How many WFS are valid in INSPIRE?
Let’s see one.

Iurie Maxim – GIS Manager, Teamnet, Romania
Daniel Cocanu, Daniel Urda, Sorin Rusu, gis@teamnet.ro
302119 indexed resources

ALL
Only 3924 are valid

3924/302119*100= 1,3% valid resources
RESOURCES INDEXED IN THE EC GEOPORTAL

**ALL**

- dataset: 59072
- layer: 13475
- series: 3477
- downloadservicedataset: 88542
- service: 137508

**VALID**

- Only 3924 resources are valid

Whatever are they if not download services that are included in the services category.
All 302119 resources are indexed

Only 741 WFS exist
Only 3924 resources are valid

VALID

18 ATOM

49 WMS 1.3

And only 2 WFS are valid
**RESOURCES INDEXED IN THE EC GEOPORTAL**

<table>
<thead>
<tr>
<th>RESOURCE</th>
<th>STANDARD</th>
<th>ALL RESOURCES</th>
<th>VALID</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dataset</td>
<td></td>
<td>138265</td>
<td>2495</td>
<td>1.8</td>
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<tr>
<td>Series</td>
<td></td>
<td>3538</td>
<td>165</td>
<td>4.7</td>
</tr>
<tr>
<td>Discovery</td>
<td>CSW</td>
<td>235</td>
<td>45</td>
<td>19.1</td>
</tr>
<tr>
<td>View</td>
<td>WMS 1.1.1</td>
<td>12281</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>WMS 1.3</td>
<td>4641</td>
<td>49</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>WMTS</td>
<td>47</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Download</td>
<td>ATOM</td>
<td>8499</td>
<td>18</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>WFS 2.0</td>
<td>741</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>Invoke</td>
<td>WPS 2.0</td>
<td>780</td>
<td>0</td>
<td>-</td>
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<tr>
<td>Transformation</td>
<td></td>
<td>9</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Other NW services</td>
<td></td>
<td>103</td>
<td>56</td>
<td>54.4</td>
</tr>
</tbody>
</table>

**Wow!**

Thanks to CY that added 16 ATOM and 1 WFS last week.

Not clear what are these Other NW services.
RESOURCES INDEXED IN THE EC GEOPORTAL

<table>
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<td>Series</td>
<td></td>
<td>3538</td>
<td></td>
<td></td>
</tr>
<tr>
<td>View</td>
<td>WMS 1.3</td>
<td></td>
<td>49</td>
<td>16 CY, 13 CZ ..</td>
</tr>
<tr>
<td>Download</td>
<td>ATOM</td>
<td></td>
<td>18</td>
<td>2 AT, 16 CY</td>
</tr>
<tr>
<td></td>
<td>WFS 2.0</td>
<td></td>
<td>2</td>
<td>1 RO, 1 CY</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>141803</td>
<td>69</td>
<td>0.05</td>
</tr>
</tbody>
</table>

All datasets and series must be accessible through View and Download Network Services (currently only very few can be accessible through “valid” services)

Wow !!!

[Image of logo: teamnet]
Only 49 WMS valid (metadata)!!
No portrayal testing!!
Only 18 ATOM valid (metadata)!!
No data testing!!
Only 2 WFS valid (metadata) !!
No data testing !!
RESOURCES INDEXED IN THE EC GEOPORTAL

7x7 pixels = 49 services are passing the EC Metadata validation

Black: Datasets and dataseries with no view or download services

All datasets and data series:
141803 ~ 377 x 377 pixels

Valid
WFS 2 pixels
Valid
ATOM
Valid WMS 1.3

Only Metadata testing !!
No data testing !!
WHY ARE SO MANY SERVICES FALLING THE METADATA TEST?

