FOSS4G IT
TORINO 2020

Improving access and usability of INSPIRE datasets: current & future initiatives

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Torino, Italy – February 21, 2020

Joint
Research
Centre

INSPIRE Directive

- Aims to create a European SDI for the purposes of EU environmental policies:
  - environmental spatial data sharing, facilitation of public access to spatial data, and assisting in cross-boundary policy-making
  - based on the SDIs established and operated by the EU Member States
  - came into force on May 15, 2007 and is implemented in various stages, with full implementation required by 2021.

DIRECTIVE 2007/2/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 14 March 2007

establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32007L0002

INSPIRE Directive – Spatial scope

- 34 spatial data themes for environmental applications:

ANNEX: 1

- Addresses
- Administrative units
- Cadastral parcels
- Coordinate reference systems
- Geographical grid systems
- Geographical names
- Hydrography
- Protected sites
- Transport networks

ANNEX: 2

- Elevation
- Geology
- Land cover
- Orthoimagery

ANNEX: 3

- Agricultural and aquaculture facilities
- Area management / restriction / regulation zones & reporting units
- Atmospheric conditions
- Bio-geographical regions
- Buildings
- Energy resources
- Environmental monitoring facilities
- Habitats and biotopes
- Human health and safety
- Land use
- Meteorological geographical features
- Mineral resources
- Natural risk zones
- Oceanographic geographical features
- Population distribution and demography
- Production and industrial facilities
- Sea regions
- Soil
- Species distribution
- Statistical units
- Utility and governmental services

https://inspire.ec.europa.eu/Themes/Data-Specifications/2892

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INSPIRE Directive – Requirements

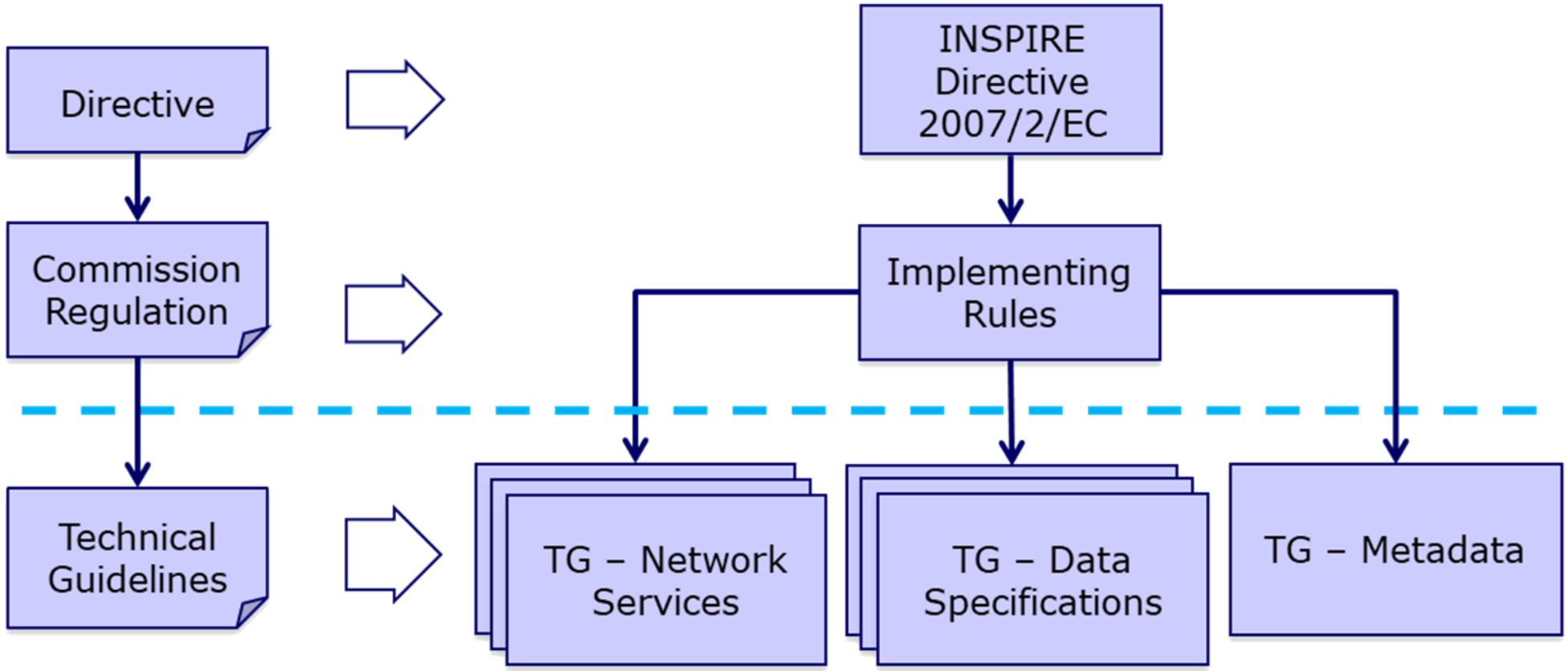
- Implementing Rules (IR) & Technical Guidelines (TG)

