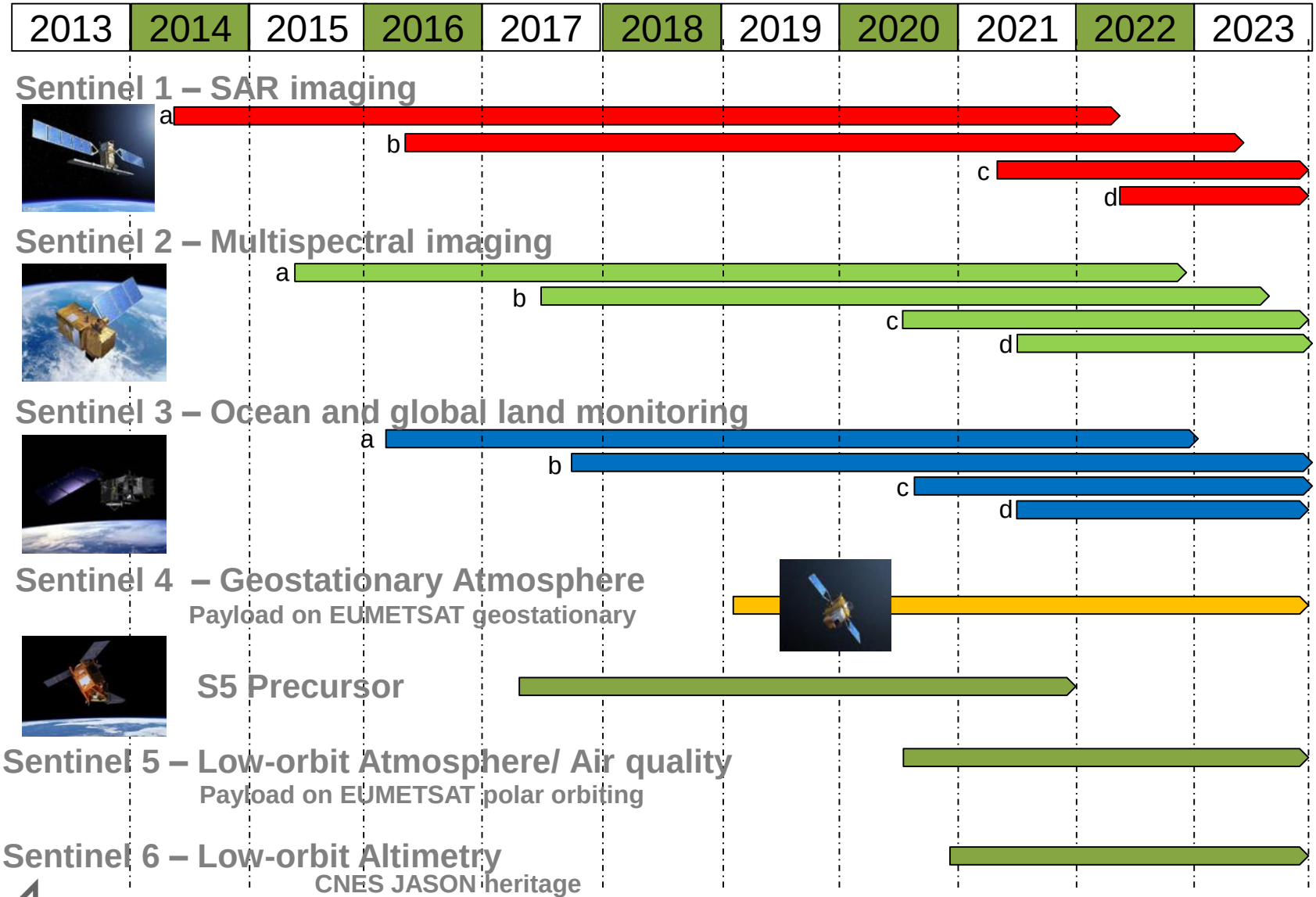
CODE-DE

Copernicus Data and Exploitation Platform for Germany

Deutsches Zentrum für Luft und Raumfahrt

Christoph Reck, Andreas Müller, Gunter Schreier,
Vanessa Keuck, Jörn Hoffmann, Hans-Peter Lüttenberg
Martin Böttcher (Brockmann Consult)

The Sentinel Satellite Family



….and rising data volume

Sentinel user products in the ESA Data Hub	2014	2015	2016	2017	2018	2019	2020
yearly volumen [TB]	180	966	4.490	6.591	7.250	7.469	8.127
average rate [Mbit/s]	194	257	1.194	1.753	1.928	1.987	2.162

Februar 2016: 14 month Sentinel-1 PAC:

1 Petabyte; > 750,000 data products

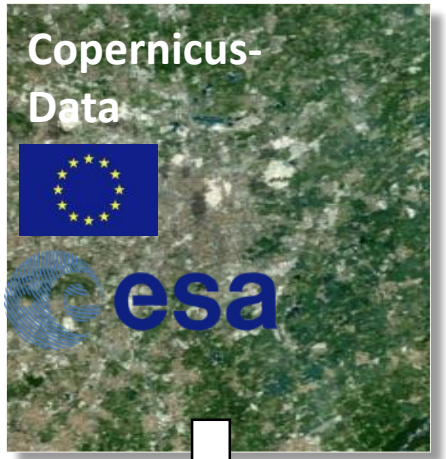
The S1-A amount stored since December 2014 exceeds the total amount of 10 years Envisat ASAR mission.

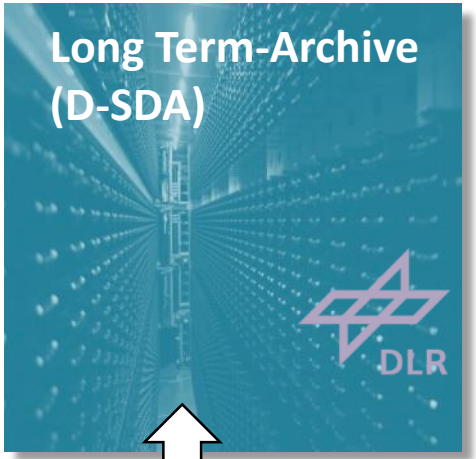
Deutsches Satelliten Daten Archiv

Sentinel PAC Archive

50 (+33) PetaByte storage capacity
~ 1,5 PetaByte of product data per year per Sentinel

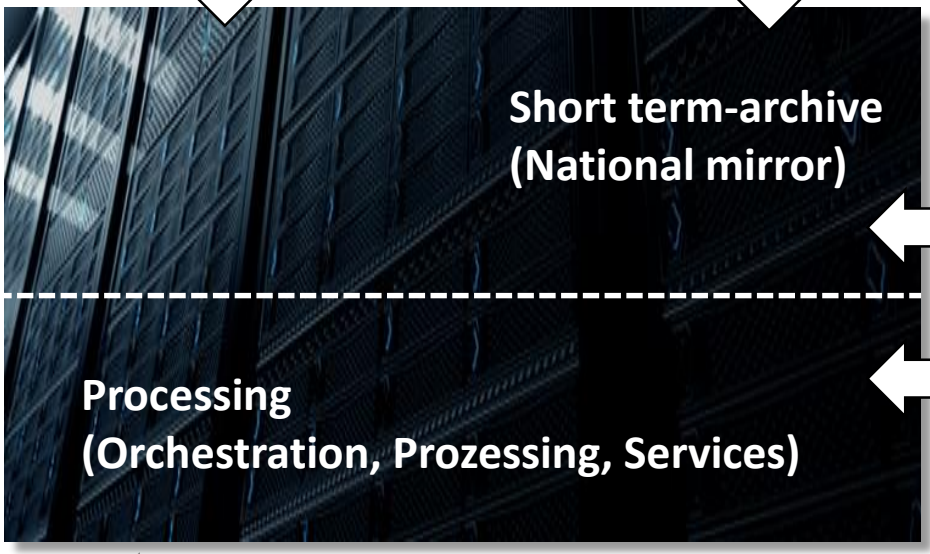
CODE-DE: Copernicus Data and Exploitation Platform

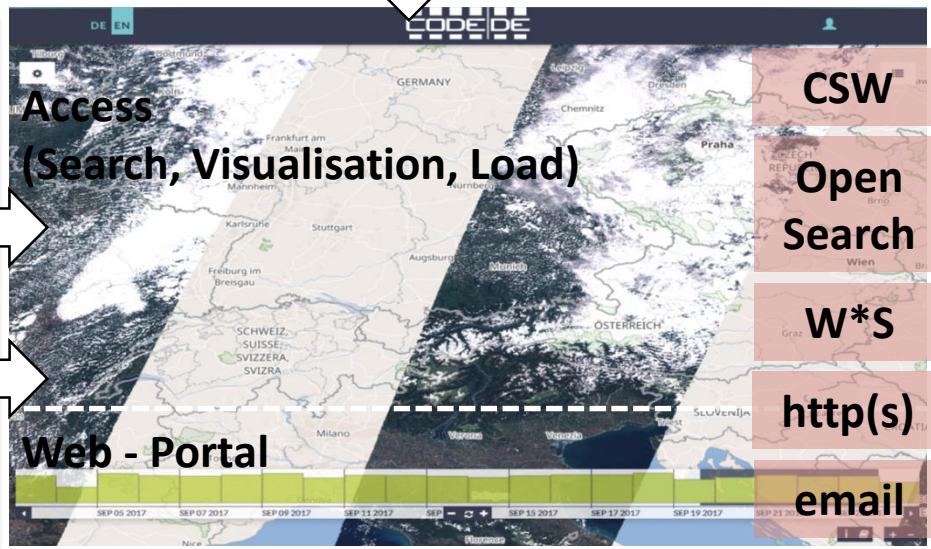




Funding:

Bundesministerium für Verkehr und digitale Infrastruktur





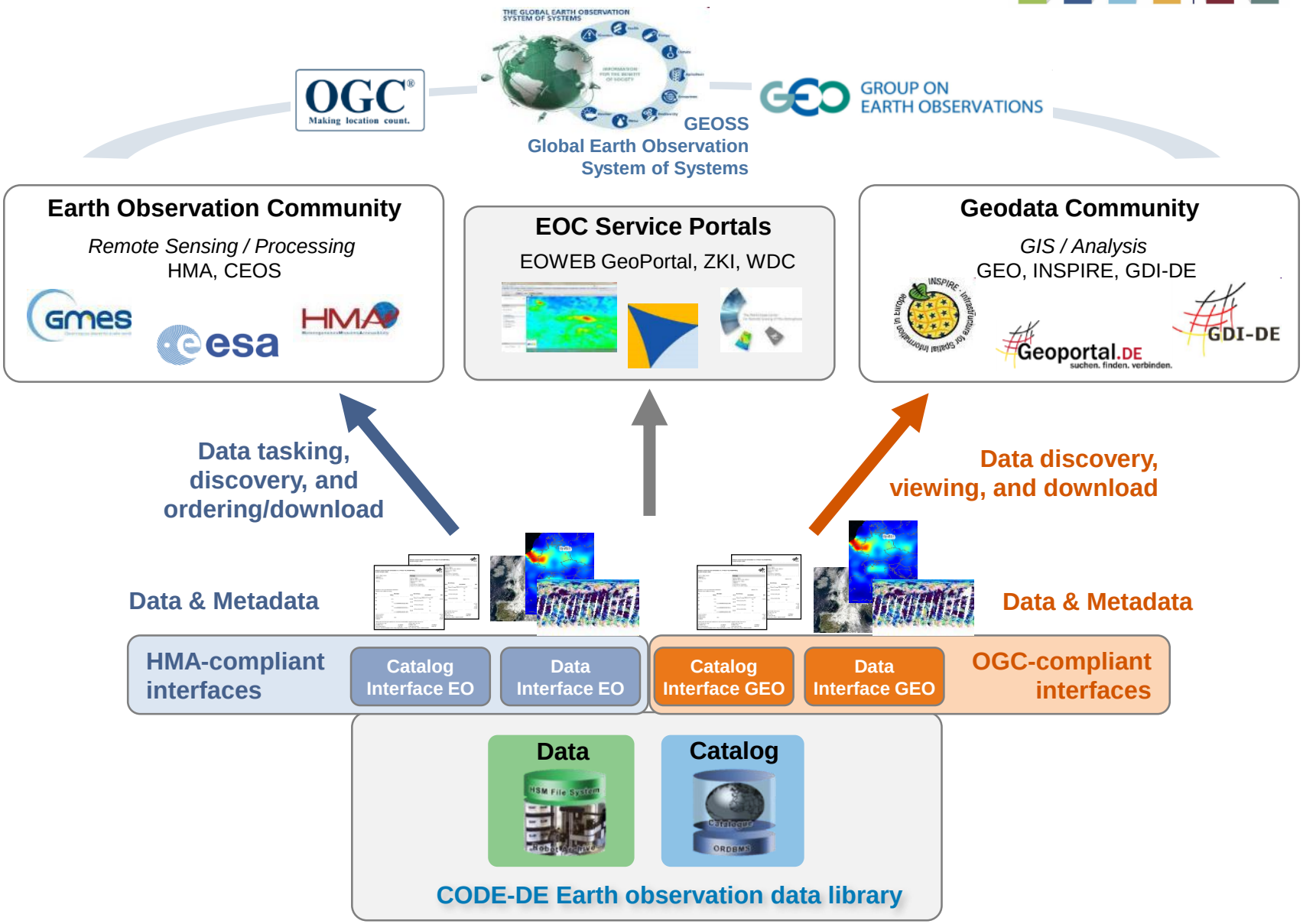
DLR

CODE-DE: Copernicus Data and Exploitation Platform – Deutschland (Germany)

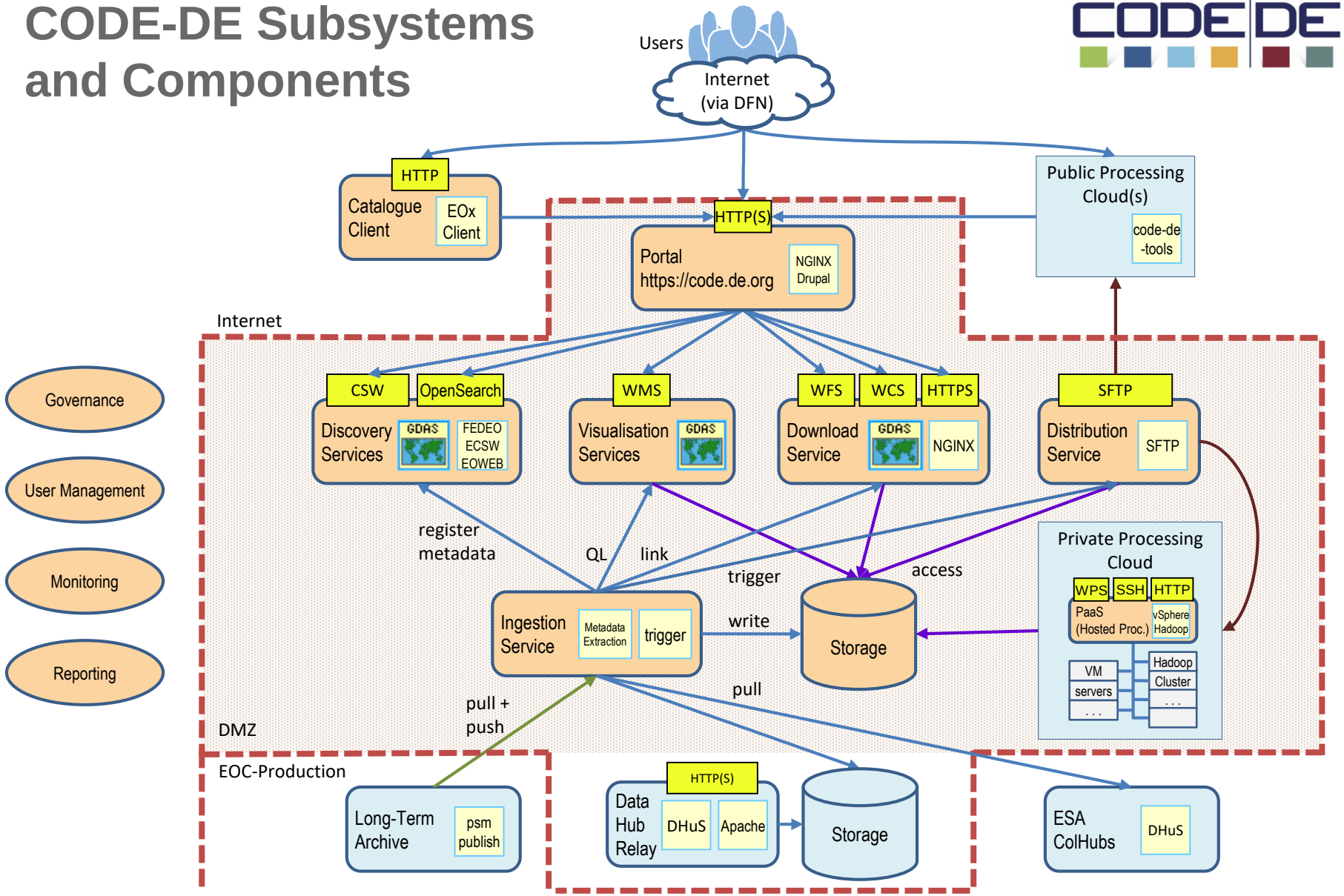
- Time: 01.07.2016 – 31.03.2019
- Phases:
  - Operational Data Access: March 2017
  - Fully operational, including processing: Q4/2017

- Access CODE-DE
  - Open View and Discovery Service
  - Download after self-registration
  - On-demand processing access
    - Free-of-charge for selected “applications” (beta users)
    - Scalable processing environment also for any third party users

