

AGI Standards Committee

Metadata Working Group

Schematron Error Descriptions

DOCUMENT CONTROL

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References

Ref.	Title/Version/Publication Date/Author
[1]	UK GEMINI, Specification for discovery metadata for geospatial data resources, Version 2.3, AGI, http://www.agi.org.uk/uk-gemini/
[2]	UK GEMINI Encoding Guidance, Technical guidance on the encoding of UK GEMINI using XSD Schemas,
[3]	UK GEMINI Schematron Schema Guidance, An introduction to the UK GEMINI 2 Schematron Schema, version 1.4, April 2018
[4]	XML in a Nutshell, Second Edition, June 2002, Elliotte Rusty Harold and W. Scott Means

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INTRODUCTION

1.1 Purpose of document

- 1 The purpose of this document is to give 'plain English' explanations of the constraints that exist in the GEMINI 2.3 Schematron schema and how they work in the context of GEMINI 2.3 metadata instances. This edition of this document relates to the Schematron rules GEMINI_2.3_Schematron_Schema-v1.0
- 2 Schematron is an XML technology described as a Document Schema Definition Language (DSDL). It provides a mechanism for applying rules based constraints to XML documents and reporting the level of conformance. A Schematron schema is encoded in XML and uses other XML technologies such as XPath to define constraints, so it might be described as human-readable and self-documenting. Knowledge of the constituent technologies is needed, however, in order to understand the meaning of a constraint.
- 3 This document aims to translate every constraint in the GEMINI Schematron schema in to more easily understandable language. Each section of this document explains one constraint from the Schematron schema, in plain English. A section presents the error message, the XML context within which the constraint works, the cause of the constraint failing and gives relevant examples of XML showing failure cases and success cases.

1.2 Scope

- 4 The scope of this document is the Schematron schema (version 2.3) used for validating XML encoded metadata conforming to the UK GEMINI 2.3 standard [1] (henceforth referred to as GEMINI).
- 5 Outside the scope of this document is the description of GEMINI metadata items, their content, obligation and meaning. Readers seeking this information should consult the GEMINI standard [1]. Examples of XML encoding are given but the scope of this document does not cover encoding explicitly. Readers seeking information on XML and the encoding of GEMINI should consult the UK GEMINI Encoding Guidance [2].
- 6 This document does not cover the concepts of the Schematron validation language. Readers seeking this information should consult the UK GEMINI Schematron Schema Guidance [3].

1.3 Assumed knowledge

- 7 The intended audience includes people responsible for creating and validating GEMINI metadata instances. It is hoped that in providing clear explanations of the constraints and their error messages, users will be assisted in creating valid GEMINI metadata. Readers will necessarily need some understanding of XML¹, the UK GEMINI standard [1], metadata encoding guidance [2] and the UK GEMINI Schematron schema [3].

¹ See http://www.w3schools.com/xml/xml_what_is.asp

1.4 Terminology

Assertion

- 8 A statement that a logical test is true.

Attribute

- 9 An attribute is a name-value pair attached to an element's start tag [4].
10 `<element attribute="attribute value"/>`

Element

- 11 An XML element is an item in an *XML document* consisting of a start tag and an end tag. XML elements may contain content which may be a value or other elements (but not both in a data centric *XML document*) and may have associated *attributes*.

```
<element>value</element>

<element>
  <child>value</child>
</element>
```

GEMINI

- 12 The UK discovery metadata profile of ISO 19115.

GML

- 13 Geography Markup Language – an XML language for encoding feature types with geometry and other attributes. GML is included in ISO 19139 to encode temporal types [ISO 19136]

INSPIRE

- 14 Infrastructure for Spatial Information in Europe

ISO

- 15 International Organisation for Standardisation

Mandatory

- 16 The obligation on the creator of metadata to provide a metadata item. The obligation is defined at a number of levels: at the lowest level this is ISO 19115 but obligations may be redefined by subsequent standards in the hierarchy. A metadata item must be provided if its obligation is mandatory. XML elements that are used to encode metadata items inherit the obligation and that obligation might be tested by an XSD schema or some other constraining schema such as Schematron.

Metadata Instance

- 17 Physically instantiated metadata.
18 In the context of this document a metadata instance will be an *XML document* conforming to ISO / TS 19139 and other associated standards.

Metadata Item

- 19 A top level metadata concept in the UK GEMINI standard. Title, for example, is a metadata item.
- 20 Metadata items may comprise sub-items.

Nillable

- 21 This term is used to indicate whether the contents of a mandatory metadata item can be left out. The ISO 19139 schema has all elements nillable; the Schematron schema reduces this to a small number, failing others if they are empty. ISO 19139 does not use the XML nil value approach, functionally extending this by requiring a reason to be given if a mandatory item is empty in a metadata instance. See "nil reason".

Nil Reason

- 22 A Nil Reason is expressed in XML encoded metadata using the gco:nilReason attribute. This attribute can be added to elements in the XML to show why a value can not be provided for the element. The valid values are defined in the underlying schema:
 - inapplicable – there is no value
 - missing – the correct value is not readily available to the sender of this data. Furthermore, a correct value may not exist
 - template – the value will be available later
 - unknown – the correct value is not known to, and not computable by, the sender of this data. However, a correct value probably exists
 - withheld – the value is not divulged
 - other:[text] – other brief explanation, where [text] is a string of two or more characters with no included spaces
 - anyURI – which should refer to a resource which describes the reason for the exception

String

- 23 A string is a sequence of characters. An empty string has no characters.

UML®

- 24 Unified Modelling Language™

UUID

- 25 A universally unique identifier, also known as a GUID (Globally Unique Identifier) is a unique 128-bit integer that is represented as a 36 (or 32 ignoring the dashes) character string of hexadecimal numbers. UUIDs are system generated and ideally a UUID will never be generated twice by any computer in existence.
- 26 Format: xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx
- 27 Example: 3ce4f380-b394-4e5d-b222-6914ea311156

XML

- 28 eXtensible Markup Language.
- 29 The XML specification can be found at <http://www.w3.org/TR/REC-xml/>

Xml Document

- 30 A collection of data represented in XML.

XSD

- 31 XML Schema Definition Language. An XSD is a document written in XML that defines the structure of an XML document.

1089/2010

- 32 Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services

976/2009

- 33 Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the Network Services

2 ERROR DESCRIPTION STRUCTURE

2.1 Introduction

- 34 Each exception, which has potential to be raised during a Schematron validation, will be described under the headings: Error Message, Context, Cause, Example – fail, Example – success and Schematron pattern. The headings are described in the following sections.

2.2 Error Message

- 35 The error message shows the text that is presented to the user if an assertion fails, rendering the XML instance invalid.

2.3 Context

- 36 The context corresponds to the location in the XML instance where the assertion fires. The context will be expressed in terms of ISO 19115 classes and properties, starting at the level of the class MD_Metadata.
- 37 The context will be expressed in the following way: ClassName.propertyName > ClassName.propertyName
- 38 For example: MD_Metadata.identificationInfo > MD_DataIdentification
- 39 See Appendix 1 for more detail on the derivation of the context expression.

2.4 Cause

- 40 The cause describes the case or cases that would result in the assertion failing.

2.5 Example – fail

- 41 An example of invalid XML is given. The XML will be abbreviated, with missing content indicated by an ellipsis. No namespace declarations will be made.

2.6 Example – success

- 42 An example of valid XML is given. It will be abbreviated in the same way.

2.7 Schematron pattern

- 43 The Schematron pattern will be shown as below, for example. More information on Schematron patterns is given in Appendix 2.

```
<sch:pattern fpi="Gemini2-mi6">
  <sch:title>Keyword</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]">
    <sch:assert test="count(gmd:descriptiveKeywords) >= 1">
      MI-6: Descriptive keywords are mandatory.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

3 TITLE

3.1 Title not nillable

3.1.1 Error message

44 The gmd:title element is not nillable and shall have a value.

3.1.2 Context

45 MD_Metadata.identificationInfo > MD_Identification.citation > CI_Citation.title

3.1.3 Cause

46 The element named gmd:title has been assigned a gco:nilReason attribute or the value of the element gmd:title is an empty string.

3.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    <gmd:citation>
      <gmd:CI_Citation>
        <gmd:title gco:nilReason="unknown"/>
      </gmd:CI_Citation>
    ...
  </gmd:citation>
  ...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    <gmd:citation>
      <gmd:CI_Citation>
        <gmd:title/>
      </gmd:CI_Citation>
    ...
  </gmd:citation>
  ...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

3.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
```



```

<gmd:MD_DataIdentification>
  <gmd:citation>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString>A valid dataset title</gco:CharacterString>
      </gmd:title>
      ...
    </gmd:CI_Citation>
    ...
  </gmd:citation>
  ...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

3.1.6 Schematron rule

```

<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mil-NotNillable">
  <sch:param name="context">
    value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:citation/*[1]/gmd:t
    itle" />
  </sch:param>
  <!-- Test that an element has a value - the value is not nillable -->
  <sch:pattern abstract="true" id="TypeNotNillablePattern">
    <sch:rule context="$context">
      <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
        AP-2: The <sch:name/> element is not nillable and shall have a value.
      </sch:assert>
    </sch:rule>
  </sch:pattern>

```

4 ALTERNATIVE TITLE

4.1 Alternative title nillable

4.1.1 Error message

47 The gmd:alternateTitle element shall have a value or a valid Nil Reason.

4.1.2 Context

48 MD_Metadata.identificationInfo > MD_Identification.citation > CI_Citation.alternateTitle

4.1.3 Cause

49 The element named gmd:alternateTitle has either no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

4.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    <gmd:citation>
      <gmd:CI_Citation>
        ...
        <gmd:alternateTitle gco:nilReason="invalidvalue"/>
        ...
      </gmd:CI_Citation>
    </gmd:citation>
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    <gmd:citation>
      <gmd:CI_Citation>
        ...
        <gmd:alternateTitle/>
        ...
      </gmd:CI_Citation>
    </gmd:citation>
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

4.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    <gmd:citation>
      <gmd:CI_Citation>
        ...
        <gmd:alternateTitle gco:nilReason="unknown"/>
        ...
      </gmd:CI_Citation>
      ...
    </gmd:citation>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    <gmd:citation>
      <gmd:CI_Citation>
        ...
        <gmd:alternateTitle>
          <gco:CharacterString>A valid alternate title</gco:CharacterString>
        </gmd:alternateTitle>
        ...
      </gmd:CI_Citation>
      ...
    </gmd:citation>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

4.1.6 Schematron rule

```
<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi2-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:citation/*[1]/gmd:al
ternateTitle" />
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
```

```
    @gco:nilReason = 'withheld' or
    starts-with(@gco:nilReason, 'other:')")">
  AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
</sch:assert>
</sch:rule>
</sch:pattern>
```

5 DATASET LANGUAGE

5.1 Dataset Language Code

5.1.1 Error message

50 Language shall be implemented with gmd:LanguageCode.

5.1.2 Context

51 MD_Metadata.identificationInfo > MD_DataIdentification.language

5.1.3 Cause

52 The element named gmd:language may have one of two child elements: gco:CharacterString or gmd:LanguageCode. Either is valid according to the ISO 19139 XSD schemas. However, the encoding guidance [2] requires that only the gmd:LanguageCode element is used. The assertion fails if the child element of the element named gmd:language is gco:CharacterString.

5.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:language>
      <gco:CharacterString>eng</gco:CharacterString>
    </gmd:language>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

5.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:language>
      <gmd:LanguageCode codeList="http://www.loc.gov/standards/iso639-
2/php/code_list.php" codeListValue="eng">eng</gmd:LanguageCode>
    </gmd:language>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

5.1.6 Schematron rule

```
<sch:pattern is-a="LanguagePattern" id="Gemini2-mi3-Language">
  <sch:param name="context"
    value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:language" />
</sch:pattern>

<!-- Test the language values (Metadata and Resource) -->
<sch:pattern abstract="true" id="LanguagePattern">
  <sch:rule context="$context">
    <sch:assert test="count(gmd:LanguageCode) = 1">
      AP-4a: Language shall be implemented with gmd:LanguageCode.
    </sch:assert>
  </sch:rule>
</sch:pattern>
...
</sch:pattern>
```

5.2 Dataset Language Code List

5.2.1 Error message

53 The language code list value is absent. When a dataset has no natural language use code zxx

5.2.2 Context

54 MD_Metadata.identificationInfo > MD_DataIdentification.language

5.2.3 Cause

55 The codeListValue attribute of the element gmd:LanguageCode must have a value. This assertion fails if the value of the attribute is an empty string.

5.2.4 Example – fail

```
<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:language>
        <gmd:LanguageCode codeList="http://www.loc.gov/standards/iso639-
2/php/code_list.php" codeListValue="">eng</gmd:LanguageCode>
      </gmd:language>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

5.2.5 Example – success

```
<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:language>
```

```
<gmd:LanguageCode codeList="http://www.loc.gov/standards/iso639-  
2/php/code_list.php" codeListValue="eng">eng</gmd:LanguageCode>  
</gmd:language>  
...  
</gmd:MD_DataIdentification>  
</gmd:identificationInfo>  
...  
</gmd:MD_Metadata>
```

5.2.6 Schematron rule

```
<sch:pattern is-a="LanguagePattern" id="Gemini2-mi3-Language">
  <sch:param name="context"
    value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:language" />
</sch:pattern>

<!-- Test the language values (Metadata and Resource) -->
<sch:pattern abstract="true" id="LanguagePattern">
  ...
  <sch:rule context="$context/gmd:LanguageCode">
    <sch:assert test="string-length(@codeListValue) > 0">
      AP-4b: The language code list value is absent. When a dataset has no
      natural language use code zxx
    </sch:assert>
  ...
</sch:rule>
</sch:pattern>
```

5.3 Dataset language code length

5.3.1 Error message

56 The language code should be three characters

5.3.2 Context

57 MD_Metadata.identificationInfo > MD_DataIdentification.language

5.3.3 Cause

58 The codeListValue attribute of the element gmd:LanguageCode must have a value which is exactly three characters long. This assertion fails if the value of the attribute is not a code of three characters.

5.3.4 Example – fail

```
<gmd:language>
  <gmd:LanguageCode
    codeList="http://www.isotc211.org/2005/resources/codeList.xml#LanguageCode"
    codeListValue="en"/>
</gmd:language>
```

5.3.5 Example – pass

```
<gmd:language>
  <gmd:LanguageCode
    codeList="http://www.isotc211.org/2005/resources/codeList.xml#LanguageCode"
    codeListValue="eng"/>
</gmd:language>
```

5.3.6 Schematron rule

```
<sch:pattern is-a="LanguagePattern" id="Gemini2-mi3-Language">
  <sch:param name="context"
    value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:language"/>
</sch:pattern>
```



```
<!-- Test the language values (Metadata and Resource) -->
<sch:pattern abstract="true" id="LanguagePattern">
...
  <sch:rule context="$context/gmd:LanguageCode">
...
    <sch:report test="string-length(@codeListValue) != 3">
      AP-4c: The language code should be three characters
    </sch:report>
  </sch:rule>
</sch:pattern>
```

6 ABSTRACT

6.1 Abstract not nillable

6.1.1 Error message

59 The gmd:abstract element is not nillable and shall have a value.

6.1.2 Context

60 MD_Metadata.identificationInfo > MD_Identification.abstract

6.1.3 Cause

61 The element named gmd:abstract has been assigned a gco:nilReason attribute or the value of the element gmd:abstract is an empty string.

6.1.4 Example – fail

```
<gmd:MD_Metadata>
...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:abstract gco:nilReason="unknown"/>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

6.1.5 Example – success

```
<gmd:MD_Metadata>
...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:abstract>
        <gco:CharacterString>A valid abstract</gco:CharacterString>
      </gmd:abstract>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

```
</gmd:MD_Metadata>
```

6.1.6 Schematron rule

```
<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mi4-NotNillable">
  <sch:param name="context"
    value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:abstract"/>
</sch:pattern>

<!-- Test that an element has a value - the value is not nillable -->
<sch:pattern abstract="true" id="TypeNotNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
      AP-2: The <sch:name/> element is not nillable and shall have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

6.2 Abstract shall not be empty

6.2.1 Error message

62 A human readable, non-empty description of the dataset, dataset series, or service shall be provided

6.2.2 Context

63 MD_Metadata.identificationInfo > MD_Identification.abstract

6.2.3 Cause

64 The element named gmd:abstract has an no textual content.

6.2.4 Example – fail

```
<gmd:abstract>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
  </gco:CharacterString>
</gmd:abstract>
```

6.2.5 Example – pass

```
<gmd:abstract>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">This is a
basic list of terrestrial habitats that were included in the UK Report in 2013
under the Habitats Directive. Every six years, all EU Member States are required
(under Article 17 of the Directive) to report on the implementation of the EU
Habitats Directive . The 3rd UK Habitats Directive Report was submitted to the
European Commission in 2013.
The list includes the code for each habitat, the formal name (with and without
formatting characters for italics), The Countries within the UK where that habitat
has been recorded and the broad category of each habitat.
  </gco:CharacterString>
</gmd:abstract>
```

6.2.6 Schematron rule

```
<sch:pattern fpi="metadata/2.0/req/common/resource-abstract">
  <sch:title>Abstract free-text element check</sch:title>
  <sch:p>A human readable, non-empty description of the dataset, dataset series
or service shall be provided</sch:p>
  <sch:rule context="//gmd:abstract">
    <sch:assert test="normalize-space(.) and *">
      MI-4a: A human readable, non-empty description of the dataset, dataset
series, or service shall be provided
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

6.3 Abstract length

6.3.1 Error message

65 Abstract is too short. GEMINI 2.3 requires an abstract of at least 100 characters

6.3.2 Context

66 MD_Metadata.identificationInfo > MD_Identification.abstract

6.3.3 Cause

67 The element named gmd:abstract has content, but it is deemed too short (less than 100 characters, excluding any spaces at the beginning or end of the content), to provide any meaningful information about the resource.

6.3.4 Example – fail

```
<gmd:abstract>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    Wolverhampton City Council Minerals Safeguarding Areas
  </gco:CharacterString>
</gmd:abstract>
```

6.3.5 Example – pass

```
<gmd:abstract>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    Common Land : Land registered as Common Land, for open public access and
outdoor recreation, encompassing commoners and local grazing rights.
  </gco:CharacterString>
</gmd:abstract>
```

6.3.6 Schematron rule

```
<sch:pattern fpi="metadata/2.0/req/common/resource-abstract-len">
  <sch:title>Abstract length check</sch:title>
  <sch:rule context="//gmd:abstract/*[1]">
    <sch:assert test="string-length() >= 99">
      MI-4b: Abstract is too short.
      GEMINI 2.3 requires an abstract of at least 100 characters, but abstract
"
<sch:value-of select='normalize-space(.)' />" has only <sch:value-of
select='string-length(.)' /> characters
    </sch:assert>
```

```
</sch:rule>
</sch:pattern>
```

6.4 Abstract shall not match Title

6.4.1 Error message

68 Abstract must not be the same text as the title

6.4.2 Context

69 MD_Metadata.identificationInfo > MD_Identification.abstract

6.4.3 Cause

70 The element named gmd:abstract has content that is exactly the same as the title.

6.4.4 Example – fail

```
<gmd:CI_Citation>
  <gmd:title>
    <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
2012 - 2012 Centre for Environment, Fisheries & Aquaculture Science (Cefas)
Farnes East - Infauna - 2012
    </gco:CharacterString>
  </gmd:title>
  <gmd:alternateTitle>
    <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
INFAUNA
    </gco:CharacterString>
  </gmd:alternateTitle>
...

<gmd:abstract>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
2012 - 2012 Centre for Environment, Fisheries & Aquaculture Science (Cefas)
Farnes East - Infauna - 2012
  </gco:CharacterString>
</gmd:abstract>
```

6.4.5 Example – pass

```
<gmd:citation>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
Timeliness of reporting deaths between 1 July to 31 December 2008
      </gco:CharacterString>
    </gmd:title>
...
<gmd:abstract>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">This
dataset as reported to the Rural Payments Agency contains death registrations that
have cleared Cattle Tracing System validation, death notifications received
between July and December 2007, deaths notified at the time of registration by
electronic means for example Cattle Tracing System online, death notifications
reported by passports and temporary Pre Printed Application Forms Attribution
statement:
```

```
</gco:CharacterString>
</gmd:abstract>
```

6.4.6 Schematron rule

```
<sch:pattern fpi="metadata/2.0/req/common/resource-abstract-text">
  <sch:title>Abstract is not the same as Title...</sch:title>
  <sch:rule context="//gmd:abstract/*[1]">
    <sch:let name="resourceTitle"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:citation/*[1]/gmd:t
itle/*[1][normalize-space()]" />
    <sch:let name="resourceAbstract" value="normalize-space(.)" />
    <sch:assert test="$resourceAbstract != $resourceTitle ">
      MI-4c: Abstract "<sch:value-of select='$resourceAbstract' />" must not be
the same text as the title "<sch:value-of select='$resourceTitle' />").
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

7 TOPIC CATEGORY

7.1 Topic category is mandatory

7.1.1 Error message

71 Topic category is mandatory for datasets and series. One or more shall be provided.

7.1.2 Context

72 MD_Metadata.identificationInfo > MD_DataIdentification

7.1.3 Cause

73 A metadata instance with a hierarchy level of 'dataset' or 'series' must have one or more topic category codes. This assertion fails if there are no gmd:topicCategory elements and the value of the codeListValue attribute of the gmd:hierarchyLevel element is either 'dataset' or 'series'.

7.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <!--Dataset language-->
    <gmd:language>
      <gmd:LanguageCode codeList="http://www.loc.gov/standards/iso639-
2/php/code_list.php" codeListValue="eng">eng</gmd:LanguageCode>
    </gmd:language>
    <!--dataset-->
    <gmd:extent>
      <gmd:EX_Extent>
        ...
      </gmd:EX_Extent>
    </gmd:extent>
    <!--Additional information source-->
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

7.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <!--Dataset language-->
    <gmd:language>
      <gmd:LanguageCode codeList="http://www.loc.gov/standards/iso639-
2/php/code_list.php" codeListValue="eng">eng</gmd:LanguageCode>
    </gmd:language>
    <!--Topic category-->
    <gmd:topicCategory>
      <gmd:MD_TopicCategoryCode>boundaries</gmd:MD_TopicCategoryCode>
    </gmd:topicCategory>
    <!--dataset-->
```

```

    <gmd:extent>
      <gmd:EX_Extent>
        ...
      </gmd:EX_Extent>
    </gmd:extent>
    <!--Additional information source-->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

```

7.1.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi5">
  <sch:title>Topic Category</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]">
    <sch:assert test="
      ((../../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'dataset' or
      ../../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'series') and
      count(gmd:topicCategory) >= 1) or
      (../../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'dataset' and
      ../../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'series') or
      count(../../gmd:hierarchyLevel) = 0">
      MI-5a: Topic category is mandatory for datasets and series.
      One or more shall be provided.
    </sch:assert>
  </sch:rule>
  ...
</sch:pattern>

```

7.2 Topic Category not nillable

7.2.1 Error message

74 Topic category shall not be null.

7.2.2 Context

75 MD_Metadata.identificationInfo > MD_DataIdentification.topicCategory

7.2.3 Cause

76 The element named gmd:topicCategory has been assigned a gco:nilReason attribute or the value of the element is an empty string.

7.2.4 Example – fail

```

<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <!--Dataset language-->
      <gmd:language>
        <gmd:LanguageCode codeList="http://www.loc.gov/standards/iso639-
        2/php/code_list.php" codeListValue="eng">eng</gmd:LanguageCode>
      </gmd:language>
      <!--Topic category-->
      <gmd:topicCategory gco:nilReason="missing"/>
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
</gmd:MD_Metadata>

```

```

<!--dataset-->
<gmd:extent>
  <gmd:EX_Extent>
    ...
  </gmd:EX_Extent>
</gmd:extent>
<!--Additional information source-->
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

7.2.5 Example – success

```

<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <!--Dataset language-->
      <gmd:language>
        <gmd:LanguageCode codeList="http://www.loc.gov/standards/iso639-
2/php/code_list.php" codeListValue="eng">eng</gmd:LanguageCode>
      </gmd:language>
      <!--Topic category-->
      <gmd:topicCategory>
        <gmd:MD_TopicCategoryCode>boundaries</gmd:MD_TopicCategoryCode>
      </gmd:topicCategory>
      <!--dataset-->
      <gmd:extent>
        <gmd:EX_Extent>
          ...
        </gmd:EX_Extent>
      </gmd:extent>
      <!--Additional information source-->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

```

7.2.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi5">
  <sch:title>Topic Category</sch:title>
  ...
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:topicCategory">
    <sch:assert test="
      ((../../../../../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'dataset' or
../../../../../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'series') and
count(@gco:nilReason) = 0) or
      (../../../../../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'dataset' and
../../../../../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'series') or
count(../../../../../gmd:hierarchyLevel) = 0">
      MI-5b: Topic Category shall not be null.

```



```
        </sch:assert>  
    </sch:rule>  
</sch:pattern>
```

8 KEYWORD

8.1 Descriptive Keywords are mandatory

8.1.1 Error message

77 Descriptive keywords are mandatory.

8.1.2 Context

78 MD_Metadata.identificationInfo > MD_DataIdentification.descriptiveKeywords

79 MD_Metadata.identificationInfo > SV_ServiceIdentification.descriptiveKeywords

8.1.3 Cause

80 An MD_DataIdentification element or an SV_ServiceIdentification element must have one or more descriptiveKeywords elements in its set of child elements.

8.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:resourceFormat>
      ...
    </gmd:resourceFormat>
    <!--Keyword-->
    <!--Limitations on public access-->
    <gmd:resourceConstraints>
      ...
    </gmd:resourceConstraints>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

8.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:resourceFormat>
      ...
    </gmd:resourceFormat>
    <!--Keyword-->
    <gmd:descriptiveKeywords>
      <gmd:MD_Keywords>
        <gmd:keyword>
          <gco:CharacterString>Farming, agricultural land</gco:CharacterString>
        </gmd:keyword>
        <gmd:thesaurusName>
          <gmd:CI_Citation>
```

```

        <gmd:title>
          <gco:CharacterString>IPVS - Integrated Public Sector Vocabulary
version 2</gco:CharacterString>
        </gmd:title>
        <gmd:date>
          <gmd:CI_Date>
            <gmd:date>
              <gco:Date>2006-04-02</gco:Date>
            </gmd:date>
            <gmd:dateType>
              <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#CI_DateTypeCode"
codeListValue="revision">revision</gmd:CI_DateTypeCode>
            </gmd:dateType>
          </gmd:CI_Date>
        </gmd:date>
      </gmd:CI_Citation>
    </gmd:thesaurusName>
  </gmd:MD_Keywords>
</gmd:descriptiveKeywords>
<!--Limitations on public access-->
<gmd:resourceConstraints>
  ...
</gmd:resourceConstraints>
  ...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

```

8.1.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi6">
  <sch:title>Keyword</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]">
    <sch:assert test="count(gmd:descriptiveKeywords) >= 1">
      MI-6: Descriptive keywords are mandatory.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

8.2 Keywords are nillable

8.2.1 Error message

81 The gmd:keyword element shall have a value or a valid Nil Reason.

8.2.2 Context

- 82 MD_Metadata.identificationInfo > MD_DataIdentification.descriptiveKeywords > MD_Keywords.keyword
- 83 MD_Metadata.identificationInfo > SV_ServiceIdentification.descriptiveKeywords > MD_Keywords.keyword

8.2.3 Cause

- 84 The element named gmd:keyword has either no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

8.2.4 Example – fail

```
<gmd:keyword>
  <gco:CharacterString></gco:CharacterString>
</gmd:keyword>
<gmd:keyword/>
```

8.2.5 Example – success

```
<gmd:keyword>
  <gco:CharacterString>Farming, agricultural land</gco:CharacterString>
</gmd:keyword>
<gmd:keyword gco:nilReason="missing"/>
```

8.2.6 Schematron rule

```
<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi6-Keyword-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:descriptiveKeywords
/*[1]/gmd:keyword" />
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

8.3 Thesaurus title is not nillable

8.3.1 Error message

- 85 The gmd:title element is not nillable and shall have a value.

8.3.2 Context

- 86 MD_Metadata.identificationInfo > MD_DataIdentification.descriptiveKeywords > MD_Keywords.thesaurusName > CI_Citation.title

87 MD_Metadata.identificationInfo > SV_ServiceIdentification.descriptiveKeywords >
MD_Keywords.thesaurusName > CI_Citation.title

8.3.3 Cause

88 The element named gmd:title has been assigned a gco:nilReason attribute or the value of the element is an empty string. A declaration of the thesaurus is not mandatory but should be given if it is available. Therefore, the thesaurus declaration can be omitted altogether if the title is not known.

8.3.4 Example – fail

```
<gmd:thesaurusName>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString></gco:CharacterString>
    </gmd:title>
    ...
  </gmd:CI_Citation>
</gmd:thesaurusName>
```

```
<gmd:thesaurusName>
  <gmd:CI_Citation>
    <gmd:title/>
    ...
  </gmd:CI_Citation>
</gmd:thesaurusName>
```

8.3.5 Example – success

```
<gmd:thesaurusName>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString>IPVS - Integrated Public Sector Vocabulary version
2</gco:CharacterString>
    </gmd:title>
    ...
  </gmd:CI_Citation>
</gmd:thesaurusName>
```

8.3.6 Schematron rule

```
<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mi6-Thesaurus-Title-
NotNillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:descriptiveKeywords
/*[1]/gmd:thesaurusName/*[1]/gmd:title" />
</sch:pattern>

<!-- Test that an element has a value - the value is not nillable -->
<sch:pattern abstract="true" id="TypeNotNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
      AP-2: The <sch:name/> element is not nillable and shall have a value.
```

```

    </sch:assert>
  </sch:rule>
</sch:pattern>

```

8.4 Thesaurus date type code list

8.4.1 Error message

89 The codeListValue attribute does not have a value.

8.4.2 Context

```

90 MD_Metadata.identificationInfo > MD_DataIdentification.descriptiveKeywords >
   MD_Keywords.thesaurusName > CI_Citation.date > CI_Date.dateType
91 MD_Metadata.identificationInfo > SV_ServiceIdentification.descriptiveKeywords >
   MD_Keywords.thesaurusName > CI_Citation.date > CI_Date.dateType

```

8.4.3 Cause

92 This assertion fails if the attribute codeListValue of the element gmd:CI_DateTypeCode does not have a value.

8.4.4 Example – fail

```

<gmd:thesaurusName>
  <gmd:CI_Citation>
    ...
    <gmd:date>
      <gmd:CI_Date>
        ...
        <gmd:dateType>
          <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#CI_DateTypeCode"
codeListValue="">revision</gmd:CI_DateTypeCode>
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>
    </gmd:CI_Citation>
  </gmd:thesaurusName>

```

8.4.5 Example – success

```

<gmd:thesaurusName>
  <gmd:CI_Citation>
    ...
    <gmd:date>
      <gmd:CI_Date>
        ...
        <gmd:dateType>
          <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#CI_DateTypeCode"
codeListValue="revision">revision</gmd:CI_DateTypeCode>
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>
    </gmd:CI_Citation>
  </gmd:thesaurusName>

```

```

    </gmd:date>
  </gmd:CI_Citation>
</gmd:thesaurusName>

```

8.4.6 Schematron rule

```

<sch:pattern is-a="IsoCodeListPattern" id="Gemini2-mi6-Thesaurus-DateType-
CodeList">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:descriptiveKeywords
/*[1]/gmd:thesaurusName/*[1]/gmd:date/*[1]/gmd:dateType/*[1]" />
</sch:pattern>

<!-- Test ISO code lists -->
<sch:pattern abstract="true" id="IsoCodeListPattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(@codeListValue) > 0">
      AP-3: The codeListValue attribute does not have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

9 TEMPORAL EXTENT

9.1 Temporal extent element

9.1.1 Error message

93 Temporal extent shall be implemented using gml:TimePeriod or gml:TimeInstant.

9.1.2 Context

94 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent

95 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent

9.1.3 Cause

96 Temporal types are encoded using GML. The GML schema provides a wide range of temporal data types which can be used within metadata to express the temporal extent. The Schematron rule limits the choice of data types that can be used to TimePeriod and TimeInstant.

