



FAIR-IZATION OF INSPIRE DATASETS

FEDERAL DCAT AP PROFILE
ISO/INSPIRE-TO-DCAT MAPPING

Céline Vilain
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NGI
Nationaal
Geografisch
Instituut



IGN
Institut
Géographique
National

Agenda



Context



Goals



Development and specifications



Ongoing and future works

Context: geospatial metadata in Belgium (simplified)

European



National



Federal/
Regional

Federal



Flanders



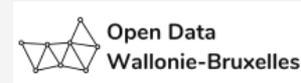
Wallonia



Brussels



Vlaams Open Data Portaal (VODAP)



Context: metadata and standards

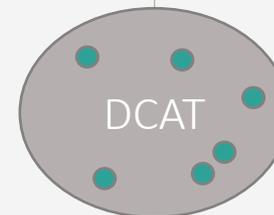
Portal



Data



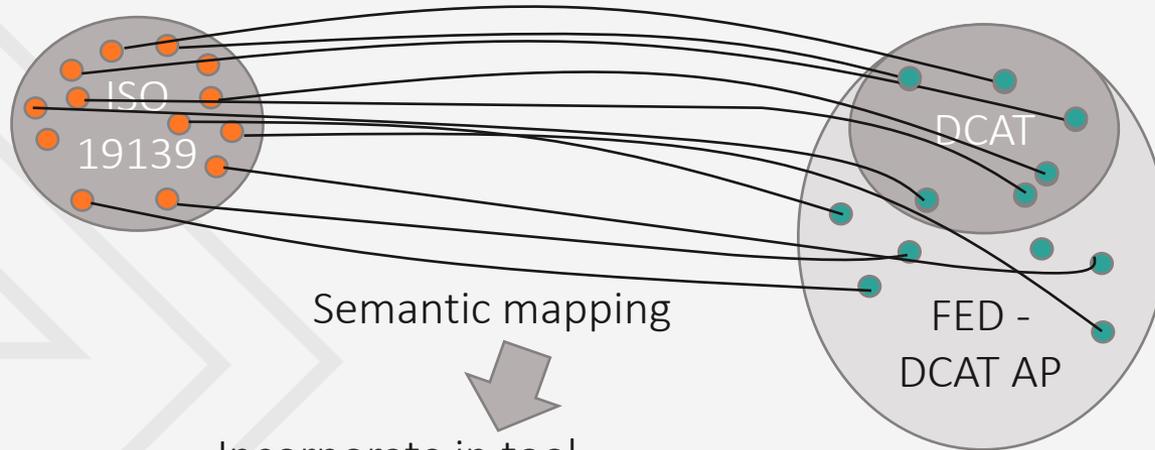
Standard



Context: FAIR-ization

F_{indable} A_{ccessible} I_{nteroperable} R_{eusable}

Standard



tool



Incorporate in tool
accessible for every
metadata publisher



<https://www.go-fair.org/fair-principles/>

Goals

Profile DCAT:

- Consensus on common RDF representation
- pertinent and generic
 - **no fork**
 - Based on norms
 - Efficient management of metadata