Standardised Access and Interfaces



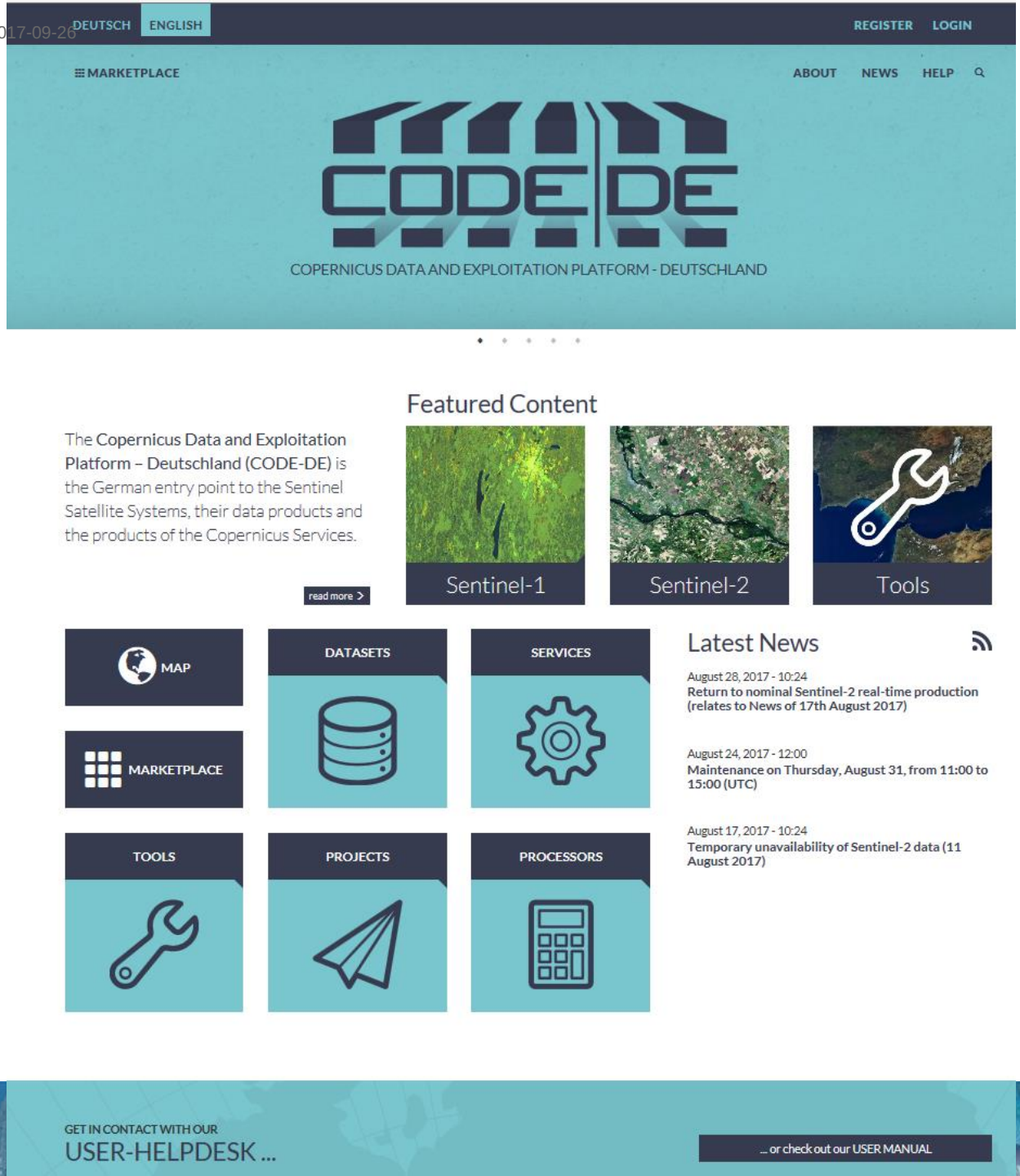
CODE-DE Subsystems and Components



Portal

Launched 09.03.2017

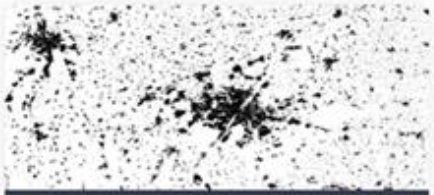
http://code-de.org

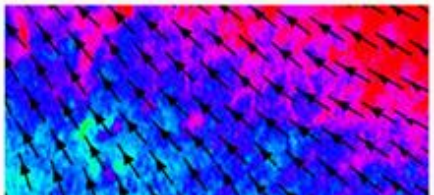


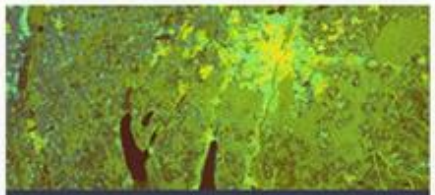
MARKETPLACE | CODE-DE | ABOUT | NEWS | HELP

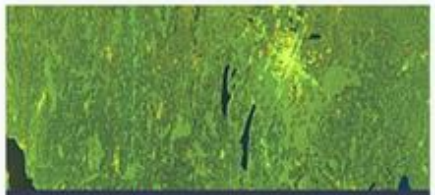
DATASETS >

The Service Marketplace includes a JavaScript based CSW client which allows creating CSW queries for the Discovery Service of the CODE-DE infrastructure. The Discovery Service returns metadata entries that are INSPIRE conform about products from the collaborative platform as well as third-party missions.


Global Urban Footprint (GUF) - TSX/TDX - global


Sentinel-1 SAR - Level 2 (Ocean Product)

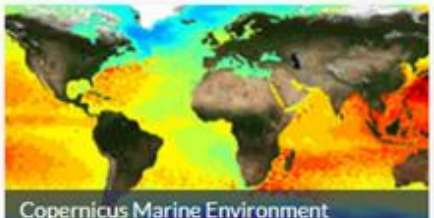

Sentinel-1 SAR - Level 1 (Ground Range Detected)

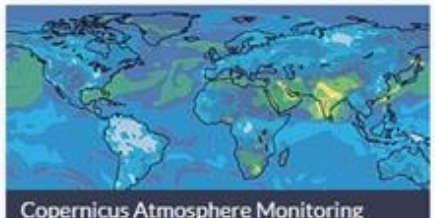

Sentinel-1 SAR - Level 1 (Single-Look Complex)

SERVICES >

These services include search and access (see also DATASETS), browsing imagery, downloading and processing (available from mid-2017). Application projects


Copernicus Land Monitoring Service


Copernicus Marine Environment Monitoring Service


Copernicus Atmosphere Monitoring Service


Copernicus Emergency Management Service

TOOLS >

CODE-DE provides useful tools like the Sentinel toolboxes. Tools that are externally hosted will be linked; other tools can be directly downloaded from the marketplace. For information on how to use these tools in the frame of CODE-DE check the user manual or contact HelpDesk.

