



INSPIRE Good Practice – Data-Service Linking Simplification

MIG-T Sub-group 2.3.2

Antonio Rotundo, Ine de Visser, Marie Lambois, Heidi Vanparys

JRC INSPIRE Team

Jordi Escriu, Davide Artasensi, Marco Minghini, Alexander Kotsev

INSPIRE Good Practice – Data-Service Linking Simplification

16th MIG – 72nd MIG-T

Joint
Research
Centre



Why simplification ?



Priority dataset provider announcing that he has successfully created a dataset metadata that fully validates against the validator.

Image by wayhomestudio on Freepik

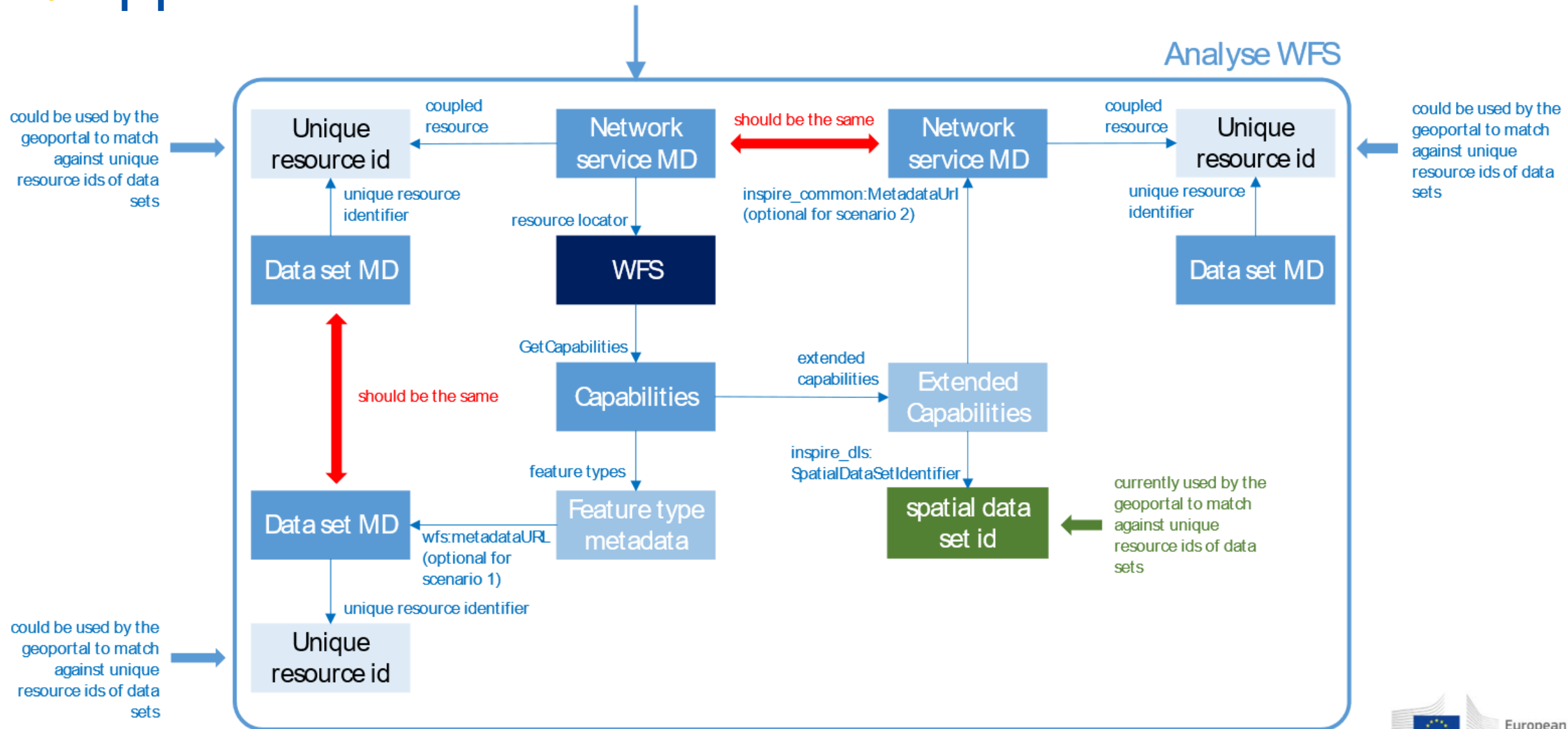
Why simplification ?



Same priority dataset provider when I announced him that now he has to create a download service with extended capabilities (so he cannot use his current software solution), a view service with extended capabilities and then he has to create a metadata for each service and in each metadata reference the dataset metadata so that the Inspire Geoportal understands that this service is serving this data and thus his data is advertised as downloadable/viewable.

Image by kues1 on Freepik

Why? The current data – service linking approach








Why simplification ?



Why?

Low level of accessibility to Italian INSPIRE data sets with the current approach

Complete overview of the harvest session

 **6728** 
Data Set and Series records
Last published harvest: 6498

 **705** 
Downloadable Data Sets 
Last published harvest: 755

 **528** 
Viewable Data Sets
Last published harvest: 487

But the number of services documented is relevant

2115
Services

 **CONCLUSIONS:** with the simplification approach, a considerable increase in the level of accessibility is expected

Why simplification ?

- While in the meantime:



The screenshot shows the NGR National Georegister website. The main heading is 'Geografische Namen - Geographical Names (INSPIRE geharmoniseerd)'. Below the heading, there is a description of the dataset: 'INSPIRE Geografische Namen (Geographical Names) themalaag, geharmoniseerd, gevuld met relevante objecten uit TOP10NL (onderdeel van de Basisregistratie Topografie (BRT)), geproduceerd en beheerd door het Kadaster. Het bevat de namen van gebieden, regio's, plaatsen, steden of nederzettingen, of elk geografische of topografische object dat van publieke of historische waarde.' The page also features a search bar, navigation tabs, and download options for WMS and Atom formats.

