

EU-Arbeitsgruppe: MIG 2016.3 – Validation & conformity

Bericht über die Aktivitäten der Arbeitsgruppe

Grillmayer Roland

13.12.2016, Wien

Was wird validiert ?



(Ilkka Rinne)

*The downside of having two levels of requirements is that the term “INSPIRE conformance” is bit tricky to define: Does that mean that the **IR (legal) rules** are fulfilled? Or that the requirements in a particular **Technical Guidance (TG)** are fulfilled? These questions and harmonizing the results existing INSPIRE validator software solutions used in different member states are in core focus of the INSPIRE Maintenance and Implementation Group (MIG) activity [MIWP-5: Validation and conformity testing](#).*

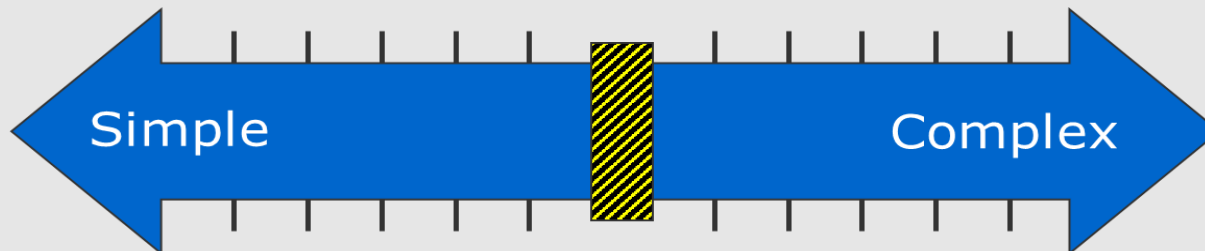
*“One part of the MIWP-5 activities is analyzing the **requirements written down in the current TG documents** and trying to formalize tests for validating services, datasets and metadata records against these requirements.”*

Quelle: <http://www.spatineo.com/2014/12/opening-inspire-conformance-testing/>

Ziel der Validierung

- Sicherstellen der technischen Interoperationalität
“The Balance Challenge”

Which level of interoperability is “just right”?



Too simple:

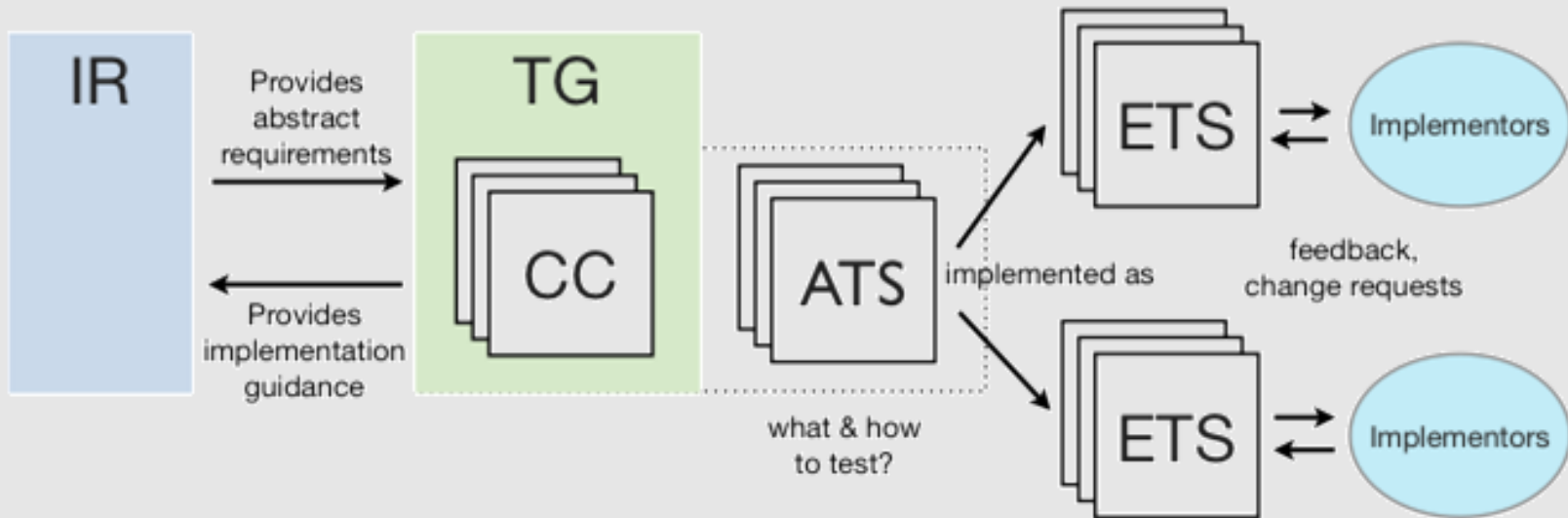
- Identified requirements can not be supported
- Insufficient harmonisation
- Few benefits

Too complex:

- Difficult to implement
- Substantial benefits available only to few users
- High costs

Quelle: https://ies-svn.jrc.ec.europa.eu/attachments/download/1780/INSPIRE%20MIWP_final%20draft%20after%20MIG%20%5BDOC5rev3%5D_clean.docx

