FedEO Report

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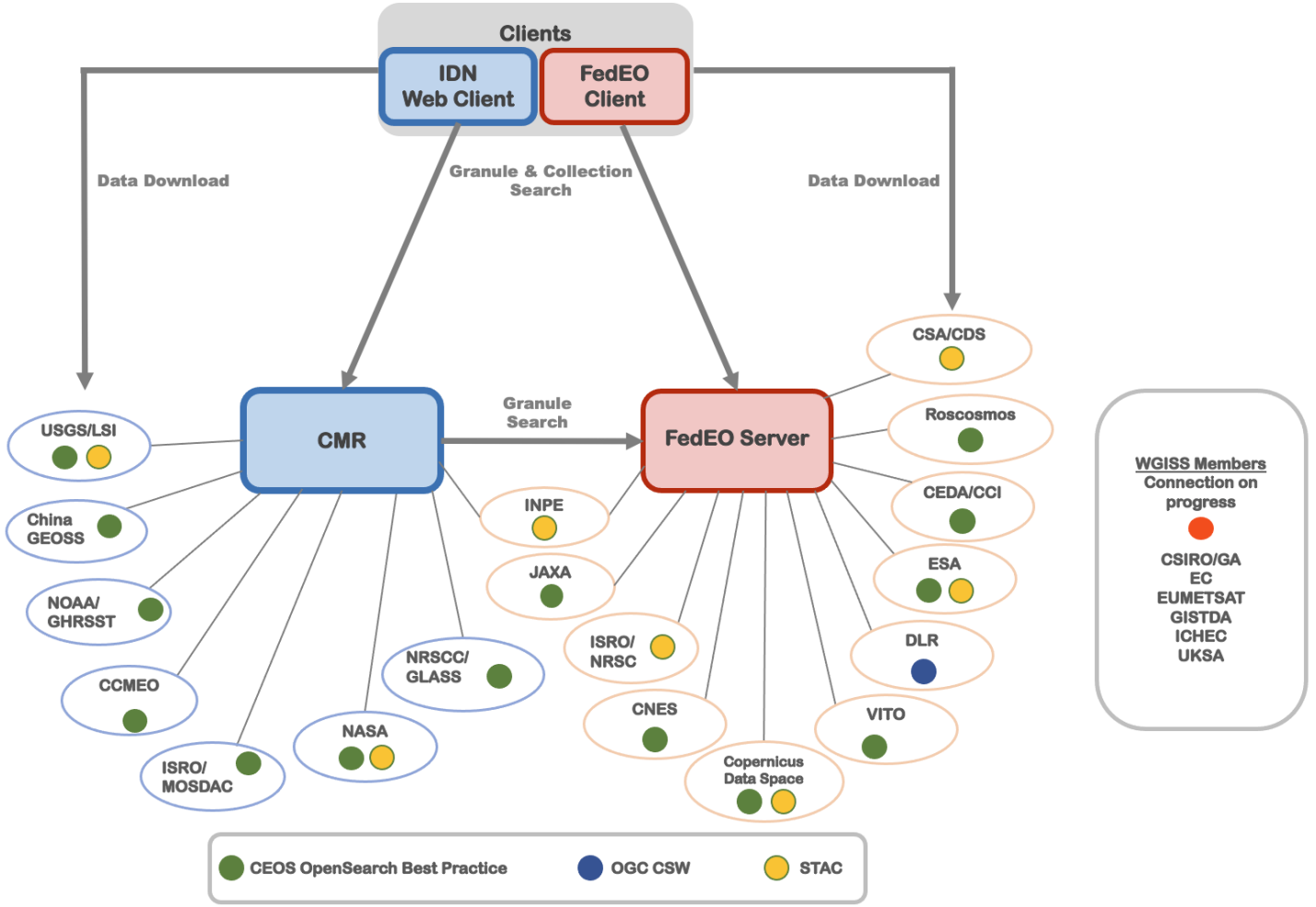
CEOS WGISS #61, Dehradun (India)
Session 4: Data Discovery and Access, 17/03/2026

Outline

- FedEO Collections and Collaborations
- FedEO Integration activities
- Evolution since WGISS-60
- Action status
    - STAC Validation
    - Discovery ARD collections
- Further work

WGISS Connected Data Assets

- FedEO: Federated Earth Observation missions access



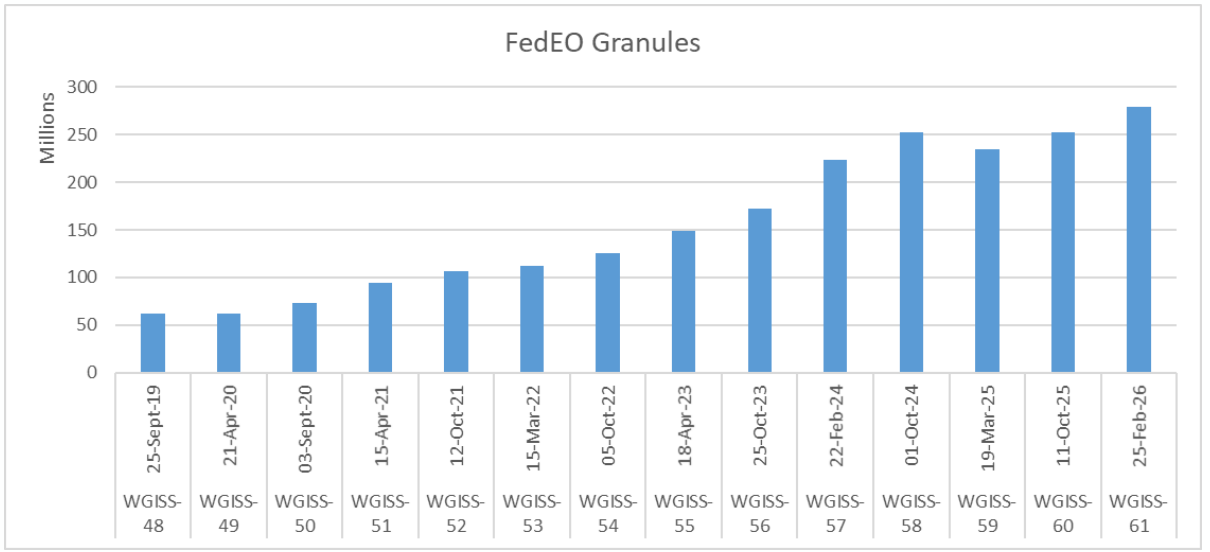
Connected Data Assets Client Partner Guide:

https://ceos-org.github.io/wgiss-cda

https://github.com/ceos-org/wgiss-cda

https://ceos.org/ourwork/workinggroups/wgiss/access/connected-data-assets/cda-datasets/

