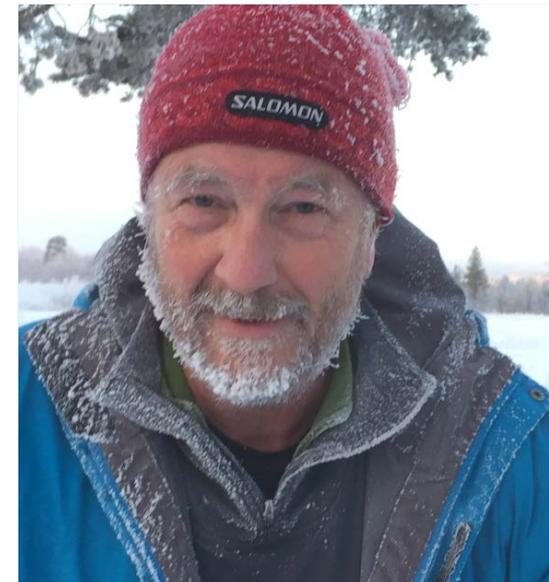


# INSPIRE Metadata

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**2016-02-10**



# Who am I !

- Working on SDI related issues within the Swedish NSDI (mainly on metadata and Geoportal development)
- Facilitator for the update of the TG Metadata to version 2.0
- No official responsibility within INSPIRE-framework

# What is INSPIRE Directive ?

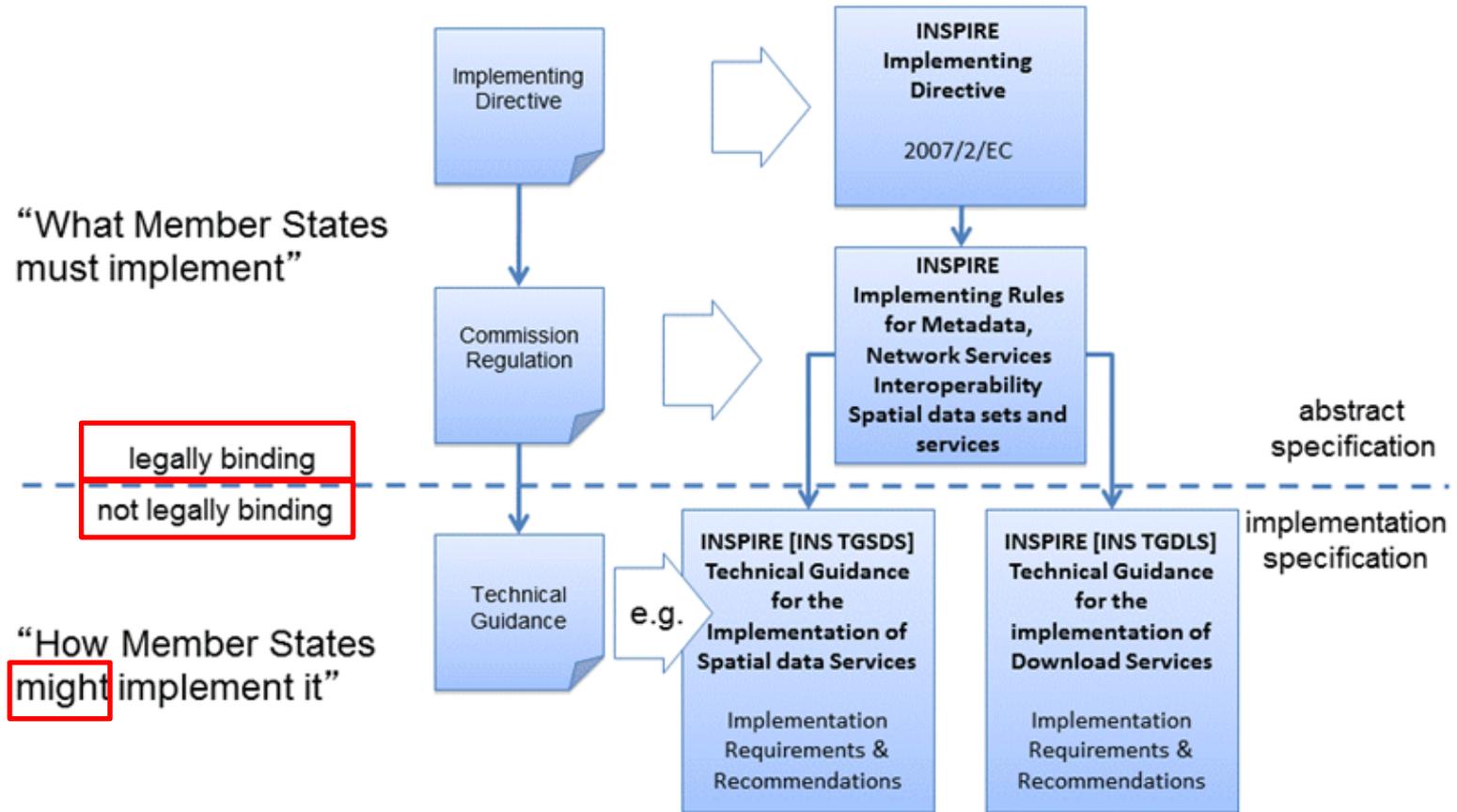
- The INSPIRE directive came into force on 15 May 2007 and will be implemented in various stages, with **full implementation required by 2019**.
- The INSPIRE directive aims to create a European Union (EU) spatial data infrastructure. This will **enable the sharing of environmental spatial information** among public sector organisations and **better facilitate public access** to spatial information across Europe.
- A European Spatial Data Infrastructure will assist in **policy-making across boundaries**. Therefore the spatial information considered under the directive is extensive and includes a great variety of topical and technical themes.