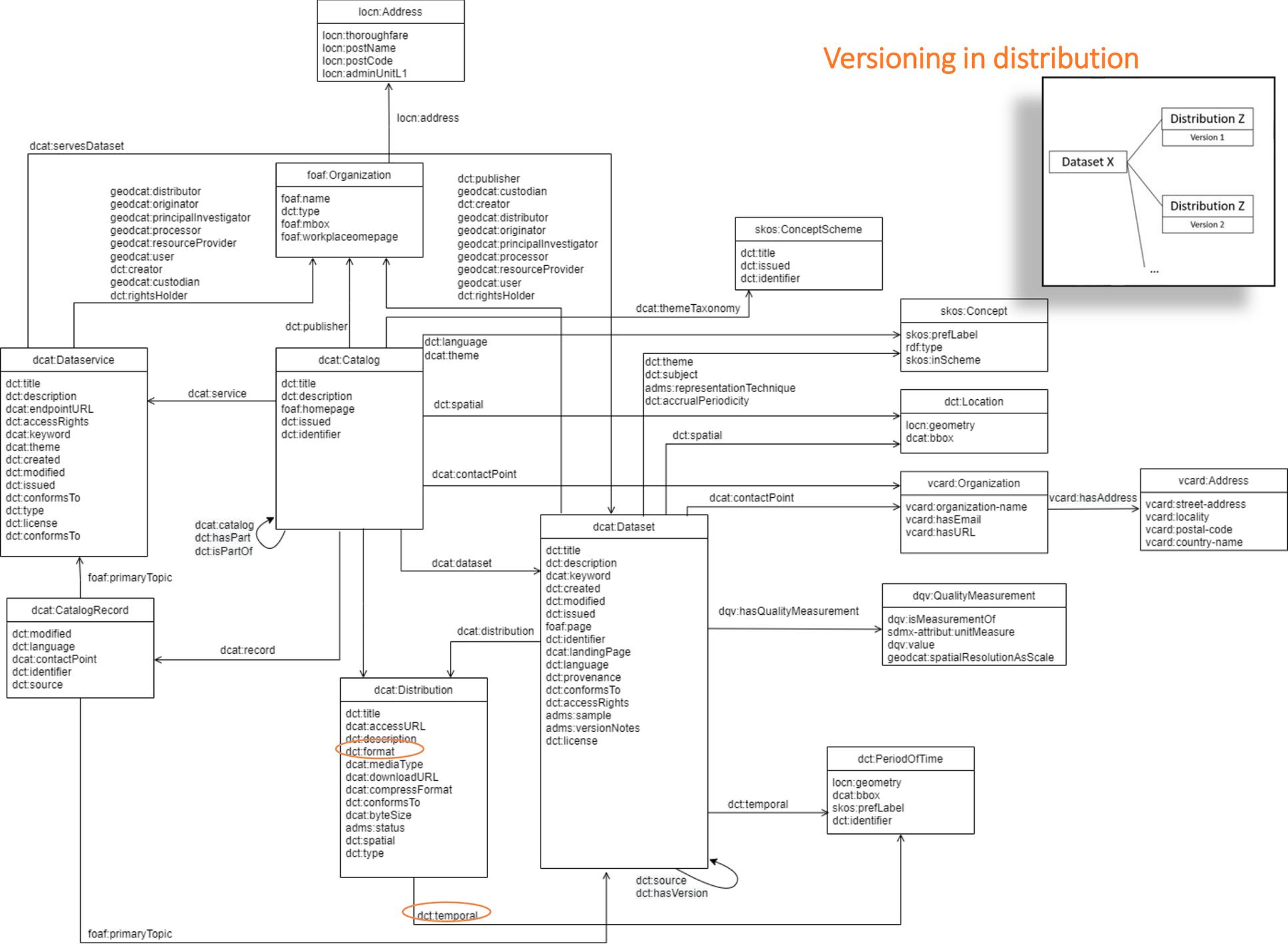
Mapping ISO 19139 to DCAT:

- Share INSPIRE metadata - cross-sector
- Keep 'Once only principle'
- Avoid information loss of INSPIRE metadata

Development and specifications

- Collaboration of 4 federal authorities
- Followed and discussed with
 - Other federal authorities in WG FED-GeoMetadata
 - Federal and regional authorities in WG Metadata
- Fitting our needs by searching into:
 - [DCAT AP - version 2.0.1](#) DCAT Application Profile for data portals in Europe
 - [GeoDCAT-AP - version 2.0.0](#) A geospatial extension for the DCAT application profile for data portals in Europe
 - [StatDCAT-AP version 1.0.1](#) DCAT Application Profile for description of statistical datasets
- Project on <https://github.com/belgif/inspire-dcat/blob/main/DCATFederalProfile.md>
 - Remarks and suggestions via issues