FedEO Collections and Collaborations



Connector	Total dataset num	Total granule num
NRCAN	7	0
ESA-MAAP	44	10495825
ESA	202	54551458
SCIHUB	6	115834620
DLR	51	730315
EUMETSAT	20	0
VITO-TERRASCOPE	122	22962885
VITO-GLOBALLAND	50	96146
CCI	356	4260625
CMEMS	285	0
ECV	532	0
Sinergise	2	35561557
ROSCOSMOS	29	0
INPE	90	5533411
CNES	8	5394462
CDSE	143	0
ISRO	53	0
JAXA-GPORTAL	1023	23448481

Updates since WGISS-60:

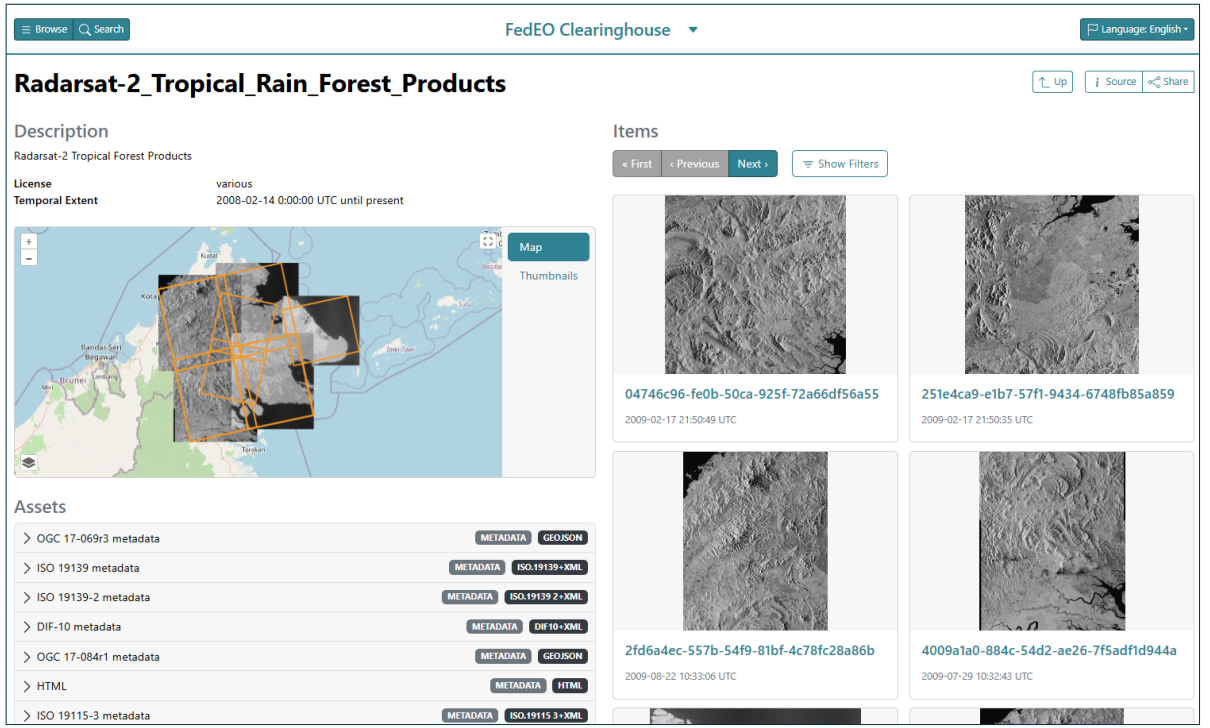
- 278 million granules (was 252)*
- 3023 collections (was 3000)

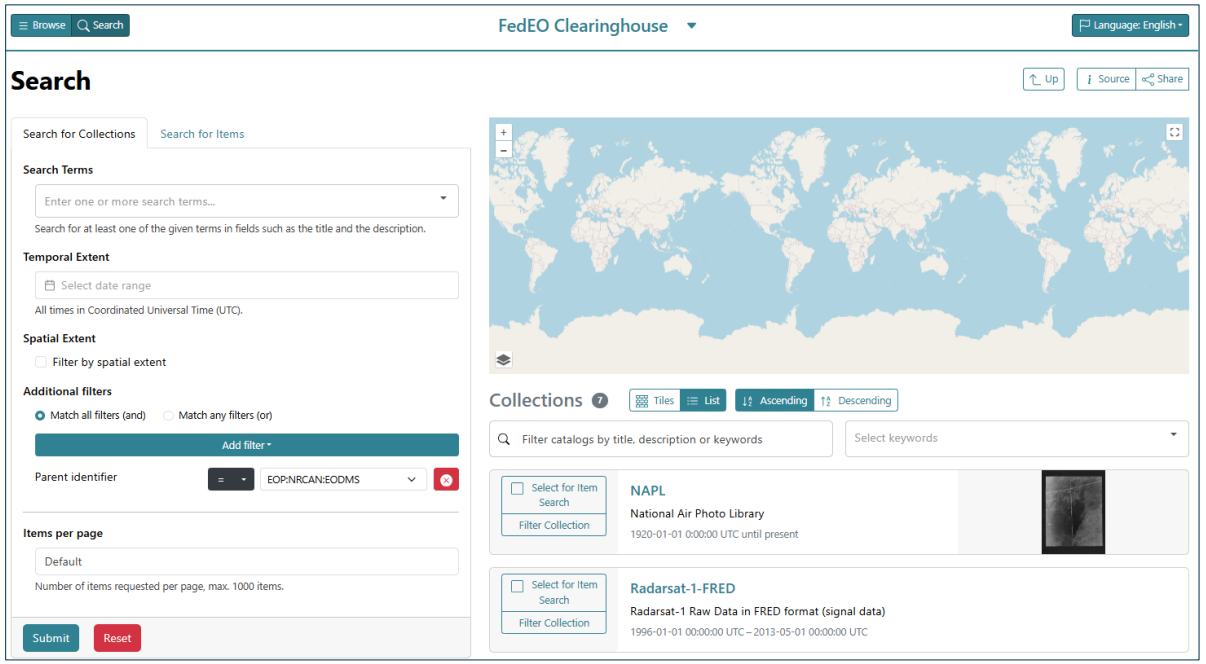
- NRCAN (new)
  - 7 collections
- CDSE:
  - From 134 to 143 collections
- INPE:
  - From 80 to 90 collections.
  - From 4.4 to 5.5 million granules
- ESA:
  - EOCAT: from 49 to 54 million granules
  - MAAP from 3.5 million to 10.5 granules
  - SCIHUB (100+ million) replaced by CDSE (0)

