

A data-centric platform for scientific support to EU policies

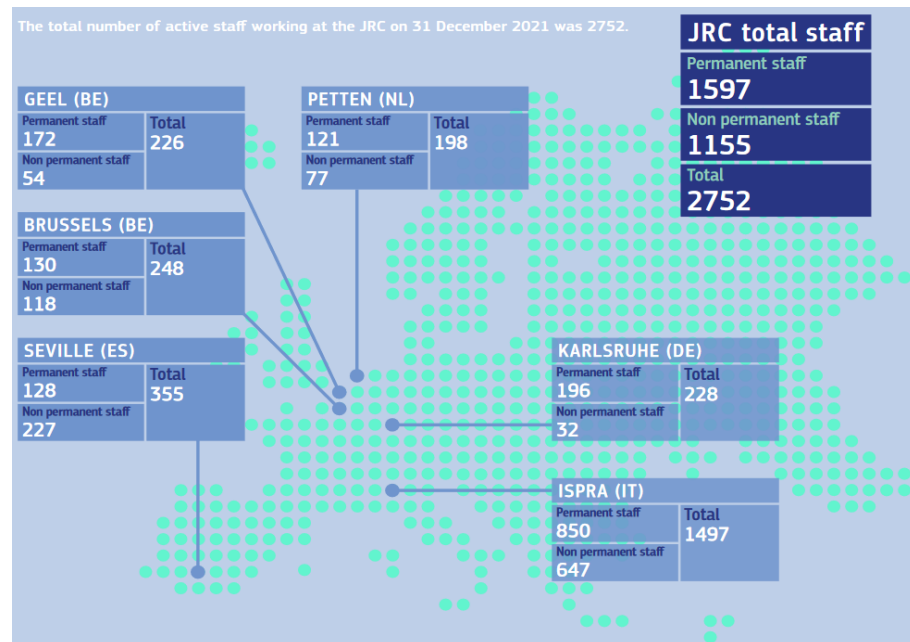
Chiara Chiarelli, Davide De Marchi, Ilias Ioannou, Pieter Kempeneers,
Tomas Kliment, Pierre Soille, **Roberto Ugolotti**

Joint Research Centre

Geneve, 04/05/2023

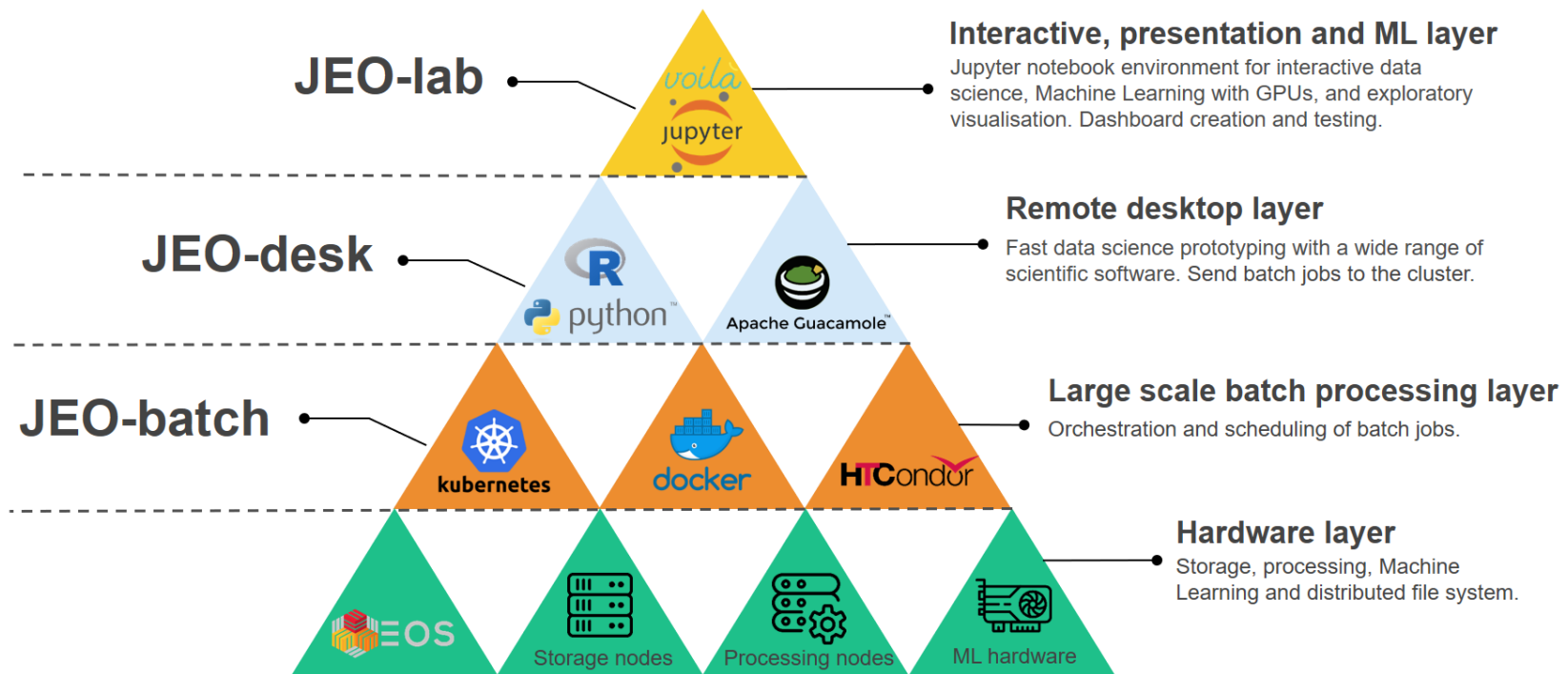
Joint Research Centre

The role of the Joint Research Centre (JRC) of the European Commission is to provide independent, evidence-based science and knowledge, supporting European Union (EU) policies to positively impact society.







Big Data Analytics Platform

The JRC Big Data Analytics Platform is a cloud platform that provides data, environments, and software to JRC researchers, all in a single place.

