



# What is new in INSPIRE?

An organisational and technological perspective

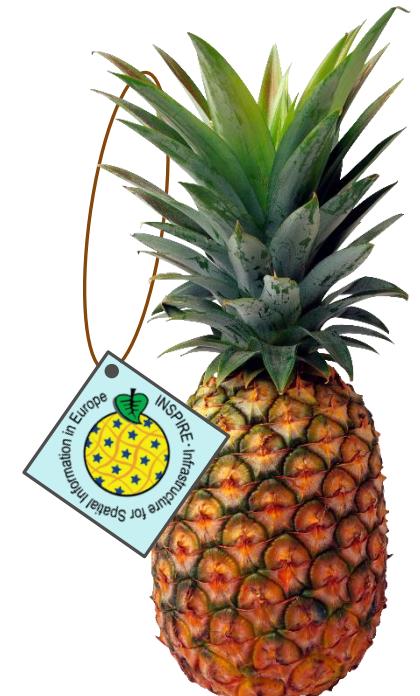


*JRC-EC INSPIRE Team*

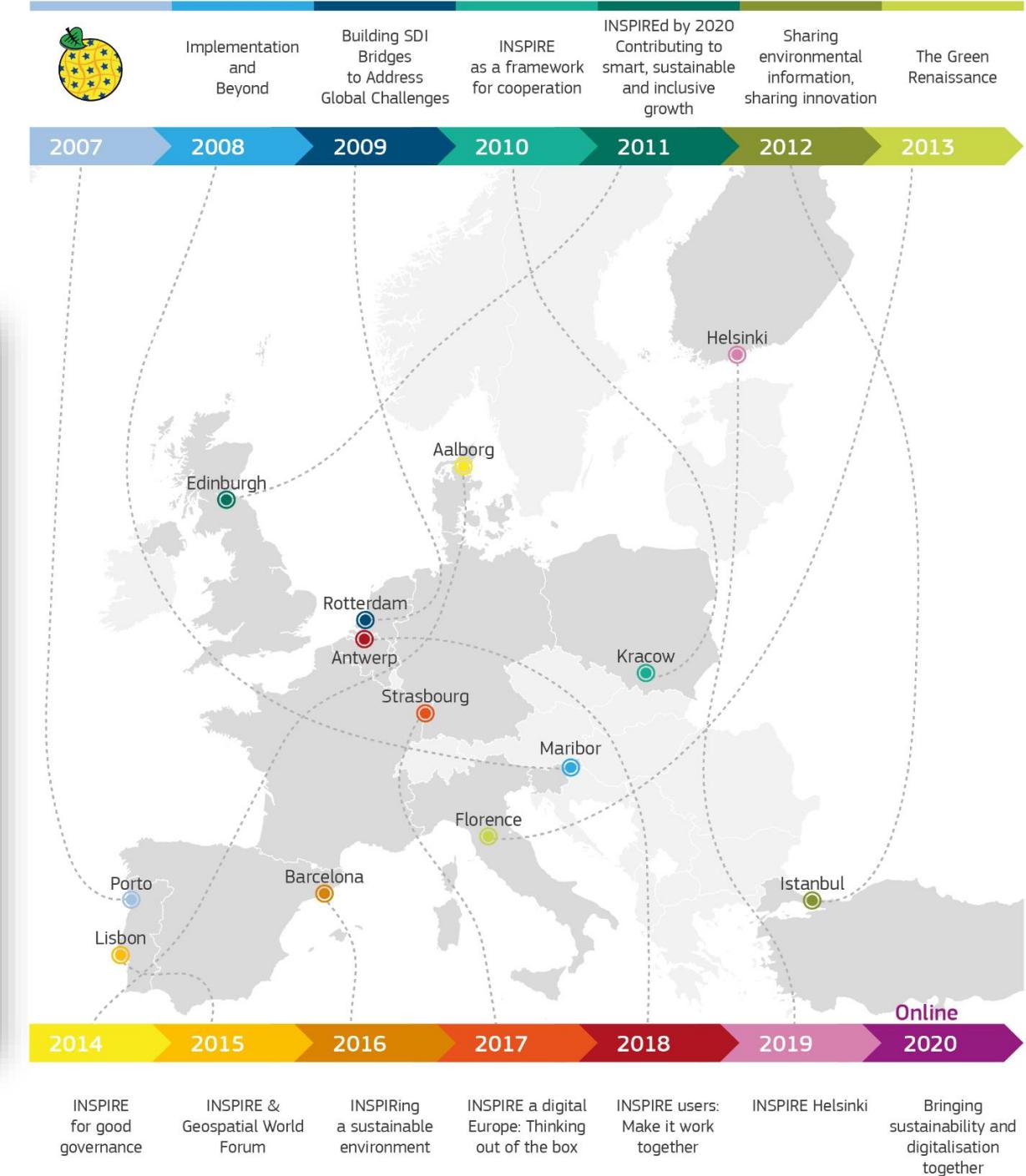
# INSPIRE

## 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.



# Lights - What works well Community



# Lights - What works well

## Data availability & E-reporting

- Discoverability and accessibility are improving.
- Use of INSPIRE in e-reporting.