9.1.4 Example – fail

```
<gmd:extent>
  <gmd:EX_Extent>
    ...
    <gmd:temporalElement>
      <gmd:EX_TemporalExtent>
        <gmd:extent>
          <gml:TimeNode gml:id="_id1">
            ...
          </gml:TimeNode>
        </gmd:extent>
      </gmd:EX_TemporalExtent>
    </gmd:temporalElement>
    ...
  </gmd:EX_Extent>
</gmd:extent>
```

9.1.5 Example – success

```
<gmd:extent>
  <gmd:EX_Extent>
    ...
    <gmd:temporalElement>
      <gmd:EX_TemporalExtent>
        <gmd:extent>
          <gml:TimePeriod gml:id="_884CEEC4-7DF9-4BCB-9A19-4F60C070DE6B">
            <gml:beginPosition>2012-01-10</gml:beginPosition>
            <gml:endPosition>2012-01-05</gml:endPosition>
          </gml:TimePeriod>
        </gmd:extent>
      </gmd:EX_TemporalExtent>
    </gmd:temporalElement>
    ...
  </gmd:EX_Extent>
```



```
</gmd:extent>
```

9.1.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi7">
  <sch:title>Temporal extent</sch:title>
  <sch:rule context="
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:temporalEl
ement/gmd:EX_TemporalExtent/gmd:extent
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:temporalEl
ement/*[1][@gco:isoType = 'gmd:EX_TemporalExtent'] [1]/gmd:extent
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:temporalEl
ement/gmd:EX_TemporalExtent/gmd:extent
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:temporalEl
ement/*[1][@gco:isoType = 'gmd:EX_TemporalExtent'] [1]/gmd:extent">
  <sch:assert test="count(gml:TimePeriod) = 1 or count(gml:TimeInstant) = 1">
    MI-7a: Temporal extent shall be implemented using gml:TimePeriod or
    gml:TimeInstant.
  </sch:assert>
</sch:rule>
</sch:pattern>
```

9.2 endPosition has inconsistent date information

9.2.1 Error message

- 97 When indeterminatePosition='unknown' or indeterminatePosition='now' are specified endPosition should be empty

9.2.2 Context

- 98 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent
- 99 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent

9.2.3 Cause

- 100 The element named endPosition has an attribute that states that the end of the temporal extent does not have a known date (indeterminatePosition="unknown"), or the date is constantly changing (indeterminatePosition="now"), but a date is given.

9.2.4 Example – fail

```
<gml32:endPosition indeterminatePosition="unknown">
05/12/2013
</gml32:endPosition>
```

9.2.5 Example – pass

```
<gml32:TimePeriod xmlns:gml32="http://www.opengis.net/gml/3.2"
```

```
gml32:id="T1">
...
<gml32:endPosition indeterminatePosition="unknown"/>
</gml32:TimePeriod>
```

9.2.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi7-endpos">
  <sch:rule context="
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:temporalElement/gmd:EX_TemporalExtent/gmd:extent/gml:TimePeriod/gml:endPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:temporalElement/*[1]@gco:isoType =
'gmd:EX_TemporalExtent'[1]/gmd:extent/gml:TimePeriod/gml:endPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:temporalElement/gmd:EX_TemporalExtent/gmd:extent/gml:TimePeriod/gml:endPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:temporalElement/*[1]@gco:isoType =
'gmd:EX_TemporalExtent'[1]/gmd:extent/gml:TimePeriod/gml:endPosition">
  <sch:report
    test="((@indeterminatePosition = 'unknown' or @indeterminatePosition =
'now') and normalize-space().)">
MI-7b: When indeterminatePosition='unknown' or indeterminatePosition='now' are
specified endPosition should be empty
  </sch:report>
...
  </sch:rule>
</sch:pattern>
```

9.3 endPosition has incorrect date

9.3.1 Error message

101 Date string doesn't have correct length, check it conforms to Gregorian calendar and UTC as per ISO 8601

9.3.2 Context

102 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent

103 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent

9.3.3 Cause

104 The element named endPosition has a date with a length that indicates that the date format does not conform to ISO 8601.

9.3.4 Example – fail

```
<gml32:endPosition>19970803</gml32:endPosition>
```

9.3.5 Example – pass

```
<gml32:endPosition>1997-08-03</gml32:endPosition>
```

9.3.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi7-endpos">
  <sch:rule context="
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:temporalElement/gmd:EX_TemporalExtent/gmd:extent/gml:TimePeriod/gml:endPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:temporalElement/*[1][@gco:isoType =
'gmd:EX_TemporalExtent'] [1]/gmd:extent/gml:TimePeriod/gml:endPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:temporalElement/gmd:EX_TemporalExtent/gmd:extent/gml:TimePeriod/gml:endPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:temporalElement/*[1][@gco:isoType =
'gmd:EX_TemporalExtent'] [1]/gmd:extent/gml:TimePeriod/gml:endPosition">
...
    <sch:assert test="string-length() = 0 or string-length() = 4 or string-length()
= 7 or string-length() = 10 or string-length() = 19">
MI-7c: Date string doesn't have correct length, check it conforms to Gregorian
calendar and UTC as per ISO 8601
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

9.4 beginPosition has inconsistent date information

9.4.1 Error message

105 When indeterminatePosition='unknown' is specified beginPosition should be empty

9.4.2 Context

106 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent

107 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent

9.4.3 Cause

108 The element named beginPosition has an attribute that states that the start of the temporal extent does not have a known date (indeterminatePosition="**unknown**"), or the date is constantly changing (indeterminatePosition="**now**"), but a date is given.

9.4.4 Example – fail

```
<gml32:TimePeriod xmlns:gml32="http://www.opengis.net/gml/3.2"
  gml32:id="T1">
  <gml32:beginPosition indeterminatePosition="unknown">
    2016-01-14
  </gml32:beginPosition>
  ...
</gml32:TimePeriod>
```

9.4.5 Example – pass

```
<gml32:TimePeriod xmlns:gml32="http://www.opengis.net/gml/3.2"
  gml32:id="T1">
  <gml32:beginPosition indeterminatePosition="unknown" />
  ...
</gml32:TimePeriod>
```

9.4.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi7-begpos">
  <sch:rule context="
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:temporalElement/gmd:EX_TemporalExtent/gmd:extent/gml:TimePeriod/gml:beginPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:temporalElement/*[1]@gco:isoType =
'gmd:EX_TemporalExtent'[1]/gmd:extent/gml:TimePeriod/gml:beginPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:temporalElement/gmd:EX_TemporalExtent/gmd:extent/gml:TimePeriod/gml:beginPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:temporalElement/*[1]@gco:isoType =
'gmd:EX_TemporalExtent'[1]/gmd:extent/gml:TimePeriod/gml:beginPosition">
  <sch:report
    test="(@indeterminatePosition = 'unknown' and normalize-space())">
    MI-7d: When indeterminatePosition='unknown' is specified beginPosition
    should be empty
  </sch:report>
  ...
</sch:rule>
</sch:pattern>
```

9.5 beginPosition has incorrect date

9.5.1 Error message

109 Date string doesn't have correct length, check it conforms to Gregorian calendar and UTC as per ISO 8601

9.5.2 Context

110 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent

111 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent

9.5.3 Cause

112 The element named beginPosition has a date with a length that indicates that the date format does not conform to ISO 8601.

9.5.4 Example – fail

```
<gml32:beginPosition>
19970426
```

```
</gml32:beginPosition>
```

9.5.5 Example – pass

```
<gml32:beginPosition>
1997-04-26
</gml32:beginPosition>
```

9.5.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi7-begpos">
  <sch:rule context="
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:temporalElem
ent/gmd:EX_TemporalExtent/gmd:extent/gml:TimePeriod/gml:beginPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:temporalElem
ent/*[1]@gco:isoType =
'gmd:EX_TemporalExtent'[1]/gmd:extent/gml:TimePeriod/gml:beginPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:temporalElem
ent/gmd:EX_TemporalExtent/gmd:extent/gml:TimePeriod/gml:beginPosition
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:temporalElem
ent/*[1]@gco:isoType =
'gmd:EX_TemporalExtent'[1]/gmd:extent/gml:TimePeriod/gml:beginPosition">
...
    <sch:assert test="string-length() = 0 or string-length() = 4 or string-length()
= 7 or string-length() = 10 or string-length() = 19">
      MI-7e: Date string doesn't have correct length, check it conforms to
Gregorian calendar and UTC as per ISO 8601
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

10 DATASET REFERENCE DATE

10.1 Error message

113 The codeListValue attribute does not have a value.

10.2 Context

114 MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.date > CI_Date.dateType

115 MD_Metadata.identificationInfo > SV_ServiceIdentification.citation > CI_Citation.date > CI_Date.dateType

10.3 Cause

116 This assertion fails if the attribute codeListValue of the element gmd:CI_DateTypeCode does not have a value.

10.4 Example – fail

```
<gmd:citation>
  <gmd:CI_Citation>
    ...
    <gmd:date>
      <gmd:CI_Date>
        ...
        <gmd:dateType>
          <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#CI_DateTypeCode"
codeListValue="">revision</gmd:CI_DateTypeCode>
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>
    </gmd:CI_Citation>
  </gmd:citation>
```

10.5 Example – success

```
<gmd:citation>
  <gmd:CI_Citation>
    ...
    <gmd:date>
      <gmd:CI_Date>
        ...
        <gmd:dateType>
          <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#CI_DateTypeCode"
codeListValue="revision">revision</gmd:CI_DateTypeCode>
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>
    </gmd:CI_Citation>
  </gmd:citation>
```

10.6 Schematron rule

```
<sch:pattern is-a="IsoCodeListPattern" id="Gemini2-mi8-ReferenceDate-DateType-CodeList">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:citation/*[1]/gmd:date/*[1]/gmd:dateType/*[1]" />
</sch:pattern>

<!-- Test ISO code lists -->
<sch:pattern abstract="true" id="IsoCodeListPattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(@codeListValue) > 0">
      AP-3: The codeListValue attribute does not have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

11 LINEAGE

11.1 Mandatory for dataset and series

11.1.1 Error message

117 Lineage is mandatory for datasets and series. One shall be provided.

11.1.2 Context

118 MD_Metadata.dataQualityInfo > DQ_DataQuality.lineage > LI_Lineage.statement

11.1.3 Cause

119 The lineage statement must be provided for metadata describing a dataset or a series. This assertion fails if it is not provided.

11.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#MD_ScopeCode"
codeListValue="dataset">dataset</gmd:MD_ScopeCode>
  </gmd:hierarchyLevel>
...
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    ...
    <!--Lineage-->
    ...
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>
```

11.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#MD_ScopeCode"
codeListValue="dataset">dataset</gmd:MD_ScopeCode>
  </gmd:hierarchyLevel>
...
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    ...
    <!--Lineage-->
    <gmd:lineage>
      <gmd:LI_Lineage>
        <gmd:statement>
          <gco:CharacterString>The lineage statement</gco:CharacterString>
        </gmd:statement>
      </gmd:LI_Lineage>
    </gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>
```



```

    </gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

11.1.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi10">
  <sch:title>Lineage</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]">
    <sch:assert test="
      ((gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'dataset' or
        gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'series') and
        count(gmd:dataQualityInfo[1]/*[1]/gmd:lineage/*[1]/gmd:statement) = 1)
    or
      (gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'dataset' and
        gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'series') or
        count(gmd:hierarchyLevel) = 0">
      MI-10a: Lineage is mandatory for datasets and series. One shall be
      provided.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

11.2 Statement is nillable

11.2.1 Error message

120 The gmd:statement element shall have a value or a valid Nil Reason.

11.2.2 Context

121 MD_Metadata.dataQualityInfo > DQ_DataQuality.lineage > LI_Lineage.statement

11.2.3 Cause

122 The element named gmd:statement has either no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

11.2.4 Example – fail

```

<gmd:MD_Metadata>
  ...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#MD_ScopeCode"
      codeListValue="dataset">dataset</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  ...
  <gmd:dataQualityInfo>
    <gmd:DQ_DataQuality>
      ...
      <!--Lineage-->
      <gmd:lineage>
        <gmd:LI_Lineage>
          <gmd:statement/>
        </gmd:LI_Lineage>
      </gmd:lineage>
    </gmd:DQ_DataQuality>
  </gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

```

    </gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

11.2.5 Example – success

```

<gmd:MD_Metadata>
  ...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
      codeListValue="dataset">dataset</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
    ...
  <gmd:dataQualityInfo>
    <gmd:DQ_DataQuality>
      ...
      <!--Lineage-->
      <gmd:lineage>
        <gmd:LI_Lineage>
          <gmd:statement gco:nilReason="missing"/>
        </gmd:LI_Lineage>
      </gmd:lineage>
    </gmd:DQ_DataQuality>
  </gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

11.2.6 Schematron rule

```

<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mil0-Statement-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:dataQualityInfo[1]/*[1]/gmd:lineage/*[1]/gmd:state
ment"/>
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

11.3 dataQualityInfo (dataset) must have lineage

11.3.1 Error message

123 The gmd:dataQualityInfo scoped to dataset must have a lineage section

11.3.2 Context

124 MD_Metadata.dataQualityInfo > DQ_DataQuality.lineage

11.3.3 Cause

125 A metadata record with a dataQualityInfo section scoped to a dataset is missing a lineage element.

11.3.4 Example – fail

```
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode
codeList="http://standards.iso.org/iso/19139/resources/codelist/gmxCodeLists.xml#MD_
ScopeCode"
codeListValue="dataset">dataset</gmd:MD_ScopeCode>
        </gmd:level>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            ...
          </gmd:DQ_ConformanceResult>
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
```

11.3.5 Example – pass

```
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode
codeList="http://standards.iso.org/iso/19139/resources/codelist/gmxCodeLists.xml#MD_
ScopeCode"
codeListValue="dataset">dataset</gmd:MD_ScopeCode>
        </gmd:level>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            ...
          </gmd:DQ_ConformanceResult>
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
```

```

        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
  </gmd:lineage>
  <gmd:LI_Lineage>
    <gmd:statement>
      <gco:CharacterString
xmlns:gco="http://www.isotc211.org/2005/gco">Commissioning Organisation: Scrabster
Harbour Trust; Purpose: Safety of navigation; Collection Type: Digital; Principal
Vessel: Not Known; Primary Instrument Type: Echosounder - single beam; Primary
Navigation Type: Not Known</gco:CharacterString>
    </gmd:statement>
  </gmd:LI_Lineage>
</gmd:lineage>
</gmd:DQ_DataQuality>
</gmd:dataQualityInfo>

```

11.3.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mil0-scoped">
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo[1]/gmd:DQ_DataQuality[1]/gmd:scope
[1]/gmd:DQ_Scope[1]/gmd:level[1]/gmd:MD_ScopeCode[1][@codeListValue = 'dataset']">
    <sch:assert
test="count(parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
sibling::gmd:lineage) = 1">
      MI-10b: The gmd:dataQualityInfo scoped to dataset must have a lineage section
    </sch:assert>
  </sch:rule>
</sch:pattern>
...

```

11.4 dataQualityInfo (series) must have lineage

11.4.1 Error message

126 The gmd:dataQualityInfo scoped to series must have a lineage section

11.4.2 Context

127 MD_Metadata.dataQualityInfo > DQ_DataQuality.lineage

11.4.3 Cause

128 A metadata record with a dataQualityInfo section scoped to a series is missing a lineage element

11.4.4 Example – fail

```

<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode codeListValue="series"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/codelist/gmxCodelists.xml#MD_ScopeCode">
            series
          </gmd:MD_ScopeCode>
        </gmd:level>
      </gmd:DQ_Scope>
    </gmd:scope>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>

```

```

    </gmd:scope>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>

```

11.4.5 Example – pass

```

<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode codeListValue="series"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/codelist/gmxCodeLists.xml#MD_ScopeCode">
            series
          </gmd:MD_ScopeCode>
        </gmd:level>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:lineage>
      <gmd:LI_Lineage>
        ...
      </gmd:LI_Lineage>
    </gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>

```

11.4.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mil0-scoped">
  ...
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo[1]/gmd:DQ_DataQuality[1]/gmd:scope
[1]/gmd:DQ_Scope[1]/gmd:level[1]/gmd:MD_ScopeCode[1][@codeListValue = 'series']">
    <sch:assert
test="count(parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
sibling::gmd:lineage) = 1">
      MI-10c: The gmd:dataQualityInfo scoped to series must have a lineage section
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

12 GEOGRAPHIC BOUNDING BOX

12.1 Geographic bounding box is mandatory

12.1.1 Error message

129 Geographic bounding box is mandatory for datasets and series. One or more shall be provided.

12.1.2 Context

130 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.geographicElement
> EX_GeographicBoundingBox

131 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent >
EX_Extent.geographicElement > EX_GeographicBoundingBox

12.1.3 Cause

132 This assertion fails if no bounding box is provided.

12.1.4 Example – fail

```
<gmd:MD_Metadata>
...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
      codeListValue="dataset">dataset</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:extent>
        <gmd:EX_Extent>
          ...
        </gmd:EX_Extent>
      </gmd:extent>
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

12.1.5 Example – success

```
<gmd:MD_Metadata>
...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
      codeListValue="dataset">dataset</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

```
<gmd:extent>
  <gmd:EX_Extent>
    ...
    <gmd:geographicElement>
      <gmd:EX_GeographicBoundingBox>
        <gmd:westBoundLongitude>
          <gco:Decimal>-9.226253</gco:Decimal>
        </gmd:westBoundLongitude>
        <gmd:eastBoundLongitude>
          <gco:Decimal>-0.707798</gco:Decimal>
        </gmd:eastBoundLongitude>
        <gmd:southBoundLatitude>
          <gco:Decimal>54.513061</gco:Decimal>
        </gmd:southBoundLatitude>
        <gmd:northBoundLatitude>
          <gco:Decimal>60.866752</gco:Decimal>
        </gmd:northBoundLatitude>
      </gmd:EX_GeographicBoundingBox>
    </gmd:geographicElement>
    ...
  </gmd:EX_Extent>
</gmd:extent>
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

12.1.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mil1">
  <sch:title>West and east longitude, north and south latitude</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]">
    <sch:assert test="
      ((../../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'dataset' or
        ../../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'series') and
      (count(gmd:extent/*[1]/gmd:geographicElement/gmd:EX_GeographicBoundingBox) >=
        1) or count(gmd:extent/*[1]/gmd:geographicElement/*[1]/@gco:isoType =
        'gmd:EX_GeographicBoundingBox'[1]) >= 1) or
      (../../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'dataset' and
        ../../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'series') or
      count(../../gmd:hierarchyLevel) = 0">
      MI-(11,12,13,13): Geographic bounding box is mandatory for datasets and
      series. One or more shall be provided.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

12.2 Coordinate values

12.2.1 Error message

- 133 West bounding longitude has a value of <X> which is outside bounds.
- 134 East bounding longitude as a value of <X> which is outside bounds.
- 135 South bounding latitude has a value of <Y> which is outside bounds.
- 136 North bounding latitude has a value of <Y> which is outside bounds.

12.2.2 Context

137 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.geographicElement
> EX_GeographicBoundingBox

138 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent >
EX_Extent.geographicElement > EX_GeographicBoundingBox

12.2.3 Cause

139 The bounding box coordinates are referenced to a WGS 84 coordinate reference system, with coordinate units of degrees and the Greenwich prime meridian. This means that, in general, longitude values must be between -180 and +180 and latitude values must be between -90 and +90.

140 Specifically, the following tests are applied:

141 -180 <= east bounding longitude <= +180

142 -180 <= west bounding longitude <= +180

143 -90 <= south bounding latitude <= north bounding latitude

144 South bounding latitude <= north bounding latitude <= +90

145 The east and west bounding longitude values are not compared against each other because the west value can be greater than the east value where bounding boxes cross the +/-180 degree meridian.

12.2.4 Example – fail

```
...
<gmd:geographicElement>
  <gmd:EX_GeographicBoundingBox>
    <gmd:westBoundLongitude>
      <gco:Decimal>-190.0</gco:Decimal>
    </gmd:westBoundLongitude>
    <gmd:eastBoundLongitude>
      <gco:Decimal>190.0</gco:Decimal>
    </gmd:eastBoundLongitude>
    <gmd:southBoundLatitude>
      <gco:Decimal>-100.0</gco:Decimal>
    </gmd:southBoundLatitude>
    <gmd:northBoundLatitude>
      <gco:Decimal>100.0</gco:Decimal>
    </gmd:northBoundLatitude>
  </gmd:EX_GeographicBoundingBox>
</gmd:geographicElement>
...
```

12.2.5 Example – success

```
...
<gmd:geographicElement>
  <gmd:EX_GeographicBoundingBox>
    <gmd:westBoundLongitude>
      <gco:Decimal>-9.226253</gco:Decimal>
    </gmd:westBoundLongitude>
    <gmd:eastBoundLongitude>
      <gco:Decimal>-0.707798</gco:Decimal>
    </gmd:eastBoundLongitude>
  </gmd:EX_GeographicBoundingBox>
</gmd:geographicElement>
...
```



```

    <gmd:southBoundLatitude>
      <gco:Decimal>54.513061</gco:Decimal>
    </gmd:southBoundLatitude>
    <gmd:northBoundLatitude>
      <gco:Decimal>60.866752</gco:Decimal>
    </gmd:northBoundLatitude>
  </gmd:EX_GeographicBoundingBox>
</gmd:geographicElement>
...

```

12.2.6 Schematron rule

```

<sch:pattern is-a="GeographicBoundingBoxPattern" id="Gemini2-mill-BoundingBox">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:geo
graphicElement/gmd:EX_GeographicBoundingBox
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:geographic
Element/*[@gco:isoType='gmd:EX_GeographicBoundingBox'] [1]
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:geographic
Element/gmd:EX_GeographicBoundingBox
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:geographic
Element/*[@gco:isoType='gmd:EX_GeographicBoundingBox'] [1]" />
</sch:pattern>

<!-- Test for gmd:MD_GeographicBoundingBox values -->
<sch:pattern abstract="true" id="GeographicBoundingBoxPattern">
  <sch:rule context="$context">
    <!-- West Bound Longitude -->
    <sch:assert test="string-length(gmd:westBoundLongitude) = 0 or (
      gmd:westBoundLongitude >= -180.0 and gmd:westBoundLongitude <=
180.0)">
      AP-6a: West bound longitude has a value of <sch:value-of
select="gmd:westBoundLongitude"/> which is outside bounds.
    </sch:assert>
    <!-- East Bound Longitude -->
    <sch:assert test="string-length(gmd:eastBoundLongitude) = 0 or (
      gmd:eastBoundLongitude >= -180.0 and gmd:eastBoundLongitude <=
180.0)">
      AP-6b: East bound longitude has a value of <sch:value-of
select="gmd:eastBoundLongitude"/> which is outside bounds.
    </sch:assert>
    <!-- South Bound Latitude -->
    <sch:assert test="string-length(gmd:southBoundLatitude) = 0 or (
      gmd:southBoundLatitude >= -90.0 and gmd:southBoundLatitude <=
gmd:northBoundLatitude)">
      AP-6c: South bound latitude has a value of <sch:value-of
select="gmd:southBoundLatitude"/> which is outside bounds.
    </sch:assert>
    <!-- North Bound Latitude -->
    <sch:assert test="string-length(gmd:northBoundLatitude) = 0 or (
      gmd:northBoundLatitude <= 90.0 and gmd:northBoundLatitude >=
gmd:southBoundLatitude)">
      AP-6d: North bound latitude has a value of <sch:value-of
select="gmd:northBoundLatitude"/> which is outside bounds.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

12.3 West bound longitude not nillable

12.3.1 Error message

146 The gmd:westBoundLongitude element is not nillable and shall have a value.

12.3.2 Context

147 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.geographicElement
> EX_GeographicBoundingBox.westBoundLongitude

148 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent >
EX_Extent.geographicElement > EX_GeographicBoundingBox.westBoundLongitude

12.3.3 Cause

149 The element named gmd:westBoundLongitude has been assigned a gco:nilReason attribute or the value of the element is an empty string.

12.3.4 Example – fail

```
<gmd:westBoundLongitude/>
```

```
<gmd:westBoundLongitude gco:nilReason="missing"/>
```

12.3.5 Example – success

```
<gmd:westBoundLongitude>
  <gco:Decimal>-9.226253</gco:Decimal>
</gmd:westBoundLongitude>
```

12.3.6 Schematron rule

```
<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mill-West-NotNillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:geo
graphicElement/*[1]/gmd:westBoundLongitude
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:geographic
Element/*[1]/gmd:westBoundLongitude" />
</sch:pattern>

<!-- Test that an element has a value - the value is not nillable -->
<sch:pattern abstract="true" id="TypeNotNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
      AP-2: The <sch:name/> element is not nillable and shall have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

12.4 East bound longitude not nillable

12.4.1 Error message

150 The gmd:eastBoundLongitude element is not nillable and shall have a value.

12.4.2 Context

151 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.geographicElement
> EX_GeographicBoundingBox.eastBoundLongitude

152 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent >
EX_Extent.geographicElement > EX_GeographicBoundingBox.eastBoundLongitude

12.4.3 Cause

153 The element named gmd:eastBoundLongitude has been assigned a gco:nilReason attribute or the value of the element is an empty string.

12.4.4 Example – fail

```
<gmd:eastBoundLongitude/>
```

```
<gmd:eastBoundLongitude gco:nilReason="missing"/>
```

12.4.5 Example – success

```
<gmd:eastBoundLongitude>
  <gco:Decimal>-0.707798</gco:Decimal>
</gmd:eastBoundLongitude>
```

12.4.6 Schematron rule

```
<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mill-East-NotNillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:geo
graphicElement/*[1]/gmd:eastBoundLongitude
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:geographic
Element/*[1]/gmd:eastBoundLongitude" />
</sch:pattern>

<!-- Test that an element has a value - the value is not nillable -->
<sch:pattern abstract="true" id="TypeNotNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
      AP-2: The <sch:name/> element is not nillable and shall have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

12.5 South bound latitude not nillable

12.5.1 Error message

154 The gmd:southBoundLatitude element is not nillable and shall have a value.

12.5.2 Context

155 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.geographicElement
> EX_GeographicBoundingBox.southBoundLatitude

156 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent >
EX_Extent.geographicElement > EX_GeographicBoundingBox.southBoundLatitude

12.5.3 Cause

157 The element named gmd:southBoundLatitude has been assigned a gco:nilReason attribute or the value of the element is an empty string.

12.5.4 Example – fail

```
<gmd:southBoundLatitude/>
```

```
<gmd:southBoundLatitude gco:nilReason="missing"/>
```

12.5.5 Example – success

```
<gmd:southBoundLatitude>
  <gco:Decimal>54.513061</gco:Decimal>
</gmd:southBoundLatitude>
```

12.5.6 Schematron rule

```
<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mill-South-NotNillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:geo
graphicElement/*[1]/gmd:southBoundLatitude
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:geographic
Element/*[1]/gmd:southBoundLatitude" />
</sch:pattern>

<!-- Test that an element has a value - the value is not nillable -->
<sch:pattern abstract="true" id="TypeNotNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
      AP-2: The <sch:name/> element is not nillable and shall have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

12.6 North bound latitude not nillable

12.6.1 Error message

158 The gmd:northBoundLatitude element is not nillable and shall have a value.

12.6.2 Context

159 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.geographicElement
> EX_GeographicBoundingBox.northBoundLatitude

160 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent >
EX_Extent.geographicElement > EX_GeographicBoundingBox.northBoundLatitude

12.6.3 Cause

161 The element named gmd:northBoundLatitude has been assigned a gco:nilReason attribute or the value of the element is an empty string.

12.6.4 Example – fail

```
<gmd:northBoundLatitude/>
```

```
<gmd:northBoundLatitude gco:nilReason="missing"/>
```

12.6.5 Example – success

```
<gmd:northBoundLatitude>
  <gco:Decimal>54.513061</gco:Decimal>
</gmd:northBoundLatitude>
```

12.6.6 Schematron rule

```
<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mill-North-NotNillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:geo
graphicElement/*[1]/gmd:northBoundLatitude
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:extent/*[1]/gmd:geographic
Element/*[1]/gmd:northBoundLatitude" />
</sch:pattern>

<!-- Test that an element has a value - the value is not nillable -->
<sch:pattern abstract="true" id="TypeNotNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
      AP-2: The <sch:name/> element is not nillable and shall have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

13 EXTENT

13.1 Error message

162 The gmd:code element shall have a value or a valid Nil Reason.

13.2 Context

163 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.geographicElement
> EX_GeographicDescription.geographicIdentifier > MD_Identifier.code

164 MD_Metadata.identificationInfo > SV_ServiceIdentification.extent >
EX_Extent.geographicElement > EX_GeographicDescription.geographicIdentifier >
MD_Identifier.code

13.3 Cause

165 The element named gmd:code, in the context of EX_GeographicDescription, has no value or has
a gco:nilReason attribute with an invalid value.