Versioning in distribution



Other specifications

- Managing multilingualism: depends on domain of the attribute

A multilingual string:

specify the language (xml:lang) for each translation

```
<locn:address>
  <locn:Address>
    <locn:thoroughfare xml:lang="en">Kortenberglaan 115</locn:thoroughfare>
    <locn:thoroughfare xml:lang="fr">Avenue de Cortenbergh 115</locn:thoroughfare>
    <locn:thoroughfare xml:lang="nl">Kortenberglaan 115</locn:thoroughfare>
    <locn:thoroughfare xml:lang="de">Avenue de Cortenbergh 115</locn:thoroughfare>
    <locn:postName xml:lang="en">Brussels</locn:postName>
    <locn:postName xml:lang="fr">Bruxelles</locn:postName>
    <locn:postName xml:lang="nl">Brussel</locn:postName>
    <locn:postName xml:lang="de">Brüssel</locn:postName>
    <locn:postCode>1000</locn:postCode>
    <locn:adminUnitL1 xml:lang="en">Belgium</locn:adminUnitL1>
```

An URI:

instantiate rdf:Description for each translation and specify language (dct:language)

```
<dcatalog:landingPage>
  <rdf:Description rdf:about="https://www.geo.be/catalog/details/64594d51-71dc-11eb-916d-3448ed25ad7c?l=en">
    <dct:language rdf:resource="http://publications.europa.eu/resource/authority/language/ENG"/>
  </rdf:Description>
  <rdf:Description rdf:about="https://www.geo.be/catalog/details/64594d51-71dc-11eb-916d-3448ed25ad7c?l=fr">
    <dct:language rdf:resource="http://publications.europa.eu/resource/authority/language/FRA"/>
  </rdf:Description>
  <rdf:Description rdf:about="https://www.geo.be/catalog/details/64594d51-71dc-11eb-916d-3448ed25ad7c?l=nl">
    <dct:language rdf:resource="http://publications.europa.eu/resource/authority/language/NLD"/>
  </rdf:Description>
  <rdf:Description rdf:about="https://www.geo.be/catalog/details/64594d51-71dc-11eb-916d-3448ed25ad7c?l=de">
    <dct:language rdf:resource="http://publications.europa.eu/resource/authority/language/DEU"/>
  </rdf:Description>
</dcatalog:landingPage>
```

Other specifications

- Specifying the thesaurus to use for each attribute with instantiation of skos:Concept

Annexe II

classe concernée	attribut concerné	thesaurus proposés	Exigence
Catalog	dcat:theme	http://inspire.ec.europa.eu/theme	O
Catalog	dcat:theme	https://vocab.belgif.be/auth/datatheme	M
Catalog	dct:language	http://publications.europa.eu/resource/authority/language	M
Catalog	dct:spatial	http://publications.europa.eu/resource/authority/place	R
Dataset	dcat:theme	https://vocab.belgif.be/auth/datatheme	M
Dataset	dcat:theme	http://inspire.ec.europa.eu/theme	R

