



INSPIRE

Infrastructure for Spatial Information in Europe

Technical Guidance for INSPIRE Discovery Services

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1 Introduction

INSPIRE is a Directive proposed by the European Commission in July 2004 which defines the legal framework for the establishment and operation of an Infrastructure for Spatial Information in Europe. The purpose of the infrastructure is to enable the formulation, implementation, monitoring activities and evaluation of Community environmental policies at all levels – European, national and local – and to provide public information.

INSPIRE builds on the infrastructures for spatial information that have already been created by the Member States. The components of those infrastructures include: metadata, spatial data themes (as described in Annexes I, II, III of the Directive), network services and technologies; agreements on data sharing, access and use; coordination and monitoring mechanisms, processes and procedures.

The guiding principles of INSPIRE are:

- that the infrastructures for spatial information in the Member States should be designed to ensure that spatial data are stored, made available and maintained at the most appropriate level;
- that it is possible to combine spatial data from different sources across the Community in a consistent way and share them between several users and applications;
- that it is possible for spatial data collected at one level of public authority to be shared between all the different levels of public authorities;
- that spatial data are made available under conditions that do not restrict their extensive use; and
- that it is easy to discover available spatial data, to evaluate their fitness for purpose and to know the conditions applicable to their use.

The text of the INSPIRE Directive is available from the INSPIRE¹ web site (http://inspire.jrc.it/directive/l_10820070425en00010014.pdf). The Directive identifies what needs to be achieved, and Member States have two years from the date of adoption to bring into force national legislation, regulations, and administrative procedures that define how the agreed objectives will be met taking into account the specific situation of each Member State. To ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and trans-boundary context, the Directive requires that common Implementing Rules (IR) are adopted in a number of specific areas. Implementing Rules are adopted as Commission Decisions, and are binding in their entirety. The Commission is assisted in the process of adopting such rules by a regulatory committee composed by representatives of the Member States and European Parliament. The committee is chaired by a representative of the Commission (this is known as the Comitology procedure). The committee will be established within three months from the entry in force of the Directive.

The scope of this document is to detail the INSPIRE technical requirements for **Discovery services** into Implementing Rules, such that these services can be implemented consistently across Europe.

These Implementing Rules are, as much as possible, in conformance with European and international standards, current practices in stakeholder communities and relevant European initiatives such as e-Government, and the EU interoperability framework.

This document will be publicly available as a 'non-paper', as it does not represent an official position of the Commission, and as such can not be invoked in the context of legal procedures.
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¹ <http://inspire.jrc.it/>

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2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15836: 2003, *Information and documentation- The Dublin Core metadata element set*

ISO 19115: 2003, *Geographic information – Metadata*

ISO 19115/Cor.1:2006, *Geographic information – Metadata, Technical Corrigendum 1*

ISO 19119:2005, *Geographic information – Services*

ISO 19119:2005 PDAM 1, *Geographic information – Services*

ISO/TS 19139:2006, *Geographic information - Metadata - Implementation specification*

OGC 07-006, **OGC CSW**, OGC™ Catalogue Services Specification, version 2.0.2 (Corrigendum Release 2).

OGC 07-045, **CSW ISO AP**, OGC™ Catalogue Services Specification 2.0.2 - ISO Metadata Application Profile for CSW 2.0, version 1.0.0 (2007).

OGC 05-008, **OGC OWS**, OGC Web Services Common Specification, version 1.0 (May 2005)

INSPIRE, **INS DIS**, Draft COMMISSION REGULATION implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the network services (Brussels, 28.11.2008, D003152/01).

INSPIRE, **INS MD**, INSPIRE Metadata Regulation, Commission Regulation (EC) No 1205/2008.

INSPIRE, **INS MD IMPL**, INSPIRE Metadata Implementing Rules: Technical Guidelines based on EN ISO 19115 and EN ISO 19119, v1.1 (2009-02-18).

INSPIRE, **INS ARC**, Network Services Architecture Version 2.0 (17-12-2007)

3 INSPIRE Profile of CSW ISO AP

3.1 General background

The base specification of an INSPIRE Discovery Service is [CSW ISO AP] as defined by [INS DIS].