(*) not all granules can be automatically counted (e.g. CDSE, ISRO, NRCAN…).

Integration – NRCAN EODMS

- STAC backend catalogue
  - 7 collections incl. Radarsat-2.

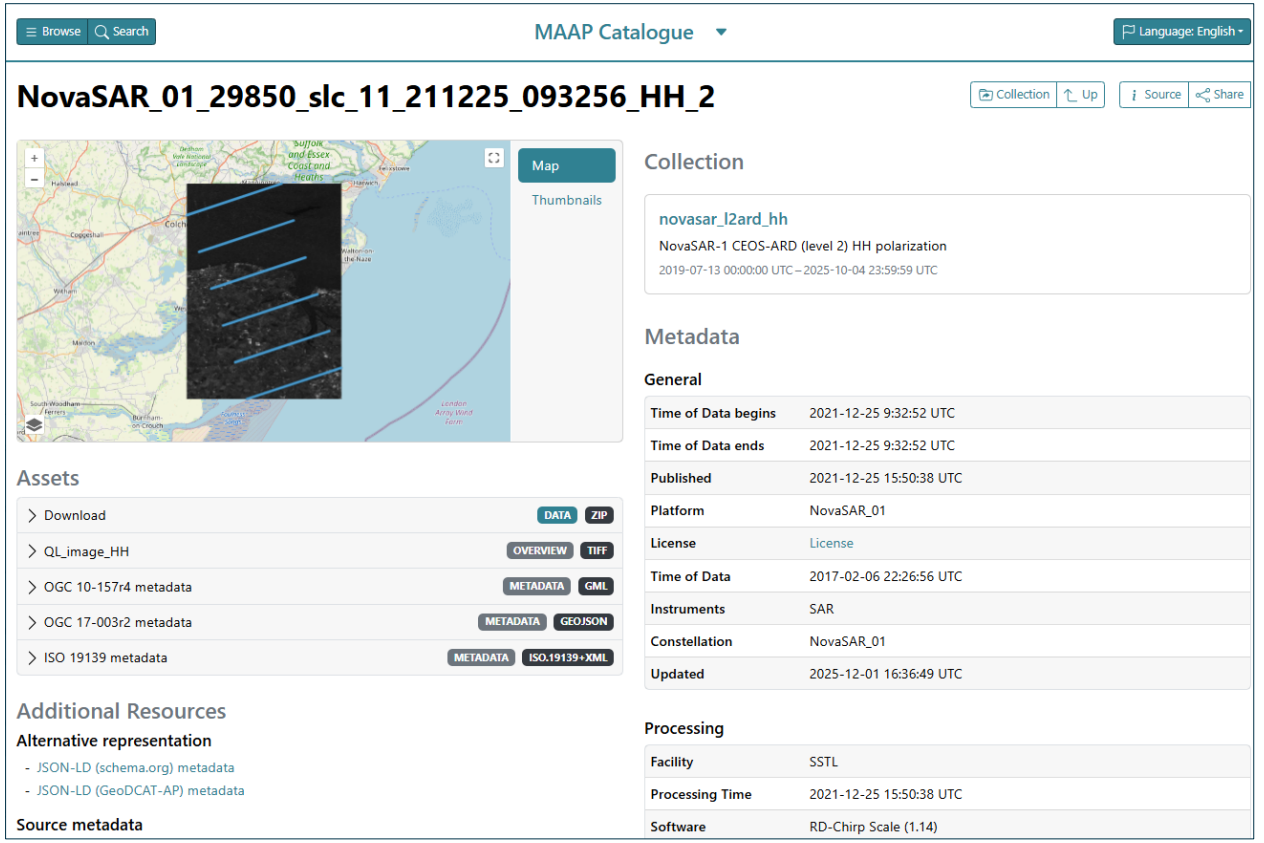




- Future work:
  - NRCAN, CSA, MDA as Providers
  - Collection science keywords.