Ziel der Validierung



- Gewährleistet durch die Requirements in den TG
- ATS – Abstract Test Suite
- Umsetzung der ATS in ETS

Aktueller Stand der Arbeiten

2016.3 Validation & conformity

■ ATS für

- Metadaten,
- Datenspezifikationen der Annex I Themen
- Netzwerkdienste

■ Entwicklung einer zentralen Validierungsplattform

- Ausgangslage : Unterschiedliche Validierungsplattformen (JRC, BRD, NL) führten zu uneinheitliche Validierungsergebnisse
- Beispiel: Validierung Metadaten mittels
 - JRC (<http://inspire-geoportal.ec.europa.eu/validator2>)
 - GDI-Suite (BRD) (<https://testsuite.gdi-de.org/gdi/>)

Lösung: Entwicklung einer zentralen Validierungsplattform

Aktueller Stand der Arbeiten

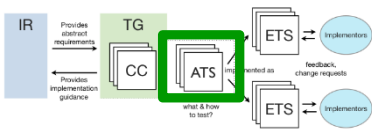
2016.3 Validation & conformity

Informationen MIG-2016.3: Validation & conformity

- <https://ies-svn.jrc.ec.europa.eu/projects/validation-and-conformity-testing>
- <http://inspire.ec.europa.eu/work-programme/validation-and-conformity-testing>

GitHUB Repositories:

- <https://github.com/inspire-eu-validation/>



Status ATS

Entwürfe ATS-Datenspezifikationen

- Data Specification on Administrative Units
- Data Specification on Hydrography
- Data Specification on Cadastral Parcels
- Data Specification on Protected Sites
- Data Specification on Geographical Names

Entwurf ATS-Metadaten

- INSPIRE Metadata based on EN ISO 19115 and EN ISO 19119

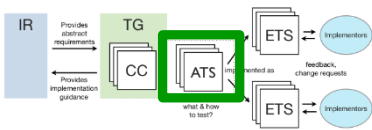
Entwürfe ATS-Netzwerkdienste

- Abstract Test Suite for the Technical Guidance for the implementation of INSPIRE View Services
- Abstract Test Suite for the Technical Guidance for the implementation of INSPIRE Download Services
- Abstract Test Suite for the Technical Guidance for INSPIRE Discovery Services

Github-Repositories: Beispiel ATS PS

The screenshot shows the GitHub interface for the organization 'INSPIRE Validation & conformity testing'. At the top, there are navigation links for 'Personal', 'Open source', 'Business', 'Explore', 'Pricing', 'Blog', and 'Support'. There are also buttons for 'This organization', 'Search', 'Sign in', and 'Sign up'. The organization's logo, featuring a globe with stars and the text 'INSPIRE - Infrastructure for Spatial Information in Europe', is on the left. The main heading is 'INSPIRE Validation & conformity testing' with the subtitle 'Workspace for EU INSPIRE MIG Validation & conformity testing sub-group' and a URL. Below this, there are tabs for 'Repositories' and 'People 2'. A search bar and filters for 'Type: All' and 'Language: All' are present. The repository list shows two items: 'ets-test-resources' (Test resources used for checking executable testsuites in the ets-repository, updated 3 days ago) and 'data-ps' (Abstract Test Suite for the Data Specification on Protected Sites, updated on Sep 16). The 'data-ps' repository is highlighted with a green border. On the right, there are sections for 'Top languages' (showing XQuery) and 'People' (showing cportele, Clemens Portele).

<https://github.com/inspire-eu-validation/>



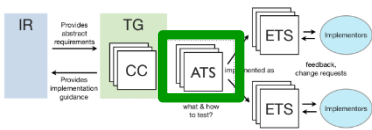
Beispiel ATS Protected Sites

Abstract Test Suite: Data Specification on Protected Sites (DRAFT)

The Data Specification on Protected Sites – Technical Guidelines (version 3.2) and the associated GML application schemas (versions 3.0 and 4.0) specifying requirements for the interoperability of spatial data sets of the data theme protected sites.

The specification specifies the following conformance classes:

Conformance class	Standardization target
GML application schema, Protected Sites Simple	INSPIRE spatial data set encoded in GML, Protected Sites features
Application schema, Protected Sites Simple	INSPIRE spatial data set
Reference Systems, Protected Sites	INSPIRE spatial data set
Data Consistency, Protected Sites	INSPIRE spatial data set
Information Accessibility, Protected Sites	INSPIRE spatial data set
Portrayal, Protected Sites	INSPIRE view service
Metadata for interoperability, Protected Sites	ISO 19115/19119 metadata record



Beispiel ATS Protected Sites

Conformance class: Data consistency, Protected Sites (DRAFT)

Conformance class for the requirements related to the consistency of the data.

To be able to test this conformance class, the encoding of the data set must be known, i.e. this is a parameterized conformance class. The XPath expressions used in this test suite assume that the GML encoding is used. If used with the GML encoding this conformance class has an indirect dependency to the conformance class "GML application schema, Protected Sites Simple".