The screenshot shows the INSPIRE Geoportal homepage. At the top, there's a navigation bar with links for About, Contact, Privacy policy, Legal notice, Cookies, and English (en). Below the navigation is a map of Europe and EFTA countries with a yellow overlay indicating data availability. A red box highlights a callout box titled 'INSPIRE Geoportal Data Set Statistics' containing the following data:

- 91433 Metadata records
- 44789 Downloadable Data Sets
- 46451 Viewable Data Sets

Below the map, there's a section titled 'Select a COUNTRY' with a table of European countries and their data availability statistics. At the bottom, there's a 'Select the whole EUROPE' button and a 'Download stats' button.

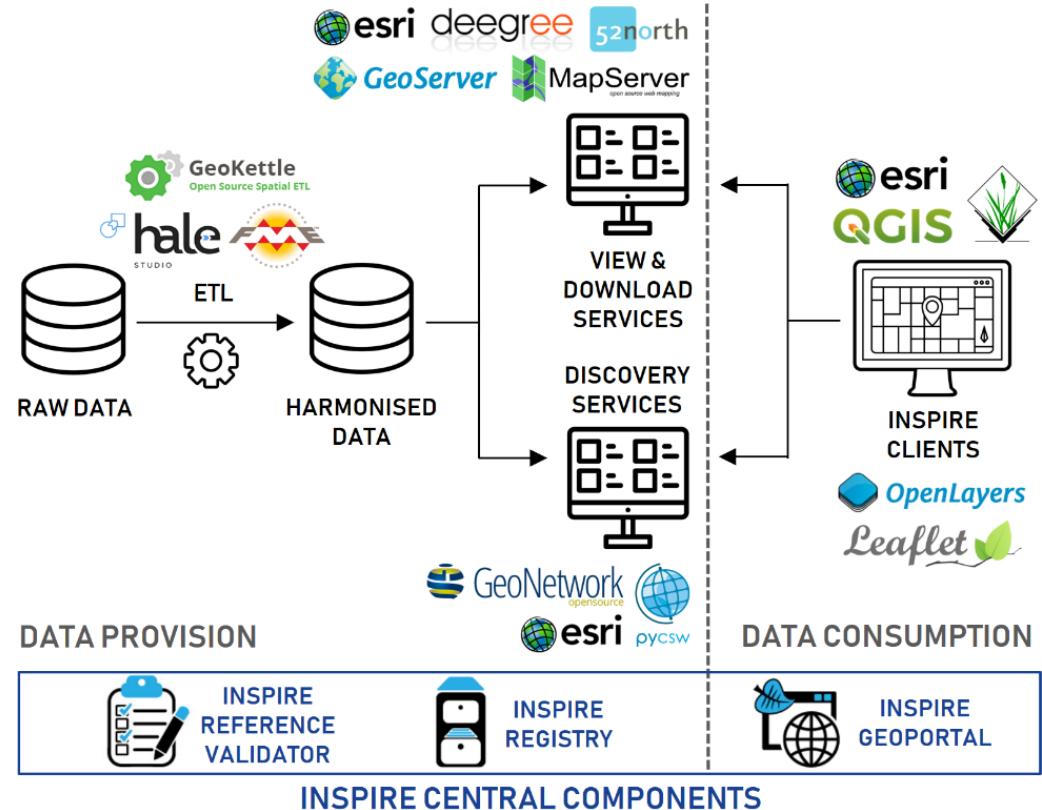


The screenshot shows the European Data Portal homepage. At the top, there's a navigation bar with links for Data, Impact & Studies, Training, News & Events, and About. Below the navigation is a search bar and a map of Europe. A search result for 'inspire' is shown, displaying 86868 datasets found. The results are listed in a table with columns for title, type (WMS), status (Created or Updated), and a link to the service provider (Geoportal Czech Office for Surveying, Mapping and Cadastre). There are also sections for INSPIRE view services for elevation and geographical names.

