

# EXPERIENCE WITH INSPIRE VALIDATOR Land Survey Office, Czech Republic

Veronika Kůsová

INSPIRE  
Conference 2018

# Introduction

---

„How can we verify INSPIRE compliance ?“

Validation against XML schema

OCL

constraints validation

Manual inspection

Readability by GIS tools

Validators

...

**INSPIRE  
Conference 2017**

INSPIRE Validator  
released



```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <gml:FeatureCollection gml:id="CZ-00025712-CUZK_TN-RAIL" xsi:schemaLocation="http://inspire.ec.europa.eu/schemas/base/3.3 http://inspire.ec.europa.eu/schemas/base/3.3/BaseTypes.xsd
3 http://schemas.opengis.net/gml/3.2.1/deprecatedTypes.xsd" xmlns:xsi="http://www.w3.org/1999/XSL/Transform" xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:net="http://inspire.e
4 xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
5   <gml:boundedBy>
6     <gml:Envelope srsName="urn:ogc:def:crs:EPSG::3045">
7       <gml:lowerCorner>5547649.63810217 456275.21190979</gml:lowerCorner>
8       <gml:upperCorner>5551473.42266507 461063.824338249</gml:upperCorner>
9     </gml:Envelope>
10   </gml:boundedBy>
11   <gml:featureMember>
12     <tn-ra:NominalTrackGauge gml:id="CZ-00025712-CUZK_TN.NTG_AN010-16788315-RWN.10000037168-RWN.10000037170" xmlns:tn-ra="http://inspire.ec.europa.eu/schemas/tn-ra/4.0">
13       <net:networkRef>
14         <net:NetworkReference>
15           <net:element xlink:href="AN010-16788315-RWN.10000037168-RWN.10000037170"/>
16         </net:NetworkReference>
17       </net:networkRef>
18       <net:inspireId>
19         <base:Identifier>
20           <base:localId>NTG_AN010-16788315-RWN.10000037168-RWN.10000037170</base:localId>
21           <base:namespace>CZ-00025712-CUZK_TN</base:namespace>
22           <base:res:nilReason="unpopulated" nilReason="unpopulated" nil="true" xsi:nil="true" nilReason="unpopulated"/>
23         </base:Identifier>
24       </net:inspireId>
25       <net:beginLifespanVersion xsi:nil="true" nilReason="unpopulated"/>
26       <net:endLifespanVersion xsi:nil="true" nilReason="unpopulated"/>
27       <tn:validFrom xsi:nil="true" nilReason="unpopulated"/>
28       <tn:validTo xsi:nil="true" nilReason="unpopulated"/>
29       <tn-ra:nominalGaugeCategory>standard</tn-ra:nominalGaugeCategory>
30     </tn-ra:NominalTrackGauge>
31   </gml:featureMember>
32   <gml:featureMember>
33     <tn-ra:NominalTrackGauge gml:id="CZ-00025712-CUZK_TN.NTG_AN010-16801077-RWN.10000037170-RWN.10000017758" xmlns:tn-ra="http://inspire.ec.europa.eu/schemas/tn-ra/4.0">
34       <net:networkRef>
35         <net:NetworkReference>
36           <net:element xlink:href="AN010-16801077-RWN.10000037170-RWN.10000017758"/>
37         </net:NetworkReference>
38       </net:networkRef>
39       <net:inspireId>
40         <base:Identifier>
```

# DATA VALIDATION

# Tested Data & Validation Settings

---

## Themes

Geographical names

Hydrography

Transport networks (Air, Cable, Rail, Road, Water)