- Data is shown as downloadable/viewable in the national data portal
 - Simplified approach has been used for years !

Context - the issues (52nd MIG-T meeting)

- the **level of data-service linking** in INSPIRE is **insufficient**, and many organisations seem to have difficulties to provide implementations in line with the current TGs (even though almost all MS provide at least some data sets with correct data-service linking);
- this already has **negative impacts** on the accessibility of INSPIRE data sets (through the INSPIRE geoportal) and hence the overall usability of the INSPIRE infrastructure;
- this will also lead to **poor indicators** in the future (metadata-based) approach for monitoring and reporting;
- the **current approach** for data-service linking described in the TGs for metadata and network services is **complicated**, and there are different interpretations of the related requirements, even by implementation/standards experts;
- the current approach for service metadata, which requires **extensions to base standards**, is posing **an obstacle to the implementation of INSPIRE requirements for network services** (because the required extensions are not widely implemented in off-the-shelf software); and
- there is a clear overlap / **duplication of data set and service metadata** (e.g. bounding box, INSPIRE theme), which in some cases leads to inconsistencies.

Context – recommendations (52nd MIG-T meeting)

- The MIG-T **supports the new data-centric approach** (already underlying the new geoportal and the proposed revision of the M&R IRs), which focuses on data and how they can be accessed through network services rather than considering data and network services as stand-alone components of the infrastructure. However, it might still be useful for application developers to be able to access a directory/register of the services available in the infrastructure.
- The MIG-T further recommends that there should be **one "source of truth" for service metadata**, ideally as provided by the service itself (e.g. in its Capabilities document).
- The **alternative approach for documenting data-service linking** in the data set metadata (as proposed in the discussion paper) **should be further elaborated** and become the **preferred option in the Metadata TGs** (and/or in a stand-alone guidance document on data-service linking); this guidance should include an explanation how the IR requirements for network service metadata are mapped to the new approach;
- The **current approach should still be supported for a transition period** (to be determined by the MIG) as an alternative option that will be used by the geoportal if no links to network services can be established based on the data set metadata; at the end of the transition period the necessity to further support the current approach should be reviewed;

Intended outcome

- **The users** of the INSPIRE infrastructure **can access all available data** via the view and download services.
When using this GP, data providers are not experiencing difficulties anymore to establish downloadable and viewable data sets, because:
- The requirements described in this good practice for documenting these links are **easy to be implemented and understood**, and therefore widely used and correctly implemented by MS.
- INSPIRE-specific extensions to existing standards that are not widely supported by existing software products. This GP makes them unnecessary from now onwards, since it allows implementer's organizations to access **off-the-shelf software** without worrying anymore about compliance to INSPIRE-specific extensions.

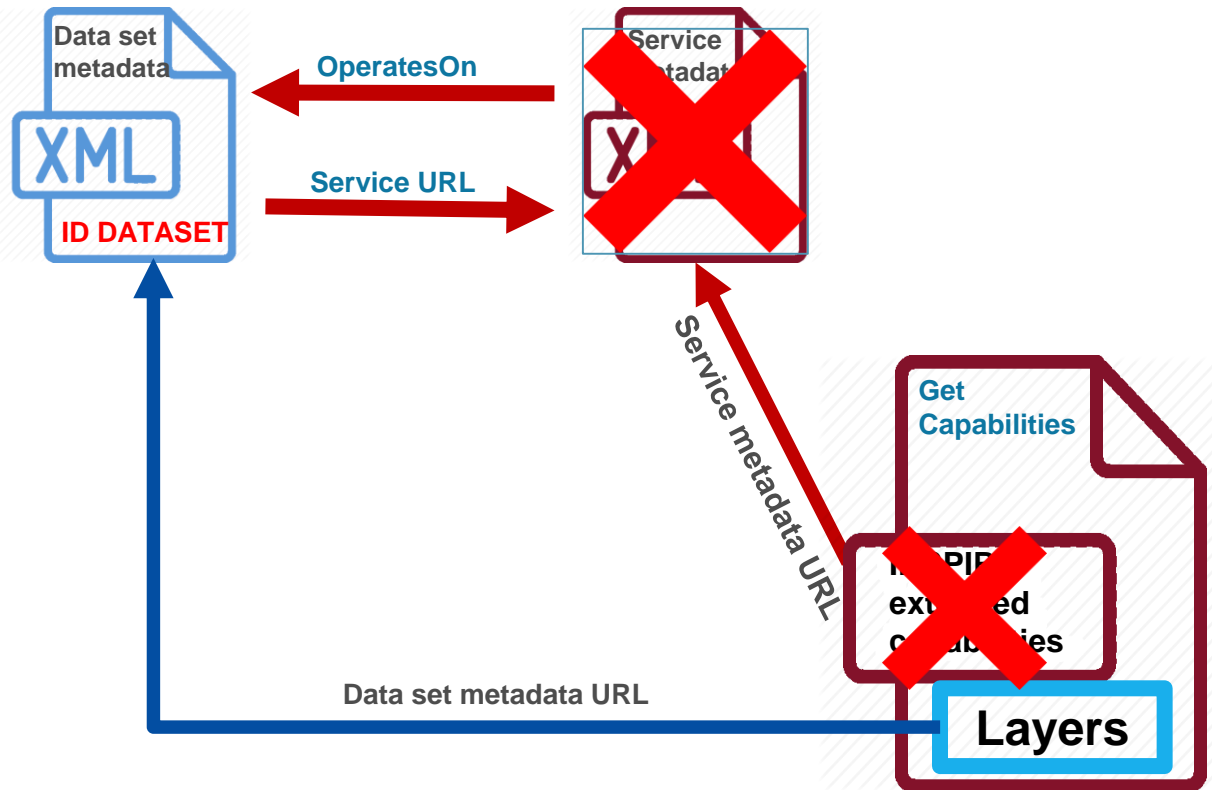
Summary of work

This good practice constitutes an alternative way to provide the data-service linking in INSPIRE - Optional, not mandatory.

