CEOS OpenSearch Project

WGISS-39, Tsukuba, Japan
Yoshiyuki Kudo (JAXA)
Jérôme Gasperi (CNES)

Agenda

- Status — Yoshiyuki Kudo, Jérôme Gasperi
- Discussion for V1.0 finalization — All
  - OpenSearch Implementations at different agencies
    - **FedEO** (covered in FedEO session)
    - **CNES** (covered in Copernicus presentation)
    - **CWIC & IDN** (covered in CWIC session)
- Project conclusion — Yoshiyuki Kudo, Jérôme Gasperi

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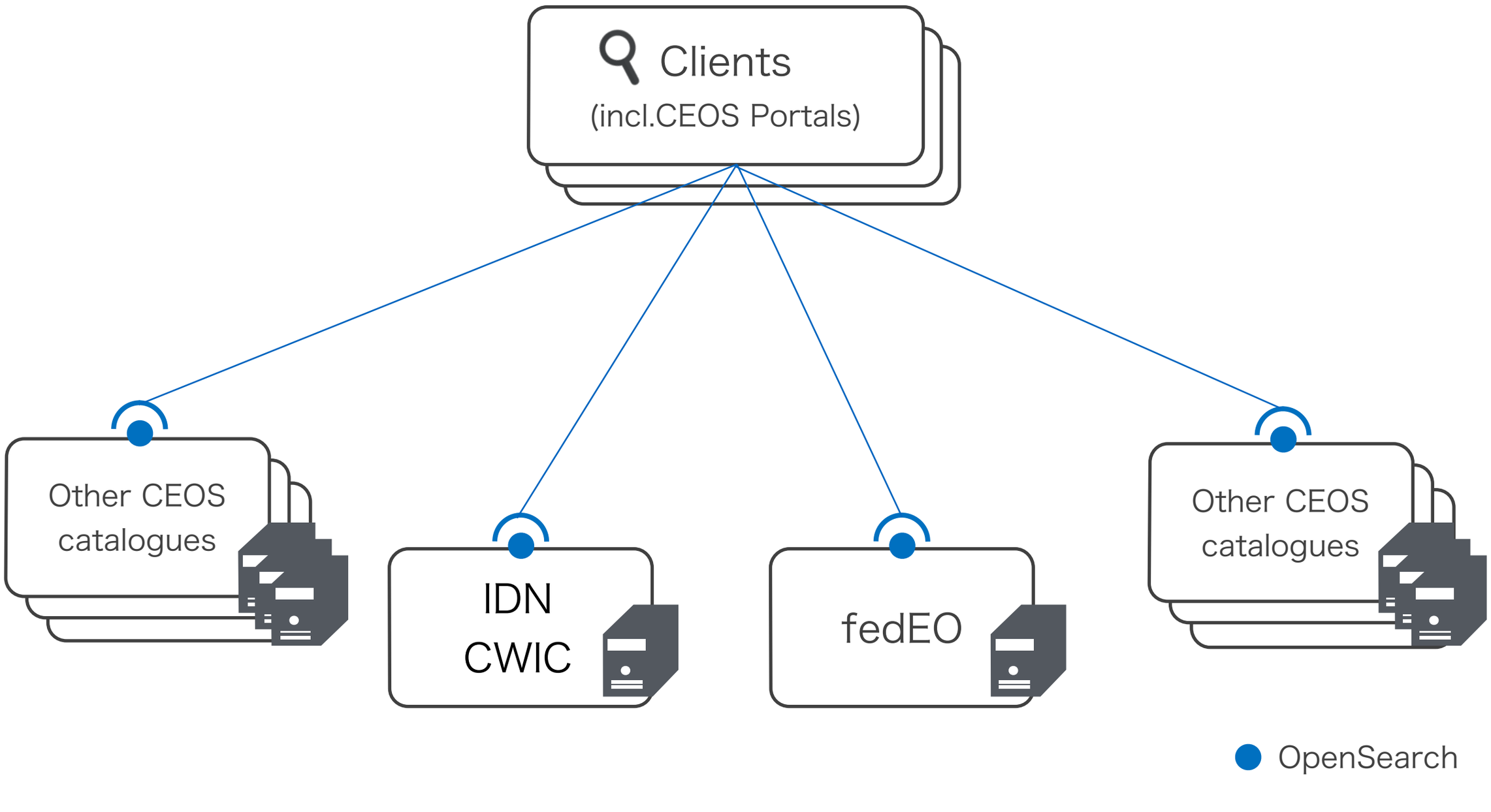
CEOS OpenSearch Project