# INSPIRE is based on a number of common principles:

- Data should be **collected only once** and kept where it can be **maintained most effectively**.
- It should be possible to **combine seamless** spatial information from **different sources** across Europe and share it with many users and applications.
- It should be possible for information **collected at one level/scale** to be shared with all levels/scales; detailed for **thorough investigations, general for strategic purposes**.
- Easy to find **what** geographic information is available, **how** it can be used to **meet** a particular need, and under **which conditions** it can be acquired and used.

# IR and TG

## Relationship between INSPIRE Implementing Rules and Technical Guidance



# INSPIRE Implementing rules (law)

- I Metadata
- II Interoperability of datasets and services
- III Network services
- IV Data and Service Sharing
- V Monitoring

*Implementing rules should not have any bindings to specific standards or technologies*

# INSPIRE Data Themes

## ANNEX 1

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

## ANNEX 2

 Elevation
 Geology
 Land cover
 Orthoimagery

## ANNEX 3

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

# Technical Guidelines Data

- One Data specification for each of the 34 themes
- <http://inspire.ec.europa.eu/index.cfm/pageid/2>
- [E:\Dropbox\metagis\Projekt\metadata\inspire\datasetspecifications\INSPIRE\\_DataSpecification\\_PS\\_v3.2.pdf](E:\Dropbox\metagis\Projekt\metadata\inspire\datasetspecifications\INSPIRE_DataSpecification_PS_v3.2.pdf)

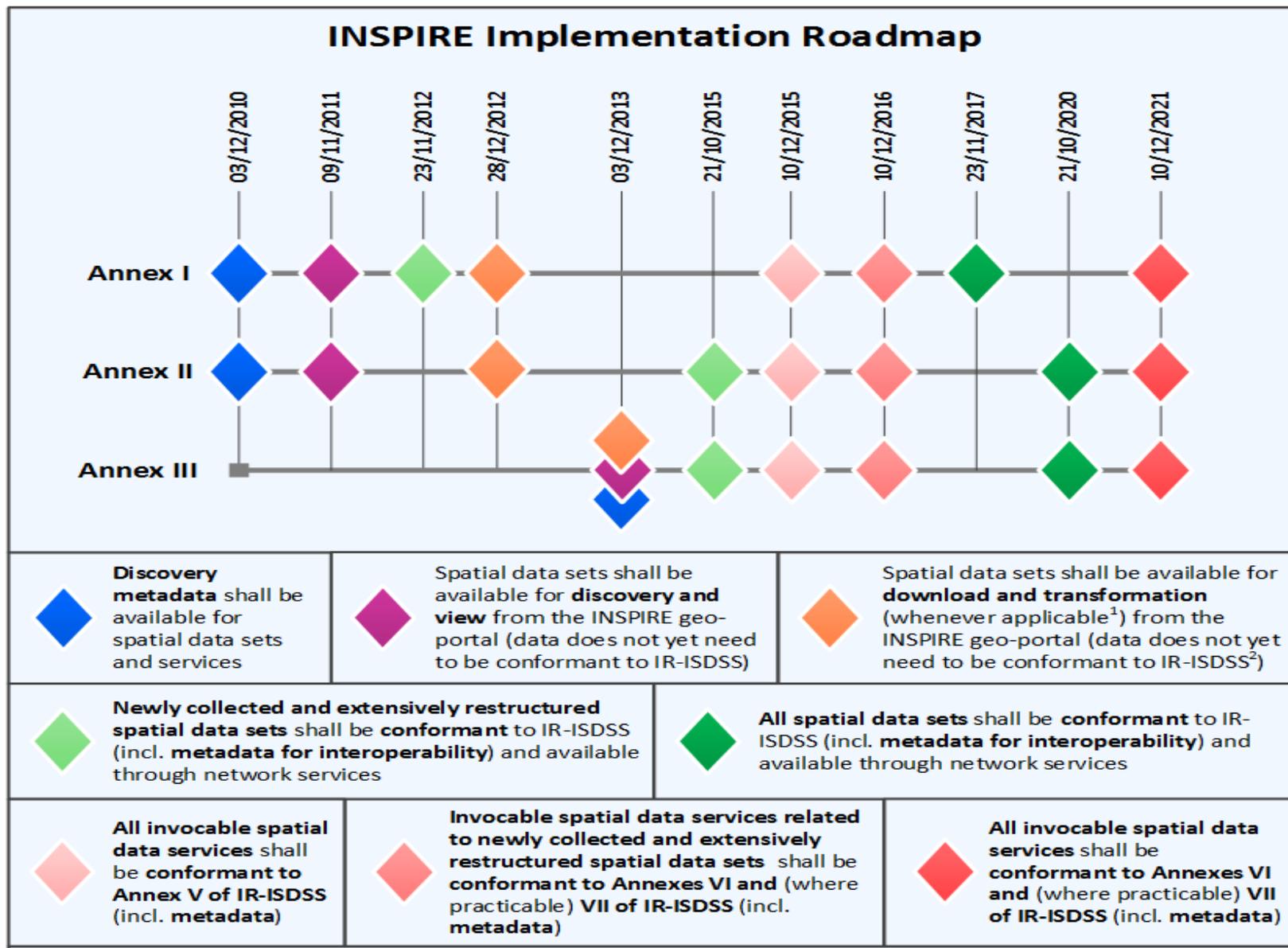
# INSPIRE Network services

- Discovery (CSW)
- View (WMS)
- Download (WFS/Atom)
- Transform
- (Other)