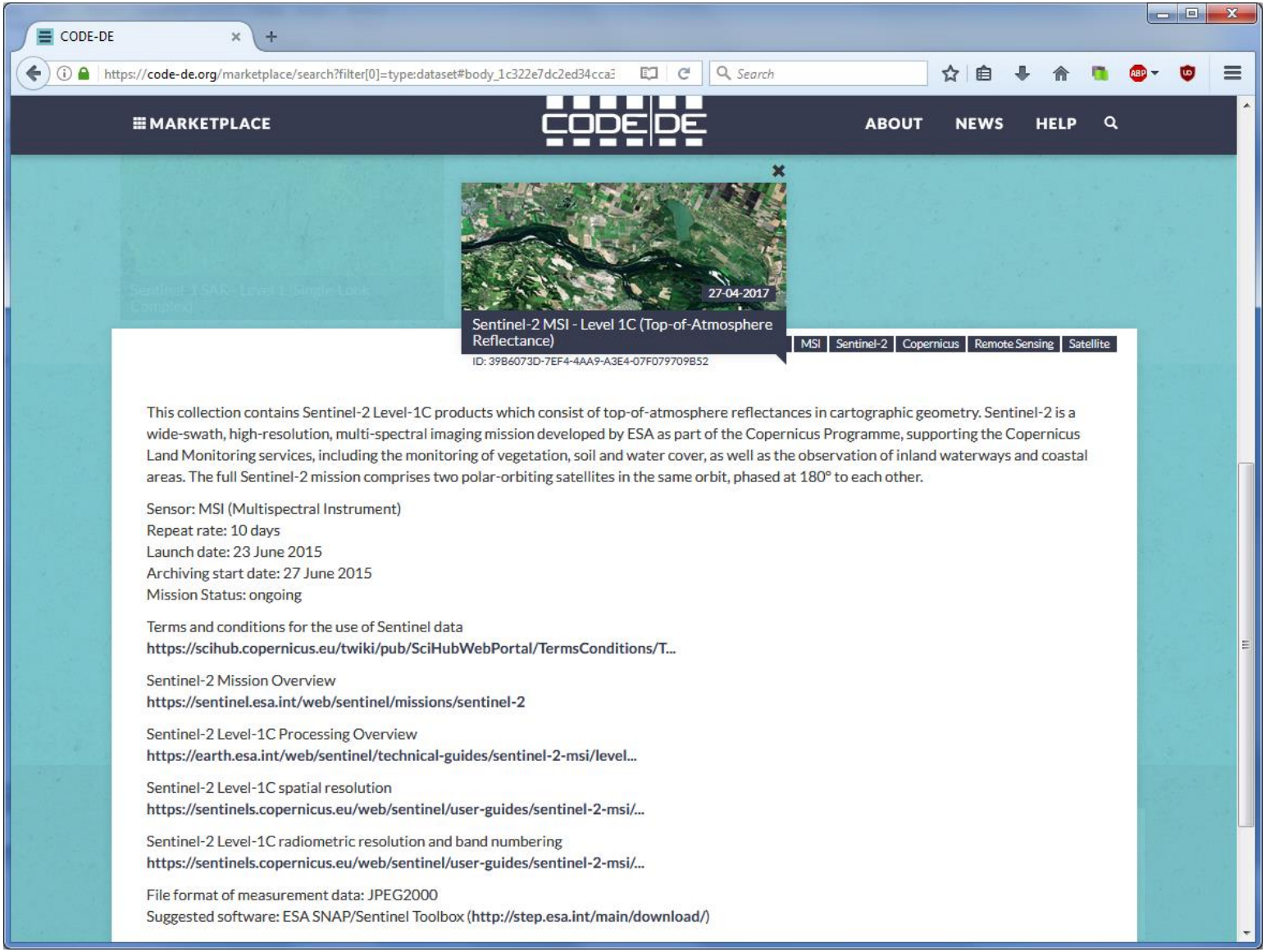
QGIS

CODE-DE User Tools

ESA Sentinel Application Platform

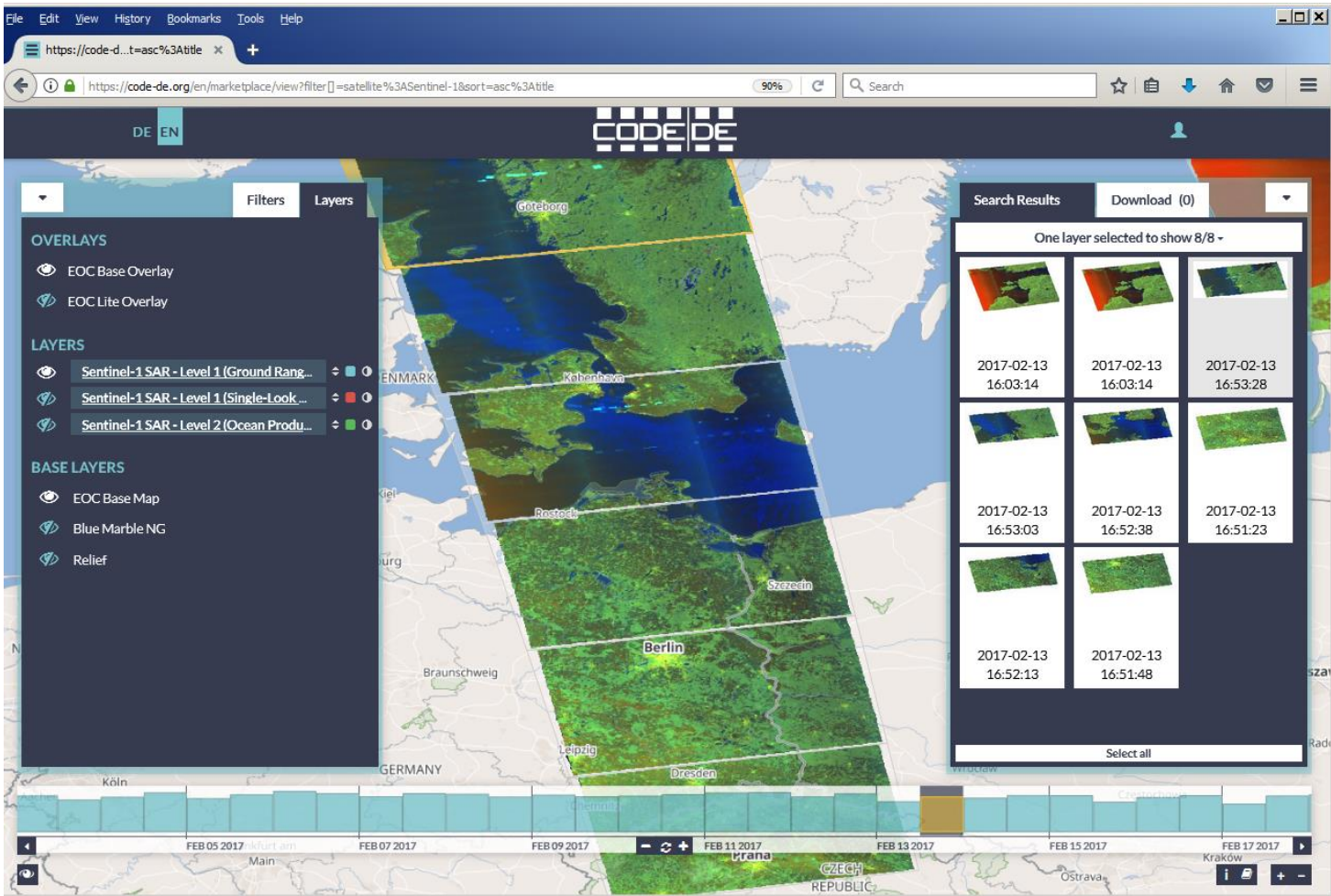
ArcGIS Sentinel-2 Download Tools

Marketplace

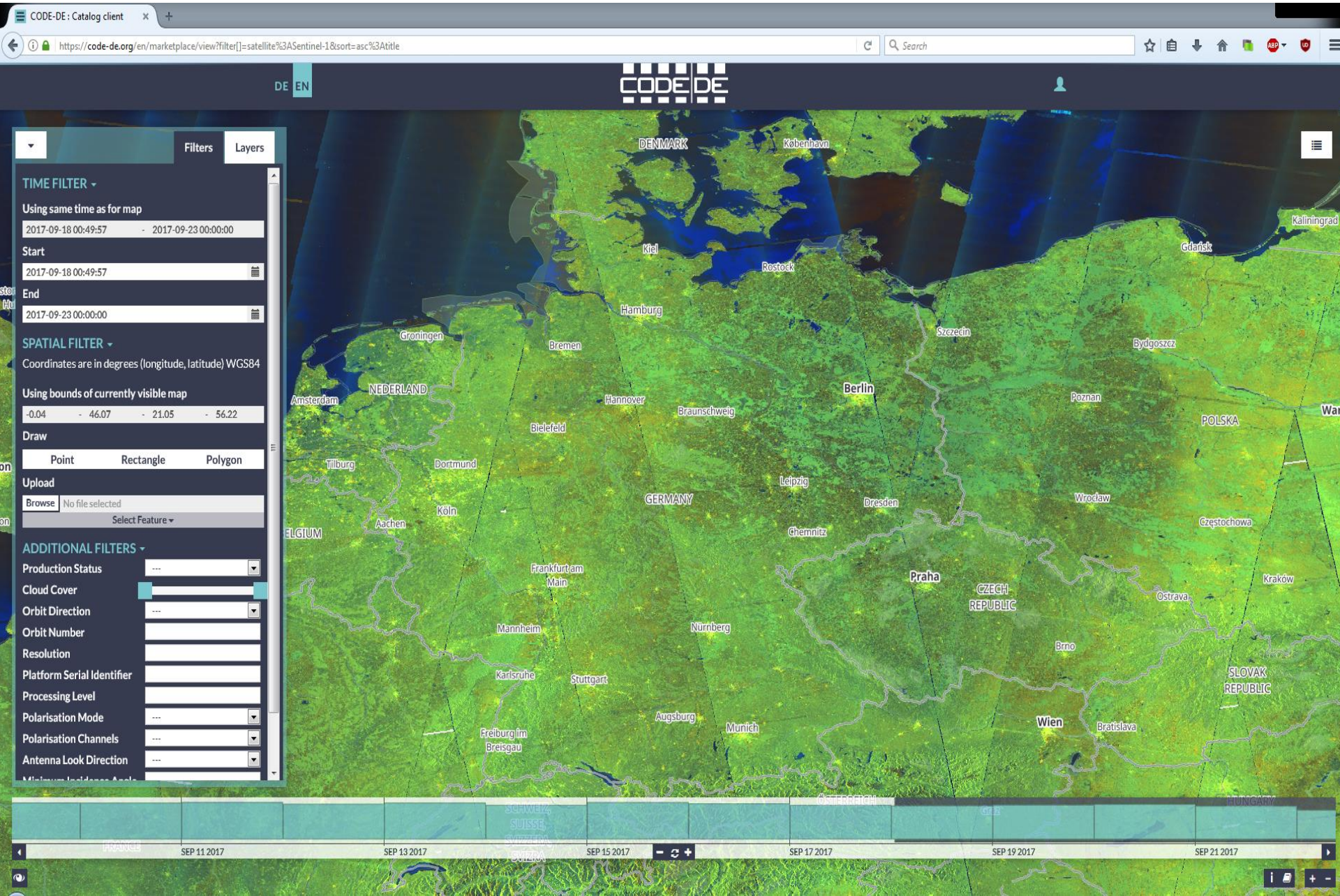


Search und Access

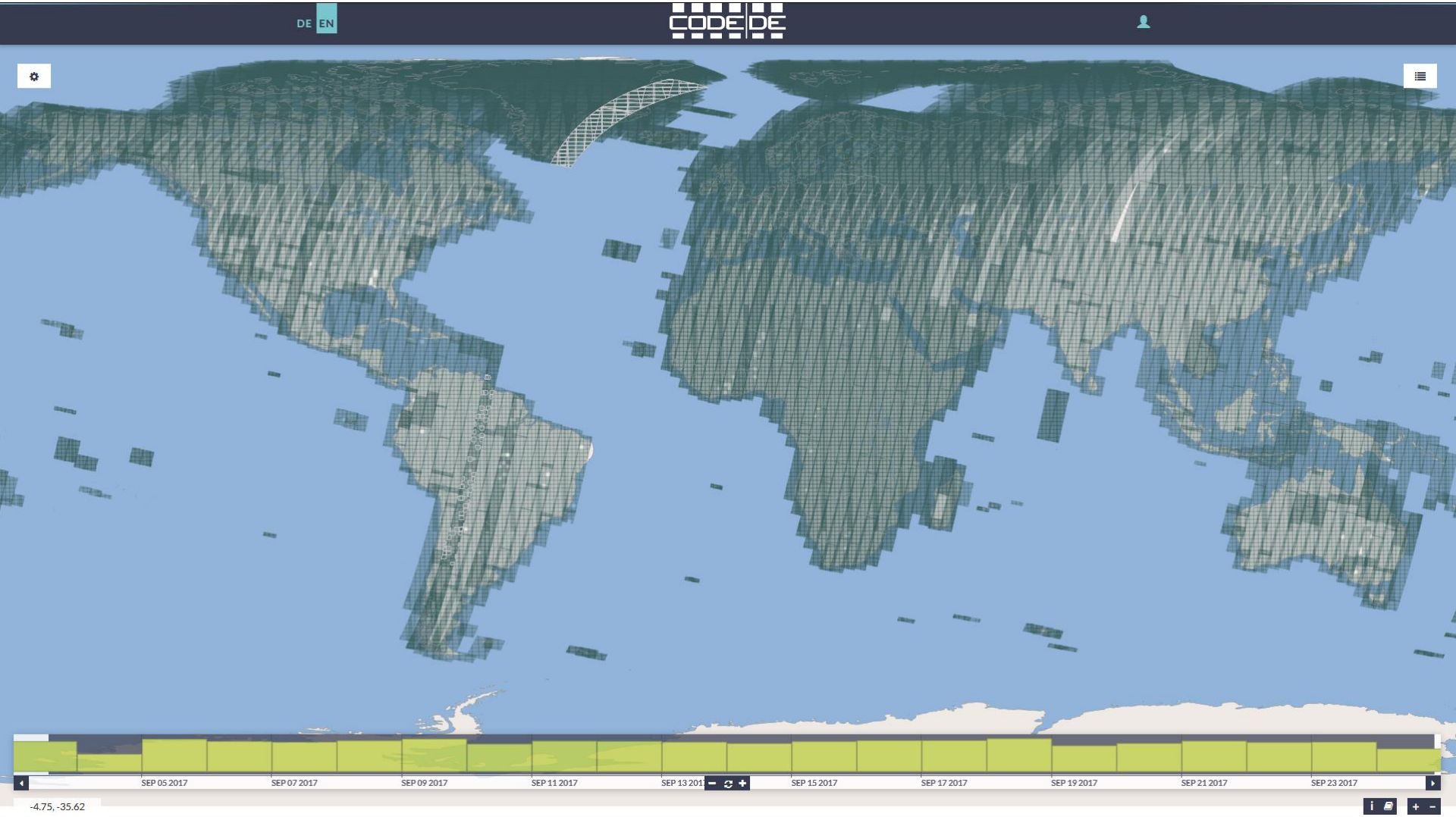
- Discover datasets (CSW, OpenSearch)
- View datasets (WMS)
- Download (WCS, WFS, DSEO)



