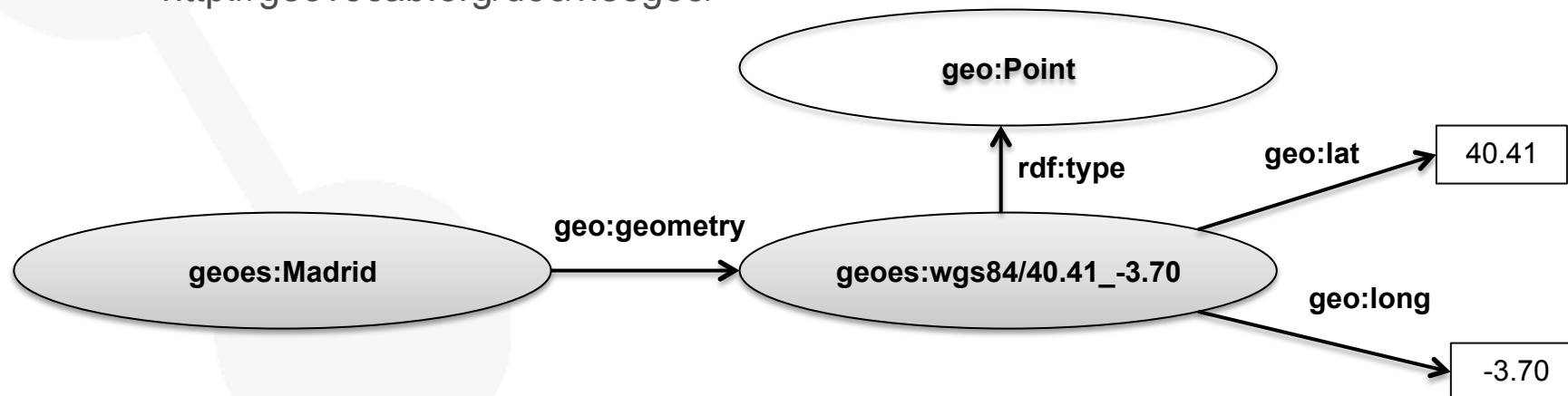
- Model used by DBPedia <http://www.w3.org/2005/Incubator/geo/>



- GeoLinkedData Geometry Model, NeoGeo Vocab

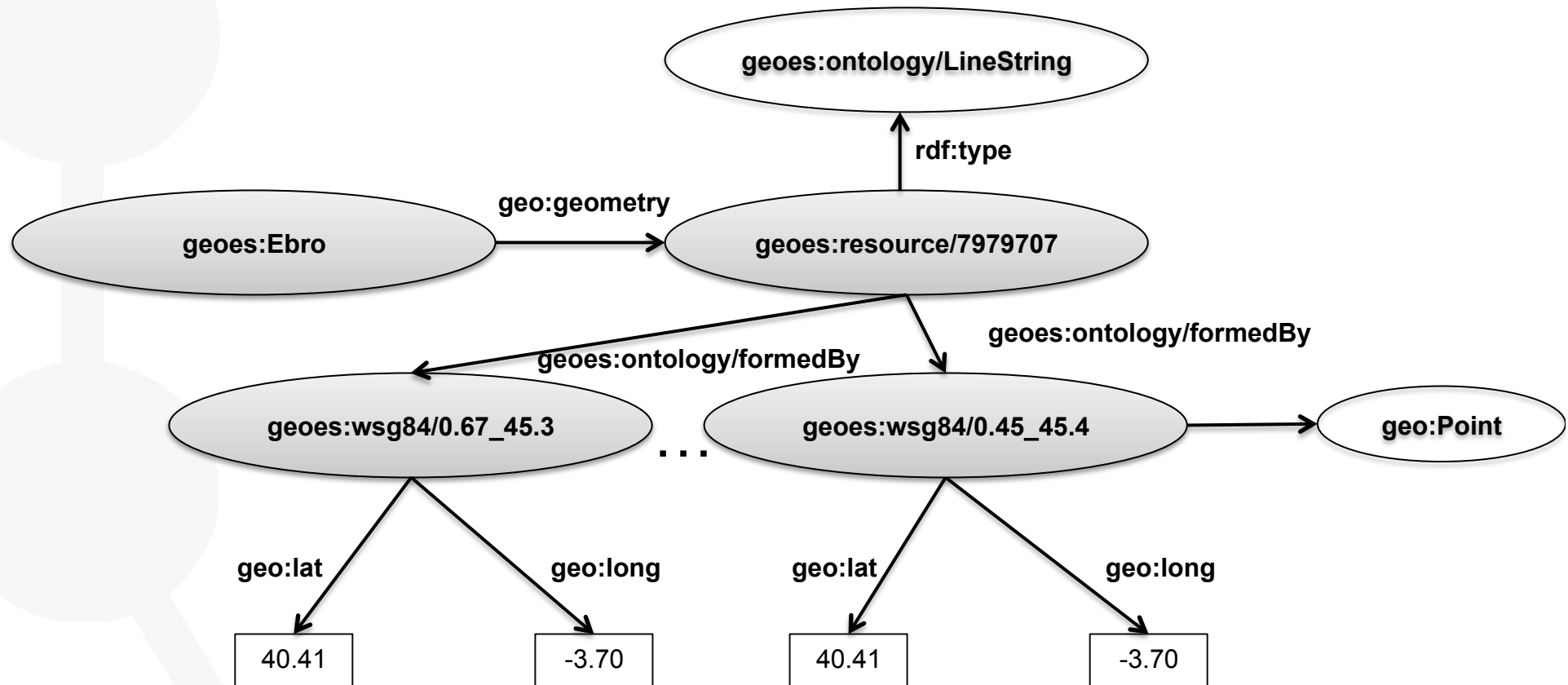
<http://geo.linkeddata.es/web/guest/modelos>

