Towards the Green Deal data space

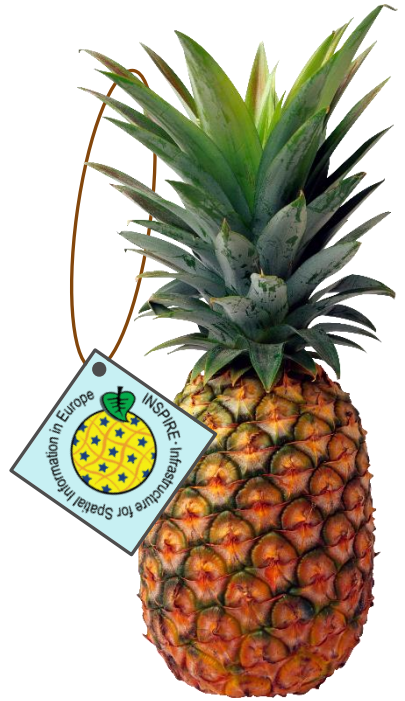
What is new in INSPIRE?

Jordi Escriu
(EC-JRC INSPIRE Team)

EuroGeographics Joint INSPIRE & POLicy KEN webinar - "INSPIRE beyond 2020", 18th November 2021

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 do be achieved.



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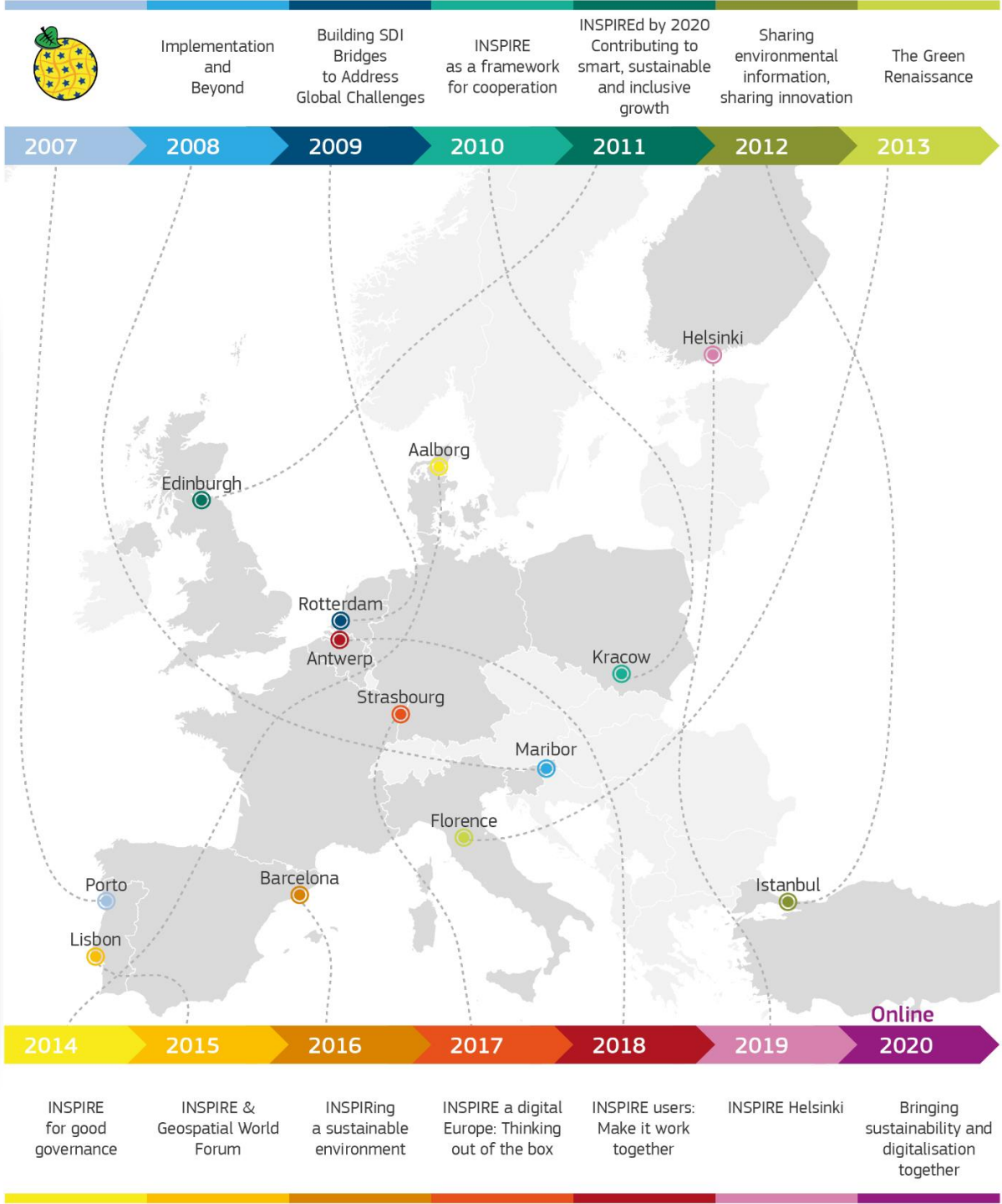
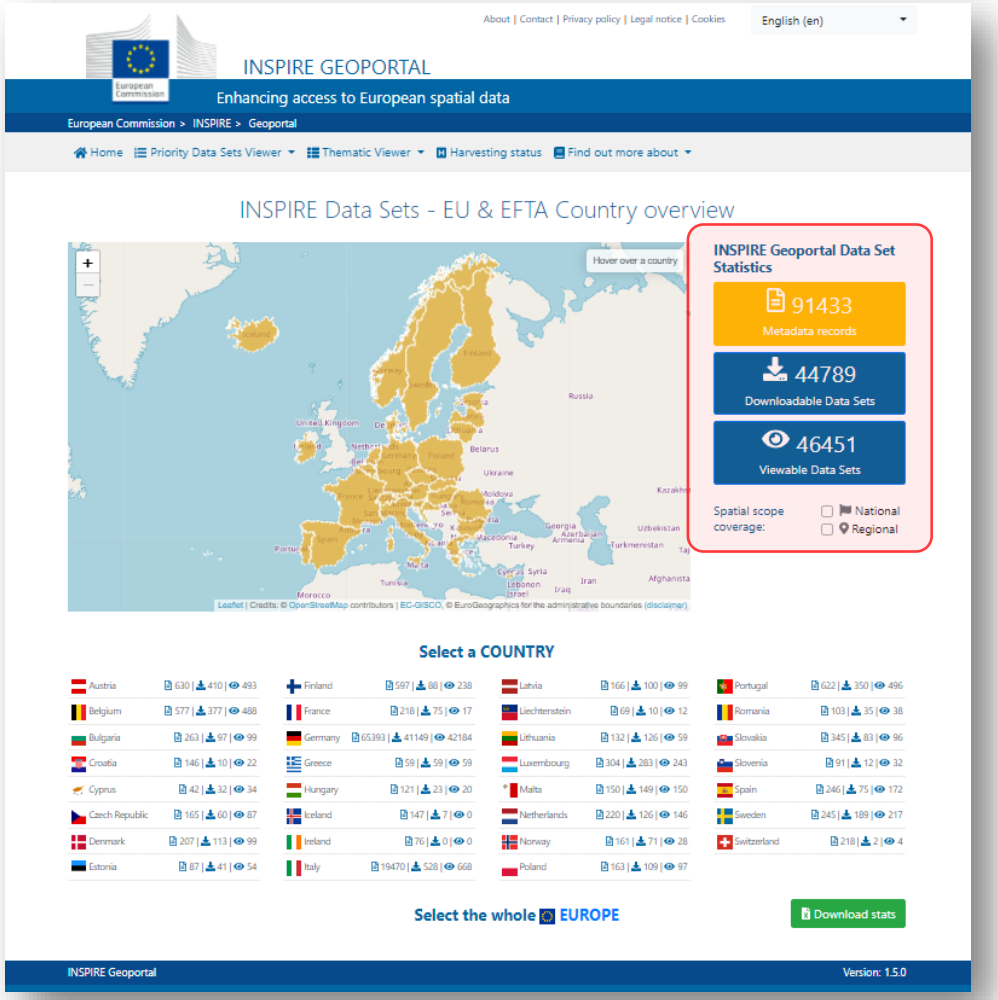
Lights - What works well
Community