- The data set metadata record shall include additional elements, already present in many national metadata profiles, related to view and download services;
- There is no need for view and download services to be documented through their stand-alone service metadata records. The metadata returned by the service itself, as a response to a Get View/Download Service Metadata request, is enough to provide the required information;
- The metadata returned by the OGC web services (OWS) can follow a structure supported by all implementing servers, no longer including the Extended Capabilities section (an optional element not supported by all implementing servers).

MIWP Action 2.3.2

Data Service Linking Simplification - Overview



Section 8

Part A. Data - service linking simplification
Good practice guidelines

Section 9

Part B. Data - service linking simplification
Use of INSPIRE conformant standard capabilities documents

Final specification:

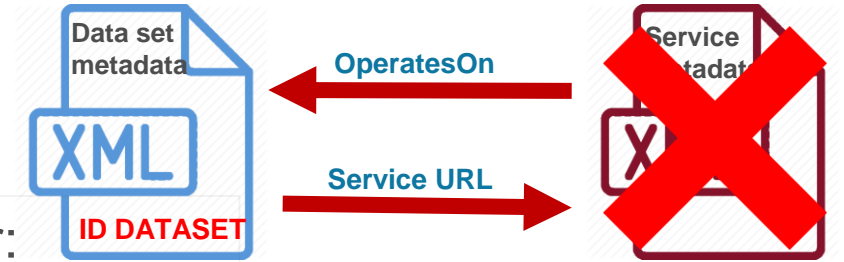
<https://github.com/INSPIRE-MIF/gp-data-service-linking-simplification/blob/main/good-practice/data-service-linking-simplification-spec.md>

Part A: Data-Service Linking Simplification

Simplification approach (resource locator)

In case of **View** and **Download** services, for the resource locator:

- the element **gmd:URL** SHALL point to the response of the Get View/Download Service Metadata (GetCapabilities);
- the elements **gmd:protocol** and **gmd:applicationProfile** SHALL be present



metadata element	Encoding
<gmd:protocol>	gmx:Anchor pointing to the URI coming from https://inspire.ec.europa.eu/metadata-codelist/ProtocolValue
	gco:CharacterString with the value of the label in the metadata language
<gmd:applicationProfile>	gmx:Anchor pointing to the URI https://inspire.ec.europa.eu/metadata-codelist/SpatialDataServiceType/view or https://inspire.ec.europa.eu/metadata-codelist/SpatialDataServiceType/download
	gco:CharacterString with the value of the label in the metadata language

Part A: Data-Service Linking Simplification

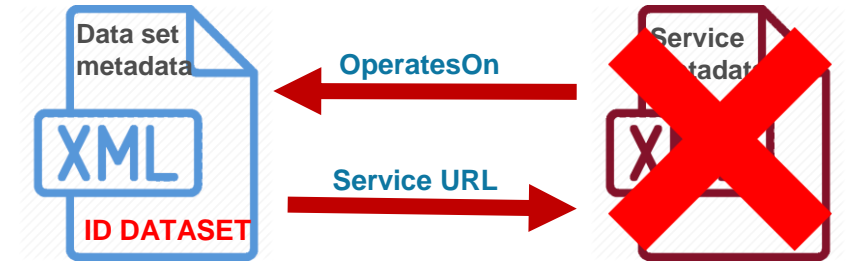
Example for a view service

```
<gmd:transferOptions>
  <gmd:MD_DigitalTransferOptions>
    <gmd:onLine>
      <gmd:CI_OnlineResource>
        <gmd:linkage>
          <gmd:URL>https://geoservizi.regione.liguria.it/geoserver/M1743/wms?version=1.3.0&request=get
capabilities</gmd:URL>
          </gmd:linkage>
          <gmd:protocol>
            <gmx:Anchor xlink:href="http://www.opengis.net/def/serviceType/ogc/wms">OGC Web Map
Service</gmx:Anchor>
          </gmd:protocol>
          <gmd:applicationProfile>
            <gmx:Anchor xlink:href="http://inspire.ec.europa.eu/metadata-
codelist/SpatialDataServiceType/view">consultazione</gmx:Anchor>
          </gmd:applicationProfile>
        </gmd:CI_OnlineResource>
      </gmd:onLine>
    </gmd:MD_DigitalTransferOptions>
  </gmd:transferOptions>
```

Part A: Data-Service Linking Simplification

Simplification approach (coupled resources)

relax the implementation of the Coupled Resource by making the linkage to the `<gmd:MD_DataIdentification>` element of the data set metadata an optional feature, just pointing to the **URL of the metadata**