Other specifications

- Use of ATOMFeed to map in dcat:Distribution

```
<?xml version="1.0" encoding="UTF-8" ?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:georss="http://www.georss.org/georss" xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#" xmlns:inspire_dls="http://inspire.ec.europa.eu/schemas/inspire_dls/1.0"
xml:lang="en">
  <title>Top10Vector - Constructions</title>
  <subtitle>Top10Vector - Constructions is the vector data set of constructions in Belgium</subtitle>
  <logo>https://www.geo.be/thumbs/Top10VectorConstructionsAndZones_ds.png</logo>
  <link href="http://publish.geo.be/geonetwork/srv/api/records/1f4296b0-76f6-4f1b-8880-315406b367e1/attachments/Atomfeed-en.xml" rel="self" hreflang="en" title="feed containing the pre-defined dataset"/>
  <link href="http://publish.geo.be/geonetwork/srv/api/records/5cfe8a91-3dc9-4cf6-a40a-6a6d6f3124ab/attachments/Atomfeed-en.xml" rel="up" type="application/xml"/>
  <id>http://publish.geo.be/geonetwork/srv/api/records/1f4296b0-76f6-4f1b-8880-315406b367e1/attachments/Atomfeed-en.xml</id>
  <rights>Copyright (c) 2020, NGI Belgium; all rights reserved</rights>
  <updated>2021-10-28T13:32:21Z</updated>
  <author>
    <name>National Geographic Institute</name>
    <email>products@ngi.be</email>
  </author>
  <entry>
    <title>Top10Vector - Constructions (EPSG code for projection system: EPSG:3812 - Distribution format: Esri Shapefile)</title>
    <id>https://ac.ngi.be/catalogue/order/ngi-standard/Vectordata/L08/Shape/Top10Vector/Top10Vector_Constructions_shp_L08.zip</id>
    <link href="https://ac.ngi.be/catalogue/order/ngi-standard/vectordata/L08/Shape/Top10Vector/Top10Vector_Constructions_shp_L08.zip" type="application/x-shapefile" rel="alternate" hreflang="en"/>
    <rights>Copyright (c) 2020, NGI Belgium; all rights reserved</rights>
    <updated>2021-10-28T13:32:21Z</updated>
    <category term="http://www.opengis.net/def/crs/EPSSG/0/EPSSG:3812" label="EPSG code for projection system: EPSG:3812"/>
    <georss:box>49.48926 2.32232 51.50903 6.42323</georss:box>
  </entry>
</feed>
```

D. dcat:Distribution

Toute instantiation de dcat:Distribution

URI	Nom	Description	Exigence	Cardinalité	Domaine	Source
dct:title	titre	Titre de la distribution concernée	O	0-1	multilingue	//atom:feed/atom:title
dcat:accessURL	URL d'accès	Adresse web de la distribution concernée du jeu de données	M	1	URL	//atom:feed/atom:entry/atom:link
dct:description	description	Description des particularités de cette description	O	0-1	multilingue	//atom:feed/atom:entry/atom:subtitle
dct:format	format	Informations relatives au format particulier de cette distribution	M	1	dct:MediaTypeOrExtent	//atom:feed/atom:entry/atom:link/@type

Micro-service PSI/INSPIRE conversion tool

Goal: to convert INSPIRE/XML to DCAT-XML in Geonetwork 4.X

Fork of OGC API Geonetwork micro-service

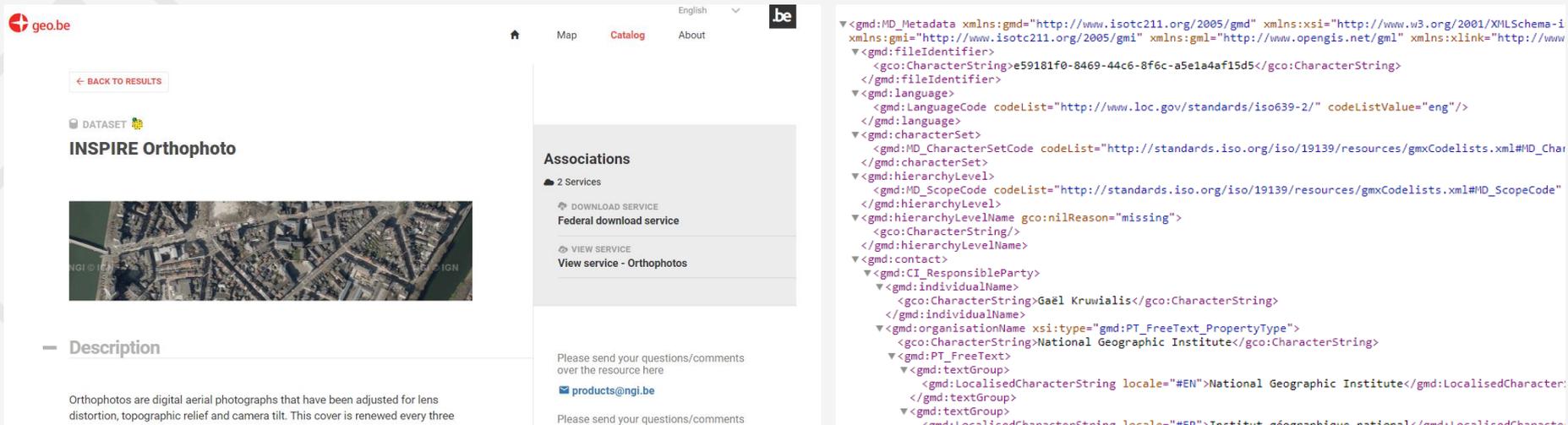
<https://github.com/geonetwork/geonetwork-microservices/blob/main/modules/services/ogc-api-records/src/main/resources/xslt/ogcapir/formats/dcat/dcat-iso19139.xsl>

