



INSPIRE Update

A technological perspective - INSPIRE Central Components



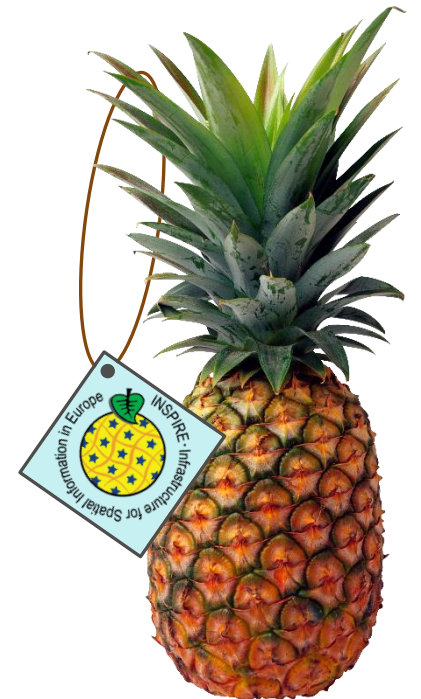
Jordi Escriu
European Commission Joint Research Centre
JRC.B.6 - INSPIRE Team

INSPIRE ESPUS Conference, 30th June 2022

INSPIRE

The geospatial pineapple

- One of the biggest geospatial data sharing initiatives in the world (**7000+ providers**).
- **Multi-faceted Spatial Data Infrastructure** framework
 - **Legal:** Directive, Implementing provisions, transposition in MS.
 - **Organisational:**
 - Governance structure with National contact points / structures, Multiple Commission Services.
 - Maintenance and Implementation Work programme;
 - **Technical:** Reusing building blocks from standardisation bodies (OGC, ISO, etc.)
 - Full stack of guidelines for discoverability, metadata, data encoding and data sharing.
- **Status of implementation**
 - Directive entered into force in 2007 / Roadmap finished by December 2021.
 - **Lights and shadows.** Objectives partially achieved. Heterogeneity of implementations across EU. Pan European coverage yet to be achieved.



What is ahead

New Policy context

- **“Europe fit for the Digital Age”**
 - Priority of the European Commission.
- **European Strategy for Data**
 - Data Governance.
 - Digital Market.
 - Open Data Directive implementation.
 - Data Act.
- **Open Data Directive (EU) 2019/1024**
- **INSPIRE Directive** - **Directive 2007/2/EC**
 - Evolution: Green Deal data space.



What is ahead

Technological trends

- New data sources:
 - Internet of Things (IoT).
 - Citizen-generated geospatial data.
 - Open research data.
 - Private data.
- Novel architectures.
- Agile and “used” standards.
- **Mature tools.**
- Application Programming Interfaces (APIs) –
From data collection to data connection.