# Lights - What works well

## Rich ecosystem of tools

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

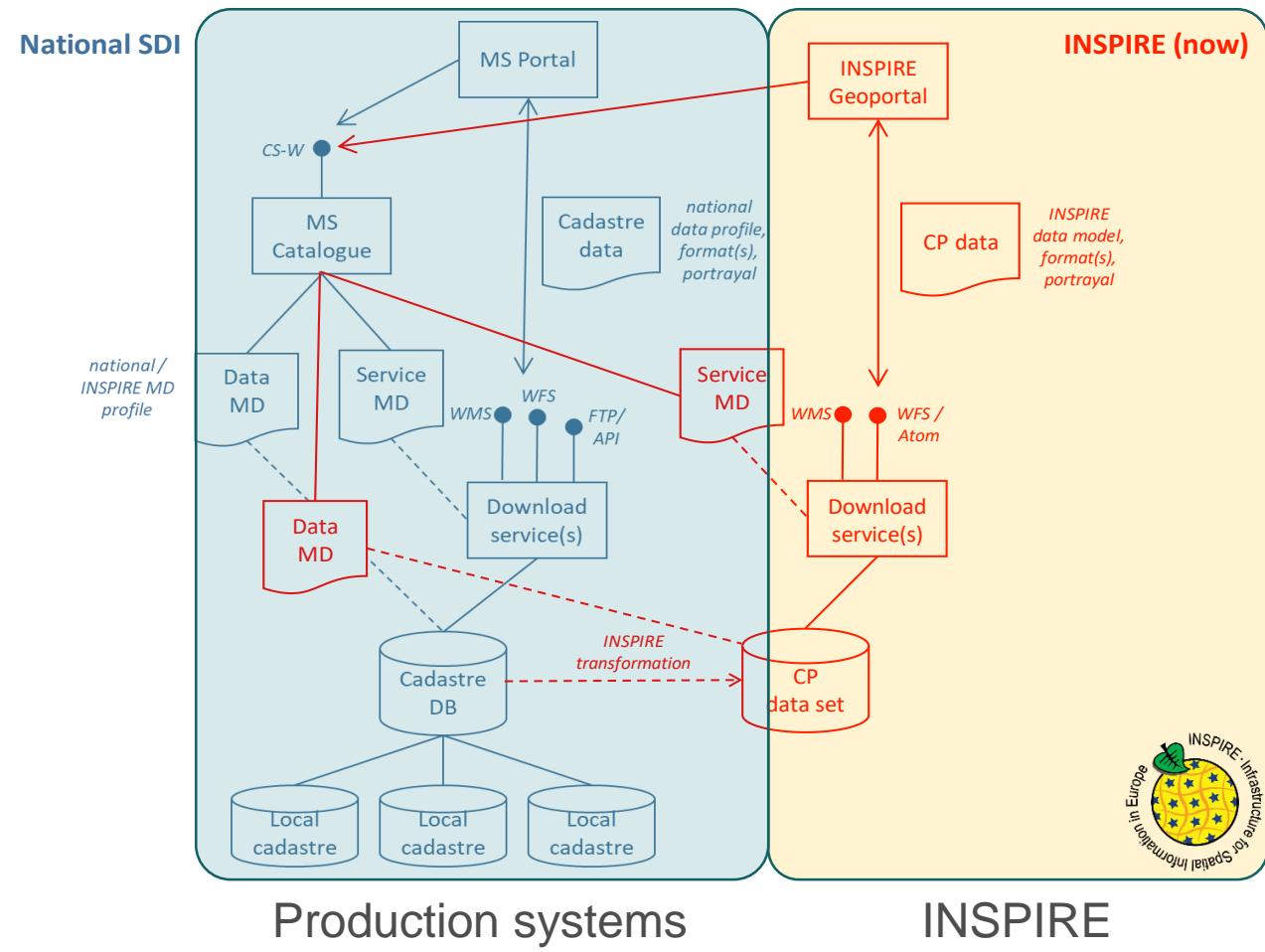


Workshop tests need fields Previous Lists name level Style info compliant Portugal die GDAL XML Web use see su new Search PDT CSW GSoc related also Download version website Language Documentation tools Service OSGeoLive Mailing bug WFS WMS Trac SVN GML Spatial GeoNetwork use see MapServer capabilities standards Geospatial GRASS based pycsw message basic Editor Services like Aim GIS OSGeo INSPIRE QGIS OM de Wiki Open data fix | add en SDI les Page draft files management inspiredata application Error using World order opensource government srs SRS free SOS Europe Software PST response SOAP User Results first pour english

# 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

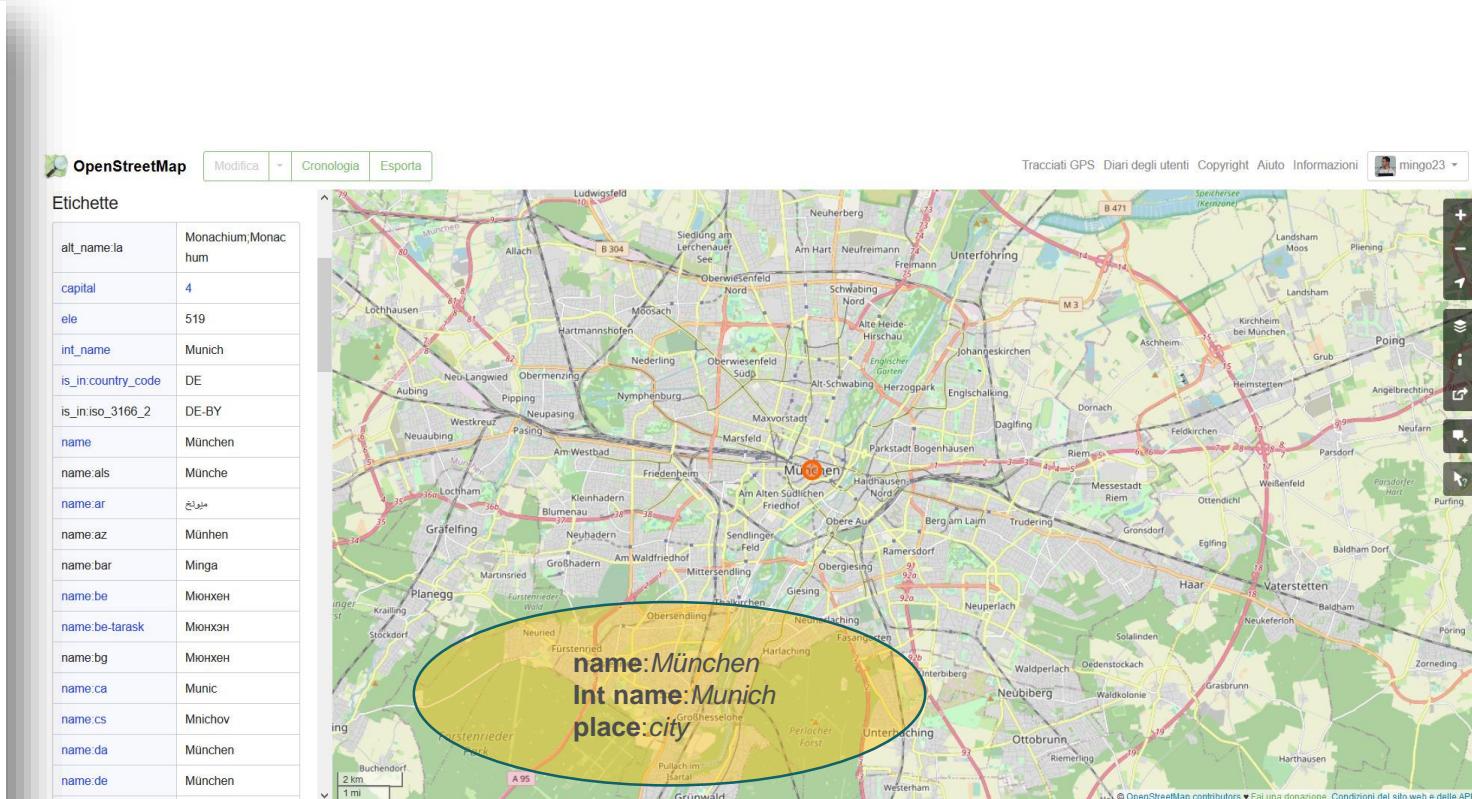
- Adherence to specific technologies / encodings.
- Strictly following standards vs. Narrow use of standards.
- Custom extensions: Extending standards is problematic.
  - Extended capabilities.
  - GML attributes.
  - Nested structures.