Integration – UKSA

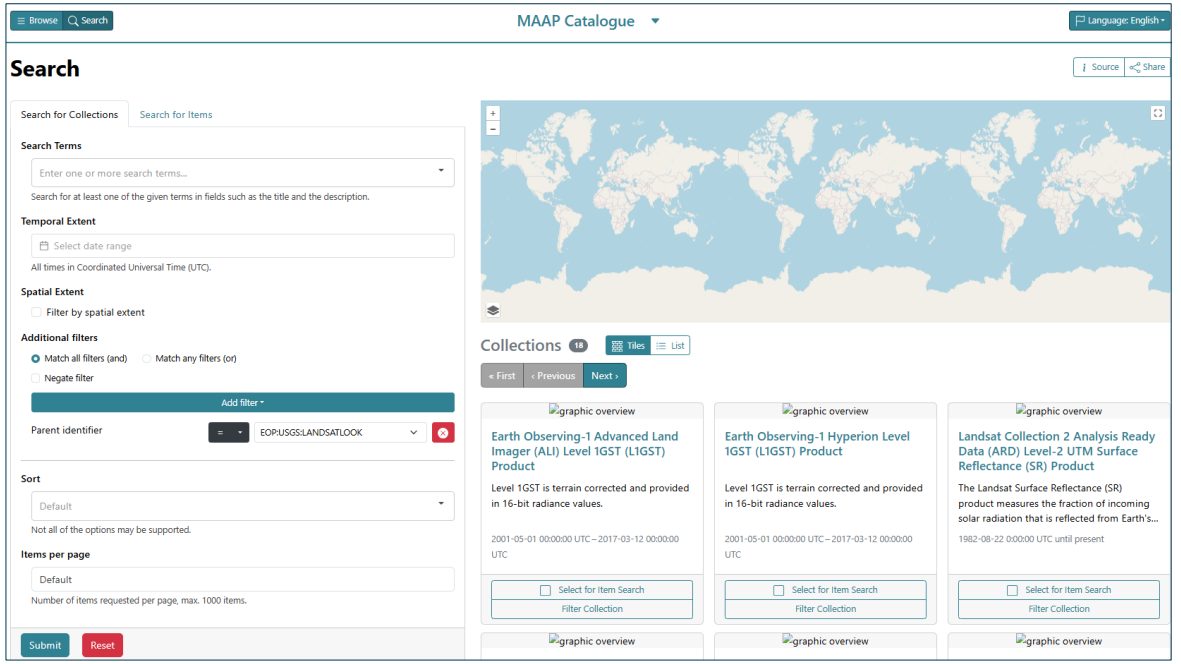
- STAC interface
  - NovaSAR SLC

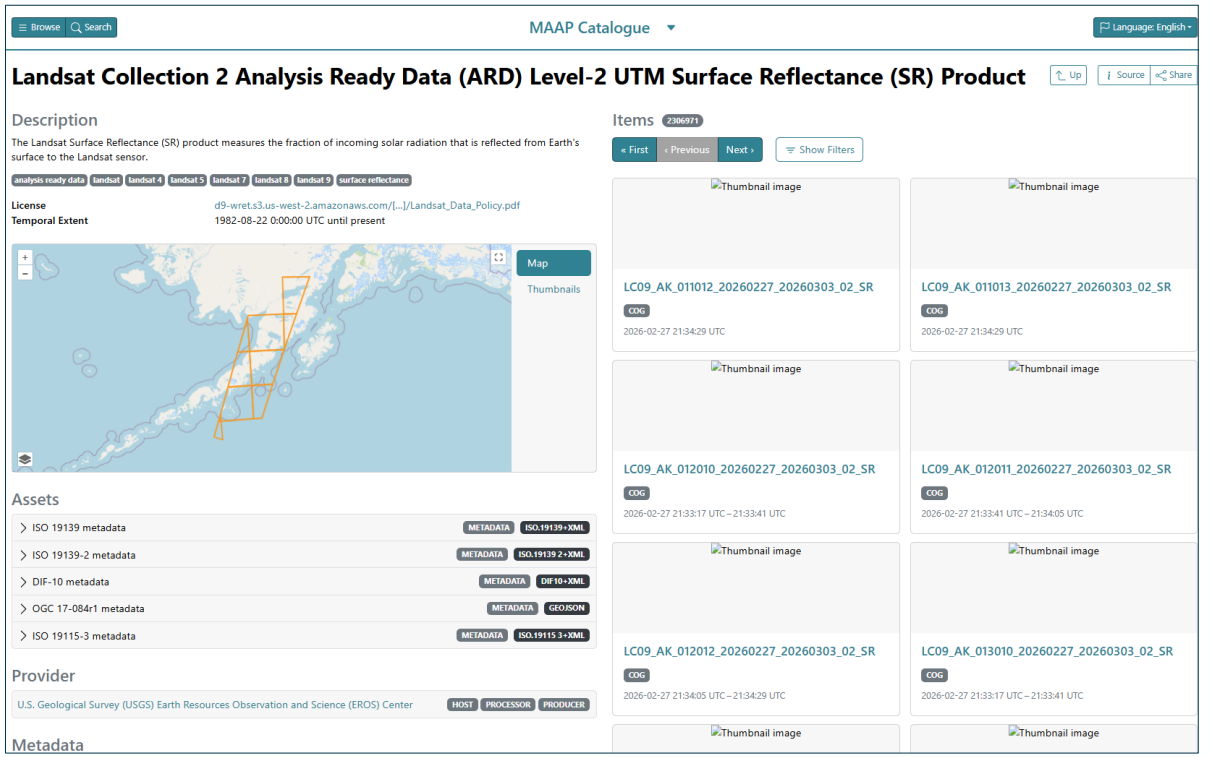


- Status:
  - Feasibility tests metadata generation and publication (S3).
- Next steps:
  - TBD by UKSA.

Integration – USGS

- STAC interface
  - Landsatlook.usgs.gov integration in ESA MAAP
  - 18 collections including CEOS-ARD
  - Open issue with inaccessible quicklooks
  - Empty queryables lists ?

