Front cover to be added

Contents

Table of contents is generated automatically; simply click on it and press F9 key, then select to update entire table.

[Abstract 5](#_Toc196713812)

[Acknowledgements 6](#_Toc196713813)

[Executive summary 7](#_Toc196713814)

[1 Introduction and purpose 11](#_Toc196713815)

[1.1 GeoDCAT Application Profile 3.0.0 for geospatial portals in Europe 11](#_Toc196713816)

[1.2 ISO & GeoDCAT-AP Metadata Implementation Pilot 11](#_Toc196713817)

[2 Pilot description 12](#_Toc196713818)

[2.1 Objectives 12](#_Toc196713819)

[2.2 Pilot participants 12](#_Toc196713820)

[2.3 Outputs and Results 13](#_Toc196713821)

[2.4 Expected benefits 13](#_Toc196713822)

[2.5 Timeline 14](#_Toc196713823)

[2.6 Pilot repository 14](#_Toc196713824)

[3 Background, initial expectations and proposals 16](#_Toc196713825)

[3.1 Belgium (Flanders) 16](#_Toc196713826)

[3.1.1 Testing focus 16](#_Toc196713827)

[3.1.2 Preliminary work and experience 16](#_Toc196713828)

[3.1.3 Initial expectations and proposals 17](#_Toc196713829)

[3.2 Czech Republic 17](#_Toc196713830)

[3.3 Denmark 17](#_Toc196713831)

[3.3.1 Testing focus 17](#_Toc196713832)

[3.3.2 Preliminary work and experience 18](#_Toc196713833)

[3.3.3 Initial expectations and proposals 18](#_Toc196713834)

[3.4 France 19](#_Toc196713835)

[3.5 Italy 19](#_Toc196713836)

[3.6 Finland 19](#_Toc196713837)

[3.6.1 Testing focus 19](#_Toc196713838)

[3.6.2 Preliminary work and experience 20](#_Toc196713839)

[3.6.3 Initial expectations and proposals 20](#_Toc196713840)

[3.7 The Netherlands 22](#_Toc196713841)

[3.7.1 Testing focus 22](#_Toc196713842)

[3.7.2 Preliminary work and experience 22](#_Toc196713843)

[3.7.3 Initial expectations and proposals 22](#_Toc196713844)

[3.8 Spain 23](#_Toc196713845)

[3.8.1 Testing focus 23](#_Toc196713846)

[3.8.2 Preliminary work and experience 23](#_Toc196713847)

[3.8.3 Initial expectations and proposals 23](#_Toc196713848)

[3.9 Slovakia 24](#_Toc196713849)

[3.9.1 Testing focus 24](#_Toc196713850)

[3.9.2 Preliminary work and experience 24](#_Toc196713851)

[3.9.3 Initial expectations and proposals 24](#_Toc196713852)

[3.10 Publications Office of the European Union 25](#_Toc196713853)

[3.10.1 Testing focus 25](#_Toc196713854)

[3.10.2 Preliminary work and experience 25](#_Toc196713855)

[3.10.3 Initial expectations and proposals 27](#_Toc196713856)

[3.11 Joint Research Centre 27](#_Toc196713857)

[3.11.1 Testing focus 27](#_Toc196713858)

[3.11.2 Preliminary work and experience 28](#_Toc196713859)

[3.11.3 Initial expectations and proposals 28](#_Toc196713860)

[4 Pilot results 29](#_Toc196713861)

[4.1 Belgium (Flanders) 29](#_Toc196713862)

[4.1.1 Summary of results 29](#_Toc196713863)

[4.1.2 Issues identified 29](#_Toc196713864)

[4.2 Czech Republic 29](#_Toc196713865)

[4.2.1 Summary of results 29](#_Toc196713866)

[4.2.2 Issues identified 30](#_Toc196713867)

[4.3 Denmark 30](#_Toc196713868)

[4.3.1 Summary of results 30](#_Toc196713869)

[4.3.2 Issues identified 31](#_Toc196713870)

[4.3.3 Conclusions 32](#_Toc196713871)

[4.4 France 32](#_Toc196713872)

[4.4.1 Summary of results 32](#_Toc196713873)

[4.4.2 Issues identified 32](#_Toc196713874)

[4.4.3 Conclusions 32](#_Toc196713875)

[4.5 Italy 33](#_Toc196713876)

[4.5.1 Summary of results 33](#_Toc196713877)

[4.5.2 Issues identified 33](#_Toc196713878)

[4.5.3 Conclusions 34](#_Toc196713879)

[4.6 Finland 34](#_Toc196713880)

[4.6.1 Summary of results 34](#_Toc196713881)

[4.6.2 Issues identified 34](#_Toc196713882)

[4.6.3 Conclusions 35](#_Toc196713883)

[4.7 The Netherlands 35](#_Toc196713884)

[4.7.1 Summary of results 35](#_Toc196713885)

[4.7.2 Issues identified 35](#_Toc196713886)

[4.7.3 Conclusions 37](#_Toc196713887)

[4.8 Spain 38](#_Toc196713888)

[4.8.1 Summary of results 38](#_Toc196713889)

[4.8.2 Issues identified 38](#_Toc196713890)

[4.8.3 Conclusions 38](#_Toc196713891)

[4.9 Slovakia 39](#_Toc196713892)

[4.9.1 Summary of results 39](#_Toc196713893)

[4.9.2 Issues identified 39](#_Toc196713894)

[4.9.3 Conclusions 39](#_Toc196713895)

[4.10 Publications Office of the European Union 40](#_Toc196713896)

[4.10.1 Summary of results 40](#_Toc196713897)

[4.10.2 Issues identified 40](#_Toc196713898)

[4.10.3 Conclusions 41](#_Toc196713899)

[4.11 Joint Research Centre 41](#_Toc196713900)

[4.11.1 Summary of results 41](#_Toc196713901)

[4.11.2 Issues identified 41](#_Toc196713902)

[4.11.3 Conclusions 41](#_Toc196713903)

[5 High-Value (geospatial) dataset tagging good practice 43](#_Toc196713904)

[6 Conclusions 44](#_Toc196713905)

[References 45](#_Toc196713906)

[List of abbreviations and definitions 46](#_Toc196713907)

[List of figures 47](#_Toc196713908)

[List of tables 48](#_Toc196713909)

[Annexes <optional> 49](#_Toc196713910)

[Annex 1. Title of annex <numbering of annexes is mandatory, if there is more than one> 49](#_Toc196713911)

Abstract

Max. 1550 characters with spaces.

Give, in up to five sentences, the most important conclusions, key facts and figures.

Include also a sentence or two on the policy relevance of the work.

It is to be used for eye-catching, newspaper type headlines to attract the reader.

Lorem ipsum dolor sit amet, coadipiscing elit. Sed quis metus dolor. Nam congue cursus ligula sed faucibus. Fusce ligula est, mattis ut ullamcorper id, vulputate nec urna. Curabitur sit amet nisi eget urna ornare ult rices.

Please consult the [Interinstitutional Style Guide](http://publications.europa.eu/code/en/en-000500.htm) for drafting your report. It contains uniform stylistic rules and conventions which must be used by all the institutions, bodies, offices and agencies of the European Union. It is available in 24 EU languages, and is obligatory for all those involved in document production.

Acknowledgements

Nunc vestibulum condimentum nisi. Nam erat diam, suscipit vitae nisl eget, tempus tempus eros. Proin vel diam convallis, bibendum mi id, faucibus eros. Donec mi nisl, auctor quis aliquet a, ultricies vel metus. Ut rhoncus nulla augue, in egestas metus fringilla non. Sed sit amet felis dignissim, ornare elit vel, mattis augue. In adipiscing euismod purus id rutrum. Nulla facilisi. Nulla vitae dui lectus.