OpenSearch Best Practices of CEOS Catalogs



Purpose

- **Promote the use of the OpenSearch** standard as a means of data discovery for Earth Data providers

- **Define the expectations and requirements** of candidate OpenSearch implementations

- **Remove ambiguity** in implementation where possible

- **Facilitate the aggregation of results** between disparate Earth Data providers via OpenSearch common standards

- Allow for clients to **access search engines** via an OpenSearch Description Document (OSDD) **with no a priori knowledge of the interface**

- Facilitate **smooth integration** between related OpenSearch implementations, such as a dataset resource collection that refers to granule resource collections from another provider

CEOS OpenSearch Best Practice Document

Version 1.0 Complete

(Today)

The trail …

Project formation

Common catalog interface to
CEOS agencie catalogs (CWIC, fedEO, …) ?
(2012)

Project formed in WGISS-35
(May 2013)

Agreed

CEOS OpenSearch BP
is in alignment with :

OGC OpenSearch Spec
10-032r8, 13-026r4 (draft)

input

CEOS Comments
(39 comments)

WGISS-36

Draft

comments from the team
(google docs)

first
draft

WGISS-37

draft version release

WGISS-38

input

commonality
practices worth sharing

comparison
chart

practices from implementations

CWIC
IDN

fedEO

CNES

ver.1

comments
(google docs)