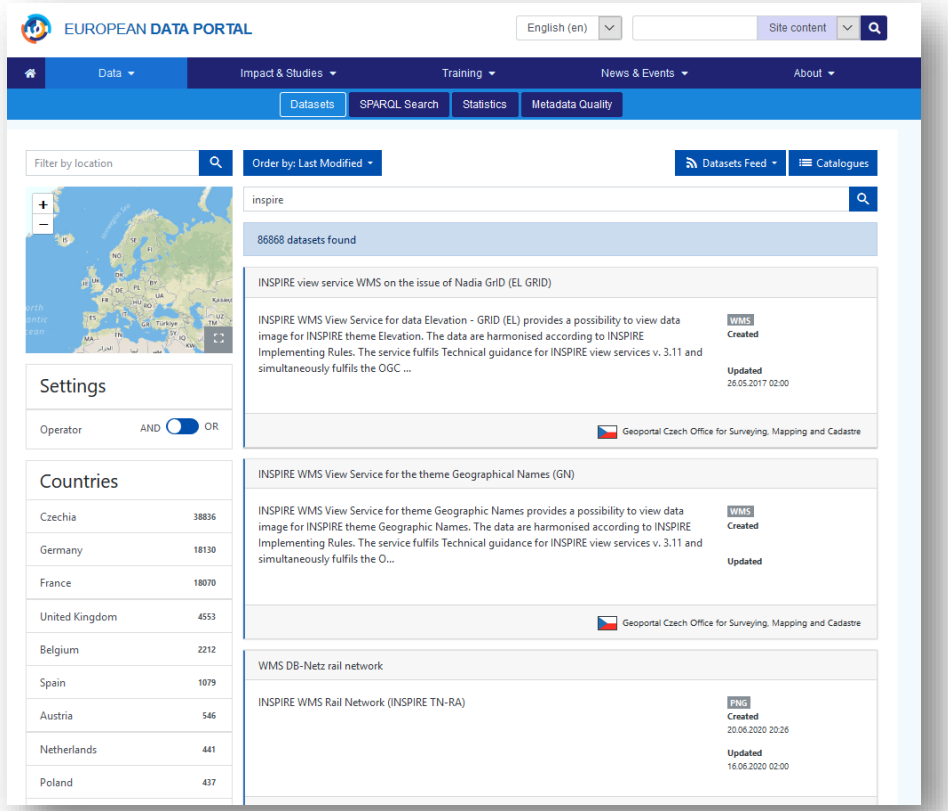


Lights - What works well
Data availability & E-reporting

- Discoverability and accessibility are improving.

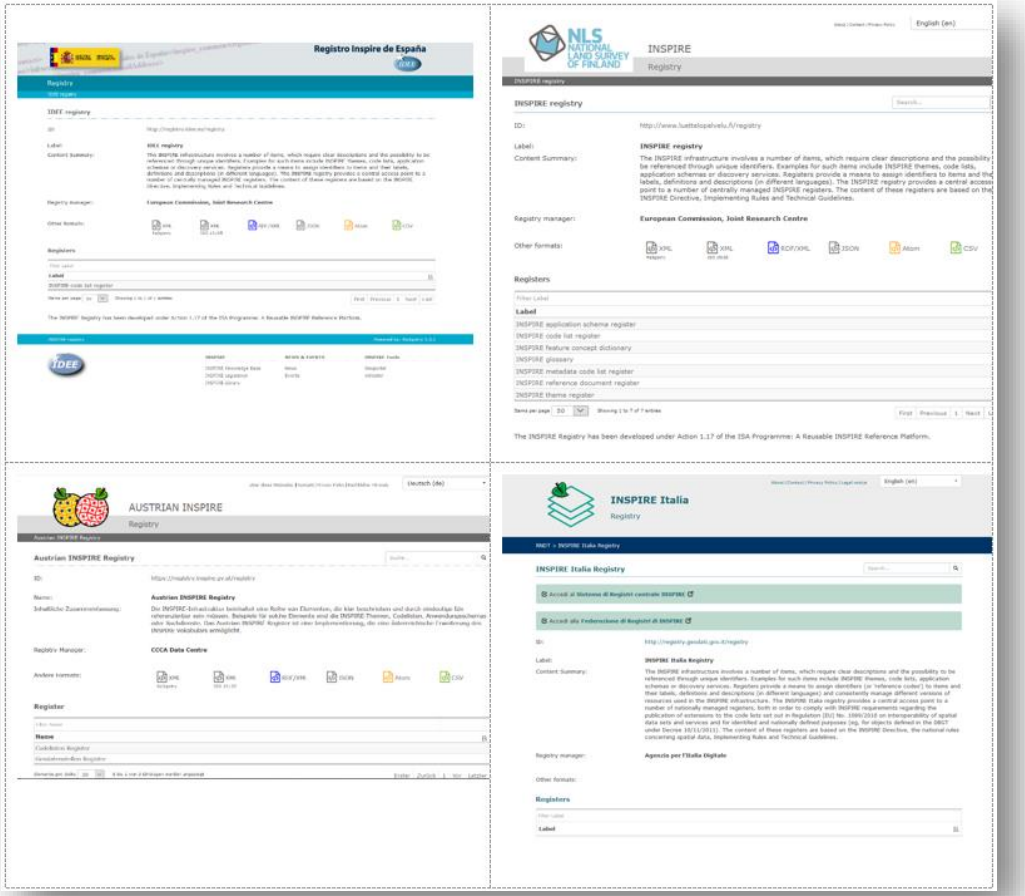


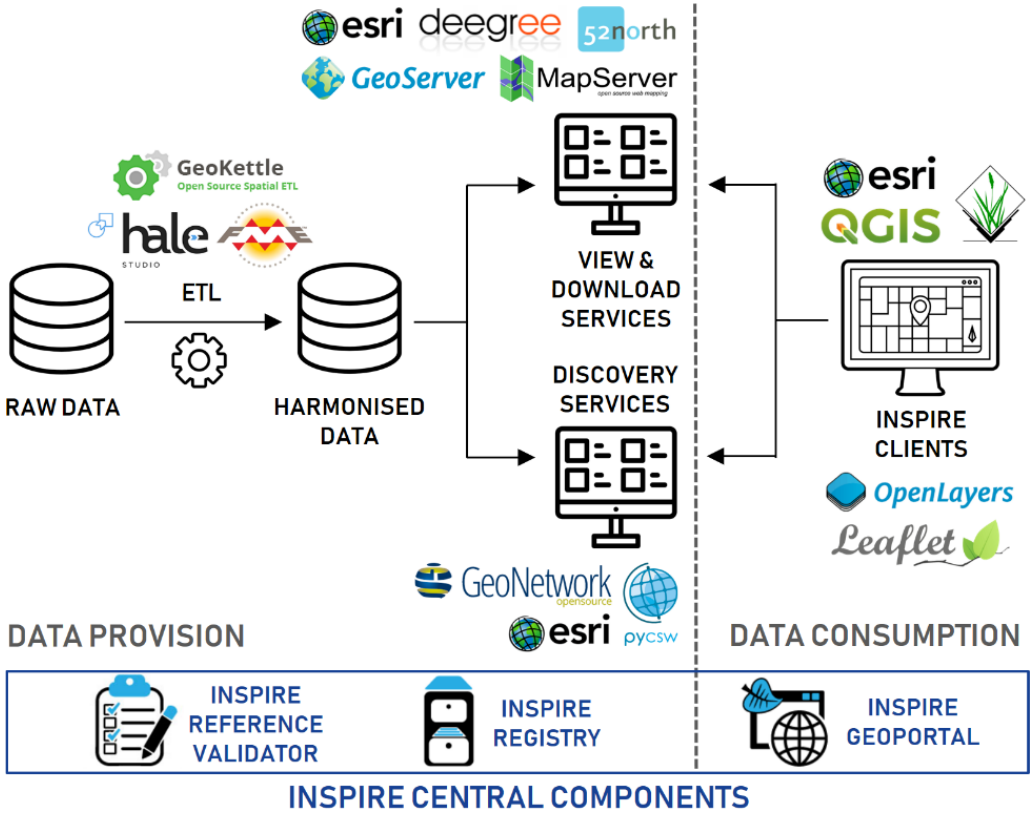
- Use of INSPIRE in e-reporting.

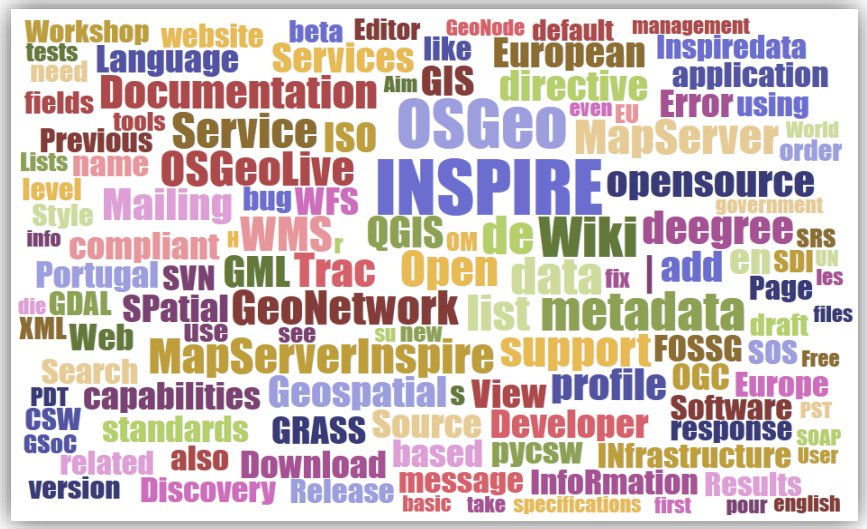


Lights - What works well
Rich ecosystem of tools

- Central INSPIRE components.
- Many client and server implementations.