13.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:extent>
      <gmd:EX_Extent>
        <gmd:geographicElement>
          <gmd:EX_GeographicDescription>
            <gmd:geographicIdentifier>
              <gmd:MD_Identifier>
                <gmd:code>
                  <gco:CharacterString></gco:CharacterString>
                </gmd:code>
              </gmd:MD_Identifier>
            </gmd:geographicIdentifier>
          </gmd:EX_GeographicDescription>
        </gmd:geographicElement>
      </gmd:EX_Extent>
    </gmd:extent>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:extent>
      <gmd:EX_Extent>
        <gmd:geographicElement>
```

```

    <gmd:EX_GeographicDescription>
      <gmd:geographicIdentifier>
        <gmd:MD_Identifier>
          <gmd:code gco:nilReason="invalidvalue"/>
        </gmd:MD_Identifier>
      </gmd:geographicIdentifier>
    </gmd:EX_GeographicDescription>
  </gmd:geographicElement>
  ...
</gmd:EX_Extent>
</gmd:extent>
...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

13.5 Example – success

```

<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:extent>
        <gmd:EX_Extent>
          <gmd:geographicElement>
            <gmd:EX_GeographicDescription>
              <gmd:geographicIdentifier>
                <gmd:MD_Identifier>
                  <gmd:code>
                    <gco:CharacterString>
http://data.ordnancesurvey.co.uk/doc/7000000000041546
                    </gco:CharacterString>
                  </gmd:code>
                </gmd:MD_Identifier>
              </gmd:geographicIdentifier>
            </gmd:EX_GeographicDescription>
          </gmd:geographicElement>
          ...
        </gmd:EX_Extent>
      </gmd:extent>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

```

```

<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:extent>
        <gmd:EX_Extent>
          <gmd:geographicElement>

```

```

    ...
    </gmd:EX_Extent>
</gmd:extent>

```

13.6 Schematron rule

```
<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```


14 VERTICAL EXTENT INFORMATION

14.1 Error message

166 The gmd:minimumValue element shall have a value or a valid Nil Reason.

167 The gmd:maximumValue element shall have a value or a valid Nil Reason.

14.2 Context

168 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.verticalElement > EX_VerticalExtent.minimumValue

169 MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.verticalElement > EX_VerticalExtent.maximumValue

14.3 Cause

170 The element named gmd:minimumValue has either no value or it has a gco:nilReason attribute with an invalid value, and / or, the element named gmd:maximumValue has either no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

14.4 Example – fail

```
<MD_Metadata>
...
<identificationInfo>
  <MD_DataIdentification>
    ...
    <extent>
      <EX_Extent>
        ...
        <verticalElement>
          <EX_VerticalExtent>
            <minimumValue>
              <gco:Real></gco:Real>
            </minimumValue>
            <maximumValue/>
            <verticalCRS xlink:href="urn:ogc:def:crs:ESPG::5101" />
          </EX_VerticalExtent>
        </verticalElement>
      </EX_Extent>
    </extent>
  </MD_DataIdentification>
</identificationInfo>
...
</MD_Metadata>
```

14.5 Example – success

```
<MD_Metadata>
...
<identificationInfo>
  <MD_DataIdentification>
    ...
    <extent>
      <EX_Extent>
        ...
        <verticalElement>
          <EX_VerticalExtent>
            <minimumValue>
              <gco:Real>10</gco:Real>
            </minimumValue gco:nilReason="unknown" />
            <maximumValue>
              <verticalCRS xlink:href="urn:ogc:def:crs:ESPG::5101" />
            </EX_VerticalExtent>
          </verticalElement>
        </EX_Extent>
      </extent>
    </MD_DataIdentification>
  </identificationInfo>
...
</MD_Metadata>
```

14.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mil6">
  <sch:title>Vertical extent information</sch:title>
</sch:pattern>

<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mil6-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:ver
ticalElement/*[1]/gmd:minimumValue |
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:extent/*[1]/gmd:verticalEl
ement/*[1]/gmd:maximumValue" />
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

15 SPATIAL REFERENCE SYSTEM

15.1 RS_Identifier shall have a value

15.1.1 Error message

171 The gmd:code element shall have a value or a valid Nil Reason.

15.1.2 Context

172 MD_Metadata.referenceSystemInfo > MD_ReferenceSystem.referenceSystemIdentifier > RS_Identifier.code

15.1.3 Cause

173 The element named gmd:code has either no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

15.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:referenceSystemInfo>
  <gmd:MD_ReferenceSystem>
    <gmd:referenceSystemIdentifier>
      <gmd:RS_Identifier>
        <gmd:code/>
      </gmd:RS_Identifier>
    </gmd:referenceSystemIdentifier>
  </gmd:MD_ReferenceSystem>
</gmd:referenceSystemInfo>
...
</gmd:MD_Metadata>
```

15.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:referenceSystemInfo>
  <gmd:MD_ReferenceSystem>
    <gmd:referenceSystemIdentifier>
      <gmd:RS_Identifier>
        <gmd:code>
          <gco:CharacterString>urn:ogc:def:crs:EPSG::27700</gco:CharacterString>
        </gmd:code>
      </gmd:RS_Identifier>
    </gmd:referenceSystemIdentifier>
  </gmd:MD_ReferenceSystem>
</gmd:referenceSystemInfo>
...
</gmd:MD_Metadata>

<gmd:MD_Metadata>
...
<gmd:referenceSystemInfo>
  <gmd:MD_ReferenceSystem>
```

```

    <gmd:referenceSystemIdentifier>
      <gmd:RS_Identifier>
        <gmd:code gco:nilReason="unknown"/>
      </gmd:RS_Identifier>
    </gmd:referenceSystemIdentifier>
  </gmd:MD_ReferenceSystem>
</gmd:referenceSystemInfo>
...
</gmd:MD_Metadata>

```

15.1.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi17">
  <sch:title>Spatial reference system</sch:title>
</sch:pattern>

<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mi17-NotNillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:referenceSystemInfo/*[1]/gmd:referenceSystemIdentifi
fier/*[1]/gmd:code" />
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

15.2 Spatial reference system requires RS_Identifier

15.2.1 Error message

174 At least one coordinate reference system used in the described dataset, dataset series, or service shall be given using
 gmd:referenceSystemInfo/gmd:MD_ReferenceSystem/gmd:referenceSystemIdentifier/gmd:RS_Identifier

15.2.2 Context

175 MD_ReferenceSystem.referenceSystemIdentifier > RS_Identifier.code

15.2.3 Cause

176 The metadata record is missing an RS_Identifier element; at least one is required.

15.2.4 Example – fail

```
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
    codeListValue="series">series</gmd:MD_ScopeCode>
  </gmd:hierarchyLevel>
...

<gmd:metadataStandardVersion>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    Version 2.3.7
  </gco:CharacterString>
</gmd:metadataStandardVersion>
<!-- looking for content here, but none is found -->

<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
```

15.2.5 Example – pass

```
<gmd:referenceSystemInfo>
  <gmd:MD_ReferenceSystem>
    <gmd:referenceSystemIdentifier>
      <gmd:RS_Identifier>
        <gmd:code>
          <gmx:Anchor
            xlink:href="http://www.opengis.net/def/crs/EPSG/0/4258">
            2D geodetic in ETRS89 on GRS80 (Latitude, Longitude) / ETRS89-GRS80
          </gmx:Anchor>
        </gmd:code>
      </gmd:RS_Identifier>
    </gmd:referenceSystemIdentifier>
  </gmd:MD_ReferenceSystem>
</gmd:referenceSystemInfo>
```

15.2.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mil7-refSysInfo-1">
  <sch:p>
The coordinate reference system(s) used in the described dataset or dataset series
shall be given using element
gmd:referenceSystemInfo/gmd:MD_ReferenceSystem/gmd:referenceSystemIdentifier/gmd:R
S_Identifier
INSPIRE Requirements:
metadata/2.0/req/sds-interoperable/crs and
metadata/2.0/req/isdss/crs
  </sch:p>
  <sch:rule context="//gmd:MD_Metadata[1]">
    <sch:assert
test="count(//gmd:MD_Metadata[1]/child::gmd:referenceSystemInfo/descendant::gmd:RS
_Identifier) > 0">
      MI-17a: At least one coordinate reference system used in the described
dataset, dataset series, or service shall be given using
gmd:referenceSystemInfo/gmd:MD_ReferenceSystem/gmd:referenceSystemIdentifier/gmd:R
S_Identifier
    </sch:assert>
```

```
</sch:rule>
</sch:pattern>
```

15.3 Default CRS Identifiers codeSpace issue

15.3.1 Error message

177 The coordinate reference system xxxx is listed in Default Coordinate Reference System Identifiers in Annex D.4. Such identifiers SHALL NOT use gmd:codeSpace

15.3.2 Context

178 MD_ReferenceSystem.referenceSystemIdentifier > RS_Identifier.code

15.3.3 Cause

179 The coordinate reference system listed appears in the Default Coordinate Reference System Identifiers in Annex D.4 of the INSPIRE Metadata regulations. In such a case, the gmd:codeSpace element shall not be used.

15.3.4 Example – fail

```
<gmd:RS_Identifier>
  <gmd:code>
    <gmx:Anchor
      xmlns:gmx="http://www.isotc211.org/2005/gmx"
      xmlns:xlink="http://www.w3.org/1999/xlink"
      xlink:href="http://www.opengis.net/def/crs/EPSG/0/4258" />
    </gmd:code>
    <gmd:codeSpace>
      <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
        INSPIRE RS registry
      </gco:CharacterString>
    </gmd:codeSpace>
  </gmd:RS_Identifier>
```

15.3.5 Example – pass

```
<gmd:RS_Identifier>
  <gmd:code>
    <gmx:Anchor
      xmlns:gmx="http://www.isotc211.org/2005/gmx"
      xmlns:xlink="http://www.w3.org/1999/xlink"
      xlink:href="http://www.opengis.net/def/crs/EPSG/0/4258" />
    </gmd:code>
  </gmd:RS_Identifier>
```

15.3.6 Schematron rule

```
<sch:let name="defaultCRSCodes"
value="document('http://agi.dev.web-foundry.co.uk/images/xslt/d4.xml')"/>
```

```
<sch:pattern fpi="Gemini2-mil7-refSysInfo-3">
  <sch:p>
```

If the coordinate reference system is listed in the table Default Coordinate Reference System Identifiers in Annex D.4, ... The gmd:codeSpace element shall not be used in this case.

```
</sch:p>
</sch:rule>
```

```
context="//gmd:MD_Metadata[1]/gmd:referenceSystemInfo/*[1]/gmd:referenceSystemIdentifier/gmd:RS_Identifier[1]/gmd:code/gmx:Anchor[1]/@xlink:href">
  <!-- associated test for whether code is a default CRS is in supplemental -->
  <sch:report test="$defaultCRSCodes//crs/text()[normalize-space(.) =
normalize-space(current()/.)] and
count(parent::gmx:Anchor/parent::gmd:code/parent::gmd:RS_Identifier/child::gmd:codeSpace) > 0">
    MI-17b: The coordinate reference system <sch:value-of select="normalize-
space(current()/.)"/> is listed in Default Coordinate Reference System Identifiers
in Annex D.4. Such identifiers SHALL NOT use gmd:codeSpace
  </sch:report>
</sch:rule>
...
</sch:pattern>
```

15.4 Default CRS Identifiers codeSpace issue

15.4.1 Error message

180 The coordinate reference system xxxx is listed in Default Coordinate Reference System Identifiers in Annex D.4. Such identifiers SHALL NOT use gmd:codeSpace

15.4.2 Context

181 MD_ReferenceSystem.referenceSystemIdentifier > RS_Identifier.code

15.4.3 Cause

182 The coordinate reference system listed appears in the Default Coordinate Reference System Identifiers in Annex D.4 of the INSPIRE Metadata regulations. In such a case, the gmd:codeSpace element shall not be used.

15.4.4 Example – fail

```
<gmd:RS_Identifier>
  <gmd:code>
    <gco:CharacterString
      xmlns:gco="http://www.isotc211.org/2005/gco">
        http://www.opengis.net/def/crs/EPSG/0/4258
    </gco:CharacterString>
  </gmd:code>
  <gmd:codeSpace>
    <gco:CharacterString
      xmlns:gco="http://www.isotc211.org/2005/gco">
        INSPIRE RS registry
    </gco:CharacterString>
  </gmd:codeSpace>
</gmd:RS_Identifier>
```

15.4.5 Example – pass

```
<gmd:RS_Identifier>
  <gmd:code>
    <gco:CharacterString
      xmlns:gco="http://www.isotc211.org/2005/gco">
        http://www.opengis.net/def/crs/EPSG/0/4258
    </gco:CharacterString>
  </gmd:code>
</gmd:RS_Identifier>
```

```

    </gco:CharacterString>
  </gmd:code>
</gmd:RS_Identifier>

```

15.4.6 Schematron rule

```

<sch:let name="defaultCRSCodes"
value="document('http://agi.dev.web-foundry.co.uk/images/xslt/d4.xml')"/>

```

```

<sch:pattern fpi="Gemini2-mil17-refSysInfo-3">
  <sch:p>

```

If the coordinate reference system is listed in the table Default Coordinate Reference System Identifiers in Annex D.4, ... The gmd:codeSpace element shall not be used in this case.

```

    </sch:p>
...
    <sch:rule
context="//gmd:MD_Metadata[1]/gmd:referenceSystemInfo/*[1]/gmd:referenceSystemIdentifier/gmd:RS_Identifier[1]/gmd:code/gco:CharacterString">
  <!-- associated test for whether code is a default CRS is in supplemental -->
  <sch:report test="$defaultCRSCodes//crs/text()[normalize-space(.) =
normalize-space(current()/.)] and
count(parent::gmd:code/parent::gmd:RS_Identifier/child::gmd:codeSpace) > 0">
    MI-17c: The coordinate reference system <sch:value-of select="normalize-
space(current()/.)"/> is listed in Default Coordinate Reference System Identifiers
in Annex D.4. Such identifiers SHALL NOT use gmd:codeSpace
  </sch:report>
</sch:rule>
...
</sch:pattern>

```

15.5 Default CRS Identifiers codeSpace issue

15.5.1 Error message

183 The coordinate reference system xxxx is listed in Default Coordinate Reference System Identifiers in Annex D.4. Such identifiers SHALL NOT use gmd:codeSpace

15.5.2 Context

184 MD_ReferenceSystem.referenceSystemIdentifier > RS_Identifier.code

15.5.3 Cause

185 The coordinate reference system listed appears in the Default Coordinate Reference System Identifiers in Annex D.4 of the INSPIRE Metadata regulations. In such a case, the gmd:codeSpace element shall not be used.

15.5.4 Example – fail

```

<gmd:RS_Identifier>
  <gmd:code>
    <gmx:Anchor xmlns:gmx="http://www.isotc211.org/2005/gmx">
      http://www.opengis.net/def/crs/EPSG/0/4258
    </gmx:Anchor>
  </gmd:code>

```



```
<gmd:codeSpace>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    INSPIRE RS registry
  </gco:CharacterString>
</gmd:codeSpace>
</gmd:RS_Identifier>
```

15.5.5 Example – pass

```
<gmd:RS_Identifier>
  <gmd:code>
    <gmx:Anchor xmlns:gmx="http://www.isotc211.org/2005/gmx">
      http://www.opengis.net/def/crs/EPSG/0/4258
    </gmx:Anchor>
  </gmd:code>
</gmd:RS_Identifier>
```

15.5.6 Schematron rule

```
<sch:let name="defaultCRScodes"
value="document('http://agi.dev.web-foundry.co.uk/images/xslt/d4.xml')"/>
```

```
<sch:pattern fpi="Gemini2-mil7-refSysInfo-3">
  <sch:p>
```

If the coordinate reference system is listed in the table Default Coordinate Reference System Identifiers in Annex D.4, ... The gmd:codeSpace element shall not be used in this case.

```
</sch:p>
```

...

```
<sch:rule
context="//gmd:MD_Metadata[1]/gmd:referenceSystemInfo/*[1]/gmd:referenceSystemIdentifier/gmd:RS_Identifier[1]/gmd:code/gmx:Anchor">
  <sch:report test="$defaultCRScodes//crs/text() [normalize-space(.) =
normalize-space(current()/.)] and
count(parent::gmd:code/parent::gmd:RS_Identifier/child::gmd:codeSpace) > 0">
    MI-17d: The coordinate reference system <sch:value-of select="normalize-
space(current()/.)"/> is listed in Default Coordinate Reference System Identifiers
in Annex D.4. Such identifiers SHALL NOT use gmd:codeSpace
  </sch:report>
</sch:rule>
</sch:pattern>
```

16 SPATIAL RESOLUTION

16.1 Error message

186 The gmd:distance element shall have a value or a valid Nil Reason.

16.2 Context

187 MD_Metadata.identificationInfo > MD_DataIdentification.spatialResolution >
MD_Resolution.distance

16.3 Cause

188 The element named gmd:distance has either no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

16.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:spatialResolution>
      <gmd:MD_Resolution>
        <gmd:distance/>
      </gmd:spatialResolution>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

16.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:spatialResolution>
      <gmd:MD_Resolution>
        <gmd:distance>
          <gco:Distance uom="urn:ogc:def:uom:EPSG::9001">29.2</gco:Distance>
        </gmd:distance>
      </gmd:MD_Resolution>
    </gmd:spatialResolution>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

<gmd:MD_Metadata>
...
<gmd:identificationInfo>
```

```
<gmd:MD_DataIdentification>
  ...
  <gmd:spatialResolution>
    <gmd:MD_Resolution>
      <gmd:distance gco:nilReason="missing"/>
    </gmd:MD_Resolution>
  </gmd:spatialResolution>
  ...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

16.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi18">
  <sch:title>Spatial Resolution</sch:title>
</sch:pattern>

<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi18-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:spatialResolution/*
[1]/gmd:distance" />
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

17 RESOURCE LOCATOR

17.1 Valid URI

17.1.1 Error message

189 The value of resource locator does not appear to be a valid URL. It has a value of '[VALUE]'. The URL must start with either http://, https:// or ftp://.

17.1.2 Context

190 MD_Metadata.distributionInfo > MD_Distribution.transferOptions >
MD_DigitalTransferOptions.onLine > CI_OnlineResource.linkage

17.1.3 Cause

191 The value of the gmd:linkage element must be a valid URL. The assertion test looks for the strings 'http://', 'https://' or 'ftp://' at the start of the element value string.

17.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:distributionInfo>
  <gmd:MD_Distribution>
    ...
    <gmd:transferOptions>
      <gmd:MD_DigitalTransferOptions>
        <gmd:onLine>
          <gmd:CI_OnlineResource>
            <gmd:linkage>
              <gmd:URL>www.anyuri.com</gmd:URL>
            </gmd:linkage>
          </gmd:CI_OnlineResource>
        </gmd:onLine>
      </gmd:MD_DigitalTransferOptions>
    </gmd:transferOptions>
  </gmd:MD_Distribution>
</gmd:distributionInfo>
...
</gmd:MD_Metadata>
```

17.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:distributionInfo>
  <gmd:MD_Distribution>
    ...
    <gmd:transferOptions>
      <gmd:MD_DigitalTransferOptions>
        <gmd:onLine>
          <gmd:CI_OnlineResource>
            <gmd:linkage>
              <gmd:URL>http://www.anyuri.com</gmd:URL>
            </gmd:linkage>
          </gmd:CI_OnlineResource>
        </gmd:onLine>
      </gmd:MD_DigitalTransferOptions>
    </gmd:transferOptions>
  </gmd:MD_Distribution>
</gmd:distributionInfo>
...
</gmd:MD_Metadata>
```

```

        </gmd:MD_DigitalTransferOptions>
    </gmd:transferOptions>
</gmd:MD_Distribution>
</gmd:distributionInfo>
...
</gmd:MD_Metadata>

```

17.1.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mil9">
  <sch:title>Resource locator</sch:title>
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:distributionInfo/*[1]/gmd:transferOptions/*[1]/g
md:onLine/*[1]">
    <sch:assert test="
        count(gmd:linkage) = 0 or
        (starts-with(normalize-space(gmd:linkage/*[1]), 'http://') or
         starts-with(normalize-space(gmd:linkage/*[1]), 'https://') or
         starts-with(normalize-space(gmd:linkage/*[1]), 'ftp://'))">
        MI-19: The value of resource locator does not appear to be a valid URL.
        It has a value of '<sch:value-of select="gmd:linkage/*[1]"/>'.
        The URL must start with either http://, https:// or ftp://.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

17.2 Online resource is nillable

17.2.1 Error message

192 The gmd:linkage element shall have a value or a valid Nil Reason.

17.2.2 Context

193 MD_Metadata.distributionInfo > MD_Distribution.transferOptions >
MD_DigitalTransferOptions.onLine > CI_OnlineResource.linkage

17.2.3 Cause

194 The element named gmd:linkage has either no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

17.2.4 Example – fail

```

<gmd:MD_Metadata>
...
<gmd:distributionInfo>
  <gmd:MD_Distribution>
    ...
    <gmd:transferOptions>
      <gmd:MD_DigitalTransferOptions>
        <gmd:onLine>
          <gmd:CI_OnlineResource>
            <gmd:linkage/>
          </gmd:CI_OnlineResource>
        </gmd:onLine>
      </gmd:MD_DigitalTransferOptions>
    </gmd:transferOptions>

```

```

    </gmd:MD_Distribution>
  </gmd:distributionInfo>
  ...
</gmd:MD_Metadata>

```

17.2.5 Example – success

```

<gmd:MD_Metadata>
  ...
  <gmd:distributionInfo>
    <gmd:MD_Distribution>
      ...
      <gmd:transferOptions>
        <gmd:MD_DigitalTransferOptions>
          <gmd:onLine>
            <gmd:CI_OnlineResource>
              <gmd:linkage gco:nilReason="missing"/>
            </gmd:CI_OnlineResource>
          </gmd:onLine>
        </gmd:MD_DigitalTransferOptions>
      </gmd:transferOptions>
    </gmd:MD_Distribution>
  </gmd:distributionInfo>
  ...
</gmd:MD_Metadata>

```

17.2.6 Schematron rule

```

<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mil9-Nillable">
  <sch:param name="context">
    value="//gmd:MD_Metadata[1]/gmd:distributionInfo/*[1]/gmd:transferOptions/*[1]/gmd:
      onLine/*[1]/gmd:linkage" />
  </sch:param>
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

18 DATA FORMAT

18.1 Nil reasons

18.1.1 Error message

195 The gmd:name element shall have a value or a valid Nil Reason.

196 The gmd:version element shall have a value or a valid Nil Reason.

18.1.2 Context

197 MD_Metadata.distributionInfo > MD_Distribution.distributionFormat > MD_Format.name

198 MD_Metadata.distributionInfo > MD_Distribution.distributionFormat > MD_Format.version

18.1.3 Cause

199 The element named gmd:name has either no value or it has a gco:nilReason attribute with an invalid value, and / or, the element named gmd:version has either no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

18.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:distributionInfo>
  <gmd:MD_Distribution>
    <gmd:distributionFormat>
      <gmd:MD_Format>
        <gmd:name/>
        <gmd:version>
          <gco:CharacterString></gco:CharacterString>
        </gmd:version>
      </gmd:MD_Format>
    </gmd:distributionFormat>
  ...
</gmd:MD_Distribution>
</gmd:distributionInfo>
...
</gmd:MD_Metadata>
```

18.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:distributionInfo>
  <gmd:MD_Distribution>
    <gmd:distributionFormat>
      <gmd:MD_Format>
        <gmd:name>
          <gco:CharacterString>GML</gco:CharacterString>
        </gmd:name>
        <gmd:version>
          <gco:CharacterString>3.2</gco:CharacterString>
        </gmd:version>
      </gmd:MD_Format>
    </gmd:distributionFormat>
```

```

    ...
    </gmd:MD_Distribution>
  </gmd:distributionInfo>
  ...
</gmd:MD_Metadata>

```

18.1.6 Schematron rule

```

<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi21-Name-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:distributionInfo/*[1]/gmd:distributionFormat/*[1]/
gmd:name" />
</sch:pattern>

<sch:pattern is-a="TypeNillableVersionPattern" id="Gemini2-mi21-Version-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:distributionInfo/*[1]/gmd:distributionFormat/*[1]/
gmd:version" />
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

18.2 At least one MD_Format is required

18.2.1 Error message

200 Datasets or dataset series must have at least one gmd:distributionFormat/gmd:MD_Format

18.2.2 Context

201 MD_Metadata.distributionInfo > MD_Distribution.distributionFormat

18.2.3 Cause

202 The dataset or dataset series metadata record is missing a gmd:distributionFormat/gmd:MD_Format element. At least one such element is required.

18.2.4 Example – fail

```

<gmd:MD_Distribution>
  <!--The ISO 19115 Constraints require this element!-->
  <gmd:distributionFormat
    xmlns:gco="http://www.isotc211.org/2005/gco" gco:nilReason="inapplicable"/>

```


18.2.5 Example – pass

```
<gmd:MD_Distribution>
  <!--The ISO 19115 Constraints require this element!-->
  <gmd:distributionFormat xmlns:gco="http://www.isotc211.org/2005/gco">
    <gmd:MD_Format>
      <gmd:name xmlns:gco="http://www.isotc211.org/2005/gco"
        gco:nilReason="unknown">
        <gco:CharacterString>image/png</gco:CharacterString>
      </gmd:name>
      <gmd:version gco:nilReason="unknown" />
    </gmd:MD_Format>
  </gmd:distributionFormat>
```

18.2.6 Schematron rule

```
<sch:let name="hierarchyLevelCLValue"
value="//gmd:MD_Metadata/gmd:hierarchyLevel[1]/gmd:MD_ScopeCode[1]/@codeListValue"/>

<sch:pattern fpi="Gemini2-mi21">
  <sch:title>Data Format</sch:title>
  <sch:p>The encoding and the storage or transmission format of the provided
datasets or dataset
  series shall be given using the gmd:distributionFormat/gmd:MD_Format element.
The multiplicity
  of this element is 1..*. </sch:p>
  <sch:let name="MDFs"
value="count (//gmd:MD_Metadata[1]/gmd:distributionInfo/gmd:MD_Distribution/gmd:distr
ibutionFormat/gmd:MD_Format)"/>
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:distributionInfo/gmd:MD_Distribution">
    <sch:report test="($hierarchyLevelCLValue = 'dataset' or
$hierarchyLevelCLValue = 'series') and ($MDFs < 1)">
      MI-21a: Datasets or dataset series must have at least one
gmd:distributionFormat/gmd:MD_Format
      We have <sch:value-of select="$MDFs"/>
    </sch:report>
  </sch:rule>
</sch:pattern>
```

18.3 nil reason must be unknown or inapplicable

18.3.1 Error message

203 A value of *[some term for not known...]* is not expected here.
If the version of the encoding is not known, then use nilReason='unknown',
otherwise if the encoding is not versioned use nilReason='inapplicable', like:

```
<gmd:version nilReason='unknown' />
```

18.3.2 Context

204 MD_Metadata.distributionInfo > MD_Distribution.distributionFormat > MD_Format.version

18.3.3 Cause

205 The version of an MD_Format element is not known, but an appropriate nil reason is not given.

18.3.4 Example – fail

```
<gmd:distributionFormat xmlns:gco="http://www.isotc211.org/2005/gco">
  <gmd:MD_Format>
    <gmd:name xmlns:gco="http://www.isotc211.org/2005/gco"
      gco:nilReason="unknown">
      <gco:CharacterString>image/png</gco:CharacterString>
    </gmd:name>
    <gmd:version>
      <gco:CharacterString>Not Applicable</gco:CharacterString>
    </gmd:version>
  </gmd:MD_Format>
</gmd:distributionFormat>
```

18.3.5 Example – pass

```
<gmd:distributionFormat xmlns:gco="http://www.isotc211.org/2005/gco">
  <gmd:MD_Format>
    <gmd:name xmlns:gco="http://www.isotc211.org/2005/gco"
      gco:nilReason="unknown">
      <gco:CharacterString>image/png</gco:CharacterString>
    </gmd:name>
    <gmd:version gco:nilReason="unknown" />
  </gmd:MD_Format>
</gmd:distributionFormat>
```

18.3.6 Schematron rule

```
<sch:let name="hierarchyLevelCLValue"
value="//gmd:MD_Metadata/gmd:hierarchyLevel[1]/gmd:MD_ScopeCode[1]/@codeListValue />

<sch:pattern fpi="Gemini2-mi21-versionNils">
  <sch:p>
    If the version of the encoding is unknown or if the encoding is not versioned,
    the gmd:version shall be left empty and the nil reason attribute shall be provided
    with either value "unknown" or "inapplicable" correspondingly
  </sch:p>
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:distributionInfo/gmd:MD_Distribution/gmd:distributionFormat/gmd:MD_Format/gmd:version/*[1]">
    <sch:report test="($hierarchyLevelCLValue = 'dataset' or $hierarchyLevelCLValue
= 'series') and
      (normalize-space(.) = 'NotApplicable'
or normalize-space(.) = 'Not Applicable'
or normalize-space(.) = 'Not entered' or
normalize-space(.) = 'Missing' or normalize-space(.) = 'missing' or
normalize-space(.) = 'Unknown' or normalize-space(.) = 'unknown' )">
      MI-21b: A value of <sch:value-of select="normalize-space(.)"/> is not
expected here.
      If the version of the encoding is not known, then use nilReason='unknown',
      otherwise if the encoding is not versioned use nilReason='inapplicable',
      like: <gmd:version nilReason='unknown' />
    </sch:report>
  </sch:rule>
</sch:pattern>
```

19 RESPONSIBLE ORGANISATION

19.1 Mandatory

19.1.1 Error message

206 Responsible organisation is mandatory. At least one shall be provided.

19.1.2 Context

207 MD_Metadata.identificationInfo > MD_DataIdentification.pointOfContact

208 MD_Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact

19.1.3 Cause

209 The assertion will fail if no responsible party information is provided. Specifically, there must be at least one pointOfContact element in the context of MD_DataIdentification or SV_ServiceIdentification.

19.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

19.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:pointOfContact>
      <gmd:CI_ResponsibleParty>
        <gmd:organisationName>
          <gco:CharacterString>SeaZone Solutions Limited</gco:CharacterString>
        </gmd:organisationName>
        <gmd:contactInfo>
          <gmd:CI_Contact>
            <gmd:address>
              <gmd:CI_Address>
                <gmd:electronicMailAddress>
                  <gco:CharacterString>info@seazone.com</gco:CharacterString>
                </gmd:electronicMailAddress>
              </gmd:CI_Address>
            </gmd:address>
          </gmd:CI_Contact>
        </gmd:contactInfo>
        <gmd:role>
          <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
```

```
as/resources/Codelist/gmxCodelists.xml#CI_RoleCode"
codeListValue="owner">owner</gmd:CI_RoleCode>
  </gmd:role>
</gmd:CI_ResponsibleParty>
</gmd:pointOfContact>
...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

19.1.6 Schematron rule

```
<sch:pattern fpi="Gemini2-23">
  <sch:title>Responsible organisation</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]">
    <sch:assert test="count(gmd:pointOfContact) >= 1">
      MI-23a: Responsible organisation is mandatory. At least one shall be
      provided.
    </sch:assert>
  </sch:rule>
...
</sch:pattern>
```

19.2 Responsible organisation not null

19.2.1 Error message

210 The value of responsible organisation shall not be null.

19.2.2 Context

211 MD_Metadata.identificationInfo > MD_DataIdentification.pointOfContact

212 MD_Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact

19.2.3 Cause

213 The assertion fails if the pointOfContact element has a nilReason attribute. The responsible party information must be provided in all cases and a nil reason is not acceptable.

