



Serving and consuming GML fragments with complex features

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LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Administration du cadastre
et de la topographie

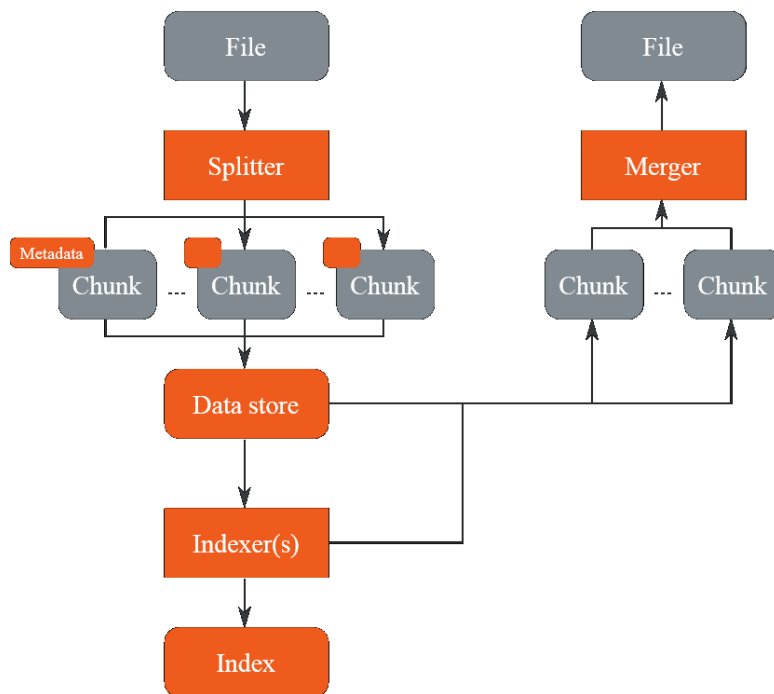




- Responsible for:
 - National cadastral plan
 - Differential GPS network
 - Aerial photos and maps
 - Open data portal: data.public.lu
 - Geoportal: geoportail.lu
 - INSPIRE: catalog.inspire.geoportail.lu
- ACT is responsible for the INSPIRE data harmonisation for the whole of Luxembourg (currently about **215** datasets from **22** government entities)



- **Direct access download service:**
 - ATOM/OpenSearch
 - implemented with GeoNetwork
 - generated based on dataset and service metadata (so always consistent)
- **Limitations**
 - Individual GML fragments cannot be served
 - Not queryable
 - Few client applications make use of ATOM/OpenSearch



- GeoRocket is a "*high-performance data store for geospatial vector data*".
- GeoRocket **splits** any XML or GeoJSON file up in chunks, **indexes** them using ElasticSearch, and is capable of responding to **(spatial) queries** by **merging** those chunks back together.
- <https://georocket.io/>

Why is GeoRocket relevant for INSPIRE?



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- Meet INSPIRE SLAs
- serve complex (nested) features
- Respond to queries

```
<wfs:member>
- <au:AdministrativeUnit gml:id="AU.0501_4thOrder">
  <gml:description>Administrative units of Grand Duchy of Luxembourg</gml:description>
  - <gml:identifier codeSpace="http://inspire.ec.europa.eu/ids">
    http://catalog.inspire.geoportail.lu/geonetwork/dataset/75FC505D-6DC0-4BAF-807D-7239F64F66
  </gml:identifier>
  <au:geometry>
  - <gml:MultiSurface gml:id="AU.0501_4thOrder-0" srsName="http://www.opengis.net/def/crs/EF
    - <gml:surfaceMember>
      - <gml:Surface gml:id="AU.0501_4thOrder-1">
        + <gml:patches></gml:patches>
      </gml:Surface>
    </gml:surfaceMember>
  </gml:MultiSurface>
  </au:geometry>
  <au:nationalCode>0501</au:nationalCode>
- <au:inspireId>
  - <base:Identifier>
    <base:localId>AU.0501_4thOrder</base:localId>
  - <base:namespace>
    http://catalog.inspire.geoportail.lu/geonetwork/dataset/75FC505D-6DC0-4BAF-807D-7239F6
  </base:namespace>
  </base:Identifier>
  ..
  ..
```

nested data structures, xlink
references, etc



- Implement WFS endpoint:
 - GetCapabilities
 - GetFeature
 - DescribeFeatureTypes
 - ListStoredQueries
- Implement reprojection
- Adapt XmlSplitter: e.g. skip bbox elements <wfs:boundedBy>, not a regular feature type chunk
- Adapt XmlIndexer: e.g. index all gml attributes (not only gml:id)
- Adapt XmlMergeStrategy: add back bbox <wfs:boundedBy> element, add timestamp, numberMatched, numberReturned attributes