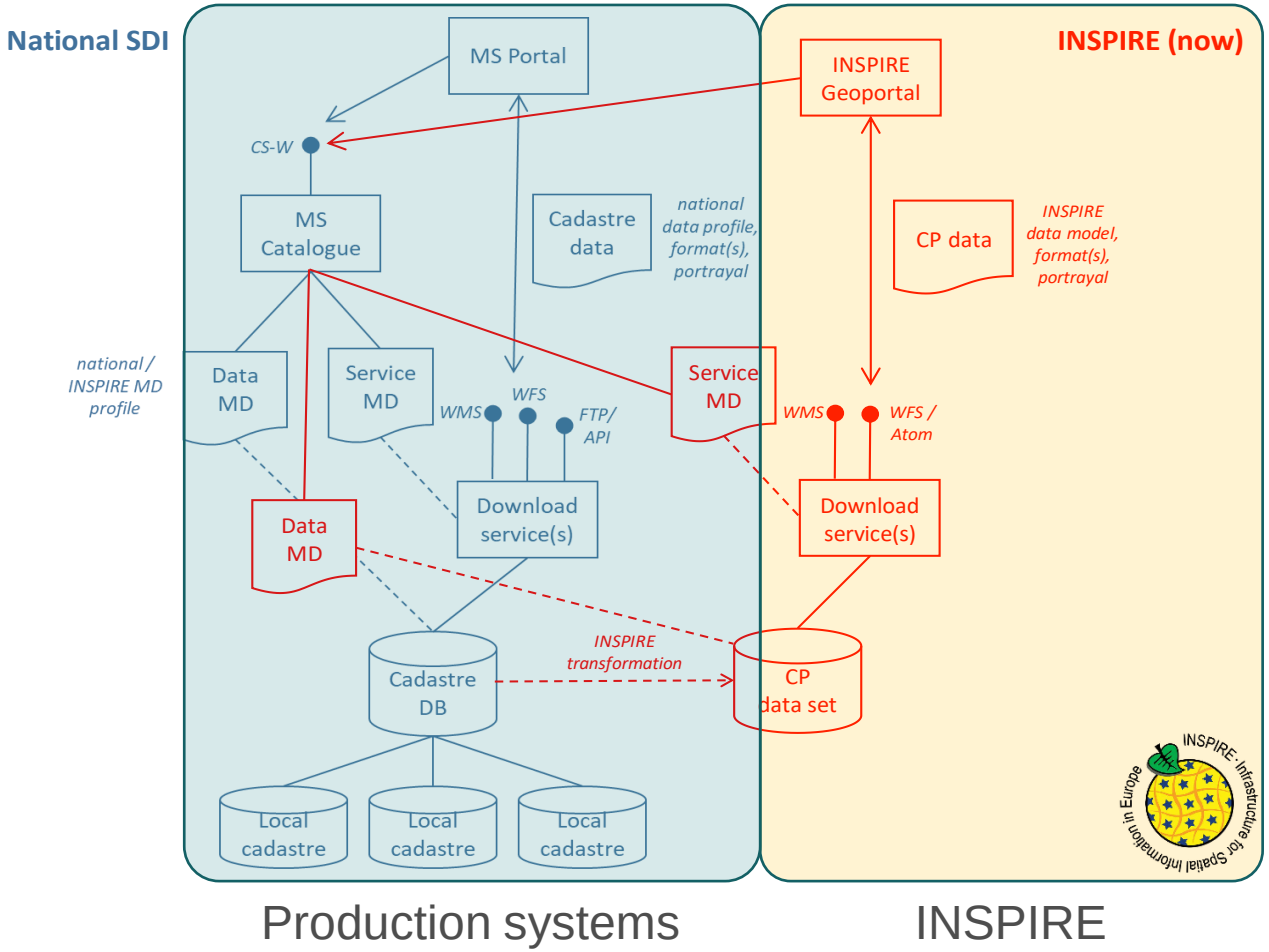






Shadows - What does not work so well
Inappropriate organisational approaches

- Parallel implementations.
- Duplication of efforts.
- INSPIRE sometimes implemented to only check a box.



Shadows - What does not work so well
Inflexibility in standardisation

- Adherence to specific technologies / encodings.
- Strictly following standards vs. Narrow use of standards.
- Custom extensions: Extending standards is problematic.
  - Extended capabilities.
  - GML attributes.
  - Nested structures.