# Shadows - What does not work so well

## Complexity

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</gn:NamedPlace>
```



<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.
- APIs – From data collection to data connection.
- Novel architectures.
- Agile standards.
- Mature tools.



# INSPIRE Evaluation & Future

## Forthcoming JRC Science for Policy Report

- 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



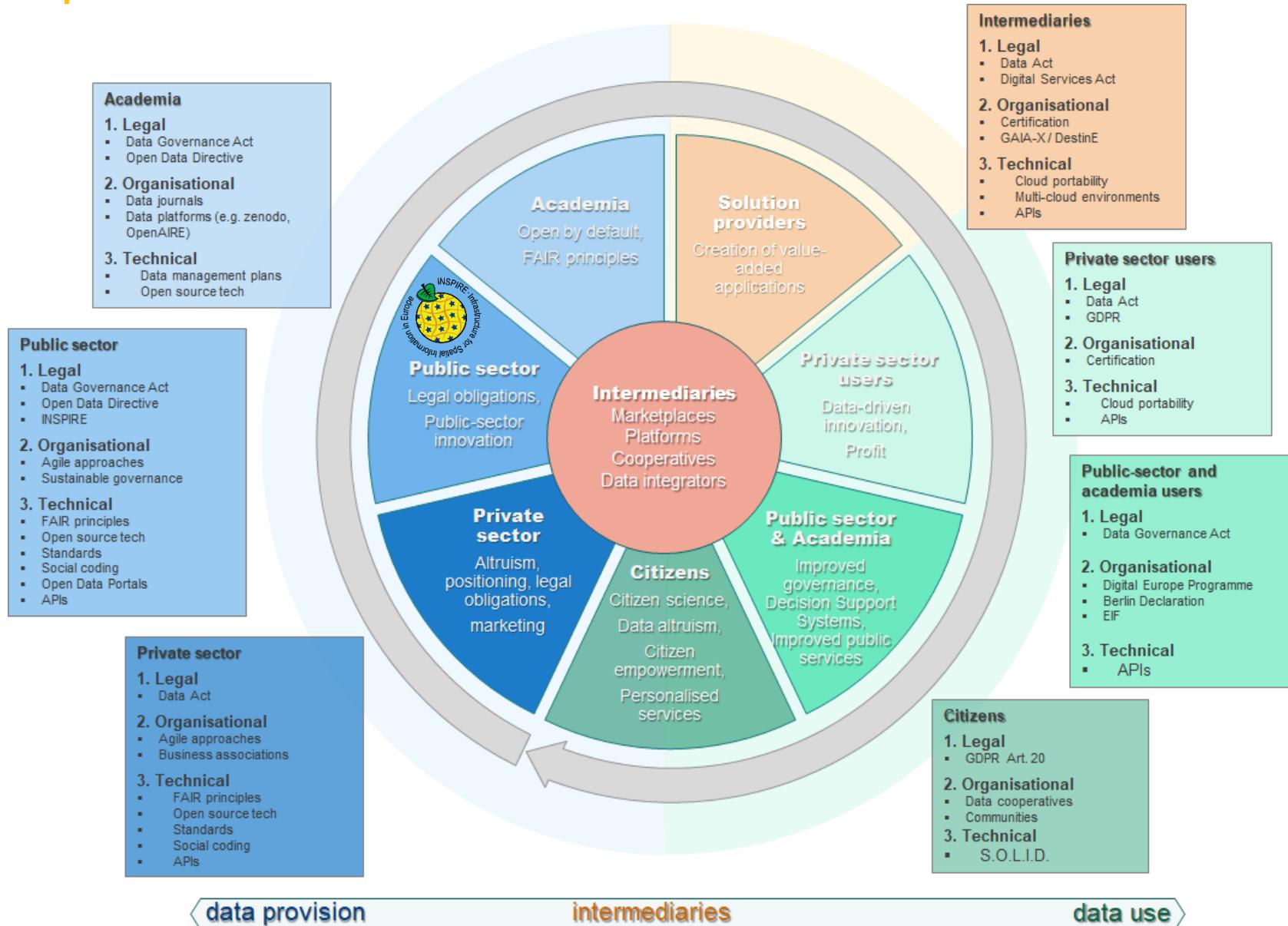
# INSPIRE Future

## Vision (work in progress)

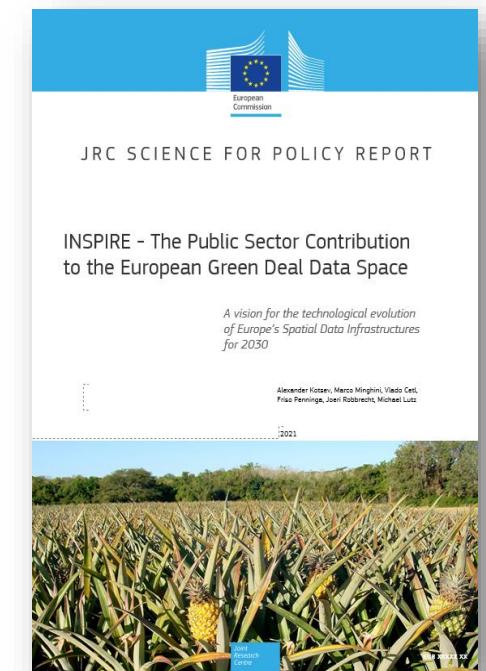


- INSPIRE should '**blend in**' with the broader ecosystem of spatial and non-spatial data, infrastructures, technologies and policies.
- This will mean **opening up to a broader community** of implementers and users, and to a wider range of applications and use cases.
- Making the INSPIRE framework 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 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

# MIWP 2021-2024 Examples

## 'Mainstreaming' INSPIRE - GitHub

- GitHub works well!

### 2 Levels of support:

**Level 1** – General support  
that includes checking,  
immediate answering and  
moving questions to the  
right Level 2.

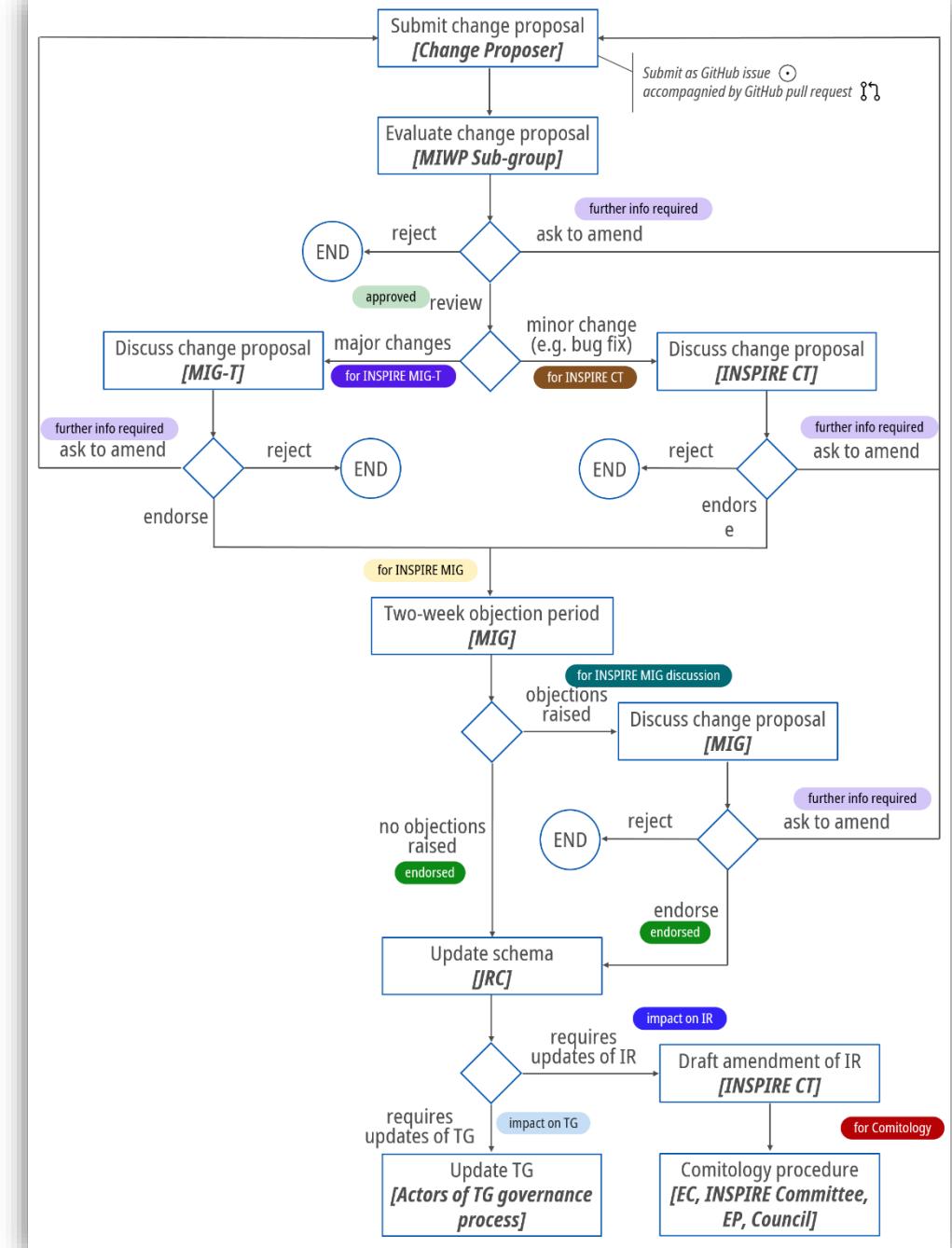
**Level 2** – Provision of  
concrete solution.

The screenshot shows the GitHub organization page for 'INSPIRE Maintenance and Implementation'. The page features a dark header with the GitHub logo, a search bar, and navigation links for Pull requests, Issues, Marketplace, and Explore. Below the header is the organization's profile picture, which is a stylized