further
discussion

Public Comment

Dec 2014

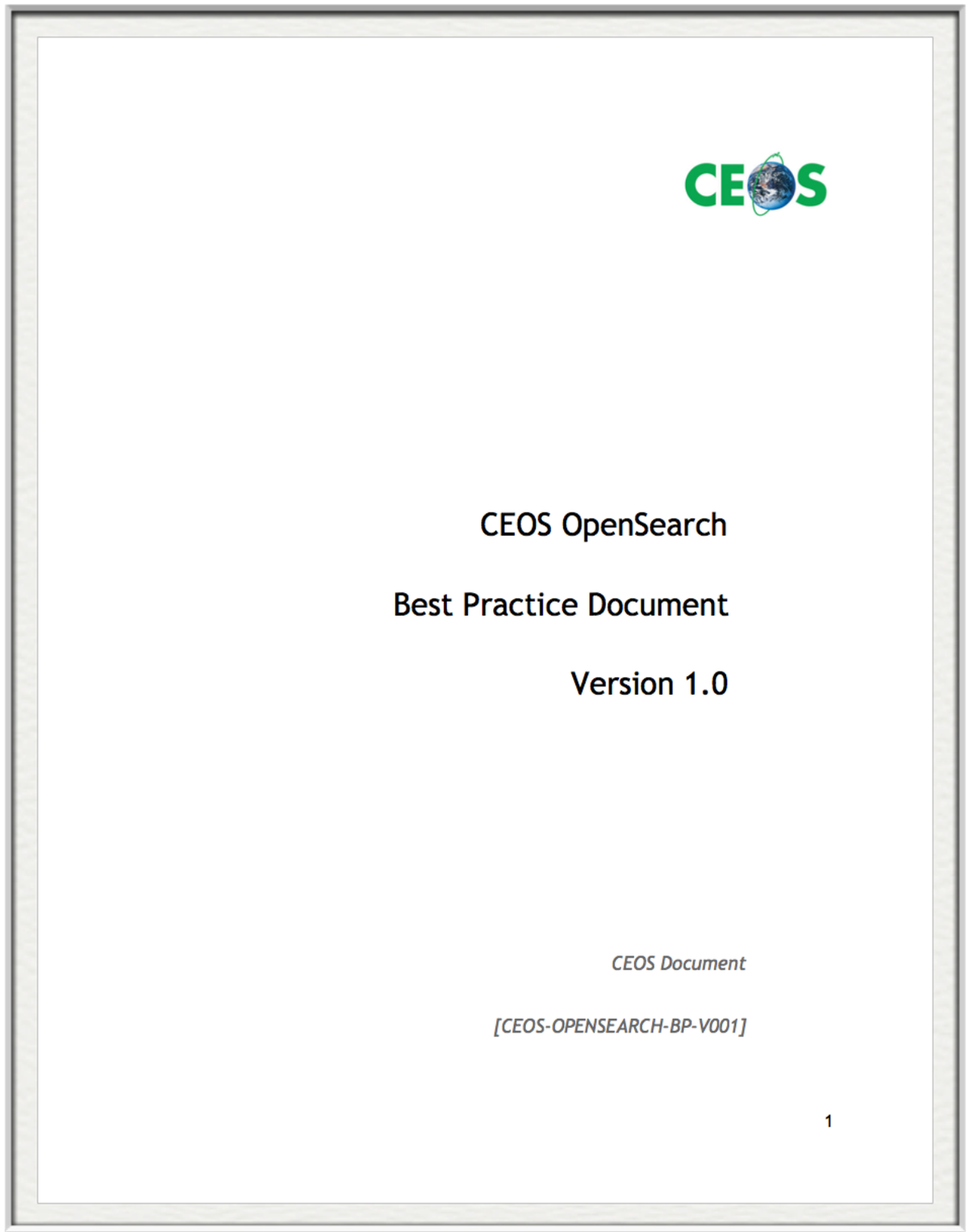
Refinement

ver 1.0

WGISS-39

CEOS OpenSearch Best Practice Document

- 40+ pages
- **17 Best Practices**
  - Based on Implementations in CEOS agencies
  - Classification
    - requirement
    - recommended
    - optional
- Example codes



http://ceos.org/ourwork/workinggroups/wgiss/projects/opensearch/

17 Best Practices

ID	Cateogy	Title	Classification
001	Two step search	Support of two step search	Recommended
002	OSDD	Support of OpenSearch Parameter Extension (Draft 2)	Recommended
003		rel attribute of the URL in OSDD	Recommended
004	Compliance Declaration	CEOS OpenSearch Best Practice identifier	Recommended
005	Search Request	Supported search parameters	Requirement
006		Multiwords for searchTerms	Recommended
007		Use of startPage over startIndex	Recommended
008		Search with geo:name	Recommended
009		Output encoding format in search URL	Optional
010	Search Response	Output encoding format support (atom)	Requirement
011		Support of dc:identifier returnable and geo:uid queriable	TBD
012		Metadata representation in search response	Recommended
013		atom:summary	Recommended
014		GeoRSS	Recommended
015		Browse Image	Recommended
016		Data access	Recommended
017	Exceptions	Exception codes	Recommended

Quick review on some BP items

2 Step Search - background

Recommended

Satellite Data Granularity and Hierarchy

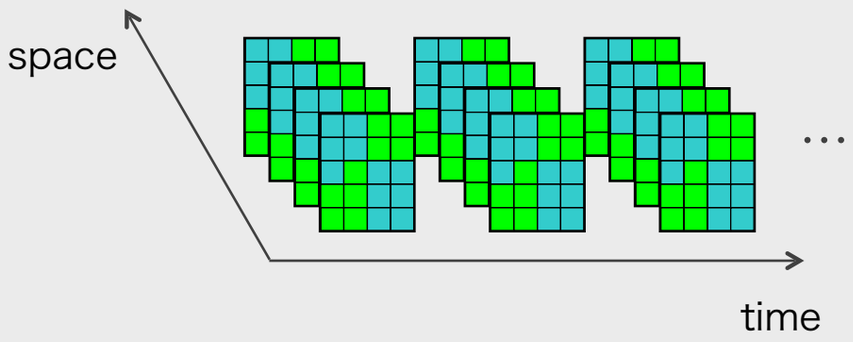
Collection

consists of

e.g.