European Commission

Shadows - What does not work so well
Complexity

```
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	<gn:geometry>
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		</gml:Point>
	</gn:geometry>
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			<base:namespace>https://www.examples.eu/</base:namespace>
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	</gn:inspireId>
	<gn:localType xsi:nil="true"/>
	<gn:name>
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```

https://www.openstreetmap.org/node/1700534808#map=12/48.1332/11.6462

What is ahead
New Policy context

- "**Europe fit for the Digital Age**" priority of the new European Commission:
  - Data-driven innovation.
  - Adding value to Europe's economy and society.
- **European Strategy for Data**:
  - Establishment of a single market for data through sector-specific data spaces.
  - Different actors interplaying in the data economy (public sector, businesses, citizens, and academia)
- **Open Data Directive** (and forthcoming Implementing Act):
  - Provision and sharing of public sector High-Value Datasets (many of them geospatial).
- **INSPIRE**: Public-sector contribution to the **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.
- Application Programming Interfaces (APIs) – From data collection to data connection.
- Novel architectures.
- Agile standards.
- Mature tools.

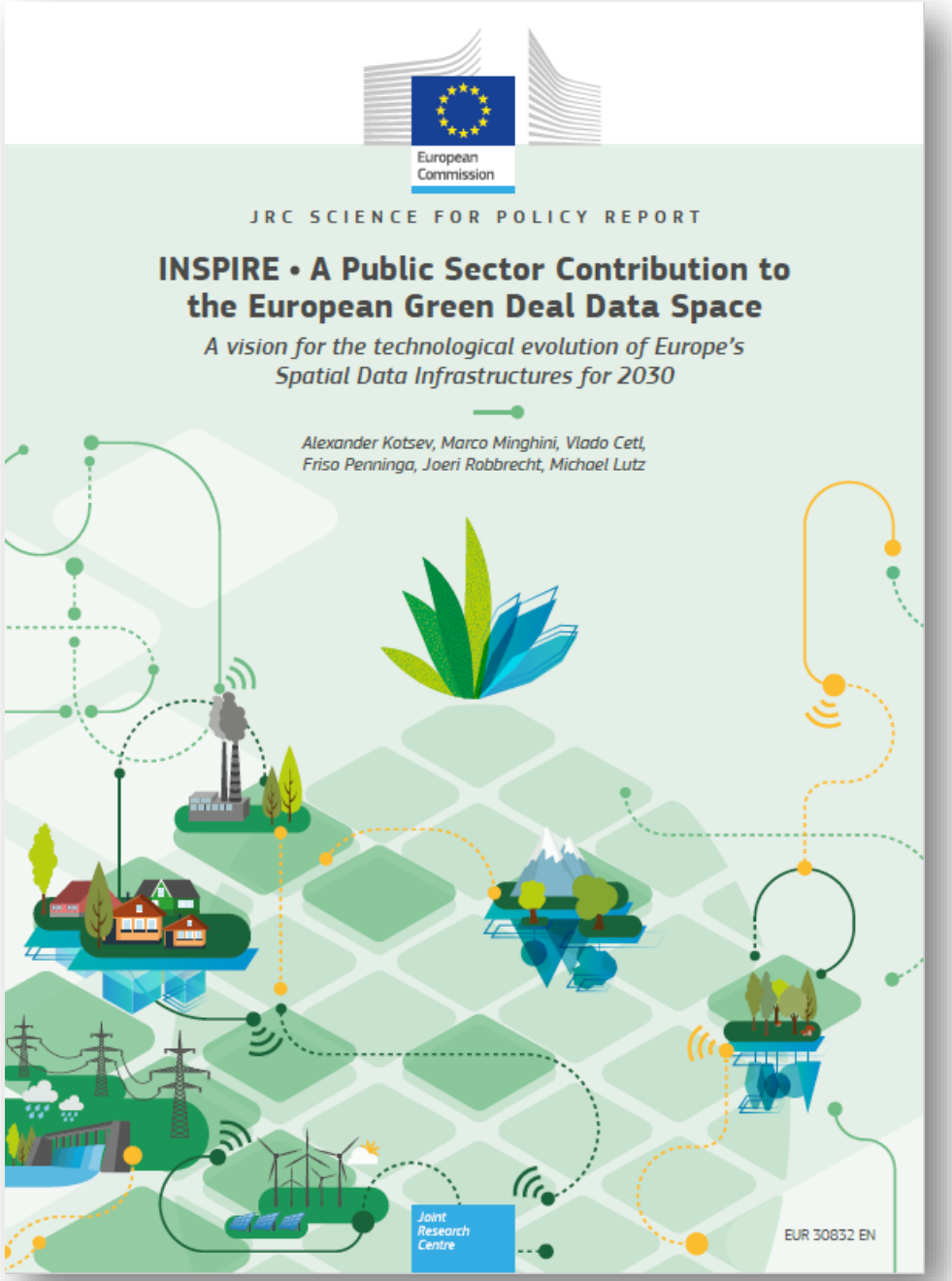
European Commission

INSPIRE Evaluation & Future