yellow globe with blue stars and the text 'INSPIRE - Infrastructure for Spatial Information in Europe'. The main title 'INSPIRE Maintenance and Implementation' is displayed, followed by a subtitle: 'This organisation is linked to the maintenance, implementation and evolution of technical approaches developed under the European INSPIRE Directive.' A horizontal navigation bar below the title includes links for Overview, Repositories (22), Packages, People (30), Teams (4), Projects, and Settings. The 'Overview' tab is selected. The page displays a section titled 'Pinned' containing four repository cards. From left to right: 1) 'helpdesk' (Public) - Community discussion for generic INSPIRE related topics, 6 stars, 3 issues; 2) 'helpdesk-geoportal' (Public) - Community discussion for INSPIRE geoportal topics, 4 stars, 2 issues; 3) 'helpdesk-registry' (Public) - Community for the discussion of change proposals by the submitting organisations for the central INSPIRE registers and register federation and their resolution by the control body, 1 star; 4) 'helpdesk-validator' (Public) - Community discussion forum for INSPIRE validation issues, 30 stars, 17 issues. A link 'Customize your pins' is located to the right of the pinned repositories.

# MIWP 2021-2024 Examples

## Governance of artefacts

- Open the floor to proposals from the community.
- Transparent approach for governance of the artefacts:
  - Sub-group and facilitators.
  - Decision tree and release plan:
    - Know how to approach each issue.
    - 2 Releases are planned per year, aligned with the MIG-T Meetings.