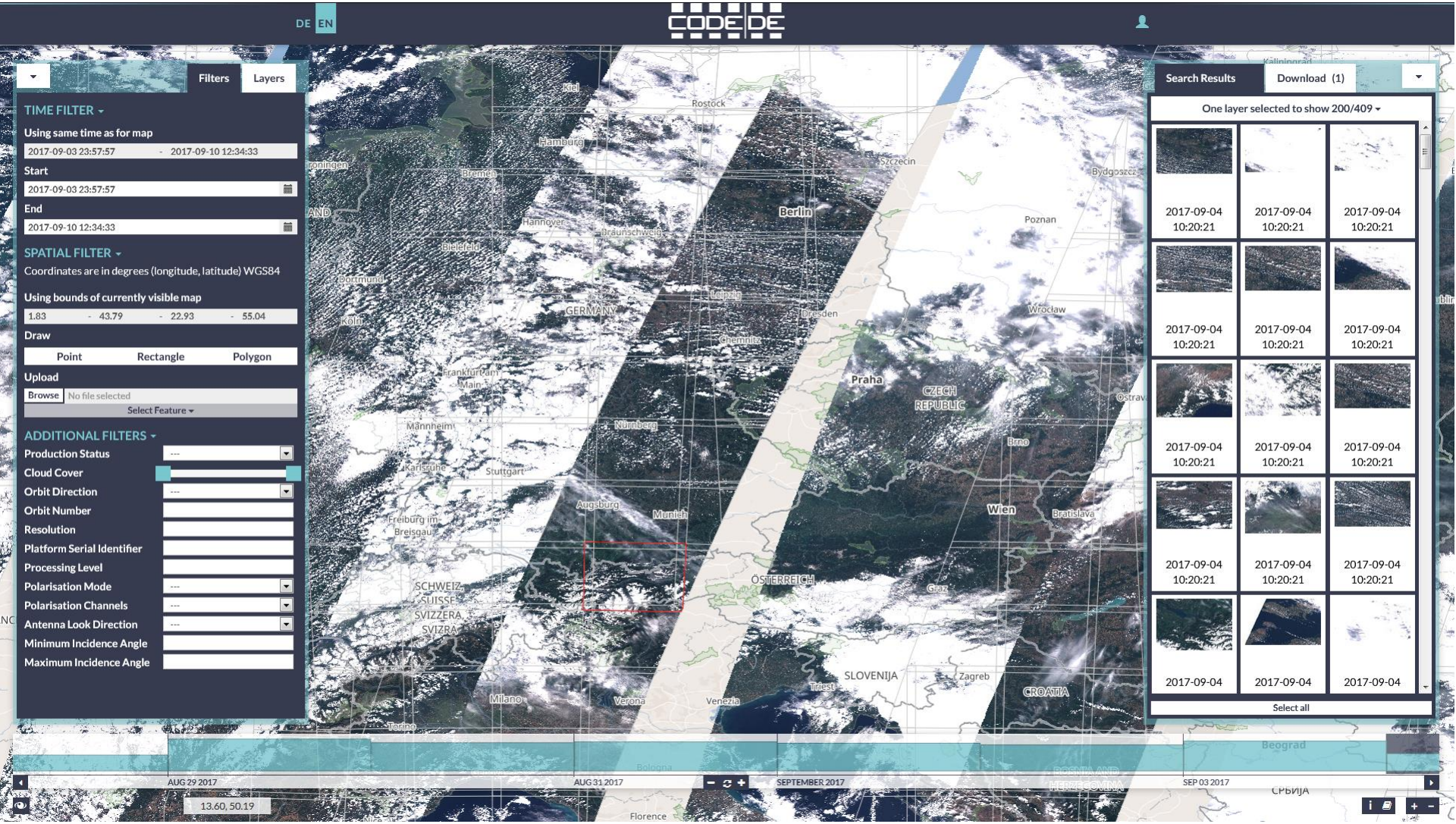
Geo-Client


CODE-DE : Catalog client
https://code-de.org/en/marketplace/view?filter[]=satellite%3ASentinel-1&sort=asc%3Atitle
Search
DE EN
CODE DE
Filters
Layers
TIME FILTER
Using same time as for map
2017-09-18 00:49:57 - 2017-09-23 00:00:00
Start
2017-09-18 00:49:57
End
2017-09-23 00:00:00
SPATIAL FILTER
Coordinates are in degrees (longitude, latitude) WGS84
Using bounds of currently visible map
-0.04 - 46.07 - 21.05 - 56.22
Draw
Point Rectangle Polygon
Upload
Browse No file selected
Select Feature
ADDITIONAL FILTERS
Production Status
Cloud Cover
Orbit Direction
Orbit Number
Resolution
Platform Serial Identifier
Processing Level
Polarisation Mode
Polarisation Channels
Antenna Look Direction
DENMARK
København
Kiel
Rostock
Hamburg
Groningen
Bremen
Szczecin
Gdańsk
Kaliningrad
Bydgoszcz
NEDERLAND
Amsterdam
Hannover
Braunschweig
Berlin
Poznan
POLSKA
Bielefeld
Tilburg
Dortmund
Leipzig
GERMANY
Dresden
Wrocław
Köln
Aachen
Chemnitz
Częstochowa
Frankfurt am Main
Praha
CZECH REPUBLIC
Ostrava
Kraków
Mannheim
Nürnberg
Brno
Karlsruhe
Stuttgart
SLOVAK REPUBLIC
Augsburg
Munich
Wien
Bratislava
Freiburg im Breisgau
SEP 11 2017
SEP 13 2017
SEP 15 2017
SEP 17 2017
SEP 19 2017
SEP 21 2017

Geo-Client


DE EN
CODE DE
SEP 05 2017
SEP 07 2017
SEP 09 2017
SEP 11 2017
SEP 13 201
SEP 15 2017
SEP 17 2017
SEP 19 2017
SEP 21 2017
SEP 23 2017
-4.75, -35.62

Geo-Client


DE EN
CODE DE
Filters
Layers
TIME FILTER
Using same time as for map
2017-09-03 23:57:57 - 2017-09-10 12:34:33
Start
2017-09-03 23:57:57
End
2017-09-10 12:34:33
SPATIAL FILTER
Coordinates are in degrees (longitude, latitude) WGS84
Using bounds of currently visible map
1.83 - 43.79 - 22.93 - 55.04
Draw
Point Rectangle Polygon
Upload
Browse No file selected
Select Feature
ADDITIONAL FILTERS
Production Status
Cloud Cover
Orbit Direction
Orbit Number
Resolution
Platform Serial Identifier
Processing Level
Polarisation Mode
Polarisation Channels
Antenna Look Direction
Minimum Incidence Angle
Maximum Incidence Angle
Search Results
Download (1)
One layer selected to show 200/409
2017-09-04 10:20:21
Select all
Berlin
Praha
CZECH REPUBLIC
Wien
Bratislava
Brno
Munich
Augsburg
Nürnberg
Stuttgart
Frankfurt am Main
Hamburg
Hannover
Leipzig
Dresden
Wrocław
Poznan
Szczecin
Rostock
Kiel
Köln
Dortmund
Bielefeld
Mannheim
Karlsruhe
Freiburg im Breisgau
SCHWEIZ SUISSE SVIZZERA SVIZRA
ÖSTERREICH
Graz
SLOVENIJA
Zagreb
CROATIA
Milano
Verona
Venezia
Triest
Florence
Beograd
AUG 29 2017
AUG 31 2017
SEPTEMBER 2017
SEP 03 2017
13.60, 50.19

Rolling Archive and LTA-Reload

Mission	Level and Product	Size [TB]	Retention Time [Months]		
			Central Europe	Europe	Global
Sentinel-1	L1 SLC	90	36	12	0
	L1 GRD	50	36	12	1
	L2 OCN	10	-	-	6
Sentinel-2	L1C MSI	320	36	12	1
Sentinel-3	L1 OLCI	60	36	12	1
	L2 SLSTR	60	36	12	1
	L2 SYN	15	36	12	1
	L2 VG	15	36	12	1
Sentinel-5p	L1 TROPOMI	100	-	-	1

CODE-DE “Sentinel-Rolling Archive”

Central Europe

Tools

dlr-eoc / code-de-tools

Watch 2 | Star 3 | Fork 0

Code | Issues 0 | Pull requests 0 | Projects 0 | Pulse | Graphs

Copernicus Data-access and Expoitation platform for Germany (CODE-DE) - user tools

10 commits | 1 branch | 0 releases | 1 contributor | Apache-2.0

Branch: master | New pull request | Find file | Clone or download

ch-reck committed on GitHub Update dataHubTransfer.sh ... Latest commit fbe56b8 on Jan 27

bin	Update dataHubTransfer.sh	a month ago
LICENSE	Initial commit	2 months ago
NOTES.md	Update NOTES.md	a month ago
README.md	Update README.md	2 months ago

README.md

code-de-tools

Copernicus Data-access and Expoitation platform for Germany (CODE-DE) - user tools

Description

This tools package publishes several scripts, examples and utilities to automate queries and data retrieval from the CODE-DE offerings.

