



# Searching **SELFIE**

INSPIRE Discovery workshop  
Ispra 03-04 July 2019

Katharina Schleidt (DataCove), Sylvain Grellet & **Abdelfettah Feliachi**  
(BRGM), Nuno Oliveira, Simone Giannecchini & Andrea Aime  
(Geosolutions)

# ELFIE



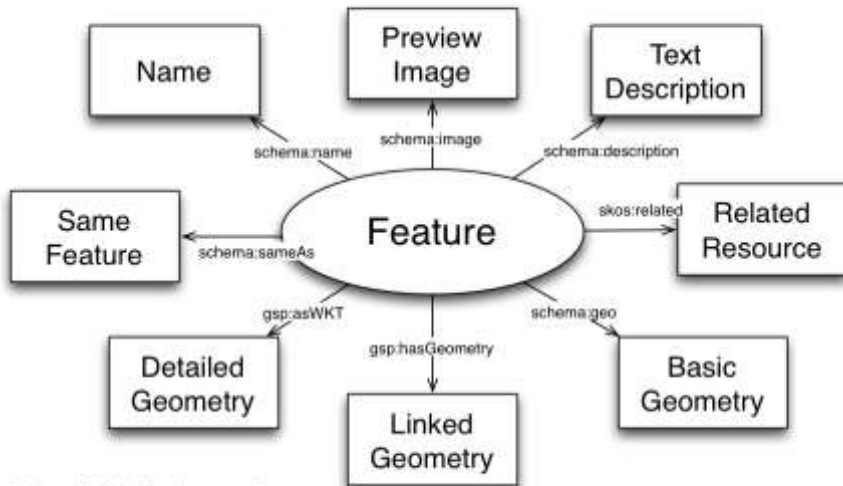
- Environmental Linked Feature Interoperability Experiment (<https://opengeospatial.github.io/ELFIE/>) a use case driven IE
- Organization: OGC, USGS, NZ Landcare Research, BRGM, NR-CAN, ...
- Goals :
  - Increase interoperability while decreasing data duplication and maintenance overhead
  - Combine the power of web services with transparency of linked data
  - Encode relationships between and among environmental features
  - Utilize commonly used and easily adopted approaches
  - **Encode highly general “preview” content for any feature : facilitate discoverability**

# JSON-LD Encoding



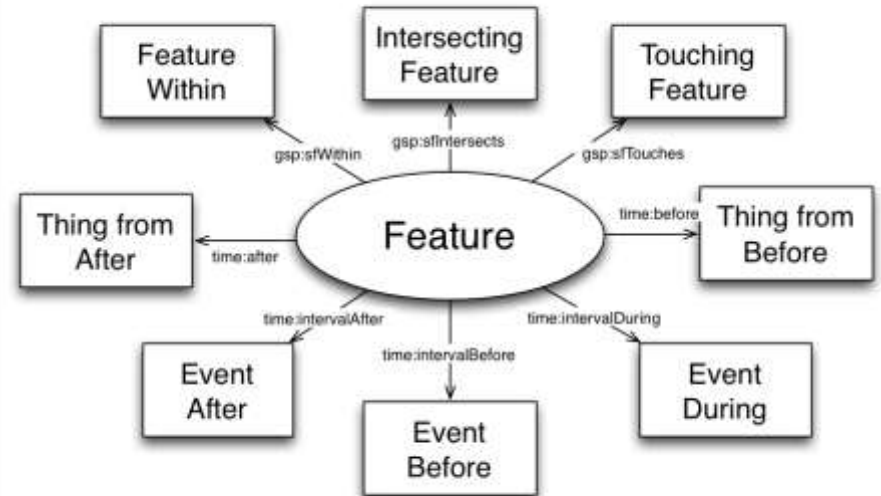
- **Different views of the same Feature**
  - By using different JSON-LD contexts
  - Based on Schema.org vocab and OGC domain ontologies

## Preview



"schema": "http://schema.org/"  
"skos": "https://www.w3.org/TR/skos-reference/"  
"gsp": "http://www.opengeospatial.org/standards/geosparql"

## Network



"gsp": "http://www.opengeospatial.org/standards/geosparql/"  
"time": "https://www.w3.org/TR/owl-time/"

# JSON-LD Encoding



- **Different views of the same Feature**
  - By using different JSON-LD contexts
  - Based on Schema.org vocab and OGC domain ontologies

## Preview

```
{
  "@context": {
    "schema": "http://schema.org/",
    "skos": "https://www.w3.org/TR/skos-reference/",
    "gsp": "http://www.opengeospatial.org/standards/geosparql",
    "description": "schema:description",
    "geo": "schema:geo",
    "hasGeometry": "gsp:hasGeometry",
    "asWKT": "gsp:asWKT",
    "image": {
      "@id": "schema:image",
      "@type": "@id"
    },
    "name": "schema:name",
    "sameAs": "schema:sameAs",
    "related": "skos:related"
  }
}
```