ELF extension

All datasets valid against XML schema & readable in QGIS



## Test Suits

CC: Application schema accessibility

CC: Information

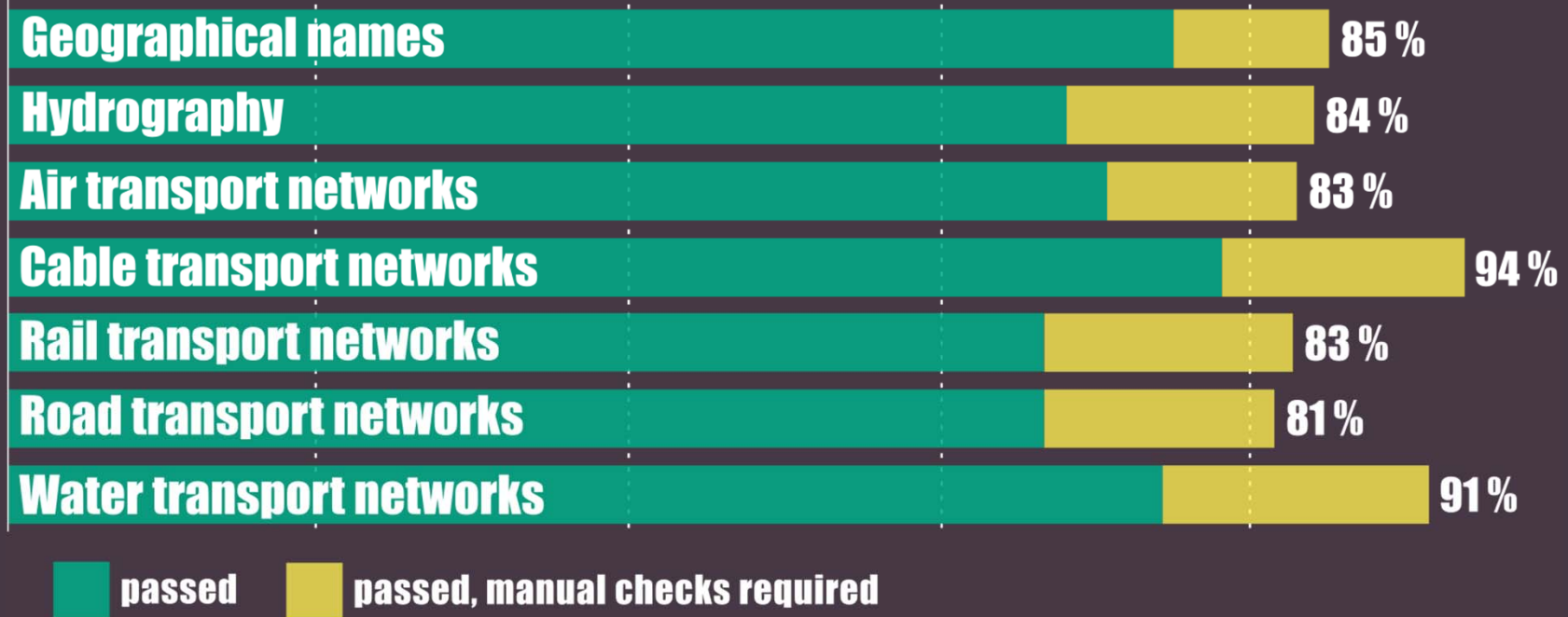
CC: Data consistency systems

CC: Reference

(CC = Conformance)

# Results

Percentage of passed test assertions:



# Types of Errors

---



**Typo**

standardized –  
standardised ...