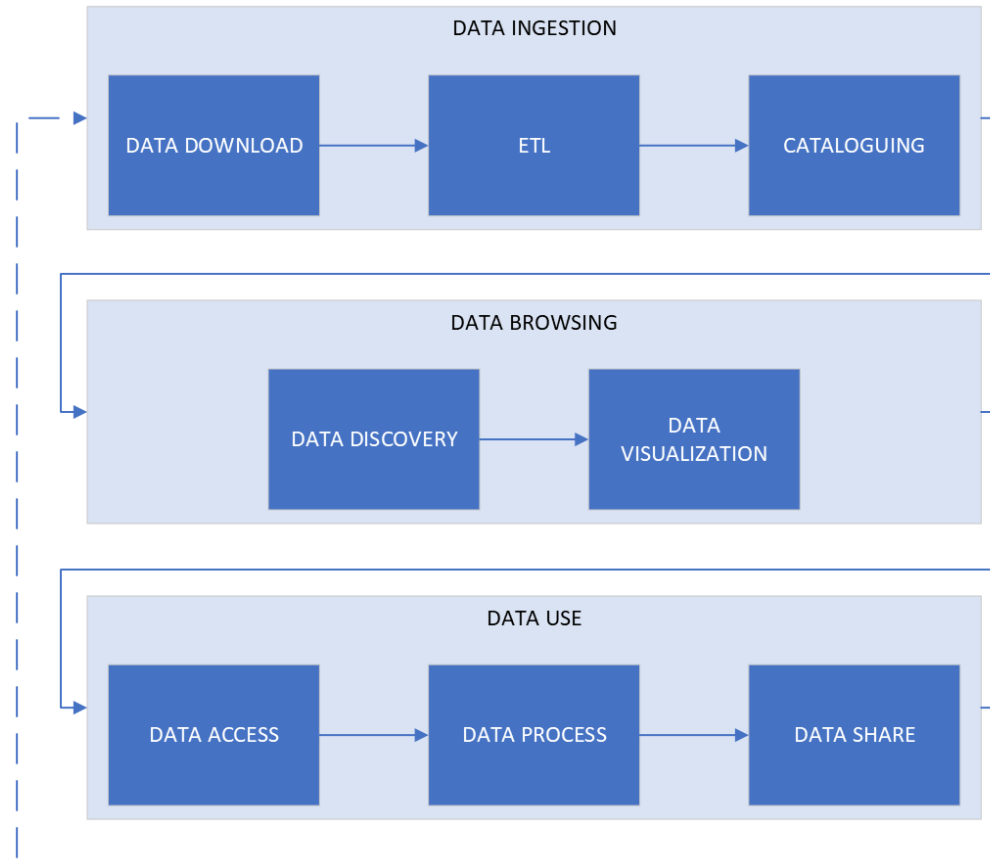


Big Data Analytics Platform

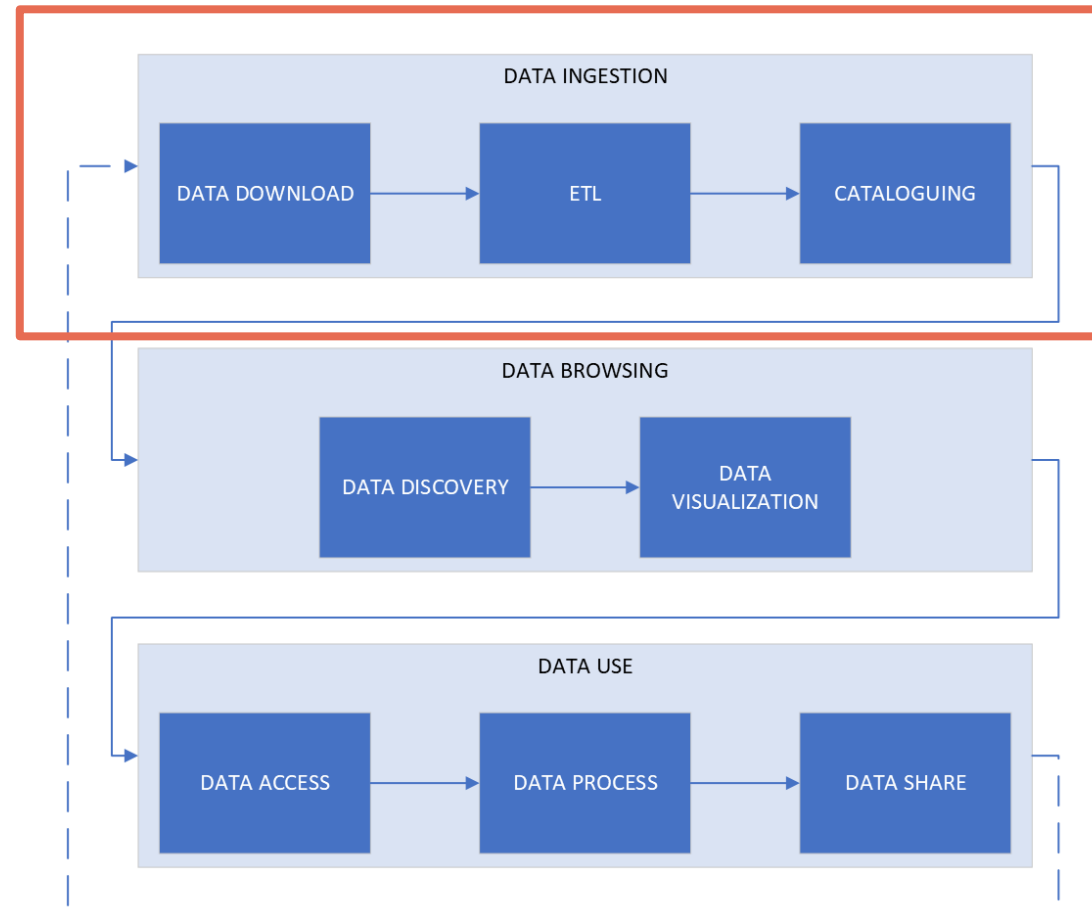
The JRC Big Data Analytics Platform is a cloud platform that provides data, environments, and software to JRC researchers, all in a single place.

