

SPOI

SDI4Apps: Points of Interest



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Smart Points of Interest (SPOI)

- POI: a specific point location that someone may find useful or interesting
- SPOI domain: tourism and related spheres (transport, logistics, advertising...)
- Smart: Links to other data and information
- Open and seamless data set of POIs as a “data fuel” for development tourism applications and services

Why SPOI?

- Save your money
- Show off your business
- Inform on your region or town
- Develop applications and services
- Combine SPOI with your data
- ...

Essential attributes of SPOI

- Many heterogeneous input data
- Complicated data harmonization process
- Based on standards, semantic description and Linked data
- Seamless data (no borders)
- Published on map portal and SPARQL endpoint
- Open Database License (ODbL)

LOD 5-star rating system



* On the web

- Accessible through SPARQL endpoint
- Open Database Licence (OdbL)
 - Copyleft license
 - Share, modify, and use a data
 - No restrictions (except keeping the freedom for other users)
 - <http://opendatacommons.org/licenses/odbl/>

**** Machine readable data**

***** Non-proprietary format**

- Original data are transformed to RDF
- SPARQL endpoint – RDF, JSON, XML, CSV...
- Via scripts we are able to prepare XML-based geo-formats (KML, GML...)

**** RDF standard

- Identifier = URI
- Combination
 - ISO 3166-1 alpha-2 country code (two letters)
 - Acronym of category of POI according Waze navigation data (three letters)
 - Coordinates (long_lat)

```
<rdf:Description rdf:about="http://www.sdi4apps.eu/poi/ML_NAT_0.8712_14.9746">
```


**** RDF standard

```
<rdf:Description rdf:about="http://www.sdi4apps.eu/poi/SZ_NAT NAT_31.15_-27.05">
  <rdfs:label>Vondo Kop</rdfs:label>
  <geos:asWKT>POINT(31.15 -27.05)</geos:asWKT>
  <poi:category>Waze
  rdf:resource="http://www.openvoc.eu/waze_classification#Natural_features"/>
  <owl:sameAs rdf:resource="http://www.geonames.org/934823/about.rdf"/>
  <skos:exactMatch rdf:resource="http://www.geonames.org/934823/about.rdf"/>
  <geos:sfWithin rdf:resource="http://dbpedia.org/resource/Swaziland"/>
  <geos:sfWithin rdf:resource="http://www.geonames.org/934841/" />
  <dc:identifier rdf:resource="http://www.sdi4apps.eu/poi/SZ_NAT NAT_31.15_-
27.05"/>
  <dc:publisher>SP0I (http://sdi4apps.eu/spoi)</dc:publisher>
  <dc:title>Vondo Kop</dc:title>
  <dc:rights rdf:resource="http://opendatacommons.org/licenses/odbl/1.0/" />
  <dc:source rdf:resource="https://www.geonames.org"/>
  <dcterms:created
  rdf:datatype="http://www.w3.org/2001/XMLSchema#date">2015-11-
12</dcterms:created>
</rdf:Description>
```

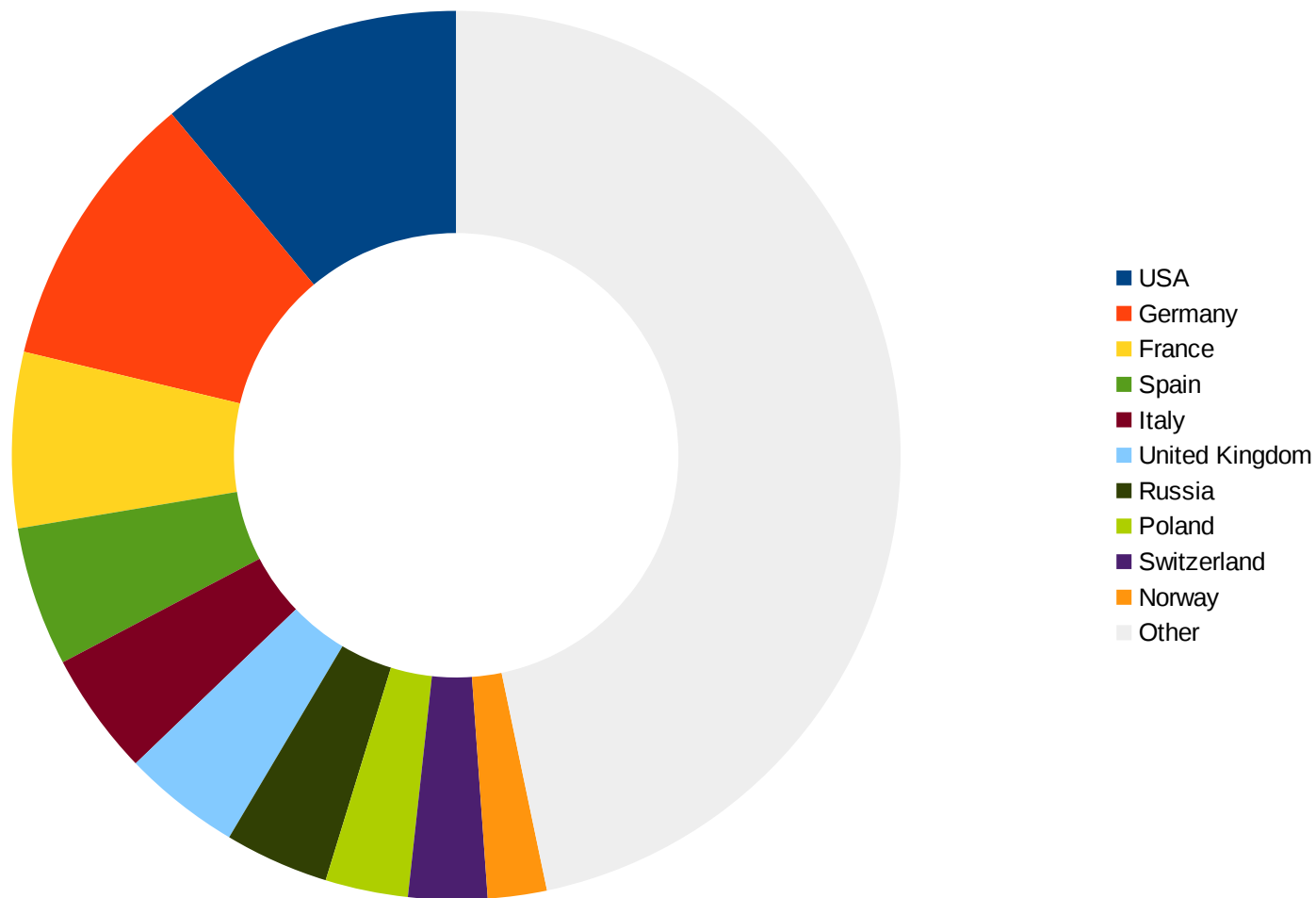
***** Linked RDF

- Classification – Waze RDF vocabulary
- Homepages (752 599), photos and pictures
- Same features
 - Web pages (Wikipedia, Wolfram|Alpha...)
 - Wikidata
 - Linked data resources (DBpedia, GeoNames.org)
- Topological relation (GeoSPARQL) – to countries (DBpedia, GeoNames.org)

