Discovery and Access Broker (DAB) technology

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Geospatial resource brokering framework

- National Meteorological and Hydrological Services
- Private sector
- Research entities
- ...

- Modelers
- Hydrologists
- Researchers
- Decision makers
- ...

Data provider services

Interoperability

enabler

Data user tools & apps

DAB
Brokering approach benefits

Without broker

- ✗ Burden of creating new connectors on participants
- ✗ New requirements (e.g. new standard) require new implementations by each participant

Number of connectors grows very rapidly with the number of participants!

With broker

- ✓ Burden of creating new connectors on broker
- ✓ Able to cope with new requirements & change of standards: more sustainable

Number of connectors grows linear with the number of participants.
The DAB broker powering the WHOS architecture

Complete list of supported standards at official WHOS home page:
https://community.wmo.int/activity-areas/wmo-hydrological-observing-system-whos
Successful pilots

WHOS Global portal
(BYU Water Data Explorer)

WHOS Plata
(BYU Water Data Explorer)
(HRC PROHMSAT model)

WHOS Arctic
(ESRI ArcGIS online + USGS GWIS)

WHOS Dominican Republic
(BYU MET Data Explorer)
Support to well known community apps

GI-portal

CUAHSI HydroDesktop

52North Helgoland

Geonetwork

WaterML Client
Support to programmatically discovery and access

R library

Jupyter notebooks

Node.js

OGC services

C# WCF plugin

Open API Specification

Swagger

REST API
Three brokers compose the DAB framework

**Discovery Broker**
- **Discovery:** To search for the datasets that match a set of user query terms
  - **Obtain metadata**

**Semantic Broker**
- **Semantic:** To augment user queries with additional search terms from various ontologies
  - To semantically harmonize metadata elements (e.g., metadata translation in different languages)
  - **Augment query**

**Access Broker**
- **Access:** To download and transform the datasets that are the result of the discovery step
  - **Obtain data**
Modular, flexible framework, new components can be plugged in. E.g.:

- One new accessor component is added to support a new data provider type
- One new profiler component is added to support a new user application type
DAB customized data views

Area of interest

Group of institutions

Global

Station(s)

Institution 1

Institution 2

Institution 3

Institution 4

Group of institutions

... (e.g., for specific variable(s) and/or combinations of other constraints)
Supported cloud infrastructures:

• **AWS**
  • ECS
  • Docker

• **Copernicus DIAS** (in progress - EOSC Hub)
  • kubernetes
  • docker
Successful DAB deployments
Thank you!