The CODE-DE Platform provides standardized interfaces for dataset discovery, Earth-Observation product filtered searches and download.

Contents

The scripts are located in the `bin/` subdirectory. The script header contains instructions on how to use. For convenience the usage help is listed below.

code-de-query-download.sh

Performs an OpenSearch query and downloads the found products.

```
USAGE:

./code-de-query-download.sh -c|--condition=... [-b|--baseurl=https://code-de.org] [-l|--limit=50] [-p|--parallel=1]
  --condition is the full OpenSearch query, for example:
    -c 'parentIdentifier=EOP:CODE-DE:S2_MSI_L1C&startDate=2017-01-04T00:00:00.000Z&endDate=2017-01-04T23:59:59.999
  --baseurl of the CODE-DE services (default is https://code-de.org)
  --limit the amount of products to be retrieved (default=50, max=500)
  --parallel count of retrievals, WARNING: do not overload your system and network (the server might limit you to
```

Output products are placed in the current directory

Help Desk

Content

Help

Overview of the Portal

CODE-DE is the German access point to the European Earth observation programme Copernicus. Data of the Sentinel satellites are the core of this Earth observation programme.

The goal of the Copernicus Data and Exploitation Platform – Deutschland (CODE-DE) is to set up a platform for data access (connection to the ESA Collaborative Data Hub) and environmental information for further value adding. The platform will provide capacities for value-added product generation that can be cost-effectively re-used by many projects and services (public, scientific and commercial) in Germany.

FAQs

Frequently asked questions (FAQ) or Questions and Answers (Q&A), are listed questions and answers, all supposed to be commonly asked in some context, and pertaining to a particular topic

- What is CODE-DE?
- How can I get Copernicus Data?
- Who has access to Copernicus / CODE-DE and according to which criteria?
- How do I request additional permissions?
- Who provides Copernicus services?
- Are Copernicus services already available?
- Are Copernicus services fully free-of-charge for users? Who pays for Copernicus Services?

GET IN CONTACT WITH OUR
USER-HELPDESK ...

... or check out our USER MANUAL

SUBJECT

YOUR NAME

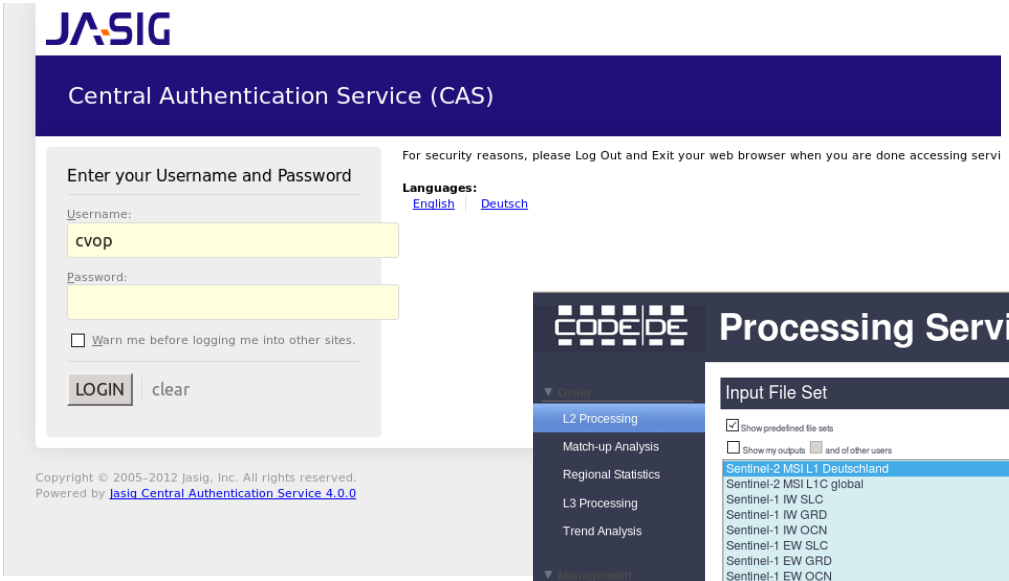
MESSAGE

YOUR E-MAIL ADDRESS

SEND MESSAGE

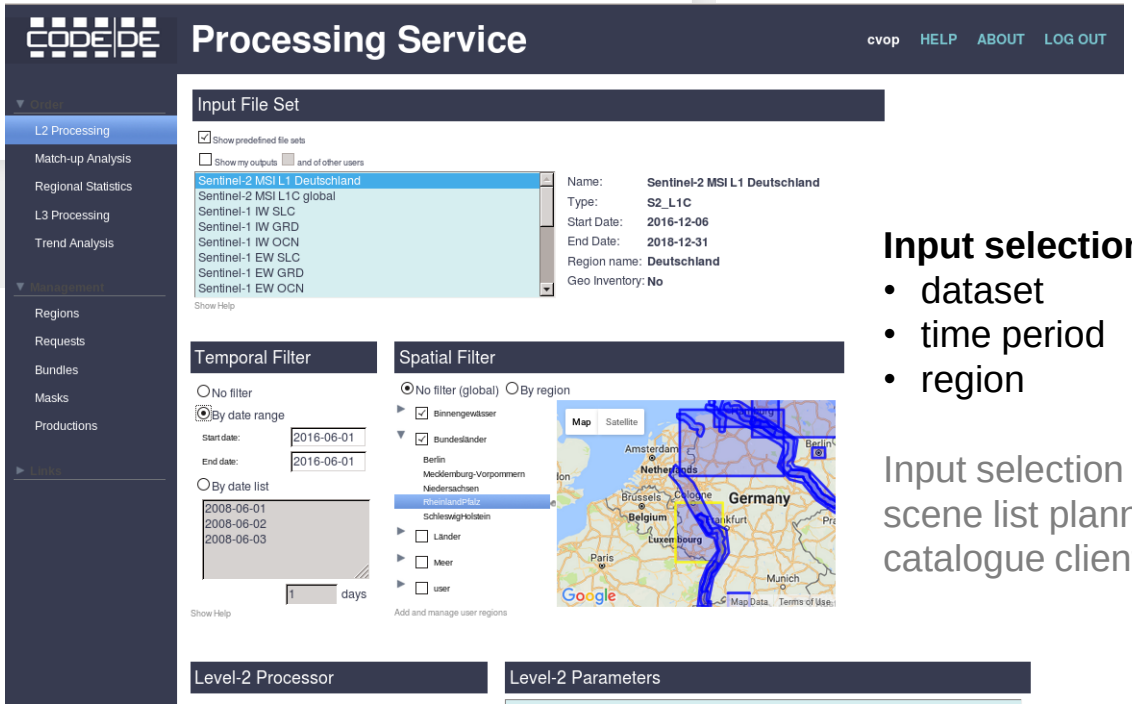
DLR

Web Interface of the processing service



CODE-DE Web portal **authentication**
provides user information
to processing service Web interface