**Validation against imported XML  
schemas**



**CRS name**

<http://www.opengis.net/def/crs/EPSG/3045>



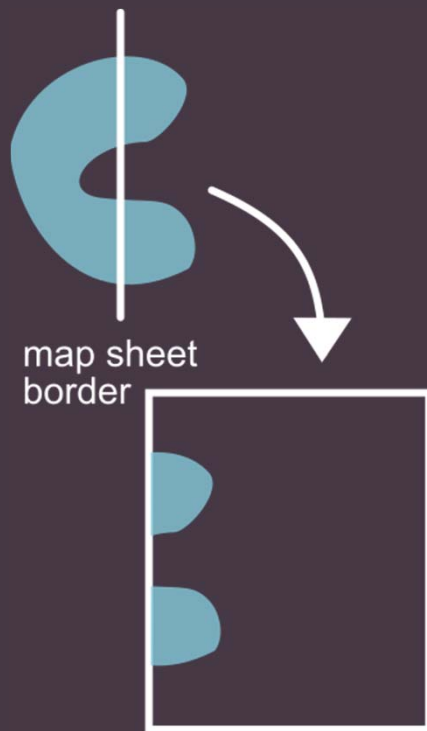
**Validation of constraints**

geometry issue

# Geometry Issue

---

e. g. StandingWater



`gml:GeometricPrimitivePropertyType`

`Point`

`LineString`

`CompositeCurve`

`Curve`

`OrientableCurve`

`Polygon`

`CompositeSurface`

`Surface`

`PolyhedralSurface`

`TriangulatedSurface`

`Tin`

`OrientableSurface`

`CompositeSolid`

`Solid`

# Data Extensions vs Validator

**Code list values in basic data types**

Verify whether all attributes whose value type is a code done in this test suite to avoid duplicating the same test

**Status** Passed  
**Duration** 0.150 s  
**Test case ID** EID2bb450fc-b68f-468e-85b6-56ee9741b731

- gmlas.e.1: GrammaticalNumber attributes
- gmlas.e.2: GrammaticalGender attributes
- gmlas.e.3: NameStatus attributes
- gmlas.e.4: Nativeness attributes

Data with ELF extension

**Code list values in basic data types**

Verify whether all attributes whose value type is a code done in this test suite to avoid duplicating the same tes

**Status** Failed  
**Duration** 0.088 s

- gmlas.e.1: GrammaticalNumber attributes
- gmlas.e.2: GrammaticalGender attributes
- gmlas.e.3: NameStatus attributes
- gmlas.e.4: Nativeness attributes

Data without ELF extension



```
1 <?xml version="1.0" encoding="utf-8"?>
2 <wfs:WFS_Capabilities xsi:schemaLocation="http://www.opengis.net/wfs/2.0 http://schemas.opengis.net/wfs/2.0/wfs.xsd http://inspire.ec.europa.eu/schemas/inspire_dls/1.0 http://inspire.ec.europa.eu/schemas/inspire_dls/1.0/inspire_dls.xsd"
3 xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:fes="http://www.opengis.net/fes/2.0" xmlns:tn-c="http://inspire.ec.europa.eu/schemas/tn-c/4.0" xmlns:tn="http://inspire.ec.europa.eu/schemas/tn/4.0">
4   <ows:ServiceIdentification>
5     <ows:Title>INSPIRE download service for the theme Transport Networks (TN)</ows:Title>
6     <ows:Abstract>The INSPIRE Download Service for the theme Transport Networks (TN) is the service that allows registered users to download repeatedly data using WFS 2.0.0 technology. The service is based on the
