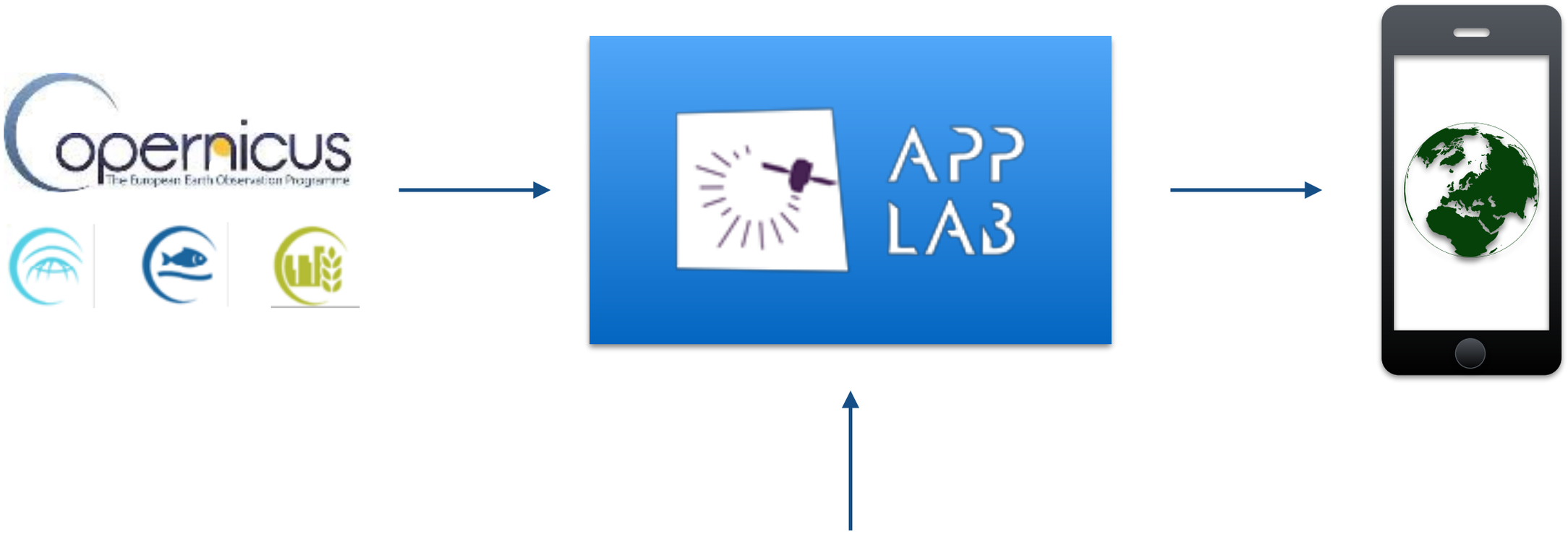
APP LAB

FROM BIG COPERNICUS DATA TO BIG INFORMATION AND BIG KNOWLEDGE: THE COPERNICUS APP LAB PROJECT

Copernicus App Lab
Linked Data Technologies



Motivation

- Lots of Earth Observation (EO) data has been made freely available recently in Europe and the United States.
- Europe is a pioneer in this area with its flagship Earth Observation Programme Copernicus.

Copernicus Services

- **Copernicus Services** transform the wealth of satellite and in-situ Copernicus data into **value-added products** by processing and analysing the data.

- There are six Copernicus services covering the following thematic areas: **Atmosphere, Marine, Land, Climate, Emergency** and **Security.**

Copernicus App Lab - Technical Pillars

- Provision of Copernicus linked open data via a cloud infrastructure
- Tools for semantic linkage of Copernicus data with other societal or business information
- Improved data access via a streaming data library

Why Linked Data?

The vision of linked data is to go from a Web of documents to a Web of data:

- Unlock data dormant in their silos
- Make it available on the Web
- Interlink it with other data

This is especially useful for Earth Observation data.