JRC Science for Policy Report

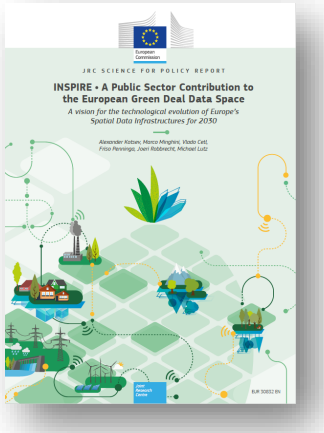
- **INSPIRE - A Public Sector Contribution to the European Green Deal Data Space**

  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.

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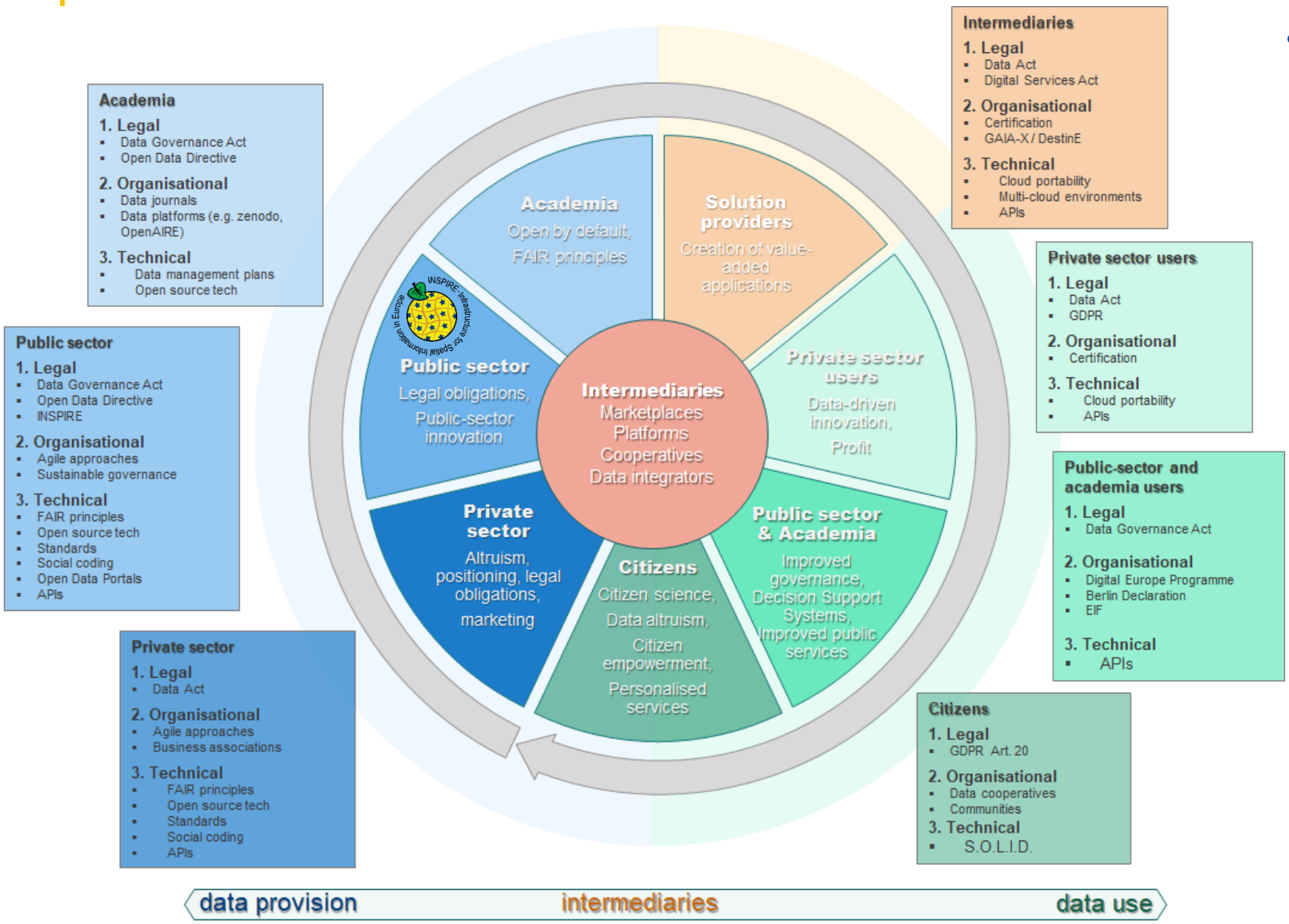
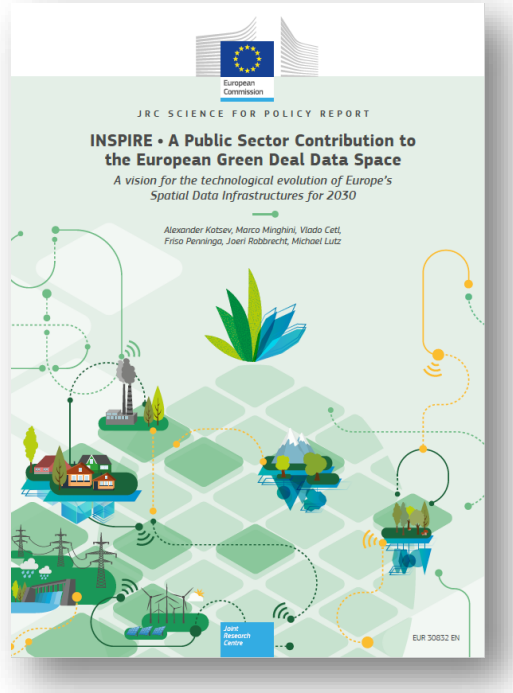
INSPIRE In a broader data ecosystem



- From a linear approach to a data ecosystem:
  - Cross-sectoral.
  - Creation of value.
  - Sustainable governance model.



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

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INSPIRE Central Components

An update

Jordi Escriu
(EC-JRC INSPIRE Team)

EuroGeographics Joint INSPIRE & POLicy KEN webinar - "INSPIRE beyond 2020", 18th November 2021

INSPIRE Central Components
Core for delivering INSPIRE

INSPIRE Toolbox

- INSPIRE Geoportal.
- INSPIRE Reference Validator.
- INSPIRE Registry.

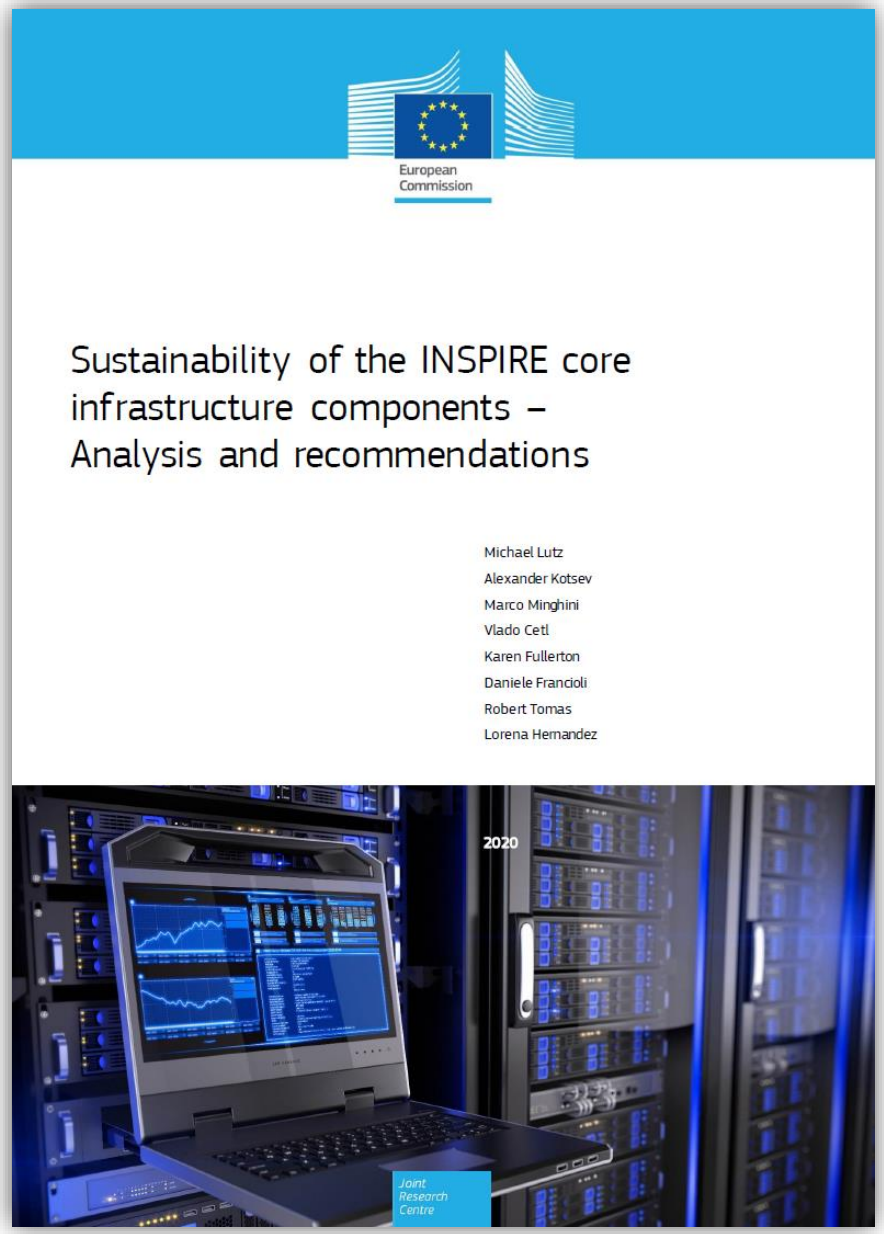
INSPIRE Framework

- Technical guidelines.
- Application schemas.

INSPIRE Central Components
Sustainability approach

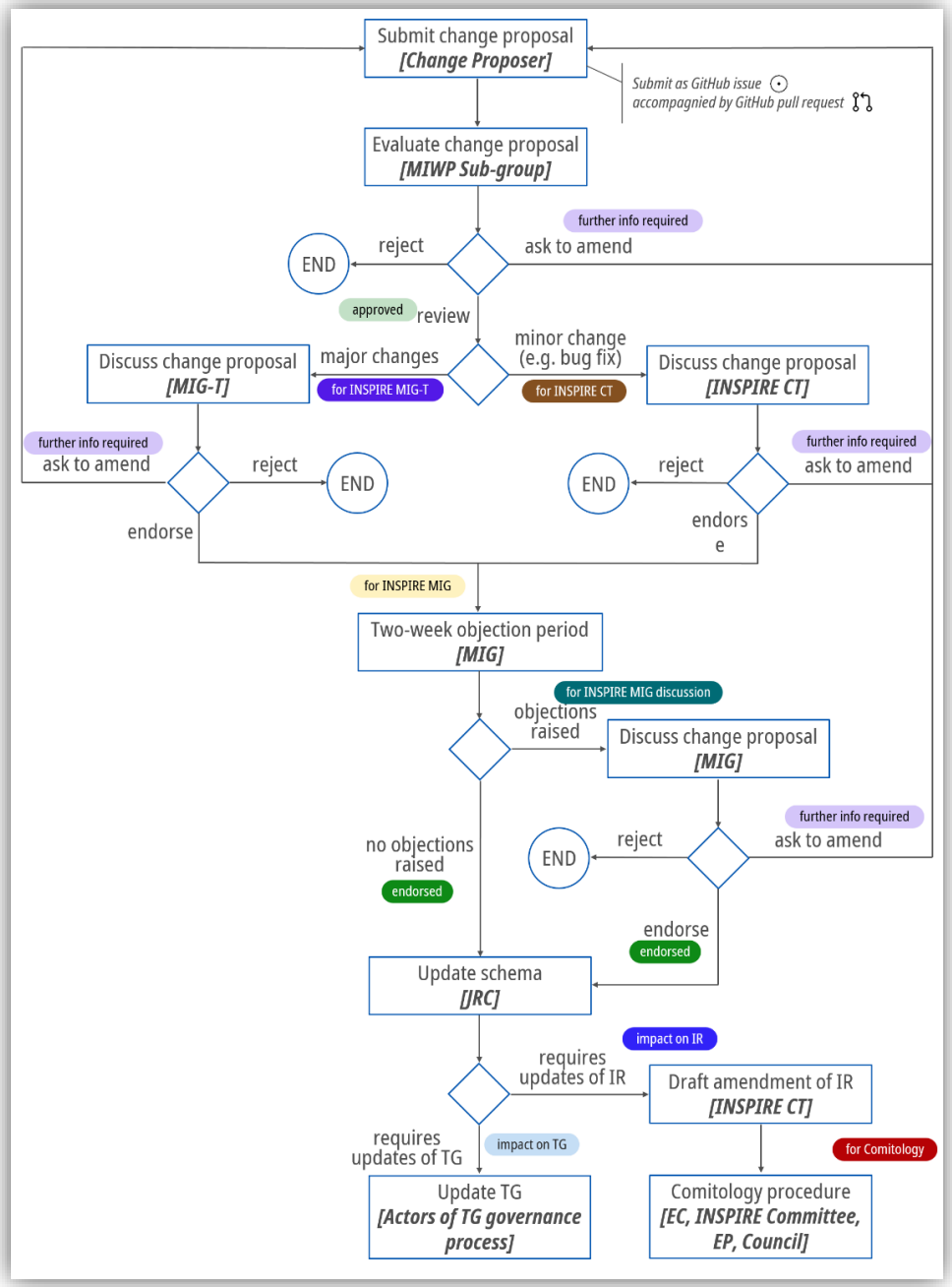
- Support by tools is the default.
- Build strategic partnerships with communities:

  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

Main access point to INSPIRE Infrastructure tools and resources.

Based on own development.

(GeoNetwork, in near future)

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

