



APP
LAB

Copernicus App Lab

Stimulating wider uptake of Copernicus
Services by making them available as linked
open data



The project (<https://www.app-lab.eu/>)



Call: H2020-EO-2016, Evolution of Copernicus services

Scope: Providing a proof-of-concept/prototype for a proposed evolution of the Copernicus services, respecting the border between Copernicus services and downstream services.

Duration: 24 months

Ambition:

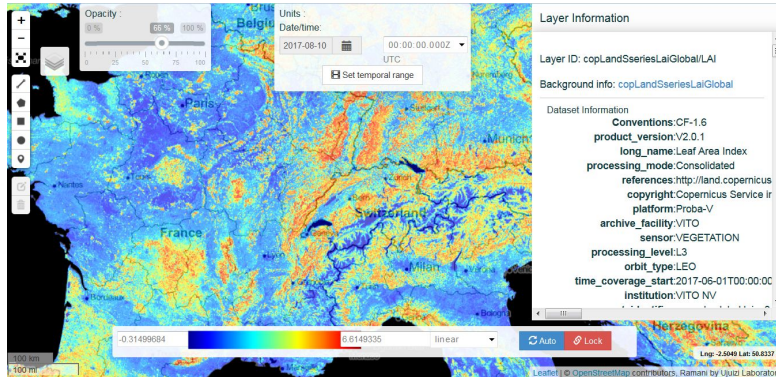
Bridging the digital divide between the established, science-driven Earth observation community and the young, innovative, entrepreneurial world of mobile developers.



Objectives

To operate a **cloud infrastructure** and **Streaming Data Library (SDL)** via which data from the Copernicus services (land, atmosphere, marine) as well as other pre-processed Sentinel data will be offered based on the existing service infrastructure of Copernicus.

→ Data Access Protocol (DAP)
implemented for Copernicus Global
Land Service
→ Streaming of selected datasets of
Copernicus Atmosphere and Marine
services



Semantic Data explorer: Example of Leaf Area Index as Map-view

Objectives

To provide tools to the Copernicus Services and any downstream developer to enable them to transform Copernicus services data into linked data themselves.

- Provision of a tool for publishing Copernicus services data as linked data.
- Provision of a tool for linking Copernicus services data with other linked data.
- Provision of a tool for querying Copernicus services data as linked data.
- Provision of a tool for visualizing Copernicus services data as linked data.





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Working with Semantic Web Technologies



Benefits of Linked Data Technologies

Approach without Copernicus App Lab Tools

- **Download all datasets from their respective repositories**
- **Understand the data**
- **Make conversions to comply with standards**
- **Store the transformed data using a new model**
- **Align data from different datasets to be able to combine the information (interlinking process)**
- **Consume data**
- **Analyse data**
- **Visualisation**

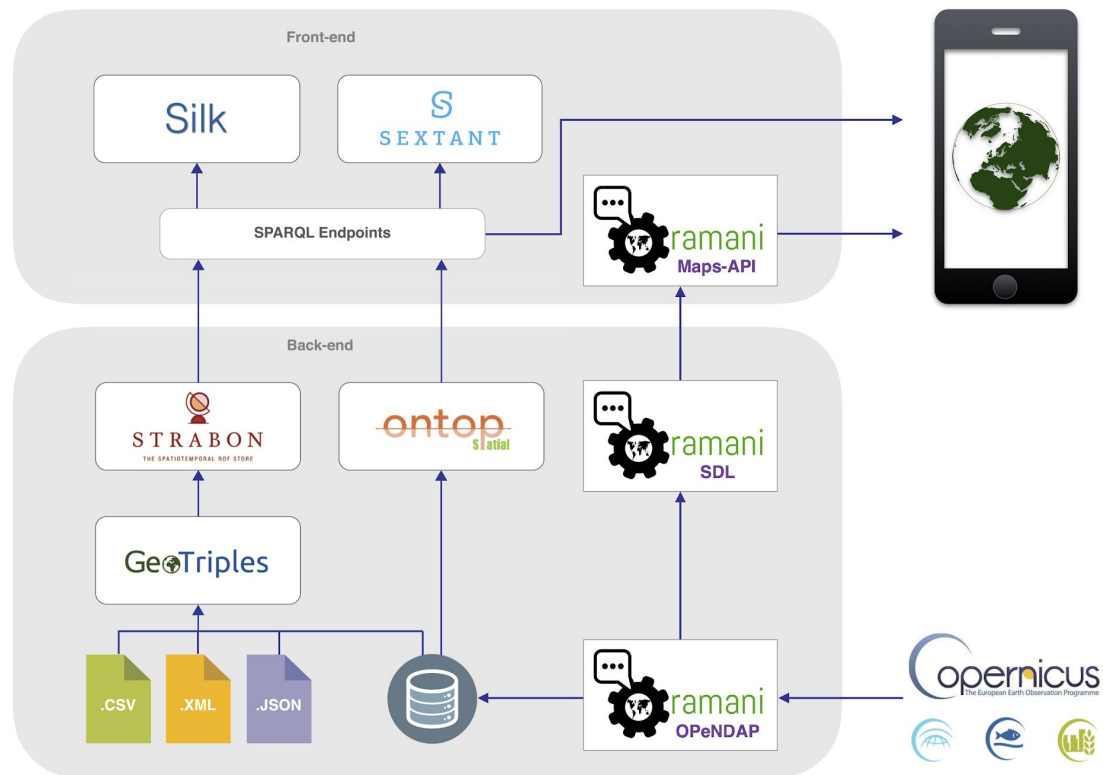
Approach with OPeNDAP only

- **Make conversions to comply with standards**
- **Align data from different datasets to be able to combine the information (interlinking process)**
- **View metadata to understand the data**
- **Consume data**
- **Analyse data**
- **Visualisation**