<http://geovocab.org/doc/neogeo/>





# Geospatial model - more complex geometries



The image shows a screenshot of the Google Maps interface. On the left side, there is a sidebar with the following sections:

- Facets**
  - Tipo**
    - Acequia
    - Aeroclub
    - Aeropuerto
    - Aeródromo
    - Alberca
    - Albufera
- Overlays**
- Filters**
- Results**

The main map area displays a geographical view of Spain and Portugal. Major cities like Madrid, Barcelona, and Lisbon are visible. The map is overlaid with a network of roads, including highways (E-5, E-90, E-92, E-80, E-801, E-802, E-803, E-804, E-7) and interchanges (IP2, IP3, IP4, IP5, IP6, IP7). Numerous red location pins are placed across the map, indicating specific points of interest. The map also shows geographical features like rivers and coastlines. The Google logo and 'Map data © 2012 - Terms of Use' are visible at the bottom left of the map area.

The screenshot displays the OpenStreetMap web interface. On the left side, there is a sidebar with the following sections:

- Facets**
  - Tipo**
    - Acequia
    - Aeroclub
    - Aeropuerto
    - Aeródromo
    - Alberca
    - Albufera
- Overlays**
- Filters**
- Results**

The main map area shows a detailed view of Spain, with various regions and cities labeled. Red pins are placed on several locations, indicating the results of the search for airports. The map includes a navigation toolbar on the left with a compass, a globe icon, and zoom controls. A copyright notice at the bottom right of the map reads "Data CC-BY-SA by OpenStreetMap".