7     Fundamental Base of Geographic Data of the Czech Republic (ZABAGED®). At present data for application schemas Cable and Air Transport Networks are provided. The service meets the requirements of the INSPIRE
8     <ows:ServiceType>OGC WFS </ows:ServiceType>
9     <ows:ServiceTypeVersion>2.0.0</ows:ServiceTypeVersion>
10  </ows:ServiceIdentification>
11  <ows:ServiceProvider>
12    <ows:ProviderName>Czech Office for Surveying, Mapping and Cadastre</ows:ProviderName>
13    <ows:ProviderSite xlink:type="simple" xlink:href="http://www.cuzk.cz"/>
14    <ows:ServiceContact>
15      <ows:ContactInfo>
16        <ows:Phone>
17          <ows:Voice>+420 284 041 800</ows:Voice>
18          <ows:Facsimile>+420 284 041 416</ows:Facsimile>
19        </ows:Phone>
20        <ows:Address>
21          <ows:DeliveryPoint>Kobylisy 115, 182 11</ows:DeliveryPoint>
22          <ows:City>Kobylisy</ows:City>
23          <ows:AdministrativeArea>Kobylisy</ows:AdministrativeArea>
24          <ows:PostalCode>182 11</ows:PostalCode>
25          <ows:Country>Czech Republic</ows:Country>
26          <ows:ElectronicMailAddress>post@srgha.cuzk.cz</ows:ElectronicMailAddress>
27        </ows:Address>
28        <ows:OnlineResource xlink:type="simple" xlink:href="http://geoportal.cuzk.cz"/>
29        <ows:HoursOfService>Mo-Fr 9:00 AM - 2:00 PM CET</ows:HoursOfService>
30      </ows:ContactInfo>
31    </ows:ServiceContact>
32  </ows:ServiceProvider>
33  <ows:OperationsMetadata>
34    <ows:Operation name="GetCapabilities">
35      <ows:DCP>
36        <ows:HTTP>
37          <ows:Get xlink:href="http://geoportal-inspirewfs.cuzk.cz:80/WFS_INSPIRE_TN_CABLE/service.svc/get?sid=26012015_01401414268396000_ODPOLEDNE_01245299833">
38            <ows:Constraint name="GetEncoding">
39              <ows:AllowedValues>
40                <ows:Value>KVP</ows:Value>
41              </ows:AllowedValues>
42            </ows:Get>
43          </ows:HTTP>
44        </ows:DCP>
45      </ows:Operation>
46    </ows:OperationsMetadata>
47  </ows:ServiceMetadata>
48 </wfs:WFS_Capabilities>
```