24 178 570

POIs

Coverage – Top 10 countries



170 123 POIs = 0,71%

Classifications

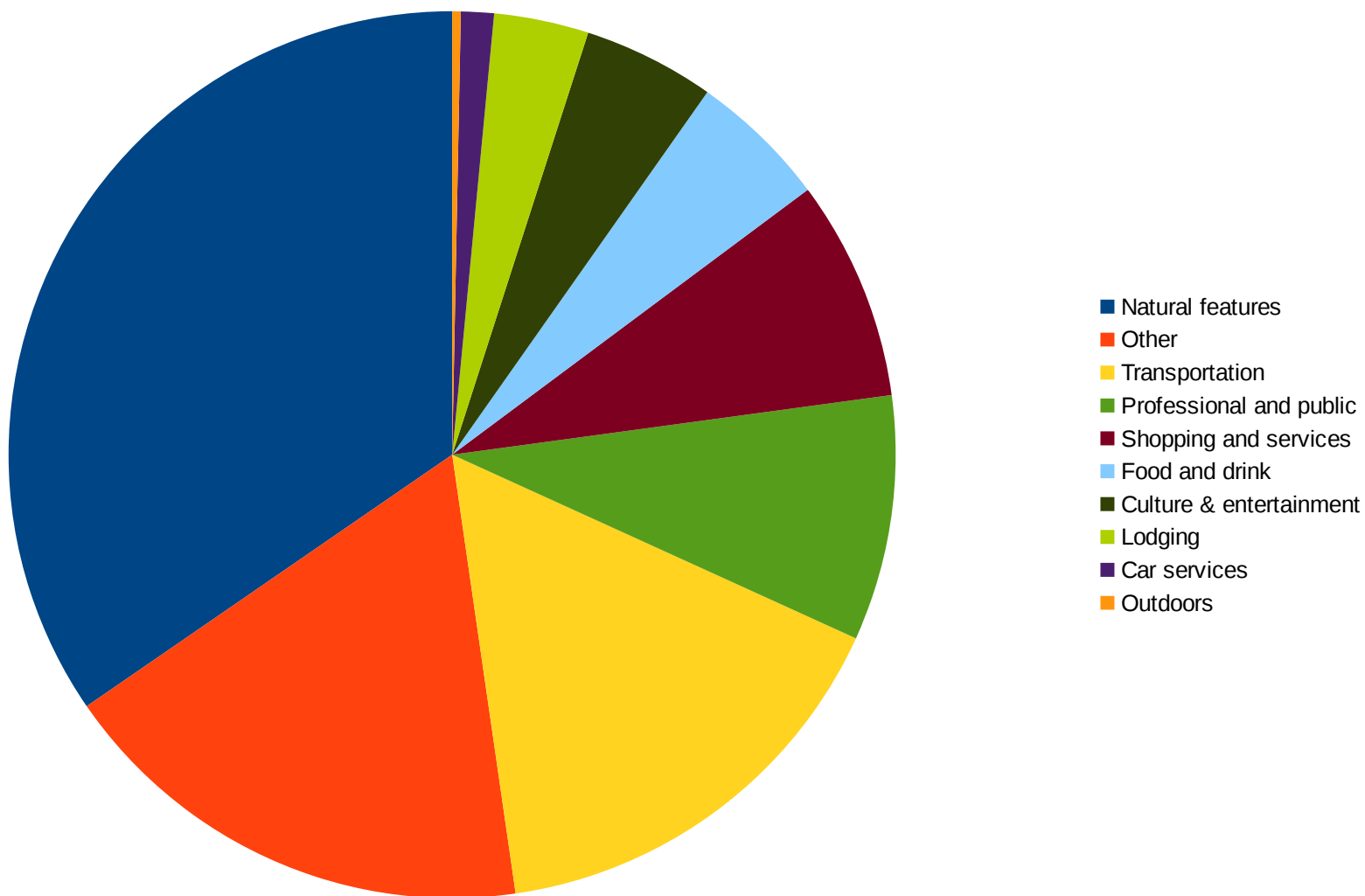
Waze

- Mandatory
- 10 categories
- RDF vocabulary

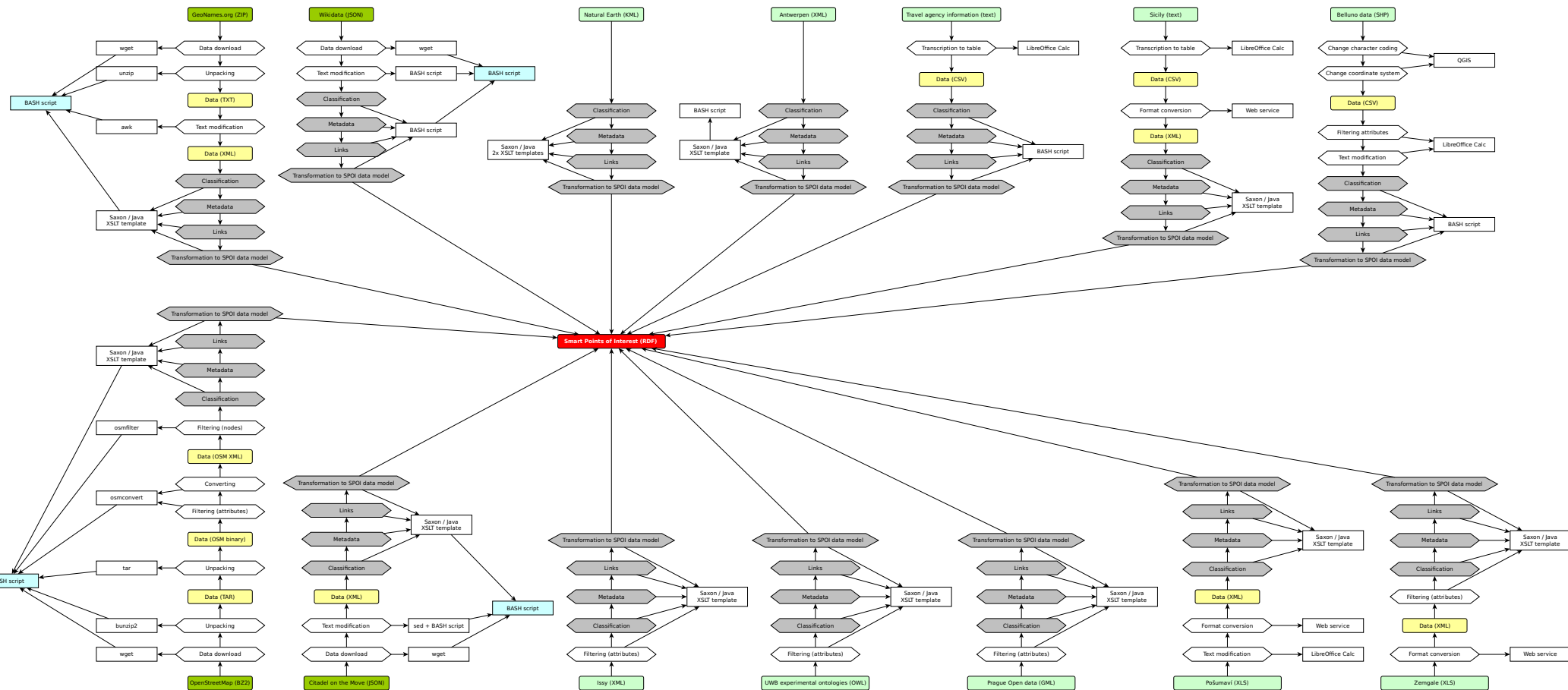