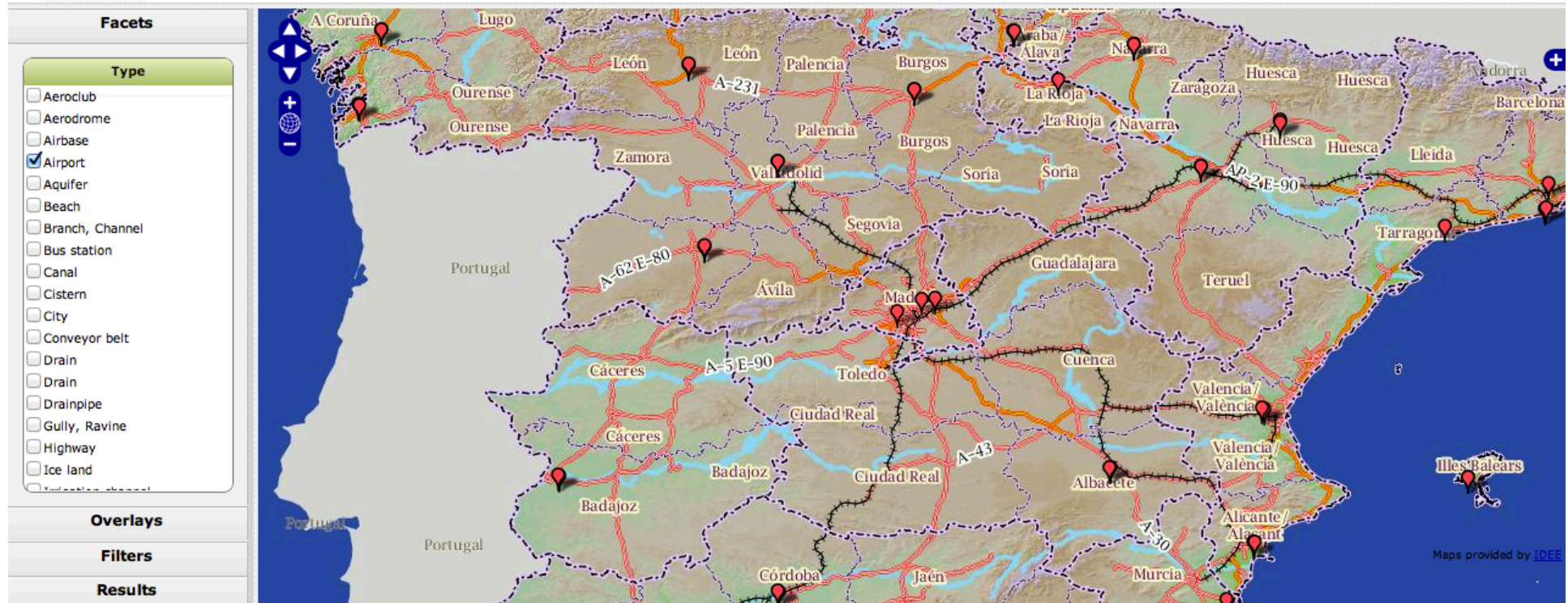
# Open Layers Map

The screenshot displays the OpenLayers Map interface. On the left, there is a search panel with the following sections:

- Facets**
- Type**
  - Aeroclub
  - Aerodrome
  - Airbase
  - Airport
  - Aquifer
  - Beach
  - Branch, Channel
  - Bus station
  - Canal
  - Cistern
  - City
  - Conveyor belt
  - Drain
  - Drain
  - Drainpipe
  - Gully, Ravine
  - Highway
  - Ice land
- Overlays**
- Filters**
- Results**