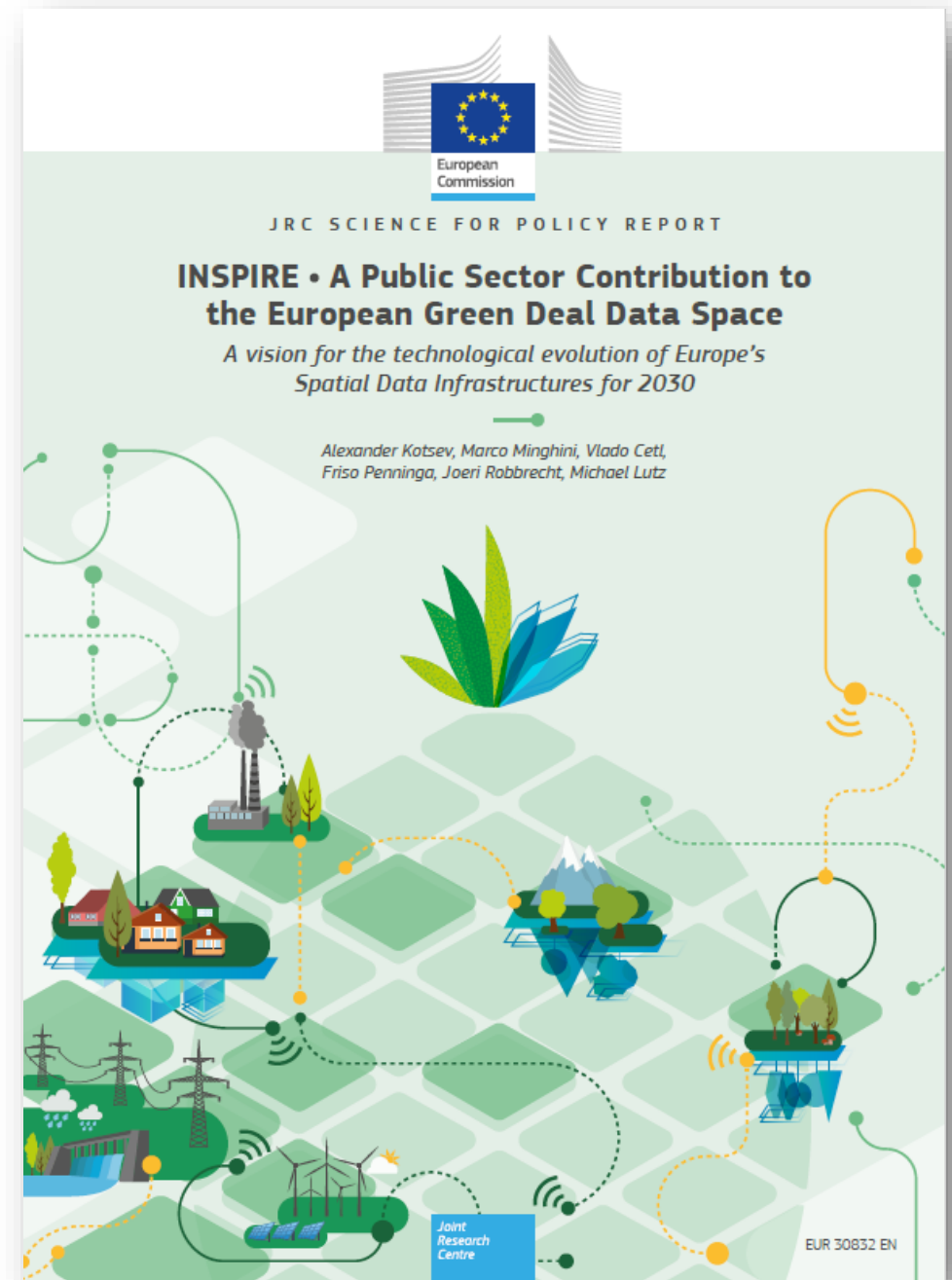


INSPIRE Evaluation & Future JRC Science for Policy Report

- **INSPIRE - A Public Sector Contribution to the European Green Deal Data Space**

<https://publications.jrc.ec.europa.eu/repository/handle/JRC126319>

- Prepared with Geonovum and DG ENV.
- Sneak peek:
 - Overview of the status
 - Policy and technological context
 - Lessons learned
 - Vision for the technological evolution
 - Actions and roadmap
 - Prototype reference framework



INSPIRE Future Vision



- INSPIRE should **'blend in'** with the broader ecosystem of spatial and non-spatial data, infrastructures, technologies and policies.
- This will mean **opening up to a broader community** of implementers and users, and to a wider range of applications and use cases.
- Making the INSPIRE framework more **flexible and agile** will significantly lower the entry level to the sharing and utilisation of data.
- **Technical approaches need to be simplified** by reusing well-adopted standards and technologies.

INSPIRE Future

Sectoral European data spaces / Green Deal

Rich pool of data
(varying degree of
accessibility)

Free flow of data
across sectors and
countries

Full respect of GDPR

Horizontal
framework for data
governance and data
access



- Technical tools for data pooling and sharing
- Standards & interoperability (technical, semantic)
- Sectoral Data Governance (contracts, licenses, access rights, usage rights)
- IT capacity, including cloud storage, processing and services

Personal Data Spaces



High Value Data sets



Public Sector



Addressing the challenge

Maintenance and Implementation Work programme

(MIWP 2021-2024)

Context for modernising the technological framework of INSPIRE.