Besides Networks services we have

- Invocable Spatial Data Services

# INSPIRE Roadmap



# Implementing rules Metadata

- <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008R1205&from=EN>

Reference	Metadata elements	Multiplicity	Condition
1.1	Resource title	1	
1.2	Resource abstract	1	
1.3	Resource type	1	
1.4	Resource locator	0..*	Mandatory if a URL is available to obtain more information on the resource, and/or access related services.
1.5	Unique resource identifier	1..*	
1.7	Resource language	0..*	Mandatory if the resource includes textual information.
2.1	Topic category	1..*	
3	Keyword	1..*	
4.1	Geographic bounding box	1..*	
5	Temporal reference	1..*	
6.1	Lineage	1	
6.2	Spatial resolution	0..*	Mandatory for data sets and data set series if an equivalent scale or a resolution distance can be specified.
7	Conformity	1..*	
8.1	Conditions for access and use	1..*	
8.2	Limitations on public access	1..*	
9	Responsible organisation	1..*	
10.1	Metadata point of contact	1..*	
10.2	Metadata date	1	
10.3	Metadata language	1	

# Technical Guidelines Metadata

[http://inspire.jrc.ec.europa.eu/documents/Metadata/MD\\_IR\\_and\\_ISO\\_20131029.pdf](http://inspire.jrc.ec.europa.eu/documents/Metadata/MD_IR_and_ISO_20131029.pdf)

## INSPIRE Metadata Implementing Rules: Technical Guidelines based on EN ISO 19115 and EN ISO 19119

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<b>Title</b>	INSPIRE Metadata Implementing Rules: Technical Guidelines based on EN ISO 19115 and EN ISO 19119
<b>Creator</b>	Drafting Team Metadata and European Commission Joint Research Centre
<b>Creation date</b>	2007-10-26
<b>Date of last revision</b>	2013-10-29
<b>Subject</b>	INSPIRE Implementing Rules for Metadata
<b>Status</b>	V. 1.3
<b>Publisher</b>	European Commission Joint Research Centre

# Extension to Network services

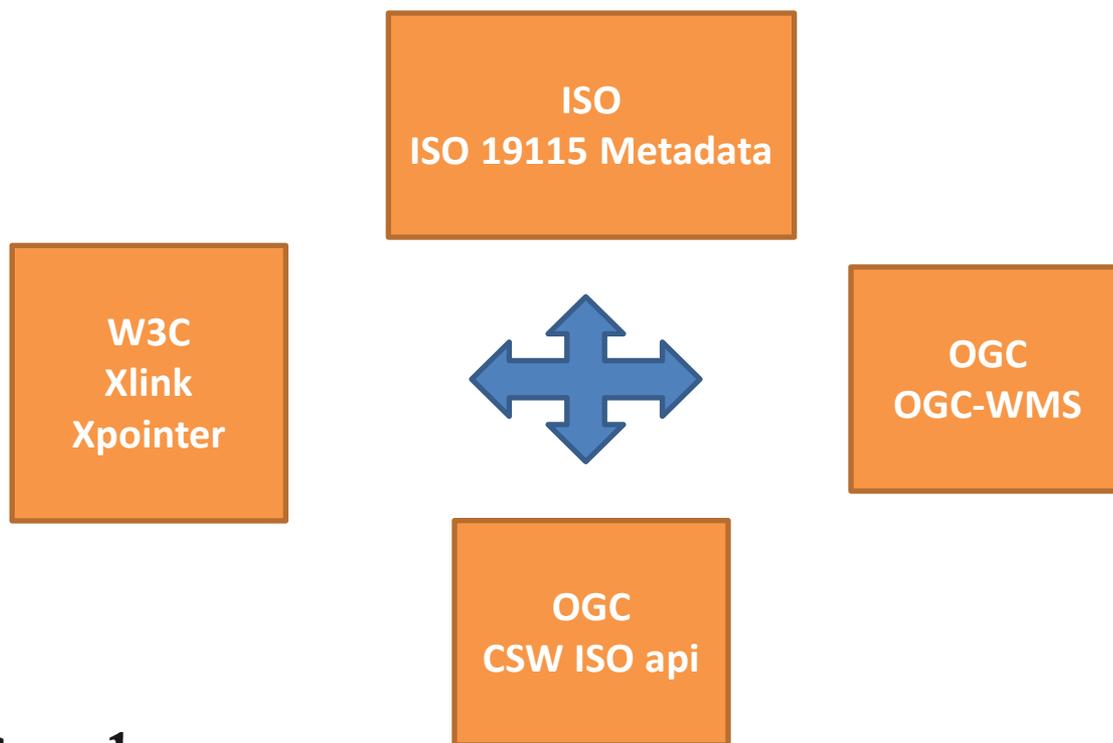
- Metadata for Service and datasets in ISO 19115 /19119 should be found through Capabilities document
  - Either through URLs pointing to metadata records (for both the service and the dataset)
  - Or through adding each metadata element in the Extended Capabilities defined by Inspire.
- If you get direct access to a service you should always get metadata and not just the cap-doc
- Language requirements

