# Making Inspire data discoverable and findable through popular search engines

Abdelfettah Feliachi, Sylvain Grellet, Thierry Vilmus

# MAKING INSPIRE DATA DISCOVERABLE AND FINDABLE THROUGH POPULAR SEARCH ENGINES

## THE FRENCH EXPERIMENTATION ON GEOCATALOGUE

*A. FELIACHI, S. GRELLET AND T. VILMUS*

INSPIRE Discovery workshop
Ispra 03-04 July 2019

INSTITUT CARNOT brgm

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# IT CONTEXT

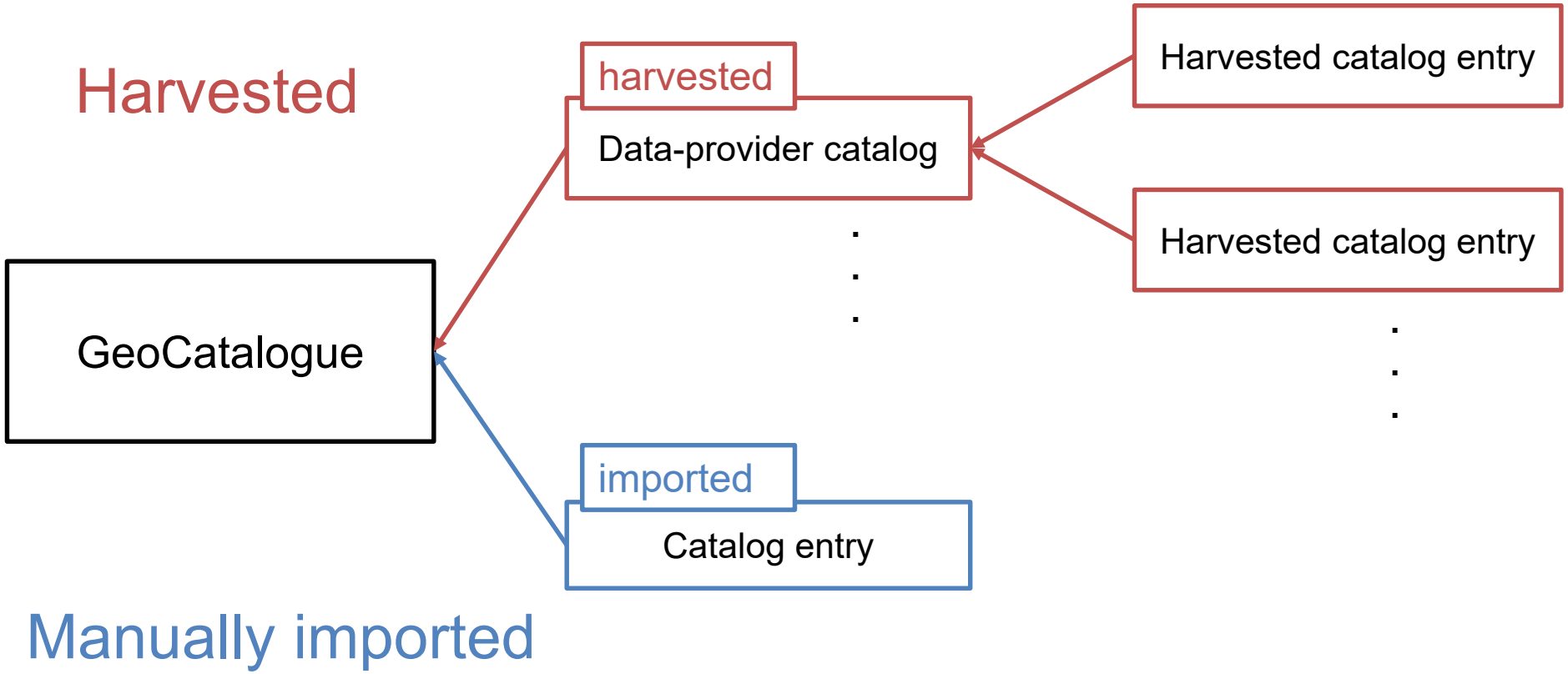
- BRGM, French geological survey, is implementing the national INSPIRE catalogue, named GeoCatalogue