INSPIRE CANT EXIST WITHOUT VALID METADATA
Error metadata identifiers

coupledresource.notfound(589)
coupledresource.notfound(113)

Warning metadata identifiers

predefinedstoredqueries.missing(507)
predefinedstoredqueries.missing(96)
MAIN ISSUES OF DOWNLOAD SERVICES THAT ARE NOT PASSING THE EC VALIDATOR

- `error.geoportal.proxy.download.dataset.validation.failed(714)`
- `error.geoportal.proxy.metadata.element.downloaddatasets.missing(603)`
- `error.geoportal.proxy.service.download.coupledresource.notfound(589)`
- `error.geoportal.proxy.service.download.predefinedstoredqueries.missing(507)`
- `error.geoportal.proxy.metadata.element.coupledresource.missing(231)`
- `error.geoportal.proxy.metadata.element.responsibleorganisation.missing(149)`
- `error.geoportal.metadata.service.coupledresource.invalid(122)`
- `error.geoportal.proxy.metadata.element.metadatapointofcontact.missing(115)`
- `error.geoportal.proxy.metadata.element.resourcetype.missing(113)`
- `error.geoportal.proxy.metadata.element.spatialdataservicetype.missing(113)`
- `error.geoportal.metadata.service.metadatapointofcontact.missing(115)`
- `error.geoportal.proxy.metadata.element.temporalreference.missing(113)`
- `error.geoportal.proxy.metadata.element.metadatadate.missing(113)`
ISSUE 1: Coupled resources: Dataset MD, Service GetCapabilities MD, Service MD

- Dataset MD
  - Service GetCapabilities URL (Resource locator)

- Service GetCapabilities MD
  - Service MD URL (Ext. Cap.)
  - Dataset MD URL (Ext. Cap.)
  - Request/Operation

- Service MD
  - Service GetCapabilities URL
  - Dataset MD URL (Coupled resource)
That's not right. The Metadata editor is not creating metadata for services according to INS IR (wrong encoding of Coupled resource).
It works only with 2 elements

2 fields in the TG

1 field in the editor
ISSUE 2: Missing Stored Queries

TG Requirement 49  Pre-defined Stored Queries shall be provided to make pre-defined datasets available.

Any implementation shall ensure that all possible (i.e. available) combinations of CRS/DataSetIdCode/DataSetIdNamespace/language should be available through a pre-defined stored query.

TG Requirement 50  Any possible (i.e. available) combinations of CRS/DataSetIdCode/DataSetIdNamespace/language shall be made available through pre-defined stored queries.

Every instance of a WFS-based pre-defined dataset download service should define only one Stored Query for serving pre-defined Spatial Data Sets in order to make it easier for clients who already know the identifier of the Stored Query.

TG Recommendation 13  The following identifier should be used to identify the Stored Query for serving pre-defined Spatial Data Sets:

http://inspire.ec.europa.eu/operation/download/GetSpatialDataSets

The parameter names for the arguments of the Stored Query shall be consistent as proposed in the following requirement:

TG Requirement 51  Pre-defined Stored Queries shall use the parameter names "CRS", "DataSetIdCode", "DataSetIdNamespace" and "Language" to identify the CRS, dataset ID code, dataset ID namespace and language components of a query.

For example the following stored query takes arguments for the parameters DataSetIdCode (mycode), DataSetIdNamespace (mynamespace), CRS (EPSG:4326), and Language (English).
DATA VALIDATION OF THE 20 DOWNLOAD SERVICES PASSING THE MD VALIDATION

7x7 pixels = 49 services are passing the EC Metadata validation

Valid WFS 18 pixels
Valid ATOM 2 pixels
Valid WMS 1.3

NOW the EC Validator is performing only Metadata testing!!
No data testing!!

So, we performed data validation for:
16 ATOM from CY
2 ATOM from AT
1 WFS from CY
1 WFS from RO
16 CYPRUS ATOM : GML 3.2. FAILS THE OGC TEAM ENGINE TEST
2 AUSTRIAN ATOMS FAILS: THEY ARE SHAPEFILE AND TIFF, NOT GML 3.2.

ESRI SHAPEFILE INSTEAD OF GML 3.2
1 CYPRUS WFS 2.0 FAILS THE OGC TEAM ENGINE TEST

Test Suite: WFS 2.0 (ISO 19142:2010) Conformance Test Suite

Test tnsMain (View Details): Failed

Summary of results

- 0 Best Practice
- 0 Passed
- 0 Continue
- 0 Not Tested
- 0 Warning
- 0 Skipped
- 1 Failed
- 0 Failed (Inherited)
1 ROMANIAN WFS TEST WITH ENV PLUS (against Protected Sites XSD version 4)

(RO) - Serviciu de descărcare pentru ariile naturale protejate din România

Download Validation Service

Upload GML dataset file

To upload the GML dataset file as web resource, insert here the http URL OR the relevant WFS GetFeature request:

/inspire.biodiversity.ro/WFS/RO_ENV_PS/wfs?service=wfs&version=2.0.0&request=GetFeature&typename=ps:ProtectedSite&count=10

To upload the GML dataset from a local resource Click the button below

Browse... No file selected.

