European Commission

GeoDCAT-AP

Cross-sector sharing and re-use of geospatial metadata

Michael Lutz, Andrea Perego

INSPIRE 2016

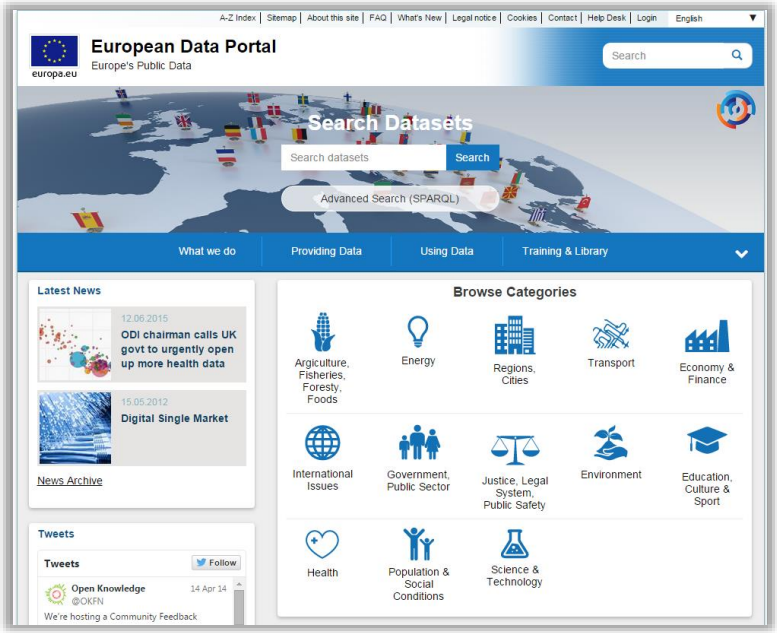
Barcelona, 30 September 2016

Joint Research Centre

INSPIRE, PSI & Open Data

EU activities and regulations

- Communication on Open Data (COM(2011)882)
- Revision to the Decision governing re-use of Commission's documents (2011/833/EU)
- Revision to the Directive on re-use of Public Sector Information (2013/37/EU)
- EU Programme on Interoperability Solutions for European Public Administrations (ISA)

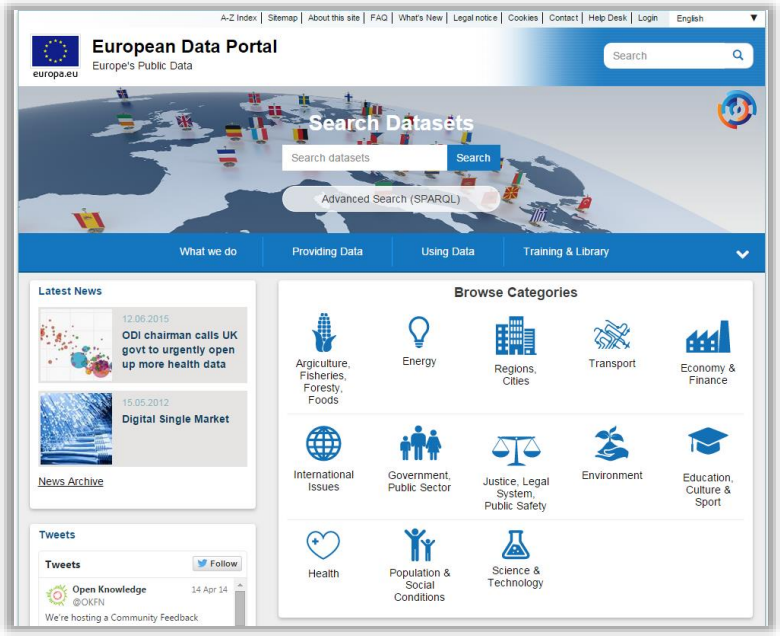


Joint Research Centre

European Commission

The European Data Portal

- A single access point for the cross-border discovery of datasets available from EU data portals
- It will harvest any kind of dataset metadata
- The **geospatial component** plays an important role in the underlying infrastructure
- Complemented with additional services – as an **EU gazetteer**
- Based on harmonised and cross-domain metadata interchange formats