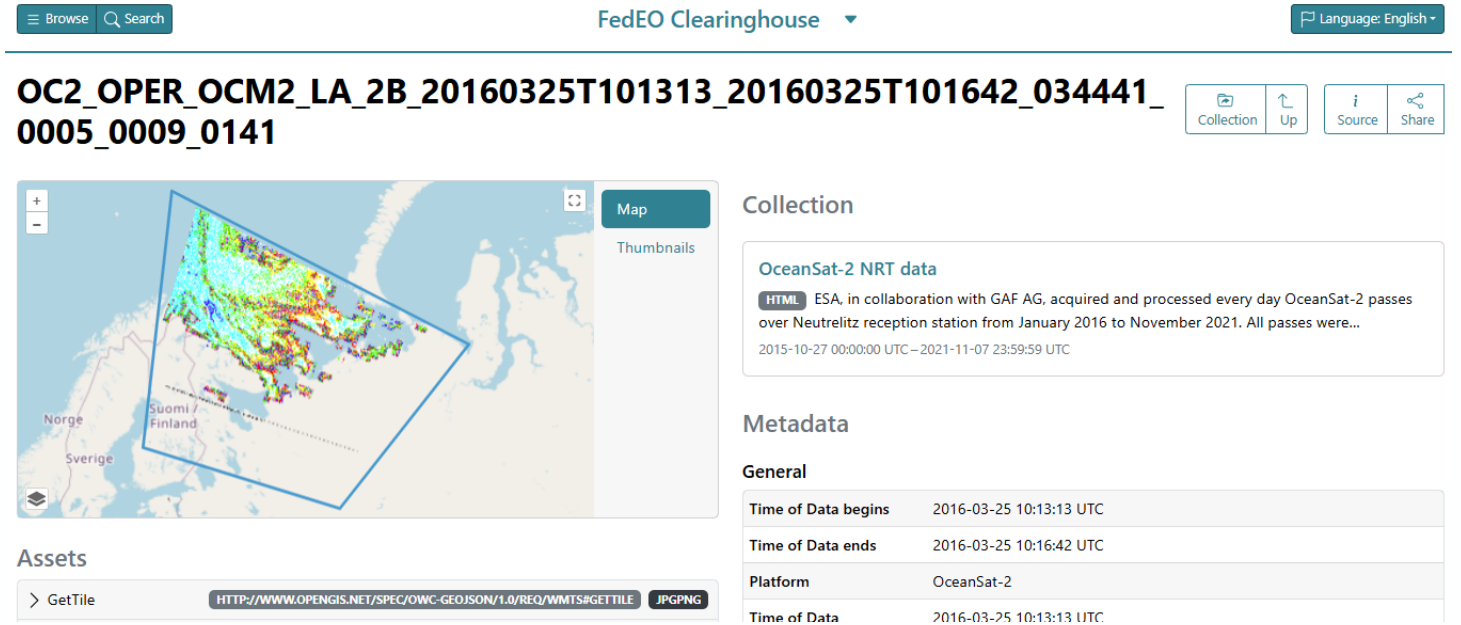


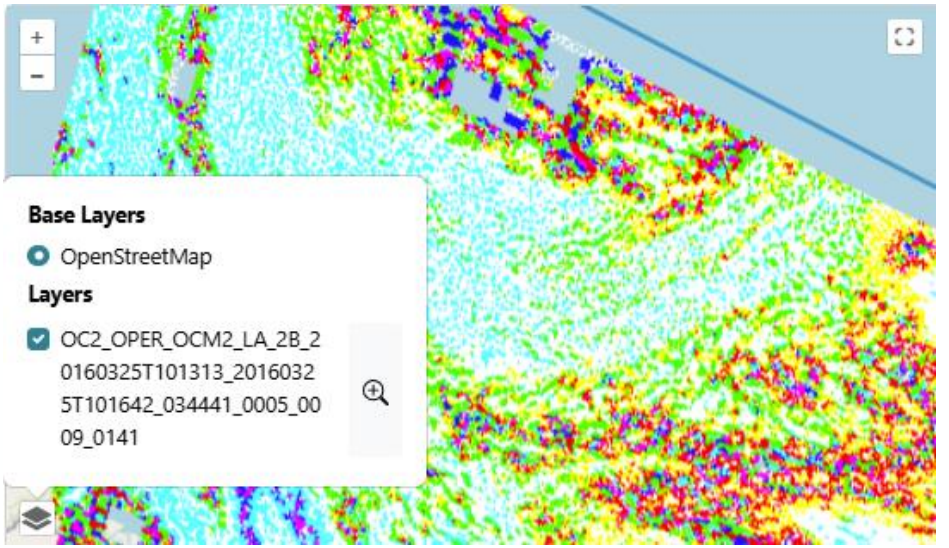


Connector	Total dataset num	Total granule num
USGS	18	49492354

Evolution since WGISS-60

- Update of STAC WebMapLink Extension for WMTS (v1.3.0)
  - https://github.com/stac-extensions/web-map-links
- Update of STACBrowser supporting STAC WebMapLink for WMTS
- Update of FedEO STAC endpoint
  - Many ESA EOCAT granules (available in FedEO) have associated WMTS information…






```
{
    "wmts:encoding": "rest",
    "uriTemplate": "https://eocat.esa.int/wmts03/1.0.0/OCM2_LA_2B/default/2016-03-25T10:13:13Z--2016-03-25T10:16:42Z/WGS84/{TileMatrix}/{TileRow}/{TileCol}.jpgpng",
    "rel": "wmts",
    "wmts:layer": "OCM2_LA_2B",
    "href": "https://eocat.esa.int/wmts03/1.0.0/WMTSCapabilities.xml"
}
```

Evolution – Planned

- Support for discovering CEOS-ARD collections
  - Search parameters
  - Quality metadata encoding (STAC, ISO, ..)
- Alignment with ESA MAAP catalogue software version.
- More fine-grained STAC collection search (with Filter Extension):
  - CQL2 JSON
  - CQL2 Advanced Comparison Operators (LIKE, BETWEEN, IN).
- STAC Fields extension: https://github.com/stac-api-extensions/fields
  - To control content of response
- STAC responses as default response type.
- May include some evolutions from OGC Testbed-21 (DQ4IPT)
  - Support for ISO19115-4 (GeoJSON)