«What Member States must implement» (abstract specification)

legally binding

not legally binding

«How Member States might implement it» (implementation specification)



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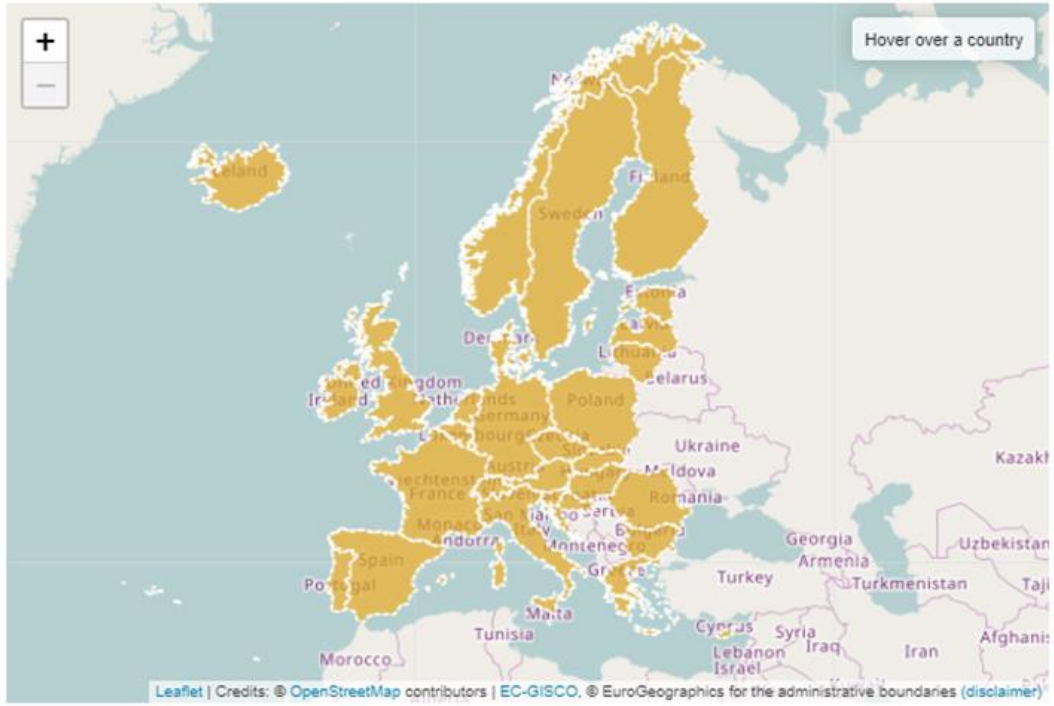
INSPIRE Directive – Where are we now?



Show: Downloadable | Viewable

INSPIRE Geoportal Data Set Statistics

152361 Metadata records	25124 Downloadable Data Sets

Select a COUNTRY

Austria 550 | 418 | 463	Finland 548 | 40 | 167	Latvia 141 | 11 | 27	Portugal 656 | 110 | 236
Belgium 597 | 242 | 464	France 40027 | 12588 | 14736	Liechtenstein 60 | 10 | 12	Romania 112 | 24 | 28
Bulgaria 169 | 4 | 3	Germany 30309 | 10674 | 10820	Lithuania 111 | 73 | 14	Slovakia 260 | 19 | 18
Croatia 112 | 7 | 8	Greece 57 | 2 | 57	Luxembourg 217 | 192 | 163	Slovenia 87 | 17 | 8
Cyprus 42 | 3 | 3	Hungary 121 | 23 | 20	Malta 157 | 136 | 152	Spain 225 | 147 | 157
Czech Republic 147 | 38 | 93	Iceland 147 | 7 | 0	Netherlands 204 | 128 | 137	Sweden 310 | 24 | 147
Denmark 224 | 39 | 33	Ireland 50 | 0 | 0	Norway 164 | 36 | 17	Switzerland 208 | 2 | 0
Estonia 75 | 14 | 23	Italy 20523 | 7 | 209	Poland 34964 | 26 | 3812	United Kingdom 20787 | 63 | 165