# MIWP 2021-2024 Examples

## The Toolbox

- Support by tools is the default.
- Build strategic partnerships with communities:
  - GeoNetwork as geoportal backend.
  - Registry in OSGeo.
- 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.



Sustainability of the INSPIRE core infrastructure components – Analysis and recommendations

Michael Lutz  
Alexander Kotsev  
Marco Minghini  
Vlado Cetl  
Karen Fullerton  
Daniele Francioli  
Robert Tomas  
Lorena Hernandez

2020

Joint Research Centre



# MIWP 2021-2024 Examples

## Modernise the technological stack of INSPIRE within the remit of legislation

- Good practices.
- Updated Good Practice library available.
- Procedure for endorsement:
  - *Step 1. Initiation.*
  - *Step 2. Submission as good practice candidate.*
  - *Step 3. Outreach.*
  - *Step 4. Submission.*
  - *Step 5. Legal scrutiny.*
  - *Step 6. Feedback.*

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

The screenshot shows the INSPIRE Knowledge Base website. At the top, there's a navigation bar with links for About, Contact, Terms of use, Privacy Policy, Legal Notice, Cookies, and a language selector set to English (en). Below the header, the title "INSPIRE KNOWLEDGE BASE" and subtitle "Infrastructure for spatial information in Europe" are displayed. The main content area has a breadcrumb navigation: European Commission > INSPIRE > Toolkit > Good Practice Library. The page features a sidebar with a "Quick search" dropdown menu containing items like Data and Service Sharing, Data Specifications, Implement, INSPIRE, INSPIRE in your Country, Learn, Maintenance and Implementation, Metadata, MIG