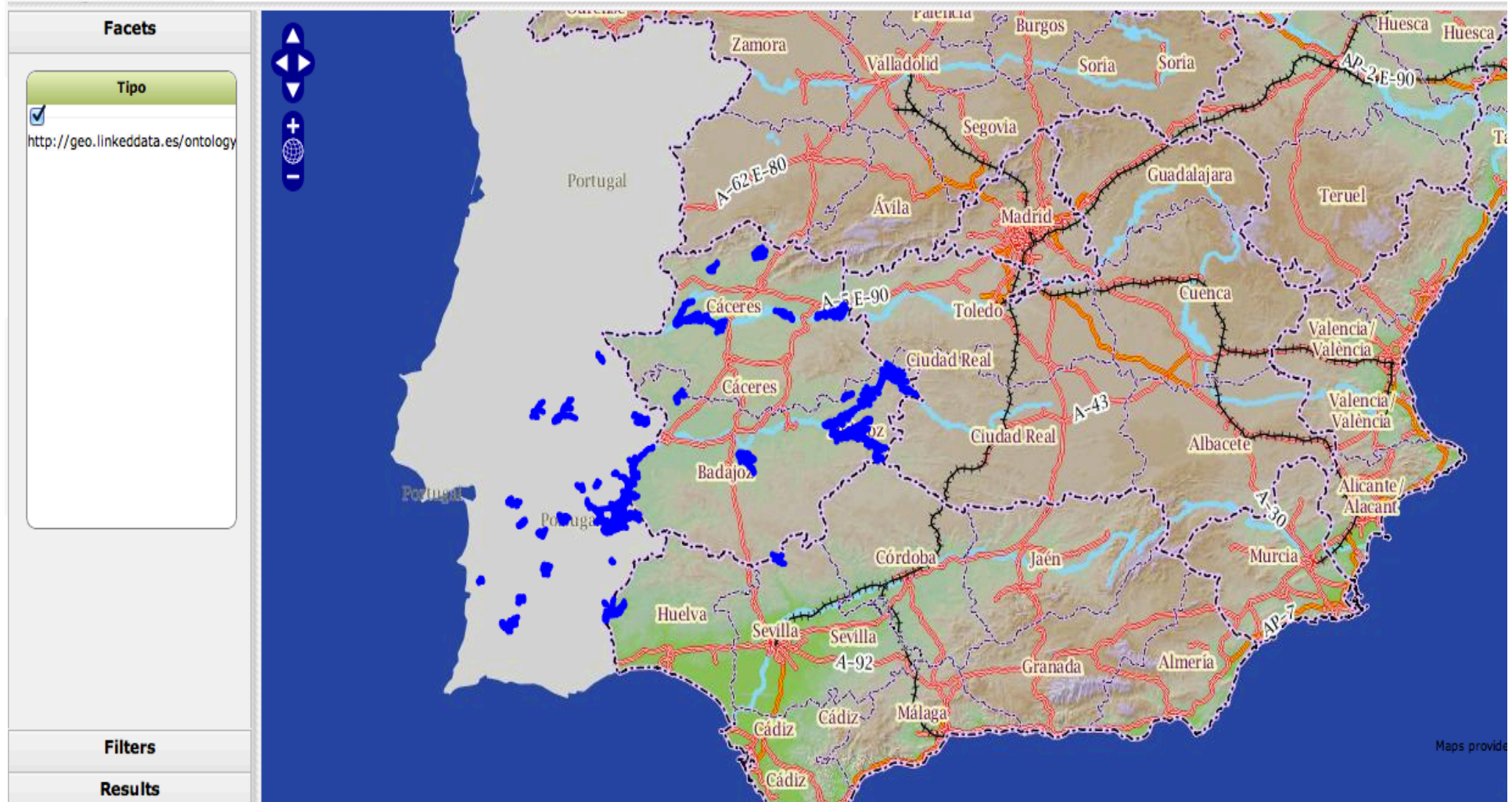
The map shows a geographical area covering parts of Portugal and Spain. Major cities labeled include Lisboa, Leiria, Coimbra, Porto, Vila Real, Madrid, Zaragoza, Valencia, and Andorra. The map features a network of roads, rivers, and topographic contours. Numerous red location pins are scattered across the map, indicating the locations of airports. A navigation toolbar is visible on the left side of the map, including a compass, a globe, and zoom controls.

- <http://www.ideo.es/csw-inspire-ideo/srv/en/main.home>
  - <http://www.ideo.es/csw-inspire-ideo/servicio>



- Also we can include any other WMS service

# Complex geometries



# Suggestions of Editions / Data curation

- For example, let us assume that the resource that represents the Murcia Airport has not the correct information.