Authors

List of authors…

Executive summary

Nunc vestibulum condimentum nisi. Nam erat diam, suscipit vitae nisl eget, tempus tempus eros. Proin vel diam convallis, bibendum mi id, faucibus eros. Donec mi nisl, auctor quis aliquet a, ultricies vel metus. Ut rhoncus nulla augue, in egestas metus fringilla non. Sed sit amet felis dignissim, ornare elit vel, mattis augue. In adipiscing euismod purus id rutrum. Nulla facilisi. Nulla vitae dui lectus.

Policy context

Typically around 130 words – up to maximum of 800 characters with spaces, reduced pro rata when graphics used

* What broader and then specific EU (ongoing) policy/political/legislative issue does the report address? For example, does it support a specific Directive, Regulation, or does it support EU industrial policy and then specifically advanced manufacturing? This is essential to ensure that a policy colleague(s) can straightaway determine its relevance to them.
* For who was the report done and, if applicable, with whom (e.g. external collaborators)?
* Is it relevant to a possible new policy or a current policy measure that has been proposed or to the implementation of a current policy?
* What is the issue(s) at stake? Are the stakes high?
* What does the report add (added value) to previous policy support work?
* Why is the report relevant now, e.g. is it to inform an upcoming or ongoing political (or media) debate or issue?
* Is it relevant to policies other than the one it was carried out to support, i.e. are there conclusions of more general application to several policies? If so, indicate which ones.

Key conclusions

Typically 350 words – maximum 2200 characters with spaces, excluding any graphics

* What are the main policy-relevant consequences of, or recommendations arising from, your findings for the policy/measure in question?
* What policy options could be proposed arising from your analysis?
* Have the main assumptions behind the existing policy or measures been confirmed or overturned?
* Has a new problem been identified? Should new policy measures be considered?
* Does the problem statement need to be adjusted?
* Have some additional impacts or alternative options been identified?
* Do the costs and benefits of the existing options need to be re-assessed?
* Are there potentially new innovations that could arise? What potential risks could there be to such innovations (not) being undertaken?
* What significant knowledge gaps and uncertainties still remain that are relevant for policy in this field?
* Has the report served to change the level of uncertainties?

Main findings

Typically 300 words – maximum 1850 characters with spaces, excluding any graphics

* Summarise the main findings, results from the work, including relevant data. Use (question) sub-headings for specific (sub-)topics.
* Use images, infographics, tables and graphs as much as possible.

Related and future JRC work

Typically 50 words – maximum 300 characters with spaces, excluding any graphics

* What other work by the JRC is relevant to this topic?
* What will be the follow-up or next steps from this report, including from a policy perspective (e.g. in regard to an upcoming new legislative proposal)?

**Recommendations for drafting an Executive Summary**

* The main target audience for an Executive Summary are (senior) policy colleagues across the Commission.
* Picture a Commissioner or Director-General having 10 minutes to read the Executive Summary only before discussing the topic at a meeting. They will want very concisely the main policy-relevant outcomes and do not want the details of how you came to your results/conclusions (they will trust that the JRC does this correctly).
* The Executive Summary should "tell a story," i.e. have a clear and relevant narrative.
* Use the questions in each section to guide you in your drafting to developing a narrative. Do not answer consecutively each question.
* Do not be overly technical. Use language that a non-specialist reader would understand and would want to read, e.g. do not overly use technical terms or acronyms and, if used, define these in the Overview section.
* Write it with a view that if a (non-expert) reader wishes to learn more, they can go to the (relevant section of the) report.
* When drafting, follow the Keep It Short and Simple (KISS) and "Less is More" approaches and put yourself in the shoes of the reader.
* Use (question) sub-headings to break up the text.
* Ask yourself, would the target audience reader find the information relevant and understandable?
* Ask a colleague with no knowledge of the report's content to read a draft then question them to see if they received the messages you want to convey.
* Use bullet points plus bold (sparsely!) to highlight key words, facts and figures.
* Therefore, the total number of words in the Abstract and Executive summary should be around 950 words, i.e. never exceed 6200 characters with spaces.
* The headings in this section and their order must not be changed, although you may modify the text of the sub-headings.

1. Introduction and purpose

As part of the GreenData4All initiative (REF), aimed at modernising the rules governing European environmental geospatial data sharing under the INSPIRE Directive (REF), their implementation is being aligned to the one of the Commission Implementing Regulation (EU) 2023/138 on open data High-Value Datasets (HVDs) (REF).

This alignment is purposed for facilitating the integration of reporting obligations into a common data flow in the scope of the open data community, centralised on the European Data Portal (EDP) (REF).

Ultimately, the process is expected to minimise the implementation burden on Member States’ (MSs) data providers, while assuring compliance to the provisions set by these Directives and to the legal framework deploying the digital priorities of the von der Leyen Commission, conveyed through the European Strategy for Data (REF) and the European Data Union strategy (REF).

* 1. GeoDCAT Application Profile 3.0.0 for geospatial portals in Europe

To this purpose, the SEMIC Group of the Directorate-General for Digital Services (DIGIT) of the European Commission has publicly released the GeoDCAT-AP 3.0.0 (REF) specification.

It facilitates the transformation of metadata managed by national geospatial data catalogues and their integration within the above-mentioned common reporting flow, by establishing an updated mapping between geospatial/INSPIRE metadata (in ISO 19139 / 19115 format) and DCAT metadata (in GeoDCAT format) used by the open data community. Furthermore, it incorporates additional provisions to comply with the HVDs Implementing Regulation.

The new GeoDCAT-AP 3.0.0 specification and its related XSLT transformation (REF) (implementing the specification mapping) were open to public review until the end of September 2024 and published on 4 October 2024.

* 1. ISO & GeoDCAT-AP Metadata Implementation Pilot

This report defines the activities, work and results of a pilot sandboxing activity aimed at testing both resources, the GeoDCAT-AP 3.0.0 specification and its related XSLT transformation, to improve them and provide a mechanism to identify and report related issues beyond the previous public review period.

1. Pilot description
   1. Objectives

Evaluating the adequacy of the GeoDCAT-AP 3.0.0 specification and its accompanying XSLT transformation regarding the following aspects:

* Quality of the transformation, quantification and evaluation of potential information losses.
* Degree of compliance of the transformed geospatial metadata (in GeoDCAT format) to the provisions set by the INSPIRE Directive and the HVDs Implementing Regulation.
* Potential implementation issues identified in the pilot to be reported.
* Others? – To be complete based on the related presentations (General and specific objectives)
* Mention the HVD Tagging good practice candidate.
  1. Pilot participants

The following stakeholders actively participated in this pilot testing:

* The MSs, through the contact points responsible for managing their national geospatial catalogues, as main users of GeoDCAT-AP specification and XSLT transformation to migrate current geospatial metadata. Particularly: Belgium (Flanders), the Czech Republic, Denmark, France, Italy, Finland, The Netherlands, Spain and Slovakia participated.
* The Publication Office of the European Union (OP), managing the EDP (REF), as future receptor of GeoDCAT-AP-based metadata and re-user of the XSLT transformation.
* The European Commission Directorate-General for Digital Services (DIGIT), through its SEMIC group, as point of contact for resolving and contributing to solutions when issues are discovered within the pilot.
* The European Commission Directorate-General for Environment (ENV), as EU policy master in the environmental domain, responsible for the INSPIRE Directive and its potential revision under the GreenData4All.
* The European Commission Joint Research Centre (JRC), as technical coordinator of the INSPIRE infrastructure, and manager and organiser of the pilot, providing as well scientific knowledge on the applicable legal and technical framework.
  1. Outputs and Results

The following outputs and results are expected in the context of this pilot:

* General feedback on the tested specification and transformation, including a detailed set of issues reported in the GeoDCAT-AP repository (REF) and the XSLT transformation repository (REF), from each participant in the pilot.
* Final report summarising the process and results achieved in the pilot, including an evaluation on the how the transformation help data providers in keeping compliance to the applicable legal framework.
* Definition and agreement on the HVD tagging candidate good practice, to smooth its potential endorsement by the INSPIRE MIG-T.
* Complete – Others?