| | | | |
|--|--|---|---|
|  ~175 servers In the JRC Data Center For storage, processing jobs and services |  ~4,500 cores 12-19 GBs of RAM per core For JEO- batch/desk/lab and other services |  10 GPU servers 38 Nvidia GPU's in total For machine learning and deep learning |  28.4 PiB storage 14.2 PiB net capacity For datasets and satellite images storage |
|--|--|---|---|

A Data Story in BDAP



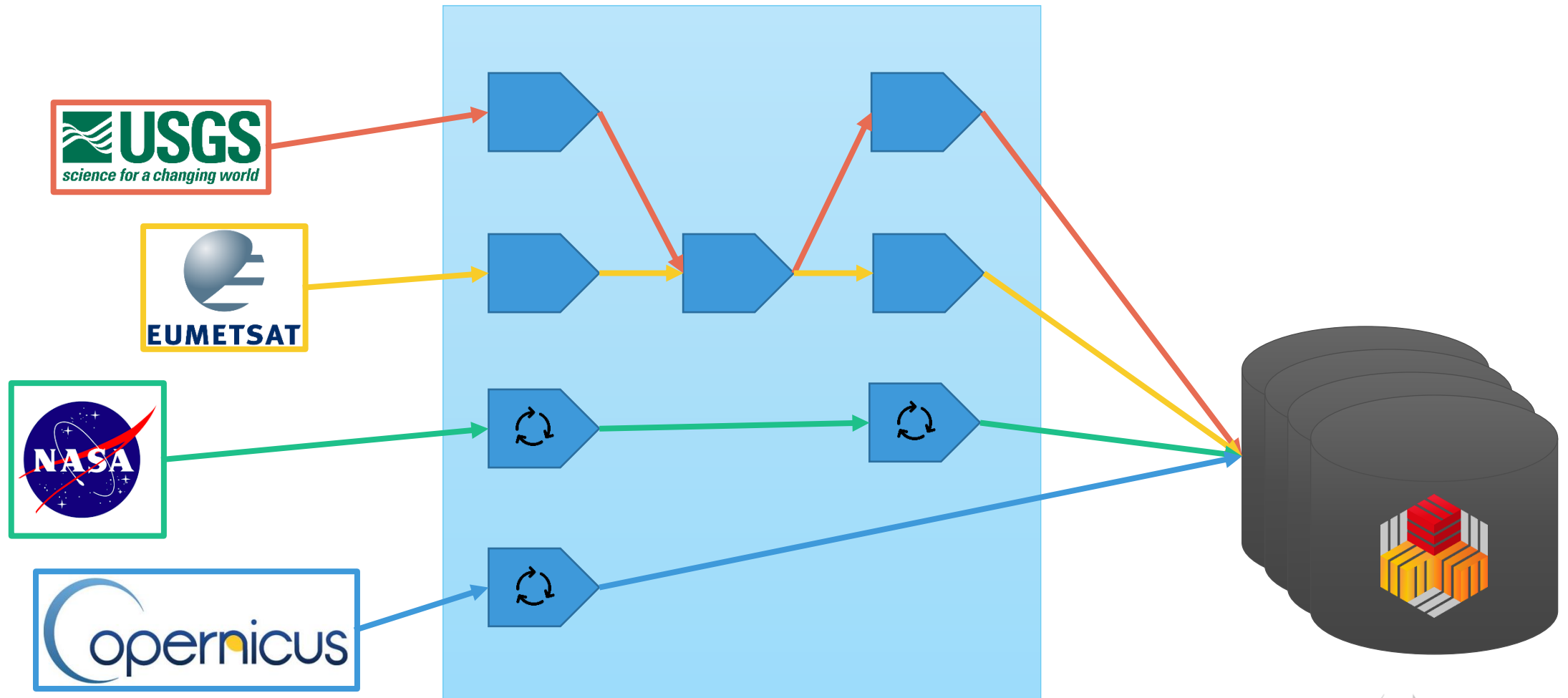
A Data Story in BDAP – Data Ingestion



Some numbers

- > 400 collections
- > 100 providers
- > 20 domains
- > 20 million of metadata records
- > 10 PB of data