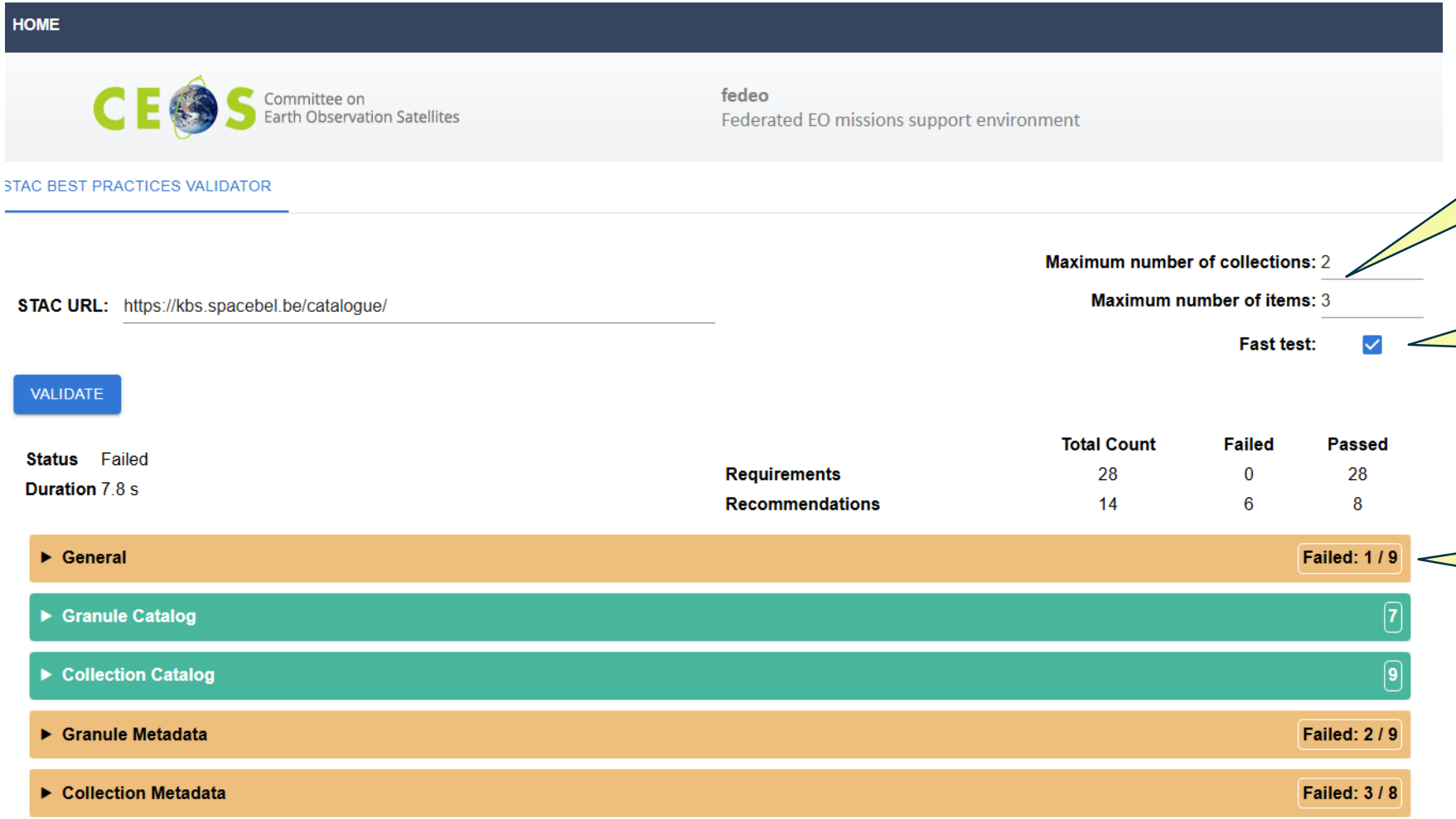
Action Status - “STAC Validation Tool”

WGISS-58-17	DAIG to look into a tool to validate a provider STAC interface against the Service Metadata and Discovery Best Practices.

- Ongoing development to support CEOS EO Collection and Granule Discovery Best Practices with STAC
  - Preliminary version “in-progress” on FedEO Validation Environment.
  - Priority on CEOS requirements/recommendations
  - User interface inspired by INSPIRE Metadata Validator
  - Tests to be made conditional on “conformance classes” still
  - Existing tools/checks still to be integrated.

Action Status - “STAC Validation Tool”

- Checks are organized as per CEOS WGISS Best Practices Document
- Requirement: green/red. Recommendation: green/orange