Although this specification [CSW ISO AP] lays down the basic behaviour of an INSPIRE Discovery Service some aspects need to be extended with respect to the requirements of the INSPIRE Directive and the Implementing Rules for Metadata [INS MD]. These aspects are:

- Discovery Service Operations
- Discovery Service Queryables
- Discovery Service Multilingual aspects

The following sections specify required extensions to the given specifications.

3.2 INSPIRE specific constraints

Here is an initial list of INSPIRE constraints applicable to an [CSW ISO AP] base Discovery Service:

- SC1. Link Discovery Service is mandatory. This means that in any case, the federated search through a GetRecords request shall be supported.
- SC2. The list of federated catalogues, if any, shall be advertised on the capabilities document of the INSPIRE Discovery Service instance.
- SC3. The additional search attributes listed in section 3.4 are mandatory and shall be supported.
- SC4. The additional search attributes listed in section 3.4 shall be advertised on the capabilities document of the INSPIRE Discovery Service instance.
- SC5. The resource type 'http://www.isotc211.org/schemas/2005/gmd' shall be supported in case of a supported harvesting operation.
- SC6. For all INSPIRE Discovery Service operations the SOAP binding is mandatory.

3.3 Discovery service operations

The base functionality of an INSPIRE Discovery Service is derived from [CSW ISO AP]. The following sections specify the extensions to this base specification that are derived from the INSPIRE requirements as defined by [INS DIS]

[CSW ISO AP] distinguishes between two types of catalogue services: A 'read-only' catalogue service that has to provide operations labelled 'CSW' and a transactional catalogue service that has to provide operations labelled 'CSWT'. This distinction is derived from the OGC catalogue base specification [OGC CSW].

Table 1 shows the relation between operations of an INSPIRE Discovery Service and the according catalogue service operation as defined by [OGC CSW].

Table 1: INSPIRE Discovery Services Operations

INSPIRE Discovery Services functions	INSPIRE Cardinality	OGC CSW ISO AP operations	OGC CSW ISO AP cardinality
Get Discovery Service Metadata	Mandatory	OGC_Service.GetCapabilities	Mandatory
Discover Metadata	Mandatory	CSW Discovery.GetRecords	Mandatory
Publish Metadata	Conditional	CSWT Manager.Transaction or CSWT Manager.Harvest	Conditional

Link Discovery service	Mandatory	Combination of OGC_Service.GetCapabilities CSW Discovery.GetRecords	Mandatory
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3.3.1 Get Discovery Service Metadata

IR	Reference	2
	Operation name	Get Discovery Service Metadata
	Obligation / condition	Mandatory
CSW ISO AP	Operation name	OGC_Service.GetCapabilities
	Definition	The GetCapabilities operation allows clients to retrieve service metadata from a server.

3.3.1.1 Request Parameters

No additional request parameters are required.

3.3.1.2 Response Parameters

Table 2 shows the parameters, that shall be part of a GetCapabilities Response, as required by clause 2.2 of [INS DIS].

Table 2: Discovery service metadata in a GetCapabilities Response

Discovery service metadata	
ServiceType	Spatial Data Service Type as defined by INSPIRE MD, Fixed Value: 'discovery'
ServiceTypeVersion	Version of this service type implemented by this server
Title	Title of this server, normally used for display to a human
Abstract	Brief narrative description of this server, normally available for display to a human
Keywords	Unordered list of one or more commonly used or formalized word(s) or phrase(s) used to describe this server
Fees	Fees and terms for retrieving data from or otherwise using this server, including the monetary units as specified in ISO 4217
AccessConstraints	Access constraints that should be observed to assure the protection of privacy or intellectual property, and any other restrictions on retrieving or using data from or otherwise using this server
ProviderName	Unique identifier for service provider organization
Providersite	Reference to the most relevant web site of the service provider
ServiceContact	Information for contacting service provider
Filter_Capabilities	The following elements are valid: And, Or, Not, PropertyIsEqualTo, PropertyIsNotEqualTo, PropertyIsLessThan, PropertyIsGreaterThan, PropertyIsLessThanOrEqualTo, PropertyIsGreaterThanOrEqualTo, BBOX.
Operations metadata	
Operation	Metadata for one operation that this server interface implements

Parameter	Parameter valid domain that applies to one or more operations which this server implements
Constraint	Constraint on valid domain of a non-parameter quantity that applies to this server
ExtendedCapabilities	Metadata about server and software additional abilities
Languages	
	OperationsMetadata section: ExtendedCapabilities (see section 3.4)

See Annex A for the full capabilities document XSD Schema.