→ Microservice spring-boot runed as standalone (java 11)

Upgrades:

- XSLT file version 1.0 → version 2.0
- Fit to the mapping
- Conversion of one INSPIRE file or complete catalog

1) <https://www.geo.be/catalog/details/e59181f0-8469-44c6-8f6c-a5e1a4af15d5?l=en>



INSPIRE Orthophoto

Orthophotos are digital aerial photographs that have been adjusted for lens distortion, topographic relief and camera tilt. This cover is renewed every three

Associations

- 2 Services
- DOWNLOAD SERVICE
Federal download service
- VIEW SERVICE
View service - Orthophotos

Please send your questions/comments over the resource here

products@ngi.be

Please send your questions/comments

```
<gmd:MD_Metadata xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:gmi="http://www.isotc211.org/2005/gmi" xmlns:gml="http://www.opengis.net/gml" xmlns:xlink="http://www.w3.org/1999/xlink">
  <gmd:fileIdentifier>
    <gco:CharacterString>e59181f0-8469-44c6-8f6c-a5e1a4af15d5</gco:CharacterString>
  </gmd:fileIdentifier>
  <gmd:language>
    <gmd:LanguageCode codeList="http://www.loc.gov/standards/iso639-2/" codeListValue="eng"/>
  </gmd:language>
  <gmd:characterSet>
    <gmd:MD_CharacterSetCode codeList="http://standards.iso.org/iso/19139/resources/gmxCodeLists.xml#MD_CharacterSetCode" codeListValue="UTF-8"/>
  </gmd:characterSet>
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode codeList="http://standards.iso.org/iso/19139/resources/gmxCodeLists.xml#MD_ScopeCode" codeListValue="dataset"/>
  </gmd:hierarchyLevel>
  <gmd:hierarchyLevelName gco:nilReason="missing">
    <gco:CharacterString/>
  </gmd:hierarchyLevelName>
  <gmd:contact>
    <gmd:CI_IndividualParty>
      <gmd:IndividualName>
        <gco:CharacterString>Gaël Kruwialis</gco:CharacterString>
      </gmd:IndividualName>
      <gmd:organisationName xsi:type="gmd:PT_FreeText_PropertyType">
        <gco:CharacterString>National Geographic Institute</gco:CharacterString>
      </gmd:organisationName>
      <gmd:PT_FreeText>
        <gmd:textGroup>
          <gmd:LocalisedCharacterString locale="#en">National Geographic Institute</gmd:LocalisedCharacterString>
          <gmd:textGroup>
            <gmd:LocalisedCharacterString locale="#fr">Institut géographique national</gmd:LocalisedCharacterString>
          </gmd:textGroup>
        </gmd:textGroup>
      </gmd:PT_FreeText>
    </gmd:CI_IndividualParty>
  </gmd:contact>
</gmd:MD_Metadata>
```