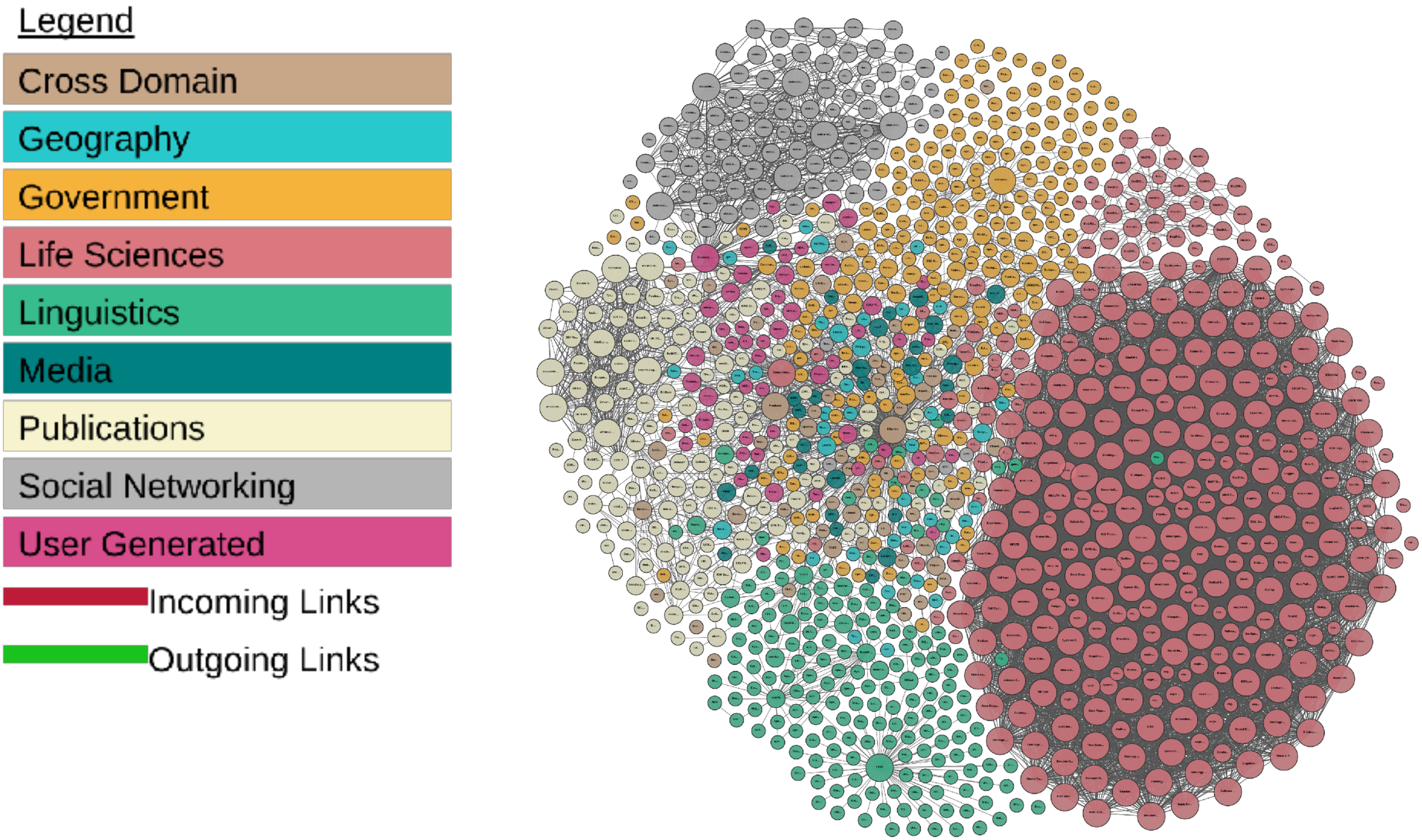
Copernicus Data as Linked Data

- Make Copernicus data more **easily discoverable by search engines** by using technologies such as **schema.org** for encoding the metadata. schema.org is now used by all major search engines.
- Once datasets are transformed into linked data (e.g., the CORINE land cover dataset), we can **interlink** them with other open linked data sources (e.g., GADM, OpenStreetMap or DBpedia data) to build **geo-knowledge graphs.**
- Enable **semantics-based querying** and **visualization** of these graphs.
- This works for **static** but also **dynamic (frequently changing) datasets**.
- **Therefore: enable easier utilization** e.g., by software developers who may not be specialists in Earth Observation.