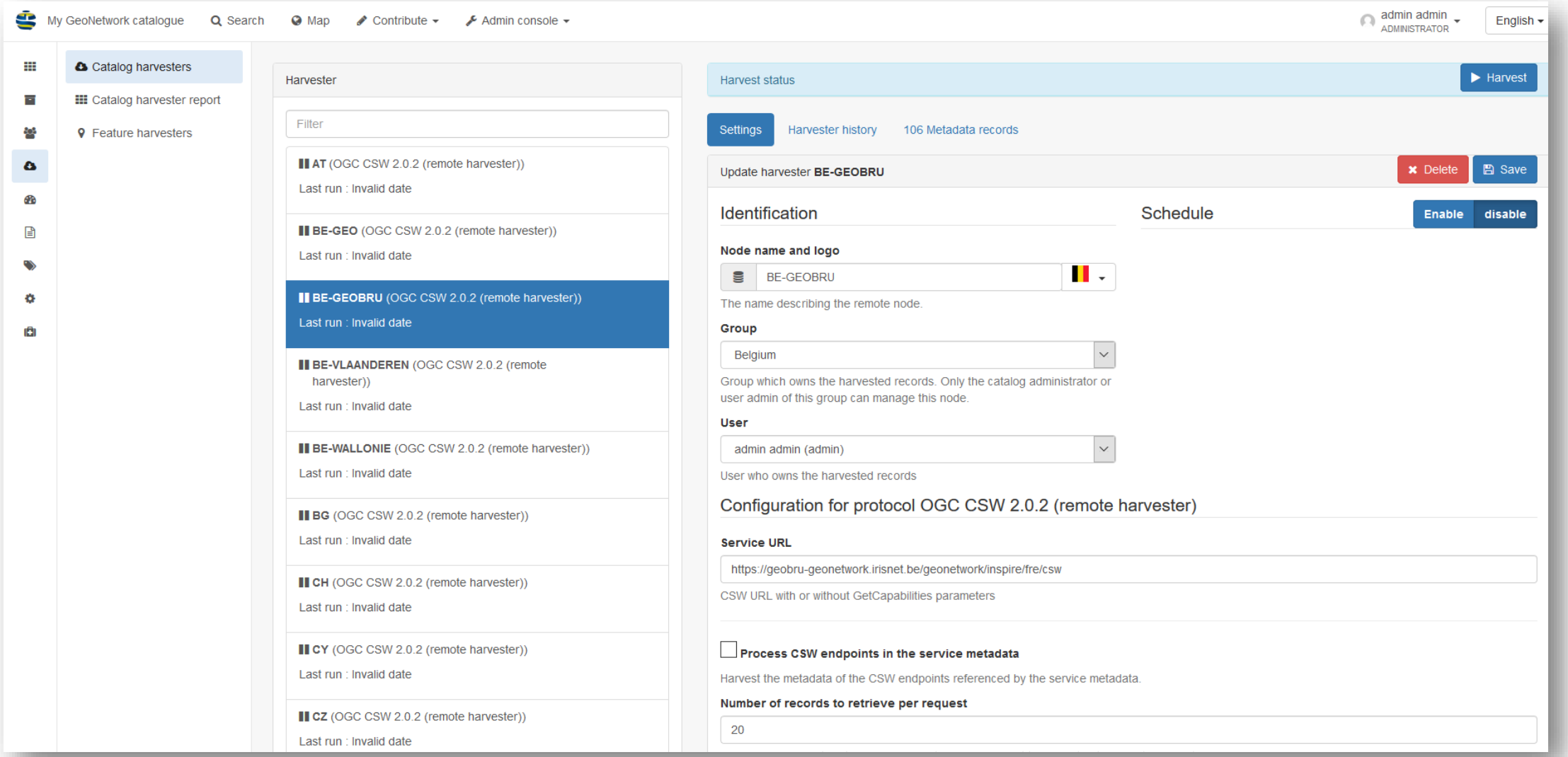
The Toolbox
INSPIRE Geoportal - https://inspire-geoportal.ec.europa.eu

Highlights

- Renewal of functionality (Backend): Ongoing
  - Migration to a **GeoNetwork**-based architecture
    - Maintaining functionality of the current Geoportal.
    - Improved harvesting processes and performance.
  - Migration to a cloud environment: assure system availability / scalability.
- Renewal of user interface (Frontend): Ready!
  - Allows filtering INSPIRE datasets according to **High-Value Datasets** (HVDs).
  - Launch waiting for the publication of the HVDs Implementing Act.

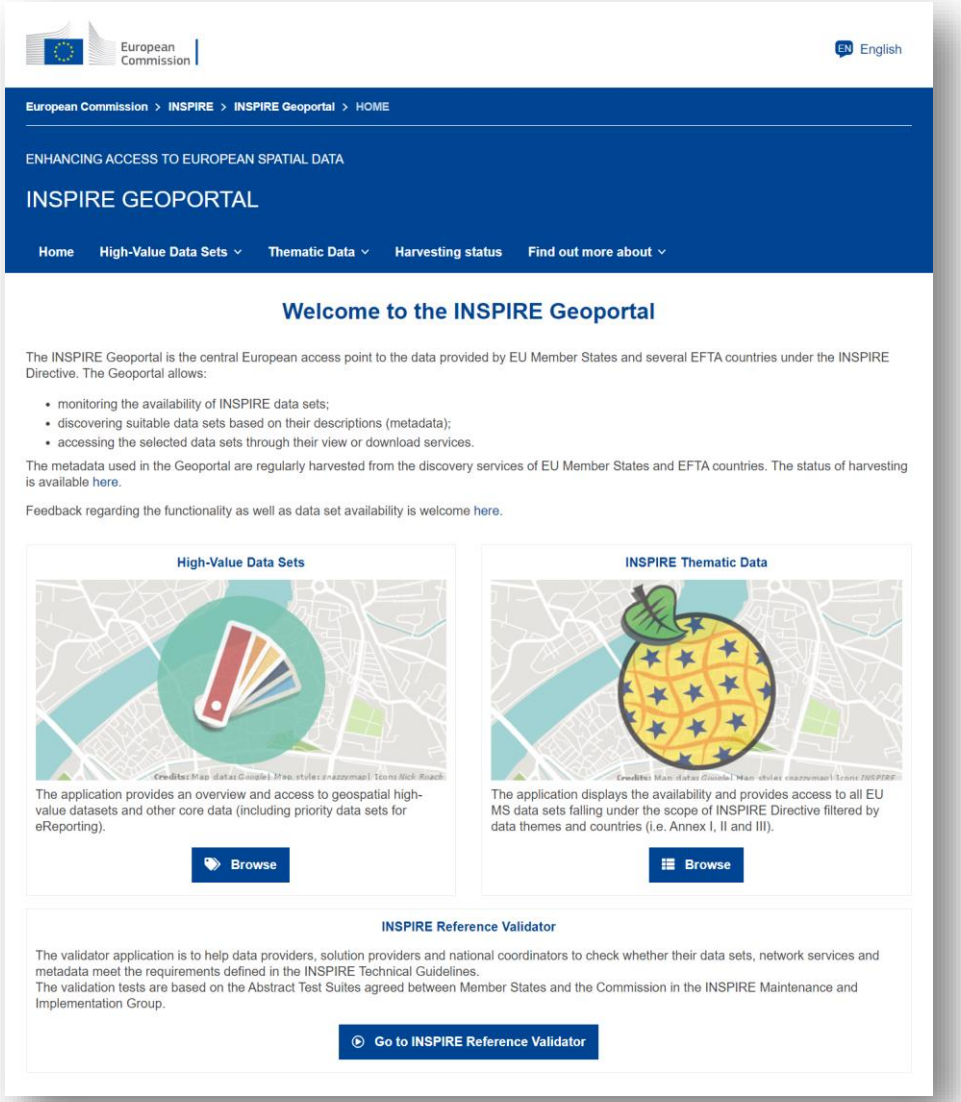
The Toolbox

INSPIRE Geoportal (Backend prototype) - Ongoing



The Toolbox
INSPIRE Geoportal (Frontend prototype)

- Ready!
- It will be launched when the High Value Datasets (HVDs) Implementing Act is published and enters in force.

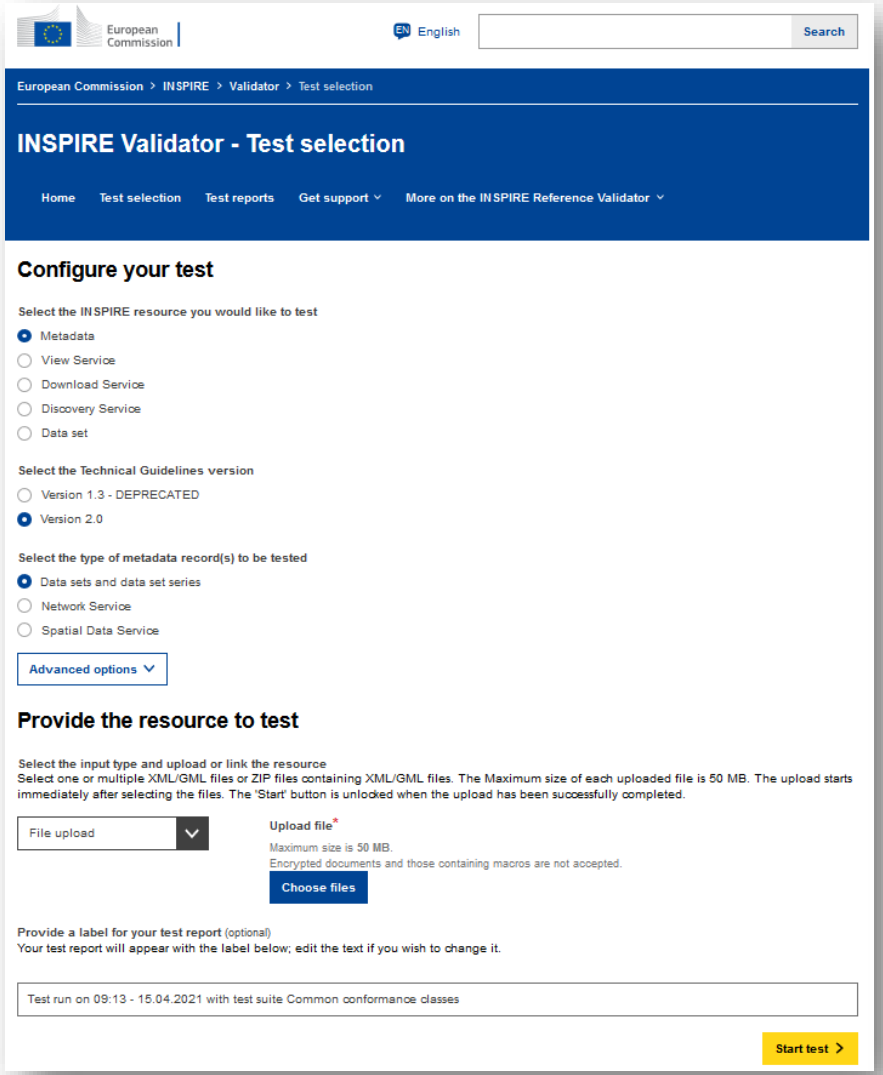


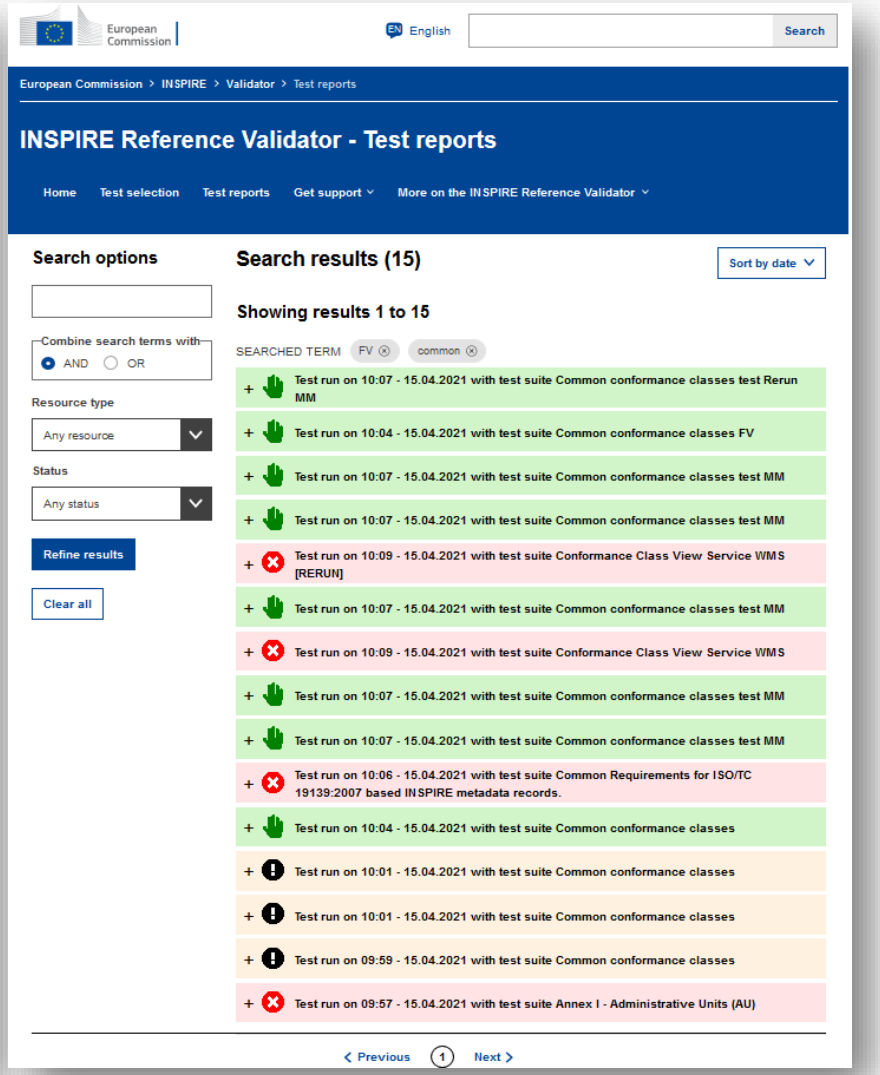
The Toolbox
INSPIRE Reference Validator

Tool used in assessing conformance of INSPIRE resources.

Based on the ETF (open source) software.

https://inspire.ec.europa.eu/validator





The Toolbox
INSPIRE Reference Validator

Highlights (I)

- Governance and annual releases:
  https://github.com/INSPIRE-MIF/helpdesk-validator/tree/master/release%20strategy
- New user interface available (2nd release 2021).
- New version of the 'Bulk validation' tool (October 2021):