## Network

```
{
  "@context": {
    "gsp": "http://www.opengeospatial.org/standards/geosparql/",
    "time": "https://www.w3.org/TR/owl-time/",
    "intersects": "gsp:sfIntersects",
    "touches": "gsp:sfTouches",
    "within": "gsp:sfWithin",
    "after": "time:after",
    "before": "time:before",
    "intervalAfter": "time:intervalAfter",
    "intervalBefore": "time:intervalBefore",
    "intervalDuring": "time:intervalDuring"
  }
}
```

# Outcomes & Use cases

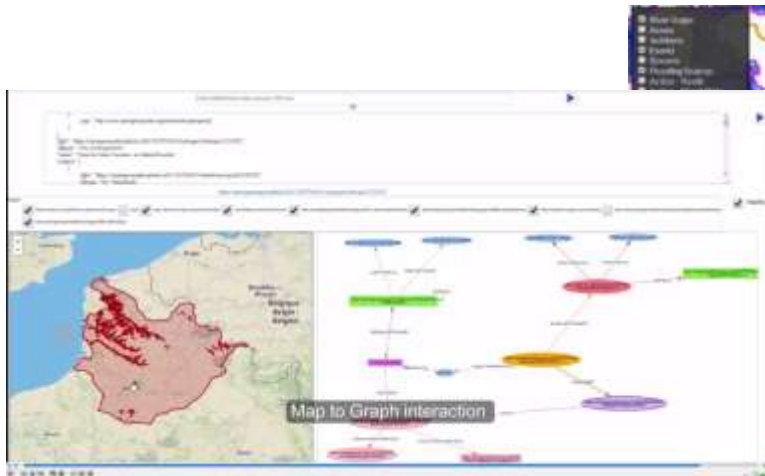


- [Engineering Report Presented to OGC](#)
- [JSON-LD contexts](#)
- [Example JSON-LD \(static\) files](#)
- [Web summary of use cases available now.](#)
- Schema.org feedback. e.g. [geometry encoding](#)
- **No Web Search demo**

Water Budgets Across the United States  
Hover over or click a watershed to see its water budget.



Water budgets are used to understand the movement of water into and out of a watershed. Much like a financial budget, inflows, storage, and outflows can be tracked. More data for currently selected basin: National Water Census Data Resources, National Water Information System Stream Gage



# SELFIE



- Second Environmental Linked Feature Interoperability Experiment (<https://opengeospatial.github.io/SELFIE/>)  
Organization: OGC, USGS, NZ Landcare Research, BRGM, NR-CAN, CSIRO, UK CEH, NASA, ...
- Objectives :
  - Evaluate a proposed resource model for multi-provider environmental feature and observation registries
  - Evaluate proposed HTTP behavior for non information resources and their representations
  - Design and evaluate linked data feature information index resources with media-type, language, and profile content negotiation as an extension of the building blocks provided by WFS3.

# SELFIE : Methodology

---



- Refine of use cases developed for ELFIE
- Collate existing practices for the implementation of non-information, information index and data resources
- Define a simple ontology of linked feature resources (resource model)
- Define JSON-LD encoding practices for efficient and effective link crawling (ELFIE-1 based)
- Executing experiments that evaluate the 3 and 4 using publishable implementations (e.g. shared Jupyter Notebooks)
- Evaluate **WFS 3.0** compliant services as an ‘engine’ facilitating the creation of the index and data information resources.

# SELFIE : Discoverability



- Based on the ELFIE-1 preview JSON-LD context.
- Embedding JSON-LD description of features in index (informational) pages. e.g. GSIP ( Groundwater Surface-Water Initial LOD Pilot) [info pages](#)

Watershed: Riviere l'Acadie - Cours inferieur

Type: Catchment, Thing, Resource

Identifier: [https://geoconnex.ca/id/catchment/020J\\*BC](https://geoconnex.ca/id/catchment/020J*BC)

Representation:

- No label [application/vnd.geo+json](#) [text/html](#)

Related Features:

Grouped by relations: Grouped by features

- **inside:** Watershed: Richelieu
- **drains:** Watershed: Riviere L'Acadie - Cours median
- **contains:** Hydrometric station : L'ACADIE (020J02N) Wells inside watershed 020J\_BC Hydrometric station (flow) : L'Acadie (030421)
- **overlaps:** Hydrogeologic unit : Southern St Lawrence Platform Hydrogeologic unit : Northern St Lawrence Platform Hydrogeologic unit : Monteregian intrusions
- **drains-into:** Watershed: Ruisseau Bernard Ouest - Riviere Richelieu

```
327 </script>
328 <script src="https://geoconnex.ca/esri/geo/js/featurearound.js"
329   type="text/javascript">
330 </script>
331 </body>
332 <script language="" type="application/ld+json">
333 {
334   "@graph" : [ [ {
335     "@id" : "http://geosciences.ca/def/hydraulicBW_Catchment",
336     "label" : [ [ {
337       "@language" : "fr",
338       "@value" : "Bassin de drainage"
339     } ], {
340       "@language" : "en",
341       "@value" : "Catchment"
342     } ] ]
343   }, {
344     "@id" : "https://geoconnex.ca/data/catchment/HYF/WSCSSDA/NRCAN/020J*BC",
345     "format" : [ [ "application/vnd.geo+json", "text/html" ] ]
346   }, {
347     "@id" : "https://geoconnex.ca/id/catchment/020J",
348     "label" : [ [ {
349       "@language" : "en",
350       "@value" : "Watershed: Richelieu"
351     } ], {
352       "@language" : "fr",
353       "@value" : "Bassin versant: Richelieu"
354     } ] ]
355   } ] ]
356 }
```



# SELFIE : Discoverability

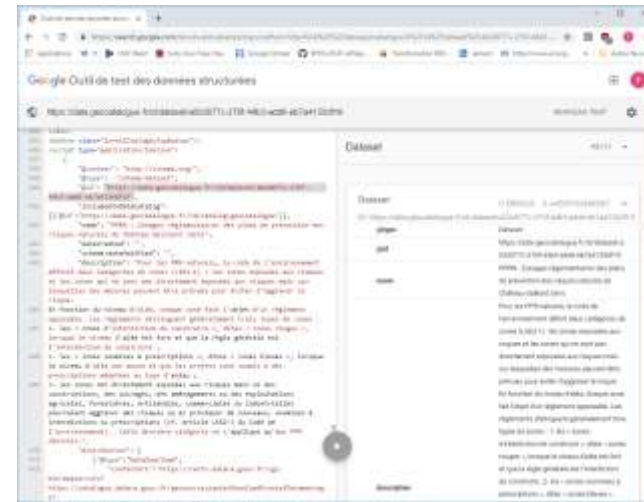
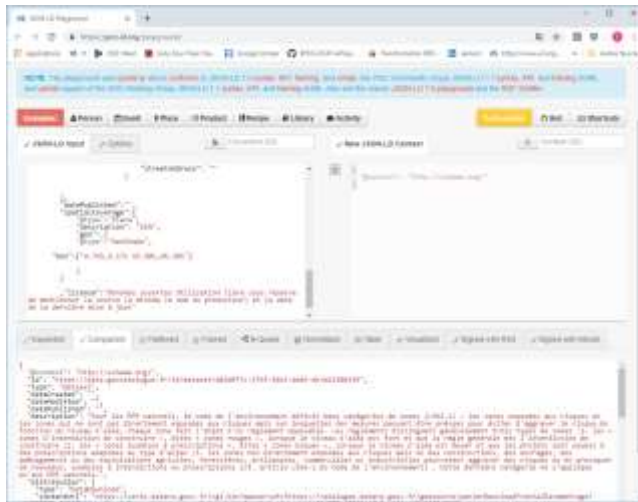


- Based on the ELFIE-1 preview JSON-LD context.
- Environment domain vocabularies : how to reuse them for indexing?
  - Should RE crawlers integrate OGC ontologies in their process?
  - Should OGC ontologies be integrated into schema.org ? → schema.org domain specific vocabulary extensions
    - E.g.
      - science-on-schema <https://github.com/ESIPFed/science-on-schema.org> ,
      - Bioschemas Types <https://bioschemas.org/types/>
  - How and when such extensions are handled by SE?

# SELFIE : Discoverability



- Who's in the other end of the tunnel?
  - No team to discuss with, only local test and validation of JSON-LD through JSON-LD playground and Google structured data testing tool



- Enlarge the questioning to other SE: Bing, Qwant (first contact)

# To Be Continued...



- **Join the Second Environmental Linked Features Interoperability Experiment**
- **Contacts :**  
Katharina Schleidt (DataCove - [kathi@datacove.eu](mailto:kathi@datacove.eu) ),  
Sylvain Grellet (BRGM - [s.grellet@brgm.fr](mailto:s.grellet@brgm.fr) ), Abdelfettah Feliachi (BRGM - [a.feliachi@brgm.fr](mailto:a.feliachi@brgm.fr) ), Nuno Oliveira (Geosolutions - [nuno.oliveira@geo-solutions.it](mailto:nuno.oliveira@geo-solutions.it) ), Simone Giannecchini (Geosolutions - [simone.giannecchini@geo-solutions.it](mailto:simone.giannecchini@geo-solutions.it) ), Andrea Aime (Geosolutions - [andrea.aime@geo-solutions.it](mailto:andrea.aime@geo-solutions.it) )