OpenStreetMap

- Optional (86%)
- Open (OSM Map Features)
- 2 levels
- String

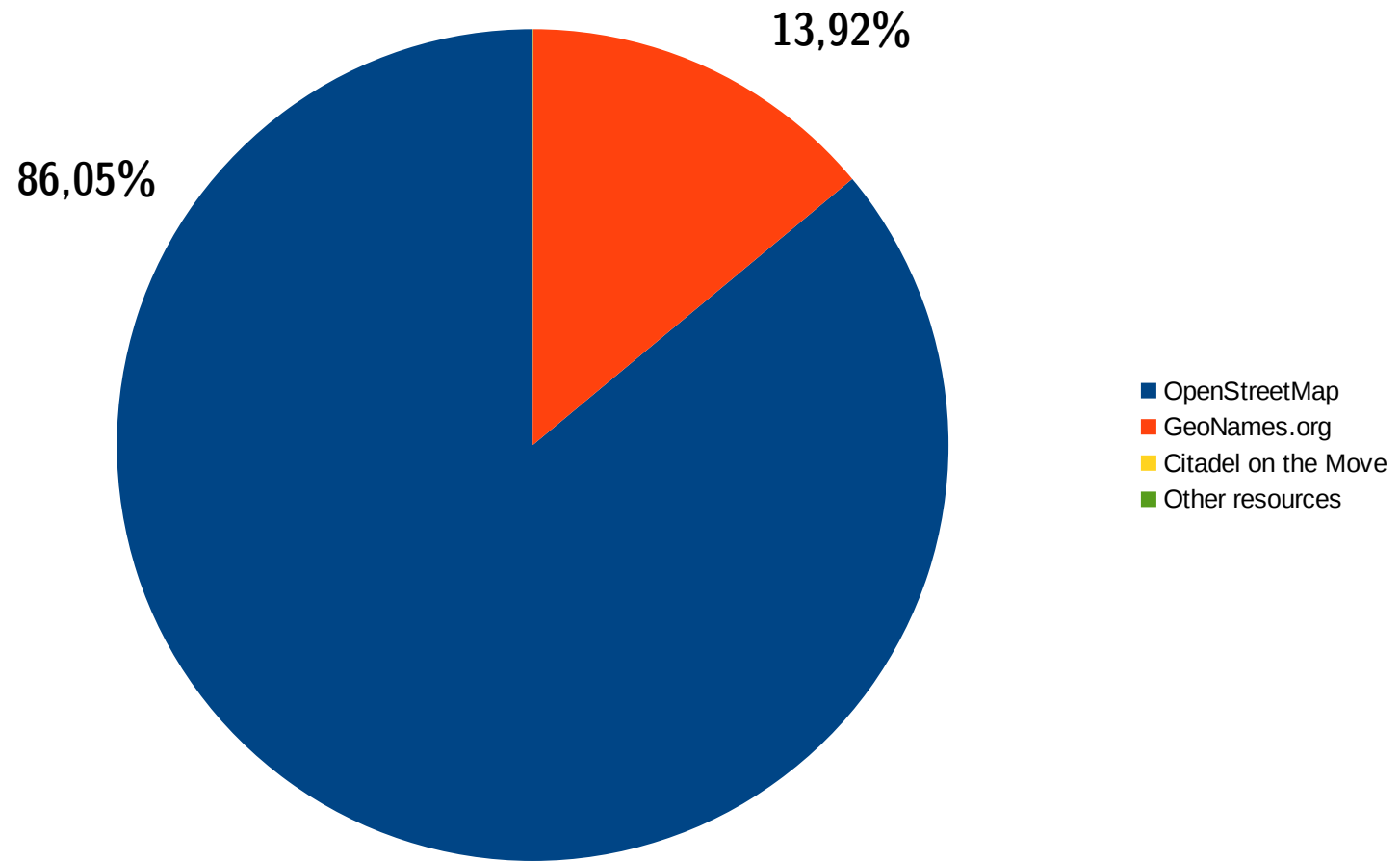
POI categories



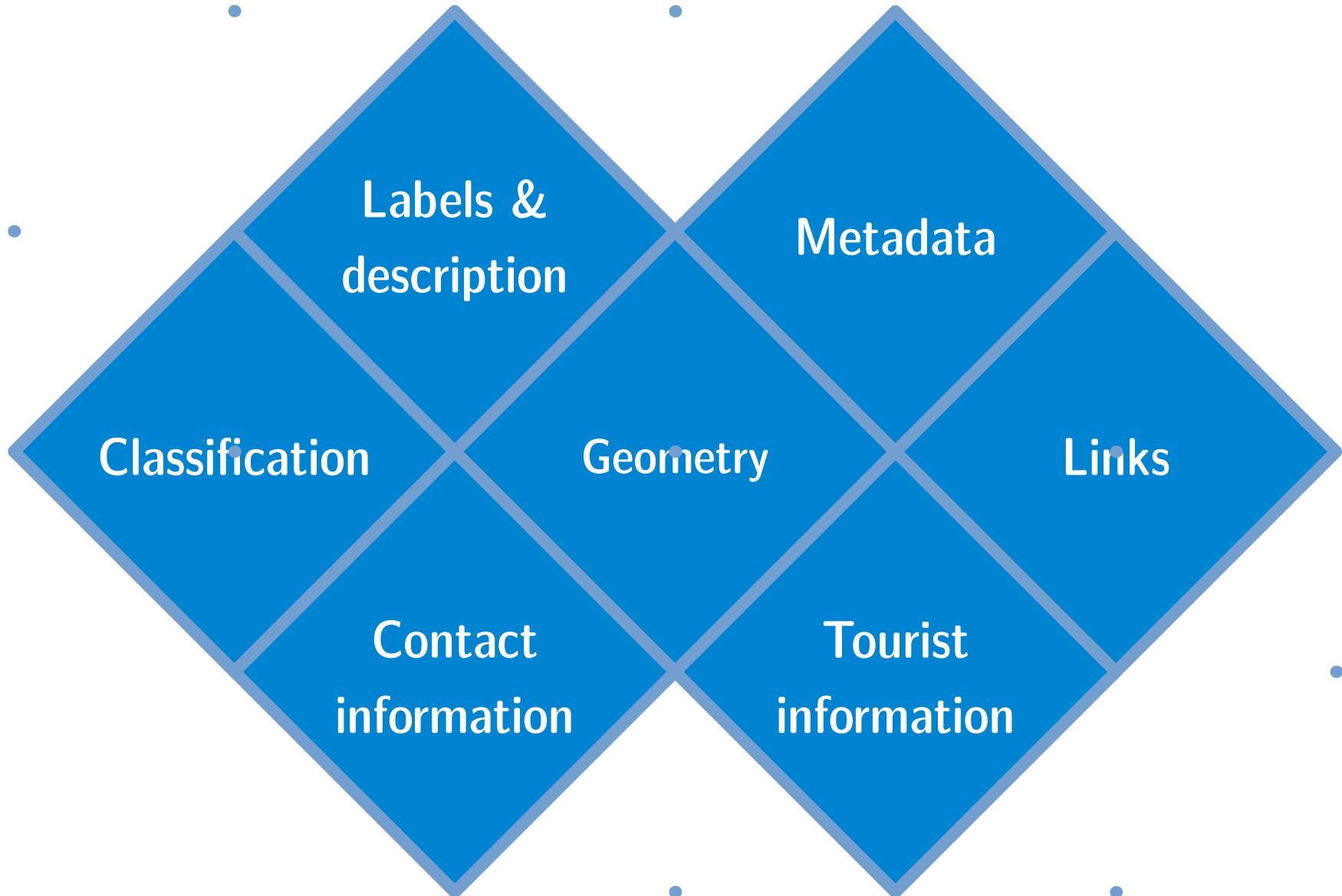
Data resources & harmonization

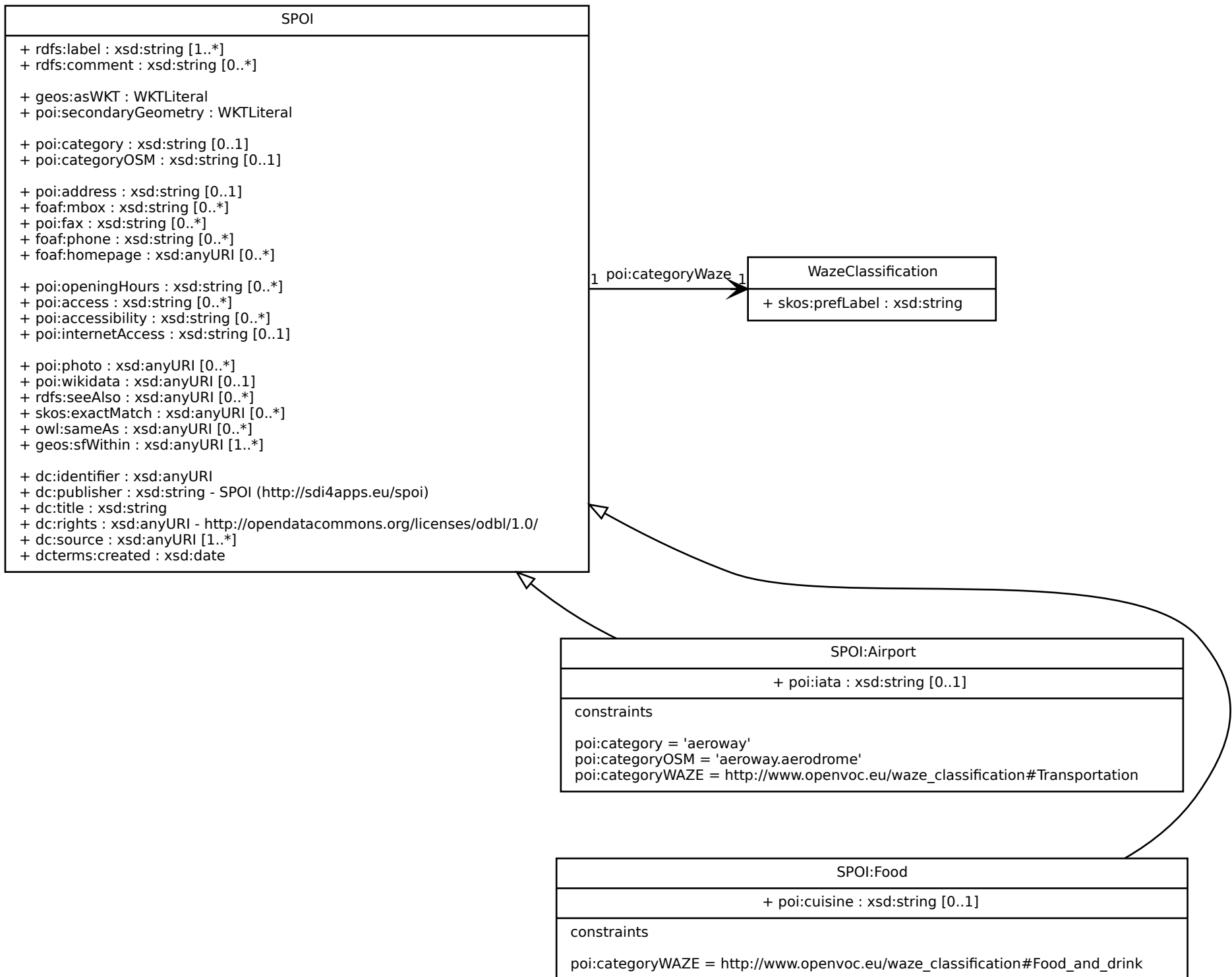