  https://github.com/inspire-eu-validation/monitoring-bulk-validation-tool/releases/tag/v2021.1.0
- Limitation of massive use of the Validator in production:
  New API gateway:
  max. 100 requests/week (200 for next Monitoring) and max. 1 request/second
  https://github.com/INSPIRE-MIF/helpdesk-validator/issues/594

The Toolbox
INSPIRE Reference Validator

Highlights (II)

- New tests already available for testing:
  - Abstract and executable tests suites for INSPIRE Annex II/III Data Specifications:

    https://github.com/INSPIRE-MIF/helpdesk-validator/issues/336
- New tests planned for future releases:
  - OGC API – Features standard.
  - Datasets in the scope of the Common Agricultural Policy (IACS Data).
  - Simplified approach for linking metadata and services (data-service linking).

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 Toolbox
INSPIRE Registry

Highlights

- **Re³gistry v2**
  - Latest release (2.2.4) – 27th July 2021
    https://github.com/ec-jrc/re3gistry/releases/tag/v2.2.4
  - Current status:
    - Completed: Development, testing and security assessment.
    - On-going: Correction of bugs and new features (Target: beginning 2022).
- **INSPIRE Registry**
  - Currently based on Re3gistry v1.3
  - Update to Re3gistry v2 foreseen by January 2022.

The Toolbox
INSPIRE Registry

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.

GitHub

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

joinup

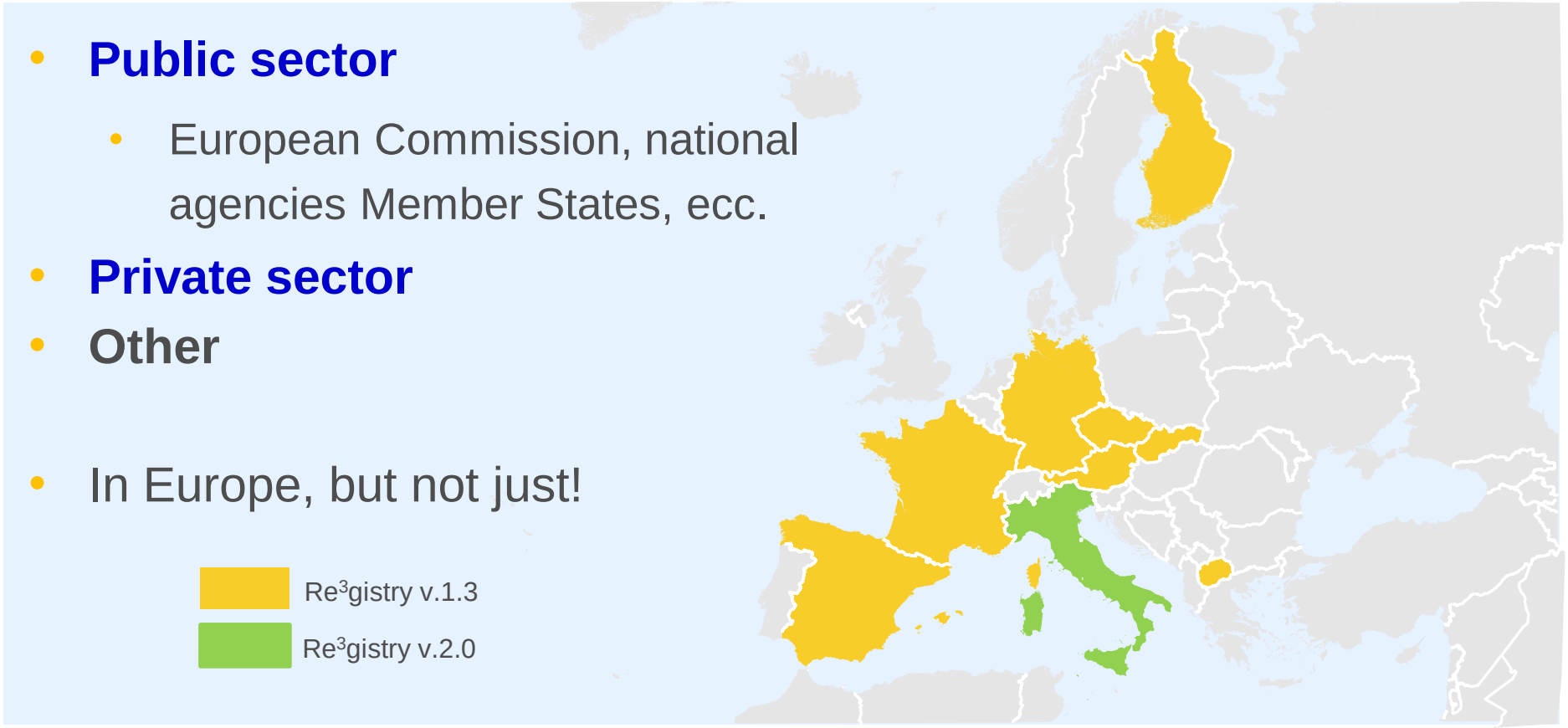