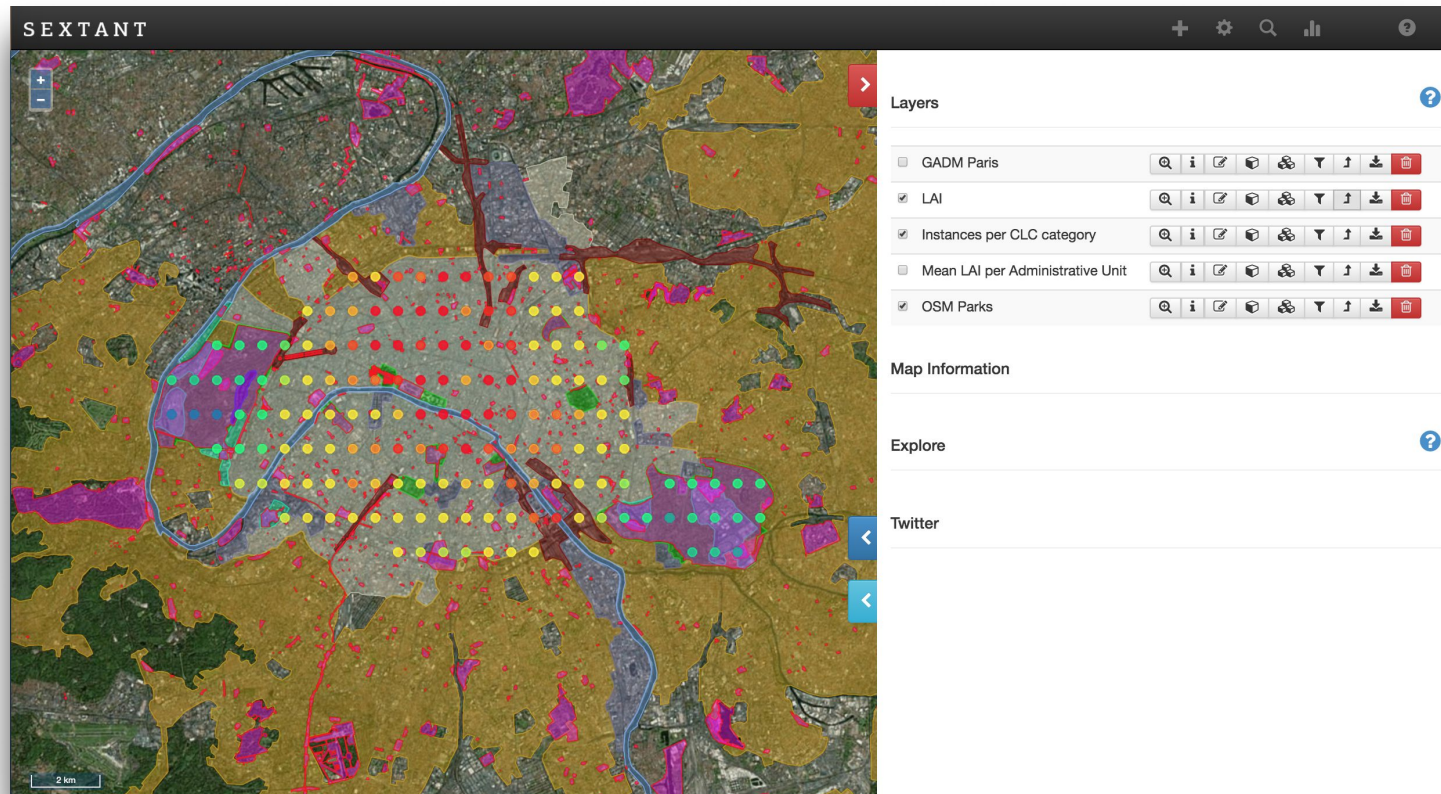
Approach with all Copernicus App Lab Tools

- **View metadata to understand the data**
- **Consume data**
- **Analyse data**
- **Visualisation**





Explore within-city patterns, e.g. parks vs. urban greenness (Paris)



Query Example - “Greenness within Paris”

```

SELECT ?w1 (ceil(avg(?lai)) as ?meanLAI) ?name
WHERE {
    ?s lai:lai ?lai .
    ?s geo:hasGeometry ?geo .
    ?s lai:observationTime ?t .
    ?geo geo:asWKT ?w .
    ?adm a <http://geo.linkedopendata.gr/gadm/AdministrativeUnit> .
    ?adm gadm:hasName ?name .
    ?adm geo:hasGeometry ?geo1 .
    ?geo1 geo:asWKT ?w1 .
    ?adm gadm:belongsToAdm2 ?adm2 .
    ?adm2 gadm:hasName "Paris"^^<http://www.w3.org/2001/XMLSchema#string> .
    FILTER (geof:sfIntersects(?w,?w1))
}
GROUP BY ?w1 ?meanLAI ?name

```

Contact

For questions on:

- Linked Open Data Tools
- Linked Data
- SPARQL
- SPARQL endpoints access

Please get in touch with:

Manolis Koubarakis: koubarak@di.uoa.gr

For questions on:

- Finding the right data
- SDL
- Data access through the API
- Data analytics

Please get in touch with: Valentijn Venus:

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For general questions on the project

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