19.2.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:pointOfContact>
      <gmd:CI_ResponsibleParty>
        <gmd:organisationName gco:nilReason="missing"/>
        ...
      <gmd:role>
        <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#CI_RoleCode"
codeListValue="owner">owner</gmd:CI_RoleCode>
        </gmd:role>
      </gmd:CI_ResponsibleParty>
```

```

        </gmd:pointOfContact>
        ...
    </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

19.2.5 Example – success

```

<gmd:MD_Metadata>
...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:pointOfContact>
        <gmd:CI_ResponsibleParty>
          <gmd:organisationName>
            <gco:CharacterString>SeaZone Solutions Limited</gco:CharacterString>
          </gmd:organisationName>
          ...
          <gmd:role>
            <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#CI_RoleCode"
codeListValue="owner">owner</gmd:CI_RoleCode>
            </gmd:role>
          </gmd:CI_ResponsibleParty>
        </gmd:pointOfContact>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

```

19.2.6 Schematron rule

```

<sch:pattern fpi="Gemini2-23">
  <sch:title>Responsible organisation</sch:title>
  ...
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:pointOfContact">
    <sch:assert test="count(@gco:nilReason) = 0">
      MI-23b: The value of responsible organisation shall no be null.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

19.3 Organisation name

19.3.1 Error message

214 One organisation name shall be provided.

19.3.2 Context

215 MD_Metadata.identificationInfo > MD_DataIdentification.pointOfContact >
CI_ResponsibleParty.organisationName

216 MD_Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact >
CI_ResponsibleParty.organisationName

19.3.3 Cause

217 The organisation name has an obligation of conditional in the base ISO 19115 standard. However, it must be provided in GEMINI metadata. It must occur once only within the context of a CI_ResponsibleParty element.

19.3.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:pointOfContact>
      <gmd:CI_ResponsibleParty>
        <gmd:individualName>
          <gco:CharacterString>A N Other</gco:CharacterString>
        </gmd:individualName>
        <gmd:positionName>
          <gco:CharacterString>Metadata Manager</gco:CharacterString>
        </gmd:positionName>
        <gmd:role>
          <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#CI_RoleCode"
codeListValue="owner">owner</gmd:CI_RoleCode>
          </gmd:role>
        </gmd:CI_ResponsibleParty>
      </gmd:pointOfContact>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

19.3.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:pointOfContact>
      <gmd:CI_ResponsibleParty>
        <gmd:organisationName>
          <gco:CharacterString>SeaZone Solutions Limited</gco:CharacterString>
        </gmd:organisationName>
        ...
        <gmd:role>
```

```

        <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#CI_RoleCode"
codeListValue="owner">owner</gmd:CI_RoleCode>
        </gmd:role>
    </gmd:CI_ResponsibleParty>
</gmd:pointOfContact>
    ...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
    ...
</gmd:MD_Metadata>

```

19.3.6 Schematron rule

```

<sch:pattern is-a="ResponsiblePartyPattern" id="Gemini2-mi23-ResponsibleParty">
    <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:pointOfContact"/>
</sch:pattern>

<!-- Test for the responsible party information -->
<sch:pattern abstract="true" id="ResponsiblePartyPattern">
    <!-- Count of Organisation Name and Individual Name >= 1 -->
    <sch:rule context="$context">
        ...
        <sch:assert
test="count(*/*gmd:contactInfo/*[1]/*gmd:address/*[1]/*gmd:electronicMailAddress) =
1">
            AP-5b: One email address shall be provided.
        </sch:assert>
    </sch:rule>
</sch:pattern>

```

19.4 Email address

19.4.1 Error message

218 One email address shall be provided.

19.4.2 Context

- 219 MD_Metadata.identificationInfo > MD_DataIdentification.pointOfContact >
 CI_ResponsibleParty.contactInfo > CI_Contact.address > CI_Address.electronicMailAddress
- 220 MD_Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact >
 CI_ResponsibleParty.contactInfo > CI_Contact.address > CI_Address.electronicMailAddress

19.4.3 Cause

- 221 The element electronicMail Address is mandatory in GEMINI metadata. One shall be provided within the context of a CI_ResponsibleParty element.

19.4.4 Example – fail

```

<gmd:MD_Metadata>
    ...
    <gmd:identificationInfo>
        <gmd:MD_DataIdentification>

```

```

...
<gmd:pointOfContact>
  <gmd:CI_ResponsibleParty>
    ...
    <gmd:contactInfo>
      <gmd:CI_Contact>
        <gmd:address>
          <gmd:CI_Address>
            ...
            </gmd:CI_Address>
          </gmd:address>
        </gmd:CI_Contact>
      </gmd:contactInfo>
    </gmd:CI_ResponsibleParty>
  </gmd:pointOfContact>
  ...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

19.4.5 Example – success

```

<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:pointOfContact>
        <gmd:CI_ResponsibleParty>
          ...
          <gmd:contactInfo>
            <gmd:CI_Contact>
              <gmd:address>
                <gmd:CI_Address>
                  <gmd:electronicMailAddress>
                    <gco:CharacterString>info@seazone.com</gco:CharacterString>
                  </gmd:electronicMailAddress>
                </gmd:CI_Address>
              </gmd:address>
            </gmd:CI_Contact>
          </gmd:contactInfo>
        </gmd:CI_ResponsibleParty>
      </gmd:pointOfContact>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

```

19.4.6 Schematron rule

```

<sch:pattern is-a="ResponsiblePartyPattern" id="Gemini2-mi23-ResponsibleParty">
  <sch:param name="context"

```



```
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:pointOfContact"/>
</sch:pattern>

<!-- Test for the responsible party information -->
<sch:pattern abstract="true" id="ResponsiblePartyPattern">
  <!-- Count of Organisation Name and Individual Name >= 1 -->
  <sch:rule context="$context">
    ...
    <sch:assert
test="count(*/*gmd:contactInfo/*[1]/*gmd:address/*[1]/*gmd:electronicMailAddress) =
1">
      AP-5b: One email address shall be provided.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

19.5 Elements not nillable

19.5.1 Error message

222 The gmd:organisationName element is not nillable and shall have a value.

223 The gmd:electronicMailAddress element is not nillable and shall have a value.

19.5.2 Context

224 MD_Metadata.identificationInfo > MD_DataIdentification.pointOfContact >

CI_ResponsibleParty.organisationName

225 MD_Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact >

CI_ResponsibleParty.organisationName

226 MD_Metadata.identificationInfo > MD_DataIdentification.pointOfContact >

CI_ResponsibleParty.contactInfo > CI_Contact.address > CI_Address.electronicMailAddress

227 MD_Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact >

CI_ResponsibleParty.contactInfo > CI_Contact.address > CI_Address.electronicMailAddress

19.5.3 Cause

228 The element gmd:organisationName has been assigned a gco:nilReason attribute or the value of the element is an empty string, and / or the element named gmd:electronicMailAddress has been assigned a gco:nilReason attribute or the value of the element is an empty string.

19.5.4 Example – fail

```
<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:pointOfContact>
        <gmd:CI_ResponsibleParty>
          <gmd:organisationName gco:nilReason="unknown"/>
          <gmd:contactInfo>
            <gmd:CI_Contact>
              <gmd:address>
                <gmd:CI_Address>
                  <gmd:electronicMailAddress gco:nilReason="missing"/>
                </gmd:CI_Address>
```

```

        </gmd:address>
      </gmd:CI_Contact>
    </gmd:contactInfo>
    ...
  </gmd:CI_ResponsibleParty>
</gmd:pointOfContact>
...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

19.5.5 Example – success

```

<gmd:MD_Metadata>
...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:pointOfContact>
        <gmd:CI_ResponsibleParty>
          <gmd:organisationName>
            <gco:CharacterString>SeaZone Solutions Limited</gco:CharacterString>
          </gmd:organisationName>
          <gmd:contactInfo>
            <gmd:CI_Contact>
              <gmd:address>
                <gmd:CI_Address>
                  <gmd:electronicMailAddress>
                    <gco:CharacterString>info@seazone.com</gco:CharacterString>
                  </gmd:electronicMailAddress>
                </gmd:CI_Address>
              </gmd:address>
            </gmd:CI_Contact>
          </gmd:contactInfo>
        </gmd:CI_ResponsibleParty>
      </gmd:pointOfContact>
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

```

19.5.6 Schematron rule

```

<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mi23-OrganisationName-
NotNillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:pointOfContact/*[1]
/gmd:organisationName
|
//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:pointOfContact/*[1]/gmd:co
ntactInfo/*[1]/gmd:address/*[1]/gmd:electronicMailAddress" />
</sch:pattern>

```

```
<!-- Test that an element has a value - the value is not nillable -->
<sch:pattern abstract="true" id="TypeNotNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
      AP-2: The <sch:name/> element is not nillable and shall have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

19.6 Role code list value

19.6.1 Error message

229 The codeListValue attribute does not have a value.

19.6.2 Context

230 MD_Metadata.identificationInfo > MD_DataIdentification.pointOfContact >
CI_ResponsibleParty.role

231 MD_Metadata.identificationInfo > SV_ServiceIdentification.pointOfContact >
CI_ResponsibleParty.role

19.6.3 Cause

232 This assertion fails if the attribute codeListValue of the element gmd:CI_RoleCode does not have a value.

19.6.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:pointOfContact>
      <gmd:CI_ResponsibleParty>
        ...
        <gmd:role>
          <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#CI_RoleCode"
codeListValue="">owner</gmd:CI_RoleCode>
          </gmd:role>
        </gmd:CI_ResponsibleParty>
      </gmd:pointOfContact>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

19.6.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
```

```

<gmd:MD_DataIdentification>
  ...
  <gmd:pointOfContact>
    <gmd:CI_ResponsibleParty>
      ...
      <gmd:role>
        <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#CI_RoleCode"
codeListValue="owner">owner</gmd:CI_RoleCode>
        </gmd:role>
      </gmd:CI_ResponsibleParty>
    </gmd:pointOfContact>
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

19.6.6 Schematron rule

```

<sch:pattern is-a="IsoCodeListPattern" id="Gemini2-mi23-Role-CodeList">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:pointOfContact/*[1]
/gmd:role/*[1]" />
</sch:pattern>

<!-- Test ISO code lists -->
<sch:pattern abstract="true" id="IsoCodeListPattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(@codeListValue) > 0">
      AP-3: The codeListValue attribute does not have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

20 FREQUENCY OF UPDATE

20.1 Error message

233 The codeListValue attribute does not have a value.

20.2 Context

234 MD_Metadata.identificationInfo > MD_DataIdentification.resourceMaintenance >
MD_MaintenanceInformation.maintenanceAndUpdateFrequency

235 MD_Metadata.identificationInfo > SV_ServiceIdentification.resourceMaintenance >
MD_MaintenanceInformation.maintenanceAndUpdateFrequency

20.3 Cause

236 This assertion fails if the attribute codeListValue of the element
gmd:MD_MaintenanceFrequencyCode does not have a value.

20.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:resourceMaintenance>
      <gmd:MD_MaintenanceInformation>
        <gmd:maintenanceAndUpdateFrequency>
          <gmd:MD_MaintenanceFrequencyCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_MaintenanceFrequencyCode"
codeListValue="">notPlanned</gmd:MD_MaintenanceFrequencyCode>
          </gmd:maintenanceAndUpdateFrequency>
        </gmd:MD_MaintenanceInformation>
      </gmd:resourceMaintenance>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

20.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:resourceMaintenance>
      <gmd:MD_MaintenanceInformation>
        <gmd:maintenanceAndUpdateFrequency>
          <gmd:MD_MaintenanceFrequencyCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_MaintenanceFrequencyCode"
codeListValue="notPlanned">notPlanned</gmd:MD_MaintenanceFrequencyCode>
          </gmd:maintenanceAndUpdateFrequency>
        </gmd:MD_MaintenanceInformation>
      </gmd:resourceMaintenance>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

```

        </gmd:maintenanceAndUpdateFrequency>
    </gmd:MD_MaintenanceInformation>
</gmd:resourceMaintenance>
...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

20.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi24">
    <sch:title>Frequency of update</sch:title>
</sch:pattern>

<sch:pattern is-a="IsoCodeListPattern" id="Gemini2-mi24-CodeList">
    <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:resourceMaintenance
/*[1]/gmd:maintenanceAndUpdateFrequency/*[1]" />
</sch:pattern>

<!-- Test ISO code lists -->
<sch:pattern abstract="true" id="IsoCodeListPattern">
    <sch:rule context="$context">
        <sch:assert test="string-length(@codeListValue) > 0">
            AP-3: The codeListValue attribute does not have a value.
        </sch:assert>
    </sch:rule>
</sch:pattern>

```

21 LIMITATIONS ON PUBLIC ACCESS

21.1 Other constraints nillable

21.1.1 Error message

237 The gmd:otherConstraints element shall have a value or a valid nil reason.

21.1.2 Context

238 MD_Metadata.identificationInfo > MD_DataIdentification.resourceConstraints >
MD_LegalConstraints.otherConstraints

239 MD_Metadata.identificationInfo > SV_ServiceIdentification.resourceConstraints >
MD_LegalConstraints.otherConstraints

21.1.3 Cause

240 The element named gmd:otherConstraints has either no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

21.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:resourceConstraints>
      <gmd:MD_LegalConstraints>
        ...
        <gmd:accessConstraints>
          <gmd:MD_RestrictionCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_RestrictionCode"
codeListValue="otherRestrictions">otherRestrictions</gmd:MD_RestrictionCode>
          </gmd:accessConstraints>
        ...
        <gmd:otherConstraints/>
      </gmd:MD_LegalConstraints>
    </gmd:resourceConstraints>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

21.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:resourceConstraints>
```

```

    <gmd:MD_LegalConstraints>
      ...
      <gmd:accessConstraints>
        <gmd:MD_RestrictionCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_RestrictionCode"
codeListValue="otherRestrictions">otherRestrictions</gmd:MD_RestrictionCode>
        </gmd:accessConstraints>
      ...
      <gmd:otherConstraints gco:nilReason="unknown"/>
    </gmd:MD_LegalConstraints>
  </gmd:resourceConstraints>
  ...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

21.1.6 Schematron rule

```

<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi25-OtherConstraints-
Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:resourceConstraints
/*[1]/gmd:otherConstraints" />
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

21.2 Code list value

21.2.1 Error message

241 The codeListValue attribute does not have a value.

21.2.2 Context

242 MD_Metadata.identificationInfo > MD_DataIdentification.resourceConstraints >
MD_LegalConstraints.accessConstraints

243 MD_Metadata.identificationInfo > SV_ServiceIdentification.resourceConstraints >
MD_LegalConstraints.accessConstraints

21.2.3 Cause

244 This assertion fails if the attribute codeListValue of the element gmd:MD_RestrictionCode does not have a value.

21.2.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:resourceConstraints>
      <gmd:MD_LegalConstraints>
        ...
        <gmd:accessConstraints>
          <gmd:MD_RestrictionCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_RestrictionCode"
codeListValue="">otherRestrictions</gmd:MD_RestrictionCode>
          </gmd:accessConstraints>
        ...
      </gmd:MD_LegalConstraints>
    </gmd:resourceConstraints>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

21.2.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:resourceConstraints>
      <gmd:MD_LegalConstraints>
        ...
        <gmd:accessConstraints>
          <gmd:MD_RestrictionCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_RestrictionCode"
codeListValue="otherRestrictions">otherRestrictions</gmd:MD_RestrictionCode>
          </gmd:accessConstraints>
        ...
      </gmd:MD_LegalConstraints>
    </gmd:resourceConstraints>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

21.2.6 Schematron rule

```
<sch:pattern is-a="IsoCodeListPattern" id="Gemini2-mi25-AccessConstraints-CodeList">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:resourceConstraints
/*[1]/gmd:accessConstraints/*[1]" />
</sch:pattern>

<!-- Test ISO code lists -->
<sch:pattern abstract="true" id="IsoCodeListPattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(@codeListValue) > 0">
      AP-3: The codeListValue attribute does not have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

21.3 LimitationsOnPublicAccess code list value

21.3.1 Error message

245 MI-25c (Limitations on Public Access): There must be one (and only one) LimitationsOnPublicAccess code list value specified using a gmx:Anchor in gmd:otherConstraints

21.3.2 Context

246 MD_Metadata.identificationInfo > MD_DataIdentification.resourceConstraints > MD_LegalConstraints.otherConstraints

247 MD_Metadata.identificationInfo > SV_ServiceIdentification.resourceConstraints > MD_LegalConstraints.otherConstraints

21.3.3 Cause

248 There must be one (and only one) LimitationsOnPublicAccess code list value specified using a gmx:Anchor in gmd:otherConstraints, but none is provided.

21.3.4 Example – fail

```
<gmd:resourceConstraints xlink:title="Limitations">
  <gmd:MD_LegalConstraints>
    <gmd:accessConstraints>
      <gmd:MD_RestrictionCode
codeList="gmxCodeLists.xml#MD_RestrictionCode"
codeListValue="otherRestrictions" />
    </gmd:accessConstraints>
    <gmd:otherConstraints>
      <gco:CharacterString>otherRestrictions</gco:CharacterString>
    </gmd:otherConstraints>
  </gmd:MD_LegalConstraints>
</gmd:resourceConstraints>
```

21.3.5 Example – success

```
<gmd:resourceConstraints xlink:title="Limitations">
  <gmd:MD_LegalConstraints>
```

```

<gmd:accessConstraints>
  <gmd:MD_RestrictionCode
    codeList="gmxCodeLists.xml#MD_RestrictionCode"
    codeListValue="otherRestrictions" />
</gmd:accessConstraints>
<gmd:otherConstraints>
  <gmx:Anchor xlink:href="http://inspire.ec.europa.eu/metadata-
codelist/LimitationsOnPublicAccess/INSPIRE_Directive_Article13_1g">
    otherRestrictions
  </gmx:Anchor>
</gmd:otherConstraints>
</gmd:MD_LegalConstraints>
</gmd:resourceConstraints>

```

21.3.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi25-LimitationsOnPublicAccess">
  <sch:title>LimitationsOnPublicAccess codelist</sch:title>
  <sch:p>We need metadata to have a gmx:Anchor linking to one of the
LimitationsOnPublicAccess codelist values from:
http://inspire.ec.europa.eu/metadata-codelist/LimitationsOnPublicAccess</sch:p>
  <sch:let name="LoPAurl" value="'http://inspire.ec.europa.eu/metadata-
codelist/LimitationsOnPublicAccess/'"/>
  <sch:let name="LoPAurlNum"
value="count(//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:resourceConst
raints/gmd:MD_LegalConstraints/gmd:otherConstraints/gmx:Anchor/@xlink:href[contains
(.,$LoPAurl)])"/>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]">
    <sch:report test="$LoPAurlNum != 1">
      MI-25c (Limitations on Public Access): There must be one (and only one)
LimitationsOnPublicAccess code list value specified using a gmx:Anchor in
gmd:otherConstraints.
      We have <sch:value-of select="$LoPAurlNum"/>
    </sch:report>
  </sch:rule>
</sch:pattern>

```

22 USE CONSTRAINTS

22.1 CodeList Value (UseConstraints-CodeList)

22.1.1 Error message

249 The codeListValue attribute does not have a value

22.1.2 Context

250 MD_Metadata.identificationInfo > MD_DataIdentification.resourceConstraints >
MD_LegalConstraints.useConstraints

251 MD_Metadata.identificationInfo > SV_ServiceIdentification.resourceConstraints >
MD_LegalConstraints.useConstraints

22.1.3 Cause

252 This assertion fails if the attribute codeListValue of the element gmd:MD_RestrictionCode does not have a value.

22.1.4 Example – fail

```
<gmd:resourceConstraints xlink:title="Conditions">
  <gmd:MD_LegalConstraints>
    <gmd:useConstraints>
      <gmd:MD_RestrictionCode codeList="gmxCodelists.xml#MD_RestrictionCode"
codeListValue="" />
    </gmd:useConstraints>
    <gmd:otherConstraints>
      <gmx:Anchor xlink:href="#">Conditions apply</gmx:Anchor>
    </gmd:otherConstraints>
  </gmd:MD_LegalConstraints>
</gmd:resourceConstraints>
```

22.1.5 Example – success

```
<gmd:resourceConstraints xlink:title="Conditions">
  <gmd:MD_LegalConstraints>
    <gmd:useConstraints>
      <gmd:MD_RestrictionCode codeList="gmxCodelists.xml#MD_RestrictionCode"
codeListValue="otherRestrictions" />
    </gmd:useConstraints>
    <gmd:otherConstraints>
      <gmx:Anchor xlink:href="#">Conditions apply</gmx:Anchor>
    </gmd:otherConstraints>
  </gmd:MD_LegalConstraints>
</gmd:resourceConstraints>
```

22.1.6 Schematron rule

```
<sch:pattern is-a="IsoCodeListPattern" id="Gemini2-mi26-UseConstraints-CodeList">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:resourceConstraints/*
[1]/gmd:useConstraints/*[1]" />
</sch:pattern>

<!-- Test ISO code lists -->
<sch:pattern abstract="true" id="IsoCodeListPattern">
```

```
<sch:rule context="$context">  
  <sch:assert test="string-length(@codeListValue) > 0"> AP-3: The codeListValue  
attribute does not have a value. This test may be called by the following Metadata  
Items: 6 - Keyword, 8 - Dataset Reference Date, 23 - Responsible Organisation, 24 -  
Frequency of Update, 25 - Limitations on Public Access, 26 - Use Constraints, 39 -  
Resource Type (aka 46 - Hierarchy Level), 42 - Specification, 50 - Spatial  
representation type, and 51 - Character encoding  
  </sch:assert>  
</sch:rule>  
</sch:pattern>
```

23 ADDITIONAL INFORMATION SOURCE

23.1 Error message

253 The gmd:supplementalInformation element shall have a value or a valid Nil Reason.

23.2 Context

254 MD_Metadata.identificationInfo > MD_Identification.supplementalInformation

23.3 Cause

255 The metadata item 'additional information source' must have a value or a valid nil reason attribute. However, the item is optional so it can be omitted altogether.

23.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:supplementalInformation/>
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

23.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:supplementalInformation>
      <gco:CharacterString>The additional information</gco:CharacterString>
    </gmd:supplementalInformation>
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:supplementalInformation gco:nilReason="missing"/>
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

23.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi27">
  <sch:title>Additional information source</sch:title>
</sch:pattern>

<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi27-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:supplementalInforma
tion"/>
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

24 METADATA DATE

24.1 Error message

256 The gmd:dateStamp element shall have a value or a valid Nil Reason.

24.2 Context

257 MD_Metadata.dateStamp

24.3 Cause

258 The dateStamp element must have a valid value or a valid nil reason.

24.4 Example – fail

```
<gmd:MD_Metadata>
  ...
  <gmd:dateStamp/>
  ...
</gmd:MD_Metadata>
```

24.5 Example – success

```
<gmd:MD_Metadata>
```

```

...
<gmd:dateStamp>
  <gco:Date>2010-11-10</gco:Date>
</gmd:dateStamp>
...
</gmd:MD_Metadata>

<gmd:MD_Metadata>
  ...
  <gmd:dateStamp gco:nilReason="missing"/>
  ...
</gmd:MD_Metadata>

<gmd:MD_Metadata>
  ...
  <gmd:dateStamp>
    <gco:DateTime>2010-11-10T13:50:38</gco:DateTime>
  </gmd:dateStamp>
  ...
</gmd:MD_Metadata>

```

24.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi30">
  <sch:title>Metadata date</sch:title>
</sch:pattern>

<sch:pattern is-a="TypeNotNullablePattern" id="Gemini2-mi30-NotNullable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:dateStamp/gco:Date"/>
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNotNullablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil
Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```


25 METADATA LANGUAGE

25.1 Metadata language is mandatory

25.1.1 Error message

259 Metadata language is mandatory. One shall be provided.

25.1.2 Context

260 MD_Metadata.language

25.1.3 Cause

261 MD_Metadata.language is optional in ISO 19115, 19139 and GEMINI, but is mandatory in the INSPIRE metadata regulation and the UK Location profile of GEMINI.

25.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:fileIdentifier>
...
</gmd:fileIdentifier>
<gmd:hierarchyLevel>
...
</gmd:hierarchyLevel>
...
</gmd:MD_Metadata>
```

25.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:language>
  <gmd:LanguageCode codeList="http://www.loc.gov/standards/iso639-
2/php/code_list.php" codeListValue="eng">eng</gmd:LanguageCode>
</gmd:language>
...
</gmd:MD_Metadata>
```

25.1.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi33">
  <sch:title>Metadata language</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]">
    <sch:assert test="count(gmd:language) = 1">
      MI-33: Metadata language is mandatory. One shall be provided.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

25.2 Language code

25.2.1 Error message

262 Language shall be implemented with gmd:LanguageCode.

25.2.2 Context

263 MD_Metadata.language

25.2.3 Cause

264 The element named gmd:language may have one of two child elements: gco:CharacterString or gmd:LanguageCode. Either is valid according to the ISO 19139 XSD schemas. However, the encoding guidance [2] requires that only the gmd:LanguageCode element is used. The assertion fails if the child element of the element named gmd:language is gco:CharacterString.

25.2.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:language>
  <gco:CharacterString>eng</gco:CharacterString>
</gmd:language>
...
</gmd:MD_Metadata>
```

25.2.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:language>
  <gmd:LanguageCode
    codeList="http://www.loc.gov/standards/iso639-2/php/code_list.php"
    codeListValue="eng">eng</gmd:LanguageCode>
</gmd:language>
...
</gmd:MD_Metadata>
```

25.2.6 Schematron rule

```
<sch:pattern is-a="LanguagePattern" id="Gemini2-mi33-Language">
  <sch:param name="context" value="/*[1]/gmd:language"/>
</sch:pattern>

<!-- Test the language values (Metadata and Resource) -->
<sch:pattern abstract="true" id="LanguagePattern">
  <sch:rule context="$context">
    <sch:assert test="count(gmd:LanguageCode) = 1">
      AP-4a: Language shall be implemented with gmd:LanguageCode.
    </sch:assert>
  </sch:rule>
...
</sch:pattern>
```

25.3 Code list value

25.3.1 Error message

265 The language code list value is absent.

25.3.2 Context

266 MD_Metadata.language

25.3.3 Cause

267 This assertion fails if the attribute codeListValue of the element gmd:LanguageCode does not have a value.

25.3.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:language>
  <gmd:LanguageCode
    codeList="http://www.loc.gov/standards/iso639-2/php/code_list.php"
    codeListValue="">eng</gmd:LanguageCode>
  </gmd:language>
...
</gmd:MD_Metadata>
```

25.3.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:language>
  <gmd:LanguageCode
    codeList="http://www.loc.gov/standards/iso639-2/php/code_list.php"
    codeListValue="eng">eng</gmd:LanguageCode>
  </gmd:language>
...
</gmd:MD_Metadata>
```

25.3.6 Schematron rule

```
<sch:pattern is-a="LanguagePattern" id="Gemini2-mi33-Language">
  <sch:param name="context" value="//gmd:MD_Metadata[1]/gmd:language"/>
</sch:pattern>

<!-- Test the language values (Metadata and Resource) -->
<sch:pattern abstract="true" id="LanguagePattern">
  ...
  <sch:rule context="$context/gmd:LanguageCode">
    <sch:assert test="string-length(@codeListValue) > 0">
      AP-4b: The language code list value is absent.
      When a dataset has no natural language use code zxx
    </sch:assert>
  ...
  </sch:rule>
</sch:pattern>
```

25.4 Language code should be three characters

25.4.1 Error message

268 The language code should be three characters

25.4.2 Context

269 MD_Metadata.language

25.4.3 Cause

270 This assertion fails if the attribute codeListValue of the element gmd:LanguageCode does not have a value with the required length. A code of three letters shall be used.

25.4.4 Example – fail

```
<gmd:language>
  <gmd:LanguageCode codeListValue="en"
    codeList="http://www.loc.gov/standards/iso639-2/php/code_list.php">
    English
  </gmd:LanguageCode>
</gmd:language>
```

25.4.5 Example – pass

```
<gmd:MD_Metadata>
...
<gmd:language>
  <gmd:LanguageCode codeListValue="eng"
    codeList="http://www.loc.gov/standards/iso639-2/php/code_list.php">
    English
  </gmd:LanguageCode>
</gmd:language>
...
</gmd:MD_Metadata>
```

25.4.6 Schematron rule

```
<!-- Test the language values (Metadata and Resource) -->
<sch:pattern abstract="true" id="LanguagePattern">
  <sch:rule context="$context">
...
    <sch:report test="string-length(@codeListValue) != 3">
      AP-4c: The language code should be three characters
    </sch:report>
  </sch:rule>
</sch:pattern>
```

26 METADATA POINT OF CONTACT

26.1 Not null

26.1.1 Error message

271 The value of metadata point of contact shall not be null.

26.1.2 Context

272 MD_Metadata.contact

26.1.3 Cause

273 The assertion will fail if the metadata item 'metadata point of contact' has a nilReason attribute.

26.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:contact gco:nilReason="missing"/>
...
</gmd:MD_Metadata>
```

26.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:contact>
...
</gmd:contact>
...
</gmd:MD_Metadata>
```

26.1.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi35">
  <sch:title>Metadata point of contact</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:contact">
    <sch:assert test="count(@gco:nilReason) = 0">
      MI-35a: The value of metadata point of contact shall not be null.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

26.2 Point of contact role

26.2.1 Error message

274 At least one metadata point of contact shall have the role 'pointOfContact'.

26.2.2 Context

275 MD_Metadata.contact > CI_ResponsibleParty.role

26.2.3 Cause

276 This assertion fails if none of the 'metadata point of contact' instances have a role with the value 'pointOfContact'.

26.2.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:contact>
  <gmd:CI_ResponsibleParty>
    ...
    <gmd:role>
      <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Sch
emas/resources/Codelist/gmxCodelists.xml#CI_RoleCode"
codeListValue="distributor">distributor</gmd:CI_RoleCode>
      </gmd:role>
    </gmd:CI_ResponsibleParty>
  </gmd:contact>
  <gmd:contact>
    <gmd:CI_ResponsibleParty>
      ...
      <gmd:role>
        <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Sch
emas/resources/Codelist/gmxCodelists.xml#CI_RoleCode"
codeListValue="custodian">custodian</gmd:CI_RoleCode>
        </gmd:role>
      </gmd:CI_ResponsibleParty>
    </gmd:contact>
  </gmd:MD_Metadata>
```

26.2.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:contact>
  <gmd:CI_ResponsibleParty>
    ...
    <gmd:role>
      <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Sch
emas/resources/Codelist/gmxCodelists.xml#CI_RoleCode"
codeListValue="pointOfContact">pointOfContact</gmd:CI_RoleCode>
      </gmd:role>
    </gmd:CI_ResponsibleParty>
  </gmd:contact>
  <gmd:contact>
    <gmd:CI_ResponsibleParty>
      ...
      <gmd:role>
        <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Sch
emas/resources/Codelist/gmxCodelists.xml#CI_RoleCode"
codeListValue="custodian">custodian</gmd:CI_RoleCode>
        </gmd:role>
      </gmd:CI_ResponsibleParty>
    </gmd:contact>
  </gmd:MD_Metadata>
```

```

    </gmd:CI_ResponsibleParty>
  </gmd:contact>
  ...
</gmd:MD_Metadata>

```

26.2.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi35">
  <sch:title>Metadata point of contact</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:contact">
    ...
    <sch:assert
      test="count(parent::node() [gmd:contact/*[1]/gmd:role/*[1]/@codeListValue =
'pointOfContact']) >= 1">
      MI-35b: At least one metadata point of contact shall have the role
'pointOfContact'.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

26.3 Organisation name

26.3.1 Error message

277 One organisation name shall be provided.

26.3.2 Context

278 MD_Metadata.contact

26.3.3 Cause

279 The organisation name has an obligation of conditional in the base ISO 19115 standard. However, it must be provided in GEMINI metadata. It must occur once only within the context of an CI_ResponsibleParty element.