This conformance class is part of the [Abstract Test Suite for the INSPIRE Data Specification on Protected Sites](#).

Standardization target type

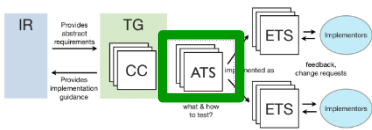
INSPIRE spatial data set

Dependencies

Direct dependencies

A direct dependency is another conformance class whose requirements must be met by the data set, too.

Specification	Conformance class	Parameters
TG DS Template	Data consistency	n/a



Beispiel ATS Protected Sites

Indirect dependencies

An indirect dependency is another conformance class whose requirements must be met by a related resource.

Specification	Conformance class	Related resource	Parameters
TG DS-PS	GML application schemas, Protected Sites	INSPIRE spatial data set encoded in GML, Protected Sites features	n/a

Feature types

The instantiable feature types are:

- ProtectedSite

Note: When "features" or "spatial objects" are mentioned in the test cases, this refers only to instances of feature types of this application schema, not to any types specified in any other application schema.

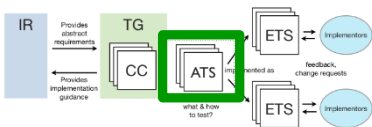
External document references

The following abbreviations are used in the test text for referring to external documents:

Abbreviation	Document name
TG DS-PS	INSPIRE Data Specification on Protected Sites – Technical Guidelines version 3.2
TG DS Template	INSPIRE Data Specification Template version 3.0rc3

Test Cases

None, all data consistency test cases are covered by the generic Data consistency tests.



Beispiel ATS Protected Sites

Indirect dependencies

An indirect dependency is another conformance class whose requirements must be met by a related resource.

Specification	Conformance class	Related resource	Parameters
TG DS Template	INSPIRE GML application schemas	INSPIRE spatial data set encoded in GML	n/a

External document references

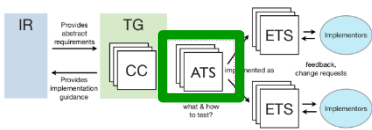
The following abbreviations are used in the test text for referring to external documents:

Abbreviation	Document name
TG DS Template	INSPIRE Data Specification Template version 3.0rc3

Test Cases

Identifier	Status	Test case in TG DS Template
Version consistency	ready for review	A.3.1, A.3.2, A.3.3
Temporal consistency	ready for review	A.3.4

Note: Additional data consistency test cases will be defined per data theme, where needed.



Beispiel ATS Protected Sites

Temporal consistency

Version: 1

Purpose: Verify that the temporal validity of the real-world entity is consistent.

Prerequisites

n/a

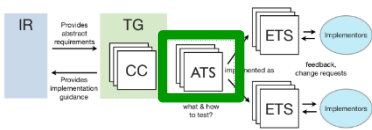
Test method

- For all **features** verify that either
 - **validFrom** or **validTo** are missing or nil or
 - **validTo** is not before the value of **validFrom**.
- Otherwise report **endTooEarly**.

Reference(s):

- [TG DS Template IR requirement Article 10 \(3\)](#)

Test type: Automated



Beispiel ATS Protected Sites

Temporal consistency

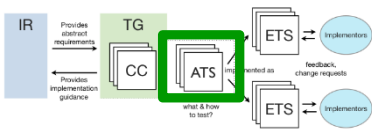
Messages

Identifier	Message text (parameters start with '\$')
endTooEarly	XML document '\$filename', \$featureType '\$gmlid': The validity of the real-world entity ends before it begins (property 'validTo': '\$end', property 'validFrom': '\$begin'). This is logically incorrect.

Contextual XPath references

The namespace prefixes and variable references are specified in [README.md](#).

Abbreviation	XPath expression
validFrom	\$features/*[local-name()='validFrom']
validTo	\$features/*[local-name()='validTo']



Conclusio Status ATS

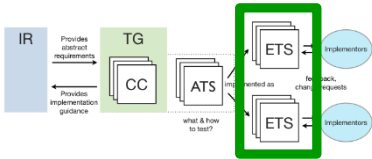
*ATS stellen die essentiellen Informationen zu
„**was muss harmonisiert werden**“
in vereinheitlichter Art und Weise zur Verfügung*

Entwürfe für

- ANNEX I Themen
- Metadaten
- Netzwerkdienste

liegen vor

Essentielle Grundlage für ETS, die über zentrale Webplattform zur Verfügung gestellt wird



ETS - Umsetzung

- Aufbauend auf etf-Web Application
- <https://github.com/interactive-instruments/etf-webapp>
- ETS-Regeln: Schematron / jQuery
- Ausschließlich für die Validierung von GML kodierten Daten

interactive instruments English | Deutsch

Home Über uns XtraServer XtraServer • AAA Suite XtraProxy for WFS REB für Windows ShapeChange ArcGIS

[Home](#) > [Über uns](#) > [Impressum](#)


Impressum

interactive instruments Gesellschaft für Software-Entwicklung mbH
 Trierer Straße 70-72
 53115 Bonn