# DOWNLOAD SERVICES VALIDATION

# Tested Services & Validation Settings

---

Direct access download services

Geomeia Web Map & Geomeia SDI Pro

Readable in QGIS 2.xx with WFS 2.0 plug-in 

**Test  
Suits**

**CC: Download  
Service –  
Direct WFS**

OGC WFS 2.0  
Conformance Test Suit

CC: Download Service –  
Direct WFS

(CC = Conformance)

# First Results

---

The screenshot shows a test suite summary for WFS 2.0. The top bar is dark blue with a white plus icon, the text 'WFS 2.0 (OGC 09-025r2/ISO 19142) Conformance Test Suite', and a white box containing the number '0'. Below it is a red bar with a white plus icon, the text 'Conformance Class: Download Service - Direct WFS', and a white box containing the text 'Failed: 1 / 2'.

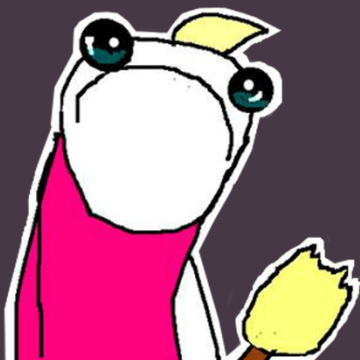
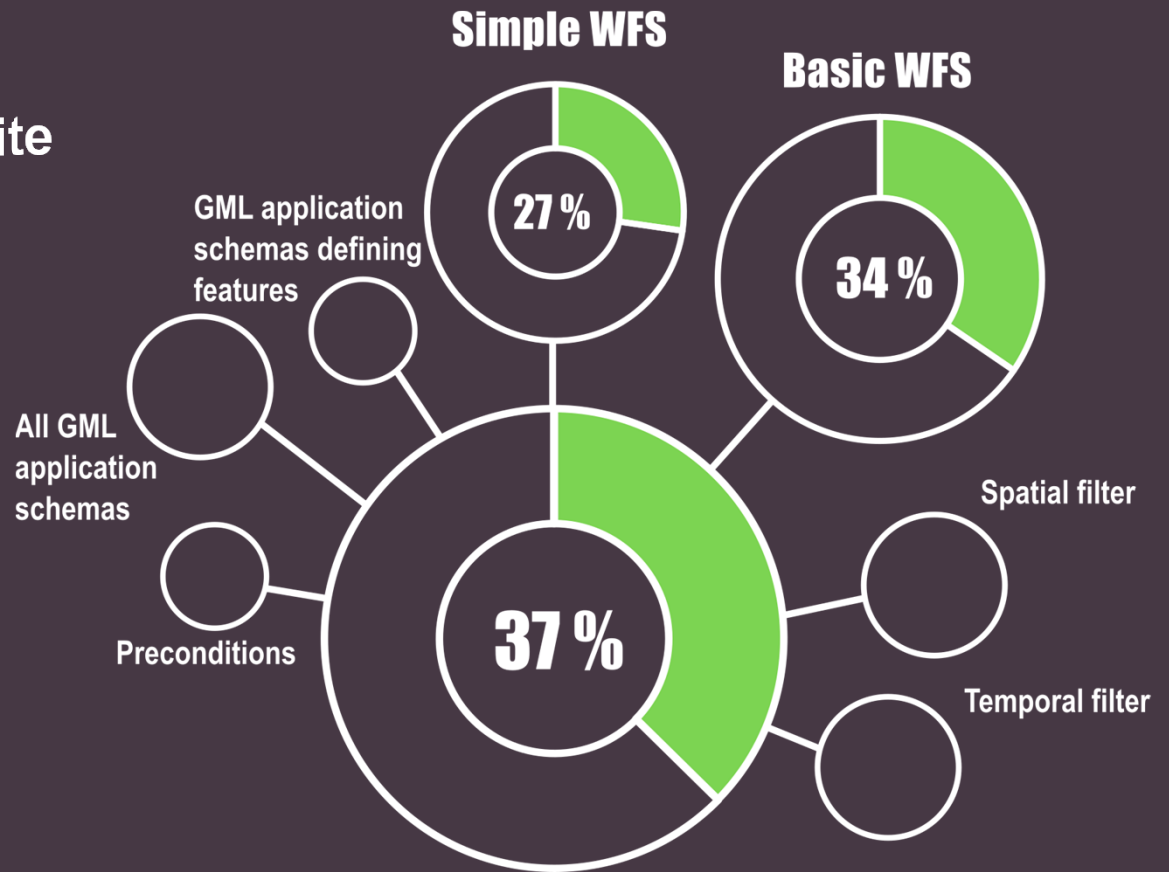
Invalid default CRS ref ~~EPSG:3004~~  
5  
→ urn:ogc:def:crs:EPSG::xxxx &  
<http://www.opengis.net/def/crs/EPSG/xxxx>