26.3.4 Example – fail

```

<gmd:MD_Metadata>
  ...
  <gmd:contact>
    <gmd:CI_ResponsibleParty>
      <gmd:individualName>
        <gco:CharacterString>A N Other</gco:CharacterString>
      </gmd:individualName>
      <gmd:positionName>
        <gco:CharacterString>Metadata Manager</gco:CharacterString>
      </gmd:positionName>
      ...
    </gmd:CI_ResponsibleParty>
  </gmd:contact>
  ...
</gmd:MD_Metadata>

```

26.3.5 Example – success

```
<gmd:MD_Metadata>
...
  <gmd:contact>
    <gmd:CI_ResponsibleParty>
      ...
      <gmd:organisationName>
        <gco:CharacterString>SeaZone Solutions Limited</gco:CharacterString>
      </gmd:organisationName>
      ...
    </gmd:CI_ResponsibleParty>
  </gmd:contact>
  ...
</gmd:MD_Metadata>
```

26.3.6 Schematron rule

```
<sch:pattern is-a="ResponsiblePartyPattern" id="Gemini2-mi35-ResponsibleParty">
  <sch:param name="context" value="//gmd:MD_Metadata[1]/gmd:contact"/>
</sch:pattern>

<!-- Test for the responsible party information -->
<sch:pattern abstract="true" id="ResponsiblePartyPattern">
  <!-- Count of Organisation Name and Individual Name >= 1 -->
  <sch:rule context="$context">
    <sch:assert test="count(*//gmd:organisationName) = 1">
      AP-5a: One organisation name shall be provided.
    </sch:assert>
    ...
  </sch:rule>
</sch:pattern>
```

26.4 Email address

26.4.1 Error message

280 One email address shall be provided.

26.4.2 Context

281 MD_Metadata.contact

26.4.3 Cause

282 The element electronicMailAddress is mandatory in GEMINI metadata. One shall be provided within the context of an CI_ResponsibleParty element.

26.4.4 Example – fail

```
<gmd:MD_Metadata>
...
  <gmd:contact>
    <gmd:CI_ResponsibleParty>
      ...
      <gmd:contactInfo>
        <gmd:CI_Contact>
```



```

...
<gmd:address>
  <gmd:CI_Address>
    ...
    <gmd:electronicMailAddress>
      <gco:CharacterString>sales@seazone.com</gco:CharacterString>
    </gmd:electronicMailAddress>
    <gmd:electronicMailAddress>
      <gco:CharacterString>info@seazone.com</gco:CharacterString>
    </gmd:electronicMailAddress>
  </gmd:CI_Address>
</gmd:address>
</gmd:CI_Contact>
</gmd:contactInfo>
...
</gmd:CI_ResponsibleParty>
</gmd:contact>
...
</gmd:MD_Metadata>

```

26.4.5 Example – success

```

<gmd:MD_Metadata>
...
<gmd:contact>
  <gmd:CI_ResponsibleParty>
    ...
    <gmd:contactInfo>
      <gmd:CI_Contact>
        ...
        <gmd:address>
          <gmd:CI_Address>
            ...
            <gmd:electronicMailAddress>
              <gco:CharacterString>info@seazone.com</gco:CharacterString>
            </gmd:electronicMailAddress>
          </gmd:CI_Address>
        </gmd:address>
      </gmd:CI_Contact>
    </gmd:contactInfo>
    ...
  </gmd:CI_ResponsibleParty>
</gmd:contact>
...
</gmd:MD_Metadata>

```

26.4.6 Schematron rule

```

<sch:pattern is-a="ResponsiblePartyPattern" id="Gemini2-mi35-ResponsibleParty">
  <sch:param name="context" value="//gmd:MD_Metadata[1]/gmd:contact"/>
</sch:pattern>

<!-- Test for the responsible party information -->
<sch:pattern abstract="true" id="ResponsiblePartyPattern">
  <!-- Count of Organisation Name and Individual Name >= 1 -->
  <sch:rule context="$context">

```

```

...
<sch:assert
test="count(*//gmd:contactInfo/*[1]//gmd:address/*[1]//gmd:electronicMailAddress) =
1">
    AP-5b: One email address shall be provided
</sch:assert>
</sch:rule>
</sch:pattern>

```

26.5 Email address not nillable

26.5.1 Error message

283 The gmd:electronicMailAddress element is not nillable and shall have a value.

26.5.2 Context

284 MD_Metadata.contact > CI_ResponsibleParty.contactInfo > CI_Contact.address >
CI_Address.electronicMailAddress

26.5.3 Cause

285 The element named gmd:electronicMailAddress has been assigned a gco:nilReason attribute or the value of the element is an empty string.

26.5.4 Example – fail

```

<gmd:MD_Metadata>
...
<gmd:contact>
  <gmd:CI_ResponsibleParty>
    ...
    <gmd:contactInfo>
      <gmd:CI_Contact>
        ...
        <gmd:address>
          <gmd:CI_Address>
            ...
            <gmd:electronicMailAddress gco:nilReason="missing"/>
          </gmd:CI_Address>
        </gmd:address>
      </gmd:CI_Contact>
    </gmd:contactInfo>
  </gmd:CI_ResponsibleParty>
</gmd:contact>
...
</gmd:MD_Metadata>

```

26.5.5 Example – success

```

<gmd:MD_Metadata>
...
<gmd:contact>
  <gmd:CI_ResponsibleParty>
    ...
    <gmd:contactInfo>
      <gmd:CI_Contact>

```

```

...
<gmd:address>
  <gmd:CI_Address>
    ...
    <gmd:electronicMailAddress>
      <gco:CharacterString>info@seazone.com</gco:CharacterString>
    </gmd:electronicMailAddress>
  </gmd:CI_Address>
</gmd:address>
</gmd:CI_Contact>
</gmd:contactInfo>
...
</gmd:CI_ResponsibleParty>
</gmd:contact>
...
</gmd:MD_Metadata>

```

26.5.6 Schematron rule

```

<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mi35-NotNillable">
  <sch:param name="context"
    value="//gmd:MD_Metadata[1]/gmd:contact/*[1]/gmd:organisationName |
/*[1]/gmd:contact/*[1]/gmd:contactInfo/*[1]/gmd:address/*[1]/gmd:electronicMailA
ddress" />
</sch:pattern>

```

27 UNIQUE RESOURCE IDENTIFIER

27.1 Mandatory

27.1.1 Error message

286 Unique resource identifier is mandatory for datasets and series. One or more shall be provided.

27.1.2 Context

287 MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.identifier

27.1.3 Cause

288 A metadata instance for a dataset or a series must contain the 'unique resource identifier' of the dataset or series. This assertion fails if the identifier element of CI_Citation is omitted.

27.1.4 Example – fail

```
<gmd:MD_Metadata>
...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
codeListValue="dataset">dataset</gmd:MD_ScopeCode>
  </gmd:hierarchyLevel>
...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <gmd:citation>
        <gmd:CI_Citation>
          ...
        </gmd:CI_Citation>
      </gmd:citation>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

27.1.5 Example – success

```
<gmd:MD_Metadata>
...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
codeListValue="dataset">dataset</gmd:MD_ScopeCode>
  </gmd:hierarchyLevel>
...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <gmd:citation>
        <gmd:CI_Citation>
          ...
          <gmd:identifier>

```

```

        <gmd:RS_Identifier>
          <gmd:code>
            <gco:CharacterString>42</gco:CharacterString>
          </gmd:code>
        </gmd:RS_Identifier>
      </gmd:identifier>
    </gmd:CI_Citation>
  </gmd:citation>
  ...
</gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

27.1.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi36">
  <sch:title>(Unique) Resource Identifier</sch:title>
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:citation/*[1]">
    <sch:assert test="
      ((../../../../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'dataset' or
      ../../../../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'series') and
      count(gmd:identifier) >= 1) or
      (../../../../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'dataset' and
      ../../../../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'series') or
      count(../../../../gmd:hierarchyLevel) = 0">
      MI-36: (Unique) Resource Identifier is mandatory for datasets and series.
      One or more shall be provided.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

27.2 Unique resource identifier is not nillable

27.2.1 Error message

289 The gmd:code element is not nillable and shall have a value.

27.2.2 Context

290 MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.identifier > RS_Identifier.code

27.2.3 Cause

291 The element gmd:code has been assigned a gco:nilReason attribute or the value of the element is an empty string.

27.2.4 Example – fail

```

<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <gmd:citation>
        <gmd:CI_Citation>
          ...

```

```

        <gmd:identifier>
          <gmd:RS_Identifier>
            <gmd:code gco:nilReason="missing"/>
          </gmd:RS_Identifier>
        </gmd:identifier>
      </gmd:CI_Citation>
    </gmd:citation>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

27.2.5 Example – success

```

<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <gmd:citation>
        <gmd:CI_Citation>
          ...
          <gmd:identifier>
            <gmd:RS_Identifier>
              <gmd:code>
                <gco:CharacterString>42</gco:CharacterString>
              </gmd:code>
            </gmd:RS_Identifier>
          </gmd:identifier>
        </gmd:CI_Citation>
      </gmd:citation>
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

```

27.2.6 Schematron rule

```

<!-- Ensure that (Unique) Resource Identifier has a value -->
<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mi36-Code-NotNillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:citation/*[1]/gmd:i
dentifier/*[1]/gmd:code" />
</sch:pattern>

<!-- Test that an element has a value - the value is not nillable -->
<sch:pattern abstract="true" id="TypeNotNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
      AP-2: The <sch:name/> element is not nillable and shall have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

27.3 Codespace is nillable

27.3.1 Error message

292 The gmd:codeSpace element shall have a value or a valid Nil Reason.

27.3.2 Context

293 MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.identifier > RS_Identifier.codeSpace

27.3.3 Cause

294 The element named gmd:codeSpace either has no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

27.3.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    <gmd:citation>
      <gmd:CI_Citation>
        ...
        <gmd:identifier>
          <gmd:RS_Identifier>
            <gmd:code>
              <gco:CharacterString>42</gco:CharacterString>
            </gmd:code>
            <gmd:codeSpace/>
          </gmd:RS_Identifier>
        </gmd:identifier>
      </gmd:CI_Citation>
    </gmd:citation>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

27.3.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    <gmd:citation>
      <gmd:CI_Citation>
        ...
        <gmd:identifier>
          <gmd:RS_Identifier>
            <gmd:code>
              <gco:CharacterString>42</gco:CharacterString>
            </gmd:code>
            <gmd:codeSpace>
              <gco:CharacterString>http://www.anyuri.com</gco:CharacterString>
            </gmd:codeSpace>
          </gmd:RS_Identifier>
        </gmd:identifier>
      </gmd:CI_Citation>
    </gmd:citation>
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

```

        </gmd:identifier>
      </gmd:CI_Citation>
    </gmd:citation>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

27.3.6 Schematron rule

```

<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi36-CodeSpace-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:citation/*[1]/gmd:i
dentifier/*[1]/gmd:codeSpace" />
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

28 SPATIAL DATA SERVICE TYPE

28.1 Mandatory for services

28.1.1 Error message

295 If the resource type is service, one spatial data service type shall be provided.

28.1.2 Context

296 MD_Metadata.identificationInfo > SV_ServiceIdentification.serviceType

28.1.3 Cause

297 This assertion fails if the serviceType element is omitted from metadata.

28.1.4 Example – fail

```

<gmd:MD_Metadata>
  ...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Sch
emas/resources/Codelist/ML_gmxCodelists.xml#MD_ScopeCode"
codeListValue="service">service</gmd:MD_ScopeCode>

```



```

</gmd:hierarchyLevel>
...
<gmd:identificationInfo>
  <srv:SV_ServiceIdentification>
    ...
  </srv:SV_ServiceIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

28.1.5 Example – success

```

<gmd:MD_Metadata>
...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Sch
      emas/resources/Codelist/ML_gmxCodelists.xml#MD_ScopeCode"
      codeListValue="service">service</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
    ...
  <gmd:identificationInfo>
    <srv:SV_ServiceIdentification>
      ...
      <srv:serviceType>
        <gco:LocalName>download</gco:LocalName>
      </srv:serviceType>
      ...
    </srv:SV_ServiceIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

```

28.1.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi37">
  <sch:title>Spatial data service type</sch:title>
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/srv:SV_ServiceIdentifica
    tion | /*[1]/gmd:identificationInfo[1]/*[@gco:isoType =
    'srv:SV_ServiceIdentification'][1]">
    <sch:assert test="
      (../../gmd:hierarchyLevel/*[1]/@codeListValue = 'service' and
      count(srv:serviceType) = 1) or
      ../../gmd:hierarchyLevel/*[1]/@codeListValue != 'service'">
      MI-37a: If the resource type is service, one spatial data service type
      shall be provided.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

28.2 Code list value

28.2.1 Error message

298 Service type shall be one of 'discovery', 'view', 'download', 'transformation', 'invoke' or 'other' following INSPIRE generic names.

28.2.2 Context

299 MD_Metadata.identificationInfo > SV_ServiceIdentification.serviceType

28.2.3 Cause

300 The base standards (ISO 19115 or ISO 19139) do not restrict the value of the service type element. The INSPIRE generic names are:

- discovery
- view
- download
- transformation
- invoke
- other

301 This assertion will fail if any other value is used.

28.2.4 Example – fail

```
<gmd:MD_Metadata>
...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Sch
      emas/resources/Codelist/ML_gmxCodelists.xml#MD_ScopeCode"
      codeListValue="service">service</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  ...
  <gmd:identificationInfo>
    <srv:SV_ServiceIdentification>
      ...
      <srv:serviceType>
        <gco:LocalName>map</gco:LocalName>
      </srv:serviceType>
      ...
    </srv:SV_ServiceIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

28.2.5 Example – success

```
<gmd:MD_Metadata>
...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Sch
```

```

emas/resources/Codelist/ML_gmxCodelists.xml#MD_ScopeCode"
codeListValue="service">service</gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
...
<gmd:identificationInfo>
  <srv:SV_ServiceIdentification>
    ...
    <srv:serviceType>
      <gco:LocalName>download</gco:LocalName>
    </srv:serviceType>
    ...
  </srv:SV_ServiceIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>

```

28.2.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi37">
  <sch:title>Spatial data service type</sch:title>
  <sch:rule>

context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/srv:SV_ServiceIdentifica
tion | /*[1]/gmd:identificationInfo[1]/*[@gco:isoType =
'srv:SV_ServiceIdentification'] [1]">
...
  <sch:assert test="
    srv:serviceType/*[1] = 'discovery' or
    srv:serviceType/*[1] = 'view' or
    srv:serviceType/*[1] = 'download' or
    srv:serviceType/*[1] = 'transformation' or
    srv:serviceType/*[1] = 'invoke' or
    srv:serviceType/*[1] = 'other'">
    MI-37b: Service type shall be one of 'discovery', 'view', 'download',
    'transformation', 'invoke' or 'other' following INSPIRE generic names.
  </sch:assert>
</sch:rule>
</sch:pattern>

```

28.3 Service type is not nillable

28.3.1 Error message

302 The srv:serviceType element is not nillable and shall have a value.

28.3.2 Context

303 MD_Metadata.identificationInfo > SV_ServiceIdentification.serviceType

28.3.3 Cause

304 The element name srv:serviceType has been assigned a gco:nilReason attribute or the value of the element is an empty string.

28.3.4 Example – fail

```

<gmd:MD_Metadata>
...

```

```
<gmd:identificationInfo>
  <srv:SV_ServiceIdentification>
    ...
    <srv:serviceType gco:nilReason="unknown"/>
    ...
  </srv:SV_ServiceIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

28.3.5 Example – success

```
<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <srv:SV_ServiceIdentification>
      ...
      <srv:serviceType>
        <gco:LocalName>download</gco:LocalName>
      </srv:serviceType>
      ...
    </srv:SV_ServiceIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

28.3.6 Schematron rule

```
<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi37-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:serviceType"/>
</sch:pattern>
```

```
<!-- Test that an element has a value or has a valid nilReason value -->
```

```
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
```

AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.

```
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

29 COUPLED RESOURCE

29.1 Error message

305 Coupled resource shall be implemented by reference using the xlink:href attribute.

29.2 Context

306 MD_Metadata.identificationInfo > SV_ServiceIdentification.operatesOn

29.3 Cause

307 Metadata elements are typically encoded 'by value', that is the value of the element is encoded directly in the metadata instance. The ISO 19139 standard provides a mechanism for encoding values 'by reference' using the xlink:href attribute. The INSPIRE metadata encoding guidance stipulates that the metadata item 'coupled resource' is implemented 'by reference'. This assertion fails if the element is implemented 'by value'. The encoding guidance [2] contains a discussion of 'by value' and 'by reference' encoding (see section 2.2.11).

29.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <srv:SV_ServiceIdentification>
    ...
    <srv:operatesOn>
      <gmd:MD_DataIdentification>
        ...
        </gmd:MD_DataIdentification>
      </srv:operatesOn>
    </srv:SV_ServiceIdentification>
  </gmd:identificationInfo>
</gmd:MD_Metadata>
```

29.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <srv:SV_ServiceIdentification>
    ...
    <srv:operatesOn xlink:href="D562983F-9203-4E59-BF35-87F6FD96134C"/>
  </srv:SV_ServiceIdentification>
</gmd:identificationInfo>
</gmd:MD_Metadata>
```

29.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi38">
  <sch:title>Coupled resource</sch:title>
  <sch:rule
```

```
context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/srv:operatesOn">  
  <sch:assert test="count(@xlink:href) = 1">  
    MI-38: Coupled resource shall be implemented by reference  
    using the xlink:href attribute.  
  </sch:assert>  
</sch:rule>  
</sch:pattern>
```

30 RESOURCE TYPE

30.1 Mandatory

30.1.1 Error message

308 Resource type is mandatory. One shall be provided.

30.1.2 Context

309 MD_Metadata.hierarchyLevel

30.1.3 Cause

310 The metadata item 'resource type' is encoded in metadata using the hierarchyLevel element. This assertion fails if the hierarchyLevel element is omitted from a metadata instance.

30.1.4 Example – fail

```
<gmd:MD_Metadata>
...
</gmd:MD_Metadata>
```

30.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodeLists.xml#MD_ScopeCode"
codeListValue="dataset">dataset</gmd:MD_ScopeCode>
  </gmd:hierarchyLevel>
...
</gmd:MD_Metadata>
```

30.1.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi39">
  <sch:title>Resource type</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]">
    <sch:assert test="count(gmd:hierarchyLevel) = 1">
      MI-39a: Resource type is mandatory. One shall be provided.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

30.2 Specific value

30.2.1 Error message

311 Value of resource type shall be 'dataset', 'series' or 'service'.

30.2.2 Context

312 MD_Metadata.hierarchyLevel

30.2.3 Cause

313 The value of the element hierarchyLevel is taken from a code list. The encoding guidance [2] and Schematron schema limits this list to 'dataset', 'series' or 'service'. This assertion will fail if any other value is used.

30.2.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
codeListValue="attribute">attribute</gmd:MD_ScopeCode>
  </gmd:hierarchyLevel>
...
</gmd:MD_Metadata>
```

30.2.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
codeListValue="dataset">dataset</gmd:MD_ScopeCode>
  </gmd:hierarchyLevel>
...
</gmd:MD_Metadata>
```

30.2.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi39">
  <sch:title>Resource type</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]">
    ...
    <sch:assert test="
      gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'dataset' or
      gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'series' or
      gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'service'">
      MI-39b: Value of resource type shall be 'dataset', 'series' or 'service'.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```


30.3 Code list

30.3.1 Error message

314 The codeListValue attribute does not have a value.

30.3.2 Context

315 MD_Metadata.hierarchyLevel

30.3.3 Cause

316 This assertion fails if the attribute codeListValue of the element gmd:MD_ScopeCode does not have a value.

30.3.4 Example – fail

```
<gmd:MD_Metadata>
  ...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
      codeListValue="">dataset</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  ...
</gmd:MD_Metadata>
```

30.3.5 Example – success

```
<gmd:MD_Metadata>
  ...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
      codeListValue="dataset">dataset</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  ...
</gmd:MD_Metadata>
```

30.3.6 Schematron rule

```
<sch:pattern is-a="IsoCodeListPattern" id="Gemini2-mi39-CodeList">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:hierarchyLevel/*[1]" />
</sch:pattern>

<!-- Test ISO code lists -->
<sch:pattern abstract="true" id="IsoCodeListPattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(@codeListValue) > 0">
      AP-3: The codeListValue attribute does not have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```


31 CONFORMITY

31.1 Explanation is nillable

31.1.1 Error message

317 The gmd:explanation element shall have a value or a valid Nil Reason.

31.1.2 Context

318 MD_Metadata.dataQualityInfo > DQ_DataQuality.report > DQ_DomainConsistency.result > DQ_ConformanceResult.explanation

31.1.3 Cause

319 An 'explanation' of the conformity is not required in GEMINI metadata. However, the element gmd:explanation is mandatory in the XML encoding. It must have either a value or a valid nil reason. This assertion fails if the element named gmd:explanation has no value or it has a gco:nilReason attribute with an invalid value.

31.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    ...
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        ...
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            ...
            <gmd:explanation/>
            ...
          </gmd:DQ_ConformanceResult>
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
    ...
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>
```

31.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    ...
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        ...
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            ...
            <gmd:explanation gco:nilReason="missing"/>
          </gmd:DQ_ConformanceResult>
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
    ...
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>
```

```

    ...
    </gmd:DQ_ConformanceResult>
  </gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
...
</gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

31.1.6 Schematron rule

```

<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi41-Explanation-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/*[1]/gmd:report/*[1]/gmd:result/*[1]/gmd:explanation" />
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

31.2 gmd:DQ_ConformanceResult is required

31.2.1 Error message

320 There must be at least one gmd:DQ_ConformanceResult

31.2.2 Context

321 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.2.3 Cause

322 The metadata must have a least one DQ_ConformanceResult, but none was found in the record.

31.2.4 Example – fail

```

<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/resources/CodeList/ML_gmxCodeLists.xml#MD_ScopeCode"
codeListValue="dataset"
codeSpace="ISOTC211/19115">dataset</gmd:MD_ScopeCode>

```

```

        </gmd:level>
        <gmd:levelDescription>
            <gmd:MD_ScopeDescription>
                <gmd:other>
                    <gco:CharacterString
xmlns:gco="http://www.isotc211.org/2005/gco">NonGeographicDataset</gco:CharacterString>
                </gmd:other>
            </gmd:MD_ScopeDescription>
        </gmd:levelDescription>
    </gmd:DQ_Scope>
</gmd:scope>
<!-- There should be a gmd:report here) -->
    <gmd:lineage>
        <gmd:LI_Lineage>
            <gmd:statement>
                <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">This
data extract was taken from the Rural Payments Agency Operations team source of reports,
the data has been formatted to ensure it complies with Data Protection Act and publishing
guidelines.</gco:CharacterString>
            </gmd:statement>
        </gmd:LI_Lineage>
    </gmd:lineage>
</gmd:DQ_DataQuality>
</gmd:dataQualityInfo>

```

31.2.5 Example – pass

```

...
</gmd:scope>
<gmd:report>
    <gmd:DQ_DomainConsistency>
        <gmd:result>
            <gmd:DQ_ConformanceResult>
                <gmd:specification>
                    <gmd:CI_Citation>
                        <gmd:title>
                            <gco:CharacterString
xmlns:gco="http://www.isotc211.org/2005/gco">
                                Commission Regulation (EU) No 1089/2010 of 23 November
2010 implementing Directive 2007/2/EC of the European Parliament and of the Council
as regards interoperability of spatial data sets and services
                            </gco:CharacterString>
                        </gmd:title>
                        <gmd:date>
                            <gmd:CI_Date>
                                <gmd:date>
                                    <gco>Date
xmlns:gco="http://www.isotc211.org/2005/gco">2010-12-08
                                </gco>Date>
                            </gmd:date>
                        </gmd:dateType>
                            <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
                                publication
                            </gmd:CI_DateTypeCode>
                        </gmd:dateType>
                    </gmd:CI_Date>
                </gmd:date>
            </gmd:CI_Citation>
        </gmd:specification>
    </gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>

```

```

    <gmd:explanation>
      <gco:CharacterString
        xmlns:gco="http://www.isotc211.org/2005/gco">
        See the referenced specification
      </gco:CharacterString>
    </gmd:explanation>
    <gmd:pass>
      <gco:Boolean xmlns:gco="http://www.isotc211.org/2005/gco">
        false
      </gco:Boolean>
    </gmd:pass>
  </gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:lineage>
...

```

31.2.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi41-confResult">
  <sch:rule context="//gmd:MD_Metadata[1]">
    <sch:assert
test="count(gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:DQ_DomainConsisten
cy/gmd:result/gmd:DQ_ConformanceResult) > 0">
      MI-41a: There must be at least one gmd:DQ_ConformanceResult
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

31.3 Pass needs valid value in conformity statement to 1089/2010

31.3.1 Error message

323 The pass value shall be true, false, or have a nil reason of 'unknown', in a conformance statement for *Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services*

31.3.2 Context

324 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.3.3 Cause

325 The pass value is not set to true or false, or has a nil reason that is not 'unknown'.

31.3.4 Example – fail

```

<gmd:DQ_ConformanceResult>
  <gmd:specification>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
          Commission Regulation (EU) No 1089/2010 of 23 November 2010
implementing Directive 2007/2/EC of the European Parliament and of the Council as
regards interoperability of spatial data sets and services
        </gco:CharacterString>
      </gmd:title>
      <gmd:date>

```

```

    <gmd:CI_Date>
      <gmd:date>
        <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
          2010-12-08
        </gco:Date>
      </gmd:date>
      <gmd:dateType>
        <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
          publication
        </gmd:CI_DateTypeCode>
      </gmd:dateType>
    </gmd:CI_Date>
  </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>
<gmd:explanation>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    See the referenced specification
  </gco:CharacterString>
</gmd:explanation>
<gmd:pass
  xmlns:gco="http://www.isotc211.org/2005/gco"
  gco:nilReason="withheld" />
</gmd:DQ_ConformanceResult>

```

31.3.5 Example – pass

```

<gmd:DQ_ConformanceResult>
  <gmd:specification>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
          Commission Regulation (EU) No 1089/2010 of 23 November 2010
implementing Directive 2007/2/EC of the European Parliament and of the Council as
regards interoperability of spatial data sets and services
        </gco:CharacterString>
      </gmd:title>
      <gmd:date>
        <gmd:CI_Date>
          <gmd:date>
            <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
              2010-12-08
            </gco:Date>
          </gmd:date>
          <gmd:dateType>
            <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
              publication
            </gmd:CI_DateTypeCode>
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>
    </gmd:CI_Citation>
  </gmd:specification>
  <gmd:explanation>

```

```

    <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
      See the referenced specification
    </gco:CharacterString>
  </gmd:explanation>
  <gmd:pass
    xmlns:gco="http://www.isotc211.org/2005/gco"
    gco:nilReason="unknown" />
</gmd:DQ_ConformanceResult>

```

31.3.6 Schematron rule

```

<!-- We need tests that WHEN we have INSPIRE conformance sections they have correct
content -->
<sch:pattern fpi="Gemini2-mi41-inspire1089">
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:
    DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Ci
    tation/gmd:title/*[1][text() = 'Commission Regulation (EU) No 1089/2010 of 23
    November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
    Council as regards interoperability of spatial data sets and services']">
    <sch:let name="localPassPath"
    value="parent::gmd:title/parent::gmd:CI_Citation/parent::gmd:specification/following
    -sibling::gmd:pass"/>
    <sch:let name="localDatePath"
    value="parent::gmd:title/following-sibling::gmd:date/gmd:CI_Date"/>
    <sch:assert test="$localPassPath/gco:Boolean or
    $localPassPath/@gco:nilReason = 'unknown'">
    MI-41b: The pass value shall be true, false, or have a nil reason of 'unknown', in a
    conformance statement for <sch:value-of select="$inspire1089"/>
    </sch:assert>
  ...
  </sch:rule>
</sch:pattern>

```

31.4 dateTypeCode shall be publication in conformity statement to 1089/2010

31.4.1 Error message

326 The dateTypeCode reported shall be publication, in a conformance statement for *Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services*

31.4.2 Context

327 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.4.3 Cause

328 The metadata has a conformance statement to 1089/2010 but the date type reported is incorrect.

31.4.4 Example – fail

```

<gmd:specification>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
        Commission Regulation (EU) No 1089/2010 of 23 November 2010
        implementing Directive 2007/2/EC of the European Parliament and of the Council as

```


regards interoperability of spatial data sets and services

```

    </gco:CharacterString>
  </gmd:title>
  <gmd:date>
    <gmd:CI_Date>
      <gmd:date>
        <gco>Date xmlns:gco="http://www.isotc211.org/2005/gco">
          2010-12-08
        </gco>Date>
      </gmd:date>
      <gmd:dateType>
        <gmd:CI_DateTypeCode codeListValue="revsion"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
      </gmd:dateType>
    </gmd:CI_Date>
  </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>

```

31.4.5 Example – pass

```

<gmd:specification>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
        Commission Regulation (EU) No 1089/2010 of 23 November 2010
        implementing Directive 2007/2/EC of the European Parliament and of the Council as
        regards interoperability of spatial data sets and services
      </gco:CharacterString>
    </gmd:title>
    <gmd:date>
      <gmd:CI_Date>
        <gmd:date>
          <gco>Date xmlns:gco="http://www.isotc211.org/2005/gco">
            2010-12-08
          </gco>Date>
        </gmd:date>
        <gmd:dateType>
          <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
    </gmd:CI_Citation>
  </gmd:specification>

```

31.4.6 Schematron rule

```

<!-- We need tests that WHEN we have INSPIRE conformance sections they have correct
content -->
<sch:pattern fpi="Gemini2-mi41-inspire1089">
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:
DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Ci
tation/gmd:title/*[1][text() = 'Commission Regulation (EU) No 1089/2010 of 23
November 2010 implementing Directive 2007/2/EC of the European Parliament and of the

```

```
Council as regards interoperability of spatial data sets and services']">
  <sch:let name="localPassPath"
value="parent::gmd:title/parent::gmd:CI_Citation/parent::gmd:specification/following
-sibling::gmd:pass"/>
  <sch:let name="localDatePath"
value="parent::gmd:title/following-sibling::gmd:date/gmd:CI_Date"/>
  <sch:assert
test="$localDatePath/gmd:dateType/gmd:CI_DateTypeCode[@codeListValue =
'publication']">
    MI-41d: The dateTypeCode reported shall be publication, in a conformance
statement for <sch:value-of select="$inspire1089"/>
  </sch:assert>
</sch:rule>
</sch:pattern>
```

31.5 date shall be 2010-12-08 in conformity statement to 1089/2010

31.5.1 Error message

329 The date reported shall be 2010-12-08 (date of publication), in a conformance statement for *Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services*

31.5.2 Context

330 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.5.3 Cause

331 The metadata has a conformance statement to 1089/2010 but the date given is not the date of publication.

31.5.4 Example – fail