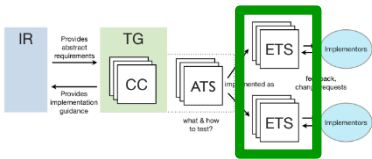
Telefon: +49 228 91410 70
 Fax: +49 228 91410 90

Email: mail [at] interactive-instruments.de

Geschäftsführer:
 Dipl.-Inform. Reinhard Erstling
 Dipl.-Inform. Karla Hinzer
 Dipl.-Phys. Clemens Portele
 Dipl.-Phys. Bernd Weidner



Clemens Portele
cportele



Status ETS

INSPIRE Validator (development version)

Starte Test | **Testberichte** | Status | Hilfe

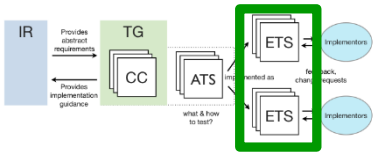
Testberichte

Q Filter items...

PS-Austria: Testlauf vom 05.12.2016 - 15:48 - 'Conformance class: Information accessibility, Protected Sites'	+
PS-Austria: Testlauf vom 05.12.2016 - 15:56 mit Testprojekt 'Conformance class: Application schema, Protected Sites Sim...	+
PS-Austria: Testlauf vom 05.12.2016 - 15:59 mit Testprojekt 'Conformance class: Data consistency, Protected Sites'	+
PS-Austria: Testlauf vom 05.12.2016 - 16:03 mit Testprojekt 'Conformance class: Reference systems, Protected Sites'	+
PS-Austria: Testlauf vom 05.12.2016 - 16:05 mit Testprojekt 'Conformance class: GML application schemas, Protected Sites'	+
Test run on 02.12.2016 - 11:34 with executable test suite 'Conformance class: INSPIRE Profile based on EN ISO 19115 and ...'	+
Test run on 02.12.2016 - 15:12 with executable test suite 'Conformance class: INSPIRE Profile based on EN ISO 19115 and ...'	+
Test run on 02.12.2016 - 15:24 with executable test suite 'Conformance class: Reference systems, General requirements'	+
Test run on 02.12.2016 - 15:25 with executable test suite 'Conformance class: Reference systems, General requirements'	+

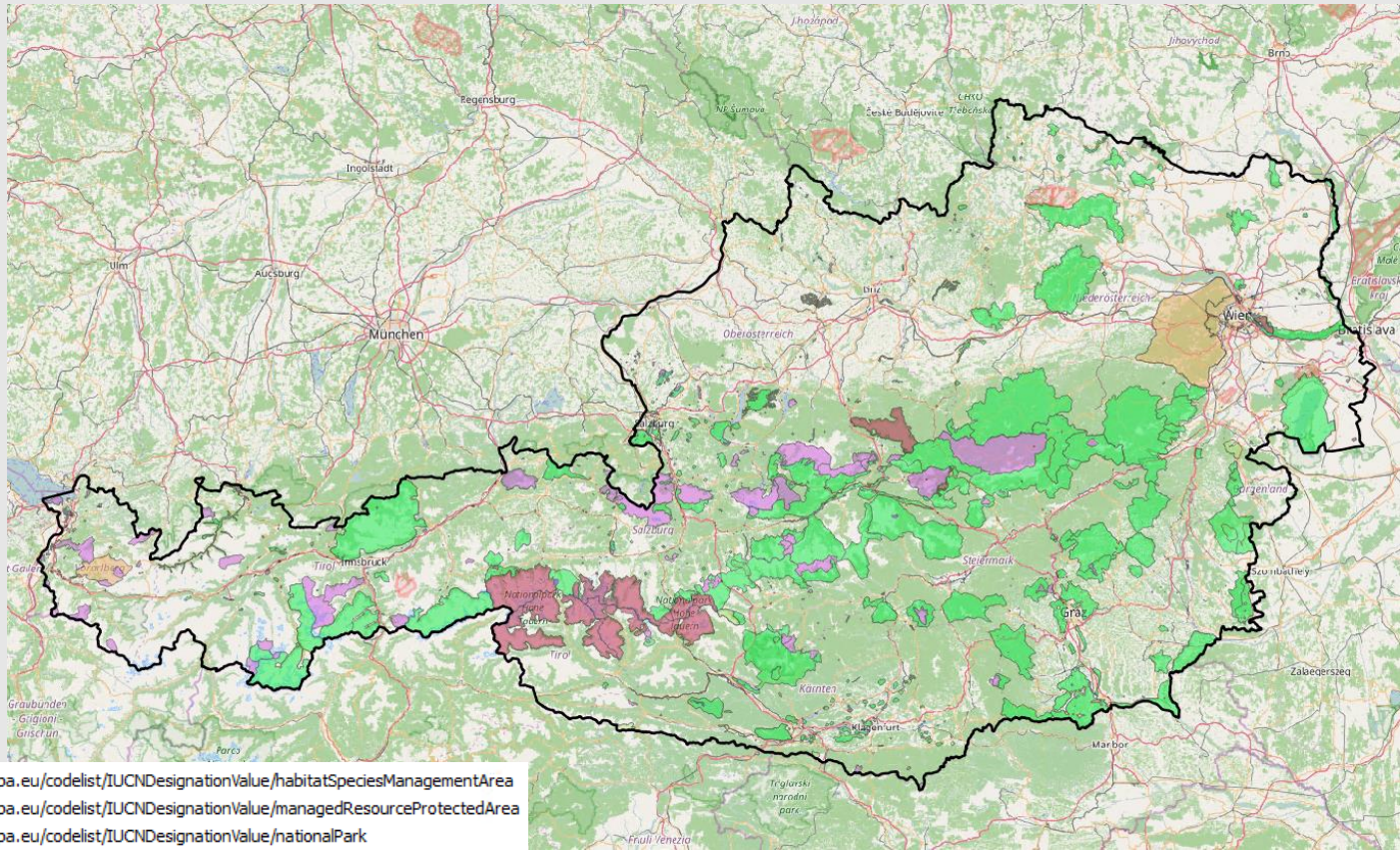
seit 29.11.2016 ETS für MIG-5 Mitglieder zum Tester bzw. Debuggen freigeschalten