INSPIRE · Infrastructure for Spatial Information in Europe

sdmx
Statistical Data and Metadata eXchange

DCAT
APPLICATION PROFILE FOR EUROPEAN DATA PORTALS

Joint Research Centre

European Commission

What is GeoDCAT-AP

- Geospatial extension to DCAT-AP (DCAT application profile for data portals in Europe)
  - DCAT-AP is a metadata profile meant to provide an interchange format for data portals operated by EU Member States
  - DCAT-AP is based on and compliant with the W3C Data Catalog (DCAT) vocabulary
- Developed in the framework of the EU Programme "Interoperability Solutions for European Public Administrations" (ISA)
- GeoDCAT-AP is meant to provide a DCAT-AP compliant representation for the set of metadata elements included in
  - INSPIRE metadata
  - The core profile of ISO 19115:2003

DCAT
APPLICATION PROFILE FOR EUROPEAN DATA PORTALS

Joint Research Centre

INSPIRE & GeoDCAT-AP: Why?

Agree upon a common RDF representation

- RDF is increasingly being used as an alternative representation of INSPIRE metadata
- Without a harmonised INSPIRE-to-RDF mapping, metadata interoperability is lost

Facilitate cross-sector sharing of INSPIRE metadata

- INSPIRE metadata are already being harvested by and published in cross-domain data catalogues at the national and/or regional level
- INSPIRE metadata are harvested and published *also* on the **European Data Portal**, which uses DCAT-AP as a metadata interchange format

GeoDCAT-AP: Objectives

- *The GeoDCAT-AP specification does not replace the INSPIRE Metadata Regulation nor the INSPIRE Metadata Technical Guidelines based on ISO 19115:2003 and ISO 19119*

- Its purpose is to give owners of geospatial metadata the possibility to achieve more by providing an additional RDF syntax binding

- Its basic use case is to make spatial datasets, data series, and services searchable on general data portals, thereby making geospatial information better searchable across borders and sectors

GeoDCAT-AP: Current status

- Final specification (**GeoDCAT-AP 1.0**) released in **December 2015**:

  https://joinup.ec.europa.eu/asset/dcat_application_profile/asset_release/geodcat-ap-v10

- **Reference implementation** (XSLT-based):

  https://webgate.ec.europa.eu/CITnet/stash/projects/ODCKAN/repos/iso-19139-to-dcat-ap/

- **GeoDCAT-AP implementations**, including **CSW**-based ones, are already available:

  https://joinup.ec.europa.eu/node/144843

GeoDCAT-AP API & Sandbox

GeoDCAT-AP API

Proof-of-concept of the implementation of GeoDCAT-AP using the standard CSW interface, and supporting multiple RDF serialisations (including HTML+RDFa) and HTTP content negotiation

http://geodcat-ap.semic.eu:8890/api/

INSPIRE GeoDCAT-AP Sandbox

Faceted browser / SPARQL endpoint for records harvested from the INSPIRE Geoportal and transformed into GeoDCAT-AP

http://inspire-sandbox.jrc.ec.europa.eu/geodcat-ap/

European Commission

GeoDCAT-AP API

Output Schema : DCAT-AP

Transform

http://sdi.eea.europa.eu/catalogue/srv/eng/csw?request=GetRecords&service=CSW&version=2.

Output format : RDF/XML

Usage notes

Copy & paste the URL of a file or of a CSW request returning ISO 19139 records.

Supported CSW request types: `GetRecords`, `GetRecordById`.

Supported CSW output schema: `http://www.isotc211.org/2005/gmd`

NB: The current version of the API supports only CSW calls using the `GET` HTTP method.

A description of the GeoDCAT-AP API is available on the API's Stash repository.