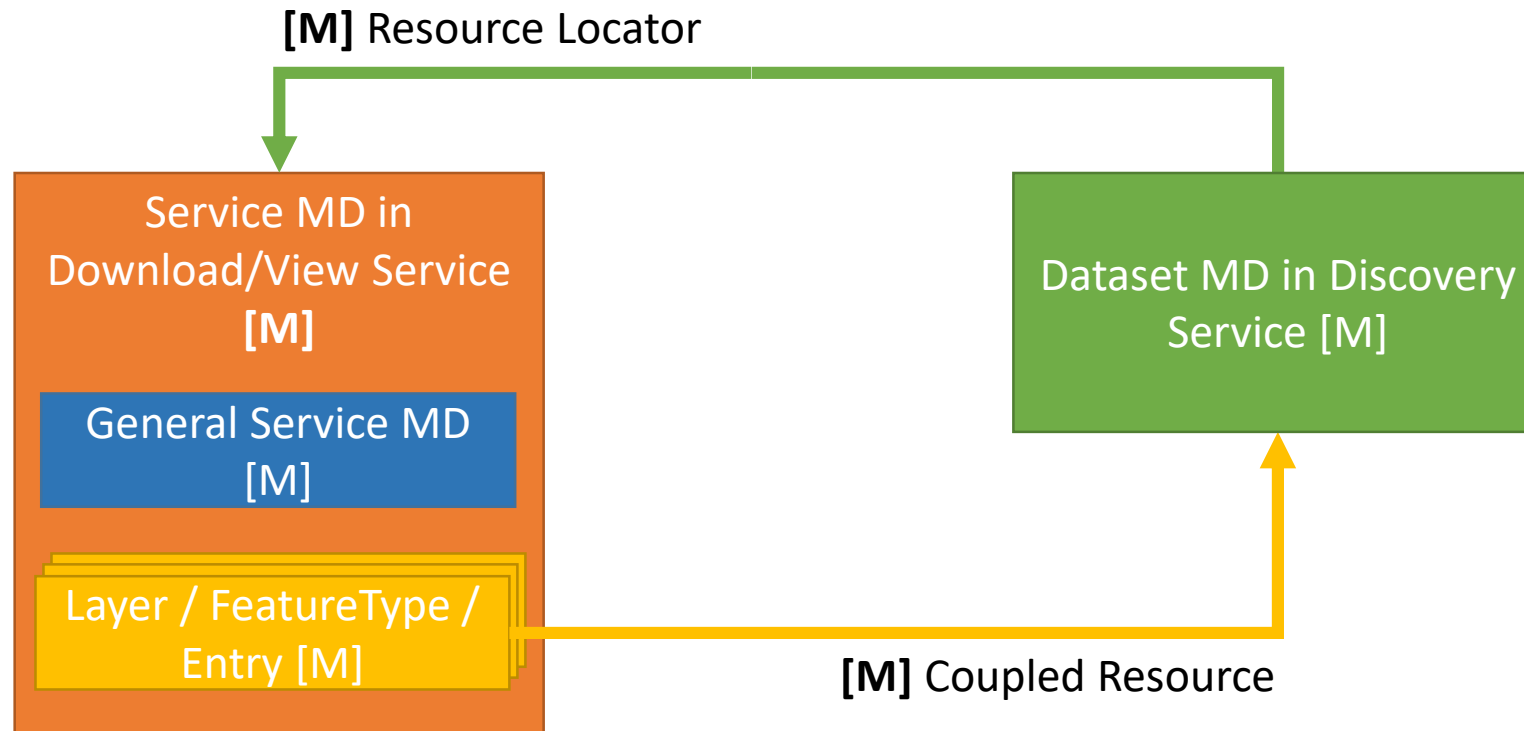


New wording of the TG Requirement

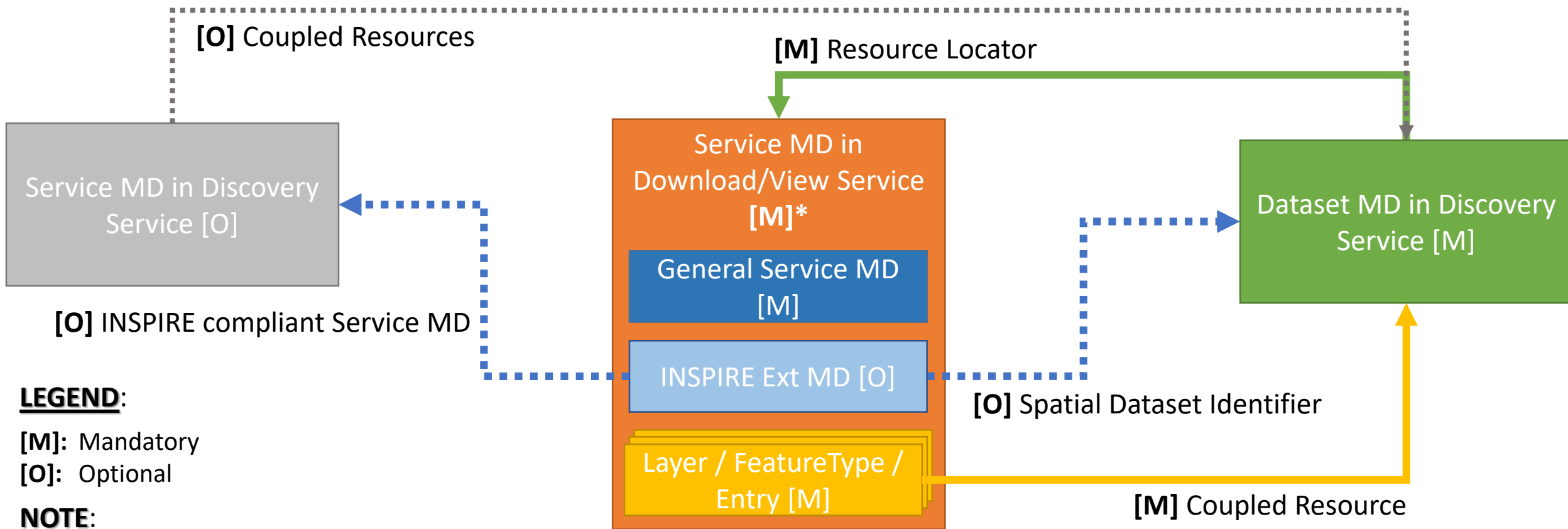
metadata element	Encoding
<wms:MetadataURL> (in Layer)	pointing to the metadata record of the provided data set or data set series, available in a Discovery Service catalog
<wfs:MetadataURL> (in Feature type)	pointing to the metadata record of the provided data set or data set series, available in a Discovery Service catalog
/feed/entry/link	containing a link to a data set metadata record with attributes <code>@rel="describedby"</code> and <code>@type=«application/xml»</code>

Proposed data – service linking approach

INSPIRE Model: Simplified ([M] only)



INSPIRE Model: Simplified



LEGEND:

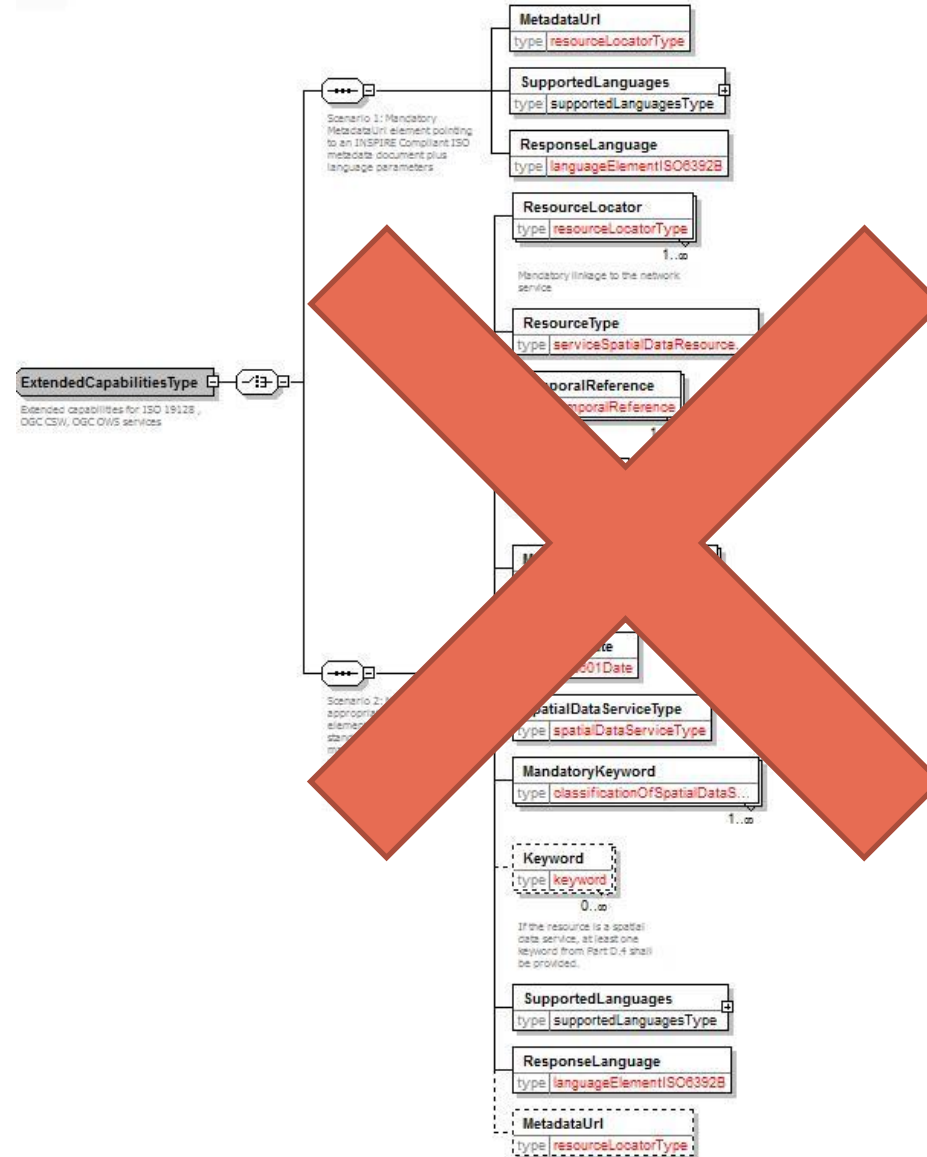
[M]: Mandatory

[O]: Optional

NOTE:

- **Regarding the INSPIRE compliant Service MD** - In an INSPIRE Network Service Scenario 1 implementation, the Service MD will not contain all INSPIRE metadata elements but contain a link to the Service MD in the Discovery Service; An Scenario 2 implementation have no separate Service MD in the Discovery Service. Instead, all metadata elements are provided in the extended capabilities section of the capabilities document of the service; An Scenario 3 implementation (new scenario considered if the good practice candidate on Data-Service Linking Simplification is endorsed) also have no separate Service MD in the Discovery. Instead, the metadata elements are remapped to existing elements in the capabilities document of the service and in the dataset metadata.
- **Regarding the Spatial Data Set Identifier** - The IR on Metadata is not including the Unique resource identifier as a required metadata element to be applied to services. The TG for Download and View services specify a WxS/Atom metadata element that contains the Unique Resource Identifier of the Spatial Data Set. In the current INSPIRE Geoportal this is used, in some cases, to establish a link between data and service for quality control purposes. The Coupled resource would be enough for data-service linking purposes, as is used e.g. in case of a WMS in the current INSPIRE Geoportal.

Part B: Use of INSPIRE conformant standard capabilities documents



Part B. Remapping of Extended Capabilities

Aim of the work

- Define an alternative mapping of INSPIRE service metadata elements to elements available in the Capabilities document of OGC OWS standard services (WMS, WFS) and Atom feeds.
- Avoid (as an option) the need for the INSPIRE Extended Capabilities section.
- Remove remaining obstacles in the implementation of INSPIRE requirements for network services due to the extensions required to software tools available in the market.

