Action 2017.3 on improved client support for INSPIRE data (completed)

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Overview

The action aims to:

1. Investigate use cases and requirements for improved client support.
2. Discuss with the open source community and commercial vendors how to improve support for INSPIRE data in client (web, desktop and mobile) software.
3. Investigate means for consumption of INSPIRE data directly from National and European discovery services.

More specifically, it will carry out the following tasks:

1. In collaboration with thematic communities (through the Thematic Clusters platform and the MIG-T), identify test datasets available in INSPIRE encodings (GML-based or alternative encodings discussed in action 2017.2) and relevant use cases.
2. Conduct a study on the usability of the test INSPIRE datasets identified in Task 1 in different libraries (OGR/GDAL), desktop and web clients (e.g. QGIS, ESRI ArcGIS for Desktop, LeafletJS, OpenLayers) and analytical or ETL tools for data processing (e.g. HALE, FME, R). Depending on the selected use cases, the study could also investigate the usability in other client tools or applications outside of the GI domain that could make use of INSPIRE data.
3. Organise, together with the open source community and commercial vendors, events to discuss the findings of the study and identify the way forward to improve the client support for INSPIRE data (and, if appropriate, possible follow-up actions for the MIWP in 2019).
4. Prioritise tools and specific functionalities that should be improved or developed, including the proposal for an approach for stakeholder collaboration (potentially including co-funding) for tool improvements.
5. Investigate good practices for the implementation of the publish – find – bind paradigm (e.g. direct use of data based on its metadata) for national and EU INSPIRE metadata and catalogues.

The full action mandate is attached: MIWP-2017.3_Improved_client_support_for_INSPIRE_data_Action_mandate_endorsed.pdf

Results

The outputs of the Action are made available on GitHub.

The results include the following:

- Usability testing framework for different data encodings (currently GeoJSON and GML, but also reusable for other alternative encodings such as GeoPackage).
- Test suite for testing different usability aspects of INSPIRE data, such as data loading, visualisation and geoprocessing.
- Can-I-use tool, providing synthesised overview of the client support for INSPIRE data (i.e. which client supports which functionality) for the following clients applications: QGIS, GRASS GIS, ArcMap Desktop, ArcGIS Pro, ArcGIS Online, hale studio, FME Desktop, OpenLayers and LeafletJS.
- Overview of the technical issues of the abovementioned client applications for consumption of INSPIRE data.
- Prioritisation for resolution of the identified issues (both from a software project and data provider perspectives).

Meetings

A face to face meeting with software projects and vendors, data providers, and experts in data encoding took place in Ispra on 8 and 9 July 2019. The agenda of the meeting is available here.

Background & context

The current data specification TGs define (complex) xml schemas based on GML as the default encoding for all INSPIRE spatial data themes. Many existing (web, desktop and mobile) applications and tools have difficulties in consuming and/or fully making use of data shared according to these schemas.

The INSPIRE xml schemas are complex because they are generated automatically from the conceptual UML model (according to the normative UML-to-GML encoding rules described in the GML standard and INSPIRE Technical Guidelines *D2.7 Encoding Guidelines*) and therefore reflect all the complex structures present in the conceptual model. In contrast, most existing clients, including the popular GDAL/OGR open source library (that is underlying most OS and proprietary client solutions) consume and write flat data structures, where e.g. each attribute can only have at most one value and attributes can have only simple types (e.g. integer, string, boolean). This means that, while INSPIRE data encoded according to the current schemas can be downloaded and viewed, simple use of the data (cartographic visualisation, simple joins, visual overlays, spatial search, etc.) is difficult in standard GIS clients.

One way to address this gap is to encourage better support by vendors for the current (GML-based) INSPIRE encoding (another one is to create alternative simplified schemas for basic data exchange and direct visualisation in standard GI tools – this solution was investigated in Action 2017.2).

Some vendors and projects have already started to improve the support for GML. However, different projects/vendors implement different (arbitrary subsets) of GML/XML. In addition, there is no analysis of the subset of XML schema (and GML) that is required in INSPIRE, including for specific INSPIRE themes that may need to deal with this complexity.

Organisational set-up

The work was carried out by the JRC and supported by a contractor. No temporary sub-group was established in support of the Action.