Murcia/San Javier, Aeropuerto de ( <a href="http://geo.linkeddata.es/resource/Aeropuerto/Murcia/San Javier, Aeropuerto de">http://geo.linkeddata.es/resource/Aeropuerto/Murcia/San Javier, Aeropuerto de</a> )	
<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://geo.linkeddata.es/ontology/Aeropuerto">http://geo.linkeddata.es/ontology/Aeropuerto</a>
<a href="http://www.w3.org/2000/01/rdf-schema#label">http://www.w3.org/2000/01/rdf-schema#label</a>	Murcia/San Javier, Aeropuerto de@es
<a href="http://www.w3.org/2003/01/geo/wgs84_pos#geometry">http://www.w3.org/2003/01/geo/wgs84_pos#geometry</a>	<a href="http://geo.linkeddata.es/resource/wgs84/37.766666666666666">http://geo.linkeddata.es/resource/wgs84/37.766666666666666</a>
<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://www.w3.org/2003/01/geo/wgs84_pos#Point">http://www.w3.org/2003/01/geo/wgs84_pos#Point</a>
<a href="http://www.w3.org/2003/01/geo/wgs84_pos#lat">http://www.w3.org/2003/01/geo/wgs84_pos#lat</a>	37.7666666666667^ <a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a>
<a href="http://www.w3.org/2003/01/geo/wgs84_pos#long">http://www.w3.org/2003/01/geo/wgs84_pos#long</a>	-0.8^ <a href="http://www.w3.org/2001/XMLSchema#double">http://www.w3.org/2001/XMLSchema#double</a>

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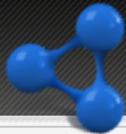


- An open initiative whose aim is to enrich the Web of Data with Spanish geospatial data
- It started off by publishing diverse information sources, such as National Geographic Institute of Spain (IGN) and Statistical Institute of Spain (INE).



- <http://geo.linkeddata.es/>

# Provinces



GEOLINKEDDATA<sup>ES</sup> 1.0  
by Ontology Engineering Group



**Facets**

**Type**

- Playa
- Ponor
- Poza
- Pozo
- Provincia

**Capas**

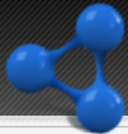
**Resultados**

Map data ©2010 Tele Atlas

© 2010 [Ontology Engineering Group](#)



# Integrate data coming from the Statistical Institute



GEOLINKEDDATA<sup>ES</sup> 1.0  
by Ontology Engineering Group

Beta

Facets

Capas

Estadísticas

Estadísticas:

- Índice de Producción Industrial
- Índice de Desempleo

Resultados

POWERED BY Google

100 mi  
200 km

Terrain

Map data ©2010 Tele Atlas

© 2010 [Ontology Engineering Group](#)