Part B. Remapping of Extended Capabilities

Metadata point of contact

- Current mapping (in **INSPIRE NS - View/Download Service TGs**)

INSPIRE metadata elements	Elements of INSPIRE Extended Capabilities/Atom feed	Applicable on Service type
Metadata Point of Contact	inspire_common:MetadataPointOfContact	WMS - WFS
Metadata Point of Contact	not mapped	Atom

- Agreed new mapping**



INSPIRE metadata elements	New allocation	Applicable on Service type
Metadata Point of Contact	WMS_Capabilities/Service/ContactInformation/ContactPersonPrimary/ContactOrganization and WMS_Capabilities/Service/ContactInformation/ContactElectronicMailAddress	WMS
Metadata Point of Contact	WFS_Capabilities/ows:ServiceProvider/ows:ProviderName and WFS_Capabilities/ows:ServiceProvider/ows:ServiceContact/ows:ContactInfo/ows:Address/ows:ElectronicMailAddress	WFS
Metadata Point of Contact	<feed><author><name> and <feed><author><email>	Atom

Part B. Remapping of Extended Capabilities

Unique Resource Identifier (referring to data set)

- Current mapping (in **INSPIRE NS - View/Download Service TGs**)

INSPIRE metadata elements	Elements of INSPIRE Extended Capabilities/Atom feed	Applicable on Service type
Unique Resource Identifier	<code>inspire_dls:SpatialDataSetIdentifier/inspire_common:Code</code> <code>inspire_dls:SpatialDataSetIdentifier/inspire_common:Namespace</code>	WFS
Unique Resource Identifier	<code>spatial_dataset_identifier_code</code> and <code>spatial_dataset_identifier_namespace</code>	Atom

- **Mapping proposed**



INSPIRE metadata elements	New allocation	Applicable on Service type
Unique Resource Identifier	not mapped as Unique resource identifier is not relevant for services	WMS - WFS - Atom

The IR on metadata is not including the Unique resource identifier as a required metadata element to be applied to services.

Limitations

- This GP is not yet applicable for services based on the [OGC API family of standards](#).
This is because a mapping between the INSPIRE metadata elements and the [OpenAPI Specification](#) has not yet been agreed. See also the [Technical guidelines for setting up an INSPIRE Download service based on the OGC API-Features standard](#).
- Complying with this GP and providing metadata for services in the discovery service will result in the duplication of certain INSPIRE metadata elements, which can lead to inconsistencies if the metadata elements are not kept in sync by means of automated processes.

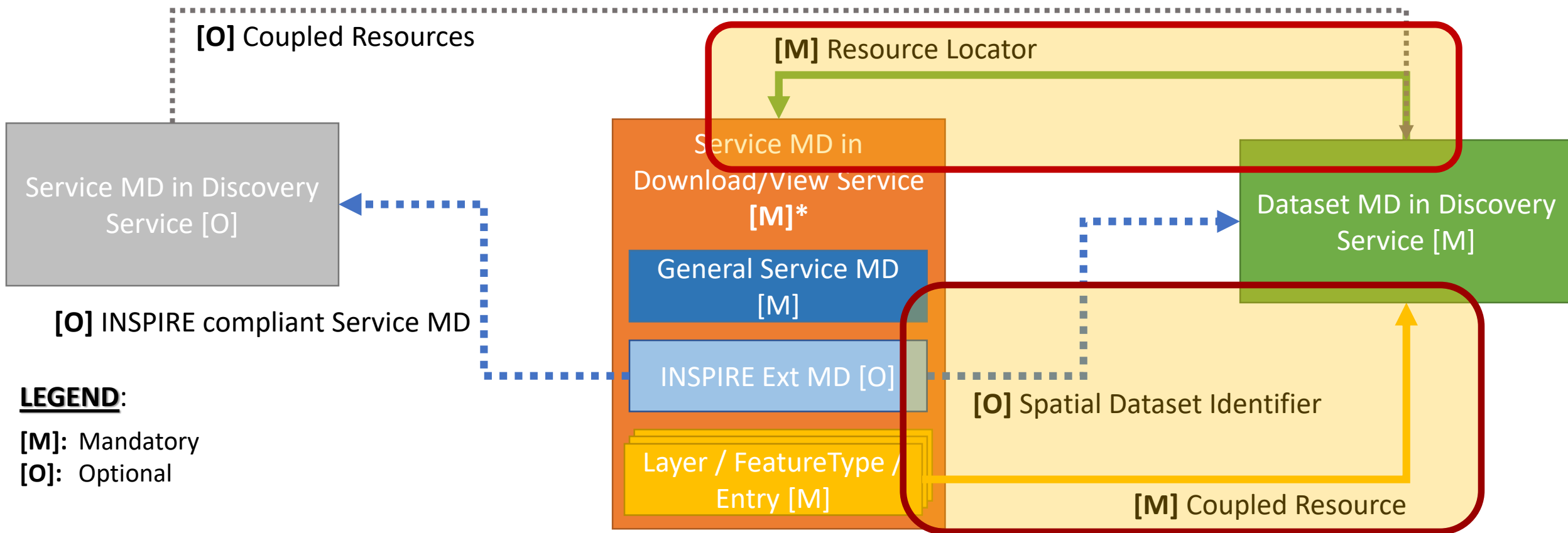
Implementations and support evidences

- The Netherlands, Italy and France
- Part A implemented in:
 - National metadata profiles
 - Codelist
 - Validation
 - Guidelines
- Revamped INSPIRE Geoportal (GeoNetwork)

Revamped INSPIRE Geoportal (GeoNetwork)

Data-Service Linking Simplification Implementation

INSPIRE Model: Simplified



LEGEND:

[M]: Mandatory

[O]: Optional



INSPIRE KNOWLEDGE BASE

Search...

Infrastructure for spatial information in Europe

[European Commission](#) > [INSPIRE](#) > [Events](#) > [INSPIRE Good Practice – Data-Service Linking Simplification Webinar](#)

[Home](#) [Learn](#) [Implement](#) [Participate](#) [Use](#) [Toolkit](#)

Quick search

- 📁 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
- 📁 Use

INSPIRE Good Practice – Data-Service Linking Simplification Webinar

Date: Monday, November 21, 2022 - 16:00 to 17:30

Online **INSPIRE Webinar** on [Data-Service Linking Simplification](#) good practice, presenting the outcomes and implementation evidences as a result of the work performed under [INSPIRE MIWP 2021-24 Action 2.3 Task 3](#).