6 core actions

1.1 Towards a digital ecosystem for the environment and sustainability

2.1 Need-driven data prioritisation

2.2 Roadmap for priority-driven implementation

2.3 Simplification of INSPIRE implementation

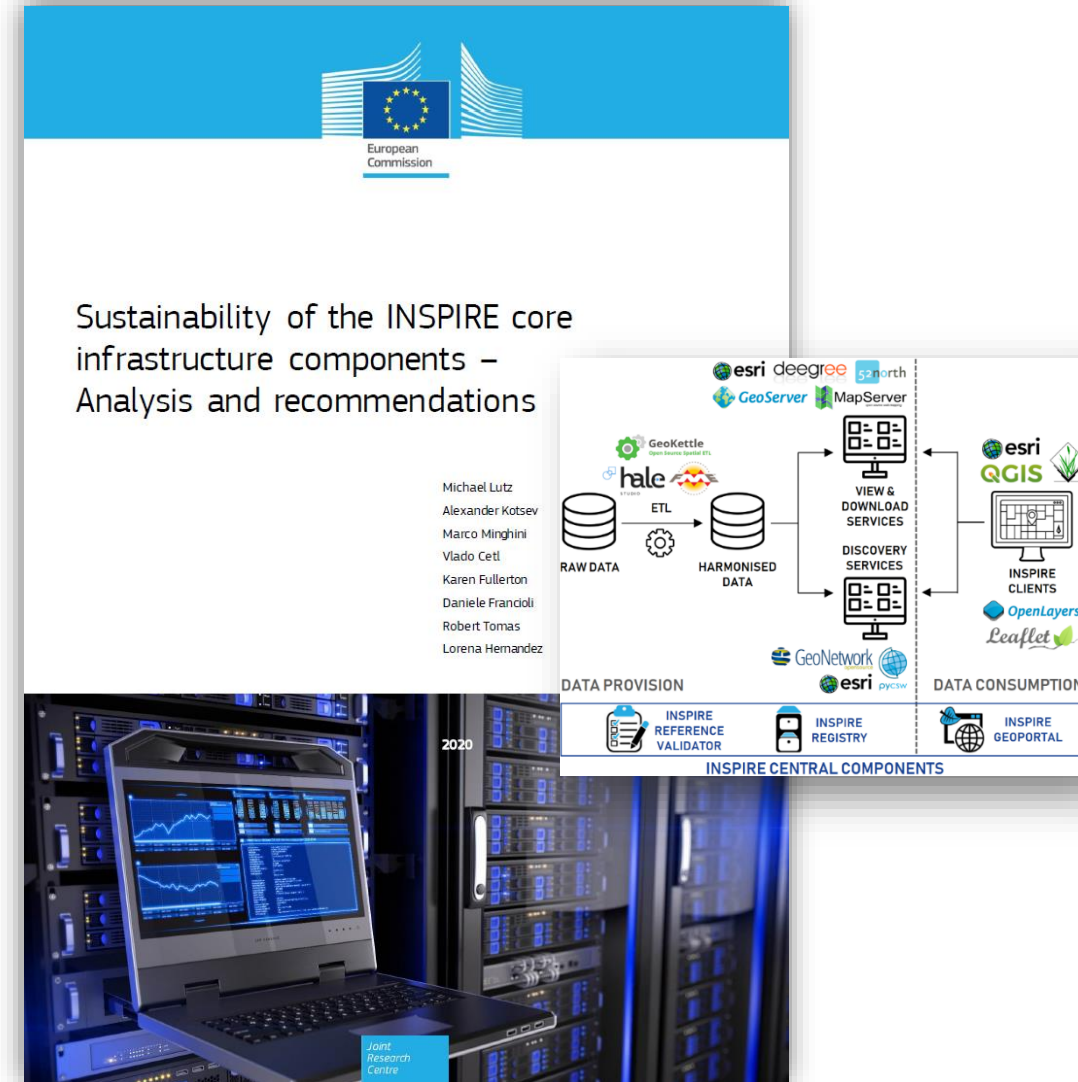
2.4 Central infrastructure components

3.1 GreenData4all initiative

INSPIRE Central Components

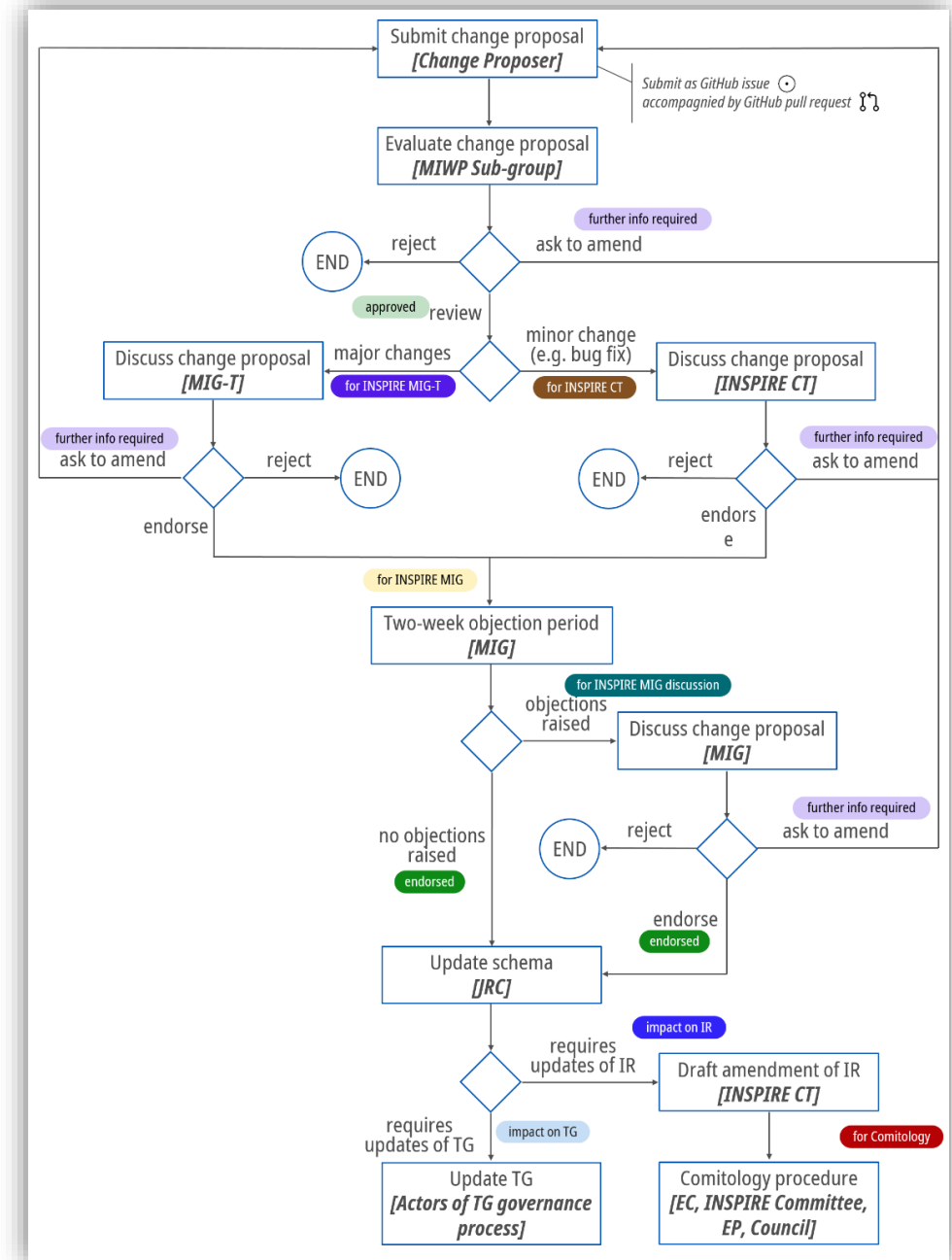
Sustainability approach

- Support by tools is the default.
- Build strategic partnerships with communities: OSGeo, GeoNetwork
- Focus on the INSPIRE-specificity and not on mainstream tool development.
- Harmonise the approaches for helpdesk.
- Decouple tools from infrastructure.
- Extensive use of the cloud.



INSPIRE Central Components Governance

- Open the floor to proposals from the community:
 - INSPIRE Helpdesks (GitHub)
 - INSPIRE Good Practices
- Transparent approach for governance:
 - MIG-T Meetings Actions and Sub-groups.
 - Decision tree and release plan:
 - Know how to approach each issue.
 - Releases planned during the year, aligned with MIG-T Meetings.