2) <http://localhost:8080/collections/main/items/e59181f0-8469-44c6-8f6c-a5e1a4af15d5?f=dcats>

```
<rdf:RDF xmlns:adms="http://www.w3.org/ns/adms" xmlns:atom="http://www.w3.org/2005/Atom" xmlns:content="http://www.w3.org/2011/content" xmlns:georss="http://www.georss.org/georss" xmlns:locn="http://www.w3.org/ns/locn" xmlns:owl="http://www.w3.org/2002/07/owl" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:skos="http://www.w3.org/2004/02/skos/core#" xmlns:vcard="http://www.w3.org/2006/vcard/ns" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:Catalog="dc:Catalog">
  <dc:title xml:lang="en">Geoportal of the Belgian federal institutions</dc:title>
  <dc:title xml:lang="fr">Géoportail des Institutions Fédérales belges</dc:title>
  <dc:title xml:lang="nl">Geoportaal van de Belgische Federale Instellingen</dc:title>
  <dc:title xml:lang="de">Geoportal des belgischen Institutionen</dc:title>
  <dc:description xml:lang="en">The catalogue contains the metadata records for the geographical data and services of the Belgian federal administrative regions. The dataset is INSPIRE compliant. The dataset is downloadable per NGI mapsheet at scale 1:50000.</dc:description>
  <dc:description xml:lang="fr">Le catalogue contient les fiches de métadonnées des données et services géographiques des institutions fédérales administratives des régions de Belgique.</dc:description>
  <dc:description xml:lang="nl">De catalogus bevat de metadatafiches voor de geografische gegevens en services van de Belgische federale administratieve regio's. De dataset is INSPIRE-comform. De dataset is te downloaden per NGI kaartblad op schaal 1:50000.</dc:description>
  <dc:description xml:lang="de">Der Katalog enthält die Metadatenblätter für die geografischen Daten und Dienste der belgischen Föderalen Verwaltungseinheiten. Die Datensätze sind digitalisierte Luftbilder, auf die systematischen Verformungen wegen der Zentralprojektion Grundlage der Harmonisierung der Datensätze der belgischen Verwaltungsregionen erstellt. Der Datensatz ist INSPIRE-konform. Der Datensatz ist in NGS-Kartenblättern verfügbar.</dc:description>
  <dc:publisher>
    <foaf:Organization>
      <foaf:name xml:lang="en">National Geographic Institute</foaf:name>
      <foaf:name xml:lang="fr">Institut géographique national</foaf:name>
      <foaf:name xml:lang="nl">Nationaal Geografisch Instituut</foaf:name>
      <foaf:name xml:lang="de">Nationales geographisches Institut</foaf:name>
      <foaf:inbox rdf:resource="mailto:products@ngi.be"/>
    </foaf:Organization>
  </dc:publisher>
  <rdf:Description rdf:about="https://www.ngi.be/website">
    <dc:language rdf:resource="http://publications.europa.eu/resource/authority/language/NLD"/>
  </rdf:Description>
  <rdf:Description rdf:about="https://www.ngi.be/website/fr">
    <dc:language rdf:resource="http://publications.europa.eu/resource/authority/language/FRA"/>
  </rdf:Description>
  <foaf:workplaceHomepage>
    <locn:address>
      <locn:Address>
        <locn:thoroughfare xml:lang="en">Kortenberglaan 115</locn:thoroughfare>
        <locn:thoroughfare xml:lang="fr">Avenue de Cortenberg 115</locn:thoroughfare>
        <locn:thoroughfare xml:lang="nl">Kortenberglaan 115</locn:thoroughfare>
        <locn:thoroughfare xml:lang="de">Avenue de Cortenberg 115</locn:thoroughfare>
        <locn:postName xml:lang="en">Brussels</locn:postName>
        <locn:postName xml:lang="fr">Bruxelles</locn:postName>
      </locn:Address>
    </locn:address>
  </foaf:workplaceHomepage>
  <dc:dataset>
    <dc:title xml:lang="en">INSPIRE Orthophoto</dc:title>
    <dc:title xml:lang="fr">Orthophoto INSPIRE</dc:title>
    <dc:title xml:lang="nl">INSPIRE Orthofoto</dc:title>
    <dc:title xml:lang="de">INSPIRE Orthophoto</dc:title>
    <dc:description xml:lang="en">Orthophotos are digital aerial photographs that have been adjusted for lens distortion, topographic relief and camera tilt. This cover is renewed every three years. The dataset is downloadable per NGI mapsheet at scale 1:50000.</dc:description>
    <dc:description xml:lang="fr">Les orthophotos sont des photos aériennes numériques sur lesquelles sont corrigées les déformations systématiques dues à la distorsion de la lentille, au relief topographique et à l'inclinaison de la caméra. Cette couverture est renouvelée tous les trois ans. Le jeu de données est généré à partir de l'harmonisation des données et provenance des régions administratives de la Belgique. Le jeu de données est généré à partir de l'harmonisation des données et provenance des régions administratives de la Belgique. Le jeu de données est généré à partir de l'harmonisation des données et provenance des régions administratives de la Belgique.</dc:description>
    <dc:description xml:lang="nl">Orthofoto's zijn digitale luchtfoto's waarop de systematische vervormingen die te wijten zijn aan de lensdistorsie, topografische verhoging en camera-tilt zijn gecorrigeerd op basis van de harmonisatie van de datasets die eigendom zijn van de Belgische administratieve regio's. De dataset is te downloaden per NGI kaartblad op schaal 1:50000.</dc:description>
    <dc:description xml:lang="de">Orthophotos sind digitale Luftbilder, auf die systematischen Verformungen wegen der Zentralprojektion Grundlage der Harmonisierung der Datensätze der belgischen Verwaltungsregionen erstellt. Der Datensatz ist INSPIRE-konform. Der Datensatz ist in NGS-Kartenblättern verfügbar.</dc:description>
    <dc:contactPoint>
      <vcard:Organization>
        <vcard:organization-name xml:lang="en">National Geographic Institute</vcard:organization-name>
        <vcard:organization-name xml:lang="fr">Institut géographique national</vcard:organization-name>
        <vcard:organization-name xml:lang="nl">Nationaal Geografisch Instituut</vcard:organization-name>
        <vcard:organization-name xml:lang="de">Nationales geographisches Institut</vcard:organization-name>
        <vcard:hasEmail rdf:resource="mailto:metadata@ngi.be"/>
      </vcard:Organization>
      <rdf:Description rdf:about="http://www.ngi.be">
        <dc:language rdf:resource="http://publications.europa.eu/resource/authority/language/ENG"/>
      </rdf:Description>
      <rdf:Description rdf:about="http://www.ngi.be/FR/FR0.shtm">
        <dc:language rdf:resource="http://publications.europa.eu/resource/authority/language/FRA"/>
      </rdf:Description>
      <rdf:Description rdf:about="http://www.ngi.be/NL/NL0.shtm">
        <dc:language rdf:resource="http://publications.europa.eu/resource/authority/language/NLD"/>
      </rdf:Description>
    </dc:contactPoint>
  </dc:dataset>
</rdf:RDF>
```