No more than *n* iterations

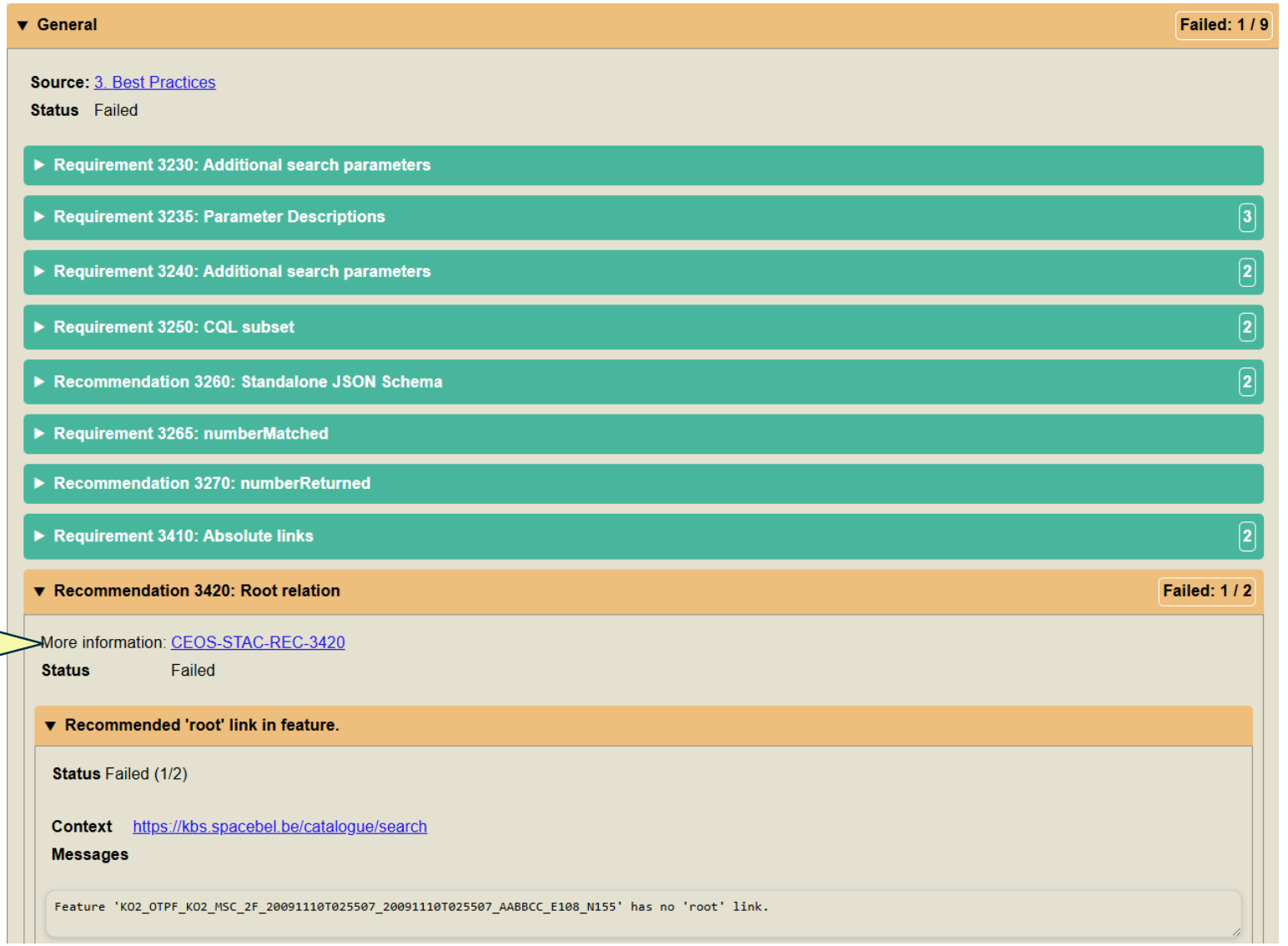
Do not retest “failed” requirement

# of included requirements in this group

Action Status - “STAC Validation Tool”

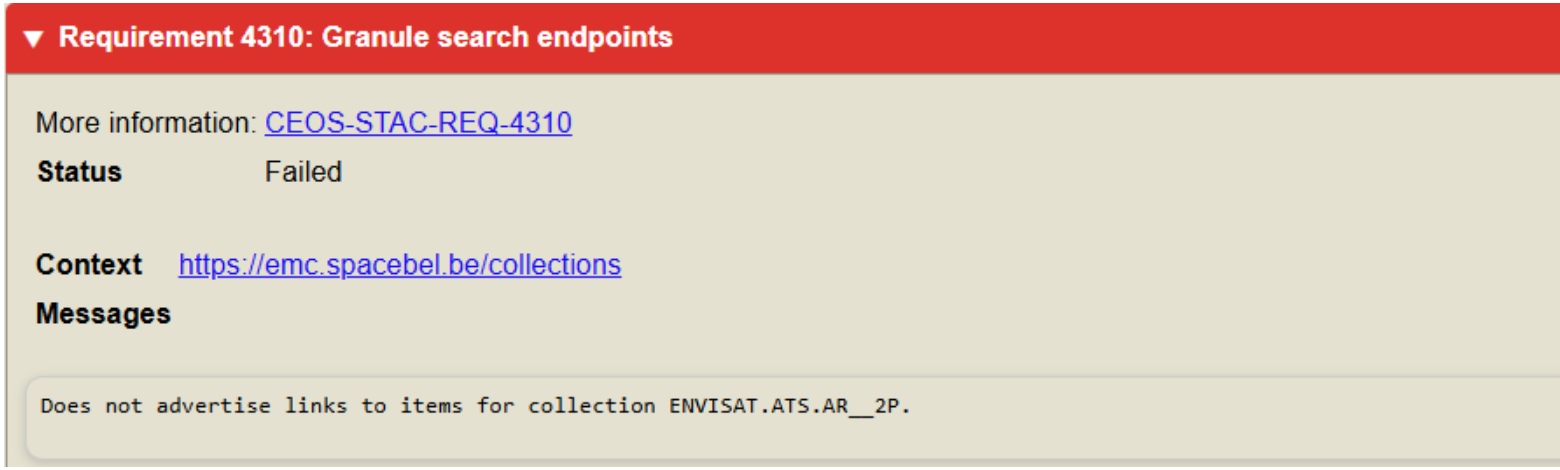
- Individual requirements grouped per chapter.
- Link to individual requirements in GitHub repository.

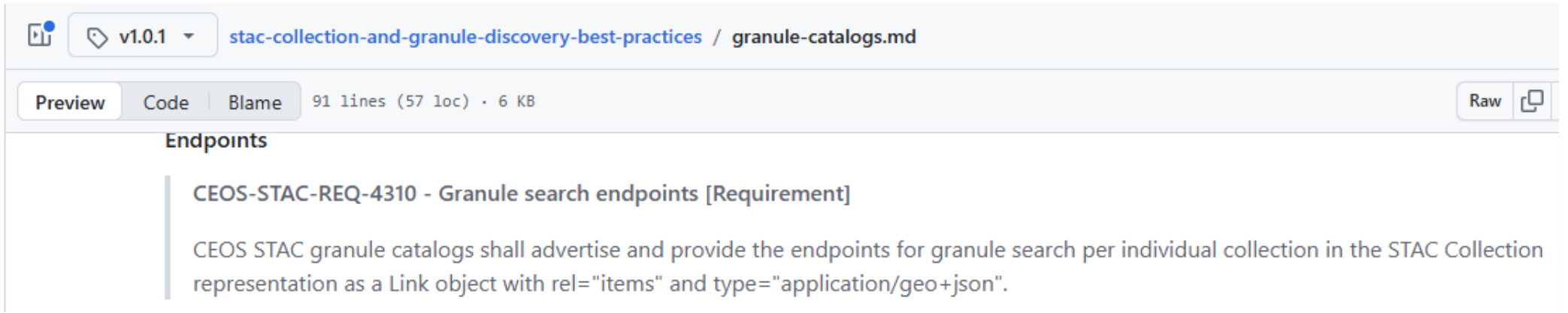
Link to Requirement/Recommendation



Action Status - “STAC Validation Tool”

- Link to individual requirements or recommendations in GitHub repository.