# Language Requirements

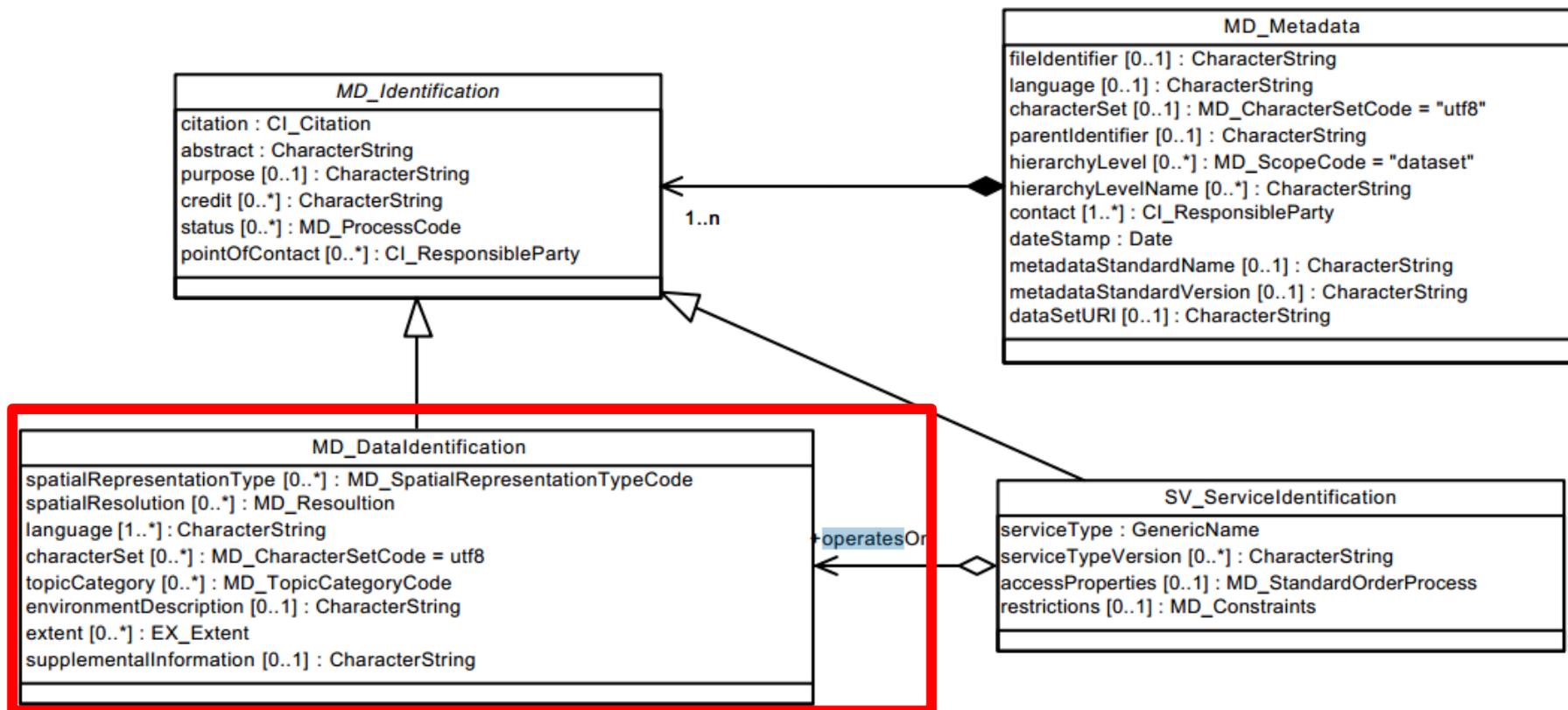
- These are requirements for all network services(WMS, WFS, CSW)
  - A network service metadata response shall contain **a list of the natural languages supported** by the service. This list shall contain one or more languages that are supported.
  - A client **may specify a specific language** in a request. If the requested language is contained in the list of supported languages, **the natural language fields of the service response shall be in the requested language**. If the requested language is not supported by the service, then this parameter shall be ignored.

# Interoperability between standards

- Different interpretation on the use of standards
- Lack of testing on Architectural level
- Created at different points in time