Select relevant INSPIRE theme OR AQD dataflow for Schematron Validation: INSPIRE Protected Sites v4.0

Summary of results

- Best Practice ✓ Passed ✓ Continue ✓ Not Tested ✓ Warning ✓ Skipped ✓ Failed ✓ Failed (Inherited)

0 1 0 0 0 0 0 0 0 0
DO YOU SEE THE GREEN PIXEL?

ROMANIAN PROTECTED AREAS DATASET SERVED THROUGH WFS 2.0 CONTAINS NOW:

- Protected Sites (nature conservation ones)
- Administrative Units (in topology with PS)
- Biogeographical Regions (topology w. PS)
- Named Places (for Protected Sites)

ATOM? NO WAY. ONLY WFS ALLOWS MACHINE TO MACHINE INTERACTION
Access the WFS with QGIS

Made according to XSD version 3.0 and 4.0 schemas
Access the WFS through KVP requests (in the browser)

http://inspire.biodiversity.ro/WFS/RO_ENV_PS/wfs?
service=WFS&
version=2.0.0&
request=GetCapabilities

http://inspire.biodiversity.ro/WFS/RO_ENV_PS/wfs?
service=WFS&
version=2.0.0&
request=GetFeature&
typeName=ps:ProtectedSite&
count=5

http://inspire.biodiversity.ro/WFS/RO_ENV_PS/wfs?
service=WFS&
version=2.0.0&
request=GetFeature&
typeName=ps:ProtectedSite&
featureId=RONPA0022&
srsName=4326
http://inspire.biodiversity.ro/WFS/RO_ENV_PS/wfs?
  service=WFS&
  version=2.0.0&
  request=ListStoredQueries

request = DescribeStoredQueries

http://inspire.biodiversity.ro/WFS/RO_ENV_PS/wfs?
  service=WFS&
  version=2.0.0&
  request=GetPropertyValue&
  valueReference=./gn:pronunciationSoundLink&
  storedQuery_ID=urn:ogc:def:query:OGC-WFS::GetFeatureById&
  id=ROSCI0201

http://inspire.biodiversity.ro/WFS/RO_ENV_PS/wfs?
  service=WFS&
  version=2.0.0&
  request=GetPropertyValue&
  valueReference=./gn:text&
  typeName=ps:ProtectedSite&
  count=6
http://inspire.biodiversity.ro/WFS/RO_ENV_PS/wfs?
  service=WFS&
  version=2.0.0&
  request=GetFeature&
  STOREDQUERY_ID=http://inspire.ec.europa.eu/operation/download/GetSpatialDataSet&
  Language=rum&
  DataSetIdCode=PS.AriiProtejate &
  DataSetIdNamespace=RO.ENV&
  CRS=http://www.opengis.net/def/crs/EPSG/0/3035

RECOM. 13 - Technical Guidance for INSPIRE Download Services 3.1

WFS GetCapabilities MD
Extended Capabilities

WFS GetCapabilities MD, Default CRS

Requirement  51 - Technical Guidance for INSPIRE Download Services 3.1
INSPIRE implementation ...
Now we know: it is possible. Now it is difficult.

It requires:
• to mix different technologies
• to involve people from all over Europe
• a team with a strong commitment

Once someone did a step, others can more easily follow.
Therefore I would like to thank to:

Richard Rombouts from Snowflake Software, that guided us to use the GoPublisher WFS

Angelo Quaglia from JRC that adapting the Metadata Validator to validate WFS 2.0

Stefania Morrone from Epsilon Italia for help with eNVPlus validator

Ilkka Rinne for allowing us to chose the most performat solution grace of Spatineo Monitor

Thorsten Reitz that made HALE, a tool that allows easy data translations

Michael Lutz for providing usefull information to make a compliant service

And to my team from Teamnet that did it: gis@teamnet.ro