[CSW ISO AP] specifies a GetCapabilities operation with several service metadata sections. The service metadata in the capabilities documents should be in conformance with the INSPIRE metadata IR elements.

Table 3 gives the mapping from the INSPIRE metadata IR elements (based on the mapping to [ISO 19119]) to the capabilities as used for the implementation of the Discovery service by [CSW ISO AP].

The first two columns are from [INS MD IMPL]. In the column "Capabilities CSW ISO AP" of table 3 the capabilities mapping is defined. In the last column the mappings as defined in the mapping ISO 19115/ISO 19119 of the DT Metadata are shown.

Table 3: Mapping INSPIRE metadata IR elements to CSW ISO AP capabilities metadata

INSPIRE Metadata element	M/C/O	Capabilities CSW ISO AP	Type Field	ISO 19139 / CSW ISO AP
Resource Title	M	/csw:Capabilities/Serviceidentification/Title	String	identificationInfo[1]*/citation*/title [ISO 19139]
Resource abstract	M	/csw:Capabilities/Serviceidentification/Abstract	String	identificationInfo[1]*/abstract [ISO 19139]
Resource locator	C	/csw:Capabilities/OperationsMetadata/Operation/GetCapabilities/DCP/HTTP/@xlink:href	URL	distributionInfo*/transferOptions*/onlineLinkage [ISO 19139]
Spatial data service type	M	/csw:Capabilities/Serviceidentification/ServiceType	GenericName	identificationInfo[1]*/serviceType [CSW ISO Metadata AP]
Keyword value	M	/csw:Capabilities/Serviceidentification/Keywords/Keyword	String	identificationInfo[1]*/descriptiveKeywords*/keyword
AccessConstraints	M	/csw:Capabilities/Serviceidentification/AccessConstraints		identificationInfo[1]*/resourceConstraints*/accessConstraints [ISO 19139]
Responsible party	M	csw:Capabilities/Serviceprovider/ProviderName	string	identificationInfo[1]*/pointOfContact*/organisationName
Responsible party e-mail	M	csw:Capabilities/Serviceprovider/ServiceContact/ContactInfo/Address/ElectronicMailAddress	string	identificationInfo[1]*/pointOfContact/address/electronicMailAddress
Operation Name	M	csw:Capabilities/OperationsMetadata/Operation	string	

3.3.2 Discover Metadata

IR	Reference	3
	Operation name	Discover Metadata
	Obligation / condition	Mandatory
CSW	Operation name	CSW Discovery.GetRecords

ISO AP	Definition	The primary means of a GetRecords operation is to search and to present metadata records.
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3.3.2.1 **Request Parameters**

According to 3.1.1 [INS DIS] two parameters have to be provided in a request:

- Language
- Query

The query parameter is realized by the filter statement of the GetRecords-Request itself. The query has to support all search attributes defined in chapter 3.4.

The language parameter is realized by using the Language queryable in a filter statement. With that a client can request metadata records in a specific metadata language.

Concerning the query language the INSPIRE requirements do not extend the basic requirements defined by [CSW ISO AP].

Example:

```
<csw:GetRecords xmlns:csw="http://www.opengis.net/cat/csw/2.0.2"
service="CSW" resultType="results"
outputFormat="application/xml"
outputSchema="http://www.isotc211.org/2005/gmd"
startPosition="1" maxRecords="10">
  <csw:Query typeNames="gmd:MD_Metadata">
    <csw:ElementSetName
typeNames="gmd:MD_Metadata">full</ns4:ElementSetName>
    <csw:Constraint version="1.1.0">
      <ogc:Filter xmlns:ogc="http://www.opengis.net/ogc">
        <ogc:And>
          <ogc:PropertyIsEqualTo>
            <ogc:PropertyName>apiso:Language</ogc:PropertyName>
            <ogc:Literal>eng</ogc:Literal>
          </ogc:PropertyIsEqualTo>
          <ogc:PropertyIsEqualTo>
            <ogc:PropertyName>apiso:ServiceType</ogc:PropertyName>
            <ogc:Literal>view</ogc:Literal>
          </ogc:PropertyIsEqualTo>
        </ogc:And>
      </ogc:Filter>
    </csw:Constraint>
  </csw:Query>
</csw:GetRecords>
```

3.3.2.2 **Response Parameters**

No additional response parameters are required.