https://inspire-geoportal.ec.europa.eu

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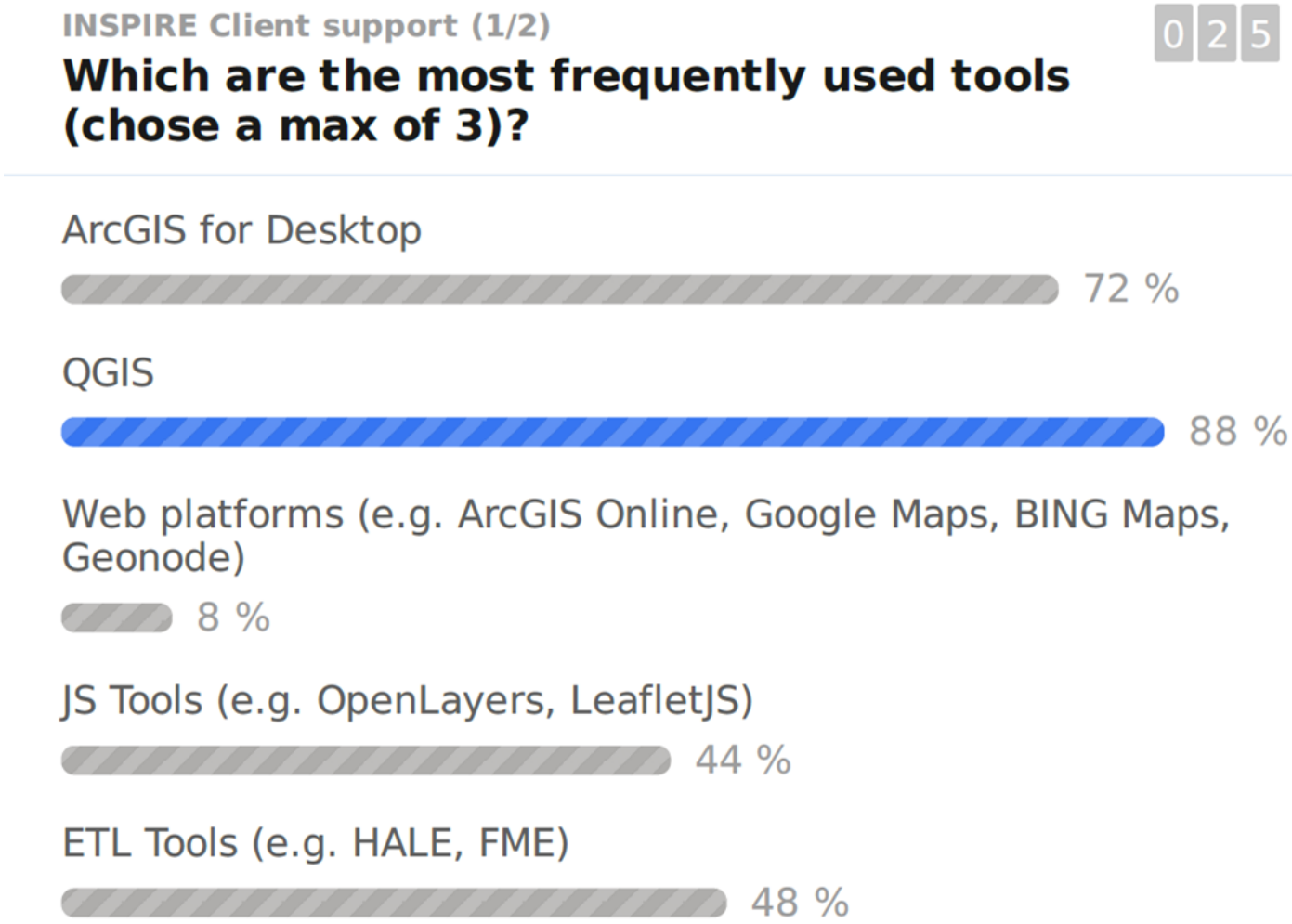
Improving INSPIRE data access & usability

- Given that:
  - INSPIRE implementation is still a challenge
  - the technological context has highly changed since INSPIRE inception
- several initiatives have been / are carried out by the JRC in order to improve data access & usability:
  1. definition of alternative encodings for INSPIRE data
  2. analysis and improvement of client support for INSPIRE data
  3. adoption of the OGC API - Features as an INSPIRE Download Service

INSPIRE – Client support

- Outcomes from the 56th MIG-T meeting (April 2019):