```
<gmd:specification>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
        Commission Regulation (EU) No 1089/2010 of 23 November 2010
implementing Directive 2007/2/EC of the European Parliament and of the Council as
regards interoperability of spatial data sets and services
      </gco:CharacterString>
    </gmd:title>
    <gmd:date>
      <gmd:CI_Date>
        <gmd:date>
          <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
            2010
          </gco:Date>
        </gmd:date>
        <gmd:dateType>
          <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>
```

31.5.5 Example – pass

```
<gmd:specification>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
        Commission Regulation (EU) No 1089/2010 of 23 November 2010
        implementing Directive 2007/2/EC of the European Parliament and of the Council as
        regards interoperability of spatial data sets and services
      </gco:CharacterString>
    </gmd:title>
    <gmd:date>
      <gmd:CI_Date>
        <gmd:date>
          <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
            2010-12-08
          </gco:Date>
        </gmd:date>
        <gmd:dateType>
          <gmd:CI_DateTypeCode codeListValue="publication"
            codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
            xCodelists.xml#CI_DateTypeCode" />
        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>
```

31.5.6 Schematron rule

```
<!-- We need tests that WHEN we have INSPIRE conformance sections they have correct
content -->
<sch:pattern fpi="Gemini2-mi41-inspire1089">
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:
    DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Ci
    tation/gmd:title/*[1][text() = 'Commission Regulation (EU) No 1089/2010 of 23
    November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
    Council as regards interoperability of spatial data sets and services']">
    <sch:let name="localPassPath"
      value="parent::gmd:title/parent::gmd:CI_Citation/parent::gmd:specification/following
      -sibling::gmd:pass"/>
    <sch:let name="localDatePath"
      value="parent::gmd:title/following-sibling::gmd:date/gmd:CI_Date"/>
    ...
    <!-- Other dates (creation 2010-11-23, revision 2013-12-30)
    ref: http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:02010R1089-20131230-->
    <!-- Publication date ref: https://inspire.ec.europa.eu/inspire-legislation/26-->
    <sch:assert test="$localDatePath/gmd:date/gco:Date[text() = '2010-12-08']">
      MI-41c: The date reported shall be 2010-12-08 (date of publication), in a
      conformance statement for <sch:value-of select="$inspire1089"/>
    </sch:assert>
    ...
  </sch:rule>
</sch:pattern>
```

31.6 date shall be 2010-12-08 in conformity statement to 1089/2010 (alt.)

31.6.1 Error message

332 The date reported shall be 2010-12-08 (date of publication), in a conformance statement for *Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial datasets and services*.

31.6.2 Context

333 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.6.3 Cause

334 The metadata has a conformance statement to 1089/2010 but the date given is not the date of publication

31.6.4 Example – fail

```
<gmd:specification>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
        COMMISSION REGULATION (EU) No 1089/2010 of 23 November 2010
        implementing Directive 2007/2/EC of the European Parliament and of the Council as
        regards interoperability of spatial data sets and services
      </gco:CharacterString>
    </gmd:title>
    <gmd:date>
      <gmd:CI_Date>
        <gmd:date>
          <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
            2010
          </gco:Date>
        </gmd:date>
        <gmd:dateType>
          <gmd:CI_DateTypeCode codeListValue="publication"
            codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
            xCodelists.xml#CI_DateTypeCode" />
        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>
```

31.6.5 Example – pass

```
<gmd:specification>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
        COMMISSION REGULATION (EU) No 1089/2010 of 23 November 2010
        implementing Directive 2007/2/EC of the European Parliament and of the Council as
        regards interoperability of spatial data sets and services
      </gco:CharacterString>
    </gmd:title>
    <gmd:date>
      <gmd:CI_Date>
        <gmd:date>
```

```

        <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
            2010-12-08
        </gco:Date>
    </gmd:date>
    <gmd:dateType>
        <gmd:CI_DateTypeCode codeListValue="publication"

codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
    </gmd:dateType>
    </gmd:CI_Date>
</gmd:date>
</gmd:CI_Citation>
</gmd:specification>

```

31.6.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi41-inspire1089x">
    <sch:p>This test allows for the title to start with `COMMISSION REGULATION` but
    ss. it should be 'Commission Regulation'</sch:p>
    <sch:rule
context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:
DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Ci
tation/gmd:title/*[1][text() = 'COMMISSION REGULATION (EU) No 1089/2010 of 23
November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
Council as regards interoperability of spatial data sets and services']">
        <sch:let name="localPassPath"
value="parent::gmd:title/parent::gmd:CI_Citation/parent::gmd:specification/following
-sibling::gmd:pass"/>
        <sch:let name="localDatePath"
value="parent::gmd:title/following-sibling::gmd:date/gmd:CI_Date"/>
...
        <!-- Other dates (creation 2010-11-23, revision 2013-12-30)
ref: http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:02010R1089-20131230-->
        <!-- Publication date ref: https://inspire.ec.europa.eu/inspire-legislation/26-->
        <sch:assert test="$localDatePath/gmd:date/gco:Date[text() = '2010-12-08']">
MI-41f: The date reported shall be 2010-12-08 (date of publication), in a
conformance statement for <sch:value-of select="$inspire1089"/>
        </sch:assert>
...
    </sch:rule>
</sch:pattern>

```

31.7 dateTypeCode shall be publication in conformity statement to 1089/2010 (alt.)

31.7.1 Error message

335 The DateTypeCode reported shall be publication, in a conformance statement for *Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial datasets and services*

31.7.2 Context

336 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.7.3 Cause

337 The metadata has a conformance statement to 1089/2010 but the date type reported is incorrect

31.7.4 Example – fail

```
<gmd:specification>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
        COMMISSION REGULATION (EU) No 1089/2010 of 23 November 2010
implementing Directive 2007/2/EC of the European Parliament and of the Council as
regards interoperability of spatial data sets and services
      </gco:CharacterString>
    </gmd:title>
    <gmd:date>
      <gmd:CI_Date>
        <gmd:date>
          <gco>Date xmlns:gco="http://www.isotc211.org/2005/gco">
            2010-12-08
          </gco>Date>
        </gmd:date>
        <gmd:dateType>
          <gmd:CI_DateTypeCode codeListValue="revsion"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>
```

31.7.5 Example – pass

```
<gmd:specification>
  <gmd:CI_Citation>
    <gmd:title>
      <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
        COMMISSION REGULATION (EU) No 1089/2010 of 23 November 2010
implementing Directive 2007/2/EC of the European Parliament and of the Council as
regards interoperability of spatial data sets and services
      </gco:CharacterString>
    </gmd:title>
    <gmd:date>
      <gmd:CI_Date>
        <gmd:date>
          <gco>Date xmlns:gco="http://www.isotc211.org/2005/gco">
            2010-12-08
          </gco>Date>
        </gmd:date>
        <gmd:dateType>
          <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>
```

31.7.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi41-inspire1089x">
  <sch:p>This test allows for the title to start with `COMMISSION REGULATION` but
  ss. it should be 'Commission Regulation'</sch:p>
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:
    DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Ci
    tation/gmd:title/*[1][text() = 'COMMISSION REGULATION (EU) No 1089/2010 of 23
    November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
    Council as regards interoperability of spatial data sets and services']">
    <sch:let name="localPassPath"
    value="parent::gmd:title/parent::gmd:CI_Citation/parent::gmd:specification/following
    -sibling::gmd:pass"/>
    <sch:let name="localDatePath"
    value="parent::gmd:title/following-sibling::gmd:date/gmd:CI_Date"/>
    ...
    <sch:assert
    test="$localDatePath/gmd:dateType/gmd:CI_DateTypeCode[@codeListValue =
    'publication']">
    MI-41g: The DateTypeCode reported shall be publication, in a conformance statement
    for <sch:value-of select="$inspire1089"/>
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

31.8 Pass has valid value in conformity statement to 1089/2010 (alt.)

31.8.1 Error message

338 The pass value shall be true, false, or have a nil reason of 'unknown', in a conformance statement for *Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial datasets and services*

31.8.2 Context

339 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.8.3 Cause

340 The pass value is not set to true or false, or has a nil reason that is not 'unknown'.

31.8.4 Example – fail

```
<gmd:DQ_ConformanceResult>
  <gmd:specification>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
          COMMISSION REGULATION (EU) No 1089/2010 of 23 November 2010
          implementing Directive 2007/2/EC of the European Parliament and of the Council as
          regards interoperability of spatial data sets and services
        </gco:CharacterString>
      </gmd:title>
      <gmd:date>
        <gmd:CI_Date>
```

```

    <gmd:date>
      <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
        2010-12-08
      </gco:Date>
    </gmd:date>
    <gmd:dateType>
      <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
        publication
      </gmd:CI_DateTypeCode>
    </gmd:dateType>
  </gmd:CI_Date>
</gmd:date>
</gmd:CI_Citation>
</gmd:specification>
<gmd:explanation>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    See the referenced specification
  </gco:CharacterString>
</gmd:explanation>
<gmd:pass
  xmlns:gco="http://www.isotc211.org/2005/gco"
  gco:nilReason="withheld" />
</gmd:DQ_ConformanceResult>

```

31.8.5 Example – pass

```

<gmd:DQ_ConformanceResult>
  <gmd:specification>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
          COMMISSION REGULATION (EU) No 1089/2010 of 23 November 2010
implementing Directive 2007/2/EC of the European Parliament and of the Council as
regards interoperability of spatial data sets and services
        </gco:CharacterString>
      </gmd:title>
      <gmd:date>
        <gmd:CI_Date>
          <gmd:date>
            <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
              2010-12-08
            </gco:Date>
          </gmd:date>
          <gmd:dateType>
            <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
              publication
            </gmd:CI_DateTypeCode>
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>
    </gmd:CI_Citation>
  </gmd:specification>
  <gmd:explanation>
    <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">

```



```

        See the referenced specification
    </gco:CharacterString>
</gmd:explanation>
<gmd:pass
  xmlns:gco="http://www.isotc211.org/2005/gco"
  gco:nilReason="unknown" />
</gmd:DQ_ConformanceResult>

```

31.8.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi41-inspire1089x">
  <sch:p>This test allows for the title to start with `COMMISSION REGULATION` but
  ss. it should be 'Commission Regulation'</sch:p>
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:
    DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Ci
    tation/gmd:title/*[1][text() = 'COMMISSION REGULATION (EU) No 1089/2010 of 23
    November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
    Council as regards interoperability of spatial data sets and services']">
    <sch:let name="localPassPath"
      value="parent::gmd:title/parent::gmd:CI_Citation/parent::gmd:specification/following
      -sibling::gmd:pass"/>
    <sch:let name="localDatePath"
      value="parent::gmd:title/following-sibling::gmd:date/gmd:CI_Date"/>
    <sch:assert test="$localPassPath/gco:Boolean or $localPassPath/@gco:nilReason =
    'unknown'"/>
    MI-41e: The pass value shall be true, false, or have a nil reason of 'unknown',
    in a conformance statement for <sch:value-of select="$inspire1089"/>
    </sch:assert>
  ...
</sch:rule>
</sch:pattern>

```

31.9 Pass requires valid value in conformity statement to 976/2009

31.9.1 Error message

341 The pass value shall be true, false, or have a nil reason of 'unknown', in a conformance statement for *Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the Network Services*

31.9.2 Context

342 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.9.3 Cause

343 The pass value is not set to true or false, or has a nil reason that is not 'unknown'

31.9.4 Example – fail

```

<gmd:DQ_ConformanceResult>
  <gmd:specification>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
          Commission Regulation (EC) No 976/2009 of 19 October 2009
          implementing Directive 2007/2/EC of the European Parliament and of the Council as
          regards the Network Services
        </gco:CharacterString>
      </gmd:title>
    </gmd:CI_Citation>
  </gmd:specification>
</gmd:DQ_ConformanceResult>

```

```

        </gco:CharacterString>
    </gmd:title>
    <gmd:date>
        <gmd:CI_Date>
            <gmd:date>
                <gco>Date xmlns:gco="http://www.isotc211.org/2005/gco">2010-
12</gco>Date>
            </gmd:date>
            <gmd:dateType>
                <gmd:CI_DateTypeCode codeListValue="creation"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
                    publication
                </gmd:CI_DateTypeCode>
            </gmd:dateType>
        </gmd:CI_Date>
    </gmd:date>
    </gmd:CI_Citation>
</gmd:specification>
<gmd:explanation>
    <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
        See the referenced specification
    </gco:CharacterString>
</gmd:explanation>
    <gmd:pass xmlns:gco="http://www.isotc211.org/2005/gco"
gco:nilReason="inapplicable">
    </gmd:pass>
</gmd:DQ_ConformanceResult>

```

31.9.5 Example – pass

```

<gmd:DQ_ConformanceResult>
    <gmd:specification>
        <gmd:CI_Citation>
            <gmd:title>
                <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
                    Commission Regulation (EC) No 976/2009 of 19 October 2009
implementing Directive 2007/2/EC of the European Parliament and of the Council as
regards the Network Services
                </gco:CharacterString>
            </gmd:title>
            <gmd:date>
                <gmd:CI_Date>
                    <gmd:date>
                        <gco>Date xmlns:gco="http://www.isotc211.org/2005/gco">
                            2010-12-08
                        </gco>Date>
                    </gmd:date>
                    <gmd:dateType>
                        <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
                            publication
                        </gmd:CI_DateTypeCode>
                    </gmd:dateType>
                </gmd:CI_Date>
            </gmd:date>
        </gmd:CI_Citation>
    </gmd:specification>

```

```
<gmd:explanation>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    See the referenced specification
  </gco:CharacterString>
</gmd:explanation>
<gmd:pass>
  <Boolean xmlns="http://www.isotc211.org/2005/gco">false</Boolean>
</gmd:pass>
</gmd:DQ_ConformanceResult>
```

31.9.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi41-inspire976">
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:
    DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Ci
    tation/gmd:title/*[1][text() = 'Commission Regulation (EC) No 976/2009 of 19 October
    2009 implementing Directive 2007/2/EC of the European Parliament and of the Council
    as regards the Network Services']">
    <sch:let name="localPassPath"
    value="parent::gmd:title/parent::gmd:CI_Citation/parent::gmd:specification/following
    -sibling::gmd:pass"/>
    <sch:let name="localDatePath" value="parent::gmd:title/following-
    sibling::gmd:date/gmd:CI_Date"/>
    <sch:assert test="$localPassPath/gco:Boolean or $localPassPath/@gco:nilReason
    = 'unknown'">
      MI-41h: The pass value shall be true, false, or have a nil reason of
      'unknown', in a conformance statement for
      <sch:value-of select="$inspire976"/>
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

31.10 Date shall be 2010-12-08 in conformity statement to 976/2009

31.10.1 Error message

344 The date reported shall be 2010-12-08 (date of publication), in a conformance statement for
*Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive
2007/2/EC of the European Parliament and of the Council as regards the Network Services*

31.10.2 Context

345 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.10.3 Cause

346 The metadata has a conformance statement to 976/2009 but the date given is not the date of
publication.

31.10.4 Example – fail

```
<gmd:DQ_ConformanceResult>
  <gmd:specification>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
          Commission Regulation (EC) No 976/2009 of 19 October 2009
          implementing Directive 2007/2/EC of the European Parliament and of the Council as
```

regards the Network Services

```

    </gco:CharacterString>
  </gmd:title>
  <gmd:date>
    <gmd:CI_Date>
      <gmd:date>
        <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
          2009-10-19
        </gco:Date>
      </gmd:date>
      <gmd:dateType>
        <gmd:CI_DateTypeCode codeListValue="creation"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
          creation
        </gmd:CI_DateTypeCode>
      </gmd:dateType>
    </gmd:CI_Date>
  </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>
<gmd:explanation>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    See the referenced specification
  </gco:CharacterString>
</gmd:explanation>
<gmd:pass xmlns:gco="http://www.isotc211.org/2005/gco"
gco:nilReason="inapplicable">
  </gmd:pass>
</gmd:DQ_ConformanceResult>

```

31.10.5 Example – pass

```

<gmd:DQ_ConformanceResult>
  <gmd:specification>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
          Commission Regulation (EC) No 976/2009 of 19 October 2009
implementing Directive 2007/2/EC of the European Parliament and of the Council as
regards the Network Services
        </gco:CharacterString>
      </gmd:title>
      <gmd:date>
        <gmd:CI_Date>
          <gmd:date>
            <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
              2010-12-08
            </gco:Date>
          </gmd:date>
          <gmd:dateType>
            <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
              publication
            </gmd:CI_DateTypeCode>
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>

```

```

    </gmd:CI_Citation>
  </gmd:specification>
  <gmd:explanation>
    <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
      See the referenced specification
    </gco:CharacterString>
  </gmd:explanation>
  <gmd:pass>
    <Boolean xmlns="http://www.isotc211.org/2005/gco">false</Boolean>
  </gmd:pass>
</gmd:DQ_ConformanceResult>

```

31.10.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi41-inspire976">
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:
    DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Ci
    tation/gmd:title/*[1][text() = 'Commission Regulation (EC) No 976/2009 of 19 October
    2009 implementing Directive 2007/2/EC of the European Parliament and of the Council
    as regards the Network Services']">
    <sch:let name="localPassPath"
    value="parent::gmd:title/parent::gmd:CI_Citation/parent::gmd:specification/following
    -sibling::gmd:pass"/>
    <sch:let name="localDatePath" value="parent::gmd:title/following-
    sibling::gmd:date/gmd:CI_Date"/>
    ...
    <!-- Other dates (creation 2009-10-19, revision 2010-12-28) ref: http://eur-
    lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:02009R0976-20101228 -->
    <!-- Publication date ref: https://inspire.ec.europa.eu/inspire-legislation/26 -->
    <sch:assert test="$localDatePath/gmd:date/gco:Date[text() = '2010-12-08']">
      MI-41i: The date reported shall be 2010-12-08 (date of publication), in a
      conformance statement for <sch:value-of select="$inspire976"/>
    </sch:assert>
    ...
  </sch:rule>
</sch:pattern>

```

31.11 dateTypeCode shall be publication in conformity statement to 976/2009

31.11.1 Error message

347 The dateTypeCode reported shall be publication, in a conformance statement *for Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the Network Services*

31.11.2 Context

348 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.11.3 Cause

349 The metadata has a conformance statement to 976/2009 but the date type reported is incorrect. A publication date must be reported

31.11.4 Example – fail

```

<gmd:DQ_ConformanceResult>
  <gmd:specification>
    <gmd:CI_Citation>

```

```

<gmd:title>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    Commission Regulation (EC) No 976/2009 of 19 October 2009
    implementing Directive 2007/2/EC of the European Parliament and of the Council as
    regards the Network Services
  </gco:CharacterString>
</gmd:title>
<gmd:date>
  <gmd:CI_Date>
    <gmd:date>
      <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
        2009-10-19
      </gco:Date>
    </gmd:date>
    <gmd:dateType>
      <gmd:CI_DateTypeCode codeListValue="creation"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
        creation
      </gmd:CI_DateTypeCode>
    </gmd:dateType>
  </gmd:CI_Date>
</gmd:date>
</gmd:CI_Citation>
</gmd:specification>
<gmd:explanation>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    See the referenced specification
  </gco:CharacterString>
</gmd:explanation>
<gmd:pass xmlns:gco="http://www.isotc211.org/2005/gco"
gco:nilReason="inapplicable">
</gmd:pass>
</gmd:DQ_ConformanceResult>

```

31.11.5 Example – pass

```

<gmd:DQ_ConformanceResult>
  <gmd:specification>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
          Commission Regulation (EC) No 976/2009 of 19 October 2009
          implementing Directive 2007/2/EC of the European Parliament and of the Council as
          regards the Network Services
        </gco:CharacterString>
      </gmd:title>
      <gmd:date>
        <gmd:CI_Date>
          <gmd:date>
            <gco:Date xmlns:gco="http://www.isotc211.org/2005/gco">
              2010-12-08
            </gco:Date>
          </gmd:date>
          <gmd:dateType>
            <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode">
              publication
            </gmd:CI_DateTypeCode>

```

```

        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>
<gmd:explanation>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    See the referenced specification
  </gco:CharacterString>
</gmd:explanation>
<gmd:pass>
  <Boolean xmlns="http://www.isotc211.org/2005/gco">false</Boolean>
</gmd:pass>
</gmd:DQ_ConformanceResult>

```

31.11.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi41-inspire976">
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:
    DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Ci
    tation/gmd:title/*[1][text() = 'Commission Regulation (EC) No 976/2009 of 19 October
    2009 implementing Directive 2007/2/EC of the European Parliament and of the Council
    as regards the Network Services']">
    <sch:let name="localPassPath"
    value="parent::gmd:title/parent::gmd:CI_Citation/parent::gmd:specification/following-
    -sibling::gmd:pass"/>
    <sch:let name="localDatePath" value="parent::gmd:title/following-
    sibling::gmd:date/gmd:CI_Date"/>
    <sch:assert test="$localPassPath/gco:Boolean or $localPassPath/@gco:nilReason
    = 'unknown'">
    ...
    MI-41j: The dateTypeCode reported shall be publication, in a conformance
    statement for <sch:value-of select="$inspire976"/>
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

31.12 Only one conformity statement to 1089/2010 (Service)

31.12.1 Error message

350 A service record should have no more than one Conformance report to [1089/2010]

31.12.2 Context

351 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.12.3 Cause

352 The metadata record contains more than one conformity statement to 1089/2010, but only one statement is allowed

31.12.4 Example – fail

```

</gmd:scope>
<gmd:report>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>

```

```

    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString>
          Commission Regulation (EU) No 1089/2010 of 23
November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
Council as regards interoperability of spatial data sets and services
        </gco:CharacterString>
      </gmd:title>
      <gmd:date>
        <gmd:CI_Date>
          <gmd:date>
            <gco>Date>2010-12-08</gco>Date>
          </gmd:date>
          <gmd:dateType>
            <gmd:CI_DateTypeCode
codeListValue="publication"

codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>
    </gmd:CI_Citation>
  </gmd:specification>
  <gmd:explanation>
    <gco:CharacterString
xmlns:gco="http://www.isotc211.org/2005/gco">
      See the referenced specification
    </gco:CharacterString>
  </gmd:explanation>
  <gmd:pass>
    <Boolean
xmlns="http://www.isotc211.org/2005/gco">>false</Boolean>
  </gmd:pass>
</gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:report>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
              <gco:CharacterString>
                Commission Regulation (EU) No 1089/2010 of 23
November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
Council as regards interoperability of spatial data sets and services
              </gco:CharacterString>
            </gmd:title>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco>Date>2010-12-08</gco>Date>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode codeListValue="publication"

codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />

```



```

        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>
<gmd:explanation gco:nilReason="withheld" />
<gmd:pass gco:nilReason="unknown" />
</gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:lineage>

```

31.12.5 Example – pass

```

</gmd:scope>
<gmd:report>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
              <gco:CharacterString>
                Commission Regulation (EU) No 1089/2010 of 23
                November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
                Council as regards interoperability of spatial data sets and services
              </gco:CharacterString>
            </gmd:title>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco>Date>2010-12-08</gco>Date>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodeLists.xml#CI_DateTypeCode" />
                </gmd:dateType>
              </gmd:CI_Date>
            </gmd:date>
          </gmd:CI_Citation>
        </gmd:specification>
        <gmd:explanation gco:nilReason="withheld" />
        <gmd:pass gco:nilReason="unknown" />
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:lineage>

```

31.12.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi41-inspireConf-sv">
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope/gmd:D
    Q_Scope/gmd:level/gmd:MD_ScopeCode[@codeListValue = 'service']">
    <sch:let name="count1089"
value="count(parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-

```

```
sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:
specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089)]"/>
<sch:let name="count1089x"
value="count(parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:
specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089x)]"/>
<sch:let name="count976"
value="count(parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:
specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire976)]"/>
<sch:assert test="$count1089 <= 1">
M1-41k: A service record should have no more than one Conformance report to
[1089/2010]
(counted <sch:value-of select="$count1089"/>)
</sch:assert>
...
</sch:rule>
</sch:pattern>
```

31.13 Only one conformity statement to 1089/2010 (Service) alt.

31.13.1 Error message

353 A service record should have no more than one Conformance report to [1089/2010]

31.13.2 Context

354 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.13.3 Cause

355 The metadata record contains more than one conformity statement to 1089/2010, but only one statement is allowed

31.13.4 Example – fail

```
</gmd:scope>
<gmd:report>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
              <gco:CharacterString>
                COMMISSION REGULATION (EU) No 1089/2010 of 23
November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
Council as regards interoperability of spatial data sets and services
              </gco:CharacterString>
            </gmd:title>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco>Date>2010-12-08</gco>Date>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode
codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
              </gmd:dateType>
```

```

        </gmd:CI_Date>
      </gmd:date>
    </gmd:CI_Citation>
  </gmd:specification>
  <gmd:explanation>
    <gco:CharacterString>
      See the referenced specification
    </gco:CharacterString>
  </gmd:explanation>
  <gmd:pass>
    <Boolean>>false</Boolean>
  </gmd:pass>
</gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:report>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
              <gco:CharacterString>
                COMMISSION REGULATION (EU) No 1089/2010 of 23
November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
Council as regards interoperability of spatial data sets and services
              </gco:CharacterString>
            </gmd:title>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco:Date>2010-12-08</gco:Date>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
                </gmd:dateType>
              </gmd:CI_Date>
            </gmd:date>
          </gmd:CI_Citation>
        </gmd:specification>
        <gmd:explanation gco:nilReason="withheld" />
        <gmd:pass gco:nilReason="unknown" />
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</gmd:report>

```

31.13.5 Example – pass

```

</gmd:scope>
<gmd:report>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>

```

```

        <gco:CharacterString>
            COMMISSION REGULATION (EU) No 1089/2010 of 23
November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
Council as regards interoperability of spatial data sets and services
        </gco:CharacterString>
        </gmd:title>
        <gmd:date>
            <gmd:CI_Date>
                <gmd:date>
                    <gco>Date>2010-12-08</gco>Date>
                </gmd:date>
                <gmd:dateType>
                    <gmd:CI_DateTypeCode
codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
            </gmd:dateType>
        </gmd:CI_Date>
        </gmd:date>
        </gmd:CI_Citation>
    </gmd:specification>
    <gmd:explanation>
        <gco:CharacterString>
            See the referenced specification
        </gco:CharacterString>
    </gmd:explanation>
    <gmd:pass>
        <Boolean>>false</Boolean>
    </gmd:pass>
    </gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:report>
    <gmd:DQ_DomainConsistency>
        <gmd:result>
            <gmd:DQ_ConformanceResult>
                <gmd:specification>
                    <gmd:CI_Citation>
                        <gmd:title>
                            <gco:CharacterString>
                                Commission Regulation (EC) No 976/2009 of 19 October
2009 implementing Directive 2007/2/EC of the European Parliament and of the Council
as regards the Network Services
                            </gco:CharacterString>
                        </gmd:title>
                        <gmd:date>
                            <gmd:CI_Date>
                                <gmd:date>
                                    <gco>Date>2010-12-08</gco>Date>
                                </gmd:date>
                                <gmd:dateType>
                                    <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
                                </gmd:dateType>
                            </gmd:CI_Date>
                        </gmd:date>
                        </gmd:CI_Citation>
                    </gmd:specification>
                    <gmd:explanation gco:nilReason="withheld" />

```

```

        <gmd:pass gco:nilReason="unknown" />
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:lineage>

```

31.13.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi41-inspireConf-sv">
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope/gmd:DQ_Scope/gmd:level/gmd:MD_ScopeCode[@codeListValue = 'service']">
    <sch:let name="count1089"
      value="count (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089])"/>
    <sch:let name="count1089x"
      value="count (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089x])"/>
    <sch:let name="count976"
      value="count (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire976])"/>
    ...
    <sch:assert test="$count1089x <= 1">
      M1-411: A service record should have no more than one Conformance report to [1089/2010]
      (counted <sch:value-of select="$count1089"/>)
    </sch:assert>
    ...
  </sch:rule>
</sch:pattern>

```

31.14 Only one conformity statement to 976/2009 (Service)

31.14.1 Error message

356 A service record should have no more than one Conformance report to [976/2009]

31.14.2 Context

357 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.14.3 Cause

358 The metadata record contains more than one conformity statement to 976/2009, but only one statement is allowed

31.14.4 Example – fail

```

</gmd:scope>
<gmd:report>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>

```

```

        <gmd:title>
            <gco:CharacterString>
                Commission Regulation (EC) No 976/2009 of 19 October
2009 implementing Directive 2007/2/EC of the European Parliament and of the Council
as regards the Network Services
            </gco:CharacterString>
        </gmd:title>
        <gmd:date>
            <gmd:CI_Date>
                <gmd:date>
                    <gco>Date>2010-12-08</gco>Date>
                </gmd:date>
                <gmd:dateType>
                    <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
                </gmd:dateType>
            </gmd:CI_Date>
        </gmd:date>
        </gmd:CI_Citation>
    </gmd:specification>
    <gmd:explanation>
        <gco:CharacterString>
            See the referenced specification
        </gco:CharacterString>
    </gmd:explanation>
    <gmd:pass>
        <Boolean>>false</Boolean>
    </gmd:pass>
    </gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:report>
    <gmd:DQ_DomainConsistency>
        <gmd:result>
            <gmd:DQ_ConformanceResult>
                <gmd:specification>
                    <gmd:CI_Citation>
                        <gmd:title>
                            <gco:CharacterString>
                                Commission Regulation (EC) No 976/2009 of 19 October
2009 implementing Directive 2007/2/EC of the European Parliament and of the Council
as regards the Network Services
                            </gco:CharacterString>
                        </gmd:title>
                        <gmd:date>
                            <gmd:CI_Date>
                                <gmd:date>
                                    <gco>Date>2010-12-08</gco>Date>
                                </gmd:date>
                                <gmd:dateType>
                                    <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
                                </gmd:dateType>
                            </gmd:CI_Date>
                        </gmd:date>
                        </gmd:CI_Citation>
                    </gmd:specification>
                    <gmd:explanation gco:nilReason="withheld" />
                </gmd:DQ_ConformanceResult>
            </gmd:result>
        </gmd:DQ_DomainConsistency>
    </gmd:report>

```

```

        <gmd:pass gco:nilReason="unknown" />
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:lineage>

```

31.14.5 Example – pass

```

</gmd:scope>
<gmd:report>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
              <gco:CharacterString>
                Commission Regulation (EC) No 976/2009 of 19 October
2009 implementing Directive 2007/2/EC of the European Parliament and of the Council
as regards the Network Services
              </gco:CharacterString>
            </gmd:title>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco>Date>2010-12-08</gco>Date>
                </gmd:date>
              </gmd:CI_Date>
            </gmd:date>
            <gmd:dateType>
              <gmd:CI_DateTypeCode codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
            </gmd:dateType>
          </gmd:CI_Date>
        </gmd:date>
      </gmd:CI_Citation>
    </gmd:specification>
    <gmd:explanation gco:nilReason="withheld" />
    <gmd:pass gco:nilReason="unknown" />
  </gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:lineage>

```

31.14.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi41-inspireConf-sv">
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope/gmd:D
Q_Scope/gmd:level/gmd:MD_ScopeCode[@codeListValue = 'service']">
    <sch:let name="count1089"
value="count (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
:specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089x])"/>
    <sch:let name="count1089x"
value="count (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
:specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089x])"/>
    <sch:let name="count976"

```

```
value="count (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
:specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire976)]"/>
...
<sch:assert test="$count976 <= 1">
  M1-41m: A service record should have no more than one Conformance report to
  [976/2009] (counted <sch:value-of select="$count976"/>)
</sch:assert>
...
</sch:rule>
</sch:pattern>
```

31.15 Conformance report to [976/2009] or [1089/2010] is required (Service)

31.15.1 Error message

359 A service record must have a Conformance report to [976/2009] or [1089/2010]

31.15.2 Context

360 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.15.3 Cause

361 A service requires a conformity report to either [976/2009] or [1089/2010] but neither report was found.

31.15.4 Example – fail

```
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode codeListValue="service"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/codelist/gmxCodeLists.xml#MD_ScopeCode">
            service
          </gmd:MD_ScopeCode>
        </gmd:level>
        <gmd:levelDescription>
          <gmd:MD_ScopeDescription>
            <gmd:other>
              <gco:CharacterString>
                Feature access service
              </gco:CharacterString>
            </gmd:other>
          </gmd:MD_ScopeDescription>
        </gmd:levelDescription>
      </gmd:DQ_Scope>
    </gmd:scope>
    <!-- There should be a gmd:report here -->
    <!-- Lineage -->
    <gmd:lineage>
      <gmd:LI_Lineage>
        <gmd:statement>
          <gco:CharacterString>
```

This dataset was created using the Natural Resource model which forms part of the MMO project 1040 Spatial Trends in Aquaculture Potential in the South and East Coast Inshore and Offshore Marine Plan Areas. The Natural

Resource model is made up of three existing environmental datasets: bathymetry derived from the Department of Food and Rural Affairs (Defra) Digital Elevation Model (DEM), predicted seabed sediments and combined seabed energy, both from UKSeaMap 2010 (McBreen, et al., 2010). ... which gives the features area specified in the features coordinate systems units.

Please note that there is much overlap in potential aquaculture areas. View each sub category independantly to gain a better understanding of its spatial area.