These outputs will support the SEMIC community to release an improved GeoDCAT-AP 3.0.0 specification and XSLT transformation, based on pragmatic outcomes from this pilot. This will deliver benefits to involved stakeholders, as summarised in 2.4.

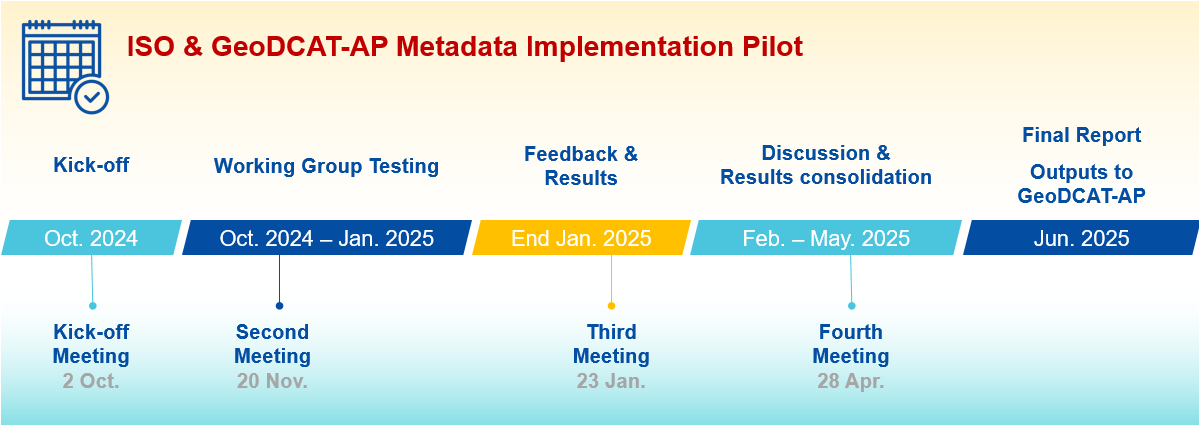
* 1. Expected benefits

The following benefits are expected after running the activities foreseen in this pilot:

* Implementers in the MS will have at their fingertips an improved quality tested tool to channel their geospatial metadata descriptions through the open data reporting flow, easing them the reporting of HVDs.
* The (OP), responsible for the EDP (REF), will be able to harvest metadata with increased quality, minimising information losses and potential issues in extracting the results of HVD reporting process.
* The SEMIC group of DIGIT and its underlying community will achieve a more solid release of the specification and XSLT transformation, based on the outcomes of a real testing case scenario.
* ENV and the JRC, main stakeholders driving INSPIRE and the GreenData4All, will attain a streamlined reporting mechanism aligned with the open data flows.
* Complete – Others?
  1. Timeline

The pilot was planned to run for nine months, from the 2 October 2024 until 30 June 2025, as illustrated in **Figure 1**.

**Figure 1.** ISO & GeoDCAT-AP metadata implementation pilot timeline.



Source Figure created for the purpose of this pilot.

* 1. Pilot repository

A GitHub repository was created to host the materials for running this pilot, including description, meeting materials, outputs and results. It is publicly accessible under this URL:

<https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot>

Additionally, a set of issues were collected to discuss and agree on specific proposals and issues identified by the participants, where needed.

<https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/issues>

1. Background, initial expectations and proposals

During the second meeting hold on 20 November 2024, the participants were requested to provide some background information concerning the pilot. This included:

* Previous work and experience about the use of DCAT-AP / GeoDCAT-AP and the related transformations available.
* Expectations on the pilot and initial proposals (if any).
* Their selected focus for the pilot testing, i.e. mainly: the GeoDCAT-AP specification, the XSLT transformation, or both.

The subsections below summarises these information items for each of the participants.

* 1. Belgium (Flanders)
     1. Testing focus

Belgium-Flanders is interested in testing real implementation examples developed through available software (e.g. GeoNetwork), including geospatial metadata HVD implementations.

* + 1. Preliminary work and experience

Belgium Flanders is leading a joint-effort working group to implement a DCAT schema plugin for GeoNetwork open source. The repository of this working group is available at <https://github.com/metadata101/dcat-ap>.

As part of this work, different HVD metadata implementations from Germany, the Netherlands and Belgium were compared. This included discussions with SEMIC, which helped to converge in the regional approach currently in use in Flanders.

This approach includes the use of Fladers Spatial Data Infrastructure (SDI) thesauri for encoding keywords in geospatial metadata used for tagging INSPIRE and HVD dataset metadata records. The category and subcategory for HVDs are also encoded according to the HVDs Implementing Regulation.

Afterwards, a mapping is used to match these keywords to DCAT-AP elements. Encoding example in ISO and DCAT native format are available.

* + 1. Initial expectations and proposals

Belgium Flanders is willing to push for the implementation of DCAT-based metadata plugins in GeoNetwork.

As organisers of the ‘DCAT schema plugin for GeoNetwork’ working group, they encourage the participants of the ISO & GeoDCAT-AP metadata implementation pilot to take part in the upcoming sprints of the mentioned working group, including related testing efforts.

The plan is to extend this DCAT-AP pluging also to GeoDCAT-AP.

Therefore, it is proposed to establishing synergies with between the ‘DCAT schema plugin for GeoNetwork’ working group and the ISO & GeoDCAT-AP metadata implementation pilot.

The convenience of aligning the timelines of both, the mentioned working group and the pilot ishighlighted, so that the real implementation examples prepared with the GeoNetwork plugin can be tested during the pilot.

* 1. Czech Republic

Czech Republic was unable to participate in the Second Meeting of the pilot.

Please, complete your contribution on expectations here (if needed)

* 1. Denmark
     1. Testing focus

In Denmark, the national geoportal (geodata-info.dk) stores metadata records based on the ISO 19115-3 metadata standard. Later on, these records are also transformed and published as ISO 19115/19139 metadata. Subsequently, they are transformed to GeoDCAT-AP and harvested by the national open data portal. Once in that portal, the metadata information is transferred to the EDP (REF).

Therefore, the testing for this country is twofold. On one hand, testing the overall transformation pipeline (including the XSLT transformation tool, the mapping from geospatial metadata to GeoDCAT-AP and the geoportal CSW output). On the other hand, testing the tagging of HVD metadata and their corresponding categories.

* + 1. Preliminary work and experience

Denmark highlighted years of experience using the current and previous versions of GeoDCAT-AP, and is willing to update its infrastructure to the current legal and technical context.

Geospatial ISO 19115/19139 dataset metadata were transformed into DCAT-AP metadata using SAXON (REF). After applying the transformation, a manual comparison of both the source and the output files was performed, finding several preliminary issues, which are included in this report.

The country initially tested the transformation of a limited number of metadata from national geoportal (geodata-info.dk) using the SEMIC XSLT transformation available at the time of the second pilot meeting (the version based on GeoDCAT-AP v2 or v3?).

It is reported that the strict adherence to the mapping between the INSPIRE-theme keyword to HVD categories could likely create false positives and present issues for non-INSPIRE-HVD harvested from geoportals.

* + 1. Initial expectations and proposals

Denmark main interest is figuring out if its architecture is still viable in the current legal and technical requirements, i.e. creating stable links to open GeoDCAT-AP endpoints (transformed from the geoportal CSW) which can be harvested to the national open data portal.

The country is expecting:

* EU-wide shared tooling and recommendations to run the XLST transformation, which could be used by different MSs.
* Metadata that can fulfill reporting obligations for both the INSPIRE Directive and the HVD Implementing Regulation.
* Definitive commonly agreed guidelines on HVD and license tagging, which prevents false positives.
* Rough sketch of better handling of data services outlined.
* Close correspondence between legal text and applicable profiles. As illustration, the DCAT-AP for HVDs profile incorporates requirements for metadata which cannot be identified in the HVD Implementing Regulation.