- It's hard to find datasets
  - Difficulties to find data through Inspire specialized search engines like Geoportals or Geocatalogs
  - General public even unaware of the existence of such tools

- How to help search engine index those datasets ?
  - Vocabulary : Schema.org
    - Proposed by important search engines Google, Microsoft, Yahoo and Yandex
  - Payload
    - JSON-LD embedded in HTML pages

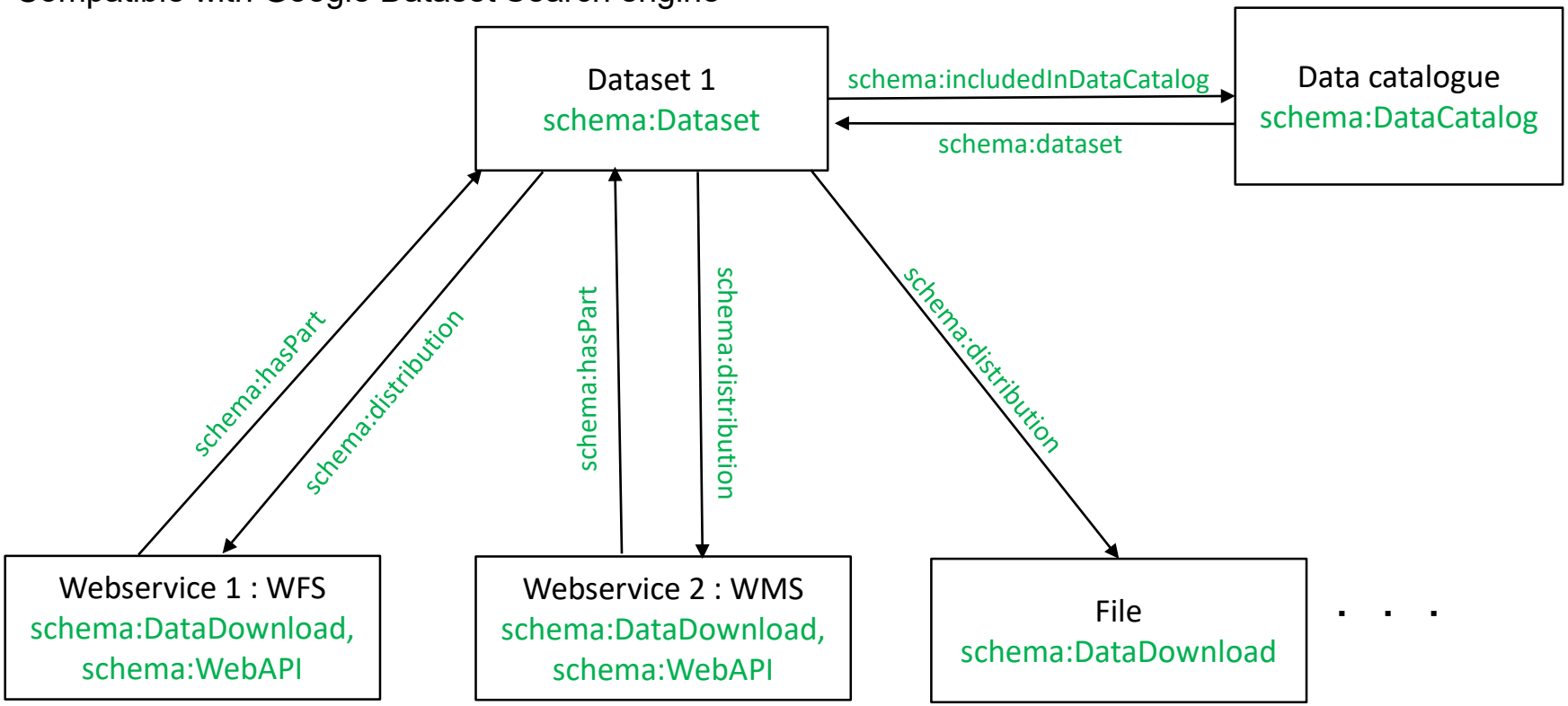
# FRENCH CONTEXT

- Metadata flow into GeoCatalogue



