GGOS Portal

Revival of a Metadata Platform

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BEV Austrian Federal Office of Metrology and Surveying

GGOS Days 2022
Monday, November 14, 2022

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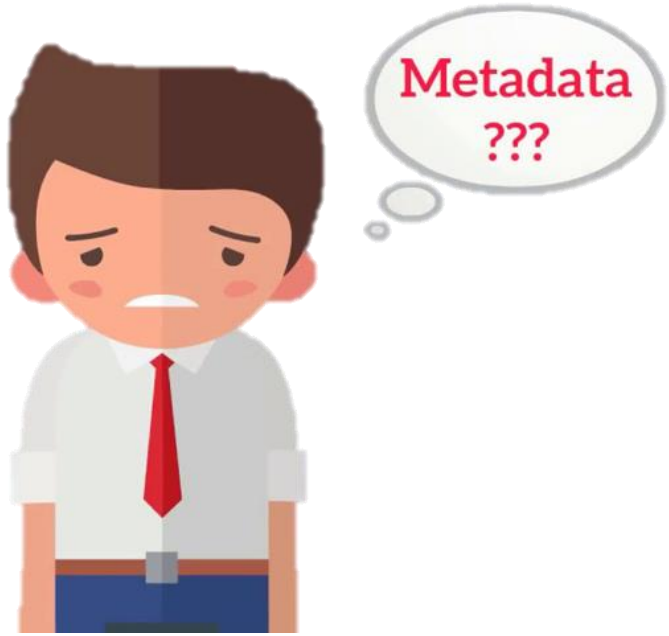
What is Metadata?



What is Metadata?

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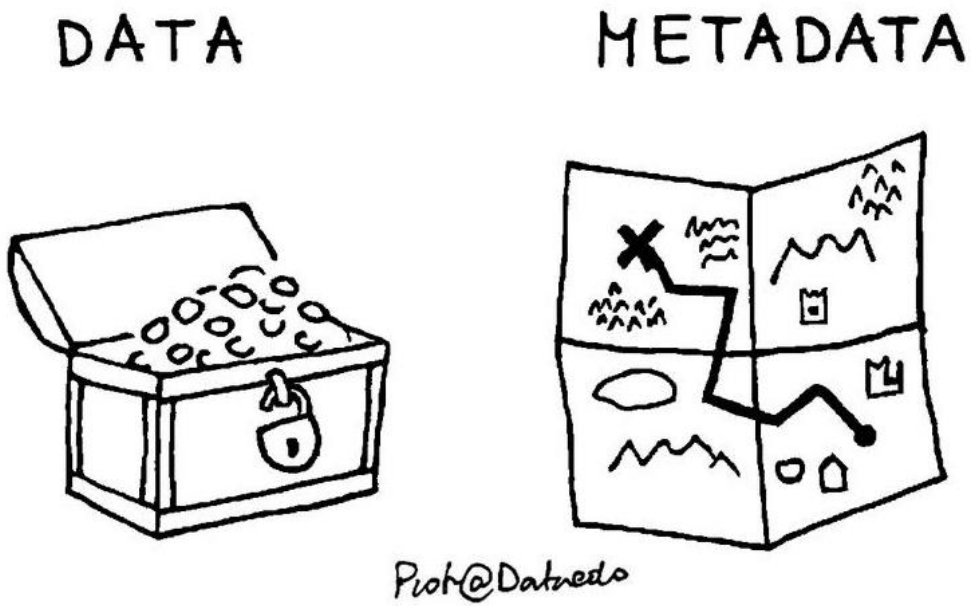
„metadata is data that provides information about other data“

not the data itself



What is Metadata?