- currently test environment
- operational environment by configuration



Input selection by

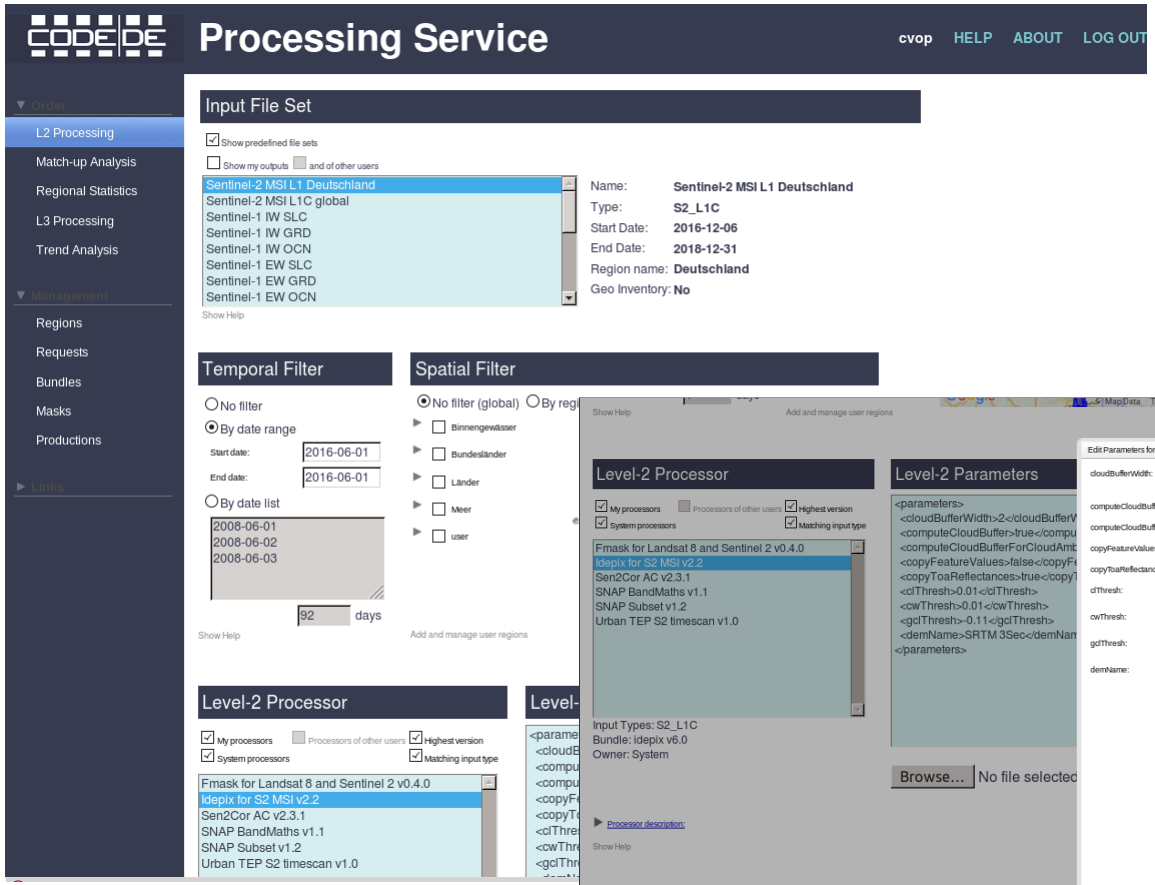
- dataset
- time period
- region

Input selection by
scene list planned with
catalogue client integration

Quick tour:

- interface
- Datasets
- Processors
- Processing
- Results

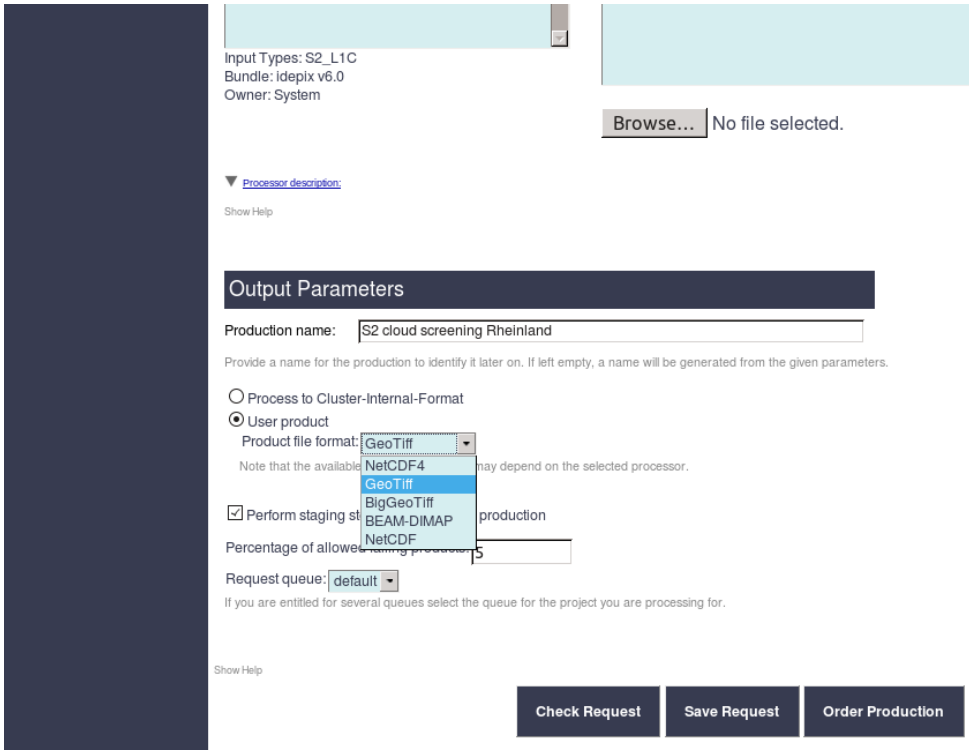
Web Interface of the processing service



Processor selection from
- system-provided processors
- user-provided processors

Parameterisation
- forms generated from processor descriptors

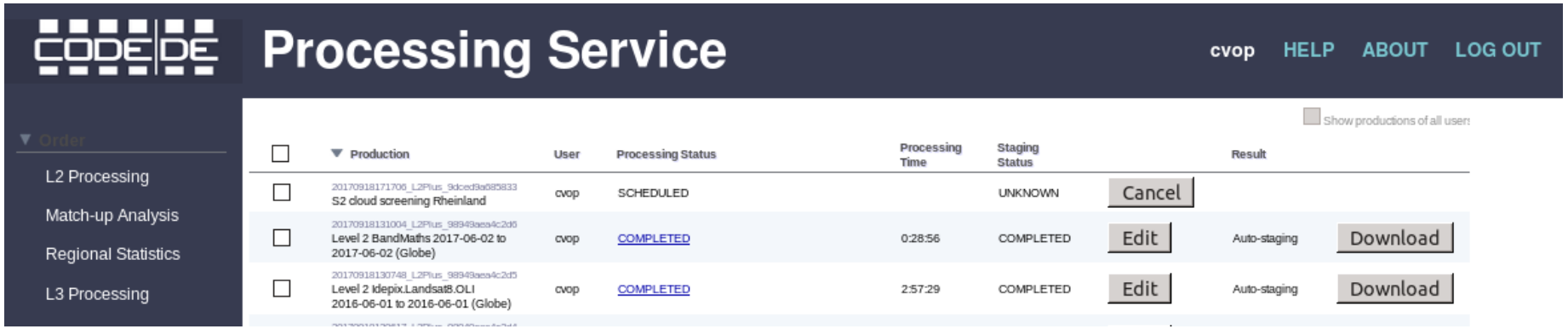
Web Interface of the processing service

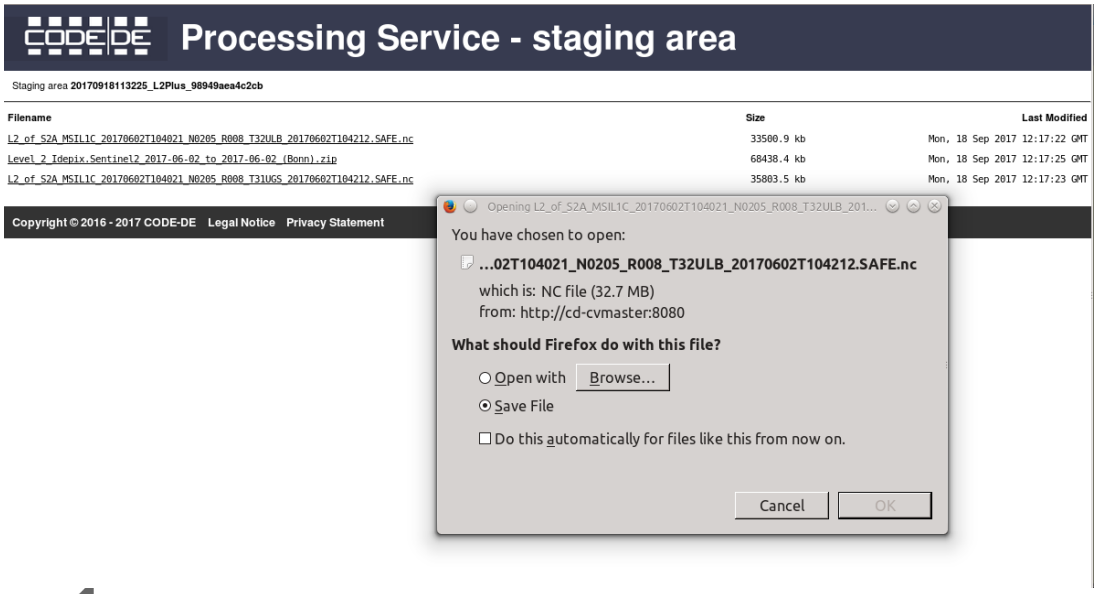


Request submission

- selection of output format
- selection of queue
- ordering production

Web Interface of the processing service





Active and done productions

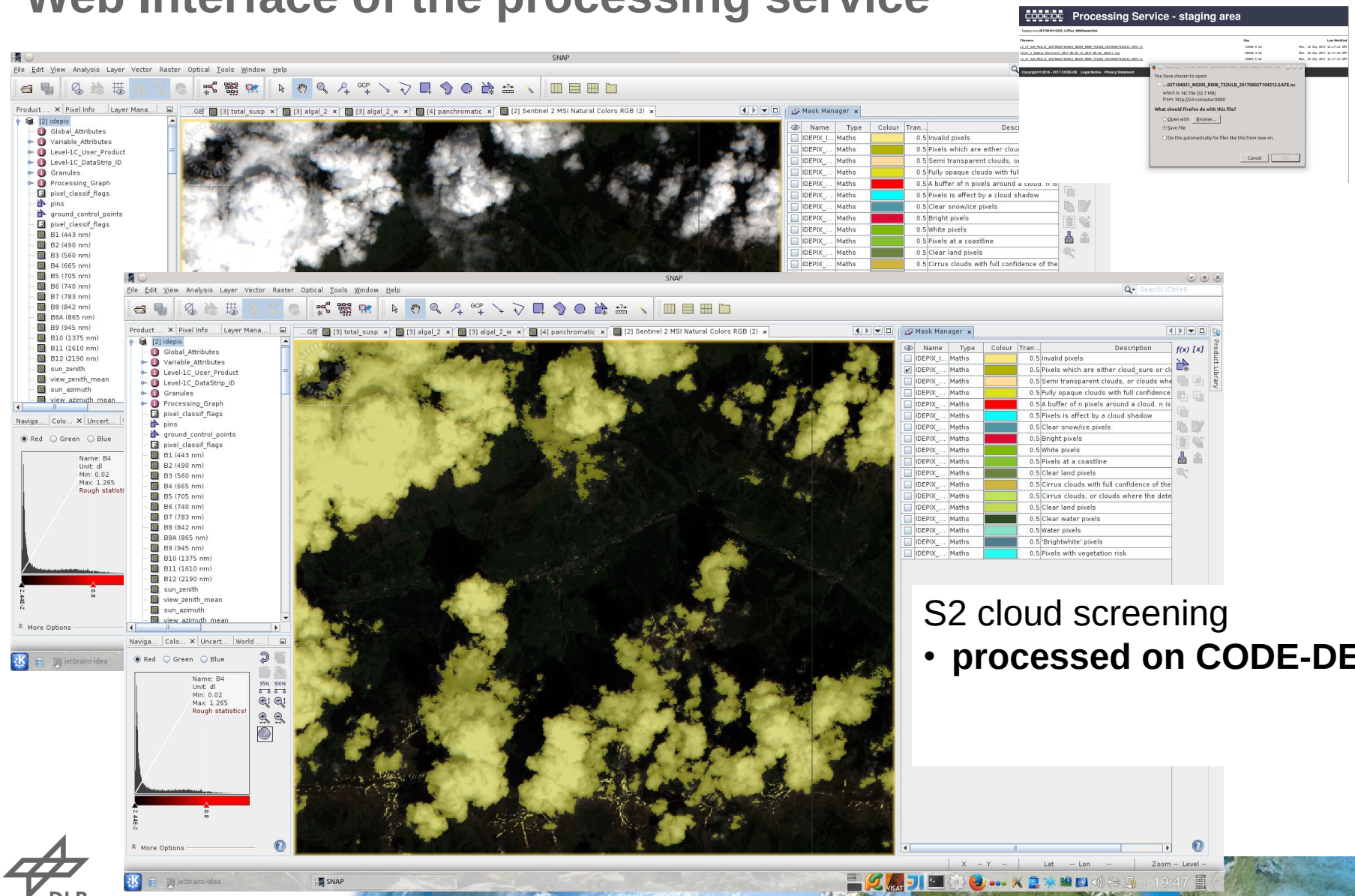
- Status and progress
- Result access
- Edit and re-submit

Access to results

- Use on the platform
- Download

Integration with CODE-DE access planned

Web Interface of the processing service



S2 cloud screening

- **processed on CODE-DE**

Nutzerprioritäten

- **Bundesbehörden.** Dazu gehören Mitarbeiter von Bundesbehörden und Forschungseinrichtungen des Bundes sowie deren Auftragnehmer, die im Rahmen eines Auftrags für eine Bundesbehörde CODE-DE nutzen. Diese Nutzerkategorie ist die primäre Zielgruppe von CODE-DE. (**Prio 1**)

- **Nutzer aus Deutschland.** Dazu gehören Mitarbeiter sonstiger deutscher Behörden (**Prio 2**), Unternehmen (**Prio 3**), Forschungs- und Bildungseinrichtungen (**Prio 3**), NGO (**Prio 3**) oder Bürger (**Prio 3**)

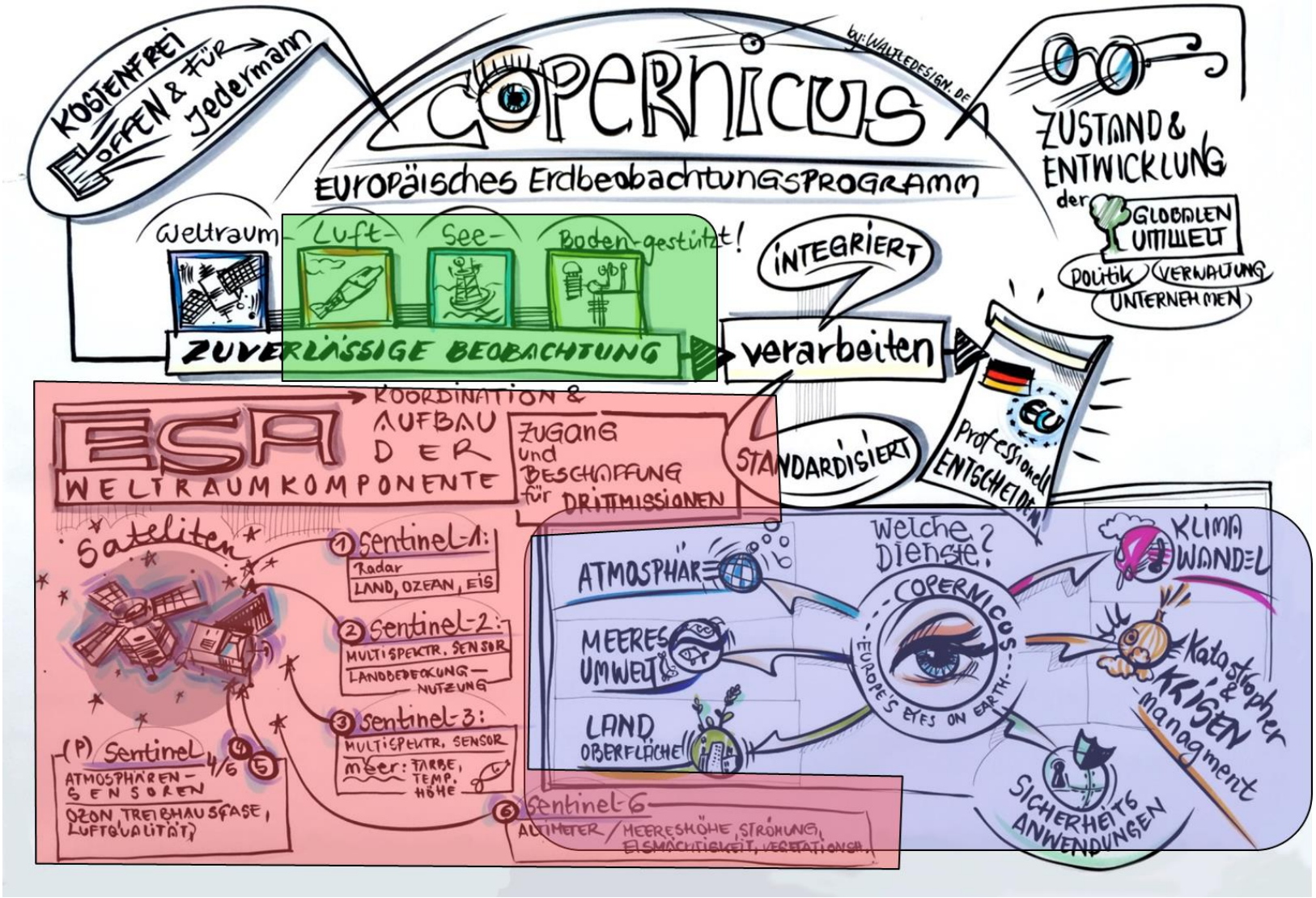
- **Sonstige Nutzer.** Dazu gehören alle Nutzer, die nicht in eine der anderen Nutzerkategorien fallen, d.h. primär Nutzern, die nicht aus Deutschland stammen. (**Prio 4**)

- **Background Nutzung durch CODE-DE intern (e.g. Global Base Map)**
- **Weitere Nutzer** (Sonderregelungen)
- **Governance Modell in Vorbereitung**

Way Forward in CODE-DE

- Successful installation of all CODE-DE components
  - Improve search performance
  - Full resolution browsing, Web Coverage Service
  - Processing capacities incl. coupling to Open Cloud (OTC)
  - Integration of different application examples
- Phase-in the CODE-DE long-term operation

Questions?


KOSTENFREI
OFFEN & für Jedermann
COPERNICUS
by: WALTERDESIGN.DE
EUROPÄISCHES ERDBEOBACHTUNGSPROGRAMM
ZUSTAND & ENTWICKLUNG der GLOBALEN UMWELT
POLITIK VERWALTUNG UNTERNEHMEN
Weltraum
Luft-
See-
Boden-gestützt!
ZUVERLÄSSIGE BEOBACHTUNG
INTEGRIERT
verarbeiten
STANDARDISIERT
Professionell ENTSCHEIDEN
ESA
KOORDINATION & AUFBAU DER WELTRAUMKOMPONENTE
ZUGANG und BESCHAFFUNG für DRITTMISSIONEN
Satelliten
1 Sentinel-1: Radar LAND, OZEAN, EIS
2 Sentinel-2: MULTISPEKTR. SENSOR LANDBEDECKUNG — NUTZUNG
3 Sentinel-3: MULTISPEKTR. SENSOR MEER: FARBE, TEMP. HÖHE
(P) Sentinel 4/5 ATMOSPHÄREN-SENSOREN OZON TREIBHAUSGASE, LUFTQUALITÄT
6 Sentinel-6 ALTIMETER / MEERESHÖHE, STRÖMUNG, EISMÄCHTIGKEIT, VEGETATION
Welche Dienste?
ATMOSPHÄRE
MEERES UMWELT
LAND OBERFLÄCHE
COPERNICUS EUROPE'S EYES ON EARTH
KLIMA WANDEL
Katastrophen & KRISEN Management
SICHERHEITS ANWENDUNGEN