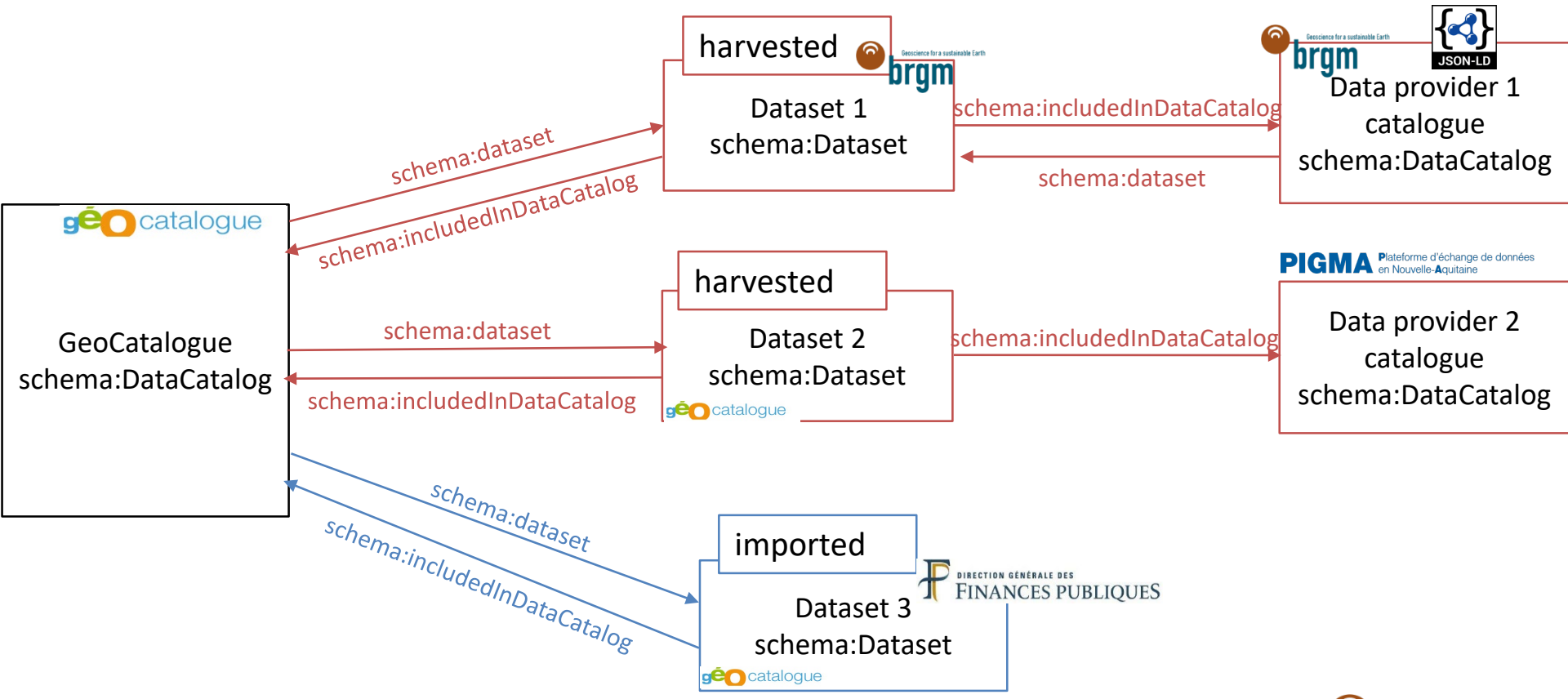
# PROPOSED DATA STRUCTURE

- Generic JSON-LD approach : as recommended by search engines
- Use schema:dataset & schema:includedInDatacatalog to link catalogues and datasets
- Use schema:distribution to declare services
- Compatible with Google Dataset Search engine



# PROPOSED DATA STRUCTURE

- Not all data provider have a URI policy that resolves to a well defined JSON-LD representation
- Example below



# PROPOSED DATA STRUCTURE

- JSON-LD examples (dataset, catalogue & service)