<https://github.com/inspire-eu-validation>

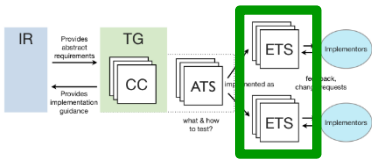


Praktische Beispiel DS Land Use

- Validieren des Datensatzes der im Rahmen der Workshops erstellt wurde



- <http://inspire.ec.europa.eu/codelist/IUCNDesignationValue/habitatsSpeciesManagementArea>
- <http://inspire.ec.europa.eu/codelist/IUCNDesignationValue/managedResourceProtectedArea>
- <http://inspire.ec.europa.eu/codelist/IUCNDesignationValue/nationalPark>
- <http://inspire.ec.europa.eu/codelist/IUCNDesignationValue/naturalMonument>
- <http://inspire.ec.europa.eu/codelist/IUCNDesignationValue/ProtectedLandscapeOrSeascape>
- <http://inspire.ec.europa.eu/codelist/IUCNDesignationValue/strictNatureReserve>

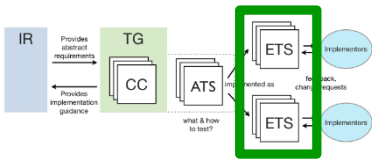


Praktische Beispiel DS Land Use

- <http://52.57.125.3/etf-webapp/>

INSPIRE Validator (development version)

Starte Test	Testberichte	Status
Testberichte		
<input type="text" value="Filter items..."/>		
PS-Austria: Testlauf vom 05.12.2016 - 15:48 - 'Conformance class: Information accessibility, Protected Sites'		
PS-Austria: Testlauf vom 05.12.2016 - 15:56 mit Testprojekt 'Conformance class: Application schema, Protected Sites Simple'		
PS-Austria: Testlauf vom 05.12.2016 - 15:59 mit Testprojekt 'Conformance class: Data consistency, Protected Sites'		
PS-Austria: Testlauf vom 05.12.2016 - 16:03 mit Testprojekt 'Conformance class: Reference systems, Protected Sites'		
PS-Austria: Testlauf vom 05.12.2016 - 16:05 mit Testprojekt 'Conformance class: GML application schemas, Protected Sites'		



Praktische Beispiel DS Land Use

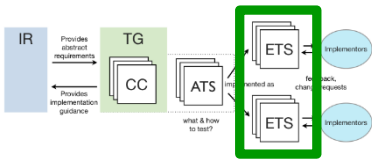
INSPIRE Validator (development version)

Starte Test
Testberichte
Status
Hilfe

Testprojekte

Filter items...

100 Metadata	
Conformance class: XML encoding of ISO 19115/19119 metadata	+
Conformance class: INSPIRE Profile based on EN ISO 19115 and EN ISO 19119	+
200 Interoperable data sets in GML	
Conformance class: Reference systems, General requirements	+
Conformance class: Data consistency, General requirements	+
Conformance class: Information accessibility, General requirements	+
Conformance class: INSPIRE GML application schemas, General requirements	+
Conformance class: INSPIRE GML encoding	+
201 Data Theme: Hydrography	
Conformance class: Application schema, Hydrography - Network	+
Conformance class: Application schema, Hydrography - Physical Waters	+
Conformance class: Reference systems, Hydrography	+
Conformance class: Data consistency, Hydrography	+
Conformance class: GML application schemas, Hydrography	+
Conformance class: Information accessibility, Hydrography	+
202 Data Theme: Protected Sites	
Conformance class: Information accessibility, Protected Sites	+
Conformance class: Application schema, Protected Sites Simple	+



Praktische Beispiel DS Land Use

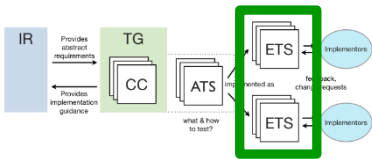
INSPIRE Validator (development version)

Starte Test Testberichte Status Hilfe

Testprojekte

Filter items...