ADEOS OCTS RTC L1A VNI
Aqua AMSR-E L3 SME
ALOS PALSAR L1.1

Granule



e.g.

A1OCT19950619XXXXXXX.dat
P1AME20081104XXXXXX_XXXXXX.h
ALPSR20100322XXXXXXX.tif

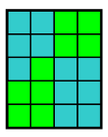
Best Practice #001

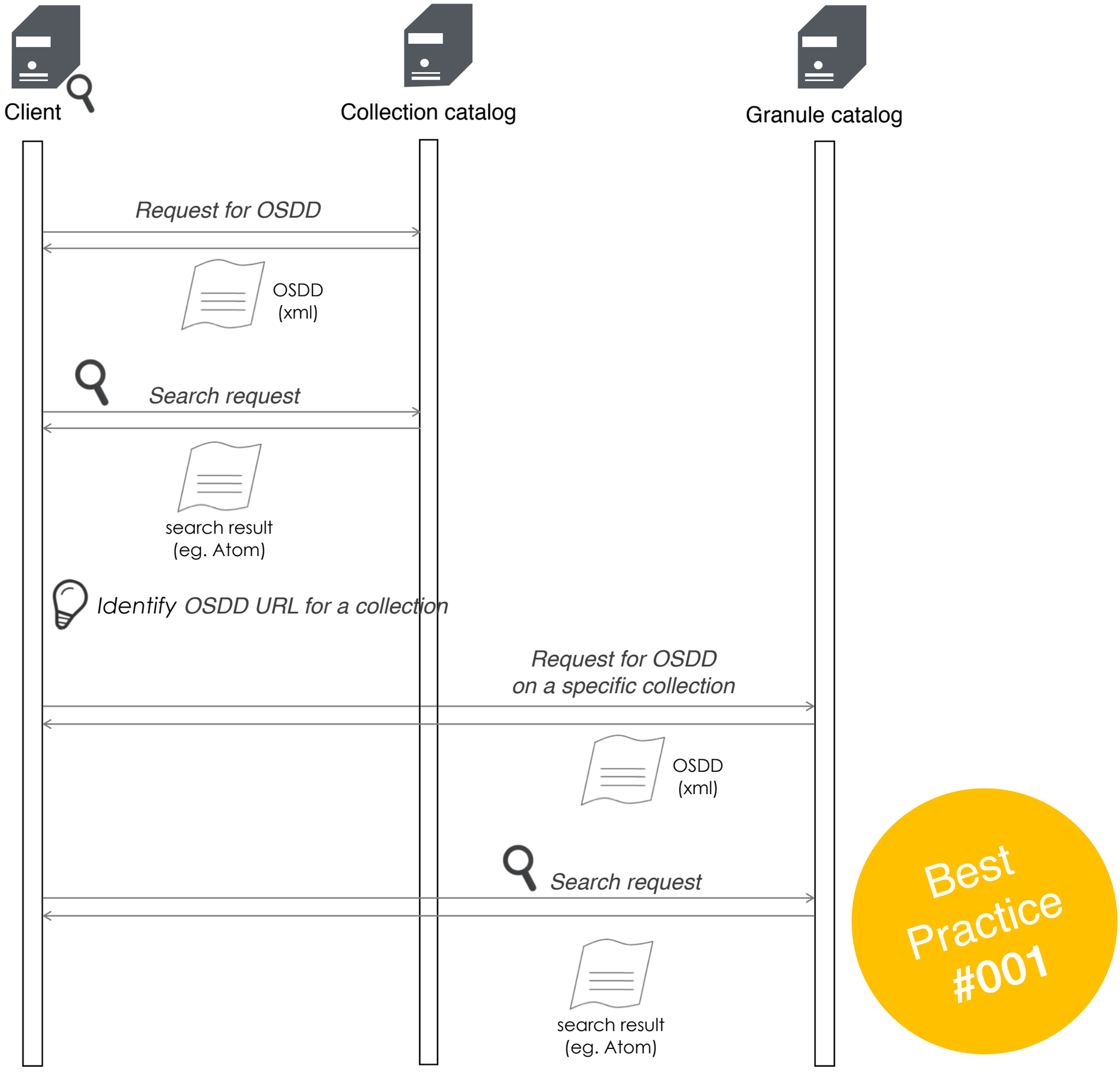
Step1

Collection Level

Step2

Granule Level





Best Practice #001

Support of OpenSearch Parameter Extension (Draft2)

Recommended

- The parameter extension :
  - explicitly advertise the valid lists and ranges of search parameters
    - ➡ reduces ambiguity and error dramatically

```
▼<os:Url type="application/atom+xml" params:method="GET" template="https://api.echo.nasa.gov:443/opensearch/datasets.atom?keyword={os:searchTerms?}&instrument=
{echo:instrument?}&satellite={echo:satellite?}&boundingBox={geo:box?}&geometry={geo:geometry?}&placeName={geo:name?}&startTime={time:start?}&endTime=
{time:end?}&cursor={os:startPage?}&numberOfResults={os:count?}&uid={geo:uid?}&clientId=ceoswaterportal">
 ▼<params:Parameter name="keyword" value="{os:searchTerms}" minimum="0">
    <atom:link rel="profile" href="http://www.elasticsearch.org/guide/en/elasticsearch/reference/current/query-dsl-query-string-query.html" title="This parameter follows the
    elastic search free text search implementations"/>
  </params:Parameter>
  <params:Parameter name="instrument" value="{echo:instrument}" title="Inventory associated with a satellite instrument expressed by this short name" minimum="0"/>
  <params:Parameter name="satellite" value="{echo:satellite}" title="Inventory associated with a Satellite/platform expressed by this short name" minimum="0"/>