OGC  
validator

<http://cite.opengeospatial.org/teamengine/>

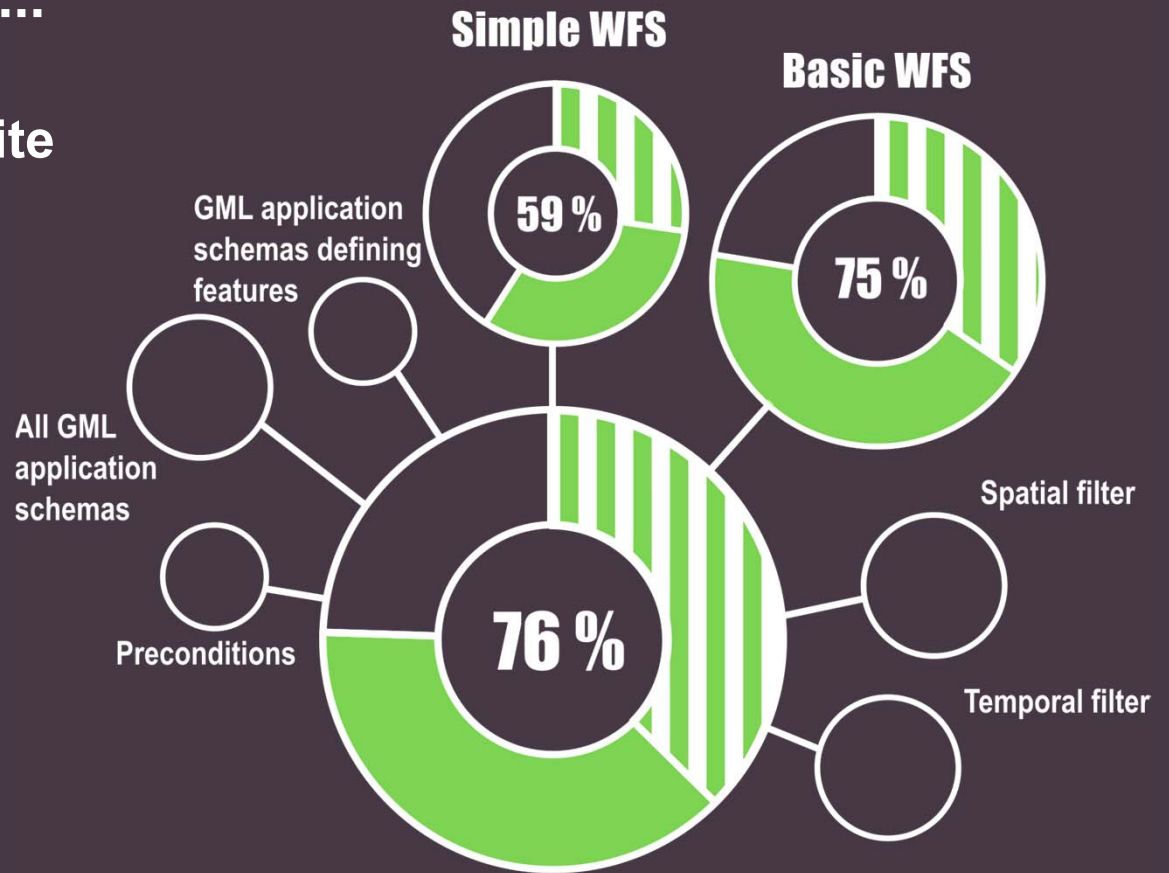
# First Results

## WFS 2.0 Conformance Test Suite



# Current Results

## WFS 2.0 Conformance Test Suite



## Types of Errors

---



**GetCapabilities XML schema validation**



**& typo in GetCapabilities Filters**



**HTTP status codes for exceptions**



**Service returns features for invalid requests**

# NOT Always Right

```
<ExceptionReport xsi:schemaLocation="http://www.opengis.net/ows/1.1 http://schemas.opengis.net/ows/1.1.0/owsExceptionReport.xsd" version="2.0.0"
  xmlns="http://www.opengis.net/ows/1.1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Exception exceptionCode="NoApplicableCode">
    <ExceptionText>An unexpected error occurred. Original message: 'GetLegendEntry: GetLegendEntries: An error occurred in the underlying database'</ExceptionText>
  </Exception>
</ExceptionReport>
```

Property Is Equal To\_case Sensitive [See ISO 19143: 7.7.3.2 | Details](#)

05:02:50

181 ms

**Name:** propertyIsEqualTo\_caseSensitive

**Description:** See ISO 19143: 7.7.3.2

**Signature:** propertyIsEqualTo\_caseSensitive(org.opengis.cite.iso19142.ProtocolBinding, javax.xml.namespace.QName)[pri:0, instance:org.opengis.cite.iso19142.basic.filter.PropertyIsEqualToOperatorTests@1ea2f4d3]