[Webinar Details](#)

[Webinar Recording](#)

Webinar Presentations

📄 [Integrated Presentation](#)

📄 [INSPIRE Good Practice – DataService Linking Simplification](#)

📄 [Simplification implementation in the Netherlands](#)

📄 [Simplification implementation in Italy](#)

📄 [Simplification Implementation In France](#)

📄 [Revamped INSPIRE Geoportal \(GeoNetwork\)](#)

MIG-T Sub-group 2.3.2: Antonio Rotundo, Ine de Visser, Marie Lambois, Heidi Vanparys

JRC INSPIRE Team: Jordi Escriu, Davide Artasensi, Marco Minghini, Alexander Kotsev

Ine de Visser

Antonio Rotundo

Marie Lambois

JRC INSPIRE Team

Outreach webinar - Slido

- Participants from
 - Germany
 - Spain
 - Italy
 - The Netherlands
 - Denmark
 - France
 - ?

Action 2.3.2 GP (2/11)

0 1 4

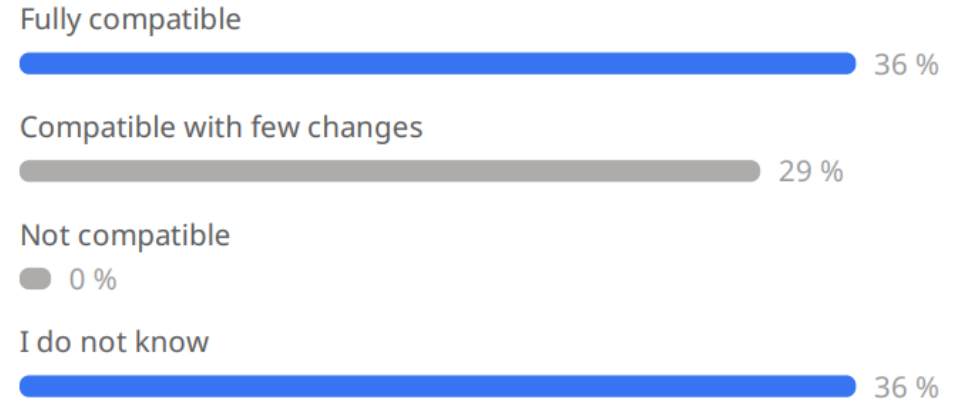
2. Do you think this good practice candidate is useful and/or necessary?



Action 2.3.2 GP (11/11)

0 1 4

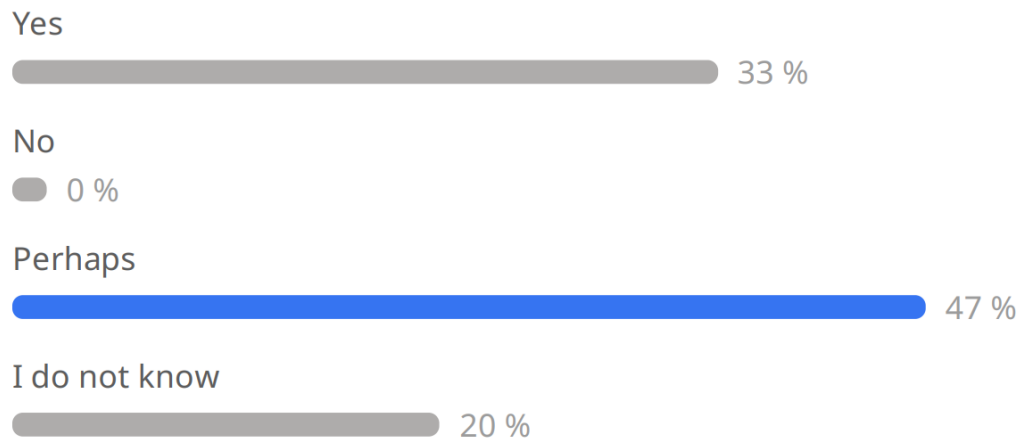
11. Is the approach of this good practice candidate compatible with your national metadata profile?



Action 2.3.2 GP (5/11)

0 1 5

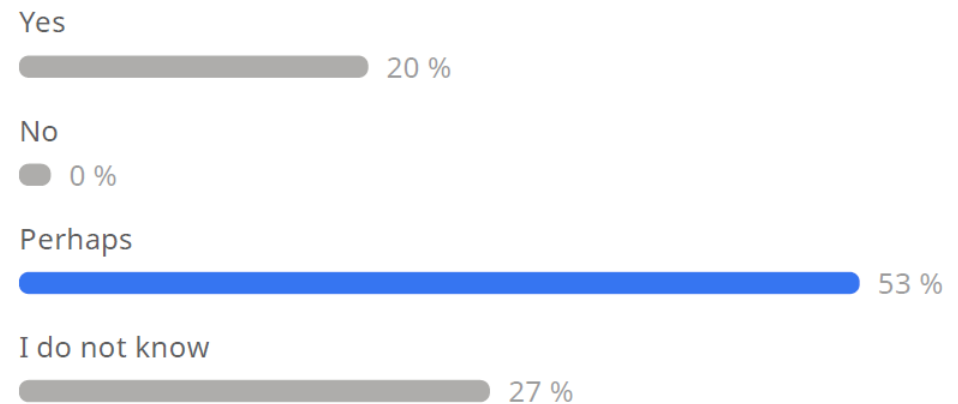
5. Are you willing to support the implementation of Part A of this good practice candidate?