https://joinup.ec.europa.eu/collection/are3na/solution/re3gistry/about

The Toolbox
INSPIRE Registry

Who is using it?

- **Public sector**
  - European Commission, national agencies Member States, ecc.
- **Private sector**
- **Other**

- In Europe, but not just!



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Flexibility in implementation

INSPIRE GitHub repositories and Good practices

Jordi Escriu
(EC-JRC INSPIRE Team)

EuroGeographics Joint INSPIRE & POLicy KEN webinar - "INSPIRE beyond 2020", 18th November 2021

Opening and Mainstreaming INSPIRE
GitHub Helpdesks

- **GitHub works well!**

  https://github.com/INSPIRE-MIF

  2 Levels of support:

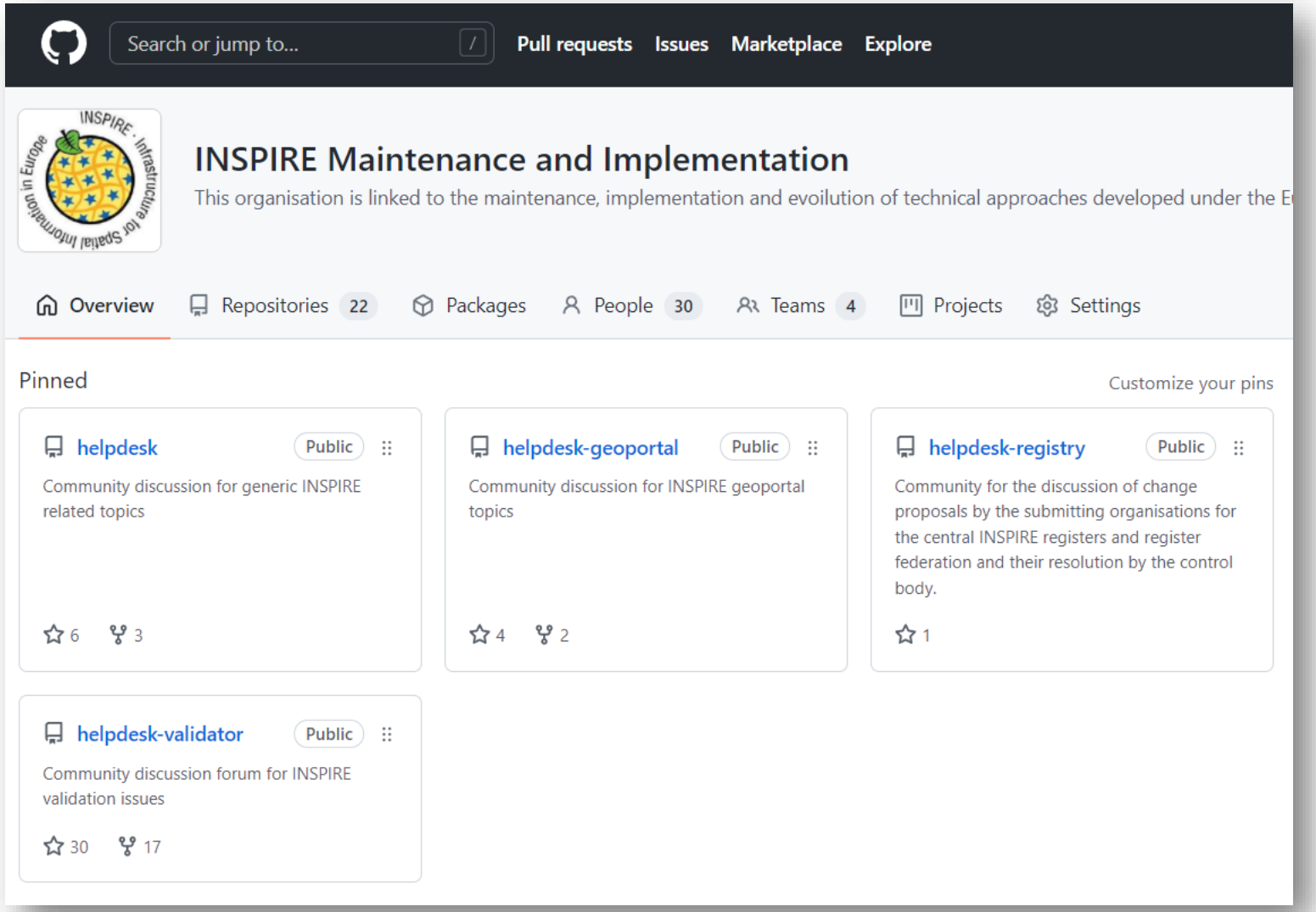
  Level 1 –

  General support – Includes:

  - Checking requests.
  - Immediate answering.
  - Moving questions to the right Level 2, if needed.

  Level 2 –

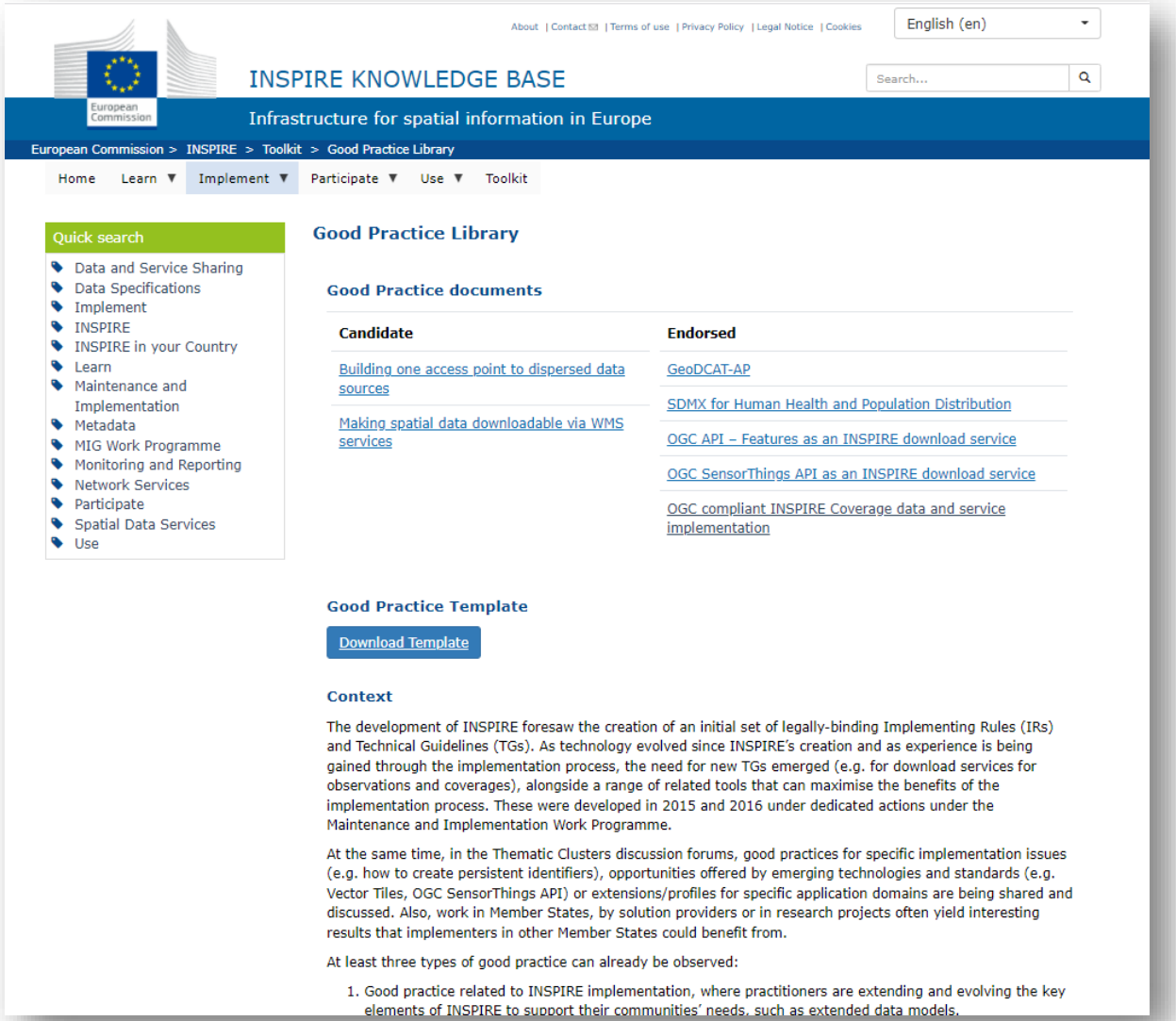
  Provision of concrete solution.



Opening and Mainstreaming INSPIRE
INSPIRE Good Practices

- Good Practice library available.
- Procedure for proposing Good Practices and subsequent potential endorsement:
  - *Step1. Initiation.*
  - *Step 2. Submission as candidate (MIG-T).*
  - *Step 3. Outreach.*
  - *Step 4. Submission (MIG).*
  - *Step 5. Legal scrutiny.*
  - *Step 6. Feedback.*

https://inspire.ec.europa.eu/portfolio/good-practice-library



Keep in touch

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Thank you!

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