Work Programme, Monitoring and Reporting, Network Services, Participate, Spatial Data Services, and Use. The main content area is titled "Good Practice Library" and contains a "Good Practice documents" section with two columns: "Candidate" and "Endorsed". Under Candidate, there are links to "Building one access point to dispersed data sources" and "Making spatial data downloadable via WMS services". Under Endorsed, there are links to "GeoDCAT-AP", "SDMX for Human Health and Population Distribution", "OGC API – Features as an INSPIRE download service", "OGC SensorThings API as an INSPIRE download service", and "OGC compliant INSPIRE Coverage data and service implementation". Below this is a "Good Practice Template" section with a "Download Template" button. The "Context" section explains the development of INSPIRE foresaw the creation of an initial set of legally-binding Implementing Rules (IRs) and Technical Guidelines (TGs). It notes that technology evolved since INSPIRE's creation and new TGs emerged, alongside related tools to maximize benefits. The "At the same time" section discusses the sharing of good practices for specific implementation issues and the emergence of new technologies like Vector Tiles and OGC SensorThings API. The "At least three types of good practice can already be observed" section lists 1. Good practice related to INSPIRE implementation where practitioners are extending and evolving key elements of INSPIRE to support their communities' needs, such as extended data models.

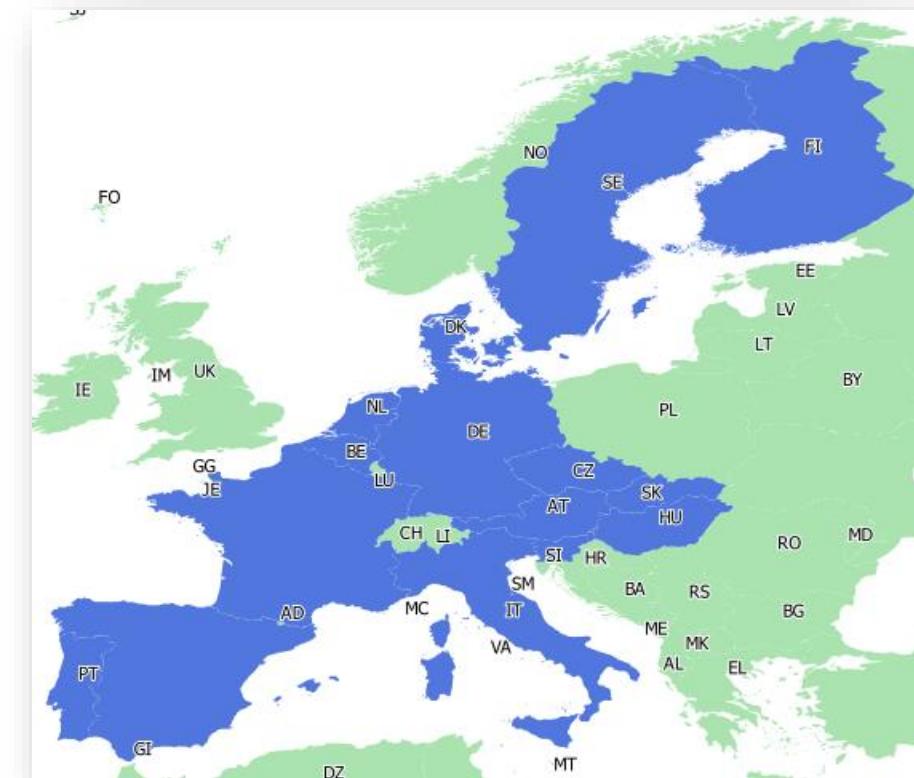
# MIWP 2021-2024 Examples

## OGC API – Features in INSPIRE

- Strong interest by Member States.