INSPIRE – Client support

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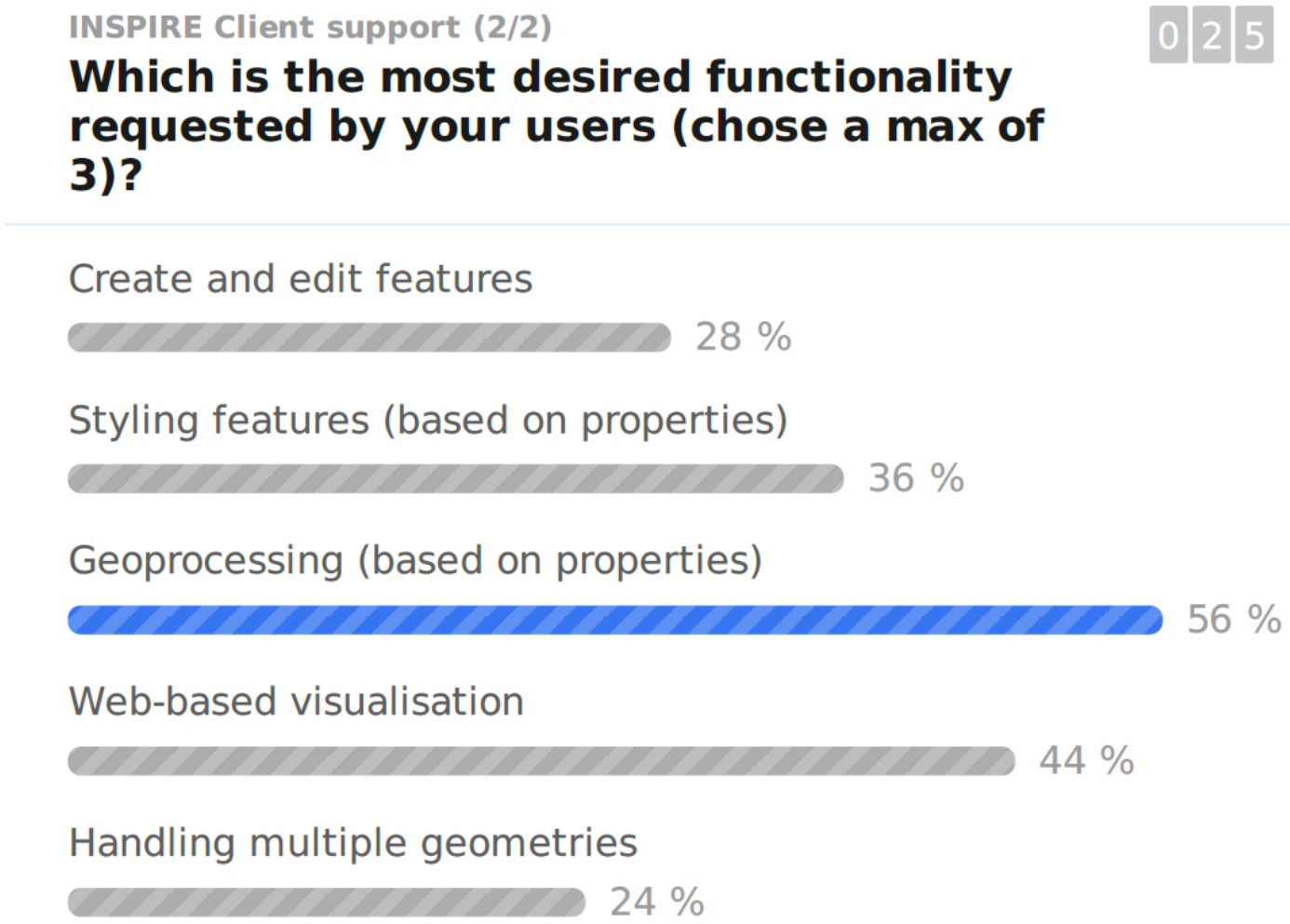


1. Alternative encodings for INSPIRE data

- INSPIRE defines the conceptual model using UML:
  - the default encoding rule maps this UML model to complex GML application schemas (XML schemas), usually not well-supported by clients
  - alternative encoding rules are allowed in INSPIRE, provided that some conditions are met