Danish participants also present some initial proposals:

* To map the gmd:purpose ISO 19115/19139 metadata element to dcat:description element in DCAT-AP / GeoDCAT-AP.
* Agree on a common way for tagging metadata as a HVD at legislation and category level. An input related proposal is available at <https://github.com/INSPIRE-MIF/hvd-inspire/issues/3>.
* Focus the pilot work on how to indicate the format(s) supported by each distribution.
  1. France

France started its participation in the pilot after the Second Meeting.

Please, complete your contribution on expectations here (if needed)

* 1. Italy

Progress report not available.

Please, complete your contribution on expectations here (if needed)

* 1. Finland
     1. Testing focus

In Finland, metadata are harvested from the INSPIRE national discovery service to the the national open data portal (OpenData.fi), and from there on further to the EDP.

Opendata.fi has implemented Geo-DCAT-AP v2, supports the use of 6 HVD categories. The Finish open data portal not participating in this pilot. The National Land Survey of Finland (NLS-FI) does it.

NLS-FI focuses its testing the XSL transformation and the requirements for HVD-reporting.

The characteristics of the metadata to be tested in this pilot are summarised below:

* Natively produced and harvested metadata that passes the INSPIRE-validator tests, despite Conformance Class 8 (INSPIRE data set and dataset series linked service metadata).
* Available as both monolingual and multilingual metadata records.
* 9 service metadata records, of type WMS, WCS, OGC API Features, OGC API Processes, and INSPIRE-ATOM.
* 7 dataset metadata records (including geospatial dataset and dataset series)
* Majority of metadata include hvdCategory and ELI-code making use of two thesaurus.
  + 1. Preliminary work and experience

The XSL transformation (the version based on GeoDCAT-AP v2 or v3 ?) has been tested for a selected set of ISO 19115/19139 files in XMLformat using either XMLSpy (REF) or an ad-hoc commandline tool to convert them to DCAT-AP.

RDF2HTML tool has been also used to transform the RDF-files to html to be saved as PDF.

Both the XML/RDF and XSL files were altered to include the xmlns:dcatap=http://data.europa.eu/r5r/ namespace, as well as dcatap:applicableLegislation and dcatap:hvdCategory to a few metadata records.

SHACL Validation against DCAT-AP v3 also started at the time of the second pilot meeting.

Additionally, a side-by-side comparison of the DCAT-AP for HVDs, GeoDCAT v3 and DCAT v3 specification was performed, noticing that:

* In DCAT-AP for HVDs: the dcatap:hvdCategory and dcatap:legislationApplication elements are mandatory for DataService, Dataset and Distribution.
* In GeoDCAT-AP 3: the dcatap:applicableLegislation element is optional for Dataset, DataService, Distribution (being mandatory in DCAT-AP for HVDs); also for DatasetSeries and Catalog (being missing in DCAT-AP for HVDs).
  + 1. Initial expectations and proposals

Regarding the pilot, Finland is expecting:

* Learning and improving together to achieve a smooth HVD-reporting process in the future.
* To get a clarification on the role of the service metadata. Are these metadata needed for the HVD-reporting?

The country also has some initial proposals regarding different aspects:

* Metadata encoding:
  + Willing to have a unified way to denote datasets as HVDs in their metadata.
* Metadata transformation / XSL amendment:
  + It would be probably of value if the XSL would also add Labels or Keywords, such as ‘Geospatial’.
  + The XSL could be extracting information from several hvdCategory elements (cardinality 0..\*) when a hvdCategory thesaurus is in use (CharacterString or Anchor).
  + The XSL should put the hvdCategory URIs, labels and the ELI-code in the/one right place(s) in the RDF file.
  + The INSPIRE priority data set codelist hosted in the INSPIRE Registry could be updated with the Open Data Discovery (ODD) / HVD legislation and the ELI-code to be reused by the XSL (this would not be necessary if the XSL can be built so that if hvdCategory information exist, then also ELI-code is put in automatically).
* Regarding SHACL Validation against DCAT-AP v3:
  + Amend XSL to retrieve only one geometry and one bounding box (bbox), otherwise shacl:violation.
  + Add a shacl:violation related to the identifiers, title and accessRights.
  + Many shacl:warnings related to invalid cardinality.
* Perhaps it would make sense to use of recommended keyword: rdfs: Literal [0..\*] for some keywords.
* It would be desiderable to support the use of the XSL as an API.
* Regarding the GeoDCAT-AP 3 specification, it is suggested to add also dcatap:hvdCategory as optional.
  1. The Netherlands
     1. Testing focus

The aim of the Netherlands is to support the SEMIC community to release an improved GeoDCAT-AP v3 specification and XSLT transformation through these actions:

* Testing if the country can transform ISO-19115-NL compliant data to GeoDCAT-AP to fulfill HVD requirements.
* Testing to what extent the GeoDCAT-AP XSLT is usable for this task and if the XSLT is re-usable for the ISO-19115-NL to DCAT-AP-NL transformation.
* Examining GeoDCAT-AP and evaluate the DCAT-AP-NL compatibility with it.
  + 1. Preliminary work and experience

Several tests have been performed on ISO-19115-NL compliant data from Dutch NGR, run through a Python based approach.

As a result, several Issues were submitted to the SEMIC Github repositories.

More details area available at:

<https://github.com/Geonovum/ISO-2-DCAT/tree/main/geodcat_ap_3_xslt>

* + 1. Initial expectations and proposals

Regarding the pilot, the Netherlands is expecting:

* A common basis for transformation approaches.
* Clarity on conceptual level of the mapping between ISO-19115/19119 and GeoDCAT-AP, including a clear roadmap and vision on ISO-19139-to-DCAT-AP.xsl as transformation tool.
* To improve the usability and structure of the SHACL profile of GeoDCAT-AP.
  1. Spain
     1. Testing focus

The focus for Spanish tests are centred in the XSLT transformation

Tests were carried out using the proof of concept API that was available for GeoDCAT-AP v2 (https://geodcat-ap.semic.eu/api/ - REF):

* In the first transformations, errors were detected due to XML metadata (e.g. licence).
* HVD keywords were included in the metadata, although the existing doubts on how to encode them in the XML schema.
* Compliance of the new HVD Implementing Regulation was also included as part of the tests.

The metadata used for the tests were extracted from the national INSPIRE geospatial metadata catalogue (CODSI), approximately 300 metadata records.

* + 1. Preliminary work and experience

Spain is working on improving the XML metadata files, preparing them for the transformation to GeoDCAT-AP, particularly including:

* The HVD keywords, although the existing doubts on how to encode them in the XML schema.
* A single licence.
* The compliance to the HVD Implementing Regulation.

An example of HVD tagging using the DQ\_ConformanceResult ISO 19115/19139 metadata element is available at:

<https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/blob/main/good-practices/hvd-tagging/inputs/Example_ES.jpg>

* + 1. Initial expectations and proposals

For further testing, Spain would find it useful to have available:

* An API (such as the previous proof of concept one) available to run the GeoDCAT-AP v3 XSLT transformation.
* Support on how to install / run the XSLT on GeoNetwork open source (e.g. a manual or tutorial).
  1. Slovakia
     1. Testing focus

The national Slovak open data cataloque (SK OpenData) is based on DCAT version 2.0. Support to version 3.0 is under development. At the time of writing, it is only supporting JSON-LD and Turtle RDF encodings.

The National open data metadata profile is based on DCAT version 3.0.

Regarding the Spatial Data Registry (SK INSPIRE), the transformation of INSPIRE/ISO metadata to DCAT/GeoDCAT is, at the time of writing, under development based on DCAT-AP documents using customised tools.

The focus of the testing in Slovakia is to check the compatibility of the GeoDCAT-AP v3 specification with the National DCAT-AP-based open data metadata profile. This also involved testing the XSLT transformation.

* + 1. Preliminary work and experience

In Slovakia, a detailed analysis of the mapping of INSPIRE/ISO metadata to the DCAT-AP national metadata profile and the GeoDCAT-AP specification was performed.

The XML RDF encoding is not supported by National OpenData cataloque, at the time of writing.