```
</gco:CharacterString>
    </gmd:statement>
  </gmd:LI_Lineage>
</gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
```

31.15.5 Example – pass

```
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode codeListValue="service"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/codelist/gmxCodelists.xml#MD_ScopeCode">
            service
          </gmd:MD_ScopeCode>
        </gmd:level>
        <gmd:levelDescription>
          <gmd:MD_ScopeDescription>
            <gmd:other>
              <gco:CharacterString>service</gco:CharacterString>
            </gmd:other>
          </gmd:MD_ScopeDescription>
        </gmd:levelDescription>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            <gmd:specification>
              <gmd:CI_Citation>
                <gmd:title>
                  <gco:CharacterString>
Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive
2007/2/EC of the European Parliament and of the Council as regards the Network
Services
                  </gco:CharacterString>
                </gmd:title>
                <gmd:date>
                  <gmd:CI_Date>
                    <gmd:date>
                      <gco:Date>2010-12-08</gco:Date>
                    </gmd:date>
                    <gmd:dateType>
                      <gmd:CI_DateTypeCode
codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
```

```

        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  </gmd:CI_Citation>
</gmd:specification>
<gmd:explanation gco:nilReason="withheld"/>
<gmd:pass gco:nilReason="unknown"/>
</gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<!-- Lineage -->
<gmd:lineage>
  <gmd:LI_Lineage>
    <gmd:statement>
      <gco:CharacterString>This dataset... </gco:CharacterString>
    </gmd:statement>
  </gmd:LI_Lineage>
</gmd:lineage>
</gmd:DQ_DataQuality>
</gmd:dataQualityInfo>

```

31.15.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi41-inspireConf-sv">
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope/gmd:D
    Q_Scope/gmd:level/gmd:MD_ScopeCode[@codeListValue = 'service']">
    <sch:let name="count1089"
      value="count (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
      sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
      :specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089)]"/>
    <sch:let name="count1089x"
      value="count (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
      sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
      :specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089x)]"/>
    <sch:let name="count976"
      value="count (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
      sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
      :specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire976)]"/>
    ...
    <sch:report test="
      not (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
      sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
      :specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089]) and
      not (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
      sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
      :specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089x]) and
      not (parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
      sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
      :specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire976)]">
      M1-41n: A service record must have a Conformance report to [976/2009] or
      [1089/2010]
    </sch:report>
  </sch:rule>
</sch:pattern>

```

31.16 Conformance statement to 1089/2010 is required (Dataset/Series)

31.16.1 Error message

362 Datasets and series must provide a conformance report to [1089/2010]. The INSPIRE rule tells us this must be the EXACT title of the regulation, which is *Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services*

31.16.2 Context

363 DQ_DataQuality > DQ_Element.result > DQ_ConformanceResult

31.16.3 Cause

364 No conformance statement to 1089/2010 could be found, but one is required

31.16.4 Example – fail

```
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode codeListValue="dataset"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/Codelist/gmxCodeLists.xml#MD_ScopeCode">
            dataset
          </gmd:MD_ScopeCode>
        </gmd:level>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            <gmd:specification>
              <gmd:CI_Citation>
                <gmd:title>
                  <gco:CharacterString>
                    D2.8.I.5 INSPIRE Data Specification on
Addresses - Guidelines, publication, 2010-04-26
                  </gco:CharacterString>
                </gmd:title>
                <gmd:date>
                  <gmd:CI_Date>
                    <gmd:date>
                      <gco:Date>
                        1995-01-01
                      </gco:Date>
                    </gmd:date>
                    <gmd:dateType>
                      <gmd:CI_DateTypeCode
codeListValue="publication"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/Codelist/gmxCodeLists.xml#CI_DateTypeCode">
                        publication
                      </gmd:CI_DateTypeCode>
                    </gmd:dateType>
                  </gmd:CI_Date>
                </gmd:date>
              </gmd:CI_Citation>
            </gmd:specification>
          </gmd:DQ_ConformanceResult>
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
```

```

        </gmd:CI_Citation>
      </gmd:specification>
    </gmd:explanation>
    <gco:CharacterString>
      Only Mandatory Elements Included
    </gco:CharacterString>
  </gmd:explanation>
  <gmd:pass>
    <gco:Boolean>
      true
    </gco:Boolean>
  </gmd:pass>
</gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:lineage>
  <gmd:LI_Lineage>
    <gmd:statement>
      <gco:CharacterString>
        Captured and maintained to Local GIS data Conventions defined
      </gco:CharacterString>
    </gmd:statement>
  </gmd:LI_Lineage>
</gmd:lineage>
</gmd:DQ_DataQuality>
</gmd:dataQualityInfo>

```

31.16.5 Example – pass

```

<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/Codelist/gmxCodeLists.xml#MD_ScopeCode"
          codeListValue="dataset">dataset</gmd:MD_ScopeCode>
        </gmd:level>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            <gmd:specification>
              <gmd:CI_Citation>
                <gmd:title>
                  <gco:CharacterString>
                    Commission Regulation (EU) No 1089/2010 of 23
November 2010 implementing Directive 2007/2/EC of the European Parliament and of the
Council as regards interoperability of spatial data sets and services
                  </gco:CharacterString>
                </gmd:title>
              </gmd:CI_Citation>
            </gmd:specification>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco>Date>
                    2010-12-08

```

```

        </gco:Date>
      </gmd:date>
    </gmd:dateType>
    <gmd:CI_DateTypeCode
codeListValue="publication"
codeList="http://aws2.caris.com/sfs/schemas/iso/19139/20070417/resources/Codelist/gm
xCodelists.xml#CI_DateTypeCode" />
    </gmd:dateType>
  </gmd:CI_Date>
</gmd:date>
</gmd:CI_Citation>
</gmd:specification>
<gmd:explanation>
  <gco:CharacterString>
    See the referenced specification
  </gco:CharacterString>
</gmd:explanation>
<gmd:pass
  xmlns:gco="http://www.isotc211.org/2005/gco"
  gco:nilReason="unknown" />
</gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:report>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
              <gco:CharacterString>
D2.8.I.5 INSPIRE Data Specification on Addresses - Guidelines, publication, 2010-04-26
            </gco:CharacterString>
          </gmd:title>
          <gmd:date>
            <gmd:CI_Date>
              <gmd:date>
                <gco:Date>
                  1995-01-01
                </gco:Date>
              </gmd:date>
              <gmd:dateType>
                <gmd:CI_DateTypeCode
codeListValue="publication"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/Codelist/gmxCodelists.xml#CI_DateTypeCode">
                publication
              </gmd:CI_DateTypeCode>
            </gmd:dateType>
          </gmd:CI_Date>
        </gmd:date>
      </gmd:CI_Citation>
    </gmd:specification>
    <gmd:explanation>
      <gco:CharacterString>
        Only Mandatory Elements Included
      </gco:CharacterString>
    </gmd:explanation>
    <gmd:pass>
      <gco:Boolean>true</gco:Boolean>

```

```

        </gmd:pass>
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:lineage>
  <gmd:LI_Lineage>
    <gmd:statement>
      <gco:CharacterString>
        Captured and maintained to Local GIS data Conventions defined
      </gco:CharacterString>
    </gmd:statement>
  </gmd:LI_Lineage>
</gmd:lineage>
</gmd:DQ_DataQuality>
</gmd:dataQualityInfo>

```

31.16.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi41-inspireConf-dss">
  <sch:rule context="
//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope/gmd:DQ_Scope/g
md:level/gmd:MD_ScopeCode[@codeListValue = 'dataset']
|
//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope/gmd:DQ_Scope/g
md:level/gmd:MD_ScopeCode[@codeListValue = 'series']">
    <sch:assert
test="count(parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
:specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089]) = 1 or
count(parent::gmd:level/parent::gmd:DQ_Scope/parent::gmd:scope/following-
sibling::gmd:report/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd
:specification/gmd:CI_Citation/gmd:title/*[1][text() = $inspire1089x]) = 1">
      MI-41o: Datasets and series must provide a conformance report to
      [1089/2010].
      The INSPIRE rule tells us this must be the EXACT title of the regulation,
      which is: <sch:value-of select="$inspire1089"/>
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

32 SPECIFICATION

32.1 Title not nillable

32.1.1 Error message

365 The gmd:title element is not nillable and shall have a value.

32.1.2 Context

366 MD_Metadata.dataQualityInfo > DQ_DataQuality.report > DQ_DomainConsistency.result > DQ_ConformanceResult.specification > CI_Citation.title

32.1.3 Cause

367 The element named gmd:title has been assigned a gco:nilReason attribute or the value of the element is an empty string.

32.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    ...
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        ...
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            <gmd:specification>
              <gmd:CI_Citation>
                <gmd:title gco:nilReason="missing"/>
                ...
              </gmd:CI_Citation>
            </gmd:specification>
            ...
          </gmd:DQ_ConformanceResult>
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
    ...
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>
```

32.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    ...
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        ...
        <gmd:result>
          <gmd:DQ_ConformanceResult>
```

```

    <gmd:specification>
      <gmd:CI_Citation>
        <gmd:title>
          <gco:CharacterString>Conformity</gco:CharacterString>
        </gmd:title>
        ...
      </gmd:CI_Citation>
    </gmd:specification>
    ...
  </gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
...
</gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

32.1.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi42">
  <sch:title>Specification</sch:title>
</sch:pattern>

<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-mi42-Title-NotNillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/*[1]/gmd:report/*[1]/gmd:result/*[1]/gmd:specification/*[1]/gmd:title" />
</sch:pattern>
<!-- Test that an element has a value - the value is not nillable -->
<sch:pattern abstract="true" id="TypeNotNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
      AP-2: The <sch:name/> element is not nillable and shall have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

32.2 Date is nillable

32.2.1 Error message

368 The gmd:date element shall have a value or a valid nil reason.

32.2.2 Context

369 MD_Metadata.dataQualityInfo > DQ_DataQuality.report > DQ_DomainConsistency.result > DQ_ConformanceResult.specification > CI_Citation.date > CI_Date.date

32.2.3 Cause

370 The element named gmd:date has either no value or it has a gco:nilReason attribute with an invalid value. The value of the gco:nilReason attribute must be taken from a controlled list.

32.2.4 Example – fail

```

<gmd:MD_Metadata>
  ...

```



```

<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    ...
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        ...
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            <gmd:specification>
              <gmd:CI_Citation>
                ...
                <gmd:date>
                  <gmd:CI_Date>
                    <gmd:date/>
                  ...
                </gmd:CI_Date>
              </gmd:date>
            </gmd:CI_Citation>
          </gmd:specification>
        ...
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</gmd:report>
  ...
</gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

32.2.5 Example – success

```

<gmd:MD_Metadata>
  ...
  <gmd:dataQualityInfo>
    <gmd:DQ_DataQuality>
      ...
      <gmd:report>
        <gmd:DQ_DomainConsistency>
          ...
          <gmd:result>
            <gmd:DQ_ConformanceResult>
              <gmd:specification>
                <gmd:CI_Citation>
                  ...
                  <gmd:date>
                    <gmd:CI_Date>
                      <gmd:date gco:nilReason="unknown"/>
                    ...
                  </gmd:CI_Date>
                </gmd:date>
              </gmd:CI_Citation>
            </gmd:specification>
          ...
        </gmd:DQ_ConformanceResult>
      </gmd:result>
    </gmd:DQ_DomainConsistency>
  </gmd:report>
  ...
</gmd:DQ_DataQuality>

```

```
</gmd:dataQualityInfo>
</gmd:MD_Metadata>
```

32.2.6 Schematron rule

```
<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi42-Date-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/*[1]/gmd:report/*[1]/gmd:result/*[1]/gmd:specification/*[1]/gmd:date/*[1]/gmd:date" />
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

32.3 Date type code list

32.3.1 Error message

371 The codeListValue attribute does not have a value.

32.3.2 Context

372 MD_Metadata.dataQualityInfo > DQ_DataQuality.report > DQ_DomainConsistency.result > DQ_ConformanceResult.specification > CI_Citation.date > CI_Date.dateType

32.3.3 Cause

373 This assertion fails if the attribute codeListValue of the element gmd:CI_DateTypeCode does not have a value.

32.3.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    ...
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        ...
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            <gmd:specification>
              <gmd:CI_Citation>
                ...
```

```

        <gmd:date>
        <gmd:CI_Date>
        ...
        <gmd:dateType>
        <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#CI_DateTypeCode"
codeListValue="creation">creation</gmd:CI_DateTypeCode>
        </gmd:dateType>
        </gmd:CI_Date>
        </gmd:date>
        </gmd:CI_Citation>
        </gmd:specification>
        ...
        </gmd:DQ_ConformanceResult>
        </gmd:result>
        </gmd:DQ_DomainConsistency>
        </gmd:report>
        ...
        </gmd:DQ_DataQuality>
        </gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

32.3.5 Example – success

```

<gmd:MD_Metadata>
...
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    ...
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        ...
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            <gmd:specification>
              <gmd:CI_Citation>
                ...
                <gmd:date>
                  <gmd:CI_Date>
                    ...
                    <gmd:dateType>
                      <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#CI_DateTypeCode"
codeListValue="creation">creation</gmd:CI_DateTypeCode>
                      </gmd:dateType>
                      </gmd:CI_Date>
                      </gmd:date>
                      </gmd:CI_Citation>
                      </gmd:specification>
                    ...
                    </gmd:DQ_ConformanceResult>
                    </gmd:result>
                    </gmd:DQ_DomainConsistency>
                    </gmd:report>
                  ...
                  </gmd:DQ_DataQuality>
                  </gmd:dataQualityInfo>

```

```
</gmd:MD_Metadata>
```

32.3.6 Schematron rule

```
<sch:pattern is-a="IsoCodeListPattern" id="Gemini2-mi42-DateType-CodeList">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/*[1]/gmd:report/*[1]/gmd:result/*[
1]/gmd:specification/*[1]/gmd:date/*[1]/gmd:date/*[1]/gmd:dateType/*[1]" />
</sch:pattern>

<!-- Test ISO code lists -->
<sch:pattern abstract="true" id="IsoCodeListPattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(@codeListValue) > 0">
      AP-3: The codeListValue attribute does not have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

33 EQUIVALENT SCALE

33.1 Error message

374 The gmd:denominator element shall have a value or a valid Nil Reason.

33.2 Context

375 MD_Metadata.identificationInfo > MD_DataIdentification.spatialResolution >
MD_Resolution.equivalentScale > MD_RepresentativeFraction.denominator

33.3 Cause

376 The denominator element must have a value of a valid nil reason. However, the 'equivalent scale' metadata item is optional and does not need to be included in metadata.

33.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:spatialResolution>
      <gmd:MD_Resolution>
        <gmd:equivalentScale>
          <gmd:MD_RepresentativeFraction>
            <gmd:denominator/>
          </gmd:MD_RepresentativeFraction>
        </gmd:equivalentScale>
      </gmd:MD_Resolution>
    </gmd:spatialResolution>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

33.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:spatialResolution>
      <gmd:MD_Resolution>
        <gmd:equivalentScale>
          <gmd:MD_RepresentativeFraction>
            <gmd:denominator>
              <gco:Integer>660000</gco:Integer>
            </gmd:denominator>
          </gmd:MD_RepresentativeFraction>
        </gmd:equivalentScale>
      </gmd:MD_Resolution>
    </gmd:spatialResolution>
```

```

    ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:spatialResolution>
        <gmd:MD_Resolution>
          <gmd:equivalentScale>
            <gmd:MD_RepresentativeFraction>
              <gmd:denominator gco:nilReason="missing"/>
            </gmd:MD_RepresentativeFraction>
          </gmd:equivalentScale>
        </gmd:MD_Resolution>
      </gmd:spatialResolution>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>

```

33.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi43">
  <sch:title>Equivalent scale</sch:title>
</sch:pattern>

<sch:pattern is-a="TypeNillablePattern" id="Gemini2-mi43-Nillable">
  <sch:param name="context"
value="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:spatialResolution/*
[1]/gmd:equivalentScale/*[1]/gmd:denominator"/>
</sch:pattern>

<!-- Test that an element has a value or has a valid nilReason value -->
<sch:pattern abstract="true" id="TypeNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="
      (string-length(normalize-space(.)) > 0) or
      (@gco:nilReason = 'inapplicable' or
      @gco:nilReason = 'missing' or
      @gco:nilReason = 'template' or
      @gco:nilReason = 'unknown' or
      @gco:nilReason = 'withheld' or
      starts-with(@gco:nilReason, 'other:'))">
      AP-1a: The <sch:name/> element shall have a value or a valid Nil Reason.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

34 HIERARCHY LEVEL NAME

34.1 Hierarchy level name is mandatory (Series/Service)

34.1.1 Error message

377 Need at least one hierarchyLevelName

34.1.2 Context

378 MD_Metadata.hierarchyLevelName

34.1.3 Cause

379 The metadata record describes a dataset series or service, but is missing a hierarchyLevelName element. At least one must be provided.

34.1.4 Example – fail

```
<!-- Resource type -->
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeListValue="service"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/codelist/gmxCodelists.xml#MD_ScopeCode">
    Service
  </gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
<!-- Metadata point of contact -->
<gmd:contact>
```

34.1.5 Example – pass

```
<!-- Resource type -->
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeListValue="service"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/codelist/gmxCodelists.xml#MD_ScopeCode">
    Service
  </gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
<gmd:hierarchyLevelName>
  <gco:CharacterString>service</gco:CharacterString>
</gmd:hierarchyLevelName>
<!-- Metadata point of contact -->
<gmd:contact>
```

34.1.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi47-general">
  <sch:p>Hierarchy level name is mandatory for dataset series and services, not
required for datasets</sch:p>
  <sch:rule context="//gmd:MD_Metadata[1]">
    <sch:let name="hierLevelNameCount" value="count(gmd:hierarchyLevelName)"/>
    <sch:report test="$hierLevelNameCount = 0 and
($hierarchyLevelCLValue = 'service' or $hierarchyLevelCLValue = 'series')">
      MI-47a: Need at least one hierarchyLevelName have:
      <sch:value-of select="$hierLevelNameCount"/>
    </sch:report>
  </sch:rule>
</sch:pattern>
```

```
</sch:rule>
</sch:pattern>
```

34.2 Hierarchy level name must be service (Service)

34.2.1 Error message

380 Hierarchy level name for services must have value "service"

34.2.2 Context

381 MD_Metadata.hierarchyLevelName

34.2.3 Cause

382 When the metadata describes a service, the hierarchyLevelName must have a value of "service". But in this case has a value that is not service.

34.2.4 Example – fail

```
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeListValue="service"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/codelist/gmxCodeLists.xml#MD_ScopeCode">
    Service
  </gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
<gmd:hierarchyLevelName>
  <gco:CharacterString>
    Services
  </gco:CharacterString>
</gmd:hierarchyLevelName>
```

34.2.5 Example – pass

```
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeListValue="service"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/codelist/gmxCodeLists.xml#MD_ScopeCode">
    Service
  </gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
<gmd:hierarchyLevelName>
  <gco:CharacterString>
    service
  </gco:CharacterString>
</gmd:hierarchyLevelName>
```

34.2.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi47-services-restriction">
  <sch:p>TG Requirement 3.1: metadata/2.0/req/sds/resource-type
  Additionally the name of the hierarchy level shall be given using element
  gmd:hierarchyLevelName element with a Non-empty Free Text Element containing the
  term "service" in the language of the metadata.</sch:p>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:hierarchyLevelName/*[1]">
    <sch:let name="hierLevelcListVal"
value="preceding::gmd:hierarchyLevel/*/@codeListValue"/>
    <sch:let name="hierLevelNameText" value="descendant-or-self::text()"/>
```



```
<sch:report test="($hierLevelcListVal = 'service' and $hierLevelNameText !=
'service') ">
  MI-47b: Hierarchy level name for services must have value "service"
</sch:report>
...
</sch:rule>
</sch:pattern>
```

34.3 Hierarchy level name must be service (Service)

34.3.1 Error message

383 Hierarchy level name for services must have value "service"

34.3.2 Context

384 MD_Metadata.hierarchyLevelName

34.3.3 Cause

385 When the metadata describes a service, the hierarchyLevelName must have a value of "service". But in this case there is no value.

34.3.4 Example – fail

```
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeListValue="service"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/codelist/gmxCodelists.xml#MD_ScopeCode">
    Service
  </gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
<gmd:hierarchyLevelName>
  <gco:CharacterString></gco:CharacterString>
</gmd:hierarchyLevelName>
```

34.3.5 Example – pass

```
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeListValue="service"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/codelist/gmxCodelists.xml#MD_ScopeCode">
    Service
  </gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
<gmd:hierarchyLevelName>
  <gco:CharacterString>service</gco:CharacterString>
</gmd:hierarchyLevelName>
```

34.3.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi47-services-restriction">
  <sch:p>TG Requirement 3.1: metadata/2.0/req/sds/resource-type
  Additionally the name of the hierarchy level shall be given using element
  gmd:hierarchyLevelName element with a Non-empty Free Text Element containing the
  term "service" in the language of the metadata.</sch:p>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:hierarchyLevelName/*[1]">
    <sch:let name="hierLevelcListVal"
value="preceding::gmd:hierarchyLevel/*/@codeListValue"/>
    <sch:let name="hierLevelNameText" value="descendant-or-self::text()"/>
```

```
...
<sch:assert test="normalize-space(.)">
  MI-47c: Hierarchy level name for services must have value "service"
</sch:assert>
</sch:rule>
</sch:pattern>
```

35 QUALITY SCOPE

35.1 dataQualityInfo is mandatory

35.1.1 Error message

386 There must be at least one gmd:dataQualityInfo

35.1.2 Context

387 DQ_DataQuality.scope

35.1.3 Cause

388 The metadata record has no gmd:dataQualityInfo section, but at least one is required.

35.1.4 Example – fail

```
...
</gmd:distributionInfo>
<!-- At least one gmd:dataQualityInfo section is expected here... -->
</gmd:MD_Metadata>
```

35.1.5 Example – pass

```
</gmd:distributionInfo>
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode
            codeList="#MD_ScopeCode" codeListValue="dataset" />
        </gmd:level>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            <gmd:specification>
              <gmd:CI_Citation>
                <gmd:title>
                  <gmx:Anchor>
Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive
2007/2/EC of the European Parliament and of the Council as regards
interoperability of spatial data sets and services
                  </gmx:Anchor>
                </gmd:title>
              <gmd:date>
                <gmd:CI_Date>
                  <gmd:date>
```

```

        <gco:Date>2010-12-08</gco:Date>
      </gmd:date>
    </gmd:dateType>
    <gmd:CI_DateTypeCode
      codeList="#" codeListValue="publication"/>
    </gmd:dateType>
  </gmd:CI_Date>
</gmd:date>
</gmd:CI_Citation>
</gmd:specification>
<gmd:explanation
  xmlns:gco="http://www.isotc211.org/2005/gco"
  gco:nilReason="unknown"/>
<gmd:pass
  xmlns:gco="http://www.isotc211.org/2005/gco"
  gco:nilReason="unknown" />
</gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</gmd:report>
<gmd:lineage>
  <gmd:LI_Lineage>
    <gmd:statement
      xmlns:gco="http://www.isotc211.org/2005/gco"
      gco:nilReason="missing"/>
    </gmd:LI_Lineage>
  </gmd:lineage>
</gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

35.1.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi48">
  <sch:title>Quality Scope</sch:title>
  <sch:rule context="//gmd:MD_Metadata[1]">
    <sch:assert test="count(gmd:dataQualityInfo) > 0">
      MI-48a: There must be at least one gmd:dataQualityInfo
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

35.2 Only one gmd:DQ_DataQuality (Series)

35.2.1 Error message

389 There shall be exactly one gmd:dataQualityInfo/gmd:DQ_DataQuality element scoped to the entire described dataset series

35.2.2 Context

390 DQ_DataQuality.scope

35.2.3 Cause

391 The metadata record declares itself to be about a series (in the hierarchyLevel scope code), and therefore needs a gmd:dataQualityInfo/gmd:DQ_DataQuality element scoped to a series, but either none was found (normal cause) or, more rarely, more than one was found

35.2.4 Example – fail

```

<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeList="#MD_ScopeCode" codeListValue="series" />
</gmd:hierarchyLevel>
...
</gmd:distributionInfo>
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode codeList="#MD_ScopeCode"
codeListValue="dataset" />
        </gmd:level>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          ...
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
    <gmd:lineage>
      ...
    </gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

35.2.5 Example – pass

```

<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeList="#MD_ScopeCode" codeListValue="series" />
</gmd:hierarchyLevel>
...
</gmd:distributionInfo>
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode codeList="#MD_ScopeCode"
codeListValue="dataset" />
        </gmd:level>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          ...
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
    <gmd:lineage>
      ...
    </gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>

```

```

<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode codeList="#MD_ScopeCode"
            codeListValue="series" />
        </gmd:level>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          ...
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
    <gmd:lineage>
      ...
    </gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

35.2.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi48-series">
  <sch:p>
    TG Requirement 1.9:
    metadata/2.0/req/datasets-and-series/one-data-quality-element
  </sch:p>
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:hierarchyLevel/gmd:MD_ScopeCode[@codeListValue =
    'series']">
    <sch:let name="dssDQ"
    value="count(/gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope
    /gmd:DQ_Scope/gmd:level/gmd:MD_ScopeCode[@codeListValue = 'series'])"/>
    <sch:assert test="$dssDQ = 1">
      MI-48b: There shall be exactly one
      gmd:dataQualityInfo/gmd:DQ_DataQuality element scoped to the entire
      described dataset series,
      but here we have <sch:value-of select="$dssDQ"/>
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

35.3 Only one gmd:DQ_DataQuality (Dataset)

35.3.1 Error message

392 There shall be exactly one gmd:dataQualityInfo/gmd:DQ_DataQuality element scoped to the entire described dataset

35.3.2 Context

393 DQ_DataQuality.scope

35.3.3 Cause

394 The metadata record declares itself to be about a dataset (in the hierarchyLevel scope code), and therefore needs a gmd:dataQualityInfo/gmd:DQ_DataQuality element scoped to a dataset, but either none was found (normal cause) or, more rarely, more than one was found.

35.3.4 Example – fail

```
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeListValue="dataset" codeSpace="ISOTC211/19115"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/ML_gmxCodelists.xml#MD_ScopeCode">
    Dataset
  </gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
...