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TITLE	CDDIS DORIS data cycle version 01
ALTERNATETITLE	CDDIS DORIS data cycle
ABSTRACT	The Doppler Orbitography by Radiopositioning Integrated on Satellite (DORIS) was developed by the Centre National d'Etudes Spatiales (CNES) with cooperation from other French government agencies. The system was developed to provide precise orbit determination and high accuracy location of ground beacons for point positioning. DORIS is a dual-frequency Doppler system that has been included as an experiment on various space missions such as TOPEX/Poseidon, SPOT-2, -3, -4, and -5, Envisat, and Jason satellites. An accurate measurment is made of the Doppler shift on radiofrequency signals emitted by the ground beacons and received on the spacecraft.
IDENTIFIER	CCDIS-V01-e2a8-4a0d-ad8a-4407-4afb-8059
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LANGUAGE	en
CHARSET	8859part2
DATE	2003-01-23 17:00:00
DATETYPE	creation
FORMATNAME	SINEX
FOMATVERSION	2.00
MEDIUMNAME	onLine
LINKAGE	ftp://cddis.gsfc.nasa.gov/doris/data

Metadata Standards

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Metadata standards are necessary for **interoperable and interdisciplinary search**

Widely used „Geographic Information“ ISO-Standards:

- **ISO 19115: Metadata**
  - Released 2003, revision 2013
- **ISO 19119: Services**
- **ISO 19139: Data Exchange** (XML schema)

Metadata - Exchange Formats

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Exchange of Metadata:

- **XML**-Format (E**X**tensible **M**arkup **L**anguage)
  - Human and machine readable
- **GML**-Format (**G**eography **M**arkup **L**anguage)
  - Extension of XML
  - to **add geospatial features**
  - Rich set of primitive geospatial objects (geometry, coordinates, …)
- **GeodesyML**
  - Extension of GML
  - to describe further **geodetic information**
  - Usable for **geodetic stations** (GNSS, SLR, VLBI, DORIS)
    - Add e.g. antenna, receiver, cable, adjustments, …
    - IGS is implementing it for GNSS

```
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GGOS-Portal
Idea of a Geodetic Metadata Platform

GGOS-Portal: Metadata Platform

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*GGOS-Portal: „A **unique acces point** for all **data, products and information** relevant in the **framework of GGOS** for **Earth Science and applications**"*

Now: Users get lost in mountains of information

Graphics part of the presentation „GGOS Portal and Meta Data" by Bernd Richter and Carey Noll at UAW 2009 (San Francisco)

GGOS-Portal: Metadata Platform

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Global Geodetic Observing System

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GGOS-Portal: Metadata Platform

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Provide metadata of geodetic:

- **Station** information
- **Observation** data
- **Product** data

GGOS-Portal users:

- **Data-providing** user (IAG Services and authorised non-IAG institutions)
- **Data-consuming** user

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GGOS-Portal & Metadata Schema
Historical Developments

History - 2007

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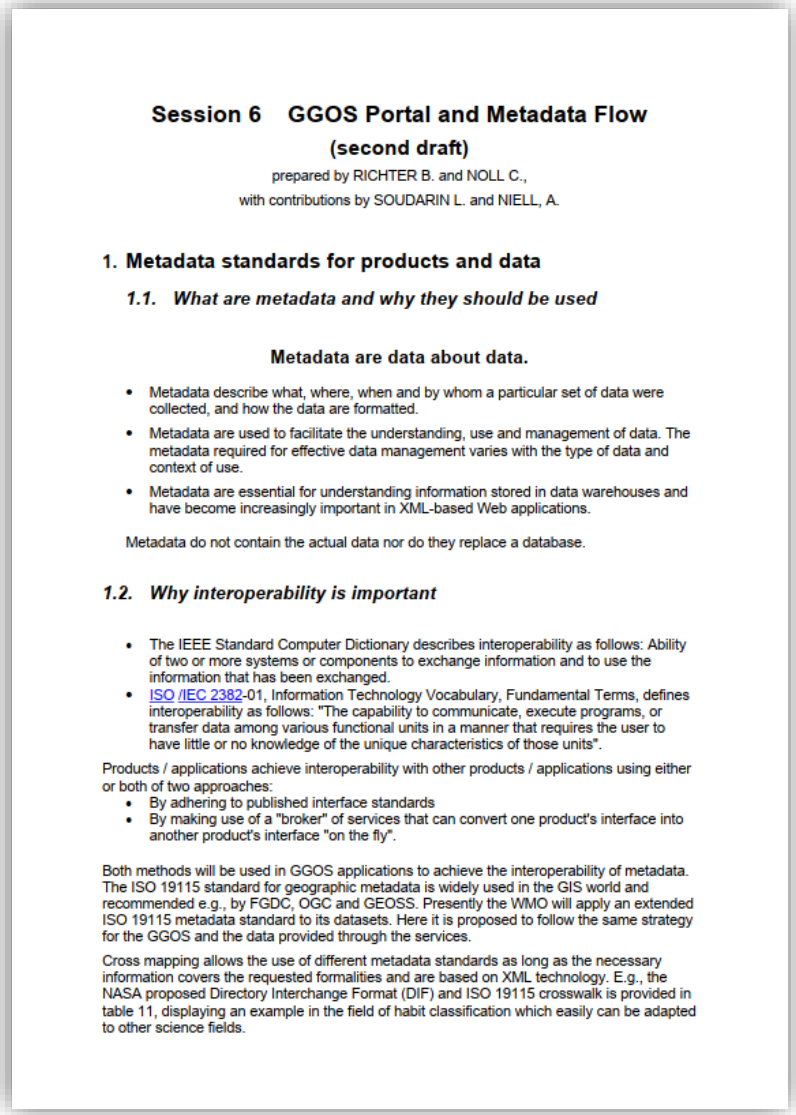
- First **presentation of ideas** (UAW)
- Developing of **Position Paper** (UAW) about GGOS-Portal and Metadata Flow



Session 6 GGOS Portal and Metadata Flow

(second draft)

prepared by RICHTER B. and NOLL C.,

with contributions by SOUDARIN L. and NIELL, A.

1. Metadata standards for products and data

1.1. What are metadata and why they should be used

Metadata are data about data.

- Metadata describe what, where, when and by whom a particular set of data were collected, and how the data are formatted.
- Metadata are used to facilitate the understanding, use and management of data. The metadata required for effective data management varies with the type of data and context of use.
- Metadata are essential for understanding information stored in data warehouses and have become increasingly important in XML-based Web applications.

Metadata do not contain the actual data nor do they replace a database.

1.2. Why interoperability is important

- The IEEE Standard Computer Dictionary describes interoperability as follows: Ability of two or more systems or components to exchange information and to use the information that has been exchanged.