  <params:Parameter name="boundingBox" value="{geo:box}" title="Inventory with a spatial extent overlapping this bounding box" minimum="0"/>
 ▼<params:Parameter name="geometry" value="{geo:geometry}" title="Inventory with a spatial extent overlapping this geometry" minimum="0">
    <atom:link rel="profile" href="http://www.opengis.net/wkt/LINESTRING" title="This service accepts WKT LineStrings"/>
    <atom:link rel="profile" href="http://www.opengis.net/wkt/POINT" title="This service accepts WKT Points"/>
    <atom:link rel="profile" href="http://www.opengis.net/wkt/POLYGON" title="This service accepts WKT Polygons"/>
  </params:Parameter>
  <params:Parameter name="placeName" value="{geo:name}" title="Inventory with a spatial location described by this name" minimum="0"/>
  <params:Parameter name="startTime" value="{time:start}" title="Inventory with a temporal extent containing this start time" minimum="0"/>
  <params:Parameter name="endTime" value="{time:end}" title="Inventory with a temporal extent containing this end time" minimum="0"/>
  <params:Parameter name="cursor" value="{os:startPage}" minimum="0"/>
  <params:Parameter name="numberOfResults" value="{os:count}" minimum="0" maxInclusive="2000"/>
  <params:Parameter name="uid" value="{geo:uid}" title="Inventory associated with this unique ID" minimum="0"/>
</os:Url>
```

Best Practice #002

(NASA ECHO OSDD : https://api.echo.nasa.gov/opensearch/datasets/descriptor_document.xml?clientId=xxxxxxx)

Support of OpenSearch Parameter Extension (Draft2)