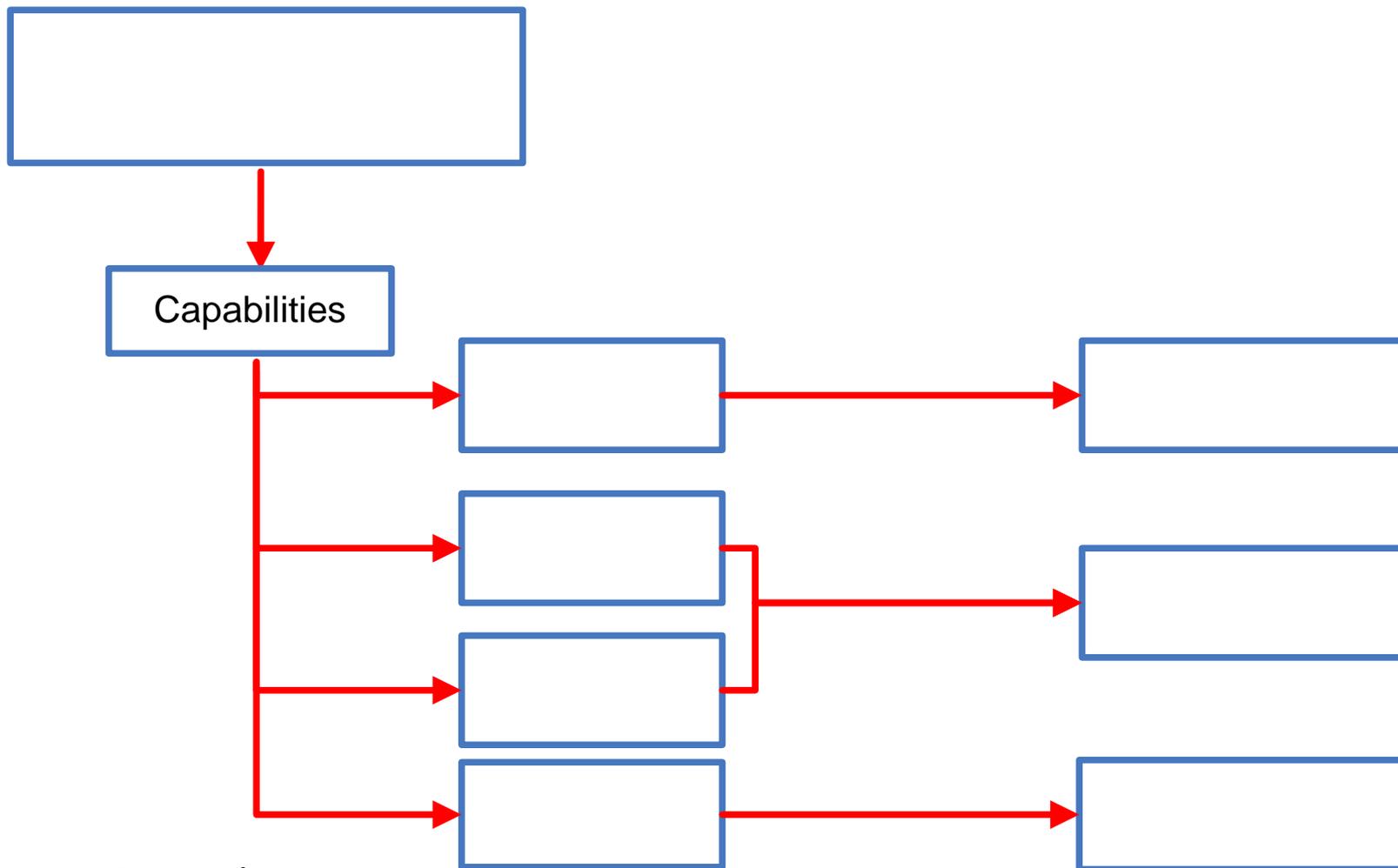
# Service - data coupling



# Different ways to handle dataset metadata for a service and its datasets

- According to ISO
  - MD\_DataIdentification object is explicitly included in OperatesON element of the SRV\_ServiceIdentification object
  - The metadata record contains one SRV\_ServiceIdentification and multiple MD\_DataIdentification objects. OperatesOn references the MD\_DataIdentification objects through its identifier through the UUIDREF attribute
  - One metadata record for the service and each of the datasets the service operates on. All records are individually accessible (eg through a catalogue service)