Ongoing and future works

- About the profile:
 - Federal authorities create python script to implement the profile directly.
 - DCAT-XML → **pandas?**
 - DCAT-RDF → **rdflib**
 - Improve profile based on reported issues via github

- About the mapping and conversion tool:
 - Document and make it available through [github](#)
 - Look at other formats (json, ttl...) of the micro-service

Links

Geoportal of the Belgian federal institutions

<https://www.geo.be/home?l=en>

Federal profile and mapping ISO/INSPIRE to DCAT

<https://github.com/belgif/inspire-dcat>

OGC API Geonetwork micro-service

<https://github.com/geonetwork/geonetwork-microservices/blob/main/modules/services/ogc-api-records/src/main/resources/xslt/ogcapir/formats/dcat/dcat-iso19139.xsl>

Micro-service conform to the mapping will be available soon on

<https://github.com/belgif/inspire-dcat>

FAIR-IZATION OF INSPIRE DATASETS

FEDERAL DCAT AP PROFILE

ISO/INSPIRE-TO-DCAT MAPPING

Key actors of the project:

Benoît Fricheteau – FPS Finance

Bart Hanssens – FPS BOSA

Marielle Adams – FPS Economy

Youri Baeyens – FPS Economy

Gaël Kruwialis – NGI

Céline Vilain – NGI

Mathieu Chaussier – GIM consultant