3.3.3 Transaction Operation

IR	Reference	3
	Operation name	Publish Metadata (push)
	Obligation / condition	Conditional: one of Transaction or Harvest has to be supported
CSW ISO AP	Operation name	CSWT Manager.Transaction
	Definition	The Transaction operation defines an interface for creating, modifying and deleting catalogue records.

3.3.3.1 **Request Parameters**

No additional request parameters are required.

3.3.3.2 **Response Parameters**

No additional response parameters are required.

3.3.4 Harvest Operation

IR	Reference	3
	Operation name	Publish Metadata (pull)
	Obligation / condition	Conditional: one of Transaction or Harvest has to be supported
CSW ISO AP	Operation name	CSWT Manager.Harvest
	Definition	The Harvest operation "pulls" data into the catalogue.

3.3.4.1 **Request Parameters**

Within the context of INSPIRE an INSPIRE Discovery Service is at least able to harvest single metadata documents that are provided through some online location.

[**CSW ISO AP**] specifies a harvest operation that is based on the related operation of the underlying base specification [**OGC CSW**]. For an INSPIRE Discovery Service, the following settings have to be met if a resource is requested to be harvested by a catalogue service instance.

- **RESOURCE TYPE**: The resource type of the resource being harvested has to be <http://www.isotc211.org/schemas/2005/gmd>
- **RESOURCE FORMAT**: The resource format of the resource being harvested has to be "application/xml"

The following XML code fragment shows a valid Harvest request:

```
<?xml version="1.0" encoding="UTF-8"?>
<csw:Harvest service="CSW" version="2.0.2"
xmlns:csw="http://www.opengis.net/cat/csw/2.0.2">
  <csw:Source>http://www.myhost.com/metadata_dataset.xml</csw:Source>
  <csw:ResourceType>http://www.isotc211.org/schemas/2005/gmd</csw:ResourceType>
  <csw:ResourceFormat>application/xml</csw:ResourceFormat>
  <csw:HarvestInterval>P1Y2M3DT10H30M0S</csw:HarvestInterval>
</csw:Harvest>
```

3.3.4.2 **Response Parameters**

No additional response parameters are required.

3.3.5 Link Discovery Service

This operation is implemented by two operations of [**CSW ISOAP**]: GetRecords and GetCapabilities:

[**CSW ISO AP**] defines a mechanism to advertise remote or federated Discovery services for remote search through the GetRecords request of the Discovery Service instance (see chapter 9.6.7, chapter 10.8.4.13 7.5 and Annex B of [**CSW ISO AP**]). Discovery services may advertise, in the capabilities document, to which other Discovery Service a query is distributed using an operation constraint called "FederatedCatalogues". Operation constraints are described in Subclause 7.4.5 of OGC 05-008c1. In

[CSW ISO AP] a federated Discovery Service must be listed by the URL of the HTTP/KVP/GET GetCapabilities request.

IR	Reference	3
	Operation name	Link Discovery Service
	Obligation / condition	Mandatory
CSW ISO AP	Operation name	OGC_Service.GetCapabilities CSW_Discovery.GetRecords
	Definition	The GetRecords operation is able to search and to present metadata records from federated Discovery Services. Federated Discovery Services are advertised in the Capabilities.

3.3.5.1 Request Parameters

No additional request parameters are required. However, it is demanded that the hopCount attribute of the Distributed search element of a GetRecords request should always have the value "2" to avoid circular searches.

GetRecords Request:

```
<csw:GetRecords xmlns:csw="http://www.opengis.net/cat/csw/2.0.2"
service="CSW" resultType="results"
    outputFormat="application/xml "
outputSchema="http://www.isotc211.org/2005/gmd"
    startPosition="1" maxRecords="10">
  <csw:DistributedSearch hopCount="2"/>
  <csw:Query typeNames="gmd:MD_Metadata">
    <csw:ElementSetName
typeNames="gmd:MD_Metadata">full</ns4:ElementSetName>
    <csw:Constraint version="1.1.0">
      <ogc:Filter xmlns:ogc="http://www.opengis.net/ogc">
        <ogc:And>
          <ogc:PropertyIsEqualTo>
            <ogc:PropertyName>apiso:Language</ogc:PropertyName>
            <ogc:Literal>eng</ogc:Literal>
          </ogc:PropertyIsEqualTo>
          <ogc:PropertyIsEqualTo>
            <ogc:PropertyName>apiso:ServiceType</ogc:PropertyName>
            <ogc:Literal>view</ogc:Literal>
          </ogc:PropertyIsEqualTo>
        </ogc:And>
      </ogc::Filter>
    </csw:Constraint>
  </csw:Query>
</csw:GetRecords>
```