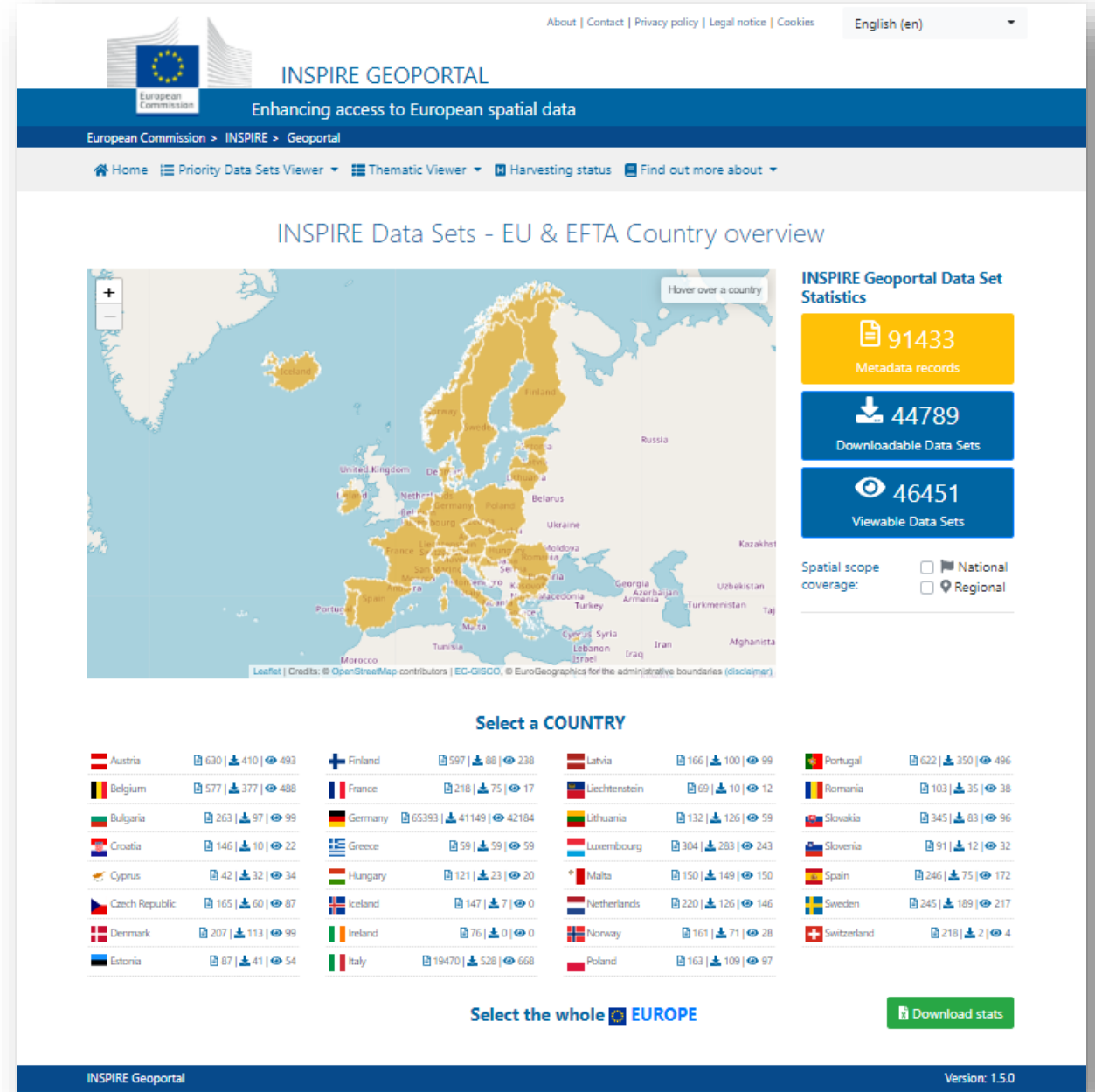
The Toolbox

INSPIRE Geoportal

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

Main access point to INSPIRE Infrastructure tools and resources.

- Based on own development (GeoNetwork, in near future).
- Main focus: INSPIRE M&R.



The screenshot displays the INSPIRE Geoportal interface. At the top, there is a navigation bar with the European Commission logo, the text "INSPIRE GEOPORTAL", and the tagline "Enhancing access to European spatial data". Below this is a breadcrumb trail: "European Commission > INSPIRE > Geoportal". A secondary navigation bar contains links for "Home", "Priority Data Sets Viewer", "Thematic Viewer", "Harvesting status", and "Find out more about".

The main content area is titled "INSPIRE Data Sets - EU & EFTA Country overview". It features a map of Europe with countries highlighted in yellow. To the right of the map is a statistics panel titled "INSPIRE Geoportal Data Set Statistics" with three key metrics: 91433 Metadata records, 44789 Downloadable Data Sets, and 46451 Viewable Data Sets. Below the statistics, there are options for "Spatial scope coverage" with radio buttons for "National" and "Regional".

Below the map is a section titled "Select a COUNTRY" with a grid of country entries. Each entry includes a flag, the country name, and three icons representing different data set metrics. The countries listed are: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and Switzerland.

At the bottom of the page, there is a button labeled "Select the whole EUROPE" and another button labeled "Download stats". The footer contains the text "INSPIRE Geoportal" and "Version: 1.5.0".

INSPIRE Geoportal

Revamp – User interface

User interface

- **Available** – Filtering by High Value Datasets (HVDs).

To be launched when the Implementing Act on HVDs is entering into force.

- **Ongoing** – Additional developments to integrate the new user interface with the new backend: GeoNetwork.