**Parameters:** GET , {http://www.locationframework.eu/schemas/CommonTransportElements/1.0}VerticalPosition

**Start time:** 05:02:50

**End time:** 05:02:50

**Duration:** 181 ms

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <wfs:WFS_Capabilities xsi:schemaLocation="http://www.opengis.net/wfs/2.0 http://schemas.opengis.net/wfs/2.0/wfs.xsd http://inspire.ec.europa.eu/schemas/inspire_dls/1.0 http://inspire.ec.europa.eu/schemas/inspire_dls/1.0/inspire_dls.xsd"
3 xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:fes="http://www.opengis.net/fes/2.0" xmlns:tn-c="http://inspire.ec.europa.eu/schemas/tn-c/4.0" xmlns:tn="http://inspire.ec.europa.eu/schemas/tn/4.0">
4   <ows:ServiceIdentification>
5     <ows:Title>INSPIRE download service for the theme Transport Networks (TN)</ows:Title>
6     <ows:Abstract>The INSPIRE Download Service for the theme Transport Networks (TN) is the service that allows registered users to download repeatedly data using WFS 2.0.0 technology. The service is based on the
7     Fundamental Base of Geographic Data of the Czech Republic (ZABAGED®). At present data for application schemas Cable and Air Transport Networks are provided. The service meets the requirements of the INSPIRE
8     <ows:ServiceType>OGC WFS </ows:ServiceType>
9     <ows:ServiceTypeVersion>2.0.0</ows:ServiceTypeVersion>
10  </ows:ServiceIdentification>
11  <ows:ServiceProvider>
12    <ows:ProviderName>Czech Office for Surveying, Mapping and Cadastre</ows:ProviderName>
13    <ows:ProviderSite xlink:type="simple" xlink:href="http://www.cuzk.cz"/>
14    <ows:ServiceContact>
15      <ows:ContactInfo>
16        <ows:Phone>
17          <ows:Voice>+420 224 111 111</ows:Voice>
18          <ows:Facsimile>+420 224 111 111</ows:Facsimile>
19        </ows:Phone>
20        <ows:Address>
21          <ows:DeliveryPoint>Pod Sídlištěm 1800/9</ows:DeliveryPoint>
22          <ows:City>Praha 8</ows:City>
23          <ows:AdministrativeArea>Kobylisy</ows:AdministrativeArea>
24          <ows:PostalCode>182 11</ows:PostalCode>
25          <ows:Country>Czech Republic</ows:Country>
26          <ows:ElectronicMailAddress>pavel.srovnal@cuzk.cz</ows:ElectronicMailAddress>
27        </ows:Address>
28        <ows:OnlineResource xlink:type="simple" xlink:href="http://geoportal.cuzk.cz"/>
29        <ows:HoursOfService>Mo-Fr 9:00 AM - 2:00 PM CET</ows:HoursOfService>
30      </ows:ContactInfo>
31    </ows:ServiceContact>
32  </ows:ServiceProvider>
33  <ows:OperationsMetadata>
34    <ows:Operation name="GetCapabilities">
35      <ows:DCP>
36        <ows:HTTP>
37          <ows:Get xlink:href="http://geoportal-inspirewfs.cuzk.cz:80/WFS_INSPIRE_TN_CABLE/service.svc/get?sid=26012015_01401414268396000_ODPOLEDNE_01245299833">
38            <ows:Constraint name="GetEncoding">
39              <ows:AllowedValues>
40                <ows:Value>KVP</ows:Value>
41              </ows:AllowedValues>
42            </ows:Get>
43          </ows:HTTP>
44        </ows:DCP>
45      </ows:Operation name="GetCapabilities">
46    </ows:OperationsMetadata>
47  </ows:OperationsMetadata>
48 </wfs:WFS_Capabilities>
```

# CONCLUSION



## Conclusion

---

Great tool

Use of INSPIRE validator API for automatic testing ?

100 % compliant data and services ?

# Thank you

Veronika Kůsová

[veronika.kusova@cuzk.cz](mailto:veronika.kusova@cuzk.cz)

Land Survey Office, Czech Republic