Data Download



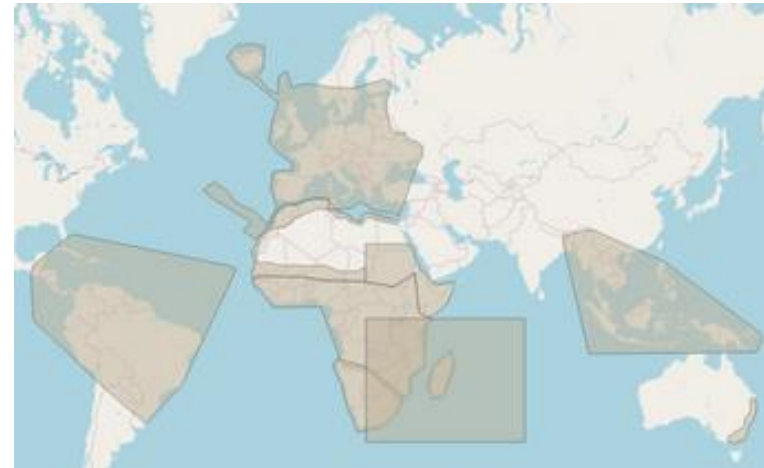
Main Systematic Downloads



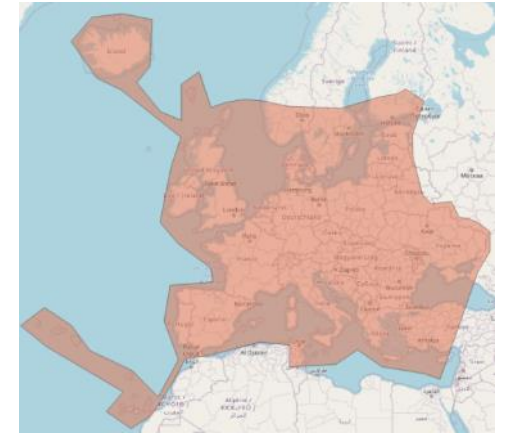
Sentinel-1 GRD



Sentinel-1 SLC



Sentinel-2 L1C and L2A



NASA HLS L30 and S30



Sentinel-3 OL2LRR + OL2WRR and Sentinel-5P: global

Quality Checks

Completeness

Accuracy

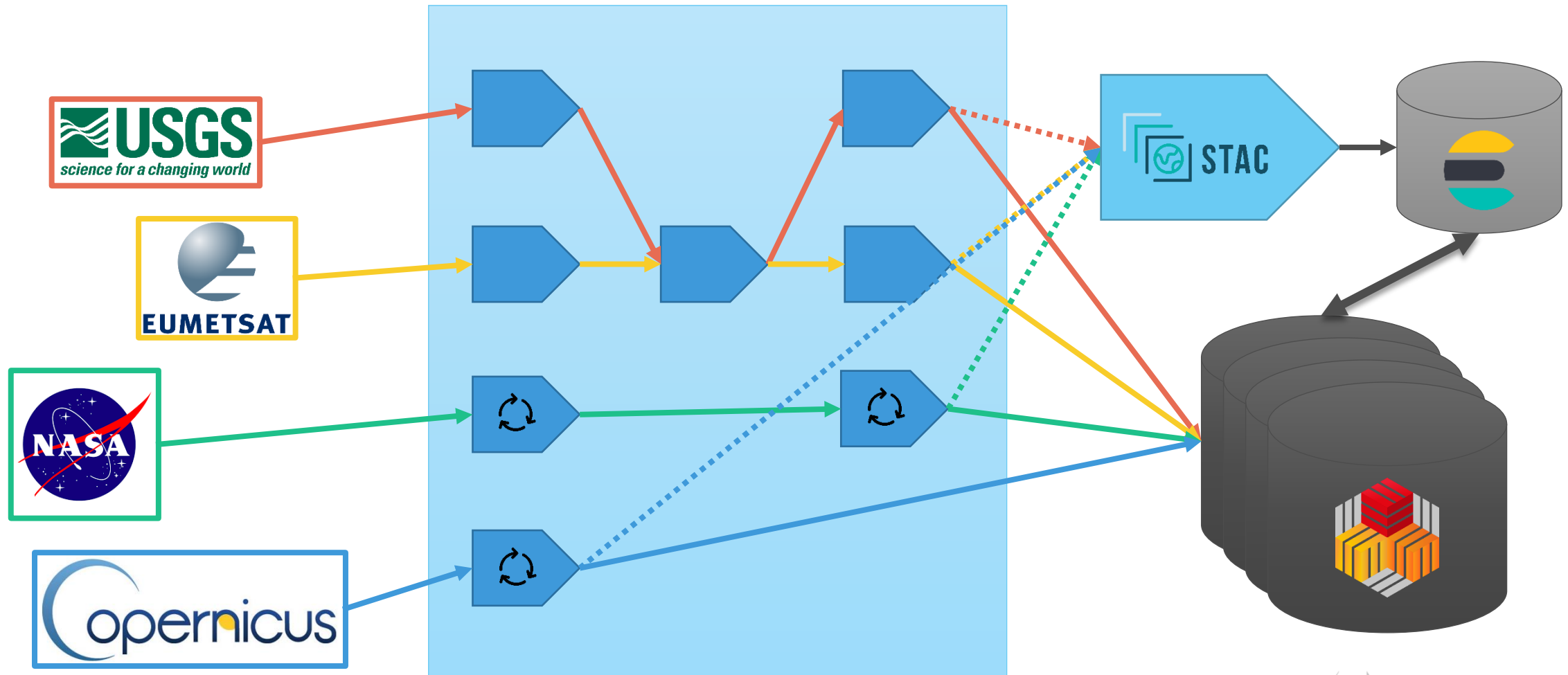
Consistency

Validity

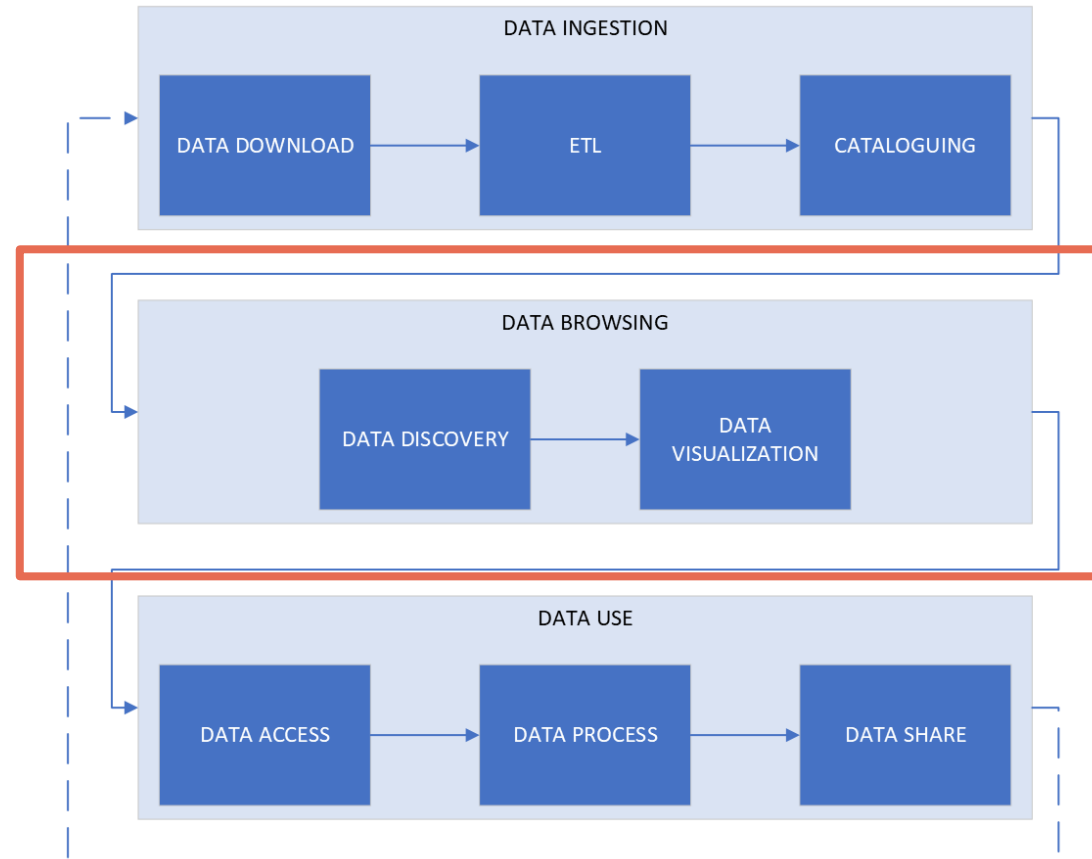
Uniqueness

Integrity

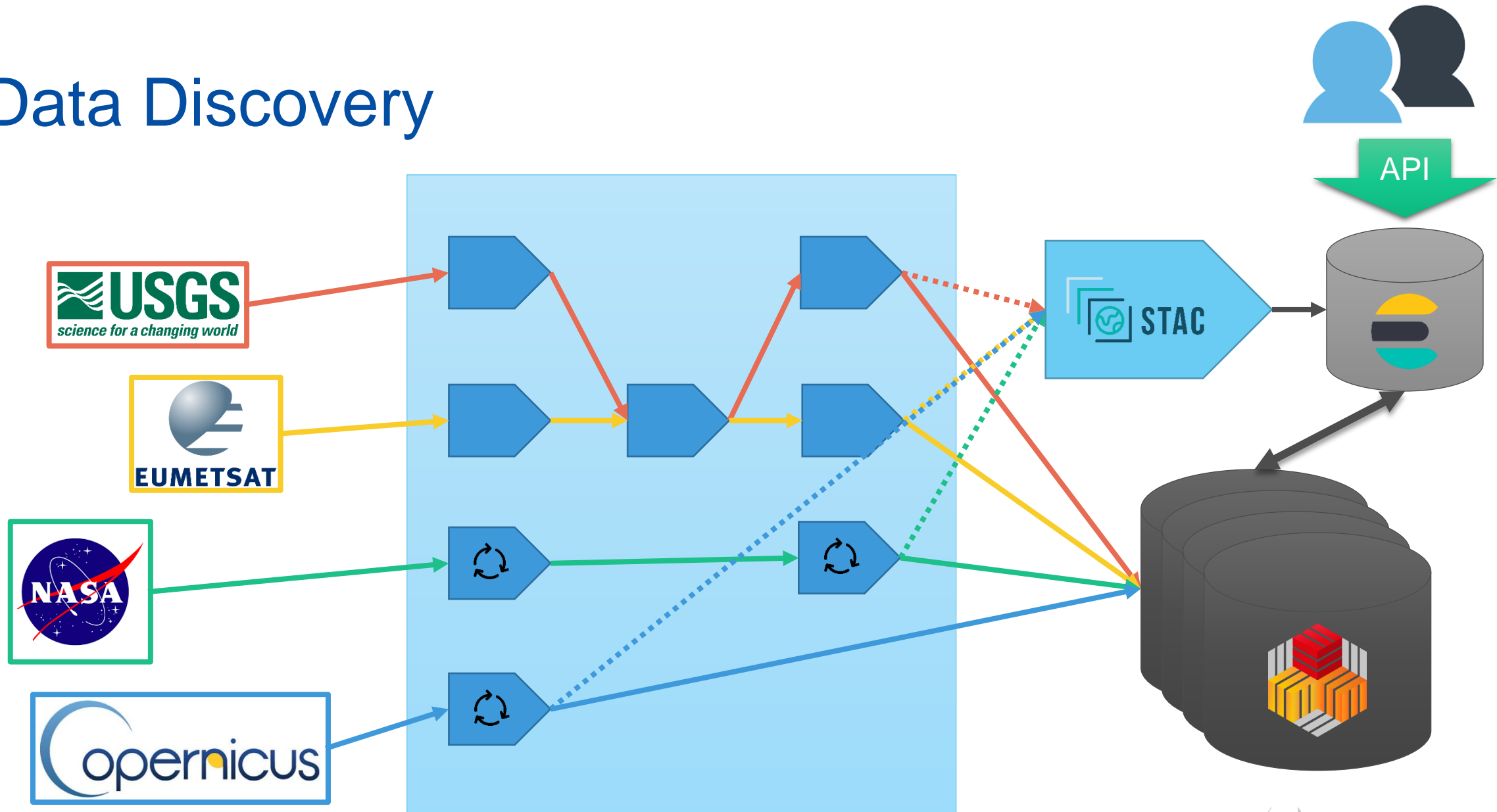
Cataloguing



A Data Story in BDAP – Data Browsing



Data Discovery



REST APIs

| | | |
|------|--|---------------------|
| GET | / | Landing Page |
| GET | /conformance | Conformance Classes |
| GET | /collections/{collection_id}/items/{item_id} | Get Item |
| GET | /search | Search |
| POST | /search | Search |
| GET | /collections | Get Collections |
| GET | /collections/{collection_id} | Get Collection |
| GET | /collections/{collection_id}/items | Get Itemcollection |

BDAP Data Catalog

JRC Big Data Analytics Platform Catalog

Source Share Language: English

Browse Search

Description

















The JRC Big Data Analytics Platform (BDAP) links data, data services, data scientists and thematic experts for generating policy relevant insights and foresight. It will play an instrumental role in advancing JRC to better mobilize and synthesize its collective knowledge and expertise in support to the EC priorities. This Catalog shows the list of all rasters and vectors available in the JRC Big Data Analytics Platform (BDAP).