The screenshot shows the INSPIRE Geoportal website. At the top, there is the European Commission logo and the text 'European Commission'. Below this is a navigation bar with the following links: 'European Commission > INSPIRE > INSPIRE Geoportal > HOME'. The main heading is 'INSPIRE GEOPORTAL'. Below the heading is a navigation menu with links: 'Home', 'High-Value Data Sets', 'Thematic Data', 'Harvesting status', and 'Find out more about'. The main content area is titled 'Welcome to the INSPIRE Geoportal'. It contains a paragraph explaining the portal's purpose and a list of features: monitoring the availability of INSPIRE data sets, discovering suitable data sets based on their descriptions (metadata), and accessing the selected data sets through their view or download services. Below this is a paragraph about metadata harvesting and a link to the harvesting status. There is also a link for feedback. The main content area is divided into two columns. The left column is titled 'High-Value Data Sets' and features a map with a color palette icon. The right column is titled 'INSPIRE Thematic Data' and features a map with a yellow apple icon. Both columns have a 'Browse' button. At the bottom of the page, there is a section titled 'INSPIRE Reference Validator' with a paragraph explaining its purpose and a 'Go to INSPIRE Reference Validator' button.

European Commission

EN English

European Commission > INSPIRE > INSPIRE Geoportal > HOME

ENHANCING ACCESS TO EUROPEAN SPATIAL DATA

INSPIRE GEOPORTAL

Home High-Value Data Sets Thematic Data Harvesting status Find out more about

Welcome to the INSPIRE Geoportal

The INSPIRE Geoportal is the central European access point to the data provided by EU Member States and several EFTA countries under the INSPIRE Directive. The Geoportal allows:

- monitoring the availability of INSPIRE data sets;
- discovering suitable data sets based on their descriptions (metadata);
- accessing the selected data sets through their view or download services.

The metadata used in the Geoportal are regularly harvested from the discovery services of EU Member States and EFTA countries. The status of harvesting is available [here](#).

Feedback regarding the functionality as well as data set availability is welcome [here](#).

High-Value Data Sets

The application provides an overview and access to geospatial high-value datasets and other core data (including priority data sets for eReporting).

Browse

INSPIRE Thematic Data

The application displays the availability and provides access to all EU MS data sets falling under the scope of INSPIRE Directive filtered by data themes and countries (i.e. Annex I, II and III).

Browse

INSPIRE Reference Validator

The validator application is to help data providers, solution providers and national coordinators to check whether their data sets, network services and metadata meet the requirements defined in the INSPIRE Technical Guidelines. The validation tests are based on the Abstract Test Suites agreed between Member States and the Commission in the INSPIRE Maintenance and Implementation Group.

Go to INSPIRE Reference Validator

INSPIRE Geoportal

Revamp – Backend: GeoNetwork (in the cloud)



- Prototype:
Available and revised
- Working system:
Delivered
Finishing testing

The screenshot displays the 'My GeoNetwork catalogue' interface. On the left, a sidebar shows 'Catalog harvesters' and 'Catalog harvester report'. The main area is titled 'Harvester' and lists several OGC CSW 2.0.2 remote harvesters for various regions: AT, BE-GEO, BE-GEOBRU (highlighted), BE-VLAANDEREN, BE-WALLONIE, BG, CH, CY, and CZ. Each entry shows 'Last run : Invalid date'. On the right, the configuration page for 'BE-GEOBRU' is shown, including tabs for 'Settings', 'Harvester history', and '106 Metadata records'. The configuration includes fields for 'Node name and logo' (BE-GEOBRU), 'Group' (Belgium), 'User' (admin admin), 'Service URL' (https://geobru-geonetwork.irisnet.be/geonetwork/inspire/fre/csw), and 'Number of records to retrieve per request' (20). There are also 'Delete' and 'Save' buttons at the top right of the configuration panel.

Spatial data discoverability trends

Standards

OGC API - Records



Open
Geospatial
Consortium

OGC - API Records - <https://ogcapi.ogc.org/records>

- Simplification of the discovery, access and management of metadata (creation, modification and sharing) on the web.
- Data automatically discoverable through search engines.
- **Status:**
 - OGC API - Records - Part 1: Core - Draft specification, near to be adopted.
 - Covering read-only access to records and simple query capabilities.
 - Additional parts: covering additional capabilities addressing specific needs.
- **Endorsed as INSPIRE Good Practice candidate (discovery services):**
 - 69th MIG-T Meeting:

<https://wikis.ec.europa.eu/display/InspireMIG/69th+MIG-T+meeting+2022-04-01>

Spatial data discoverability trends

Standards



SpatioTemporal Asset Catalogues (STAC) - <https://stacspec.org>

- SpatioTemporal Asset: any file that represents information about the earth captured in a certain space and time.
- STAC: Common language to describe a range of geospatial information.
- It allows data providers to expose their data as SpatioTemporal Asset Catalogs (STAC), so that new code does not need to be written whenever a new data set or API is released.
- Making it being more easily indexed and discovered.
- MIG-T community showed increasing interest on STAC.