Article 7

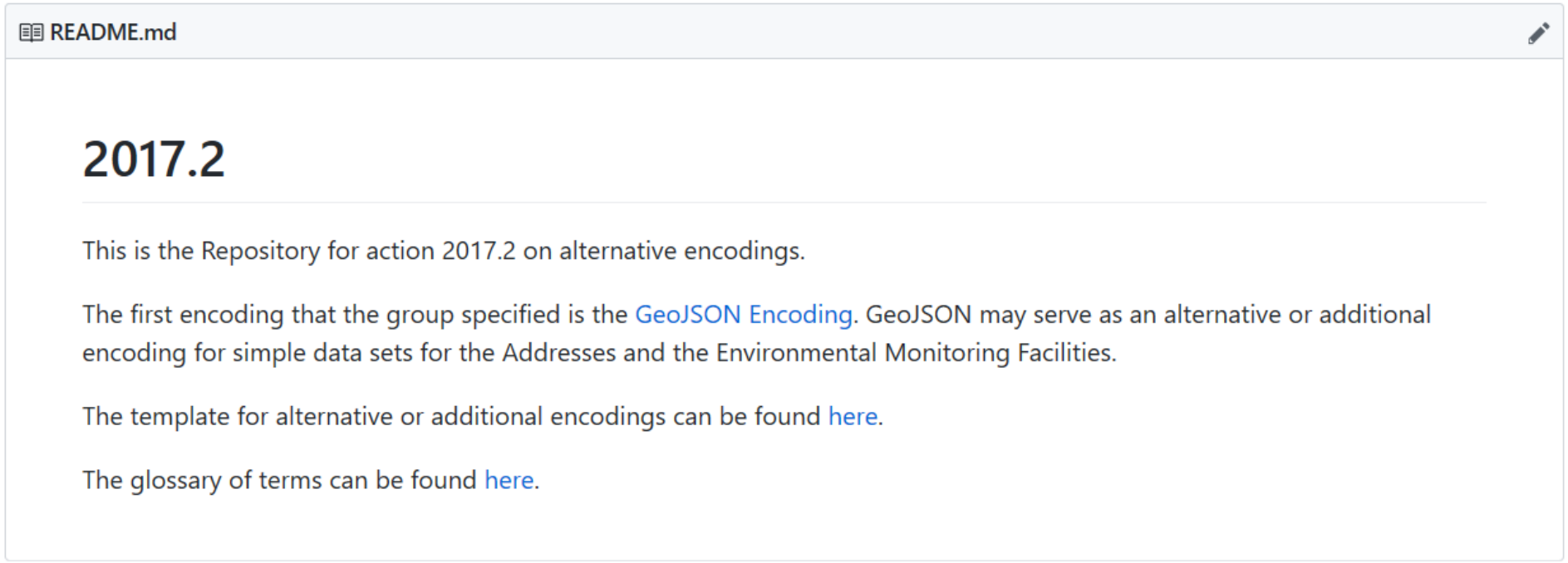
Encoding

1. Every encoding rule used to encode spatial data shall conform to EN ISO 19118. In particular, it shall specify schema conversion rules for all spatial object types and all attributes and association roles and the output data structure used.

2. Every encoding rule used to encode spatial data shall be made available.

1. Alternative encodings for INSPIRE data

- Aim:
  - developing concrete proposals for alternative encodings of INSPIRE to improve usability in GIS desktop/web clients


README.md

2017.2

This is the Repository for action 2017.2 on alternative encodings.

The first encoding that the group specified is the GeoJSON Encoding. GeoJSON may serve as an alternative or additional encoding for simple data sets for the Addresses and the Environmental Monitoring Facilities.

The template for alternative or additional encodings can be found here.

The glossary of terms can be found here.

https://webgate.ec.europa.eu/fpfis/wikis/x/aAKOE
https://github.com/INSPIRE-MIF/2017.2

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1. Alternative encodings for INSPIRE data

- Results:
  - generic UML-to-GeoJSON encoding rule
  - theme-specific model transformation rules (AD, EF)

https://github.com/INSPIRE-MIF/2017.2

INSPIRE UML-to-GeoJSON encoding rule

`Version: 0.1` `Date: 2019-03-29`

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1. Alternative encodings for INSPIRE data

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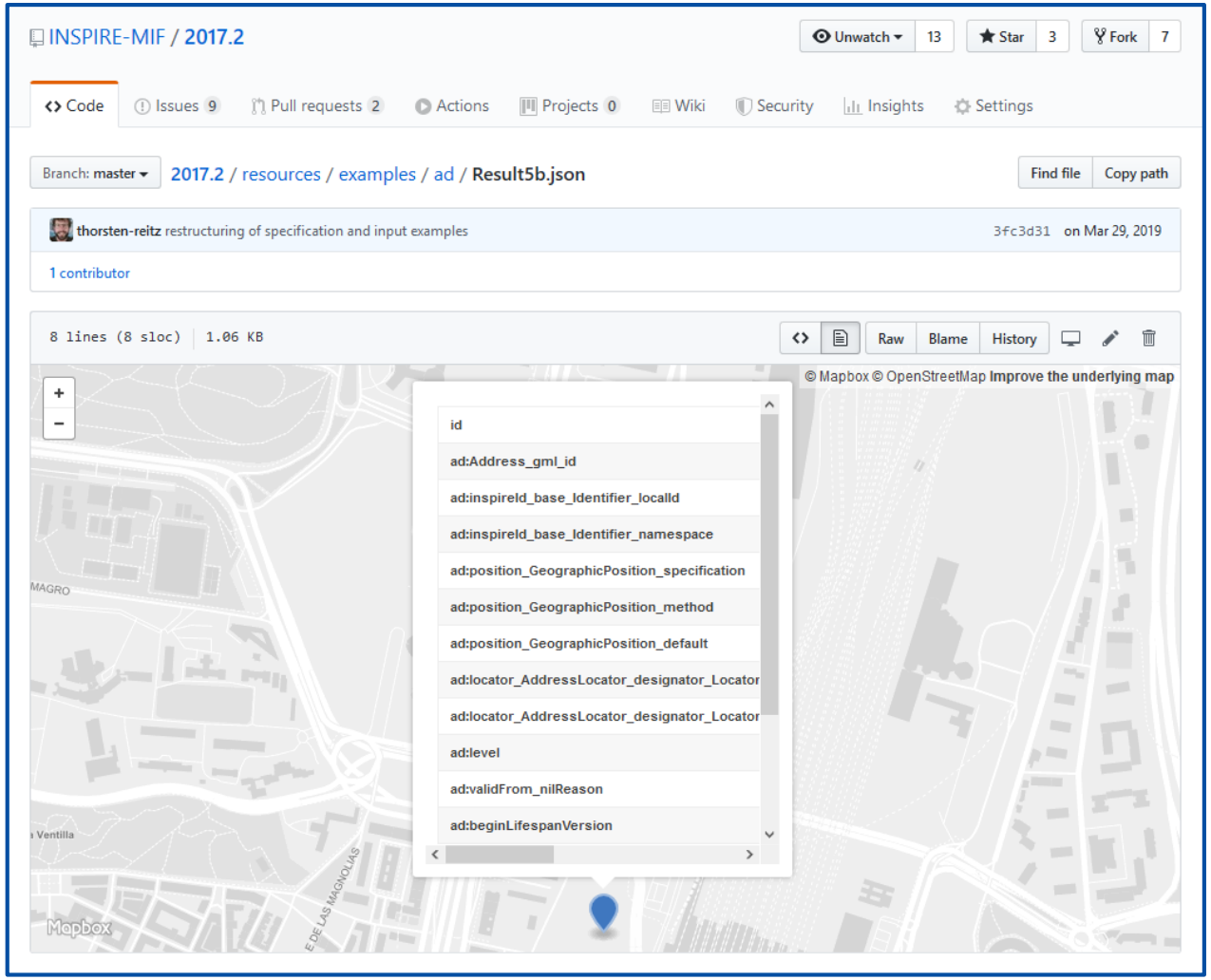