# WMS service - Layers and Datasets



# Overview metadata for services

What relations are needed

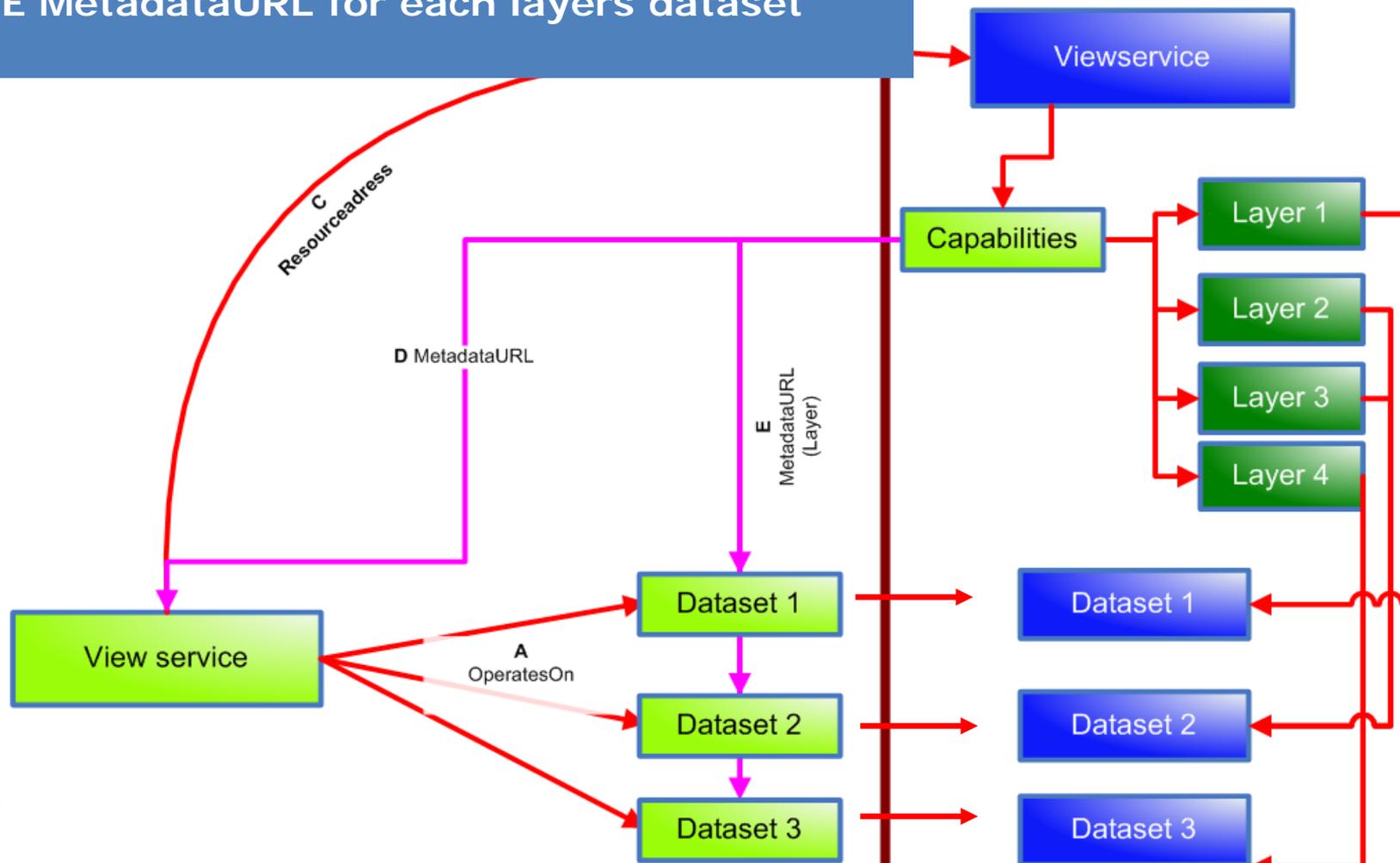
A Coupled resources

C Online Linkage

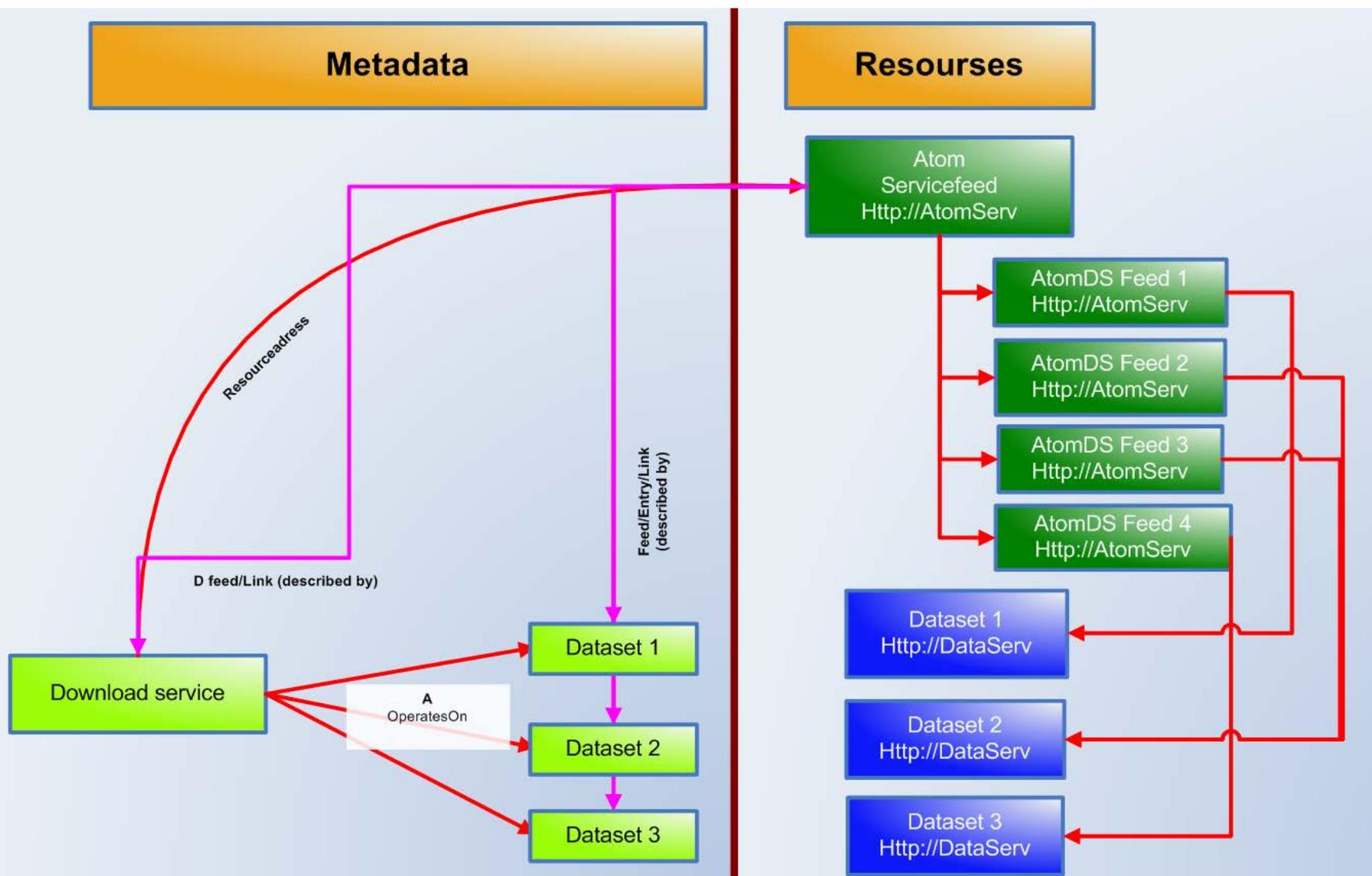
D MetadataURL for the service metadata

E MetadataURL for each layers dataset

## Resources



# Atom feed (download service)



# Concepts of service records and dataset records in ISO

- According to INSPIRE a theme should be documented with at least one metadata record for each of the:
  - Dataset, View service. Download service
- So in a portal we can eg have following:
  - > **Protected sites (dataset)**
  - > **Protected sites (view)**
  - > **Protected sites (WFS)**
  - > **Protected sites (Atom)**
- Instead of just **Protected sites** (with number of links to access service APIs)
- This is also better corresponds to our current Open data user that uses DCAT for publishing. They uses the concept of datasets with APIs

# Conformance reports

(Quality reports)

- Instead of reporting quantitative quality reports, conformance reports are used
- In order to report in metadata the conformance of the dataset to a certain specification we use quality reports of type conformance.
  - A reference to a specification  
(IR Interoperability of datasets and services)
  - And a value of Pass=true/false

# Conformance reports – (cont)

- Conformance reports can also be done against the Technical guidelines (data specifications)
- Conformance can also be done against subsets of a specification by referencing specific sections in ATS (Abstract tests)

# Conformance reports

```

<gmd:DQ_ConformanceResult>
  <gmd:specification>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString>INSPIRE Data Specification on Transport Networks – Draft Guidelines
– CRS</gco:CharacterString>
      </gmd:title>
      <gmd:date>
        <gmd:date>
          <gco:Date>yyyy-mm-dd</gco:Date>
        </gmd:date>
        <gmd:dateType>
          <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/resou
rces/Codelist/ML_gmxCodelists.xml#CI_DateTypeCode"
codeListValue="publication">publication</gmd:CI_DateTypeCode>
          </gmd:dateType>
        </gmd:date>
      </gmd:CI_Citation>
    </gmd:specification>
    <gmd:explanation> (...) </gmd:explanation>
    <gmd:pass> (...) </gmd:pass>
  </gmd:DQ_ConformanceResult>
  
```

[http://inspire.jrc.ec.europa.eu/documents/Data\\_Specifications/INSPIRE\\_DataSpecification\\_TN\\_v3.2.pdf](http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_TN_v3.2.pdf)

# Data Validation: ATS - Part 1

Conformance Class	Tests
A.1 Application Schema Conformance Class	A.1.1 Schema element denomination test
	A.1.2 Value type test
	A.1.3 Value test