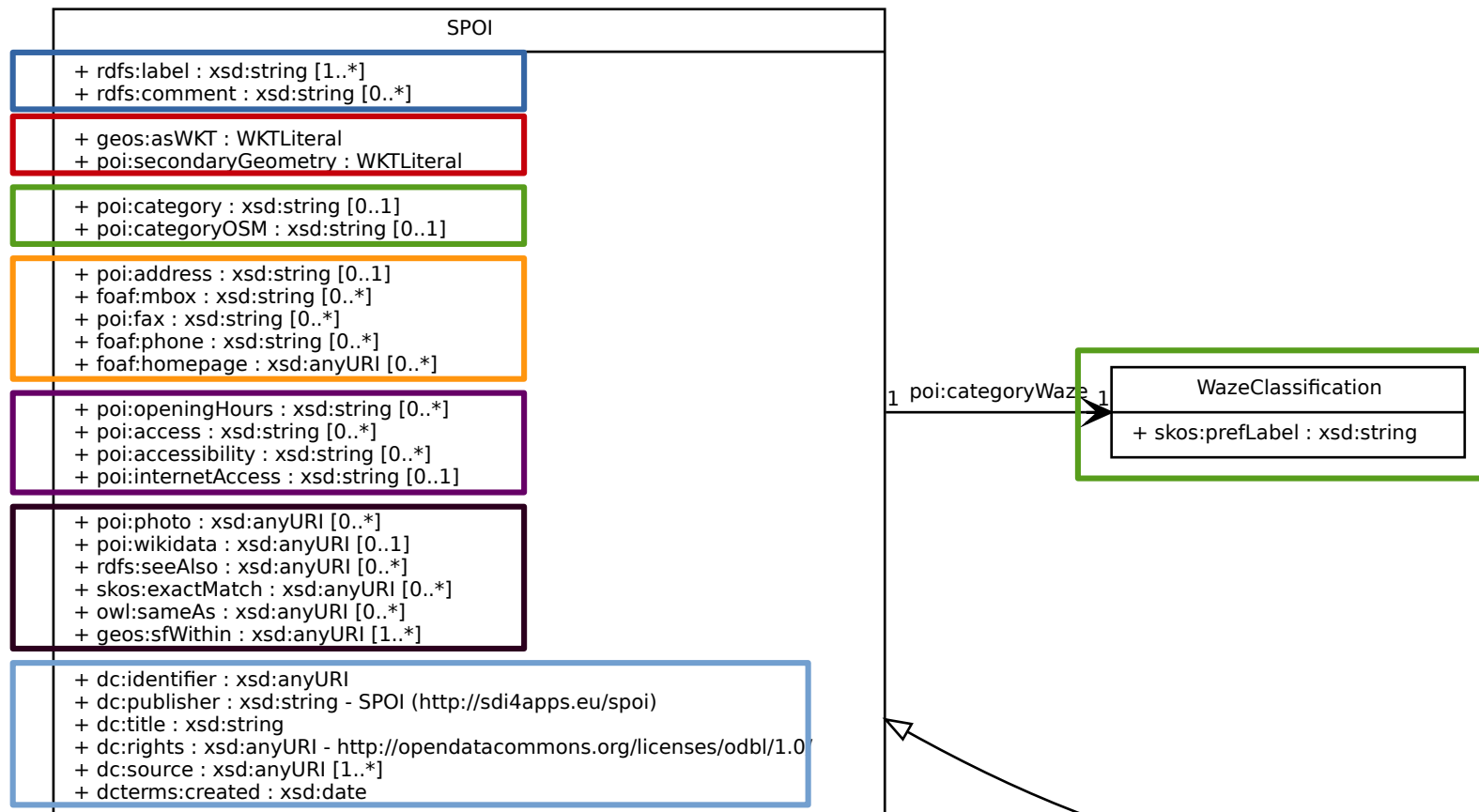
Data resources



Data model







Labels & descriptions

Geometry

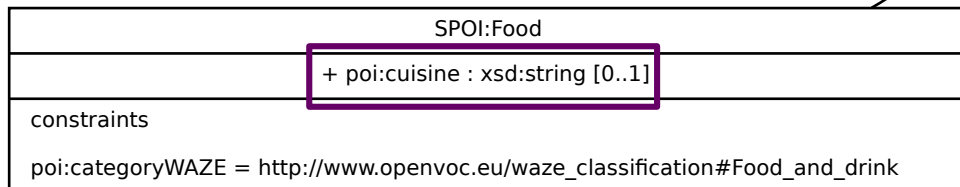
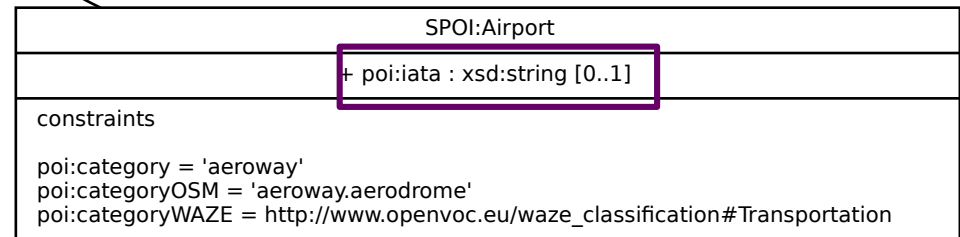
Classification