https://github.com/INSPIRE-MIF/2017.2

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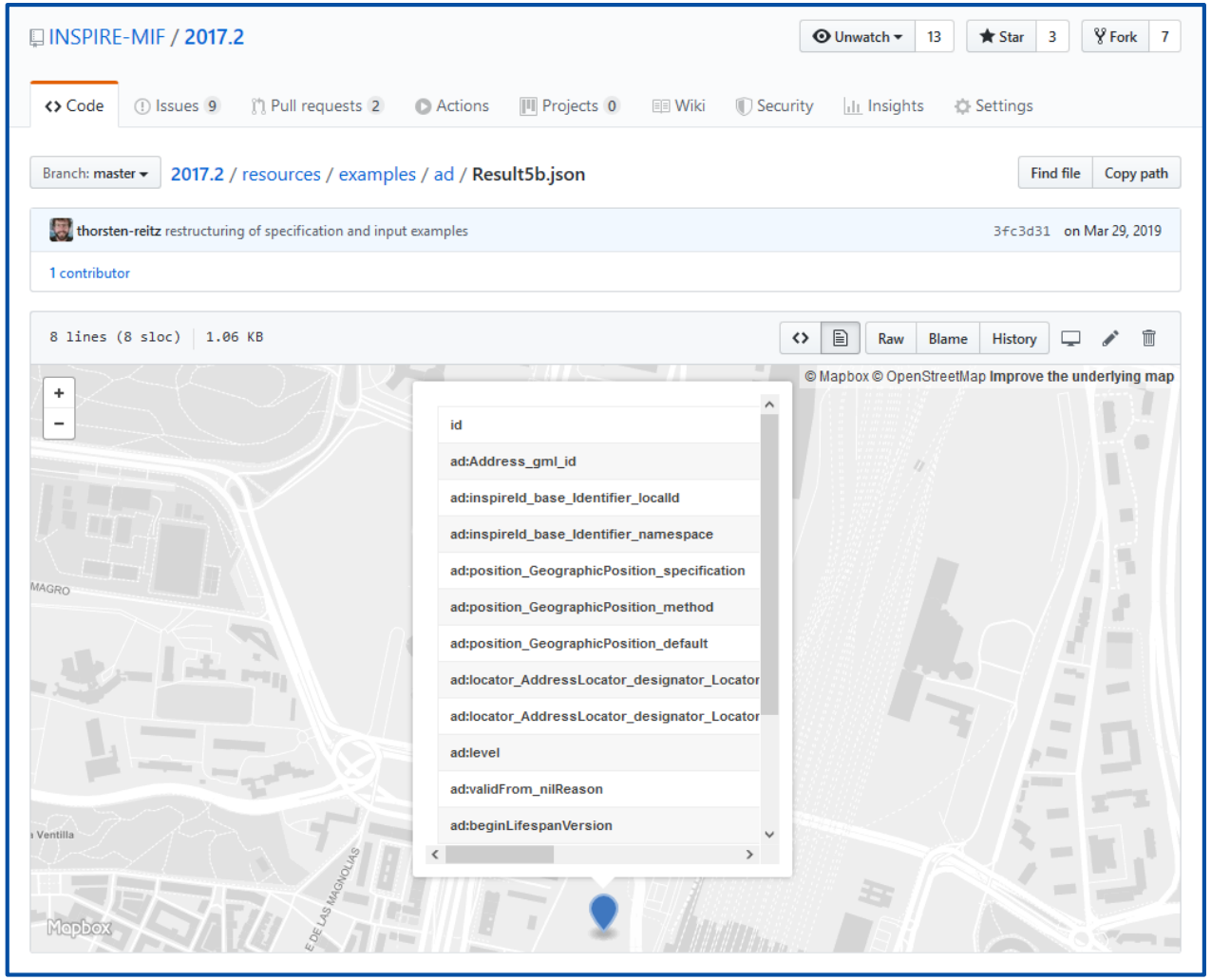
1. Alternative encodings for INSPIRE data