Spatial Data Registry internally stores metadata in JSON format. JSON-LD encoding will be used for DCAT/GeoDCAT metadata. Approximately 1000 dataset records will be transformed.

The initial testing of the XSLT identified problems with the transformation of Distribution sections. These will be documented in GitHub.

* + 1. Initial expectations and proposals

Slovakia is expecting fro this pilot:

* A global agreement on RDF encoding exchange format (in XML, JSON-LD, Turtle RDF).
* A collection of use-cases, where GeoDCAT-AP v3.0 will deliver added value.
* Clarification on which EU and national client metadata apps will support GeoDCAT-AP v3.0.
  1. Publications Office of the European Union
     1. Testing focus

The OP manages the EDP (data.europa.eu) (REF) through con terra. The portal harvests geocatalogues via a component called ‘Geoharvester’, which currently maps ISO 19115/19139 to GeoDCAT-AP v2.

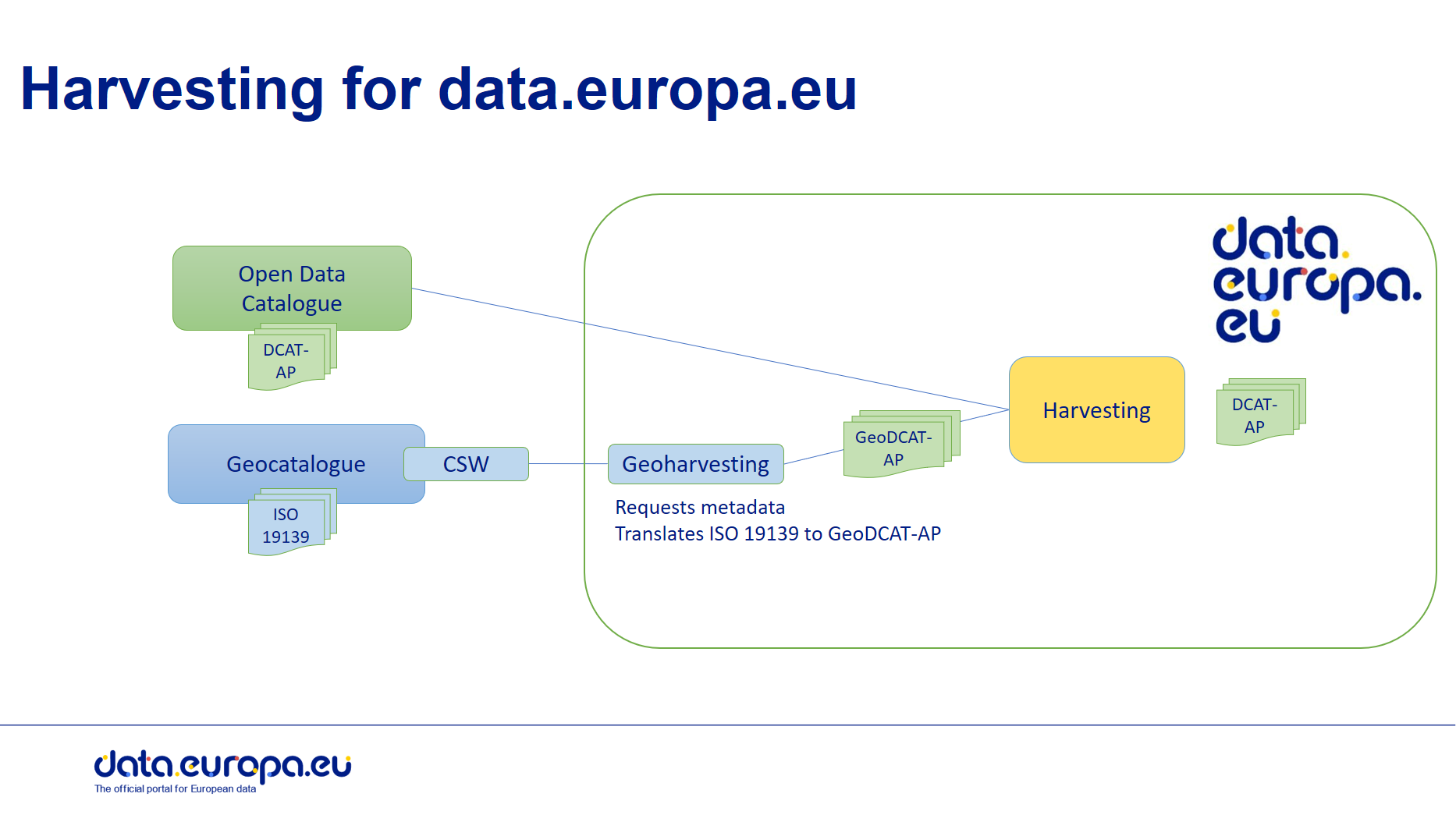
At the time of the Second Meeting of the pilot, the Geoharvester is planned to be updated to GeoDCAT-AP v3. This portal will be implementing the changes introduced in the SEMIC XSLT (https://github.com/semiceu/iso-19139-to-dcat-ap/) (REF). The new version will not be available on data.europa.eu immediately, since coordination with other partners is needed in this process.

Therefore, the testing by OP/con terra is focused on indivisual GeoDCAT-AP metadata harvested from selected geocatalogues from the MSs.

* + 1. Preliminary work and experience

**Figure 2** shows how the EDP harvest data from MSs, from both national Open Data Portals / Catalogues and also from national Geoportals / Geocatalogues. In the later case, the role of the Geoharvester requests metadata from national geocatalogues CSWs, translating the records from ISO 19115/19139 to GeoDCAT-AP. Afterwards, the Geoharvester exposes the resuting GeoDCAT-AP metadata making them available for the EDP harvesting component.

**Figure 2.** Harvesting from the European Data Portal (EDP) (data.europa.eu).



Source: Presentation from OP / con terra. Second Meeting of the ISO&GeoDCAT-AP Pilot (20 November 2024).

According to the plans at the time of the Second Meeting of the pilot, the EDP will implement GeoDCAT-AP v3 by January 2025. The Geoharvester has its own XSLT transformation, which we will be aligned to GeoDCAT-AP v3 thosugh this update.

Regarding the countries participating in the pilot (at the Second Meeting), the EDP currently harvest the geocatalogues from Italy, Denmark, The Netherlads, Slivakia and 3 regional ones from Spain. For Belgium and Finland, only the open data catalogues are harvested, since these two countries directly harvest geocatalogues from their open data portals.

Regarding how to derive from metadata the information on HVD, OP / con terra will not be assuming that all INSPIRE metadata of certain data themes are also HVD, to prevent the false positives also raised by Denmark.

The initial proposal is to not add the applicableLegislation at the information of the Open Data Directive, although it is possible to add the information on the INSPIRE Directive (could be derived, still to be decided).

For the HVD catagories (dcatap:hvdCategory) it is still to be decided if any mapping will be implemented.

* + 1. Initial expectations and proposals

In the context of the pilot, OP / con terra looks for the first version of the Geoharvester aligned to GeoDCAT-AP v3, as well as for a quick help and resolution of any issues that could arise during the pilot.

OP / con terra can offer / provide transformed metadata in GeoDCAT-AP v3 (in XML) to any interested partners for testing.

* 1. Joint Research Centre
     1. Testing focus

The aim of the JRC is to support the alignment of INSPIRE and High-Value Datasets in the context of the GrenData4All initiative.

As technical coordinators of the INSPIRE infrastructure, the JRC needs to run the INSPIRE Monitoring and Reporting (MIWP 2021-2024), which will be integrated into the HVD reporting process in the near future. The final aim is to support MSs’ metadata implementation to smooth this transition.

The focus of the testing from JRC will be therefore focused on assuring that geospatial INSPIRE-compliant metadata keeps consistency and compliancy after the transformation to GeoDCAT-AP v3.

For this purpose, a selected set of INSPIRE-compliant metadata records from the INSPIRE Geoportal (https://inspire-geoportal.ec.europa.eu) will be used. In order to asure the representativeness of the metadata sample, a mix of metadata implementations making use of the traditional data-service-linking and the data-service-linking simplification approach, coming from a variety of sources (e.g. different endpoints / countries, and thematic domains), will be chosen.