Contact information

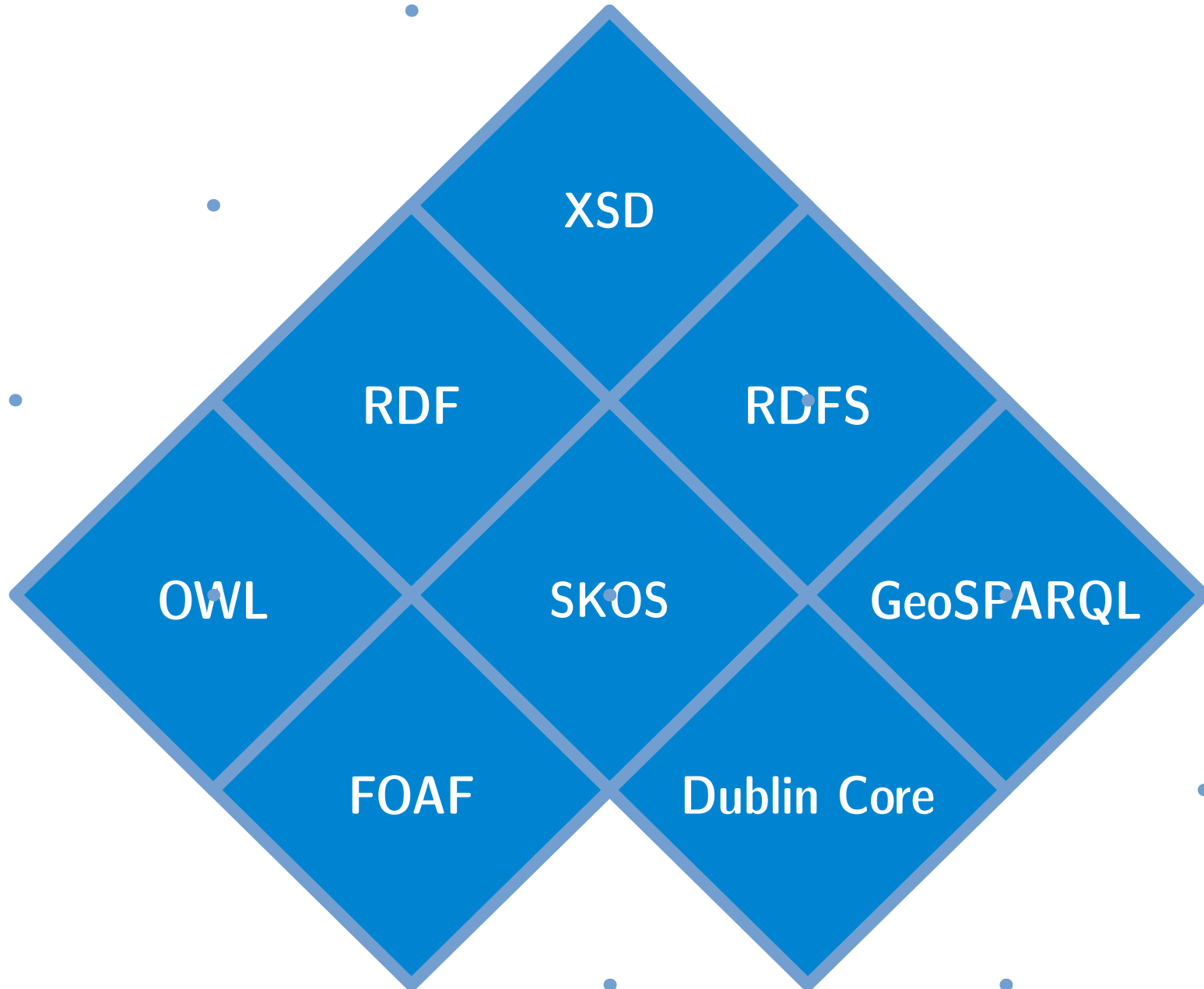
Tourist information

Links

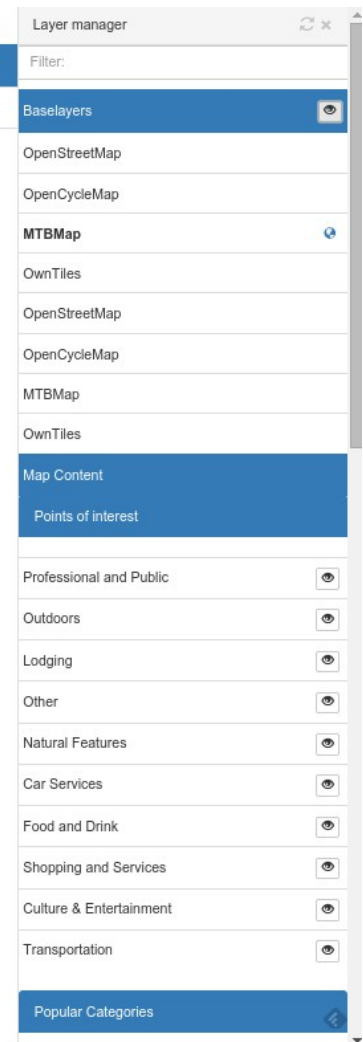
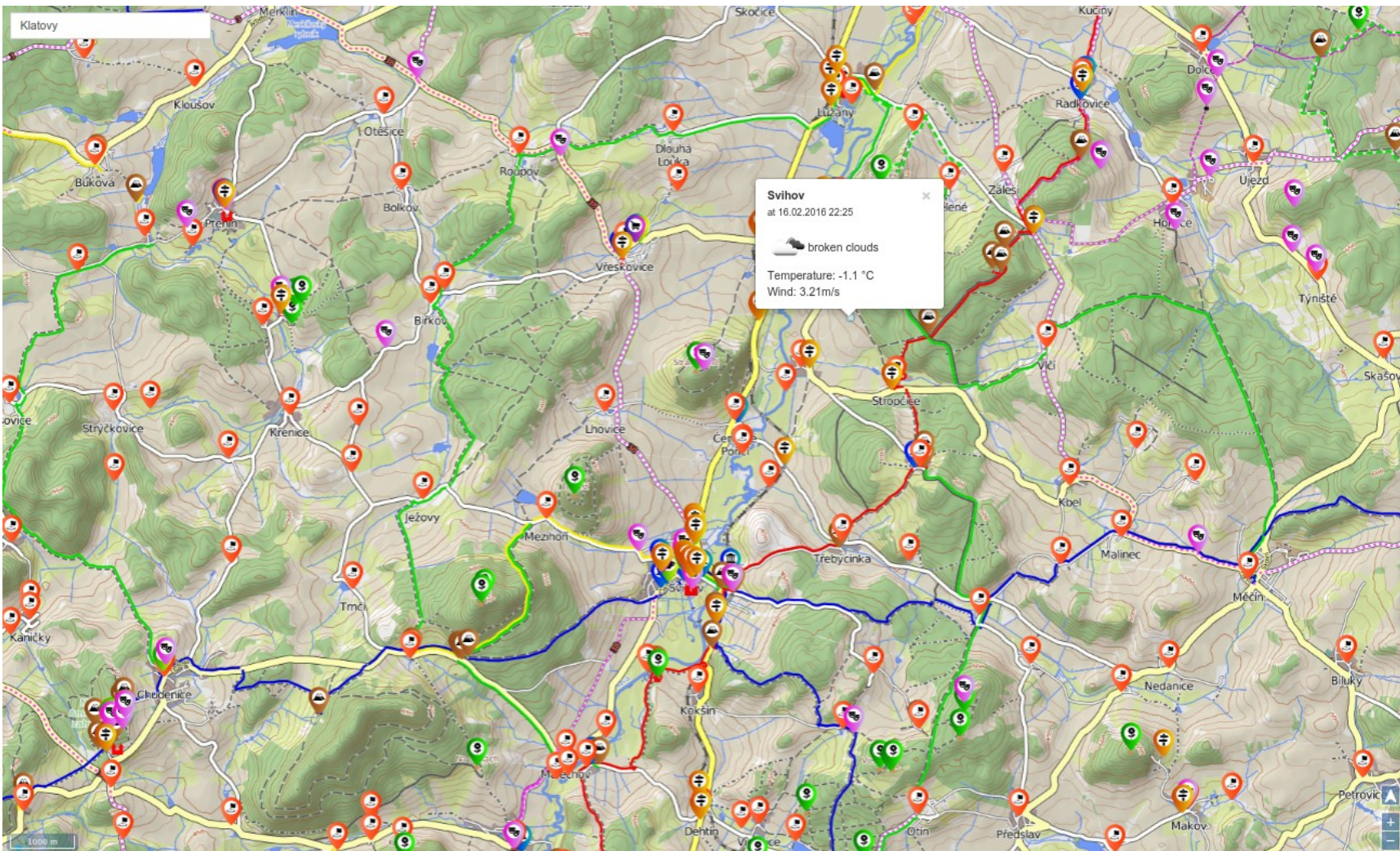
Metadata