Catalogue

```
{
   "@context": "http://schema.org/",
   "@type": "DataCatalog",
   "@id": "https://data.geoscience.fr/id/catalogue/BRGM",
   "name": {value":"BRGM Data Catalog", "@language": "en"},
   "description": "BRGM metadata catalog",
                  …..
   "dataset":["https://data.geoscience.fr/id/dataset/borehole", … ]
                  …..
   "about": ["https://www.eionet.europa.eu/gemet/en/inspire-
theme/ge", … ],
…..
}
```

Dataset

```
{
   "@context": "http://schema.org/",
   "@type": "Dataset",
   "@id": "https://data.geoscience.fr/id/dataset/borehole",
   "includedInDataCatalog": "https://data.geoscience.fr/id/
        catalogue/BRGM",
   "name": {value":"Borehole",  "@language":"en"},
                  …
   "distribution": [
      { "@id":"https://data.geoscience.fr/api/wfs/borehole",
        "@type":["DataDownload","WebAPI"],
        "contentUrl":"http://geoservices.brgm.fr"} … ],
…..
}
```

Service

```
{
   "@context": "http://schema.org/",
   "@id":"https://data.geoscience.fr/api/wfs/borehole",
   "@type":["DataDownload","WebAPI"],
   "name": "Borehole WFS Service",
                  …..
    keywords":[
    {"@value":"Forage", "@language":"fr"},…],
                  ……
"spatialCoverage":{"@type":"Place",
"geo": {"@type":"GeoShape",
"box":[     "-5.79028,41.36493 9.56222,51.09111",
            "-61.7961,15.87 -61.1871,16.5129",
            "-61.2315,14.4028 -60.817,14.8801",
            "-54.6038,2.11347 -51.6481,5.75542",*
            "55.2206,-21.3739 55.8531,-20.8565",
            "45.0392,-12.9925 45.2297,-12.6625"]
            }
 }, ……
```

# URIS IN THE PICTURE

- Define a national URI architecture
  - Taking into account the 3 types of data providers
    - Harvested by the national catalogue : with a URI policy & with no URI policy
    - Imported into the national catalogue (thus no data provider URI policy)
- Use persistent URI to identify catalogues, datasets and services
- Rationale
  - For data provider having a URI policy that resolves in JSON-LD : respect it
  - For the others : define a national pattern

Data catalogue : https://data.geocatalogue.fr/id/catalog/{data_provider_catalogue_id}

Dataset : https://data.geocatalogue.fr/id/dataset/{geocatalogue_defined_uuid}

**Handled through a unique URI resolver**

→When those start having a URI policy that resolves in JSON-LD have a HTTP 301 ('Moved Permanently') from the previous URI to the new one

# IMPLEMENTATION FOR DATASETS

- ISO 19115 (19139 XML encoding)  to JSON-LD/Schema.org mapping
  - Building on feedback from previous experience:

    https://www.w3.org/2015/spatial/wiki/ISO_19115_-_DCAT_-_Schema.org_mapping

    https://ec-jrc.github.io/dcat-ap-to-schema-org/

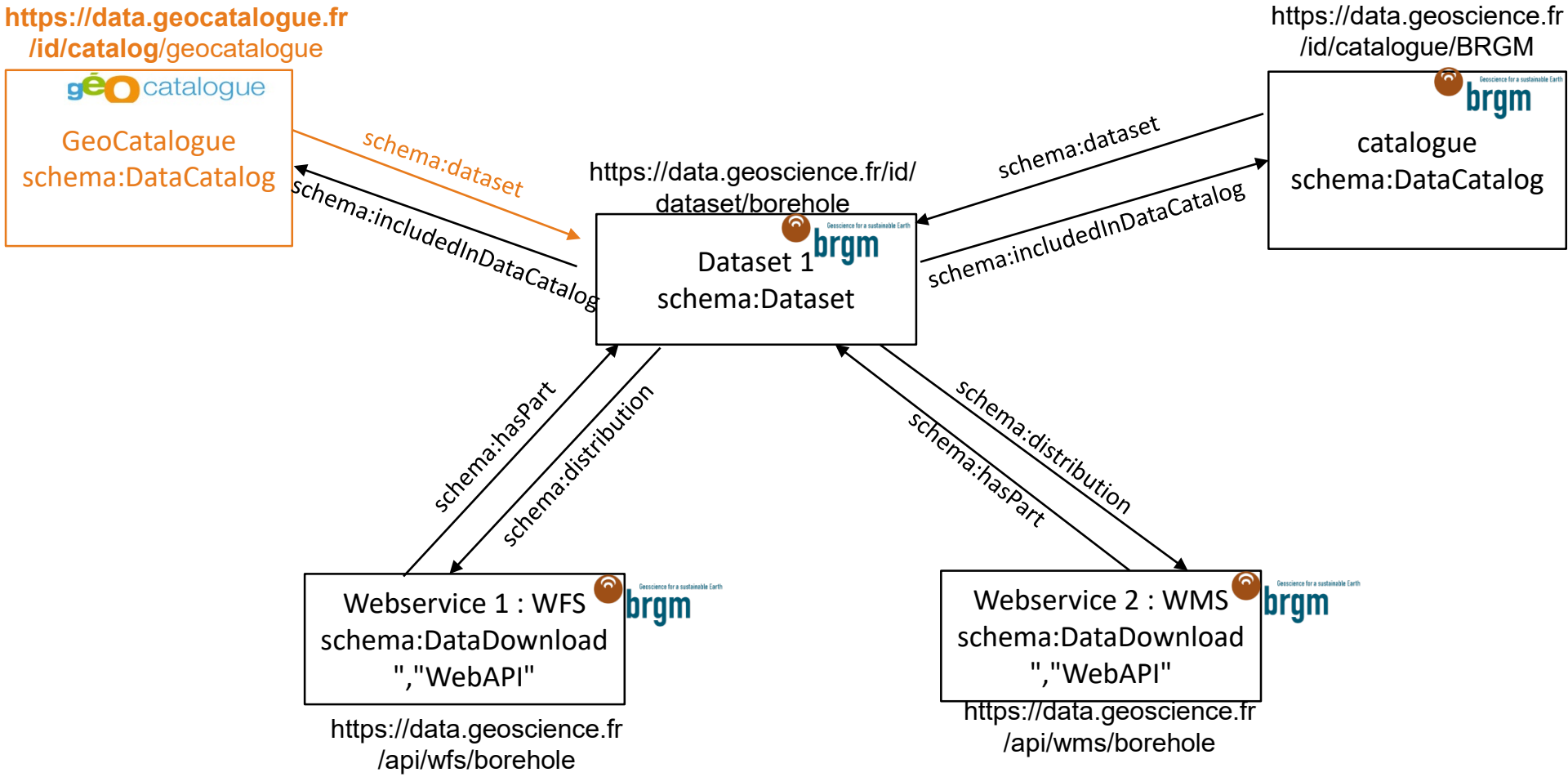
    http://geocat.fr/dataset-prop.html

  - Proposal of an operational mapping
    https://github.com/geonetwork/core-geonetwork/wiki/JSON-LD---ISO19139-mapping-proposal

- XSLT implementation experimentation
  - On the fly generated JSON-LD from the 19139 XML encoding of the metadata
  - Imbedded in the HTLM pages