Recommended

- Eg. geometry parameter

```
<Parameter name="geometry" value=”{geo:geometry}”>
    <atom:link rel="profile" href=”http://www.opengis.net/wkt/LINESTRING”
title="This service accepts WKT LineStrings"/>
      <atom:link rel="profile" href=”http://www.opengis.net/wkt/POINT”
title="This service accepts WKT Point"/>
</Parameter>
```

The server supports point and line among other geometry types, and the convention can be found in the value of href

Best Practice #002

Recommended Search Parameter Support

Requirement

keep the list short and simple

- count
- searchTerms [1]
- startPage
- geo:box
- time:start
- time:end

[1] optional for granule level search

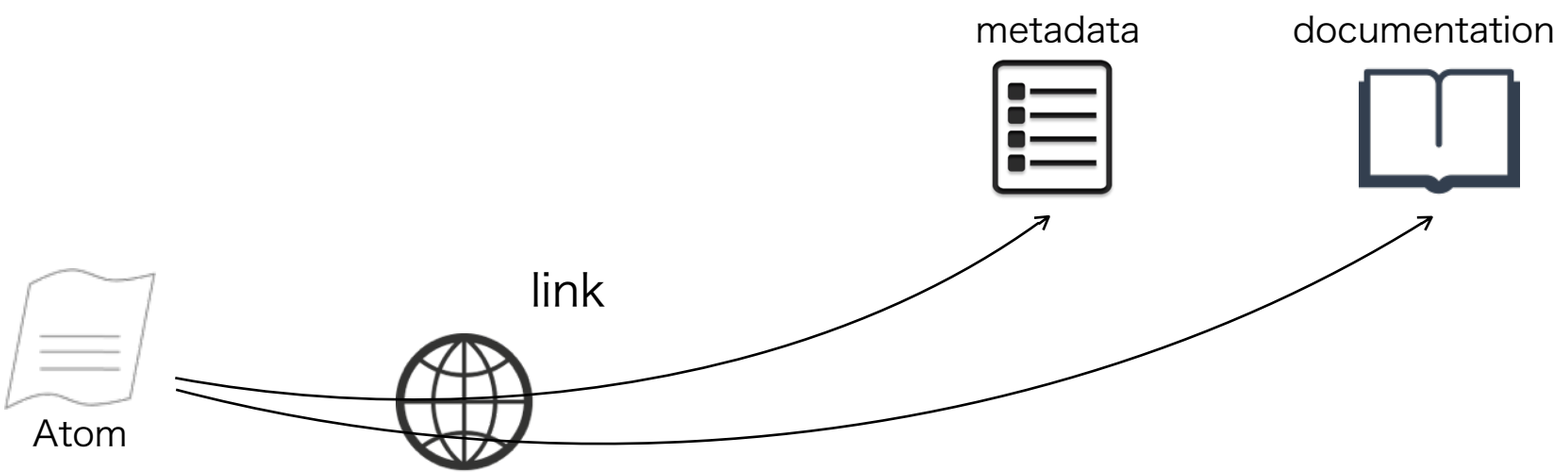
Best Practice #005

Metadata in search result

Recommended

atom:link@rel="alternate" or **atom:link@rel=”via”**
for detailed representation of the metadata
atom:link@rel="describedBy"
for the documentation (i.e. human readable information about the resource).

```
<link rel=”alternate” href=”http://foo.ceos.org/foo/dataset_abc.xml”
type=”application/vnd.iso.19139+xml”/>
<link rel=”describedBy” href=”http://foo.ceos.org/foo/dataset_abc.html”
type=”text/html”/>
```



Best Practice #012

URL to Browse Image

Recommended

atom:link@rel=”icon”
or
media:content/media:Category=QUICKLOOK
(Media RSS notation)

Best Practice #015

Data Access

Recommended

use **atom:link@rel=”enclosure”** along with an **type attribute** (e.g. type=”application/x-hdf”) for embedding data access URL.