* + 1. Preliminary work and experience

The preliminary task performed by the JRC includes the revision of the GeoDCAT-AP 3 specification, providing comments in the period from July to September 2024.

As main role, the JRC will take care of the pilot organisation and management, and running selected INSPIRE-compliant metadata testing. For the later purpose, a semi-automated transformation process is foreseen. Tools for testing have not been selected at the time of the Second Meeting of the pilot.

On the other hand, the JRC is and will be supporting the identification of examples on tagging HVDs, based on the inputs provided by different Member States. The goal is to promote an INSPIRE good practice on this matter.

* + 1. Initial expectations and proposals

The main JRC expectations on the pilot are:

* Indentifying the limitations of the XSLT transformation (e.g. DCAP-AP requirements for HVDs still missing in XSLT due to the lack of harmonized tagging in geospatial metadata).
* Understanding the difficulties in validating geospatial metadata in GeoDCAT-AP v3.
* Evaluating INSPIRE compliancy after the transformation to GeoDCAT-AP, in the current absence of ad-hoc tools available for this purpose. Manual tests will be probably needed, which means also fuzzy testing outcomes.

At the beggini of the pilot, the JRC proposes:

* To open an inventory of related good practices from MSs, focused on HVD tagging practices (but not only) at: <https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/tree/main/good-practices>
* Promote the potential update of the GeoDCAT-AP Proof-of-Concept API, if it is demonstrated to be useful for MSs: <https://geodcat-ap.semic.eu/api/>
* Identify the best tools available to run the XSLT transformation in an automated way, and possibly draft related recommendations.

1. Pilot results

This section presents the results achieved by each participant of the pilot during the pilot testing. For each participant, a summary of results and the enumeration of the issues identified is provided, with references to the corresponding GitHub repositories.

A summary table for all participants is compiled at the end of the section.

For the moment, the content is updated until the Third Meeting of the pilot (23 January 2025). MSs will update their corresponding part of this section based on further work and the last testing steps performed until the end of the pilot, expected by June 2025.

* 1. Belgium (Flanders)
     1. Summary of results

BE-Flanders have led the working group for the development of a DCAT schema plugin for GeoNetwork open source. Particularly, the team has developed a plugin based on DCAT-AP 2 that is currently being embedded in the GeoNetwork core branch of this open source software. Thus, it is available for other organisations willing to test and/or reuse it.

As part of this work, the team has contributed to the migration from DCAT-AP 2 to DCAT-AP 3. Implementation of the migration in GeoNetwork already started.

BE-Flanders team has extensively contributed to the sharing of views and agreement of the HVD tagging (geospatial) good practice candidate, establishing active synergies of the previously mentioned working group (mainly during sprints 3 and 4) with the ISO & GeoDCAT-AP pilot.

* + 1. Issues identified

The DCAT schema plugin for GeoNetwork working group collected the issues related to the plugin at <https://github.com/metadata101/dcat-ap/issues>.

* 1. Czech Republic
     1. Summary of results

The Czech ISO 19115/19139 Metadata Profile is complex. Czech Republic could use the XSLT in this environment after some adjustments.

The country is planning to simplify this profile to increase compatibility with DCAT-AP. As part of this work, a detailed mapping of the national INSPIRE profile to GeoDCAT will be carries out.

* + 1. Issues identified

Most of the issues identified with the transformation are connected to the national extension of the INSPIRE metadata profile:

* XSLT - transformation failed because of the bilinguality of the gmd:country item

https://github.com/SEMICeu/GeoDCAT-AP/issues/148.

* More than one dataset identifier

https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/71.

* Duplicity of schema:startDate/schema:endDate after transformation

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/72>.

* 1. Denmark
     1. Summary of results

Denmark intensively worked towards the HVD reporting on 9 February 2025, with the goal to get the corresponding datasets on data.Europa.eu. A qualitative analysis of the reporting progress, barriers, measures taken, etc. has been performed as part of this work.

Tagging of HVD datasets on the Danish geoportal continued in line with the good practice candidate agreed in the context of the pilot (i.e. using Anchor encoding keywords).

The country is looking forward to the answers / solutions to the fundamental questions/issues identified through this pilot.

* + 1. Issues identified

Two overall approaches were considered during the pilot:

* Pipeline transforming CSW ISO metadata to DCAT in CKAN using the SEMIC XSLT Transformation (service + mapping), which was already in place before the pilot.

The problem of this pipeline that the SEMIC Proof of Concept API for using the transformation is neither updated to GeoDCAT-AP 3 nor maintained in the SEMIC repository. No similar alternative was identified.

* Pipeline transforming CSW ISO metadata to DCAT (using GeoNetwork 4.4.6+), subsequently migrated to CKAN using a ‘CSW header remover’.

The problem of this pipeline is that the CKAN harvester is not able to process/ignore csw:GetRecordsResponse element (among other things) around the RDF elements in the XML file.

In the short-term, manual fixes will be performed. In the medium-term, a Proxy script solution to remove unwanted CSW wrapping will be used.

As a long-term solution, perhaps new functionality could be added in GeoNetwork v5.x, together with a different DMS for the Danish portal, taking into account the revision of INSPIRE.

In the future:

* A third approach that could perhaps work in the future: using the getAsRdf function in GeoNetwork – Example: <https://geodata-info.dk/doc/api/index.html#/records/getAsRdf>.

The main issues identified are:

* How to map ‘gmd:purpose’ element? Suggested to be also mapped to dcat:description (like is it the case for ‘gmd:abstract’)

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/70>.

* All formats (‘gmd:distributionFormat’) are listed in each dcat:Distribution

<https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/issues/8>.

* + 1. Conclusions

Demark appreciate to have common agreement on how to tag HVD in INSPIRE metadata, although it remains to be implemented into the mapping and the related transformation.

There is a need for coordination / documentation of semantic transformation assets in GeoNetwork and the standalone SEMIC GeoDCAT-AP specification / mapping, in case they diverge.

The approach to be used for Data Services remains a challenge and needs further discussions.

* 1. France
     1. Summary of results

France have not encountered major regression in actual usage of the transformation.

Mapping of usage conditions to dct:rights, when they are not specified as URIs is an improvement in the workflow. The country is now applying explicit URIs for licenses.

French data is not always INSPIRE-compliant and the XSLT transformation cannot and should probably not deal with these non-conforming cases.

* + 1. Issues identified

The main issue that France identified is:

* Improve the mapping to dcat:Distribution

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/57>.

* + 1. Conclusions

The French approach is to base the national transformation on the XSLT and to fix metadata upstream, by giving clear recommendations and adding specific tooling to use small and specialized XSLT:

* Isomorphe: <https://github.com/ecolabdata/ecospheres-isomorphe>
* XSLTs: <https://github.com/ecolabdata/ecospheres-xslt/tree/main/xslts>

A common repository to share these specialized/national XSLT transformation from Member States could be useful.

* 1. Italy
     1. Summary of results

Italy has long experience in the application of GeoDCAT-AP. The national catalogue for spatial data also includes a ‘GeoDCAT-AP\_IT’ API (<https://geodati.gov.it/geodcat-ap_it/>) that is based on a XSLT customized script linked to the national metadata profiles.

The API and the XSLT script have been used for years to publish metadata from the spatial data catalogue (<https://geodati.gov.it>) to the open data portal (<https://dati.gov.it>).

In the context of the pilot, a test was made on metadata records published in the national spatial catalogue (using a test environment), also including the encodings for the agreed HVD tagging.

* + 1. Issues identified
* Add ‘HVD category’ and ‘documentation’ properties related to HVDs in GeoDCAT-AP 3.0.

<https://github.com/SEMICeu/GeoDCAT-AP/issues/147>.

* Align vocabulary for the ‘accessRights’ property.

DCAT-AP refers to the Access Rights Named Authority List – relevant for metadata quality assessment in data.europa.eu.