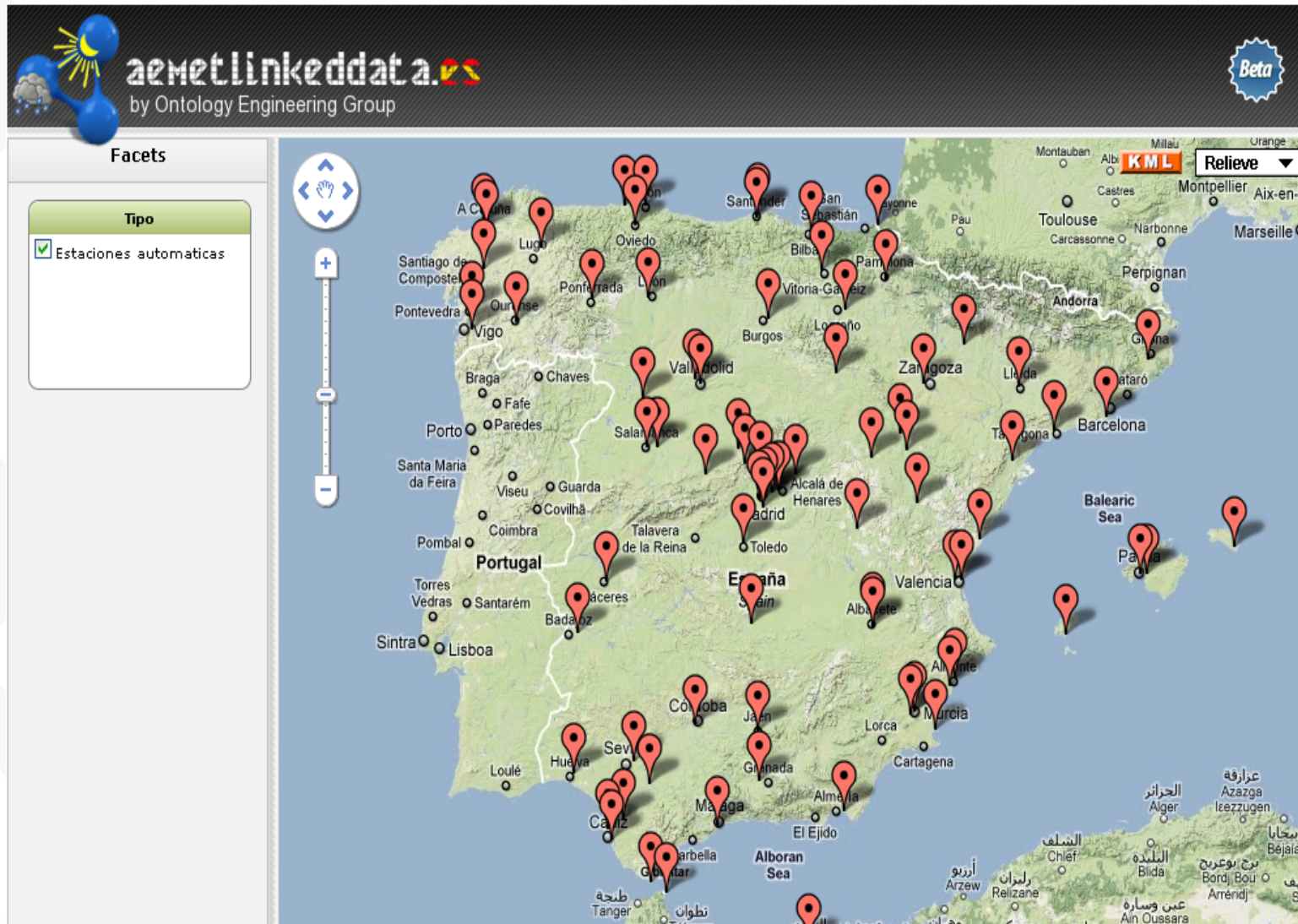
## Meteorological Linked Data - AEMET

- AEMET, Spanish Meteorological Office, data
- Meteorological data registered by its weather stations, radars, lightning detectors and ozone soundings.