- ISO /IEC 2382-01, Information Technology Vocabulary, Fundamental Terms, defines interoperability as follows: "The capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the user to have little or no knowledge of the unique characteristics of those units".

Products / applications achieve interoperability with other products / applications using either or both of two approaches:

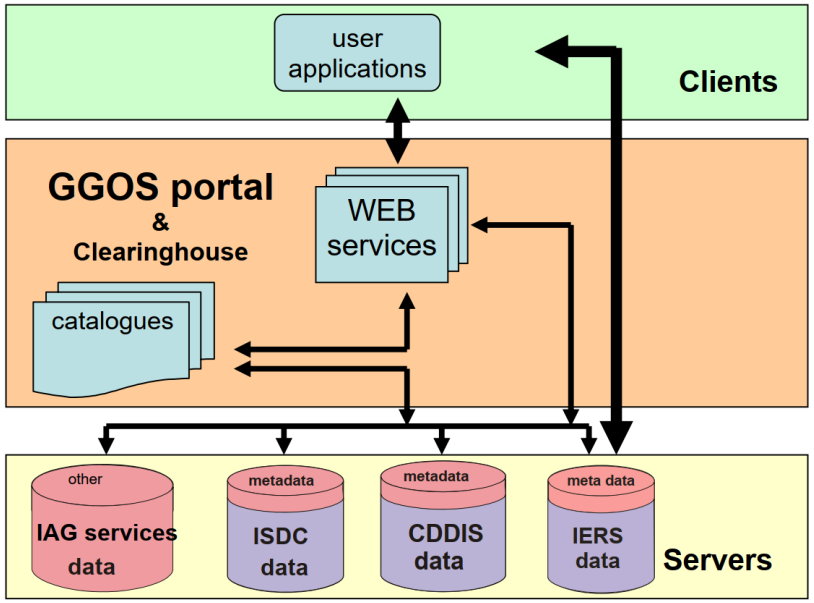
- By adhering to published interface standards
- By making use of a "broker" of services that can convert one product's interface into another product's interface "on the fly".

Both methods will be used in GGOS applications to achieve the interoperability of metadata. The ISO 19115 standard for geographic metadata is widely used in the GIS world and recommended e.g., by FGDC, OGC and GEOSS. Presently the WMO will apply an extended ISO 19115 metadata standard to its datasets. Here it is proposed to follow the same strategy for the GGOS and the data provided through the services.

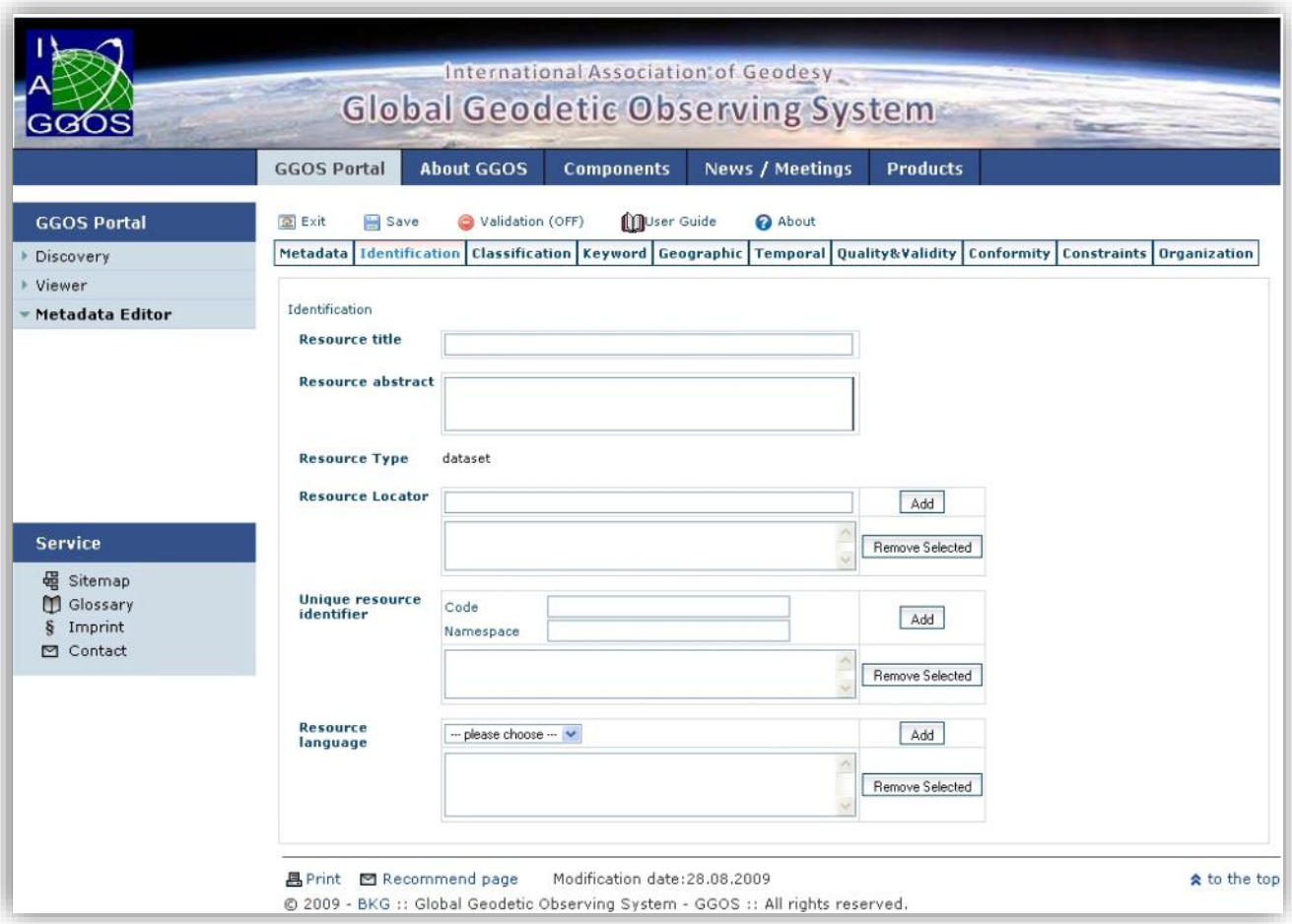
Cross mapping allows the use of different metadata standards as long as the necessary information covers the requested formalities and are based on XML technology. E.g., the NASA proposed Directory Interchange Format (DIF) and ISO 19115 crosswalk is provided in table 11, displaying an example in the field of habit classification which easily can be adapted to other science fields.

