The Pros and Cons of Using Linked Data as a means to Support Open Geospatial Data

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• Ordnance Survey Ireland (OSi) is Ireland’s authoritative source for Geospatial information.

• OSi and the ADAPT Centre developed a **Linked Data platform** available at [data.geohive.ie](http://data.geohive.ie)

• Currently published on the platform is the national boundary dataset – more to come in the future
Conceptual Architecture of the LD Platform

Proxy Server

Application or Web Browser

Linked Data Frontend

Data Dumps

Ontologies

SPARQL EndPoint

TripleStore

R2RML Mappings

R2RML Processor

CSV data

Web Browser

Triple Pattern Fragments Web Client

Triple Pattern Fragments Server
Tools of Interest from the LD Platform

• **R2RML Implementation**: Tool developed within ADAPT for converting *Tabular Data* to *RDF*

• **Parliament Triple Store**: RDF database which supports GeoSPARQL – perform functions on geometries


• **Triple-Pattern Fragment**: Reduces *server* side query processing load by having the *client* do it.
data.geohive.ie
Serving Ireland’s geospatial information as Linked Data.

About the Initiative
The goal of Ordnance Survey Ireland’s (OSI) initiative with ADAPT is to develop a platform to publish OSI’s geospatial data as Linked Data on the Web while adhering to best practices in the domain of geospatial information. The publication of Linked Data enables third parties to explore and consume rich data in a meaningful manner via a combination of simple, standardized technologies (e.g., RDF and URI) that operate over the Web’s existing HTTP infrastructure.

Download and Query
Ordnance Survey Ireland’s geospatial data is available both via Triple Pattern Fragments Server and web client, a Linked Data frontend (e.g., by following the HTTP URI of County Dublin) and as downloadable datasets for local use.

Contact and Legal
Contact us:
- Corporate
- GeoHive

Or send us an email via geohive@osi.ie.

Legal:
- Corporate
- Privacy
- The data served by the OSI via the Linked Data frontend, query endpoints and files is licensed under CC BY 4.0.

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Query to list "things" and their labels

```
SELECT DISTINCT ?subject ?label
WHERE {
  ?subject dctitle ?label
}
UNION
{
  ?subject rdfs:label ?label
}
LIMIT 100
```

...or pick an example query: List things and their labels

Query results:

### Description of County Dublin linking to its three representations

#### Property
- `geo:defaultGeometry`
  - [1 geometrical representation]
- `geo:hasGeometry`
  - [3 geometrical representations]
- `rdfs:label`
  - Éirí Amháin (en)
  - DUBLIN (en)
  - DUBLIN
- `simi:source`
  - <http://dopedia.org/resource/County_Dublin>
- `rdfs:comment`
  - geo:Feature

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Default generalization with OSi’s base map.

Different representations
# Download the Data

OSI "boundary" database contains geometrical representations of the boundaries of the administrative units (e.g., county, city, and rural area) of the Republic of Ireland. These are generalised up to 20, 50 and 100 meters. The following table allows boundary data to be downloaded in the RDF Turtle format.

<table>
<thead>
<tr>
<th>Administrative Unit</th>
<th>Boundary Generalisation (in meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Barony</td>
<td>Barony 20m</td>
</tr>
<tr>
<td>Census 2011 Cities and Legal Towns</td>
<td>Cen 11 Cities and Legal Towns 20m</td>
</tr>
<tr>
<td>Census 2011 Electoral Divisions</td>
<td>Cen 11 Electoral Divisions 20m</td>
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<tr>
<td>Census 2011 Electoral Divisions Links</td>
<td>Cen 11 Electoral Divisions Links</td>
</tr>
<tr>
<td>Census 2011 Settlements</td>
<td>Cen 11 Settlements 20m</td>
</tr>
<tr>
<td>Census 2011 Small Areas Conoral</td>
<td>Cen 11 Small Areas Conoral 20m</td>
</tr>
<tr>
<td>City and County Council</td>
<td>City and County Council 20m</td>
</tr>
<tr>
<td>City Council</td>
<td>City Council 20m</td>
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<tr>
<td>County</td>
<td>County 20m</td>
</tr>
<tr>
<td>County Council</td>
<td>County Council 20m</td>
</tr>
<tr>
<td>Electoral Division</td>
<td>Electoral Divisions 20m</td>
</tr>
<tr>
<td>Local Electoral Area</td>
<td>Local Elec Area 20m</td>
</tr>
<tr>
<td>Municipal Districts</td>
<td>Municipal Districts 20m</td>
</tr>
<tr>
<td>Parish</td>
<td>Parish 20m</td>
</tr>
<tr>
<td>Rural Area</td>
<td>Rural Area 20m</td>
</tr>
<tr>
<td>Townland</td>
<td>Townland 20m</td>
</tr>
<tr>
<td>Totals</td>
<td>Totals 20m</td>
</tr>
</tbody>
</table>

- **Links to DBpedia**: Links to DBpedia
- **Full Dump**: Full Dataset (large file)

Datahub: https://datahub.io/dataset/geohive
Pros and Cons

• **Pros:**
  • Publish individual resources on the web
  • Human and machine friendly data
  • Link to external data sources for enrichment

• **Cons:**
  • RDF not widely adopted (yet)
  • Tools not very mature (typically from research projects)
  • Not all tools maintained (regularly)
Platform developed using Linked Data technology to publish open authoritative Irish geospatial data. Available at data.geohive.ie

Tool References:

- **R2RML Implementation:**
  https://opengogs.adaptcentre.ie/debruync/r2rml

- **Parliament Triple Store:**
  http://parliament.semwebcentral.org/

- **Pubby Frontend:**
  http://wifo5-03.informatik.uni-mannheim.de/pubby/

- **Triple-Pattern Fragment:**
  http://linkeddatafragments.org/

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