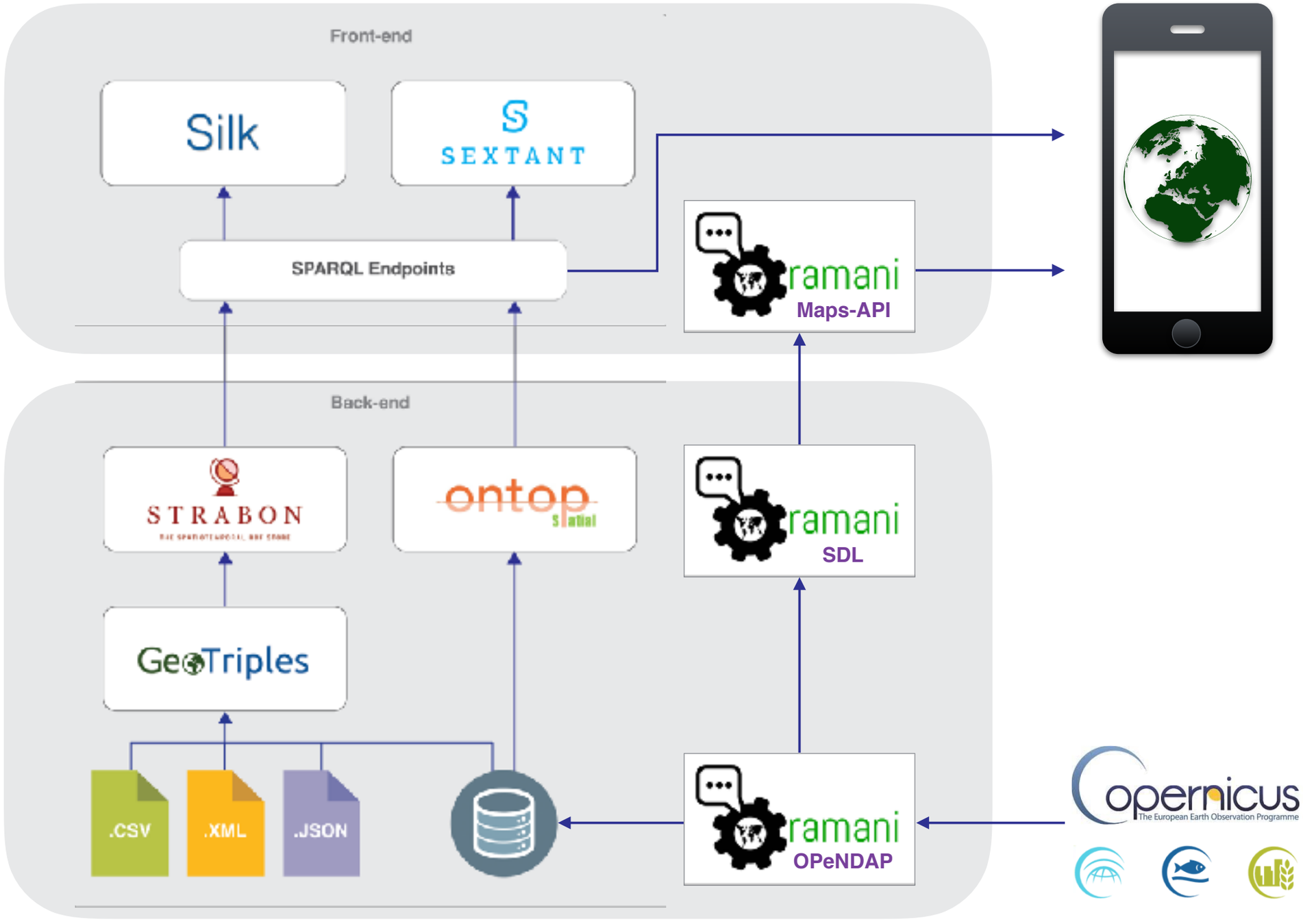
Linked Data Benefits

- More and more datasets are becoming available as linked data everyday (1163 datasets in LOD cloud today, 570 datasets in LOD cloud in 2014)
- Easy to combine different data sources without the need to integrate them
- Dereferenced URIs are used to identify things and expose them on the Web as resources
- Easy to build services/applications

Linked Open Data Cloud



Linked Data Technologies



Building Apps with Linked Data

Approach without Copernicus App Lab Tools

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

Approach with OPeNDAP only

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

Approach with all Copernicus App Lab Tools

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

Demo Use Case - LAI in Paris