Action 2.3.2 GP (6/11)

0 1 5

6. Are you willing to support the implementation of Part B of this good practice candidate?

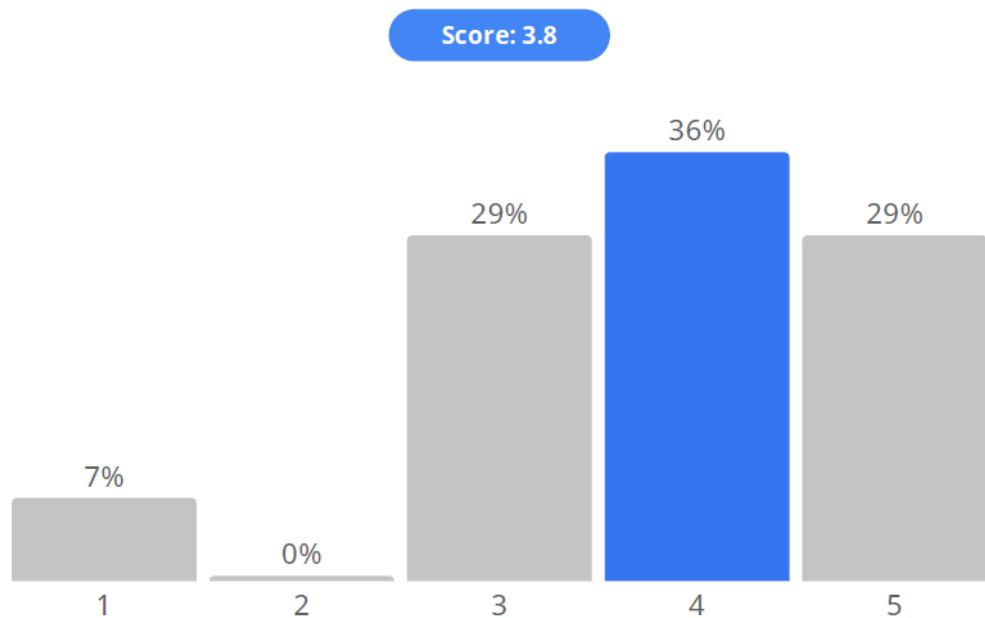


Outreach webinar - Slido

Action 2.3.2 GP (3/11)

0 1 4

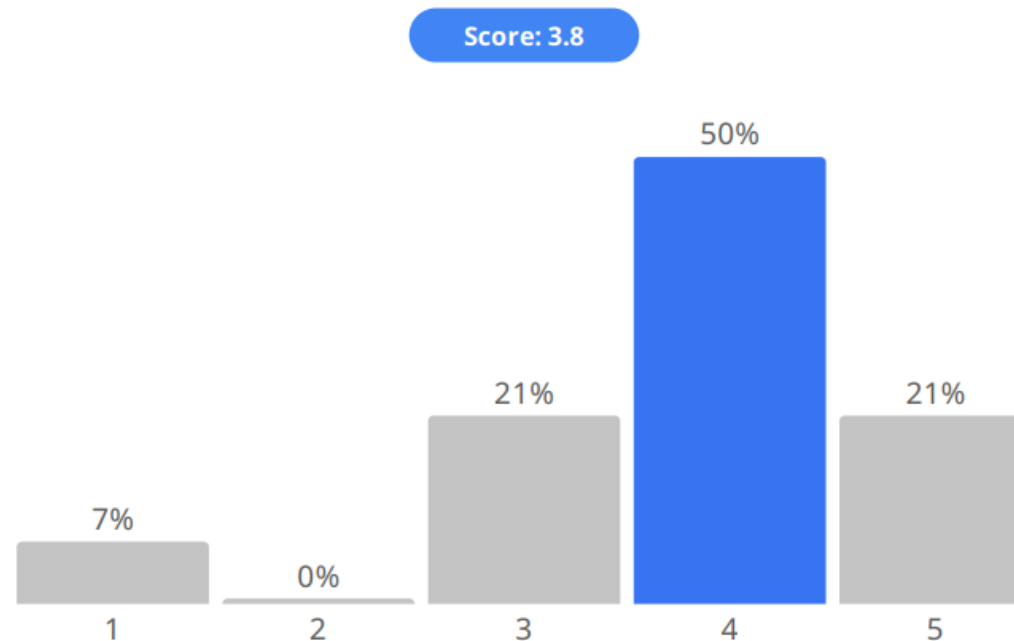
3. Rate the quality of the good practice candidate specification



Action 2.3.2 GP (4/11)

0 1 4

4. Provide an overall rate for this good practice candidate



Conclusions and next steps

Data-Service Linking Simplification good practice candidate

- Ready for MIG-T / MIG endorsement.
 - November 25th 2022

Procedure for proposing & endorsing good practices and progress overview | <https://inspire.ec.europa.eu/portfolio/good-practice-library>

The procedure includes the following six steps	Progress until 21.11.2022
Step 1. Initiation	GitHub: https://github.com/INSPIRE-MIF/gp-data-service-linking-simplification Collection of issues: https://github.com/INSPIRE-MIF/gp-data-service-linking-simplification/issues Support organisations and proposals: https://github.com/INSPIRE-MIF/gp-data-service-linking-simplification/tree/main/proposals Initiation fiche: https://github.com/INSPIRE-MIF/gp-data-service-linking-simplification/blob/main/good-practice/good-practice-fiche.md Final good practice specification: https://github.com/INSPIRE-MIF/gp-data-service-linking-simplification/blob/main/good-practice/data-service-linking-simplification-spec.md
Step 2. Submission as good practice candidate	Data Service Linking Simplification https://inspire.ec.europa.eu/good-practice/data-service-linking-simplification
Step 3. Outreach	Webinar 21.11.2022 16:00 – 17:30 (CET) https://inspire.ec.europa.eu/events/inspire-good-practice-data-service-linking-simplification-webinar
Step 4. Submission	Scheduled: <ul style="list-style-type: none">– 16th INSPIRE MIG - November 24.– 72nd INSPIRE MIG-T - November 25.
Step 5. Legal scrutiny	
Step 6. Feedback	

Thank you!



JRC-INSPIRE-SUPPORT@ec.europa.eu

© European Union 2020

Unless otherwise noted the reuse of this presentation is authorised under the [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/) license. For any use or reproduction of elements that are not owned by the EU, permission may need to be sought directly from the respective right holders.