100 Metadata	
Conformance class: XML encoding of ISO 19115/19119 metadata	+
Conformance class: INSPIRE Profile based on EN ISO 19115 and EN ISO 19119	+
200 Interoperable data sets in GML	
Conformance class: Reference systems, General requirements	+
Conformance class: Data consistency, General requirements	+
Conformance class: Information accessibility, General requirements	+
Conformance class: INSPIRE GML application schemas, General requirements	+
Conformance class: INSPIRE GML encoding	+
202 Data Theme: Protected Sites	
Conformance class: Information accessibility, Protected Sites	+
Conformance class: Application schema, Protected Sites Simple	+
Conformance class: Data consistency, Protected Sites	+
Conformance class: Reference systems, Protected Sites	+
Conformance class: GML application schemas, Protected Sites	+



Praktische Beispiel DS Land Use

202 Data Theme: Protected Sites

Conformance class: Information accessibility, Protected Sites +

Conformance class: Application schema, Protected Sites Simple -

Beschreibung:
 This test suite examines requirements associated with the application schema.

Note that since both code-list-valued properties of this application schema may be extended without restrictions, there is no test case for code list values.

This is a draft version. It has limitations and is expected to contain errors. Please report any issues or problems [in GitHub](#).

Known limitations are documented in the description of the applicable test case or test assertion. There is a general limitation in all assertions that extensions in additional application schemas are not fully supported.

Source: [Conformance Class 'Application schema, Protected Sites Simple'](#)

Pre-requisite conformance classes:

- [Conformance Class 'GML application schemas, Protected Sites'](#)

Schlagwörter:

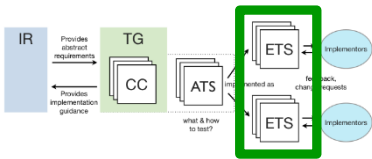
- 202 Data Theme: Protected Sites

Start →

Conformance class: Data consistency, Protected Sites +

Conformance class: Reference systems, Protected Sites +

Conformance class: GML application schemas, Protected Sites +



Praktische Beispiel DS Land Use

INSPIRE Validator (development version)

Starte Test
Testberichte
Status
Hilfe

Testlauf "PS-Austria: Testlauf vom 06.12.2016 - 11:03 mit Testprojekt 'Conformance class: Application schema, Protected Sites Simple'" wird durchgeführt

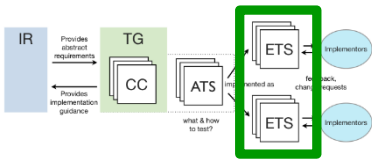
```

2016-12-06T10:05:07 INFO Compiling test script
2016-12-06T10:05:07 INFO Starting XQuery tests
2016-12-06T10:05:07 INFO "Testing 101 features"
2016-12-06T10:05:07 INFO "Indexing features (parsing errors: 0): 54 ms"
2016-12-06T10:05:07 INFO "Executing Test Suite: /etf/projects/bsx/data/schemas/ets-schemas-bsxets.xml"
2016-12-06T10:05:07 INFO "Statistics table: 0 ms"
2016-12-06T10:05:07 INFO "Test Suite 'Conformance class: INSPIRE GML application schemas, General requirements' started"
2016-12-06T10:05:07 INFO "Test Case 'Schema' started"
2016-12-06T10:05:07 INFO "Test Assertion 'gmlas.a.1: Mapping of source data to INSPIRE': PASSED_MANUAL"
2016-12-06T10:05:07 INFO "Test Assertion 'gmlas.a.2: Modelling of additional spatial object types': PASSED_MANUAL"
2016-12-06T10:05:07 INFO "Test Case 'Schema' finished: PASSED_MANUAL"
2016-12-06T10:05:07 INFO "Test Case 'Schema validation' started"
2016-12-06T10:05:07 INFO "Test Assertion 'gmlas.b.1: xsi:schemaLocation attribute': PASSED - 0 ms"
  
```

Executing:

- Conformance class: INSPIRE GML encoding
- Conformance class: INSPIRE GML application schemas, General requirements
- Conformance class: GML application schemas, Protected Sites
- Conformance class: Application schema, Protected Sites Simple

Abbrechen



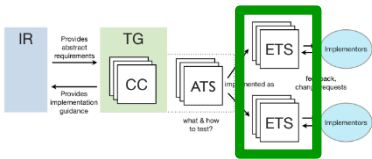
Praktische Beispiel DS Land Use

PS-Austria: Testlauf vom 06.12.2016 - 11:03 mit Testprojekt
 'Conformance class: Application schema, Protected Sites Simple'

Status	Failed	Total Skipped Failed Warnings Manual					Show	Level of detail	
Duration	12 s	Test suites	4	0	1	0	1	<input checked="" type="radio"/> All <input type="radio"/> Only failed <input type="radio"/> Only manual	<input type="radio"/> All details <input type="radio"/> Less information <input checked="" type="radio"/> Simplified
		Test cases	8	0	1	0	2		
		Assertions	25	0	1	0	4		