	A.1.4 Attributes/associations completeness test
	A.1.5 Abstract spatial object test
	A.1.6 Constraints test
	A.1.7 Geometry representation test
A.2 Reference Systems Conformance Class	A.2.1 Datum test
	A.2.2 Coordinate reference system test
	A.2.3 Grid test
	A.2.4 View service coordinate reference system test
	A.2.5 Temporal reference system test
	A.2.6 Units of measurements test
A.3 Data Consistency Conformance Class	A.3.1 Unique identifier persistency test
	A.3.2 Version consistency test
	A.3.3 Life cycle time sequence test
	A.3.4 Validity time sequence test
	A.3.5 Update frequency test
A.4 Data Quality Conformance Class	A.4.1 Data quality target results test
A.5 Metadata IR Conformance Class	A.5.1 Metadata for interoperability test
A.6 Information Accessibility Conformance Class	A.6.1 Code list publication test
	A.6.2 CRS publication test
	A.6.3 CRS identification test
	A.6.4 Grid identification test
A.7 Data Delivery Conformance Class	A.7.1 Encoding compliance test

# Conformance reports

- Example of a conformance report to a subset (crs) of version 3.0.1 of theme ad (addresses)

```
<gmd:DQ_ConformanceResult>  
  <gmd:specification href="http://inspire.ec.europa.eu/conformanceClass/ad/3.0.1/crs" />  
  <gmd:explanation> (...) </gmd:explanation>  
  <gmd:pass> (...) </gmd:pass>  
</gmd:DQ_ConformanceResult>
```

# Reporting service performance in metadata

- **Availability** describes the percentage of time the service is available.
- **Performance** describes how fast a request to the spatial data service can be completed.
- **Capacity** describes the maximum number of simultaneous requests that can be completed with the declared performance.
- Initial design was to make an extension to ISO 19115 to handle this.

# Reporting Performance

```

<gmd:report>
  <gmd:DQ_ConceptualConsistency>
    <gmd:nameOfMeasure>
      <gco:CharacterString>Performance</gco:CharacterString>
    </gmd:nameOfMeasure>
    <gmd:measureIdentification>
      <gmd:MD_Identifier>
        <gmd:code>
          <gco:CharacterString>INSPIRE
QoS2</gco:CharacterString>
        </gmd:code>
      </gmd:MD_Identifier>
    </gmd:measureIdentification>
    <gmd:DQ_QuantitativeResult>
      <gmd:valueUnit xlink:href="
http://www.opengis.net/def/uom/SI/second"/>
      <gmd:value>
        <gco:Record>0.5</gco:Record>
      </gmd:value>
    </gmd:DQ_QuantitativeResult>
  </gmd:DQ_ConceptualConsistency>
  <gmd:result>

```

# Versions of standards

- We are now working with ISO 19115, ISO 19119 and ISO 19139
- Some countries in Europe has started work on standards based on ISO 19115-1 and ISO 19115-3 and ISO 19157. But current TGs are not based on these.
- We need to work on a roadmap for if/how to move to the new suite if standards.