The Toolbox

INSPIRE Registry

Tool used for referencing common codes and concepts.

Based on the Re³gistry (open source) software.

<https://inspire.ec.europa.eu/registry>



The screenshot displays the INSPIRE Registry website. At the top, there is a navigation bar with the European Commission logo, the text 'INSPIRE Registry', and a language dropdown menu set to 'English (en)'. Below the navigation bar is a search bar with the text 'INSPIRE registry' and a search icon. A blue banner below the search bar contains a survey link: 'Help us improving the Re3gistry software! Please fill our quick survey at http://europa.eu/!Bn84Ct'. The main content area is divided into sections: 'ID: http://inspire.ec.europa.eu/registry', 'Label: INSPIRE registry', 'Content Summary: The INSPIRE infrastructure involves a number of items, which require clear descriptions and the possibility to be referenced through unique identifiers. Examples for such items include INSPIRE themes, code lists, application schemas or discovery services. Registers provide a means to assign identifiers to items and their labels, definitions and descriptions (in different languages). The INSPIRE registry provides a central access point to a number of centrally managed INSPIRE registers. The content of these registers are based on the INSPIRE Directive, Implementing Rules and Technical Guidelines.', 'Registry manager: European Commission, Joint Research Centre', and 'Other formats: Re3gistry XML, ISO 19135 XML, JSON, Atom, CSV'. Below this is a 'Registers' section with a table listing various registers. At the bottom, there is a footer with the text 'The INSPIRE Registry has been developed under Action 1.17 of the ISA Programme: A Reusable INSPIRE Reference Platform.' and 'INSPIRE registry Powered by: Re3gistry 1.3'.

INSPIRE registry

Powered by: Re3gistry 1.3

Re3gistry software

Latest releases

- Major release (2.3.0) – 10th March 2022

<https://github.com/ec-jrc/re3gistry/releases/tag/v2.3.0>

- Latest hotfix release (2.3.1) – 23rd March 2022

<https://github.com/ec-jrc/re3gistry/releases/tag/v2.3.1>

v2.3.0 10/03/2022

emanuelaepure10 released this 21 days ago · 8 commits to master since this release v2.3.0 7e88a04

New Features

- Update the caching after publishing a change from the management interface
- Add the cache all - master language, cache all and remove cache buttons to the management interface
- Show just valid items when selecting a successor for an item
- Update libraries
- Change date format
- Init SHIRO in the constructor
- Make the login page mobile friendly
- Add release note
- Add API documentation page
- Cache just the active languages
- When a codelist is "retired", all the contained codelist values should be retired
- Make it possible to set more properties using Maven build profiles
- Update Shiro initialisation, update Shiro documentation
- Update the handling of the helper files (system.installed, ...)
- Improve error logging
- Add "Other formats" to the webapp
- Update CKEditor
- Update RestAPI

Bugfixes

- Fixed the RDF/JSON problem when importing to Geonetwork
- Fixed Malformed XML/JSON export when label contains whitespace
- Fixed Save the email in lower case when using ECAS
- Fixed vulnerability of log4j-code and log4j-api
- Correct name of logger; fix bug with logger that is null when error
- Fixed code that modifies requested URI
- Remove application.status.baseuri from pom.xml
- Fix several typos in documentation
- Solve vulnerability issue regarding: SSL Cookie without Secure Flag

v2.3.1 23/03/2022 Latest

emanuelaepure10 released this 8 days ago · 6 commits to master since this release v2.3.1 7d30eb3

Bugfixes

- Fixed the missing update of used libraries for both re3gistry2 and re3gistry2restapi for the /dist folder

Assets 2

- Source code (zip)
- Source code (tar.gz)

Re3gistry software

Re³gistry v2 - Where to find it?

Re3gistry 2 software

license EUPL 1.2

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About the Re3gistry 2

The Re3gistry 2 is a reusable open source solution for managing and sharing "reference codes".

It provides a consistent central access point where labels and descriptions for reference codes can be easily browsed by humans and retrieved by machines.

Reference codes are exchanged between applications to uniquely reference some 'thing'. They can be used to define sets of permissible values for a data field or to provide a reference or context for the data being exchanged. Examples are enumerations, controlled vocabularies, taxonomies, thesauri or, simply, 'lists of things'.

The Re3gistry 2 supports organisations in managing and updating reference codes in a consistent way.

The Re3gistry software version numbers comply with the [Semantic Versioning Specification 2.0.0](#).