- Results:
  - generic UML-to-GeoJSON encoding rule
  - theme-specific model transformation rules (AD, EF)
  - template for alternate encodings for INSPIRE data
    - GeoPackage
    - OpenStreetMap



https://github.com/INSPIRE-MIF/2017.2

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2. Improved client support for INSPIRE data

- Aim:
  - analyze and improve client support for INSPIRE data (GML & GeoJSON)

Welcome to CanIUse INSPIRE

In this repository we document which features of INSPIRE GML and any alternative encodings (such as the GeoJSON encoding currently under development) can be used in which software product. The repository is created as part of the MIG 2017.3 action work to improve the usability of INSPIRE Data.

We have test several client applications, including:

- QGIS 2.18 and QGIS 3.4
- Esri ArcMap 10.5
- Esri ArcGIS Online
- OpenLayers 3
- Leaflet 1.4
- OGR
- Safe Software FME
- wetransform hale studio

- desktop clients:
- web client:
- ETL tools:

https://github.com/INSPIRE-MIF/caniuse

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2. Improved client support for INSPIRE data

- Definition of test suites for both GML and GeoJSON:
  - loading data
  - creating & editing features
  - big files handling
  - displaying geometry
  - handling CRS
  - loading/displaying 3D coordinates
  - managing object references
  - managing resolvable links
- Provision of test data:
  - WFS & valid GML from the INSPIRE Geoportal
  - GeoJSON from the previous initiative
  - generated ad hoc (multiple/mixed geometries, complex data types)

https://github.com/INSPIRE-MIF/caniuse/blob/master/docs/gml.md
https://github.com/INSPIRE-MIF/caniuse/blob/master/docs/geoJSON.md

2. Improved client support for INSPIRE data

- Result: a Can I use matrix showing the support for each client

Geography Markup Language (gml)

This section describes the tests being performed to assess usability of INSPIRE data in GML encoding.

gml_file_load

QGIS	ArcGIS Online	ArcGIS Pro	ArcMap Desktop	hale studio	FME Desktop	OpenLayers	Leaflet	GRASS GIS
3.4.4-Madeira	December 2018 release	2.3	10.7	3.4.1	2018.1	5.3.0	1.4.0	7.7.svn

gml_file_display

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gml_WFS2_load

QGIS	ArcGIS Online	ArcGIS Pro	ArcMap Desktop	hale studio	FME Desktop	OpenLayers	Leaflet	GRASS GIS
3.4.4-Madeira	December 2018 release	2.3	10.7	3.4.1	2018.1	5.3.0	1.4.0	7.7.svn

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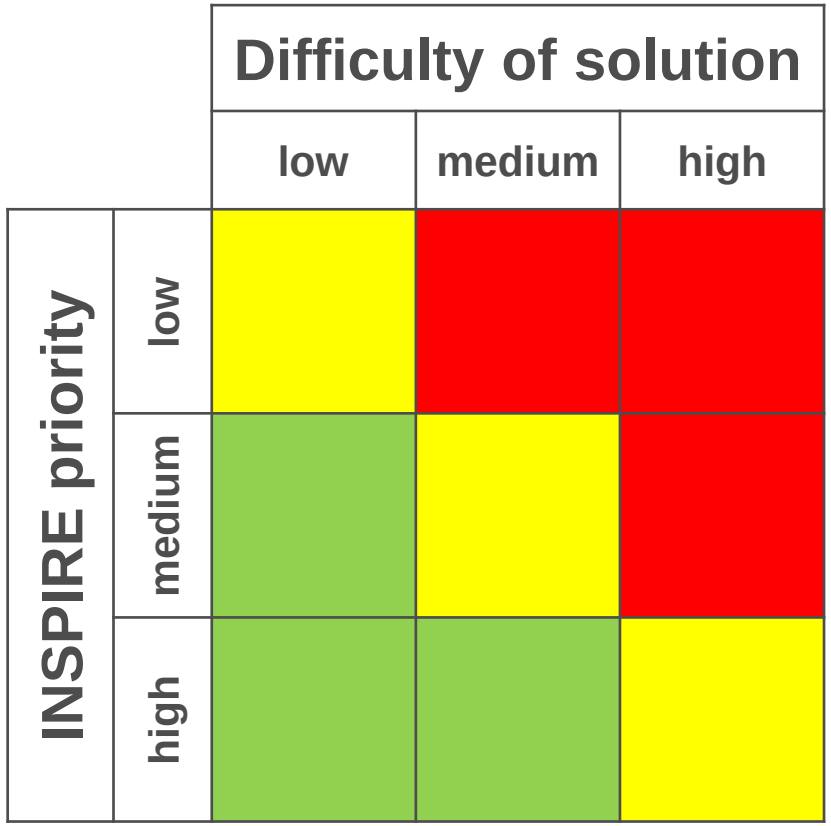
https://inspire-mif.github.io/caniuse/generator/out.html