- Close collaboration between OGC, MS, EC, software vendors and projects.
- Extensive sandboxing.
- Approach confirmed through deployments.
- Validation in the ETF validator (working prototype).
- Iterative process.

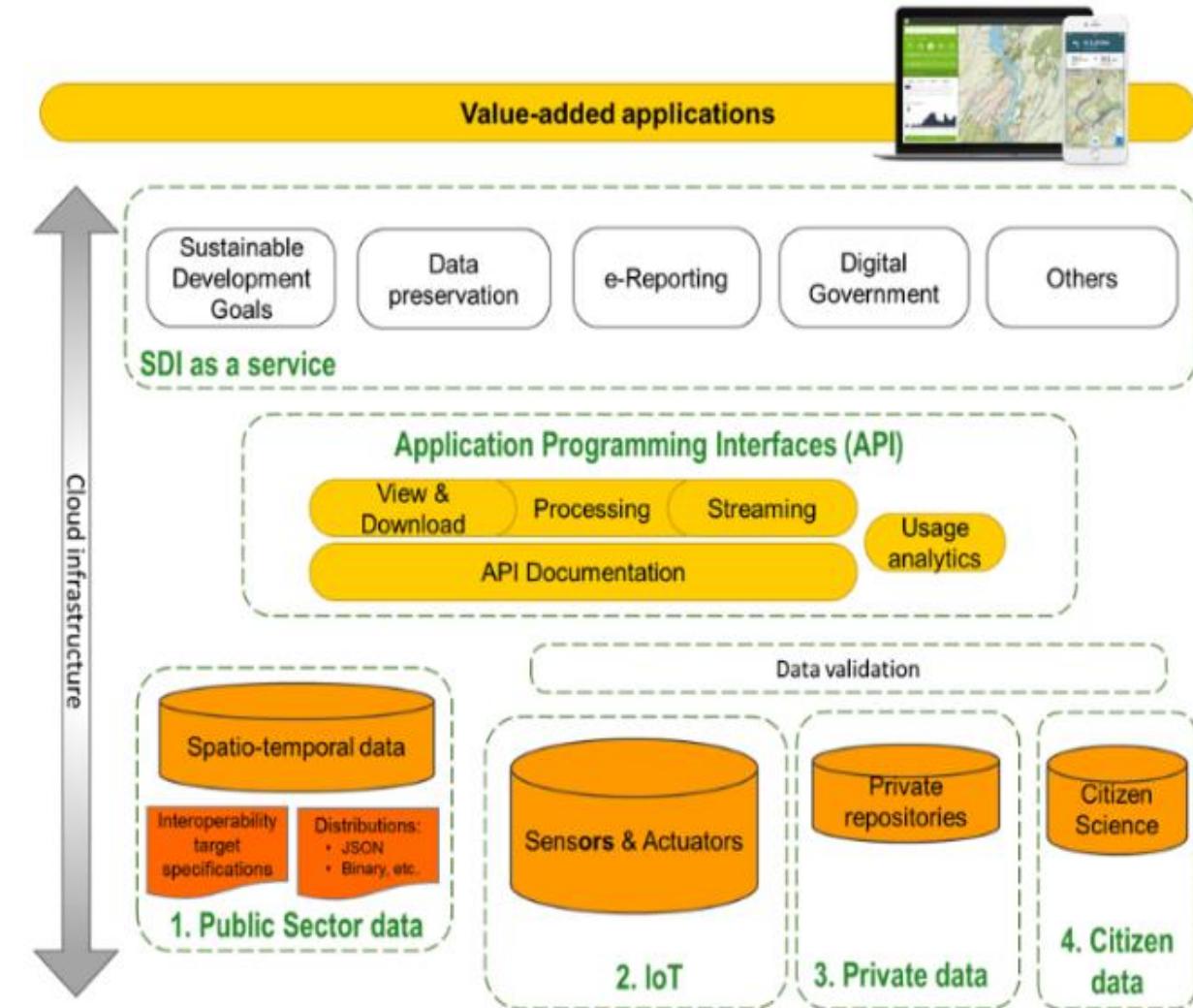
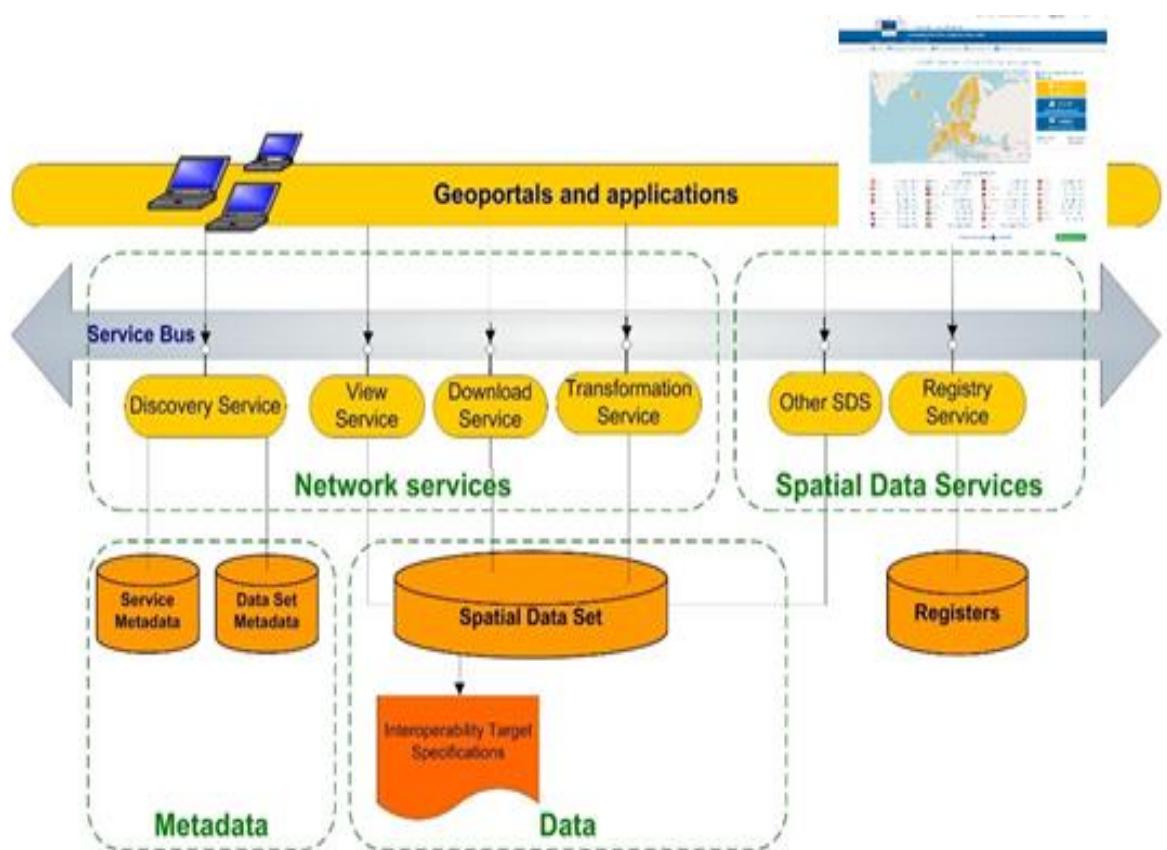
### What is the impact of OGC API – Features so far?

With just over a year since the release of Part 1 of OGC API - Features, the standard has already begun to have an impact globally. For example, the International Organization for Standardization (ISO) has approved Part 1 under the name [ISO 19168-1:2020 Geographic information — Geospatial API for features — Part 1: Core](#). Further, the community of more than 30 states that are implementing the INSPIRE Directive has endorsed the API as a [Good Practice](#) for an INSPIRE download service. The INSPIRE Directive aims to create a European Union (EU) spatial data infrastructure for the purposes of EU environmental policies and policies or activities which may have an impact on the environment. Part 2 of the standard is expected to have even greater utility in geomatics due to its support for a variety of CRS. As with any OGC standard, this OGC standard is free to download and implement. Interested parties can view and download the standard from the OGC API - Features Page at <https://ogcapi.ogc.org>



# MIWP 2021-2024 Examples

A new technical framework is needed...



# Keep in touch



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# Thank you



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