GeoDCAT-AP API @ Stash: https://webgate.ec.europa.eu/CITnet/stash/projects/ODCKAN/repos/iso-19139-to-dcat-ap/browse/api

Joint Research Centre

The GeoDCAT-AP API

- The main objective of this prototype is to provide **a working example on how GeoDCAT-AP can be supported without changing the existing infrastructure**, based on INSPIRE / ISO 19115 metadata and CSWs
- The GeoDCAT-AP API provides also an example on **how to enable traditional HTTP functionalities in CSWs**, as content negotiation, allowing a better integration with non-geospatial services and APIs
- Another key objective is to show how the existing catalogue infrastructure can be used to **publish metadata in a way that increases their visibility on the Web**, by following standards as **HTML+RDFa** and Search Engine Optimisation (SEO) techniques
- Notably, these are some of the issues addressed by the Geonovum testbed "Spatial Data on the Web":

  http://geo4web-testbed.github.io/topic4/

GeoDCAT-AP: Open issues

- Lack of vocabularies able to model some information – in particular:
  - reference systems
  - spatial / temporal resolution
  - data quality
- Limited use of **global & persistent identifiers** (in particular, HTTP URIs) in the original metadata records. Some consequences:
  - impossible to (safely) implement incremental harvesting
  - impossible to unambiguously identify resources referred to from metadata (keywords from reference vocabularies, responsible organisations, licences, etc.)
  - faceted search (esp., language neutral) cannot be effectively implemented

GeoDCAT-AP: Ongoing work

Although the GeoDCAT-AP WG is formally closed, their members are contributing, on a volunteer basis, to carry on additional implementation activities. These include:

- Alignment of INSPIRE spatial data themes, ISO topic categories and MDR data themes (i.e., the ones used in DCAT-AP) – This work is documented here:
  - https://webgate.ec.europa.eu/CITnet/stash/projects/ODCKAN/repos/iso-19139-to-dcat-ap/browse/alignments

- Testing and enhancing the mappings defined in GeoDCAT-AP. This work will be used as a basis for possible future revisions to GeoDCAT-AP

Data & services

- Another issue concerns how to model **dataset distributions available via services / APIs** (WMS, WFS, WCS, as well as SPARQL endpoints)
- This work is carried out in the framework of the DCAT-AP Implementation Guidelines WG, and may lead to a standardised and interoperable representation for any kind of service-based data access – not limited to the geospatial platform
- The current proposal is to use **OpenSearch** to describe the service and the request parameters
- For geospatial services, the OpenSearch document can be automatically generated from a GetCapabilities document, but a **standardised mapping** need to be designed

Profile-based content negotiation

- This is basically about **HTTP content negotiation based also on "profiles"** – e.g., being able to request (meta)data in a given schema (ISO 19115, Dublin Core, etc.), and not only in a given format (XML, RDF, etc.)
- CSW (but also by OAI-PMH) already supports the ability to choose the output schema with a specific request parameter. However, the rationale is defining a **standardised approach for any type of service run on the Web**
- This issue might be addressed in the framework of the W3C/OGC Spatial Data on the Web WG, or by future work at W3C on DCAT – on this topic, see also the "Smart Descriptions & Smarter Vocabularies" (SDSVoc) Workshop:

  https://www.w3.org/2016/11/sdsvoc/

Conclusions

- Promoting the use of **global, persistent and (ideally) resolvable identifiers, in form of HTTP URIs**, is beneficial to the geospatial infrastructure itself, and enables a better integration with other data sources and service platforms

- Making geospatial services more Web-friendly would increase the re-use of geospatial data. This includes support to **HTTP content negotiation**, service ouput provided also in formats optimised for Web consumption and discovery (e.g., **HTML with embedded metadata**)

- **Standardised GetCapabilites to OpenSearch mappings** would facilitate the use of geospatial services by general purpose clients

- **Profile-based HTTP content negotiation** would enable Web clients to use functionalities already supported by geospatial services

European Commission

Thanks for your attention!

michael.lutz@jrc.ec.europa.eu

andrea.perego@jrc.ec.europa.eu

For more information

- GeoDCAT-AP 1.0 specification

  https://joinup.ec.europa.eu/asset/dcat_application_profile/asset_release/geodcat-ap-v10

- GeoDCAT-AP implementations

  https://joinup.ec.europa.eu/node/144843

- GeoDCAT-AP XSLT

  https://webgate.ec.europa.eu/CITnet/stash/projects/ODCKAN/repos/iso-19139-to-dcat-ap/

- GeoDCAT-AP API (demo)

  http://geodcat-ap.semic.eu:8890/api/

- INSPIRE GeoDCAT-AP Sandbox

  http://inspire-sandbox.jrc.ec.europa.eu/geodcat-ap/