Additional Resources

- OpenAPI service description
- OpenAPI service documentation

Catalogs 24 Tiles List Ascending Descending

Filter catalogs by title

| | | | |
|---|---|---|---|
|  Administrative Units Data Administrative Units Collections available in the JRC Big Data Analytics Platform (BDAP). |  Elevation Data Elevation Collections available in the JRC Big Data Analytics Platform (BDAP). |  Landuse Data Landuse Collections available in the JRC Big Data Analytics Platform (BDAP). |  Protected Sites Data Protected Sites Collections available in the JRC Big Data Analytics Platform (BDAP). |
|  Buildings Data Buildings Collections available in the JRC Big Data Analytics Platform (BDAP). |  Energy Data Energy Collections available in the JRC Big Data Analytics Platform (BDAP). |  Meteo Data Meteo Collections available in the JRC Big Data Analytics Platform (BDAP). |  Social Aspects Data Social Aspects Collections available in the JRC Big Data Analytics Platform (BDAP). |
|  Copernicus Data Access Portfolio Document (DAP) Data Copernicus Data Access Portfolio Document (DAP) Collections available in the JRC Big Data Analytics Platform (BDAP). |  Geographical Grid Systems Data Geographical Grid Systems Collections available in the JRC Big Data Analytics Platform (BDAP). |  NASA Data NASA Collections available in the JRC Big Data Analytics Platform (BDAP). |  Soil Data Soil Collections available in the JRC Big Data Analytics Platform (BDAP). |
|  Copernicus Sentinel Data Copernicus Sentinel Collections available in the JRC Big Data Analytics Platform (BDAP). |  Geographical Names Data Geographical Names Collections available in the JRC Big Data Analytics Platform (BDAP). |  Natural Risk Zones Data Natural Risk Zones Collections available in the JRC Big Data Analytics Platform (BDAP). |  Statistical Units Data Statistical Units Collections available in the JRC Big Data Analytics Platform (BDAP). |

JRC Big Data Analytics Platform Catalog

BDAP Data Catalog - Search

Search

in JRC Big Data Analytics Platform Catalog

[Browse](#)

[Source](#) [Share](#) [Language: English](#)


Temporal Extent

4/1/2023 ~ 4/7/2023

All times in Coordinated Universal Time (UTC).

Spatial Extent

Filter by spatial extent



Collections

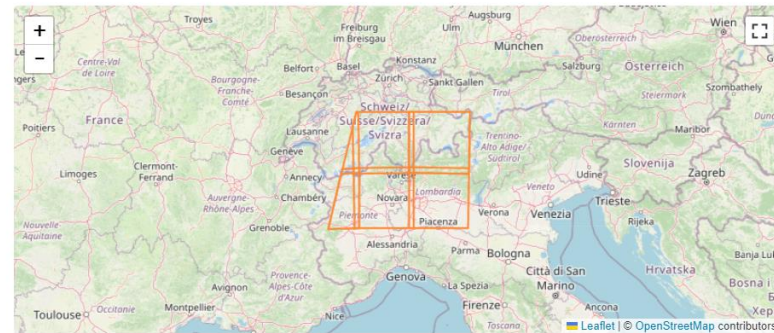
Sentinel-2 MSI: MultiSpectral Instrument, Level-1C

Item IDs

Enter one or more Item IDs...