Best Practice #016

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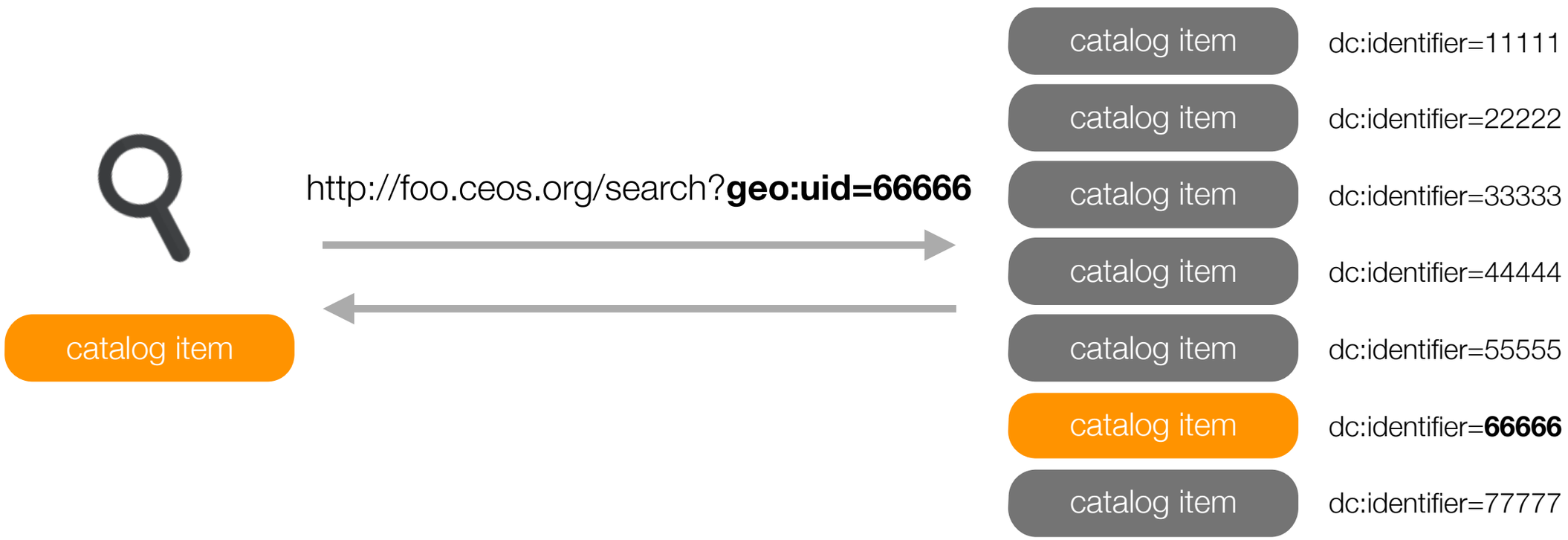
One last remaining item to be resolved

- **CEOS-BP-011**
  - **Support of dc:identifier returnable and the corresponding geo:uid queryable to allow for “search-by-ID”**
  - Make it “**Requirement**“ or "**Strongly recommended**” ?



Use case of CEOS-BP-011 (raised by ESA)

- Put a link on a Web site pointing to a single (OpenSearch) catalog item (using a URL) to illustrate something (e.g. an earth quake in the Himalaya)
- End users being able to bookmark and retrieve a single item

Comments -
The need of this BP item ?

- The use case (in the previous slide) is not possible if there is no way to **point directly to a single item in the catalog**.
- **For the end user,** being able to **bookmark** and **retrieve a single item** is desirable.
- **For the provider** to be able to retrieve a single item rather than re-executing a potentially resource-intensive search just to retrieve one record in a result set is a pretty obvious optimization
- Preferred over “links (atom:link) in the entry” as **it’s in agreed structure (Atom)**
- If everything is optional or"recommended" or "strongly recommended", we will end up with no **interoperability** at all.