- <http://aemet.linkeddata.es/>

# Weather stations

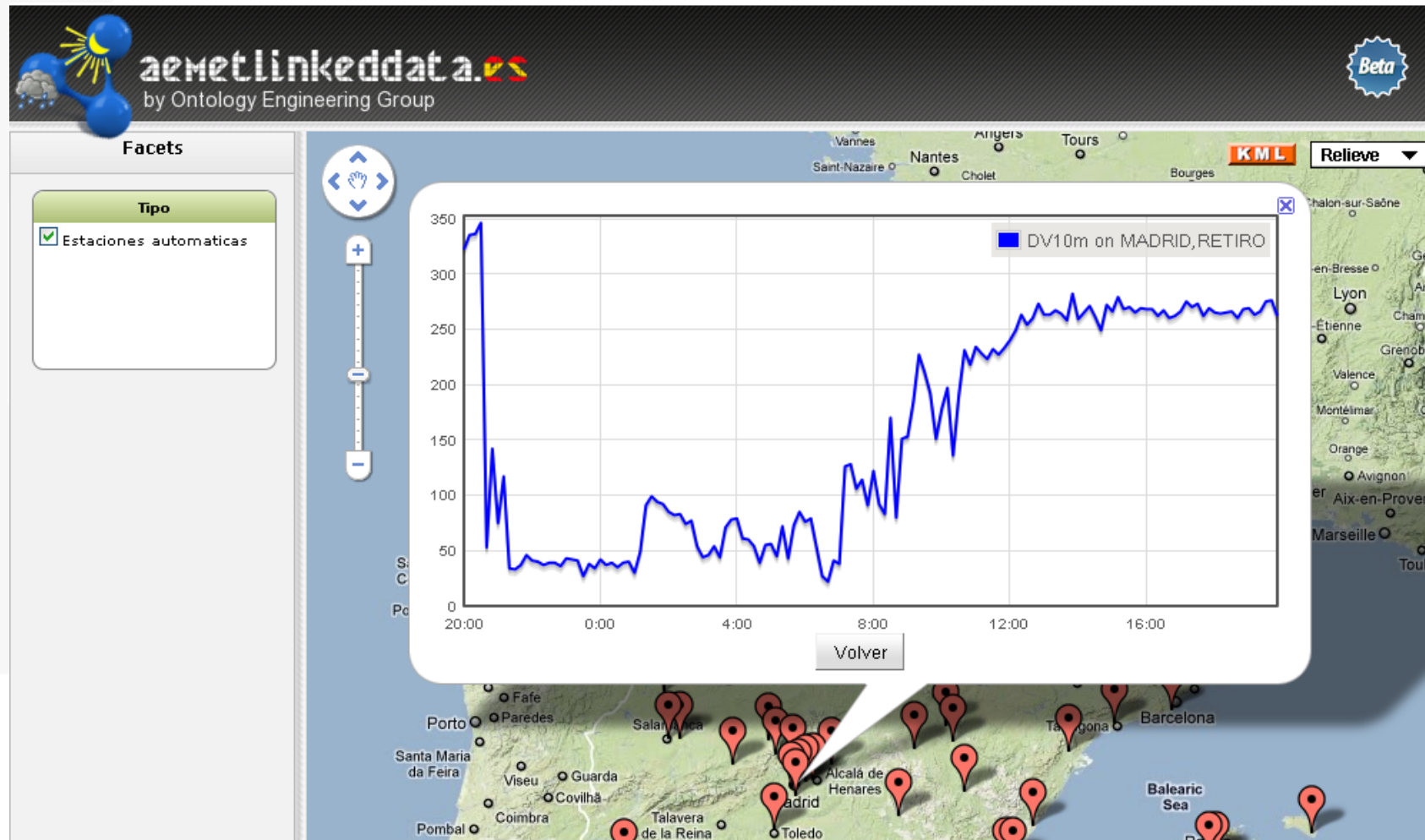


# Observations for each station

The screenshot displays the 'aemetlinkedata.es' web application interface. The header includes the logo and 'by Ontology Engineering Group' on the left, and a 'Beta' badge on the right. A 'Facets' sidebar on the left shows a filter for 'Estaciones automaticas'. The main area features a map of Spain with numerous red location pins. A white popup window is open over the Madrid area, displaying the following data for 'Estacion MADRID, RETIRO' at '21:40 26/5/2011':

- [Dir. media del viento:](#) 276 grados [dia](#) | [semana](#)
- [Recorrido del viento:](#) 13 Hm [dia](#) | [semana](#)
- [Vel. media del viento:](#) 2.2 m/s [dia](#) | [semana](#)
- [Dir. de la v. max. del viento:](#) 251 grados [dia](#) | [semana](#)
- [Temperatura del aire:](#) 18.5 grados C. [dia](#) | [semana](#)
- [Humedad relativa:](#) 75 % [dia](#) | [semana](#)
- [Temp. del pto. de rocío:](#) 13.9 grados C. [dia](#) | [semana](#)
- [Vel. max. del viento:](#) 4.7 m/s [dia](#) | [semana](#)
- [Precipitacion:](#) 0 litros/m2 [dia](#) | [semana](#)
- [Presion:](#) 938.4 hPa [dia](#) | [semana](#)
- [Pres. reducida al nivel del mar:](#) 1013.6 hPa [dia](#) | [semana](#)

# A particular observation



Specific visualizations for datasets based on SSN Ontology – ongoing work

<http://www.w3.org/2005/Incubator/ssn/ssnx/ssn>



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- map4rdf for exploring and visualizing RDF datasets.
- Easy to configure, use and extend
- It is also used in El Viajero, an application for exploiting, managing and organizing Linked Data in the domain of news and blogs about traveling  
[http://webenemasuno.linkeddata.es/index\\_en.html](http://webenemasuno.linkeddata.es/index_en.html)
- Future work
  - Improve facets visualization
  - Include more visualizations for specific vocabularies





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