Re-used vocabularies / formats



Map client



Map client



Information

Josef Dobrovský

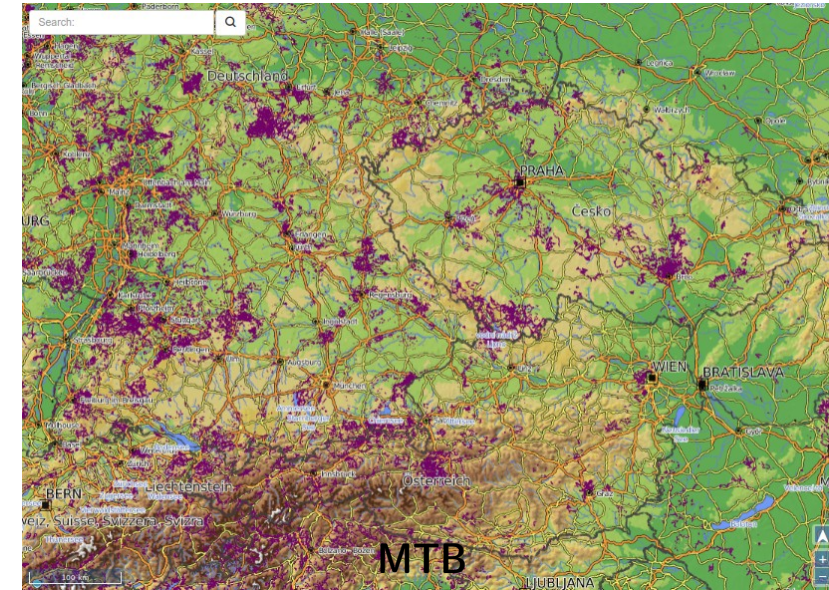
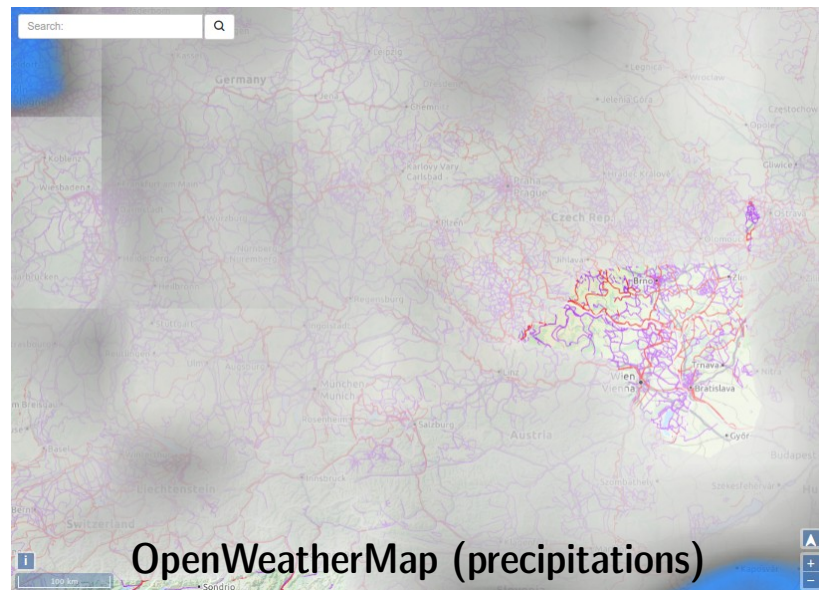
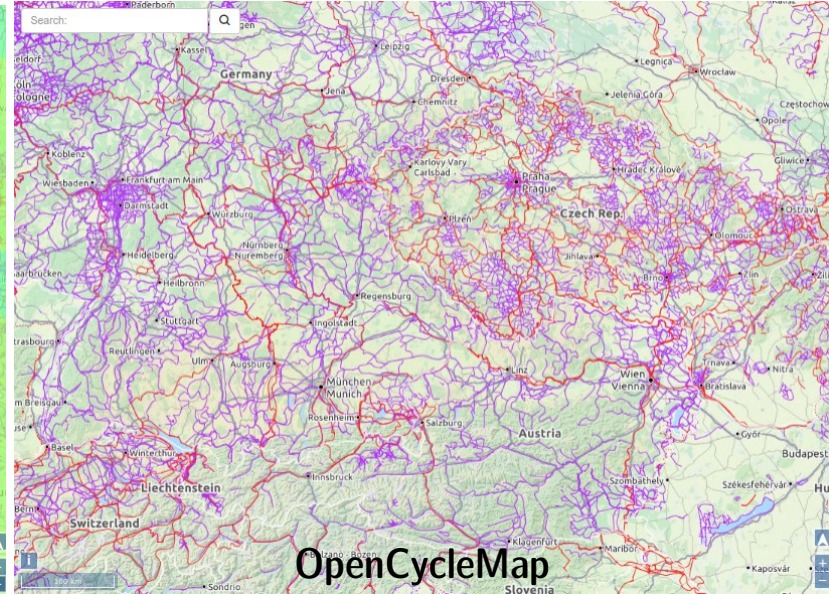
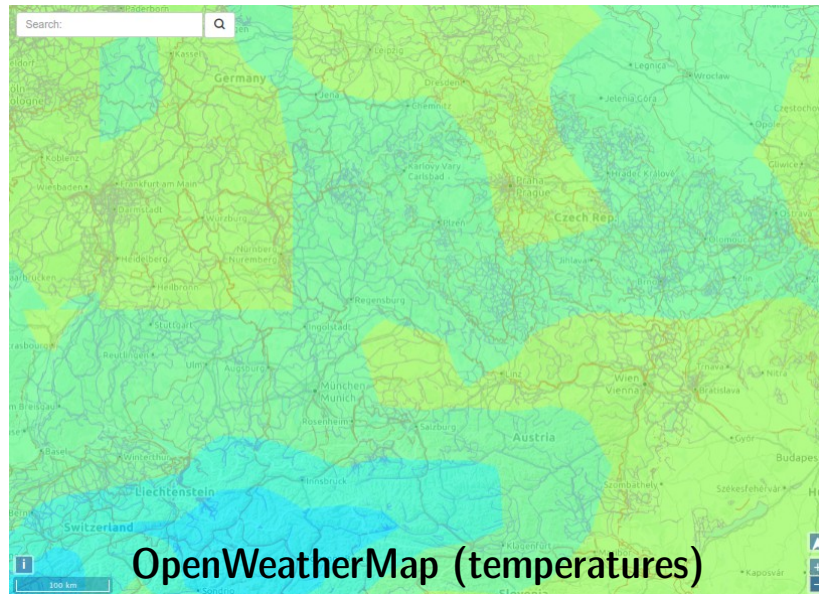
Category: Culture & Entertainment
Subcategory: Memorial
Country: Czech Republic
More info: DBpedia
Created: 2016-01-24
Coordinates: 49° 27' 47" N 13° 09' 55" E