- + Conformance class: INSPIRE GML encoding** 1
- + Conformance class: INSPIRE GML application schemas, General requirements** Failed: 1/4
- + Conformance class: GML application schemas, Protected Sites** 1
- + Conformance class: Application schema, Protected Sites Simple** 2

Report generated by ETF



Praktische Beispiel DS Land Use

PS-Austria: Testlauf vom 06.12.2016 - 11:03 mit Testprojekt 'Conformance class: Application schema, Protected Sites Simple'

	Total	Skipped	Failed	Warnings	Manual
Test suites	4	0	1	0	1
Test cases	8	0	1	0	2
Assertions	25	0	1	0	4

Status Failed
 Duration 12 s

Show: All, Only failed, Only manual
 Level of detail: All details, Less information, Simplified

- + Conformance class: INSPIRE GML encoding 1
- Conformance class: INSPIRE GML application schemas, General requirements Failed: 1 / 4

This test suite examines GML documents against basic requirements for the GML encoding for spatial data sets in INSPIRE. This only covers application-schema-independent, generic requirements. Requirements related to specific application schemas are part of conformance classes with a dependency on this conformance class.

This is a draft version. It has limitations and is expected to contain errors. Please report any issues or problems [in GitHub](#).

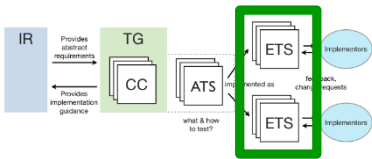
Known limitations are documented in the description of the applicable test case or test assertion. There is a general limitation in all assertions that extensions in additional application schemas are not fully supported.

Source: [Conformance Class 'INSPIRE GML encoding'](#)

Pre-requisite conformance classes:

 - [Conformance Class 'INSPIRE GML encoding'](#)

Status Failed
 Duration 12 s
- + Schema 2
- + Schema validation 2
- + GML model 3
- + Simple features Failed: 1 / 11



Praktische Beispiel DS Land Use

Schema 2

Verify whether each relevant element of the dataset under inspection carries a name specified in the target application schema.

Status Passed, manual checks required
Duration 0.001 s

gmlas.a.1: Mapping of source data to INSPIRE

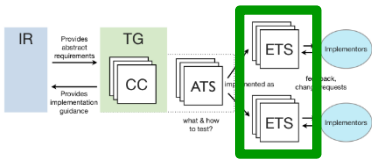
Verify whether each relevant element of the source data set under inspection has been properly mapped to the INSPIRE application schemas. Inspect the documentation of the source data set and determine, if all relevant information has been mapped correctly to the INSPIRE application schema, i.e. that spatial object types, data types, attributes, association roles, code lists, and enumerations are mapped to the INSPIRE application schemas with the correct designation of mnemonic names.

Relevant requirements:

- Article 4(1) - For the exchange and classification of spatial objects from data sets meeting the conditions laid down in Article 4 of Directive 2007/2/EC, Member States shall use the spatial object types and associated data types, enumerations and code lists that are defined in Annexes II, III and IV for the themes the data sets relate to.

Source: [Abstract Test Case 'Schema'](#)

Status Passed, manual checks required
Duration 0.001 s



Praktische Beispiel DS Land Use

- Schema
2

Verify whether each relevant element of the dataset under inspection carries a name specified in the target application schema.

Status Passed, manual checks required
Duration 0.001 s

o gmlas.a.1: Mapping of source data to INSPIRE

- gmlas.a.2: Modelling of additional spatial object types

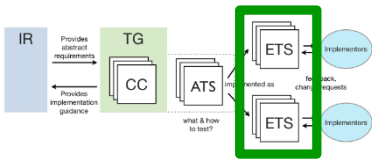
Inspect the XML Schema namespace of each feature element. If a namespace URI does not start with "http://inspire.ec.europa.eu/schemas/" or "urn:x-inspire:specification:gmlas:" it is not one of the approved INSPIRE application schema namespaces. Review the extension documentation for the identified namespaces to check that any extensions do not overlap with the spatial object types and associated data types and enumerations that are defined in Annexes II, III and IV of the Implementing Rule.

Relevant requirements:

- Article 4(1) - For the exchange and classification of spatial objects from data sets meeting the conditions laid down in Article 4 of Directive 2007/2/EC, Member States shall use the spatial object types and associated data types, enumerations and code lists that are defined in Annexes II, III and IV for the themes the data sets relate to.