Sort

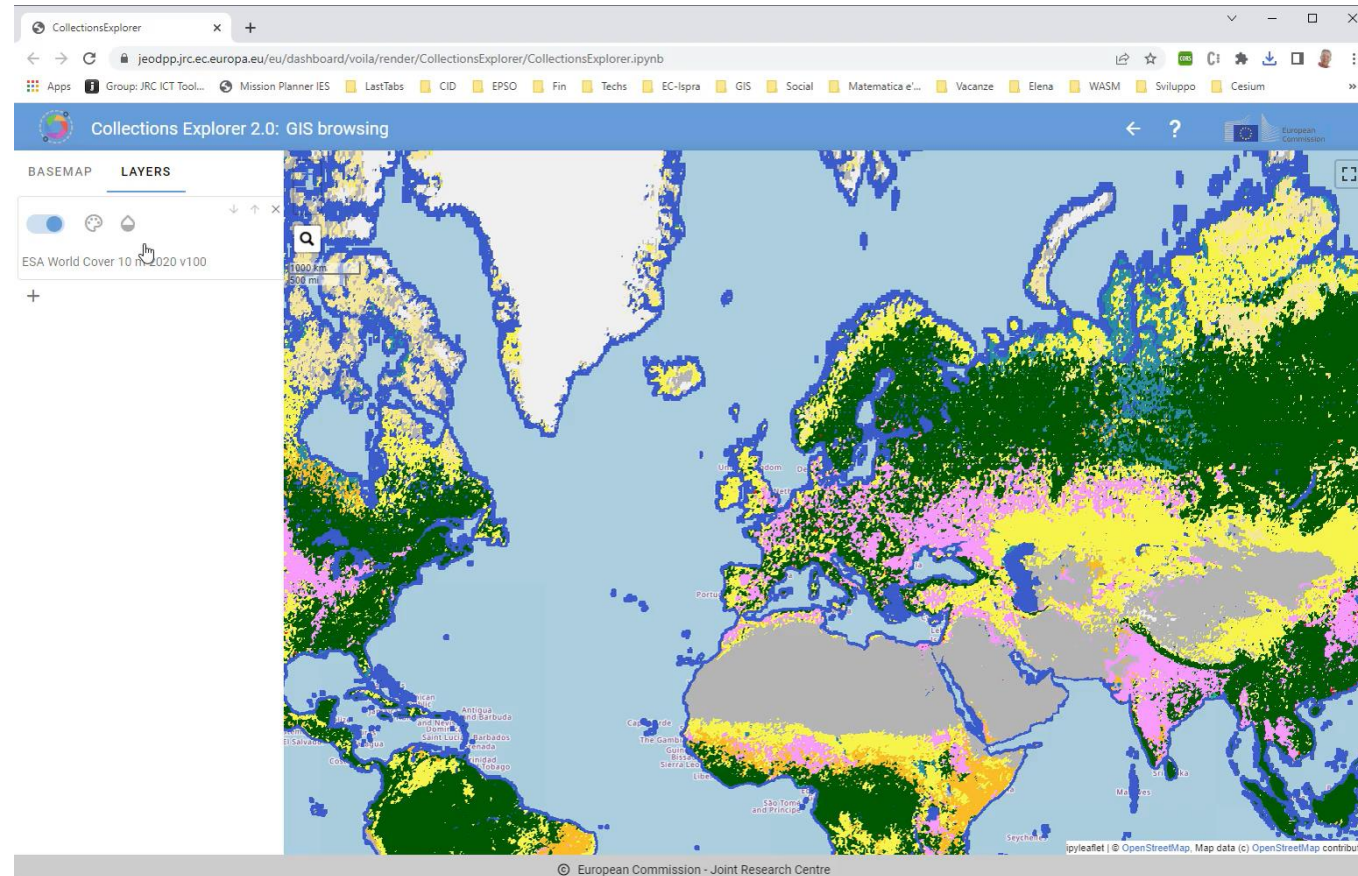
Default



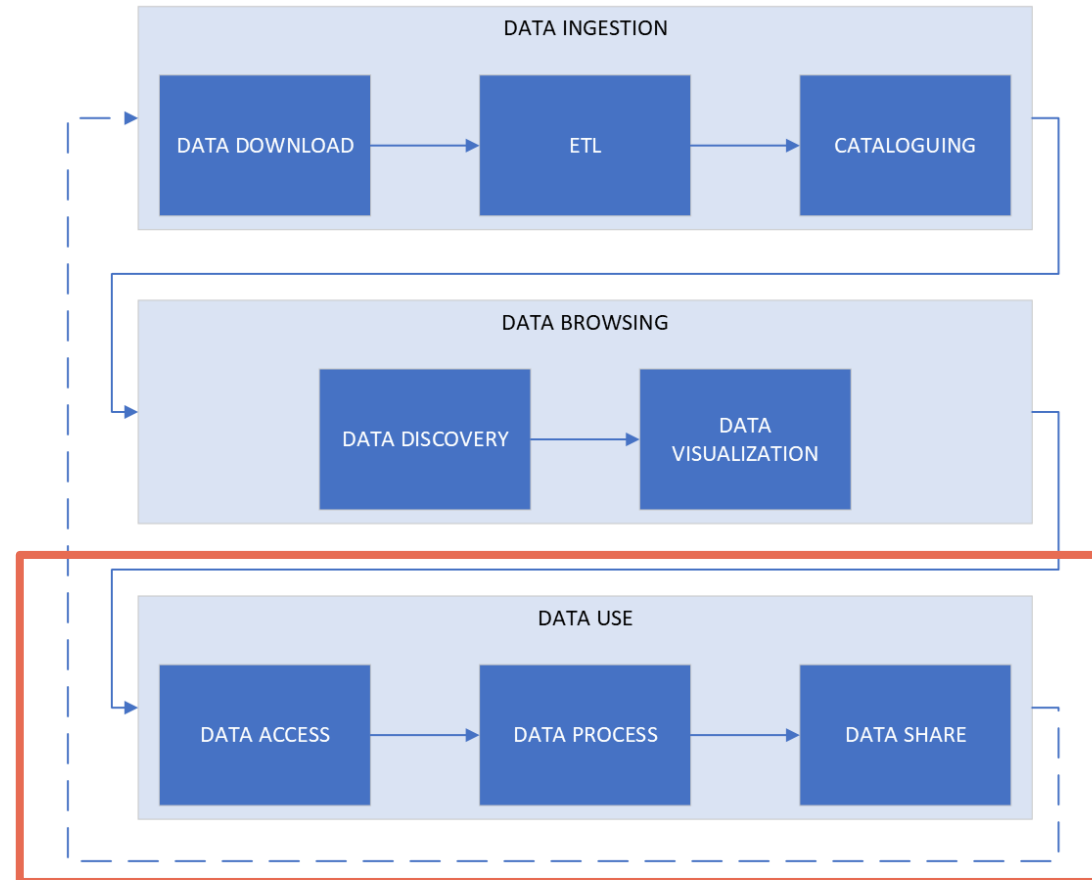
Items

- | | | |
|--|--|--|
| <p>S2A_MSIL1C_20230406T102021_N0509_R065_T32T_LR_20230406T171951.SAFE</p> <p>Directory Binary JPEG 2000</p> <p>4/6/2023, 10:20:21 AM UTC</p> | <p>S2A_MSIL1C_20230406T102021_N0509_R065_T32T_NS_20230406T171951.SAFE</p> <p>Directory Binary JPEG 2000</p> <p>4/6/2023, 10:20:21 AM UTC</p> | <p>S2B_MSIL1C_20230401T101559_N0509_R065_T32T_NR_20230401T135921.SAFE</p> <p>Directory Binary JPEG 2000</p> <p>4/1/2023, 10:15:59 AM UTC</p> |
| <p>S2A_MSIL1C_20230406T102021_N0509_R065_T32T_LS_20230406T171951.SAFE</p> <p>Directory Binary JPEG 2000</p> <p>4/6/2023, 10:20:21 AM UTC</p> | <p>S2B_MSIL1C_20230401T101559_N0509_R065_T32T_LR_20230401T135921.SAFE</p> <p>Directory Binary JPEG 2000</p> <p>4/1/2023, 10:15:59 AM UTC</p> | <p>S2B_MSIL1C_20230401T101559_N0509_R065_T32T_NS_20230401T135921.SAFE</p> <p>Directory Binary JPEG 2000</p> <p>4/1/2023, 10:15:59 AM UTC</p> |