For developers

EPSG:4326
49° 27' 47" N 13° 09' 55" E
EPSG:3857
1465536.6979402, 6353808.8669482

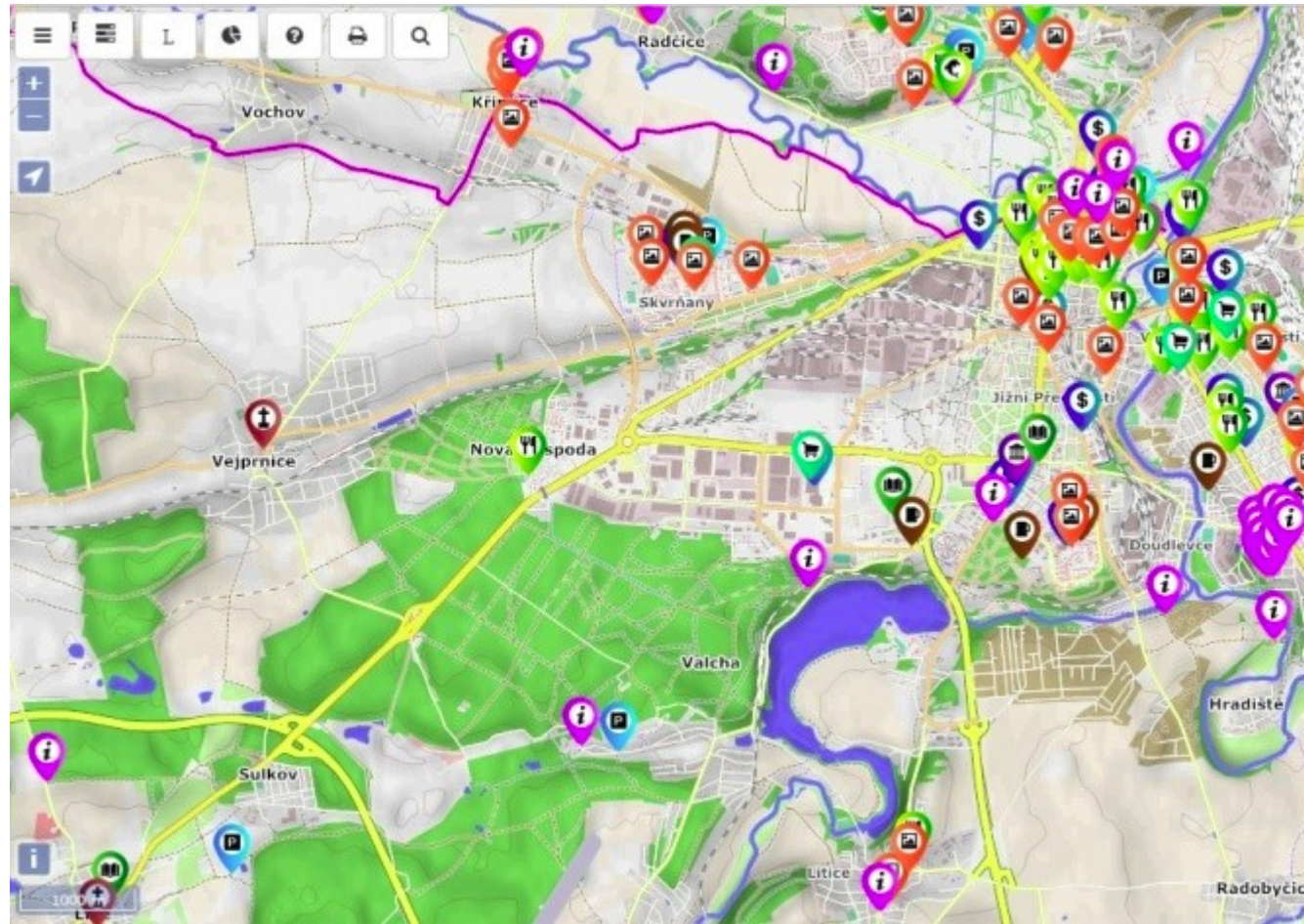
poi_id
http://www.sdi4apps.eu/poi/CZ_CAE_13.1655737_49
<http://www.w3.org/2000/01/rdf-schema#label>
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<http://www.w3.org/2002/07/owl#sameAs>
<http://linkeddata.org/triplify/node3310496814>
<http://www.openvoc.eu/poi#categoryOSM>
historic.memorial
<http://www.openpgis.net/ont/geosparql#s1Within>
<http://www.geonames.org/3077311>
<http://www.openvoc.eu/poi#category>
historic
<http://www.openvoc.eu/poi#categoryWaze>
http://www.openvoc.eu/waze_classification#Culture_1
<http://purl.org/dc/elements/1.1/identifier>
http://www.sdi4apps.eu/poi/CZ_CAE_13.1655737_49.46
<http://purl.org/dc/elements/1.1/publisher>
SPOI (<http://sdi4apps.eu/spoi>)
<http://purl.org/dc/elements/1.1/rights>
<http://opendatacommons.org/licenses/odbl/1.0/>
<http://purl.org/dc/elements/1.1/source>
<https://www.openstreetmap.org>
<http://purl.org/dc/elements/1.1/title>
Josef Dobrovský
<http://purl.org/dc/terms/1.1/created>
2016-01-24
<http://www.w3.org/2004/02/skos/core#exactMatch>
<http://linkeddata.org/triplify/node3310496814>

Map client – layers



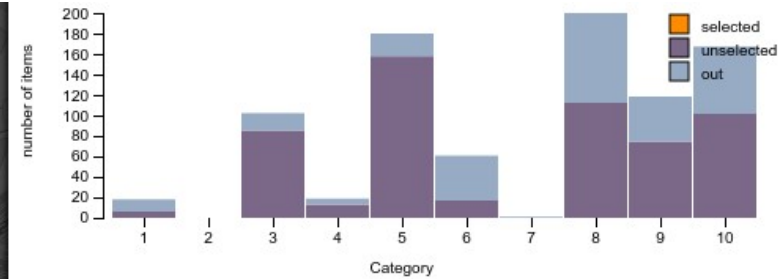
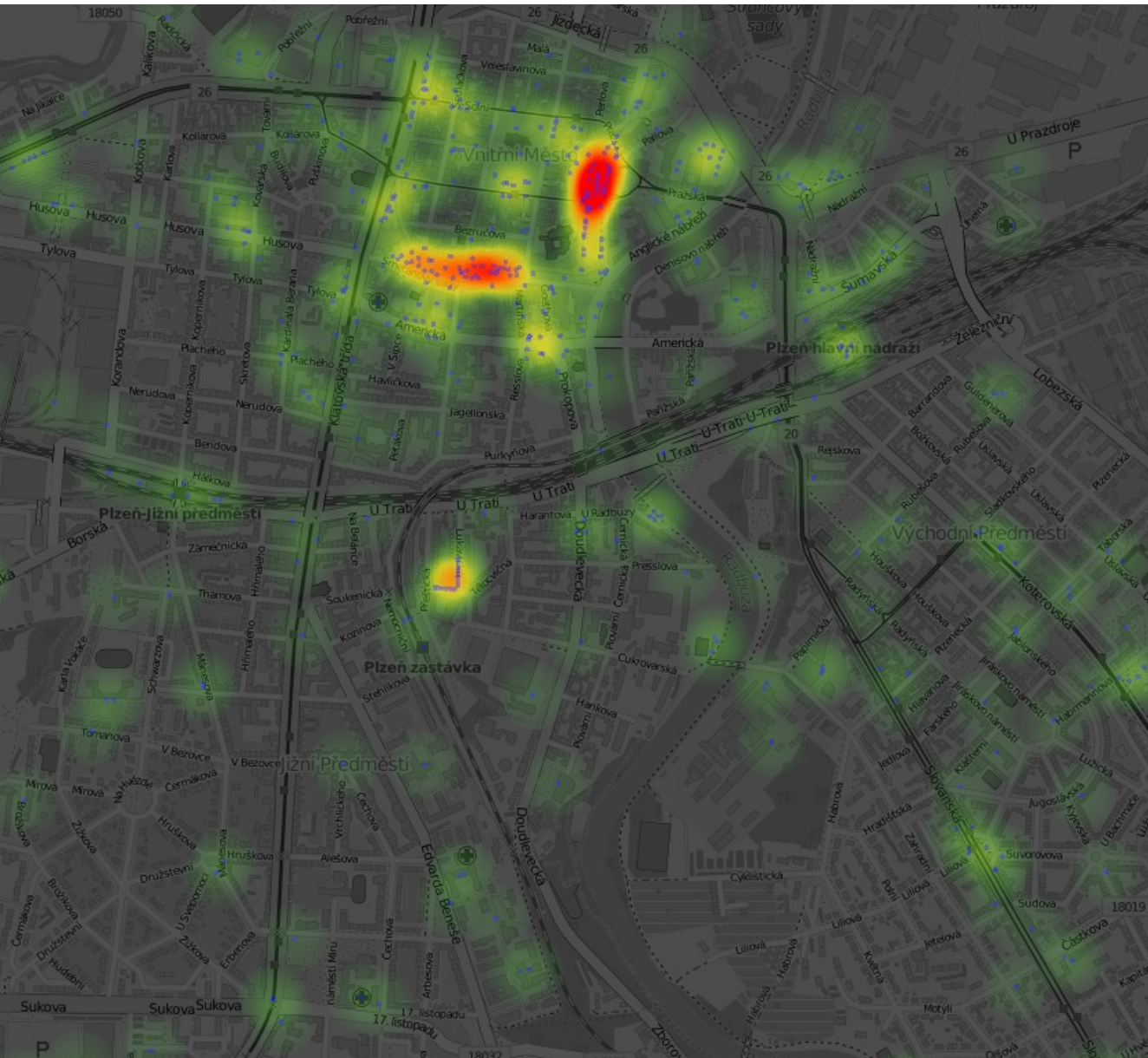
Map client – Technologies