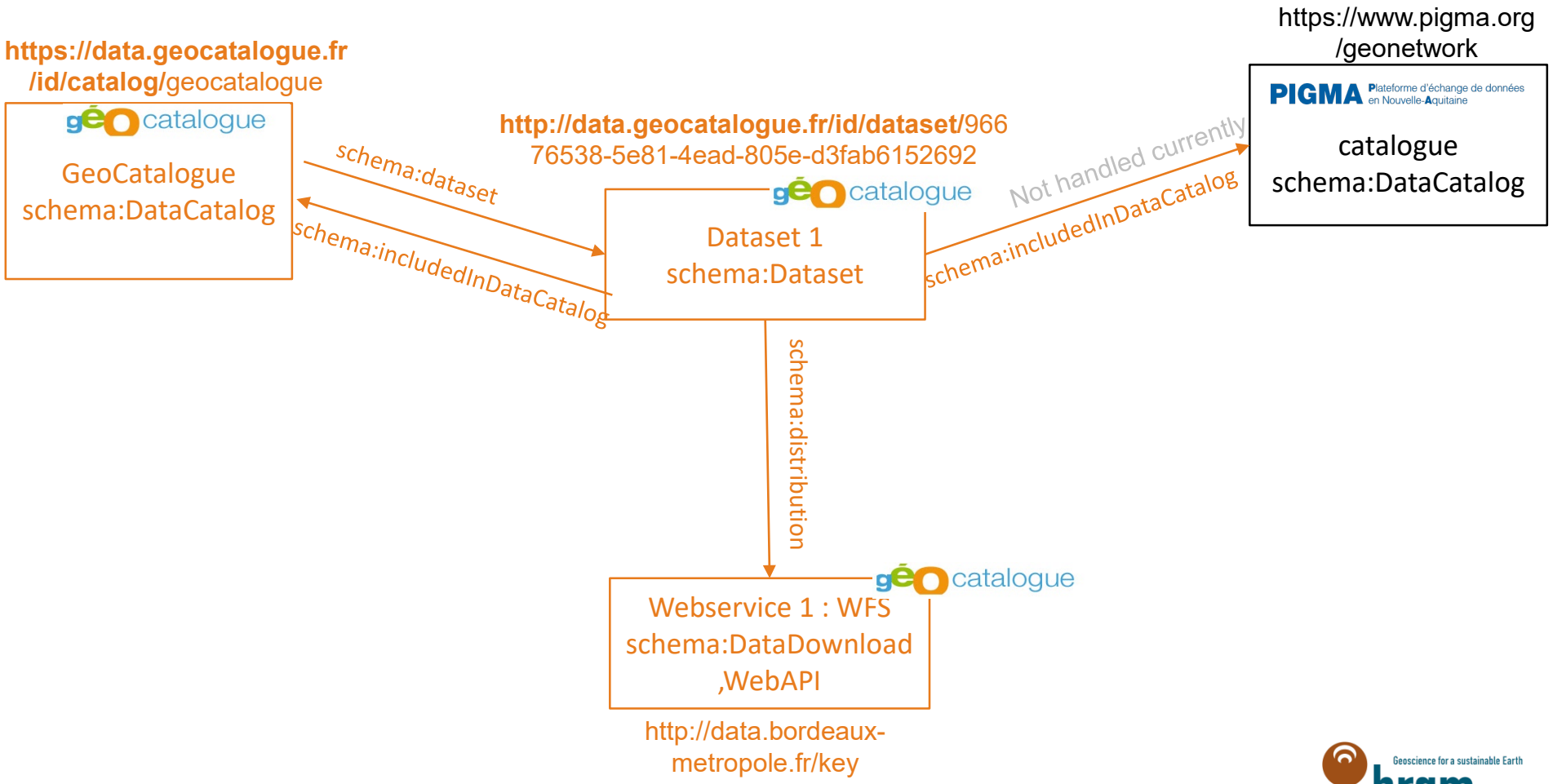
# URIS – APPLIED TO THE DATA STRUCTURE

- Data provider with a URI policy that resolves to JSON-LD
- Comprehensive example on BRGM national borehole dataset