<https://github.com/ec-jrc/re3gistry>

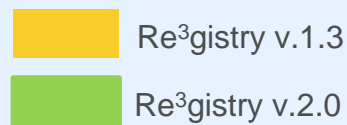


<https://joinup.ec.europa.eu/collection/a-re3na/solution/re3gistry/about>

Re3gistry software

Who is using it?

- **Public sector**
 - European Commission, national agencies Member States, ecc.
- **Private sector**
- **Other**
- In Europe, but not just!



0 250 500 1,000 Km

© European Union, 2021. Map produced by EC-JRC. The boundaries and the names shown on this map do not imply official endorsement or acceptance by the European Union.

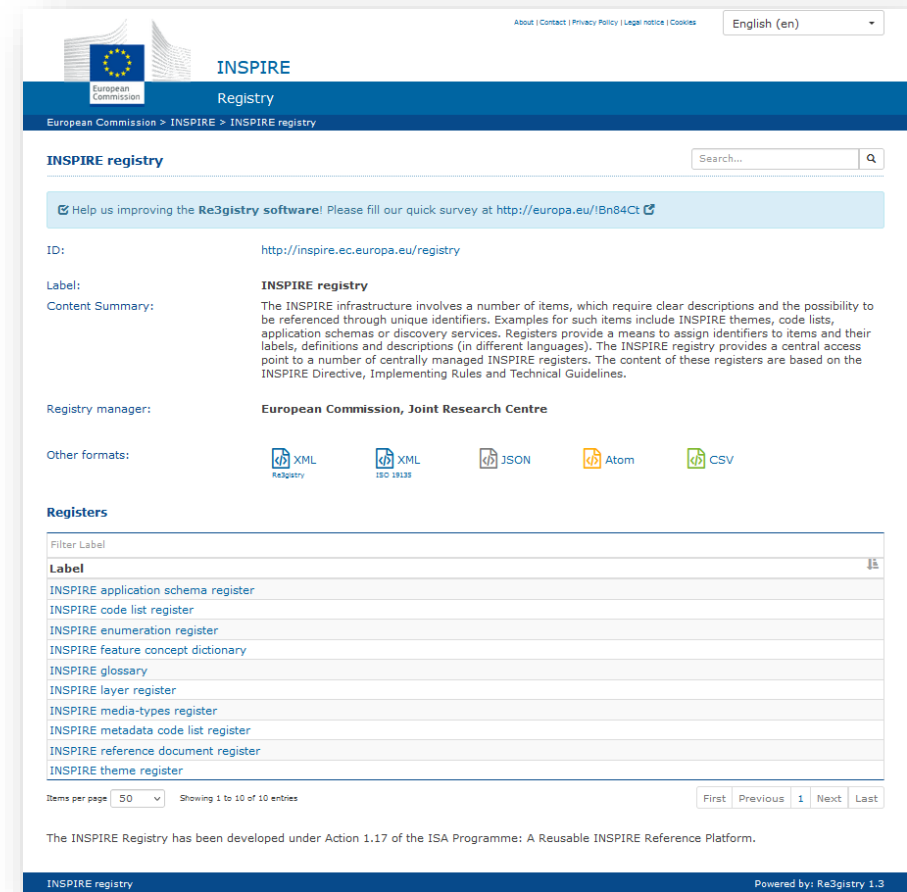
INSPIRE Registry

Software update

- Currently based on Re3gistry v1.3
- Update to Re3gistry v2
- Current status:
 - **Completed:** Development; Correction of bugs and new features, Testing in sandbox environment, Security assessment.
 - **Ongoing:** Production environment.
- Launch expected by July 2022.

Maintenance and evolution

- INSPIRE Operational Support: Re3gistry SW, Registry Federation tool and INSPIRE Registry.
- Handover to contractors in process.



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<https://inspire.ec.europa.eu/registry>

Reuse of tools & Community building

Reuse of the tools

- Publications Office of the European Union analyzing / considering using the Re3gistry SW tool for the publication of Corporate Reference Data Sets.



Community building

- Participation in the Google Summer of Code (GSoC)
<https://summerofcode.withgoogle.com>
- GSoC proposals
OSGeo Page:
https://wiki.osgeo.org/wiki/Google_Summer_of_Code_2022_Ideas
GitHub Re3gistry page:
<https://github.com/ec-jrc/re3gistry/wiki/Google-Summer-of-Code-2022>

Google Summer of Code 2022 Ideas



Google Summer of Code @



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[EU Spotify](https://www.spotify.com/eu)

Thank you!



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