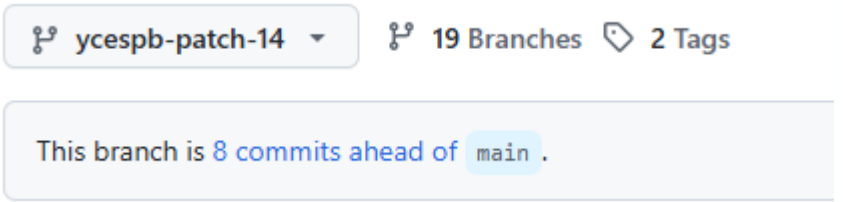


Action Status - “STAC Validation Tool”

- Implementation status:
  - Current version (under test) at https://geo.spacebel.be/validator
  - Verify current test results / test behavior
  - Bring tests inline with the declared conformance classes, e.g. when no “collection search” conformance, skip all related tests.
  - Extract content to perform more tests without user inputs (text search based on titles etc..)
  - Integrate additional tests from original open-source library including “STAC Extension schema validation”

CEOS EO collection and granule discovery best practices with STAC

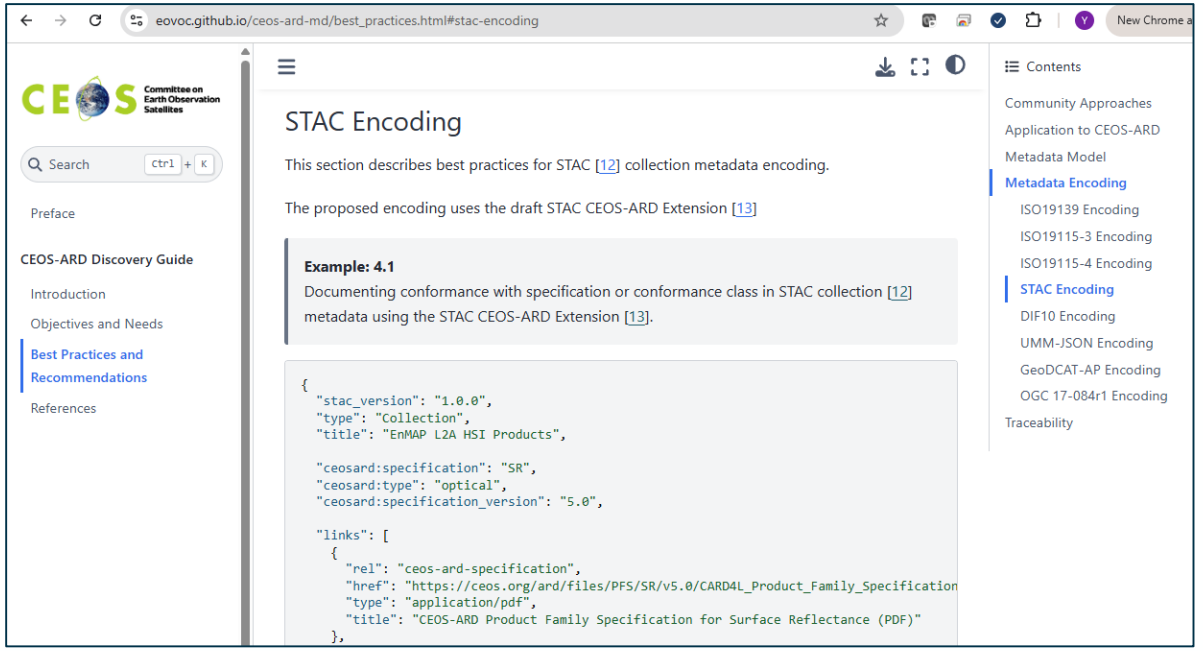
- Current version:
  - https://github.com/ceos-org/stac-collection-and-granule-discovery-best-practices
- Updates ?
  - Current release v1.0.1 (2024)
  - A number of updates of STAC Extension versions and corrections (e.g. Updated WebMap Link extension use for WMTS) to consider are in the below branch. Can we consider to integrate these changes ?



Action Status – “CEOS ARD Keywords”

WGISS-59-30	CEOS-ARD Oversight Group to work with CEOS MIM Database team and LSI-VC to identify and develop ‘CEOS-ARD’ keywords to be provided to DAIG for FedEO and IDN, to support discovery of the datasets. CEOS-ARD Oversight Group should consider how to recommend the use of these keywords to support better discovery of CEOS-ARD datasets.	**Due: WGISS-60**

- Action underway – Preparation of Guidance document by DAIG (GitHub) – subject of separate presentation.



Conclusion

- Adoption by data providers of STAC accelerates federations with CDA and FedEO
    - CSA EODMS catalogue integrated.
    - Integration of EUMETSAT, CNES, DLR, CSIRO catalogues in progress. Require further interactions with the respective partners
- STAC Online Validator progress
    - Requires further work
- Several CEOS WGISS actions ongoing
    - Incl. discovery of CEOS-ARD datasets (VITO, CSIRO, DLR, etc.)


QUESTIONS?
WHEN?
WHAT?
WHERE?
WHO?
HOW?
Where?
What?
When?
Why?

Spare slides