- DescribeFeatureType:
<https://pocinspire.gim.be/wfs/BU.Building?service=WFS&version=2.0.0&request=DescribeFeatureType>
- GetFeature with bbox search:
[https://pocinspire.gim.be/wfs/AD.Address?service=WFS&request=GetFeature&version=2.0.0&srsName=urn:ogc:def:crs:EPSG::3035&typeName=ad%3AAddress&bbox=2951336.21549,4040834.26362,2951891.50257,4042608.47357,urn:ogc:def:crs:EPSG::3035&namespaces=xmlns\(ad,http%3A%2F%2Finspire.ec.europa.eu%2Fschemas%2Fad%2F4.0\)&count=10000](https://pocinspire.gim.be/wfs/AD.Address?service=WFS&request=GetFeature&version=2.0.0&srsName=urn:ogc:def:crs:EPSG::3035&typeName=ad%3AAddress&bbox=2951336.21549,4040834.26362,2951891.50257,4042608.47357,urn:ogc:def:crs:EPSG::3035&namespaces=xmlns(ad,http%3A%2F%2Finspire.ec.europa.eu%2Fschemas%2Fad%2F4.0)&count=10000)
- GetFeatureById:
https://pocinspire.gim.be/wfs/AD.Address?service=WFS&request=GetFeature&version=2.0.0&srsName=urn:ogc:def:crs:EPSG::3035&id=Address.075A00282000824_108_6
- DescribeStoredQueries:
<https://pocinspire.gim.be/wfs/AU.AdministrativeUnit?service=wfs&version=2.0.0&request=DescribeStoredQueries>

Validation: predefined dataset



LU-ACT-AU-WFS-predefined

Status Passed
Started 05/07/2019 13:23:46 GMT
Duration 1 min 41 s

	Total Count	Skipped	Failed	Warnings	Manual
Test suites	1	0	0	0	0
Test modules	3	0	0	0	0
Test cases	13	0	0	0	0
Test steps	96	0	0	0	0
Assertions	182	0	0	0	0

Show

- All
- Only failed
- Only manual

Level of detail

- All details
- Less information
- Simplified

+ Conformance Class: Download Service - Pre-defined WFS 3

Viewing WFS 2.0.0 with QGIS



The screenshot shows the QGIS 2.18.26 interface with a map of Luxembourg. A dialog box titled "WFS 2.0 OnlineResource - Version 0.9.8 beta" is open, displaying the following information:

- WFS 2.0 OnlineResource** *Warning: No SSL certificate verification!*
- URL: `http://tdn.lu/RoadTransportNetwork/RoadLink?service=wfs&version=2.0.0&request=GetCapabilities`
- Authentication required
- Buttons: List FeatureTypes, List StoredQueries
- FeatureTypes**: `tn-ro:RoadLink` (selected), Metadata, Show Extent
- Info: This feature type is in dataset 'INSPIRE - Annex I Theme Transport Networks - Roads - RoadLink'
- Use current Extent as Bounding Box Filter
- Extent: 2951972.07701, 4041439.22109, 4042212.47167, 5518300.76504
- FeatureLimit**: 1000
- SRS**: urn:ogc:def:crs:EPSG::3035
- GetFeature(s): 0%

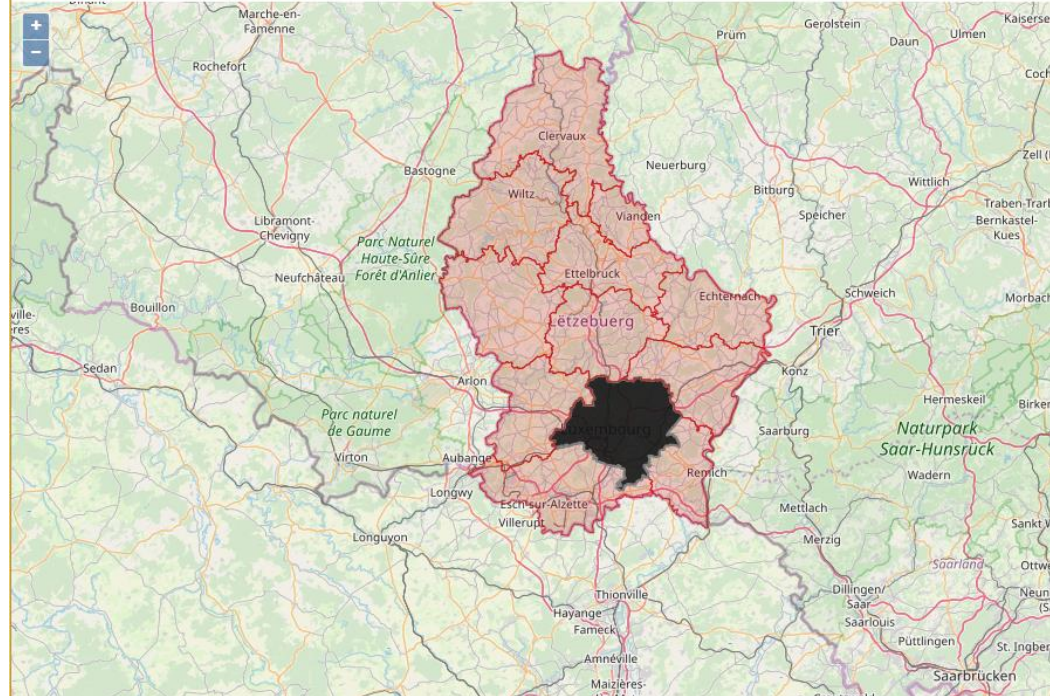
The map in the background shows a street network with buildings in blue and roads in pink. The legend on the left lists layers such as RoadLink [1916], RailwayLink [3550], Address [1146], Building [1287], Building [375], Building [24], and OpenStreetMap. The status bar at the bottom shows coordinates (4041654.5, 2951370.9) and scale (1:217).

Viewing WFS 2.0.0 data with OpenLayers



OpenLayers 5.3 Map with GML32 features: au:AdministrativeUnit

1stOrder, 2ndOrder, 3rdOrder, 4thOrder





- Leverage existing investment in file-based data harmonisation
- Service individual GML fragments
- Basic querying
- Client support for WFS 2.0.0 / Complex features is improving