- HS layers
- Specific tiles for cycling and biking
- OpenCycleMap, MTB map, OSM...
- Panoramio, OpenWeatherMap



<http://ng.hsayers.org/examples/geosparql/>

Advanced visualization



- 1 - Car Services
- 2 - Culture & Entertainment
- 3 - Food and Drink
- 4 - Lodging
- 5 - Natural Features
- 6 - Other
- 7 - Outdoors
- 8 - Professional and Public
- 9 - Shopping and Services
- 10 - Transportation

Radius:

SPARQL endpoint

Virtuoso SPARQL Query Editor

Default Data Set Name (Graph IRI)

Query Text

```
select distinct ?Concept where {[] a ?Concept} LIMIT 100
```

(Security restrictions of this server do not allow you to retrieve remote RDF data, see [details](#).)

Results Format:

HTML ▼

Execution timeout:

0

milliseconds (values less than 1000 are ignored)

Options:



Strict checking of void variables

(The result can only be sent back to browser, not saved on the server, see [details](#))

Run Query

Reset

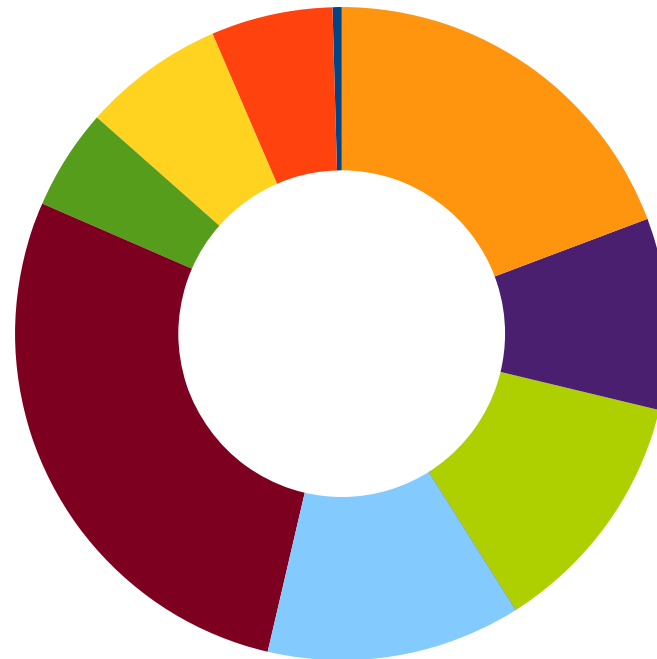
<http://ng.hslayers.org:8890/sparql>

SPARQL query

```
SELECT ?categ (COUNT(?o) as ?oCount)
WHERE {?o <http://www.openvoc.eu/poi#categoryWaze> ?categ.}
GROUP BY ?categ
ORDER BY ?categ
```



categ	oCount
http://www.openvoc.eu/waze_classification#Car_services	37289
http://www.openvoc.eu/waze_classification#Culture_&_entertainment	497791
http://www.openvoc.eu/waze_classification#Food_and_drink	578861
http://www.openvoc.eu/waze_classification#Lodging	411714
http://www.openvoc.eu/waze_classification#Natural_features	2302460
http://www.openvoc.eu/waze_classification#Other	1039602
http://www.openvoc.eu/waze_classification#Outdoors	1719
http://www.openvoc.eu/waze_classification#Professional_and_public	1014299
http://www.openvoc.eu/waze_classification#Shopping_and_services	782140
http://www.openvoc.eu/waze_classification#Transportation	1592835



- Car services
- Culture and entertainment
- Food and drink
- Lodging
- Natural features
- Other
- Outdoors
- Professional and public
- Shopping and services
- Transportation

Přes 23 000 000 turistických zájmových bodů

Otevřená a bezesová datová sada, založená na principech Linked Data. Obsahuje přes 23 000 000 zájmových bodů využitelných zejména pro turistiku.

sdi4apps.eu/spoi
gis.zcu.cz/spoi

Vizualizace



Search:

OpenCycleMap

MTBMap

OwnTiles

Points of interest

- Car Services ☐
- Transportation ☒
- Professional and Public ☐
- Shopping and Services ☒
- Food and Drink ☒
- Culture & Entertainment ☒

Future

- Data model & metadata
- New data & new data resources
- Massive linking
- Optimization of download and harmonization
- Errors & duplicities
- Better map client (visual hierarchy, clustering...)
- Optimization of server solution
- Apps development (context-based, analysis, routing, itineraries...)
- Business solution (advertising)

Benefits

- Common data model
- Re-using existing standards
- Linked data
- SPARQL endpoint



SPOI Promotion

- July 2015: 27th International Cartographic Conference, Rio de Janeiro, Brazil
- September 2015: 19th International Conference on Information Systems for Agriculture and Forestry, Dresden, Germany
- October 2015: International Semantic Web Conference, Bethlehem PA, USA
- November 2015: 1st ICA European Symposium on Cartography, Vienna, Austria
- November 2015: Where Camp, Berlin, Germany
- January and February 2016: Road show, Praha and Klatovy, Czechia
- February 2016: Joint Research Centre, Ispra, Italy
- April 2016: EGU 2016, Vienna, Austria
- May 2016: Geoinformace ve veřejné správě 2016, Praha, Czechia

SPOI main contributors

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- Czech Centre for Science and Society: Karel Charvát
- Baltic Open Solutions Centre: Raitis Bērziņš, Přemysl Vohnout

SPOI expert consultants

- Phil Archer (W3C)
- Runar Bergheim (AVINET)
- Karel Jedlička (UWB Plzeň)
- Štěpán Kafka (HSRS)

We are waiting for



Your data



Feedback



**Your ideas
& support**

SDI4Apps



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Sports“