2. Improved client support for INSPIRE data

- INSPIRE users know which functionality is supported by which client

2. Improved client support for INSPIRE data

- INSPIRE users know which functionality is supported by which client
- software vendors & open source project communities
  - involved in the project!



2. Improved client support for INSPIRE data

- INSPIRE users know which functionality is supported by which client
- software vendors & open source project communities
  - involved in the project!

INSPIRE priority	Difficulty of solution: low	Difficulty of solution: medium	Difficulty of solution: high
low			
medium			
high			

GML_ATTRIBUTES_TO_OGR_FIELDS=YES by default when loading GML #29641

New issue

Open qgib opened this issue on Apr 10, 2019 · 1 comment

qgib commented on Apr 10, 2019 Contributor

Author Name: Alexander Kotsev (Alexander Kotsev)
Original Redmine Issue: 21826

Redmine category:data_provider/ogr

We work in Europe for the Joint Research Centre (European Commission) as technical coordinator of the EU INSPIRE Directive implementation. Within the context of INSPIRE, an increasing number of datasets are made available by European Union Member States as GML [1]. Application schemas (*.xsd) for INSPIRE are available at [2]. Most, if not all of the GML instances that are made available use attributes of GML elements such as xlink:href pointing to a registry with persistent uri [3]. The default behaviour of QGIS ignores those attributes which is inherited from the default OGR/GDAL logic for creating a *.gfs on first load of a GML instance. As a consequence, a significant portion of the available attribute content is 'invisible' in QGIS.

The issue is described in [4], and the solution is already available there. In a nutshell, when first loading the GML, the open option 'GML_ATTRIBUTES_TO_OGR_FIELDS' should be set to 'YES'. This would allow the generation of a fully-blown *.gfs correctly showing all GML attributes in QGIS (which would make the life of a lot of European data providers a lot easier). Sample GML instances are attached.

Addressing this issue would be very much appreciated.

Marco Minghini and Alex Kotsev

[1] http://inspire-geoportal.ec.europa.eu/
[2] http://inspire.ec.europa.eu/schemas/
[3] http://inspire.ec.europa.eu/registry/
[4] INSPIRE-MIF/caniuse#3

- LandUseNL.gml (Alexander Kotsev)

Assignees
No one assigned

Labels
Data Provider
Feature Request

Projects
None yet

Milestone
No milestone

Linked pull requests
Successfully merging a pull request may close this issue.
None yet

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3. INSPIRE Download Services based on the OGC API - Features standard

- OGC APIs: the new family of standards to replace the OWS ones
- REST APIs, described using OpenAPI, geared towards JSON
- modular, user-centric, developer-friendly
- many standards in the pipeline, one released so far (OGC API - Features):
  - API building blocks to create, modify and query features on the Web
  - *Part 1 - Core* published in October 2019, additional Parts available soon
  - available open source implementations: pygeoapi, ldproxy, GeoServer, etc.

http://www.ogcapi.org
https://www.opengeospatial.org/standards/ogcapi-features

3. INSPIRE Download Services based on the OGC API - Features standard

Setting up an INSPIRE Download service based on the OGC API-Features standard

`Version: 0.1` `Date: 2019-12-04`

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https://github.com/INSPIRE-MIF/gp-ogc-api-features

- Specification for implementing the requirements of the INSPIRE IR for Download Services based on OGC API - Features standard:
  - to be submitted as an INSPIRE good practice document to the INSPIRE MIG for endorsement
  - participation of data providers, software vendors, open source projects & standardisation bodies is foreseen

3. Adoption of API-based standards for INSPIRE implementers

- A specific study to assess the feasibility, design & implementation implications of the transition towards OGC API - Features (for static data) and SensorThings API (for dynamic data) in INSPIRE implementation:
  - funded by ELISE (European Location Interoperability Solutions for e-Government)
  - run by a consortium together with EU data providers during 2020
  - expected deliverables:
    - methodology for evaluation of standard-based APIs
    - strategies for API deployment
    - API deployment at the data providers' premises
    - measurement of the impact (including through workshops/hackathons)
    - recommendations for Member States data providers

Thank you!

marco.minghini@ec.europa.eu

@MarcoMinghini

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