3.3.5.2 Response Parameters

GetCapabilities Response:

The supported federated catalogues shall be advertised to be supported by an INSPIRE Discover or Collect Metadata operation. An appropriate <OperationsMetadata>-section of a capabilities document is shown next (excerpt from full capabilities):

```
<ows:OperationsMetadata>
<ows:Operation name="GetRecords">
  [...] (List of DCPs, parameters here)
  ...<ows:Constraint name="FederatedCatalogues">
    <ows:Value>http://www.mycatalogue.com</ows:Value>
```

```

    <ows:Value>http://www.yourcatalogue.com</ows:Value>
    <ows:Value>http://www.theotherguyscatalogue.com</ows:Value>
  </ows:Constraint>
</ows:OperationsMetadata>
</ows:Constraint>

```

3.4 Discovery Service Queryables

3.4.1 Introduction

[CSW ISO AP] as the base specification for the INSPIRE Discovery Service is based on the ISO 19115/19119 information model. As such it is required that the abstract INSPIRE metadata elements (see [INS MD]) could be requested through the INSPIRE Discovery Service interface within a query.

The relation between ISO 19115 and ISO 19119 and the elements of the INSPIRE Metadata IR is describe in [INS MD IMPL].

Clause 3.4.2 defines the required mappings to common queryables specified by [CSW ISO AP] and [OGC CSW]. Clause 3.4.3 defines additional queryables required by [INS MD] and [INS MD IMPL].

3.4.2 Mapping common queryables

Table 4 identifies these INSPIRE elements from [INS MD] and connects them to appropriate queryables defined by OGC [CSW ISO AP]. Annotations are given wherever necessary.

The third column in Table 4 indicates if the queryable must be supported by an INSPIRE Discovery Service or not.

Table 4: INSPIRE queryables

INSPIRE queryable metadata elements	INSPIRE Discovery Service (CSW ISO AP) queryable properties	Is mandatory for INSPIRE Discovery Service? ²
Resource title	Title	Yes
Resource Abstract	Abstract	Yes
Resource Type	Type	Yes
Unique resource identifier	ResourceIdentifier	Yes
Topic category	TopicCategory	Yes, if resources of type 'dataset' or 'series' are supported by the catalogue service instance
Spatial data service type	ServiceType	Yes, if resources of type 'service' are supported by the catalogue service instance.
Keyword	Subject	Yes
Geographic bounding box	BoundingBox	Yes, if resources of type 'dataset' or 'series' are supported by the catalogue service instance
Temporal Reference	TemporalExtent PublicationDate RevisionDate CreationDate	Yes
Spatial resolution	SpatialResolution	Yes, if resources of type 'dataset' or 'series' are supported by the discovery

² See Article 11 (2) of the INSPIRE directive and Annex II Part A of the Network services IR.

		service instance
Responsible party	OrganisationName	Yes
Responsible party role	Role	Yes
Degree	-	Yes
Specification	-	Yes
Limitations on public access	-	Yes
Conditions applying to access and use	-	Yes
Lineage	-	Yes
Metadata Language	Language	Yes

The only queryable that is not defined by [INS MD IMPL] is “Metadata language”. This is a mandatory queryable for INSPIRE Discovery Service to support the “Language” query parameter as defined by clause 3.1 in [INS DIS].

Table 5 identifies the additional queryables that are not supported by [CSW ISO AP], but required by [INS MD]. X-Path expression and data types are taken from [INS MD IMPL].