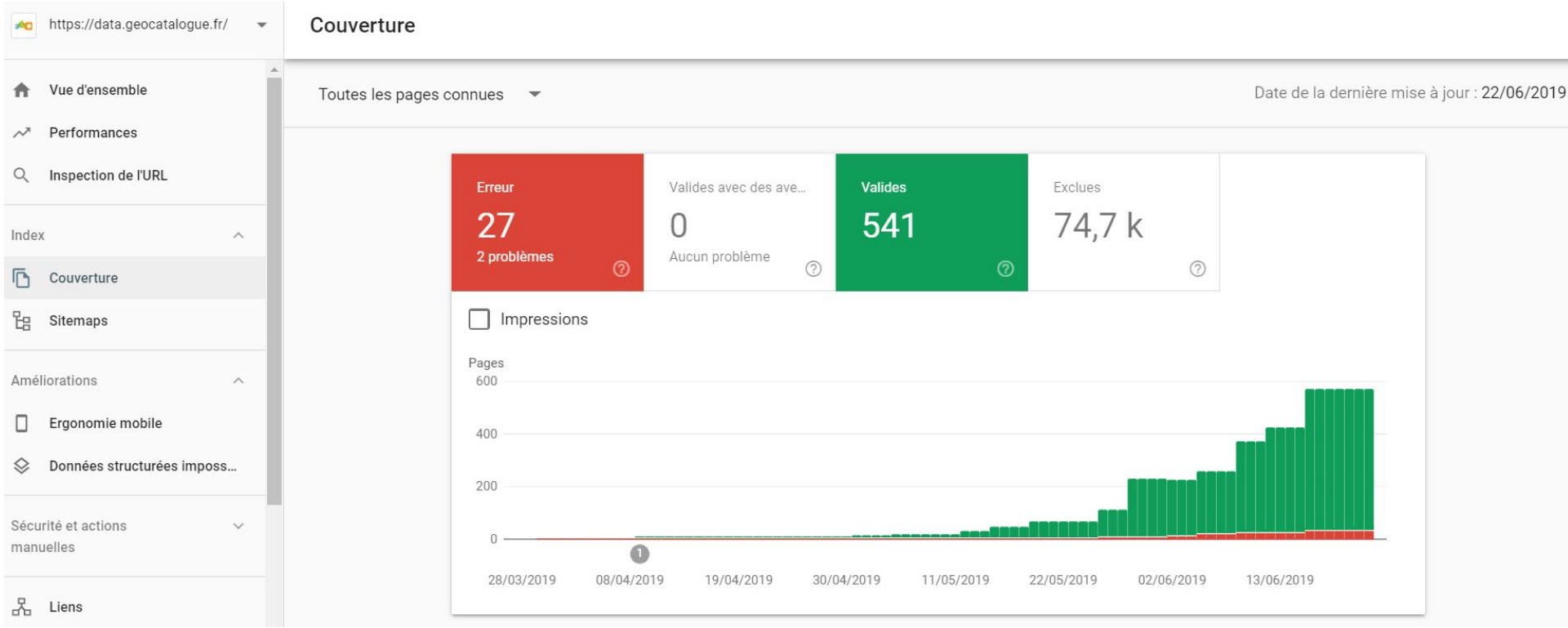
# URIS – APPLIED TO THE DATA STRUCTURE

- Data provider with non URI or a URI policy that does not resolve to JSON-LD
- Comprehensive example on PIGMA platform



# EXAMPLE OF INDEXATION IN SEARCH ENGINES

- Google search console
  - Sitemap needed for indexation: generating file(s) manually periodically
  - Uploading them to the Google search console
  - Run indexation then wait …



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# WHAT'S NEXT

- Pending IT aspects
  - How to declare a webservices that is not linked to a specific dataset (ex : WPS) ?
  - Link from catalogue to catalogue ?
  - Follow DCAT2 / schema.org work
  - Possibility to use vocabulary from dcat (ex: dcat:DataService, …) : how is it indexed by search engines

- Implementation
  - Basic SEO must be respected. (HTML title corrected recently to correspond the dataset title)
  - Improve the XSLT JSON-LD generation: some errors are detected by the search engine console.
  - Agree on JSON-LD patterns for services
  - Follow / Finish the test of the architecture at national scale
  - Push the solution to open source projects (ex : Geonetwork)

# CONCLUSION

- Indexation results
  - Google Search : Slow but effective. Pages do not necessarily hit the first page. Adding the term “geocatalogue” to the search improves the results.
  - Google Dataset Search : promising results. Searching by dataset name works for the indexed datasets. To explore further: search by keywords, temporal extent, spatial extent, etc.
  - Other search engines: current tests on Bing
- Benefits
  - National GeoCatalogue and linked catalogues : increases usability and visibility
  - Public : enhances overall search experience, allowing to discover, browse, view and download much more environmental data than before.

**An important complementary access point for geocatalogs search engines**

# THANK YOU

Contact


- A.Feliachi@brgm.fr
- S.Grellet@brgm.fr
- T.Vilmus@brgm.fr