History - 2009

- **GGOS Book** (chapter about GGOS-Portal)
- Developing a first **GGOS-Portal prototype**
- Establishing **GGOS Working Group on DIS** (Data and Information Systems)



GGOS-Portal Architecture – GGOS Portal Specifications 2009



GGOS-Portal Metadata-Editor Screenshot – by Richter/Noll at UAW 2009

History – 2011/2012

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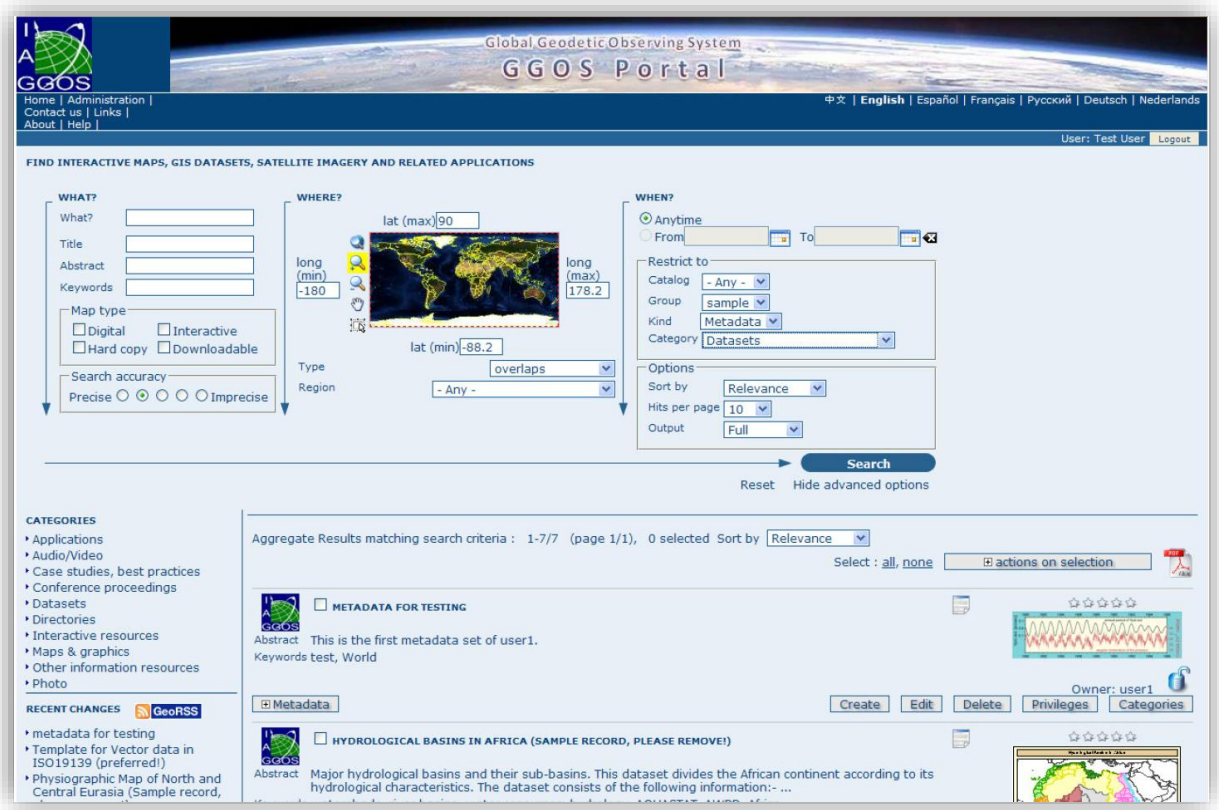
2011:

- New **GGOS-Portal prototype**
  - GeoNetwork-Software was used
  - Available at ggos-portal.org (by BKG)
  - Provision of some **test-data**

- **IAG Services were encouraged to contribute**
  - with **5 main products** (metadata)

2012:

- **Stop of GGOS-Portal developments!!**
  (Bernd Richter changed position at BKG)



GGOS-Portal Screenshot – IAG Travaux Report 2007-2011

History – since 2012

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2016:

- Finishing of first developmed **metadata schema** (no document available!)
- Up to now: No further developments in GGOS Committee on DIS

2016/17:

- Attemt to **re-develop GGOS-Portal** (at new GGOS CO at BEV in Vienna, Austria)

2022:

- Start to **revive GGOS-Portal idea** again (after GGOS website finished)
- **Discussion** in GGOS D-A-CH community
- Announcement of **bachelor thesis** (TU Vienna): GGOS-Portal research & development