Table 5: INSPIRE additional queryables

Name	Definition	Data type	Property Mapping to Information Model
Degree	This is the degree of conformity of the resource to the related specification.	Boolean	dataQualityInfo/*/report/*/result/*/pass
Specification	This is a citation of the specification to which the resource is expected to conform.	Specification, see Table 6	
LimitationsOnPublicAccess	This metadata element shall provide information on the limitations (if they exist) and the reasons for such limitations (Article 5-2(e))	LimitationsOnPublicAccess, see Table	
ConditionApplyingToAccessAndUse	This metadata element defines the conditions for access and use of spatial datasets and services, and where applicable, corresponding fees as required by Articles 5-2 (b) and 11-2 (f).	CharacterString	identificationInfo[1]*/resourceConstraints/*/useLimitation
Lineage	This is a statement on process history and/or overall quality of the spatial dataset.	CharacterString	dataQualityInfo/*/lineage/*/statement

Table 6: Composition of union Specification

Name	Definition	Data type	Property Mapping to Information Model
SpecificationTitle	Title of the specification	CharacterString	dataQualityInfo/*/report/*/result/*/specification/*/title
SpecificationDate	Reference date of specification	Date-8601	dataQualityInfo/*/report/*/result/*/specification/*/date/*/date

SpecificationDateType	Type reference date of specification	Codelist (CI_DateTypeCode), one of: creation, revision or publication	dataQualityInfo/*/report/*/result/*/specification/*/date/*/dateType
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Table 7: Composition of union LimitationsOnPublicAccess

Name	Definition	Data type	Property Mapping to Information Model
AccessConstraints	Access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on obtaining the resource.	Codelist (MD_RestrictionCode), one of: copyright, patent, patentPending, trademark, license, intellectualPropertyRights, restricted, otherRestrictions	identificationInfo[1]/*/resourceConstraints/*/accessConstraints
OtherConstraints	other restrictions and legal prerequisites for accessing and using the resource.	CharacterString	identificationInfo[1]/*/resourceConstraints/*/otherConstraints
Classification	name of the handling restrictions on the resource.	CodeList (MD_ClassificationCode), one of: unclassified, restricted, confidential, secret, topSecret	identificationInfo[1]/*/resourceConstraints/*/classification

3.4.3 Additional queryables advertised

[CSW ISO AP] defines a mechanism to advertise additional queryables through the capabilities document of the Discovery service instance (see chapter 7.5, table 23 in [CSW ISO AP]).

All supported ISO queryables shall be advertised to be supported by an INSPIRE Discover Metadataoperation; in addition, all INSPIRE queryables shall be listed in the section "AdditionalQueryables". A sample <OperationsMetadata>-section of a capabilities document is shown next (excerpt from full capabilities):

```
<ows:OperationsMetadata>
  <ows:Operation name="GetRecords">
    [...] (List of DCPs, parameters here)
  <ows:Constraint name="SupportedISOQueryables">
    <ows:Value>Language</ows:Value>
    <ows:Value>CreationDate</ows:Value>
    <ows:Value>PublicationDate</ows:Value>
    <ows:Value>OrganisationName</ows:Value>
    <ows:Value>ResourceIdentifier</ows:Value>
    <ows:Value>TopicCategory</ows:Value>
    <ows:Value>DistanceValue</ows:Value>
    <ows:Value>DistanceUOM</ows:Value>
    <ows:Value>TempExtent_begin</ows:Value>
    <ows:Value>TempExtent_end</ows:Value>
    <ows:Value>ServiceType</ows:Value>
    <ows:Value>Denominator</ows:Value>
  </ows:Constraint>
  <ows:Constraint name="AdditionalQueryables">
    <ows:Value>Degree</ows:Value>
    <ows:Value>AccessConstraints</ows:Value>
    <ows:Value>OtherConstraints</ows:Value>
    <ows:Value>Classification</ows:Value>
    <ows:Value>ConditionApplyingToAccessAndUse</ows:Value>
    <ows:Value>Lineage</ows:Value>
  </ows:Constraint>
</ows:OperationsMetadata>
```

```
<ows:Value>SpecificationTitle</ows:Value>
<ows:Value>SpecificationDate</ows:Value>
<ows:Value>SpecificationDateType</ows:Value>
</ows:Constraint>
</ows:Operation>
```

3.5 Multilingual aspects

An INSPIRE Discovery Service must indicate the languages that are supported to formulation values within a query. This requires that a client application must be able to determine the supported languages of the values of the queryables.

To indicate the supported languages the following has to be supported by a capabilities document that is returned by an INSPIRE Discovery Service

- The capabilities document shall be returned in the default language
- A list of supported languages for queryable values defined by a 3-letter code as described in ISO 639-2
- The translations to other supported languages shall be referenced in the “ExtendedCapabilities” element, as a link to an online resource.