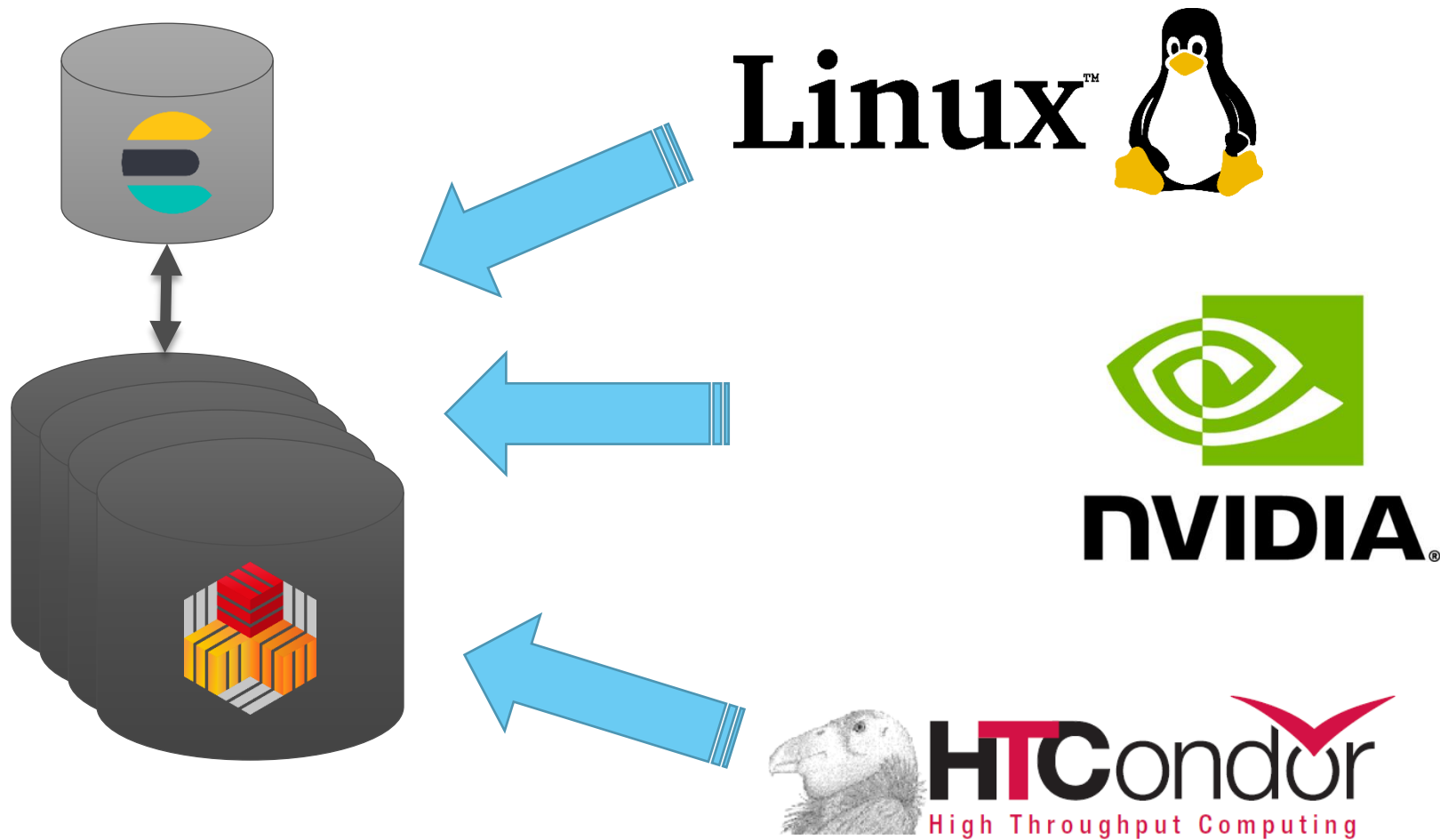
BDAP Collections Explorer



A Data Story in BDAP – Data Use



BDAP Development Environment

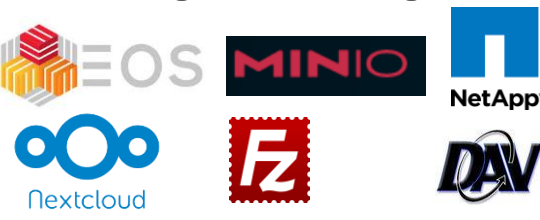


BDAP software landscape

Operating systems & virtualization



Storage & file sharing



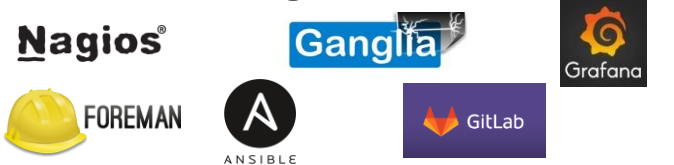
Web-desktop for data science



Data science languages & IDEs



Monitoring & Automation



Search engine & web frameworks/servers



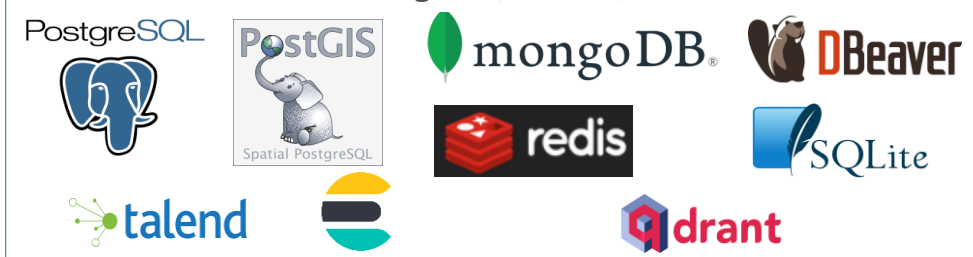
AI & Machine Learning



HTC/HPC & Workflow engines



Database engines, clients, and tools



Geospatial software applications



Conclusions – How BDAP adds value to data?

Combine different sources of data

Quality checks on data

Based on open-source and widely used standards

Integrated environment + data

A data-centric platform for scientific support to EU policies

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