<https://github.com/SEMICeu/GeoDCAT-AP/issues/150>.

* For 1 bounding box in ISO XML, 4 instances of locn:geometry and 4 instances of dcat:bbox are provided after the transformation.

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/76>.

* Only WFS and WMS services are considered in the transformation as Distribution. A direct URL for downloading the dataset is not considered, although relevant for bulk download.

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/74>

* + 1. Conclusions

It would be useful to have a unique and complete specification (and a corresponding XSLT script) also including the missing properties relevant for the HVD reporting.

Two proposals for consideration:

* Align the requirements for GeoDCAT-AP properties with those ones in DCAT-AP (e.g. for accessRights).
* Take into account the optional properties (e.g. downloadURL) considered in the Metadata Quality Assessment (MQA) tool available in data.europa.eu in order to increase the metadata quality.
  1. Finland
     1. Summary of results

The focus on Finish testing was the XSLT Transformation of INSPIRE compliant metadata.

The HVD-tagging agreed in the good practice candidate, that is the eli-code and the HVD main category, is already in place in the national metadata portal.

The work also allowed identifying national issues. For example, a development is needed in the Open Data Portal to identify Anchors as keywords. The XSLT used when harvesting metadata portals currently only supports CharacterString encodings.

* + 1. Issues identified

Finland raised some issues and questions for internal discussion at https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/issues, particularly:

* Exchanges and proposals related to the HVD-tagging good practice and the XSLT transformation.

<https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/issues/2>.

* Proposal to add ‘hvdCategory’ as optional in GeoDCAT-AP 3.0 and in the XSL transformation.

<https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/issues/3>.

* XSLT Transformation: The same key words emerge twice.

<https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/issues/6>.

* XSLT Transformation: namespaces and standards.

<https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/issues/5>.

* Role of service metadata in the EDP, in HVD-reporting and in this pilot?

<https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/issues/4>.

There is a need for more exchange, investigation and interaction between participants in the pilot regarding specific issues.

* + 1. Conclusions

There is a need for a good practice on GeoDCAT-AP encoding and iteration of analysis after the transformation has been updated. It is suggested to take this into account in the pilot work plan. Regular pilot meetings and discussions on GitHub are needed for communication and for reaching consensus.

* 1. The Netherlands
     1. Summary of results

The Netherlands created a structured way of testing the XSLT and the GeoDCAT-AP profile with jupyter notebook: <https://github.com/Geonovum/ISO-2-DCAT/tree/main/geodcat_ap_3_xslt>

During this process, a lot was learned about how the transformation works and which solutions have been devised to unlock as much metadata as possible. This allowed gaining insights into where the transformation is not yet working out well.

* + 1. Issues identified

XSLT-related issues:

* blank nodes for distribution, dataservice and catalogrecord:

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/58>.

* mapping of Distribution and DataService:

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/59>.

* MD\_Keywords to dcat:theme transformation is incomplete:

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/60>.

* dcat:CatalogRecord should always have a foaf:primaryTopic:

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/63>.

* multiple geometry serialisations for dcat:bbox:

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/64>.

* clarify the statement on usage for HVD datasets:

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/66>.

* transformation of dct:license:

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/68>.

GeoDCAT-AP / SHACL validation-related issues:

* misalignment between GeoDCAT-AP dct:Standard properties and XSLT transformation rules.

<https://github.com/SEMICeu/GeoDCAT-AP/issues/141>.

* create the geodcat-ap shacl file as an extension to the dcat-ap shacl file:

<https://github.com/SEMICeu/GeoDCAT-AP/issues/142>.

* guidance on the use of prov:qualifiedAttribution on Dataset would be welcome:

<https://github.com/SEMICeu/GeoDCAT-AP/issues/143>.

* A.7.13 Spatial resolution - text and provided example are confusing:

<https://github.com/SEMICeu/GeoDCAT-AP/issues/144>.

* conflicting namespace prefix in geodcat-ap-SHACL.ttl:

<https://github.com/SEMICeu/GeoDCAT-AP/issues/145>.

* Controlled vocabulary to be used for adms:representationTechnique:

<https://github.com/SEMICeu/GeoDCAT-AP/issues/137>.

* controlled vocabulary Theme:

<https://github.com/SEMICeu/GeoDCAT-AP/issues/138>.

* A.7.4 Resource locator - \*On-line resource:

<https://github.com/SEMICeu/GeoDCAT-AP/issues/139>.

* A.7.6 Coupled resource:

<https://github.com/SEMICeu/GeoDCAT-AP/issues/140>.

* + 1. Conclusions

The Netherlands detected several issues in the XSLT transformation and the SHACL validation. Substantive discussions about possible solutions were expected.

It is requested an update of the XSLT at the end of the pilot in which improvements are included for the detected issues.

Clarity and certainty is needed about where and by whom the issues identified will be addressed.

The Netherlands wonder which XSLT is used for the transformation performed by other Member States.

* 1. Spain
     1. Summary of results

The Spanish Official Catalogue of INSPIRE Data and Services (CODSI) has 286 HVDs on geospatial, earth observation, environment and mobility classified, which have been transformed to GeoDCAT using a Python script using the SEMIC XSLT (<https://github.com/SEMICeu/iso-19139-to-dcat-ap>).

The process to assign HVD category keywords was performed for many of these resources, but is pending for some.

* + 1. Issues identified
* Managing multiple languages - If a dataset has more than one language, only the first one is kept.

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/52>.

* ‘gmd:purpose’ to ‘dct:description’ - If in the ISO file there is an abstract and a purpose, in GeoDCAT the purpose is lost. In ‘dct:description’ only the abstract is recognized.

<https://github.com/SEMICeu/iso-19139-to-dcat-ap/issues/70>.

* Transformation: HVD Category - When transforming from ISO to RDF, the INSPIRE and HVD keywords are not in the RDF file.

<https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/issues/7>.

* Add 'HVD category' and 'documentation' properties related to high-value datasets.

<https://github.com/SEMICeu/GeoDCAT-AP/issues/147>.

* + 1. Conclusions

Spain found that the transformation to ISO metadata to GeoDCAT using an ad-hoc Python is easy and simple.

There were errors in the GeoDCAT files that still do not know if could be prevented with corrections in the ISO metadata, or they are due to XSLT errors.

There were some concerns about the first HVDs reporting of GeoDCAT metadata to EDP on 9 February 2025.

GeoDCAT-AP does not have the richness of ISO metadata. There are ISO metadata elements that are not in the INSPIRE Metadata Regulation. That is, they are not mandatory and will disappear in the GeoDCAT-AP format. For example: ‘purpose’ or ‘supplementalInformation’ ISO elements.

* 1. Slovakia
     1. Summary of results

Slovakia successfully integrated the Spatial data registry into the National Open data catalogue (https://rpi.gov.sk/api/opendata/katalog.json).

Custom development tools were used, based on JSON data structures of input metadata, because the Slovak national open data portal does not support RDF XML format.

DCAT v3.0 was implemented at the Spatial data registry. The national open data catalogue is still only supporting DCAT 2.0.

Support to GeoDCAT extension is in process. It is current currently available in a development environment. At the moment, only JSON-LD and Turtle RDF encodings are supported.

* + 1. Issues identified

There is a need to clarify whether also metadata for datasets semantically falling under the Open Data / HVDs, but not yet INSPIRE harmonized, shall be made available via GeoDCAT-AP.

GeoDCAT is not yet supported at the national open data portal, which could be a problem for reporting of ‘spatial’ open data.

Pilot resulting metadata should be made visible via main target portals (INSPIRE EU and data.europa.eu) and discuss the usability of the content visible using such graphical user interfaces.

* + 1. Conclusions

Some input metadata still needs to be updated to fulfil all requirements of the National Profile as well as for GeoDCAT.

There is problem about ‘Double registration’ of the same datasets: the National Open Data portal need to remove datasets already registered in the Spatial Data Registry.