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GGOS-Portal
Future Perspectives

GGOS-Portal: Platform Realization

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Requirements:

- **Use existing** Data Management System (DMS)
- Include **geospatial features**
- **Free available**
- **Open-source** (community development)
- **Big developing community**
- **Constantly evolving**

Platform GeoNetwork

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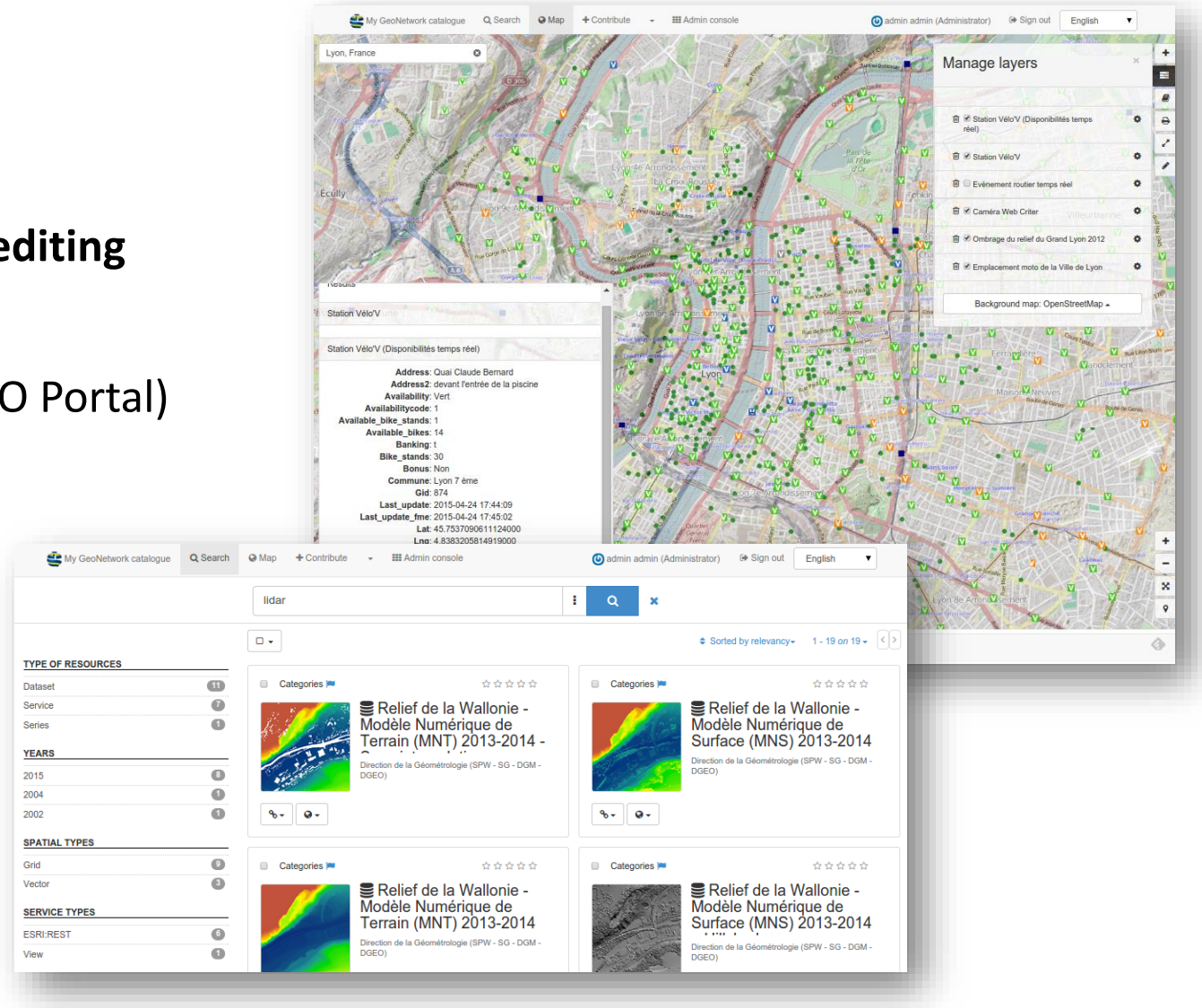
Continuous developments (>10 years)

Functionalities:

- Metadata **harvesting, validating, creating** and **editing**
- Create **own metadata schema**
- Metadata **exchange with other portals** (e.g. GEO Portal)
- Intuitive **search interface**
- Illustration on a **dynamic map**



GeoNetwork opensource

www.geonetwork-opensource.org

github.com/geonetwork

Platform CKAN

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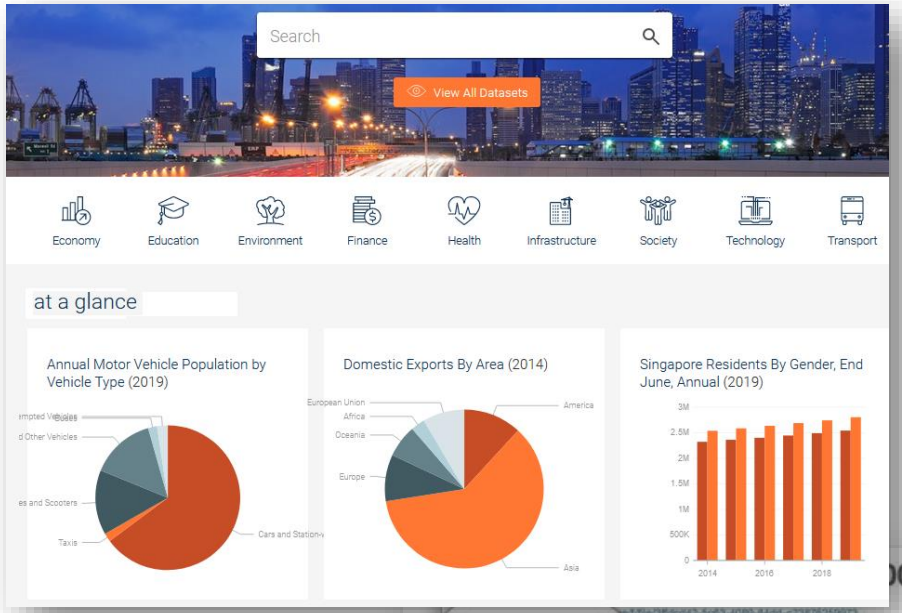
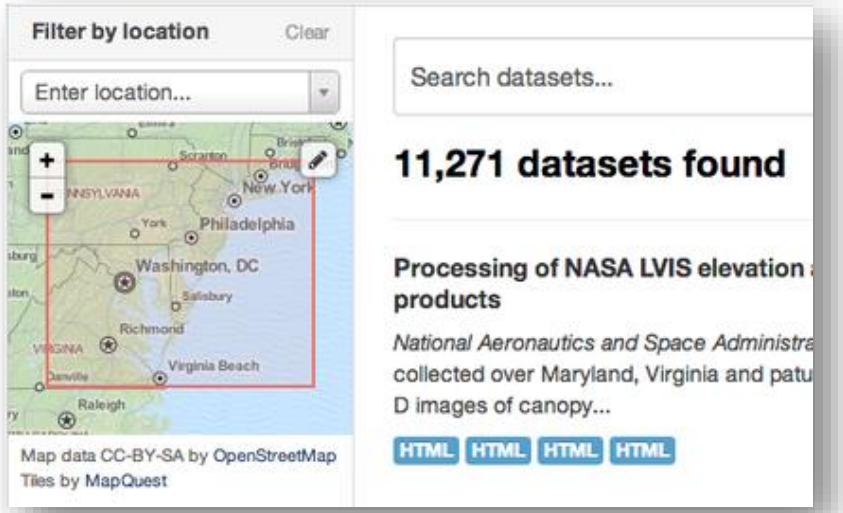
Additional Functionalities (compared to GeoNetwork)

- **Visualisation** by graphics
- **Themeable**: Easily create own GUI Theme
- **Extensions** available (save developing time)
- **More Contributing Developers** (Github)

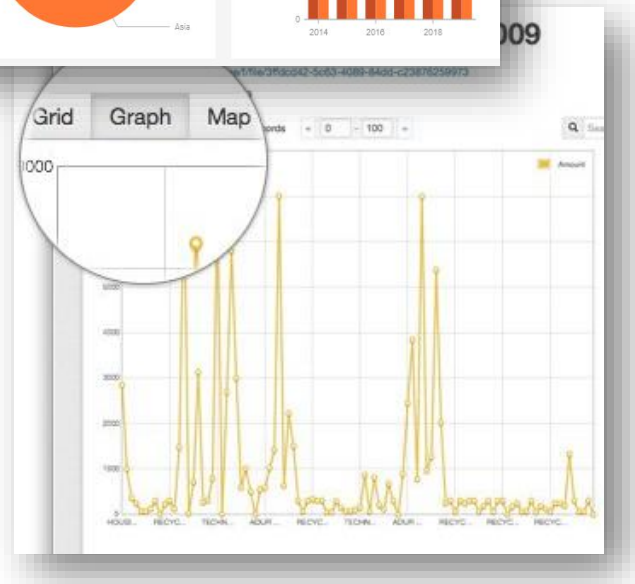




ckan

ckan.org

github.com/ckan



Next Steps - Phases

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1. Research Phase

- Find **best suitable metadata-platform software** for our needs (GeoNetwork, CKAN, …)
- Create **Overview of existing geodetic metadata**
- Define necessary **metadata granuality** for GGOS Portal
- Work together with **GGOS DOI WG** (and Committee on DIS ?)

2. Build-up Phase

3. Operating Phase

- **Integrate existing metadata** of geodetic data - step by step
- **Encourage data-providers** to **create DOI‘s and metadata** for their data

Requirements for Success

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- **Cooperation** of all IAG Services and (meta-)data providers
  - Metadata should be provided and maintained by data providers!
  - Automatic harvesting of metadata (synchronisation)

- **„GGOS-Portal Manager“** is needed:
  - Contact point for all data-providers and users
  - Manage metadata-platform (install harvesting, …)
  - Further develop metadata-platform

Is it worth to do this?

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Useful for:

- **Geodesists**
- **Geoscientists**
- **General Society**

YES

One-Stop-Shop

Increase **Visibility** of:

- **Geodetic Data** and **Products**
- **IAG/GGOS** and **Geodesy**
- **Data-Provider** (IAG Services)

Helps to
Promote Geodesy
on political level

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Thank you for your attention!

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