- The link pointing to a particular item **should be one of the links in the entry**, not an OpenSearch query.

Comments - **Requirements or Recommendation ?**

- NASA (ECHO), CWIC, and ESA has already implemented it
- CNES will implement it
- Trivial to implement (as far as we know)
- If everything is optional or"recommended" or "strongly recommended", we will end up with no **interoperability** at all.

- It was pretty trivial to implement. But it is **probably not the general case (eg. ESIP)**.
- The more mandatory elements the greater the risk of compliance and, therefore, **increased risk to the legitimacy of the document**. The more implementers that abide by it the more legitimacy.

Discussion

- Now, **requirement** or **strongly recommended** ?
- Majority in favor of “**requirement**”
- “requirement” can be a barrier to the developers ?
- 2 “requirement”s including #011 of all the17 BPs
- Proposal for lowering the possible barrier
  - Keep the project mailing list open so developers can drop any technical questions
  - (Beneficial for other BP items as well)

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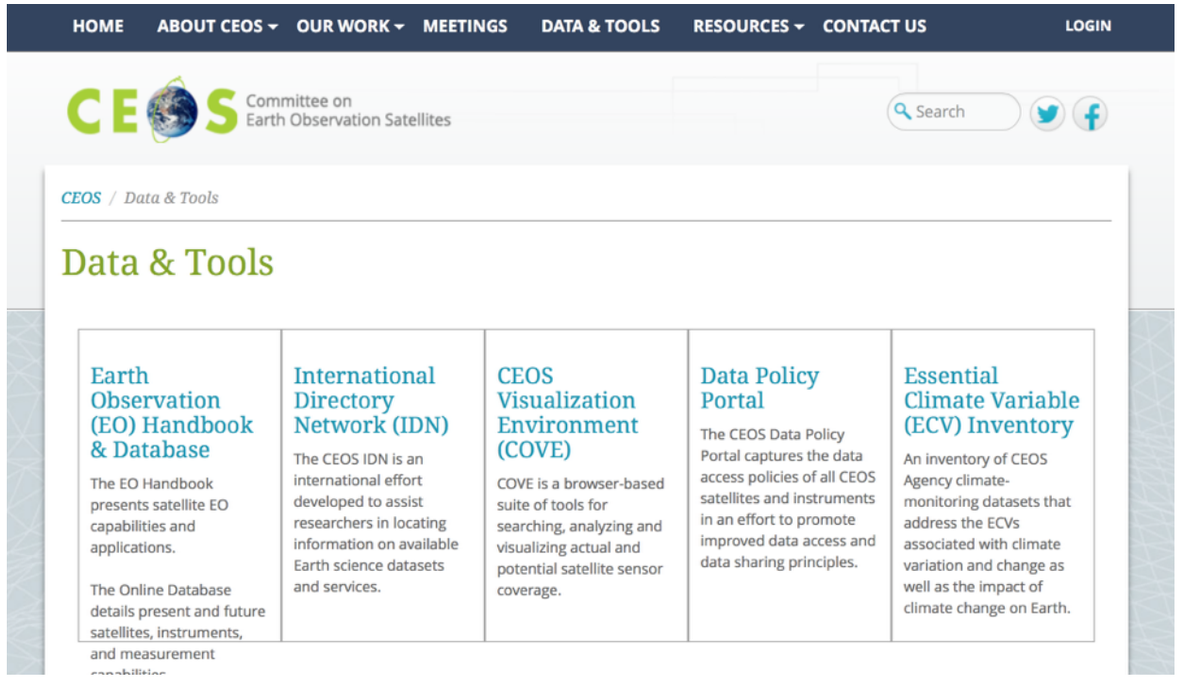
Project conclusion

- We have Version 1.0 finalized, which completes the project in success
- Important ：
  - Exposure and spreading to relevant agencies and public
  - Let’s keep the project web page as well as mailing list for comments from those followers



Thank you !