Source: [Abstract Test Case 'Schema'](#)

Status Passed, manual checks required
Duration 0.001 s



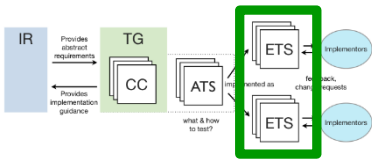
Praktische Beispiel DS Land Use

- + Schema 2
- + Schema validation 2
- + GML model 3
- Simple features Failed: 1 / 11

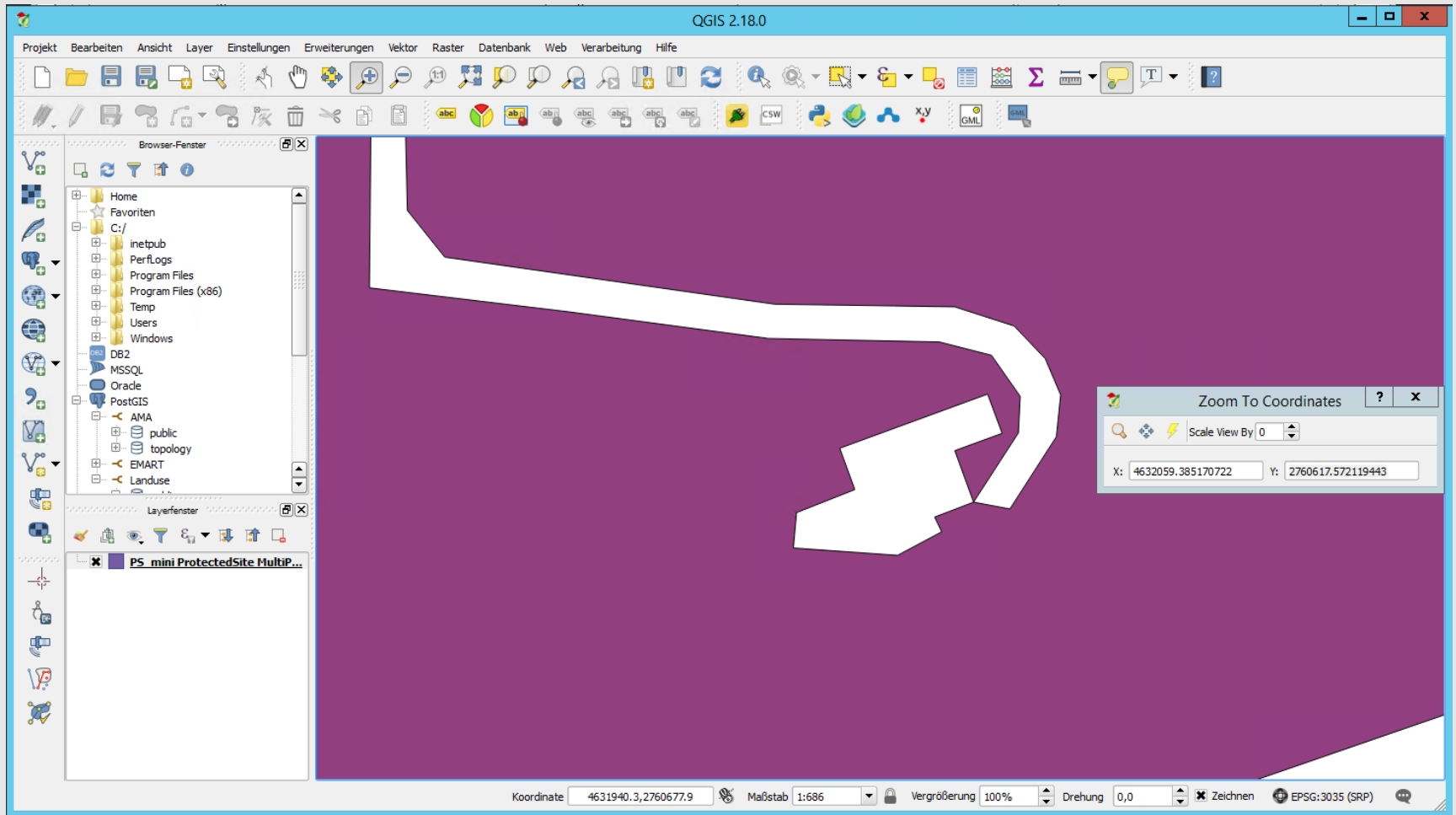
Verify that all features that are not excluded from the default requirement that geometries meet the requirements of the Simple Features standard fulfill the requirements.

Status Failed
Duration 1.999 s

- ✓ gmlas.d.1: No spatial topology objects
- ✓ gmlas.d.2: No non-linear interpolation
- ✓ gmlas.d.3: Surface geometry elements
- ✓ gmlas.d.4: No non-planar interpolation
- ✓ gmlas.d.5: Geometry elements
- ✓ gmlas.d.6: Point coordinates in gml:pos
- ✓ gmlas.d.7: Curve/Surface coordinates in gml:posList
- ✓ gmlas.d.8: No array property elements
- ✓ gmlas.d.9: 1, 2 or 3 coordinate dimensions
- ▲ gmlas.d.10: Validate geometries (1)
- ✓ gmlas.d.11: Validate geometries (2)



..lets jump into Qgis (4632059.3851 / 2760617.5721)



Conclusio

- Durch die Umsetzung der ATS und ETS wurden essentielle Grundlage für eine erfolgreiche Datenharmonisierung geschaffen
- ETS zur Zeit in der Testphase

Weiterführende Arbeiten

- Fertigstellung der Entwürfe der ATS und Implementierung ETS
- Freischalten der ETS Plattform

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