Service exceptions shall be returned within a “ServiceException” element, one element by supported language.

See “Annex A Capabilities extensions and examples” that defines the required extension types for INSPIRE Discovery Service.

3.6 Discovery Service SOAP Binding and WSDL description

An INSPIRE Discovery Service shall implement the SOAP binding for all discovery service operations as defined in [CSW ISO AP]. In addition to [CSW ISO AP] the SOAP binding for the GetCapabilities operation shall be implemented for the INSPIRE Discovery service.

An INSPIRE Discovery Service shall describe its interface in a WSDL document conforming to WSDL 1.1. An example WSDL describing the INSPIRE Discovery Service interface can be found at <http://schemas.opengis.net/csw/2.0.2/examples/wsd/2.0.2/>.

4 Quality of Service requirements

Three criteria (performance, availability and capacity) shall be monitored and reported as part of the INSPIRE directive. The following three criteria are recommended in the framework of the INSPIRE directive:

- Reliability;
- Security;
- Regulatory.

4.1.1 Reliability

It is recommended to check the INSPIRE metadata specifications conformity through the use of reference tests. In order to allow comparison between responses, it is also recommended to provide reference metadatasets.

4.1.2 Security

It is recommended the Discovery service to be certified with regard to security regulations.

4.1.3 Regulatory

It is recommended to check the INSPIRE Discovery service specifications through the use of reference tests.

Annex A Capabilities extensions and examples

Capabilities extension for multilingualism

The following XSD Schema defines the XSD Types that are needed to provide additional information on multilingual aspects. This information has to be provided in a capabilities documents that is returned by an INSPIRE Discovery Service (see [OGC WS]).

The XML Elements that comply with the following shall be applied in the <ExtendedCapabilities> section of the capabilities document.

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="http://www.inspire.org"
xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified"
attributeFormDefault="unqualified" xmlns="http://www.inspire.org"
xmlns:ows="http://www.opengis.net/ows" >
  <xs:import namespace="http://www.opengis.net/ows"
schemaLocation="http://schemas.opengis.net/ows/1.0.0/ows19115subset.xsd"></
xs:import>
  <xs:complexType name="InspireCapabilitiesType">
    <xs:annotation>
      <xs:documentation>Additional capabilities for
INSPIRE</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="Languages" type="LanguagesType"
minOccurs="0"/>
      <xs:element name="TranslatedCapabilities"
type="TranslatedCapabilitiesType" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="MultilingualCapabilities"
type="InspireCapabilitiesType"></xs:element>
  <xs:complexType name="LanguagesType">
    <xs:annotation>
      <xs:documentation>List of languages defined by a 3-letter
code as described in ISO 639-2 that are supported by this service instance.
</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="Language" type="xs:string"
minOccurs="0" maxOccurs="unbounded"></xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="TranslatedCapabilitiesType">
    <xs:annotation>
      <xs:documentation>List of URLs that give access to
translation of capabilities document at hand.</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="Document" type="DocumentType"
minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="DocumentType">
    <xs:annotation>
      <xs:documentation>Connect point URL to translated
capabilities document. The language attribute shall be defined by a 3-
letter code as described in ISO 639-2.</xs:documentation>
    </xs:annotation>
```

```

        <xs:complexContent>
          <xs:extension base="ows:OnlineResourceType">
            <xs:attribute name="language"
use="required"></xs:attribute>
          </xs:extension>
        </xs:complexContent>
      </xs:complexType>
</xs:schema>

```

XML Example for extended capabilities

```

<ows:OperationsMetadata xmlns:ows="http://www.opengis.net/ows">
  [...]
  <ows:ExtendedCapabilities>
    <MultilingualCapabilities xmlns="http://www.inspire.org"
xmlns:xlink="http://www.w3.org/1999/xlink" >
      <Languages>
        <Language>GER</Language>
        <Language>DUT</Language>
      </Languages>
      <TranslatedCapabilities>
        <Document
xlink:href="http://www.somehost.com/capabilities_german.xml"
language="GER"/>
        <Document
xlink:href="http://www.somehost.com/capabilities_dutch.xml"
language="DUT"/>
      </TranslatedCapabilities>
    </MultilingualCapabilities>
  </ows:ExtendedCapabilities>
</ows:OperationsMetadata>

```