# Validations

- A common metadata validator is created for the INSPIRE project
- <http://inspire-geoportal.ec.europa.eu/validator2/>
- Eg for record  
<https://www.geodata.se/InspireCswProxy/csw?request=GetRecordById&service=CSW&version=2.0.2&elementSetName=full&id=3772f3a8-7ae3-4f36-a86b-42dfcfa4ce1&outputSchema=csw:IsoRecord>
- Validates metadata and also related records metadata
- It validates correctly against TG but can't validate (of course) against the Implementing rules (the law)
- No officially legally binding validator

# Freetext fields

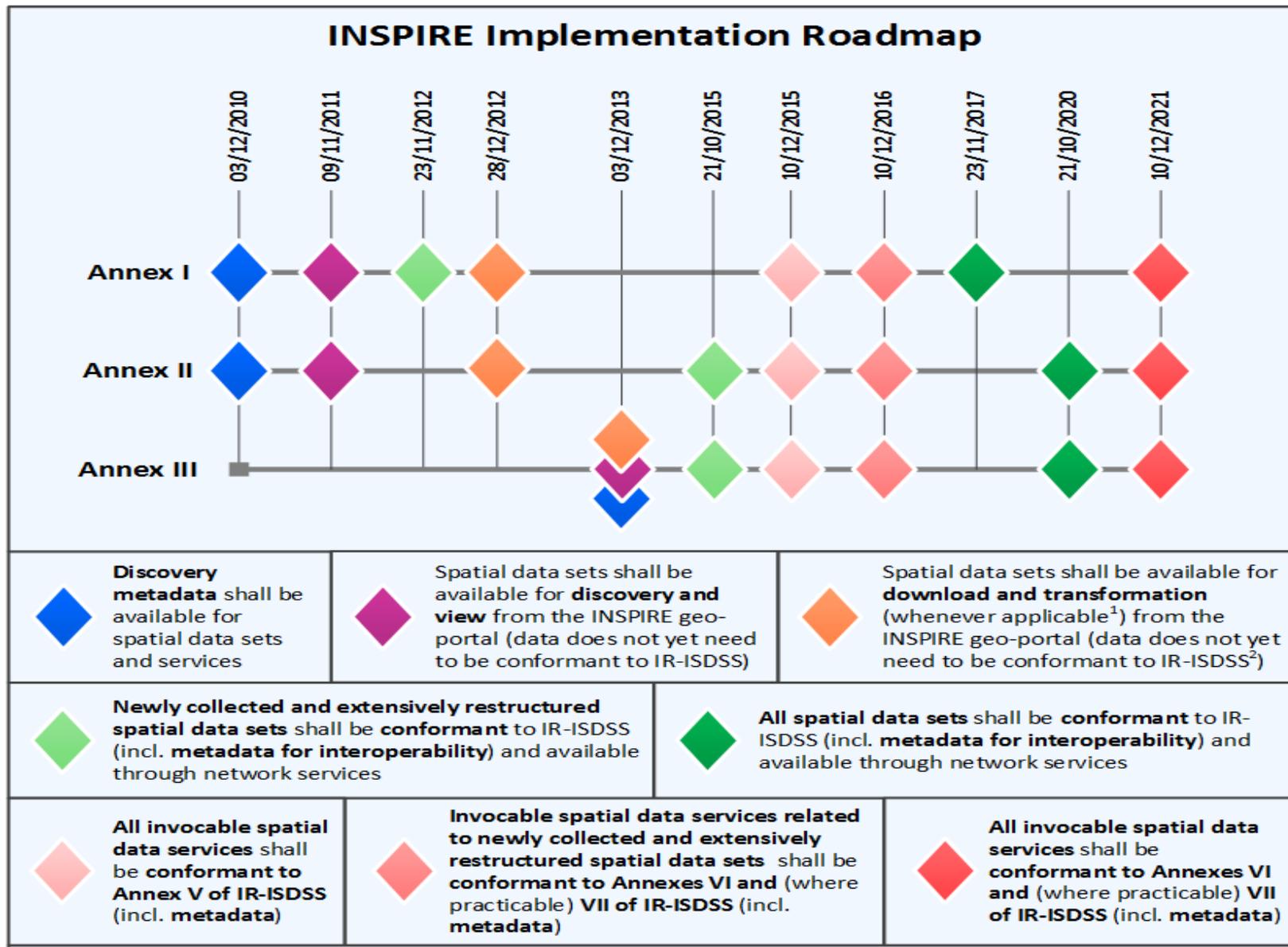
- Some textfields are used a code lists.  
Eg otherRestrictions are used with values “no limitations” and “no conditions apply”
- Hard to filter on  
e.g. “No Limitations” in Swedish and Finnish translates to different words when eg Google translate are used
- We now propose to use Anchor instead for a number of elements.



# Current version of TG metadata

- Current version is 1.3 from 2013
- New version 2.0 will be available mid 2016
  - Some changed elements because of earlier mistakes
  - Addition of Invocable spatial data services
  - Migration of information on metadata from other documents into this release.
  - Closer mapping between IR Requirements, ISO Requirements and the TG Doc

# INSPIRE Roadmap



# Thanks for listening !

## Questions ?

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