Currently, only metadata from the Slovak Ministry of Environment are made available. Other data providers will be engaged as soon as possible.

At the moment, service metadata files were skipped as in input for the transformation. All the services information is currently obtained from the ‘GetCapabilities’ of the services.

As main message, if possible, a recommendation for the future shift from XML to JSON is requested.

* 1. Publications Office of the European Union
     1. Summary of results

At the time of the Third Meeting of the pilot, the Geoharvester has been updated to GeoDCAT-AP 3, including the implementation of the HVD geospatial tagging good practice. The system counts with its own XSLT transformation, now aligned to GeoDCAT-AP 3. However, this update is not yet available at data.europa.eu production environment.

Identification of HVDs and their categories is taking into account the agreements of the HVD tagging good practice (non-multilingual) proposal, based on the ‘Anchor’ encodings (https://github.com/INSPIRE-MIF/GeoDCAT-AP-pilot/blob/main/good-practices/hvd-tagging/CANDIDATE-ISO\_HVD\_Tagging\_Anchor\_Non-Multilingual.xml)

Tests are in process at data.europa.eu’s pre-production environment, mainly looking into validation issues using a DCAT-AP validator (https://www.itb.ec.europa.eu/shacl/dcat-ap/).

Examples of GeoDCAT-AP (in RDF-XML format) can be provided upon request.

* + 1. Issues identified

Related to HVD ‘applicableLegislation’ element:

* Current metadata records are either using <http://data.europa.eu/eli/reg_impl/2023/138/oj> (required URLs) and <https://eur-lex.europa.eu/eli/reg_impl/2023/138/oj> to reference the HVD Implementing Regulation through the ‘applicableLegislation’ element.

data.europa.eu maps both to <http://data.europa.eu/eli/reg_impl/2023/138/oj>, although only <http://data.europa.eu/eli/reg_impl/2023/138/oj> should be used. Other URLs (e.g. <https://op.europa.eu/web/eu-vocabularies/concept/-/resource?uri=http://data.europa.eu/bna/c_83aa10a6>) are not mapped.

Some of the validation issues identified cannot be solved:

* ISO distributions do not have applicable legislations.
* HVDs need to be accessible via an API. However, not all ISO metadata have an OnlineResource digital transfer option of ‘download’ type to be mapped as service distribution.
  + 1. Conclusions

As expected, the OP / con terra encountered some difficulties due to the differences in ISO 10115/19139 and GeoDCAT-AP. In the ISO standard, the equivalents mapped to ‘hvdCategory’, ‘applicableLegislation’, and ‘license’ are all properties of the dataset described, not distributions as in GeoDCAT-AP.

A proposal to improve this, OP/ con terra offer guidance on how to describe API endpoints in ISO 10115/19139, including service types - See discussion at <https://github.com/INSPIRE-MIF/helpdesk/discussions/161>.

* 1. Joint Research Centre
     1. Summary of results

The JRC revised the GeoDCAT-AP 3 specification, providing comments and potential enhancements in the period from July to September 2024.

The organisation has also organised and managed the pilot, leading the meetings, and engaging with participants to progress and deliver results.

Additionally, JRC has pushed for the preparation, clarification and potential endorsement of the candidate good practice on High-Value geospatial Datasets tagging, which at the time of the Fourth Meeting of the pilot is ready for endorsement.

* + 1. Issues identified

The JRC is still working to transform a selected set of INSPIRE-compliant metadata records from the INSPIRE Geoportal.

Results of this analysis / tests will be published on GitHub as issues. Metadata records to be analysed will be selected preferably from Member States non participating in the pilot, and scoped to different thematic domains.

* + 1. Conclusions

There is a need to push participants to publish some of their findings on GitHub, which is a pre-requirement for further analyses and reporting to SEMIC.

Further working meetings and discussions are expected to deliver a common and more integrated vision, evaluation of issues and quality of the XSLT transformation.

Further conclusions could be derived by June 2025.

1. High-Value (geospatial) dataset tagging good practice

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed quis metus dolor. Nam congue cursus ligula sed faucibus. Fusce ligula est, mattis ut ullamcorper id, vulputate nec urna. Curabitur sit amet nisi eget urna ornare ultrices. Cras eget facilisis dolor. Sed id velit sit amet dui ornare dapibus at et lorem. Donec erat lacus, dapibus a massa at, euismod hendrerit leo.

Etiam volutpat dapibus dui a laoreet. Mauris gravida lobortis hendrerit. Integer at risus erat. Ut luctus lectus lorem, sit amet molestie lacus dictum id. Donec dolor lacus, aliquam et urna quis, cursus convallis nisi. Cras aliquet convallis urna, ac elementum leo accumsan ut. Nunc accumsan dolor dolor, vitae iaculis libero tempus non.

1. Conclusions

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed quis metus dolor. Nam congue cursus ligula sed faucibus. Fusce ligula est, mattis ut ullamcorper id, vulputate nec urna. Curabitur sit amet nisi eget urna ornare ultrices. Cras eget facilisis dolor. Sed id velit sit amet dui ornare dapibus at et lorem. Donec erat lacus, dapibus a massa at, euismod hendrerit leo.

Etiam volutpat dapibus dui a laoreet. Mauris gravida lobortis hendrerit. Integer at risus erat. Ut luctus lectus lorem, sit amet molestie lacus dictum id. Donec dolor lacus, aliquam et urna quis, cursus convallis nisi. Cras aliquet convallis urna, ac elementum leo accumsan ut. Nunc accumsan dolor dolor, vitae iaculis libero tempus non.

Nunc vestibulum condimentum nisi. Nam erat diam, suscipit vitae nisl eget, tempus tempus eros. Proin vel diam convallis, bibendum mi id, faucibus eros. Donec mi nisl, auctor quis aliquet a, ultricies vel metus. Ut rhoncus nulla augue, in egestas metus fringilla non. Sed sit amet felis dignissim, ornare elit vel, mattis augue. In adipiscing euismod purus id rutrum. Nulla facilisi. Nulla vitae dui lectus.

References

This section should contain complete list of citations in the report. Please see below for some examples.

Examples of references, presented according to the rules of the Interinstitutional style guide (<http://publications.europa.eu/code/en/en-250904.htm>):

(Citing books):

Pollan, M., The omnivore's dilemma, Penguin Group, New York, 2006.

(Citing books with an editor):

Poston, T., A draft of history, edited by K. A. Hauke, University of Georgia Press, Athens, 2000.

(Citing an article in a periodical):

Bagchi, A., ‘Conflicting nationalisms: the voice of the subaltern in Mahasweta Devi’s Bashai Tudu’, Tulsa Studies in Women's Literature, Vol. 15, No 1, Tulsa, 1996, pp. 41-50.

(Citing a report):

European Commission, Joint Research Centre, Stepniak, M., Cheimariotis, I., Lodi, C., Rataj, M., Zawieska, J., Grosso, M. and Marotta, A., *Research and Innovation on Drones in Europe,* Publications Office of the European Union, Luxembourg, 2024, https://data.europa.eu/doi/10.2760/02357, JRC137334.

List of abbreviations and definitions

|  |  |
| --- | --- |
| Abbreviations | Definitions |
| ABΓ | Alpha Beta Gamma |
| ΔΕΖ | Delta Epsilon Zeta Delta Epsilon Zeta Delta Epsilon Zeta Delta Epsilon Zeta Delta Epsilon Zeta Delta Epsilon Zeta |
| ΗΘΙ | Eta Theta Iota |

List of figures

[**Figure 1.** ISO & GeoDCAT-AP metadata implementation pilot timeline. 14](#_Toc196713912)

[**Figure 2.** Harvesting from the European Data Portal (EDP) (data.europa.eu). 26](#_Toc196713913)

List of tables

**No table of figures entries found.**

Annexes <optional>

Annex 1. Title of annex <numbering of annexes is mandatory, if there is more than one>

Each annex has a numbered title. They do not start on new pages.

Back cover to be added

XX-XX-XX-XXX-XX-C