</gmd:distributionInfo>
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode
            codeList="#MD_ScopeCode"
            codeListValue="nonGeographicDataset">
            nonGeographicDataset
          </gmd:MD_ScopeCode>
        </gmd:level>
        <gmd:levelDescription>
          ...
        </gmd:levelDescription>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            ...
          </gmd:DQ_ConformanceResult>
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
    <gmd:lineage>
      ...
    </gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>
```

35.3.5 Example – pass

```
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeListValue="dataset" codeSpace="ISOTC211/19115"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/ML_gmxCodelists.xml#MD_ScopeCode">
    Dataset
  </gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
...
```

```

</gmd:distributionInfo>
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode
            codeList="#MD_ScopeCode"
            codeListValue="dataset">
            This report is scoped to the Dataset
          </gmd:MD_ScopeCode>
        </gmd:level>
        <gmd:levelDescription>
          ...
        </gmd:levelDescription>
      </gmd:DQ_Scope>
    </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            ...
          </gmd:DQ_ConformanceResult>
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
    <gmd:lineage>
      ...
    </gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

35.3.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi48-dataset">
  <sch:p>
    TG Requirement 1.9:
    metadata/2.0/req/datasets-and-series/one-data-quality-element
  </sch:p>
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:hierarchyLevel/gmd:MD_ScopeCode[@codeListValue =
    'dataset']">
    <sch:let name="dsDQ"
    value="count (/gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope
    /gmd:DQ_Scope/gmd:level/gmd:MD_ScopeCode[@codeListValue = 'dataset'])"/>
    <sch:assert test="$dsDQ = 1">
      MI-48c: There shall be exactly one
      gmd:dataQualityInfo/gmd:DQ_DataQuality element scoped to the entire
      described dataset, but
      here we have <sch:value-of select="$dsDQ"/>
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

35.4 Only one gmd:DQ_DataQuality (Service)

35.4.1 Error message

395 There shall be exactly one gmd:dataQualityInfo/gmd:DQ_DataQuality element scoped to the entire described service

35.4.2 Context

396 DQ_DataQuality.scope

35.4.3 Cause

397 The metadata record declares itself to be about a service (in the hierarchyLevel scope code), and therefore needs a gmd:dataQualityInfo/gmd:DQ_DataQuality element scoped to a service, but either none was found (normal cause) or, more rarely, more than one was found

35.4.4 Example – fail

```
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode
    codeList="gmxCodelists.xml#MD_ScopeCode" codeListValue="service">
    service
  </gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
...
...
</gmd:distributionInfo>
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <!-- Scope - Required by ISO 19115 constraint -->
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode
            codeList="gmxCodelists.xml#MD_ScopeCode"
            codeListValue="attribute"/>
          </gmd:level>
          ...
        </gmd:DQ_Scope>
      </gmd:scope>
      <gmd:report>
        <gmd:DQ_DomainConsistency>
          <gmd:result>
            <gmd:DQ_ConformanceResult>
              ...
            </gmd:DQ_ConformanceResult>
          </gmd:result>
        </gmd:DQ_DomainConsistency>
      </gmd:report>
      <!-- Lineage -->
      <gmd:lineage>
        ...
      </gmd:lineage>
    </gmd:DQ_DataQuality>
  </gmd:dataQualityInfo>
</gmd:MD_Metadata>
```

35.4.5 Example – pass


```

<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode
    codeList="gmxCodelists.xml#MD_ScopeCode" codeListValue="service">
    service
  </gmd:MD_ScopeCode>
</gmd:hierarchyLevel>
...
...
</gmd:distributionInfo>
<gmd:dataQualityInfo>
  <gmd:DQ_DataQuality>
    <!-- Scope - Required by ISO 19115 constraint -->
    <gmd:scope>
      <gmd:DQ_Scope>
        <gmd:level>
          <gmd:MD_ScopeCode
            codeList="gmxCodelists.xml#MD_ScopeCode"
            codeListValue="service"/>
          </gmd:level>
          ...
        </gmd:DQ_Scope>
      </gmd:scope>
    <gmd:report>
      <gmd:DQ_DomainConsistency>
        <gmd:result>
          <gmd:DQ_ConformanceResult>
            ...
          </gmd:DQ_ConformanceResult>
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </gmd:report>
    <!-- Lineage -->
    <gmd:lineage>
      ...
    </gmd:lineage>
  </gmd:DQ_DataQuality>
</gmd:dataQualityInfo>
</gmd:MD_Metadata>

```

35.4.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi48-service">
  <sch:p>TG Requirement 3.8: metadata/2.0/req/sds/only-one-dq-element</sch:p>
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:hierarchyLevel/gmd:MD_ScopeCode[@codeListValue =
    'service']">
    <sch:let name="svDQ"
      value="count(//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope
      /gmd:DQ_Scope/gmd:level/gmd:MD_ScopeCode[@codeListValue = 'service'])"/>
    <sch:assert test="$svDQ = 1">
      MI-48d: There shall be exactly one
      gmd:dataQualityInfo/gmd:DQ_DataQuality element scoped to the entire
      described service, but here we have <sch:value-of select="$svDQ"/>
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

35.5 levelDescription is mandatory (Service)

35.5.1 Error message

398 gmd:levelDescription is missing ~ the level shall be named using element
gmd:scope/gmd:DQ_Scope/gmd:levelDescription/gmd:MD_ScopeDescription/gmd:other
element with a Non-empty Free Text Element containing the term "service"

35.5.2 Context

399 DQ_DataQuality.scope

35.5.3 Cause

400 When then DQ_DataQuality report is scoped to a service a levelDescription section is required.

35.5.4 Example – fail

```
<gmd:DQ_DataQuality>
  <gmd:scope>
    <gmd:DQ_Scope>
      <gmd:level>
        <gmd:MD_ScopeCode codeList="gmxCodelists.xml#MD_ScopeCode"
          codeListValue="service" />
      </gmd:level>
    </gmd:DQ_Scope>
  </gmd:scope>
```

35.5.5 Example – pass

```
<gmd:DQ_DataQuality>
  <gmd:scope>
    <gmd:DQ_Scope>
      <gmd:level>
        <gmd:MD_ScopeCode codeList="gmxCodelists.xml#MD_ScopeCode"
          codeListValue="service" />
      </gmd:level>
      <gmd:levelDescription>
        <gmd:MD_ScopeDescription>
          <gmd:other>
            <gco:CharacterString>
              service
            </gco:CharacterString>
          </gmd:other>
        </gmd:MD_ScopeDescription>
      </gmd:levelDescription>
    </gmd:DQ_Scope>
  </gmd:scope>
```

35.5.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi48-service-1">
  <sch:p>The level shall be named using element  
gmd:scope/gmd:DQ_Scope/gmd:levelDescription/gmd:MD_ScopeDescription/gmd:other  
element with a Non-empty Free Text Element containing the term "service" in the  
language of the metadata.  
(metadata/2.0/req/sds/only-one-dq-element)
</sch:p>
<sch:rule
  context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope/gmd
```

```
:DQ_Scope/gmd:level/gmd:MD_ScopeCode[@codeListValue = 'service']">
  <sch:assert test="count(following::gmd:levelDescription) = 1">
    MI-48e: gmd:levelDescription is missing ~ the level shall be named using
    element
    gmd:scope/gmd:DQ_Scope/gmd:levelDescription/gmd:MD_ScopeDescription/gmd:other
    element with a Non-empty Free Text Element containing the term "service"
  </sch:assert>
...
  </sch:rule>
</sch:pattern>
```

35.6 levelDescription value (Service)

35.6.1 Error message

401 Value (gmd:MD_ScopeDescription/gmd:other) must be "service"

35.6.2 Context

402 DQ_DataQuality.scope

35.6.3 Cause

403 When then DQ_DataQuality report is scoped to a service the value of the levelDescription/other element shall be service.

35.6.4 Example – fail

```
<gmd:scope>
  <gmd:DQ_Scope>
    <gmd:level>
      <gmd:MD_ScopeCode codeListValue="service"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/codelist/gmxCodelists.xml#MD_ScopeCode">
        service
      </gmd:MD_ScopeCode>
    </gmd:level>
    <gmd:levelDescription>
      <gmd:MD_ScopeDescription>
        <gmd:other>
          <gco:CharacterString>
            Feature access service
          </gco:CharacterString>
        </gmd:other>
      </gmd:MD_ScopeDescription>
    </gmd:levelDescription>
  </gmd:DQ_Scope>
</gmd:scope>
```

35.6.5 Example – pass

```
<gmd:scope>
  <gmd:DQ_Scope>
    <gmd:level>
      <gmd:MD_ScopeCode codeListValue="service"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/codelist/gmxCodelists.xml#MD_ScopeCode">
        service
      </gmd:MD_ScopeCode>
    </gmd:level>
    <gmd:levelDescription>
```

```

    <gmd:MD_ScopeDescription>
      <gmd:other>
        <gco:CharacterString>
          service
        </gco:CharacterString>
      </gmd:other>
    </gmd:MD_ScopeDescription>
  </gmd:levelDescription>
</gmd:DQ_Scope>
</gmd:scope>

```

35.6.6 Schematron rule

```

<sch:pattern fpi="Gemini2-mi48-service-1">
  <sch:p>The level shall be named using element
  gmd:scope/gmd:DQ_Scope/gmd:levelDescription/gmd:MD_ScopeDescription/gmd:other
  element with a Non-empty Free Text Element containing the term "service" in the
  language of the metadata.
  (metadata/2.0/req/sds/only-one-dq-element)
  </sch:p>
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:scope/gmd
    :DQ_Scope/gmd:level/gmd:MD_ScopeCode[@codeListValue = 'service']">
    ...
    <sch:report test="
    following::gmd:levelDescription/gmd:MD_ScopeDescription/gmd:other/gco:CharacterStr
    ing/text() != 'service' or
    following::gmd:levelDescription/gmd:MD_ScopeDescription/gmd:other/gmx:Anchor/text(
    ) != 'service'">
      MI-48f: Value (gmd:MD_ScopeDescription/gmd:other) must be "service"
    </sch:report>
  </sch:rule>
</sch:pattern>

```

36 SPATIAL REPRESENTATION TYPE

36.1 Type Code is required (Dataset/series)

36.1.1 Error message

404 Dataset and dataset series metadata must have at least one gmd:spatialRepresentationType with gmd:MD_SpatialRepresentationTypeCode. The codeListValue must be one of 'vector', 'grid', 'tin', or 'textTable'

36.1.2 Context

405 MD_DataIdentification.spatialRepresentationType

36.1.3 Cause

406 The metadata record describes a dataset or dataset series, and as such must supply at least one spatialRepresentationType section but none was found

36.1.4 Example – fail

```
...
</gmd:resourceConstraints>
<!--
<gmd:spatialRepresentationType>
  <gmd:MD_SpatialRepresentationTypeCode codeList="#"
    codeListValue="grid">
  </gmd:MD_SpatialRepresentationTypeCode>
</gmd:spatialRepresentationType>
-->
<gmd:spatialResolution>
...
```

36.1.5 Example – pass

```
...
</gmd:resourceConstraints>
<gmd:spatialRepresentationType>
  <gmd:MD_SpatialRepresentationTypeCode codeList="#" codeListValue="grid">
  </gmd:MD_SpatialRepresentationTypeCode>
</gmd:spatialRepresentationType>
<gmd:spatialResolution>
...
```

36.1.6 Schematron rule

```
<sch:pattern fpi="metadata/2.0/req/isdss/spatial-representation-type">
  <sch:title>Spatial Representation Type</sch:title>
  <sch:p>
Dataset and dataset series must have a MD_SpatialRepresentationTypeCode
  </sch:p>
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/gmd:MD_DataIdentification[1]
">
    <sch:assert
      test="($hierarchyLevelCLValue = 'dataset' or $hierarchyLevelCLValue =
'series') and count(gmd:spatialRepresentationType) > 0">
      MI-50a: Dataset and dataset series metadata must have at least one
      gmd:spatialRepresentationType with gmd:MD_SpatialRepresentationTypeCode. The
```

```
codeListValue must be one of 'vector', 'grid', 'tin', or 'textTable'
</sch:assert>
</sch:rule>
</sch:pattern>
```

36.2 code list value is incorrect (Dataset/Series)

36.2.1 Error message

407 codeListValue must be one of 'vector', 'grid', 'tin', or 'textTable'

36.2.2 Context

408 MD_DataIdentification.spatialRepresentationType

36.2.3 Cause

409 The metadata record describes a dataset or dataset series, and as such must supply at least one spatialRepresentationType section with a code type of 'vector', 'grid', 'tin', or 'textTable', but no such code was found.

36.2.4 Example – fail

```
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeList="#MD_ScopeCode" codeListValue="dataset" />
</gmd:hierarchyLevel>
...
<gmd:spatialRepresentationType>
  <gmd:MD_SpatialRepresentationTypeCode
    codeList="ML_gmxCodeLists.xml#MD_SpatialRepresentationTypeCode"
    codeListValue="video" />
</gmd:spatialRepresentationType>
```

36.2.5 Example – pass

```
<gmd:hierarchyLevel>
  <gmd:MD_ScopeCode codeList="#MD_ScopeCode" codeListValue="dataset" />
</gmd:hierarchyLevel>
...
<gmd:spatialRepresentationType>
  <gmd:MD_SpatialRepresentationTypeCode
    codeList="ML_gmxCodeLists.xml#MD_SpatialRepresentationTypeCode"
    codeListValue="textTable" />
</gmd:spatialRepresentationType>
```

36.2.6 Schematron rule

```
<sch:pattern fpi="metadata/2.0/req/isdss/spatial-representation-type-values">
  <sch:p>
    MD_SpatialRepresentationTypeCode, ... must be one of 'vector', 'grid', 'tin',
    or 'textTable'
  </sch:p>
  <sch:rule>
    context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/gmd:MD_DataIdentification[1]
    /gmd:spatialRepresentationType/gmd:MD_SpatialRepresentationTypeCode">
      <sch:assert test="
        ($hierarchyLevelCLValue = 'dataset' or $hierarchyLevelCLValue = 'series')
      and
```

```

        (@codeListValue = 'vector' or @codeListValue = 'grid' or @codeListValue =
'tin' or @codeListValue = 'textTable')">
        MI-50b: codeListValue must be one of 'vector', 'grid', 'tin', or 'textTable'
    </sch:assert>
</sch:rule>
</sch:pattern>

```

36.3 Type Code value is mandatory (Dataset/Series)

36.3.1 Error message

410 Dataset and dataset series metadata must have at least one gmd:spatialRepresentationType with gmd:MD_SpatialRepresentationTypeCode. The codeListValue must be one of 'vector', 'grid', 'tin', or 'textTable'

36.3.2 Context

411 MD_DataIdentification.spatialRepresentationType

36.3.3 Cause

412 The metadata record describes a dataset or dataset series, and as such must supply at least one spatialRepresentationType section with a code type of 'vector', 'grid', 'tin', or 'textTable', but no such code was found

36.3.4 Example – fail

```

...
</gmd:resourceConstraints>
<gmd:spatialRepresentationType
  xmlns:gco="http://www.isotc211.org/2005/gco"
  gco:nilReason="withheld" />
<gmd:spatialResolution>
...

```

36.3.5 Example – pass

```

...
</gmd:resourceConstraints>
<gmd:spatialRepresentationType>
  <gmd:MD_SpatialRepresentationTypeCode codeList="#" codeListValue="tin">
  </gmd:MD_SpatialRepresentationTypeCode>
</gmd:spatialRepresentationType>
<gmd:spatialResolution>
...

```

36.3.6 Schematron rule

```

<sch:pattern fpi="metadata/2.0/req/isdss/spatial-representation-typeNN">
  <sch:title>
    Spatial Representation Type is not nillable for dataset/series
  </sch:title>
  <sch:p>
    Dataset and dataset series must have a MD_SpatialRepresentationTypeCode
  </sch:p>
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/gmd:MD_DataIdentification[1]
/gmd:spatialRepresentationType">
    <sch:assert

```

```

    test="($hierarchyLevelCLValue = 'dataset' or $hierarchyLevelCLValue =
'series') and count(gmd:MD_SpatialRepresentationTypeCode) > 0">
    MI-50c: Dataset and dataset series metadata must have at least one
    gmd:spatialRepresentationType with gmd:MD_SpatialRepresentationTypeCode. The
    codeListValue must be one of 'vector', 'grid', 'tin', or 'textTable'
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

36.4 codeListValue attribute has no value

36.4.1 Error message

413 The codeListValue attribute does not have a value

36.4.2 Context

414 MD_DataIdentification.spatialRepresentationType

36.4.3 Cause

415 The codeListValue attribute of requires a value, the Spatial Representation Type Code requires a value, but none is given

36.4.4 Example – fail

```

<gmd:spatialRepresentationType>
  <gmd:MD_SpatialRepresentationTypeCode codeListValue="" codeList="">
    Grid
  </gmd:MD_SpatialRepresentationTypeCode>
</gmd:spatialRepresentationType>

```

36.4.5 Example – pass

```

<gmd:spatialRepresentationType>
  <gmd:MD_SpatialRepresentationTypeCode
    codeListValue="grid" codeList="">
    Grid
  </gmd:MD_SpatialRepresentationTypeCode>
</gmd:spatialRepresentationType>

```

36.4.6 Schematron rule

```

<sch:pattern is-a="IsoCodeListPattern" id="Gemini2-mi50-SRType-CodeList">
  <sch:param name="context"
value="//gmd:MD_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:spatia
lRepresentationType/gmd:MD_SpatialRepresentationTypeCode" />
</sch:pattern>

<!-- Test ISO code lists -->
<sch:pattern abstract="true" id="IsoCodeListPattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(@codeListValue) > 0">
      AP-3: The codeListValue attribute does not have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```


37 CHARACTER ENCODING

37.1 Character encoding is not in the code list

37.1.1 Error message

416 "XXX" is not one of the values of ISO 19139 code list MD_CharacterSetCode

37.1.2 Context

417 MD_DataIdentification.characterSet

37.1.3 Cause

418 When a characterSet section is listed, all codes used must be in the ISO 19139 code list MD_CharacterSetCode

37.1.4 Example – fail

```
<gmd:characterSet xmlns:wms="http://www.opengis.net/wms">
  <gmd:MD_CharacterSetCode codeListValue="utf-8"
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/Codelist/ML_gmxCodeLists.xml#MD_CharacterSetCode" />
</gmd:characterSet>
```

37.1.5 Example – pass

```
<gmd:characterSet xmlns:wms="http://www.opengis.net/wms">
  <gmd:MD_CharacterSetCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/Codelist/ML_gmxCodeLists.xml#MD_CharacterSetCode" codeListValue="utf8"/>
</gmd:characterSet>
```

37.1.6 Schematron rule

```
<sch:pattern fpi="Gemini2-mi51">
  <sch:title>Character encoding</sch:title>
  <sch:p>
    The character encoding(s) shall be given for datasets and datasets series which
    use encodings not based on UTF-8 by using element
    gmd:characterSet/gmd:MD_CharacterSetCode referring to one of the values of ISO
    19139 code list MD_CharacterSetCode.
  </sch:p>
  <sch:p>
    The multiplicity of this element is 0..n. If more than one character
    encoding is used within the described dataset or datasets series, all used
    character encodings, including UTF-8 code list value "utf8"), shall be given
    using this element
  </sch:p>
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:c
haracterSet/gmd:MD_CharacterSetCode[1]/@codeListValue">
    <sch:assert test="
      ($hierarchyLevelCLValue = 'dataset' or $hierarchyLevelCLValue = 'series') and
      $charSetCodes//gml:identifier/text() [normalize-space(.) =
      normalize-space(current()/.)]">
      MI-51: "<sch:value-of select="normalize-space(.)"/>" is not one of the values
      of ISO 19139 code list MD_CharacterSetCode
```

```

    </sch:assert>
  </sch:rule>
</sch:pattern>

```

37.2 code list attribute has no value

37.2.1 Error message

419 The codeListValue attribute does not have a value.

37.2.2 Context

420 MD_DataIdentification.characterSet

37.2.3 Cause

421 The codeListValue attribute of the MD_CharacterSetCode requires a value, but none was given.

37.2.4 Example – fail

```

<gmd:characterSet xmlns:wms="http://www.opengis.net/wms">
  <gmd:MD_CharacterSetCode codeListValue=""
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/Codelist/ML_gmxCodelists.xml#MD_CharacterSetCode" />
</gmd:characterSet>

```

37.2.5 Example – pass

```

<gmd:characterSet xmlns:wms="http://www.opengis.net/wms">
  <gmd:MD_CharacterSetCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas
/resources/Codelist/ML_gmxCodelists.xml#MD_CharacterSetCode" codeListValue="utf8"/>
</gmd:characterSet>

```

37.2.6 Schematron rule

```

<sch:pattern is-a="IsoCodeListPattern" id="Gemini2-mi51-CharSet-CodeList">
  <sch:param name="context"
value="//gmd:MD_Metadata/gmd:identificationInfo[1]/gmd:MD_DataIdentification/gmd:cha
racterSet/gmd:MD_CharacterSetCode" />
</sch:pattern>

```

```

<!-- Test ISO code lists -->
<sch:pattern abstract="true" id="IsoCodeListPattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(@codeListValue) > 0">
      AP-3: The codeListValue attribute does not have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

38 TOPOLOGICAL CONSISTENCY

38.1 xsi:type attribute is required

38.1.1 Error message

422 The result type shall be declared using the xsi:type attribute of the gco:Record element

38.1.2 Context

423 DQ_DataQuality > DQ_TopologicalConsistency.result > DQ_Result

38.1.3 Cause

424 When we have a DQ_QuantitativeResult for a gmd:DQ_TopologicalConsistency report, the result type shall be declared using the xsi:type attribute of the gco:Record element.

38.1.4 Example – fail

```
<gmd:report>
  <gmd:DQ_TopologicalConsistency>
    <gmd:nameOfMeasure>
      <gco:CharacterString>
        Number of faulty point-curve connections
      </gco:CharacterString>
    </gmd:nameOfMeasure>
    <gmd:evaluationMethodType>
      <gmd:DQ_EvaluationMethodTypeCode
codeList="standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/resour
ces/codelist/gmxCodeLists.xml#DQ_EvaluationMethodTypeCode"
codeListValue="indirect"/>
    </gmd:evaluationMethodType>
    <gmd:evaluationMethodDescription>
      <gco:CharacterString>
        A point-curve connection exists where different curves touch...
      </gco:CharacterString>
    </gmd:evaluationMethodDescription>
    <gmd:dateTime/>
    <gmd:result>
      <gmd:DQ_QuantitativeResult>
<!--The mandatory elements are valueUnit and value/Record with xsi:type -->
      <gmd:valueUnit
xlink:href="http://www.opengis.net/def/uom/OGC/1.0/unity"/>
      <gmd:value>
        <gco:Record xmlns:xs="http://www.w3.org/2001/XMLSchema">
          12
        </gco:Record>
      </gmd:value>
    </gmd:DQ_QuantitativeResult>
    </gmd:result>
  </gmd:DQ_TopologicalConsistency>
</gmd:report>
```

38.1.5 Example – pass

```
<gmd:report>
  <gmd:DQ_TopologicalConsistency>
    <gmd:nameOfMeasure>
      <gco:CharacterString>
        Number of faulty point-curve connections
      </gco:CharacterString>
```

```

    </gmd:nameOfMeasure>
    <gmd:evaluationMethodType>
      <gmd:DQ_EvaluationMethodTypeCode
codeList="standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/resour
ces/codelist/gmxCodeLists.xml#DQ_EvaluationMethodTypeCode"
codeListValue="indirect"/>
    </gmd:evaluationMethodType>
    <gmd:evaluationMethodDescription>
      <gco:CharacterString>
        A point-curve connection exists where different curves touch...
      </gco:CharacterString>
    </gmd:evaluationMethodDescription>
    <gmd:dateTime/>
    <gmd:result>
      <gmd:DQ_QuantitativeResult>
<!--The mandatory elements are valueUnit and value/Record with xsi:type -->
        <gmd:valueUnit
xlink:href="http://www.opengis.net/def/uom/OGC/1.0/unity"/>
        <gmd:value>
          <gco:Record
            xmlns:xs="http://www.w3.org/2001/XMLSchema"
            xsi:type="xs:integer">
            12
          </gco:Record>
        </gmd:value>
      </gmd:DQ_QuantitativeResult>
    </gmd:result>
  </gmd:DQ_TopologicalConsistency>
</gmd:report>

```

38.1.6 Schematron rule

```

<sch:pattern
  fpi="metadata/2.0/req/isdss/topological-consistency-quantitative-results">
  <sch:p>
    When we have a DQ_QuantitativeResult for a gmd:DQ_TopologicalConsistency
    report, the result type shall be declared using the xsi:type attribute of the
    gco:Record element
  </sch:p>
  <sch:rule
context="//gmd:MD_Metadata[1]/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:report/gmd:
DQ_TopologicalConsistency/gmd:result/gmd:DQ_QuantitativeResult/gmd:value">
    <sch:assert test="count(gco:Record/@xsi:type) = 1">
      MI-52a: The result type shall be declared using the xsi:type attribute of the
      gco:Record element
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

38.2 Date shall be 2013-04-05

38.2.1 Error message

- 425 When TopologicalConsistency is for *INSPIRE Data Specifications - Base Models - Generic Network Model*, the date given shall be the date of publication of the Generic Network Model, which is 2013-04-05

38.2.2 Context

426 DQ_DataQuality > DQ_TopologicalConsistency.result > DQ_Result

38.2.3 Cause

427 The date of publication shall be given in the TopologicalConsistency report for *INSPIRE Data Specifications - Base Models - Generic Network Model*, The date given does not match the publication date, which is 2013-04-05

38.2.4 Example – fail

```
<gmd:report>
  <gmd:DQ_TopologicalConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
<!-- The title for this report shall always be "INSPIRE Data Specifications - Base
Models - Generic Network Model" -->
              <gco:CharacterString>
INSPIRE Data Specifications - Base Models - Generic Network Model
              </gco:CharacterString>
            </gmd:title>
          <gmd:date>
            <gmd:CI_Date>
              <gmd:date>
<!-- The date shall be the date of publication of the Generic Network Model -->
                <gco>Date>2013-04-06</gco>Date>
              </gmd:date>
            <gmd:dateType>
              <gmd:CI_DateTypeCode>
                codeList="" codeListValue="publication"/>
              </gmd:dateType>
            </gmd:CI_Date>
          </gmd:date>
        </gmd:CI_Citation>
      </gmd:specification>
      <gmd:explanation>
        <gco:CharacterString>
          [Some statement on topological consistency]
        </gco:CharacterString>
      </gmd:explanation>
      <gmd:pass>
        <gco:Boolean>true</gco:Boolean>
      </gmd:pass>
    </gmd:DQ_ConformanceResult>
  </gmd:result>
</gmd:DQ_TopologicalConsistency>
</gmd:report>
```

38.2.5 Example – pass

```
<gmd:report>
  <gmd:DQ_TopologicalConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
```

```

<!-- The title for this report shall always be "INSPIRE Data Specifications - Base
Models - Generic Network Model" -->
    <gco:CharacterString>
INSPIRE Data Specifications - Base Models - Generic Network Model
    </gco:CharacterString>
</gmd:title>
<gmd:date>
    <gmd:CI_Date>
        <gmd:date>
<!-- The date shall be the date of publication of the Generic Network Model -->
            <gco>Date>2013-04-05</gco>Date>
        </gmd:date>
        <gmd:dateType>
            <gmd:CI_DateTypeCode
                codeList="" codeListValue="publication"/>
        </gmd:dateType>
    </gmd:CI_Date>
</gmd:date>
</gmd:CI_Citation>
</gmd:specification>
<gmd:explanation>
    <gco:CharacterString>
        [Some statement on topological consistency]
    </gco:CharacterString>
</gmd:explanation>
<gmd:pass>
    <gco:Boolean>true</gco:Boolean>
</gmd:pass>
</gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_TopologicalConsistency>
</gmd:report>

```

38.2.6 Schematron rule

```

<sch:pattern
    fpi="metadata/2.0/req/isdss/topological-consistency-descriptive-results">
    <sch:title>Topological consistency</sch:title>
    <sch:p>
        In the event that a Topological consistency report is required for a Generic
        Network Model dataset, check that the correct date/datetype and boolean values
        are given. Test relies on the citation having the required title...
    </sch:p>
    <sch:let name="GenericNetworkModelValue"
        value="'INSPIRE Data Specifications - Base Models - Generic Network Model'"/>
    <sch:let name="GenericNetworkModelDate" value="'2013-04-05'"/>
    <sch:rule
context="//gmd:DQ_TopologicalConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:spe
cification/gmd:CI_Citation/gmd:title/gco:CharacterString[normalize-space(
text()) = 'INSPIRE Data Specifications - Base Models - Generic Network Model']">
        <sch:report
            test="following::gmd:date/gmd:CI_Date/gmd:date/gco>Date[text() != '2013-04-05']">
                MI-52b: When TopologicalConsistency is for
                <sch:value-of select="$GenericNetworkModelValue"/>, the date given shall be
                the date of publication of the Generic Network Model, which is 2013-04-05
            </sch:report>
        ...
    </sch:rule>
</sch:pattern>

```

38.3 Date type shall be publication

38.3.1 Error message

428 When TopologicalConsistency is for *INSPIRE Data Specifications - Base Models - Generic Network Model*, the code list value shall always be publication

38.3.2 Context

429 DQ_DataQuality > DQ_TopologicalConsistency.result > DQ_Result

38.3.3 Cause

430 The date type given in the TopologicalConsistency report for *INSPIRE Data Specifications - Base Models - Generic Network Model*, shall be publication, but another value was specified

38.3.4 Example – fail

```
<gmd:report>
  <gmd:DQ_TopologicalConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
<!-- The title for this report shall always be "INSPIRE Data Specifications - Base
Models - Generic Network Model" -->
              <gco:CharacterString>
INSPIRE Data Specifications - Base Models - Generic Network Model
              </gco:CharacterString>
            </gmd:title>
          <gmd:date>
            <gmd:CI_Date>
              <gmd:date>
                <gco>Date>2013-04-05</gco>Date>
              </gmd:date>
            <gmd:dateType>
<!-- The code list value shall always be publication -->
              <gmd:CI_DateTypeCode>
                codeList="" codeListValue="revision"/>
              </gmd:dateType>
            </gmd:CI_Date>
          </gmd:date>
        </gmd:CI_Citation>
      </gmd:specification>
      <gmd:explanation>
        <gco:CharacterString>
          [Some statement on topological consistency]
        </gco:CharacterString>
      </gmd:explanation>
      <gmd:pass>
        <gco:Boolean>>false</gco:Boolean>
      </gmd:pass>
    </gmd:DQ_ConformanceResult>
  </gmd:result>
</gmd:DQ_TopologicalConsistency>
</gmd:report>
```


38.3.5 Example – pass

```
<gmd:report>
  <gmd:DQ_TopologicalConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
<!-- The title for this report shall always be "INSPIRE Data Specifications - Base
Models - Generic Network Model" -->
              <gco:CharacterString>
INSPIRE Data Specifications - Base Models - Generic Network Model
            </gco:CharacterString>
          </gmd:title>
        <gmd:date>
          <gmd:CI_Date>
            <gmd:date>
              <gco>Date>2013-04-05</gco>Date>
            </gmd:date>
          </gmd:dateType>
<!-- The code list value shall always be publication -->
          <gmd:CI_DateTypeCode>
            codeList="" codeListValue="publication"/>
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>
    </gmd:CI_Citation>
  </gmd:specification>
  <gmd:explanation>
    <gco:CharacterString>
      [Some statement on topological consistency]
    </gco:CharacterString>
  </gmd:explanation>
  <gmd:pass>
    <gco:Boolean>>false</gco:Boolean>
  </gmd:pass>
</gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_TopologicalConsistency>
</gmd:report>
```

38.3.6 Schematron rule

```
<sch:pattern
  fpi="metadata/2.0/req/isdss/topological-consistency-descriptive-results">
  <sch:title>Topological consistency</sch:title>
  <sch:p>
    In the event that a Topological consistency report is required for a Generic
    Network Model dataset, check that the correct date/datatype and boolean values
    are given. Test relies on the citation having the required title...
  </sch:p>
  <sch:let name="GenericNetworkModelValue"
    value="'INSPIRE Data Specifications - Base Models - Generic Network Model'"/>
  <sch:let name="GenericNetworkModelDate" value="'2013-04-05'"/>
  <sch:rule
context="//gmd:DQ_TopologicalConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:spe
cification/gmd:CI_Citation/gmd:title/gco:CharacterString[normalize-space(
  text()) = 'INSPIRE Data Specifications - Base Models - Generic Network Model']">
...
  <sch:report
```

```

        test="following::gmd:dateType/gmd:CI_DateTypeCode[@codeListValue !=
'publication']">
        MI-52c: When TopologicalConsistency is for
        <sch:value-of select="$GenericNetworkModelValue"/>, the code list value
        shall always be publication
        </sch:report>
...
    </sch:rule>
</sch:pattern>

```

38.4 An explanation must be provided

38.4.1 Error message

431 When TopologicalConsistency is for *INSPIRE Data Specifications - Base Models - Generic Network Model*, some statement on topological consistency must be provided in the explanation

38.4.2 Context

432 DQ_DataQuality > DQ_TopologicalConsistency.result > DQ_Result

38.4.3 Cause

433 When TopologicalConsistency is for INSPIRE Data Specifications - Base Models - Generic Network Model, some statement on topological consistency must be provided in an explanation, but no explanation was given

38.4.4 Example – fail

```

<gmd:report>
  <gmd:DQ_TopologicalConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
<!-- The title for this report shall always be "INSPIRE Data Specifications - Base
Models - Generic Network Model" -->
              <gco:CharacterString>
INSPIRE Data Specifications - Base Models - Generic Network Model
            </gco:CharacterString>
          </gmd:title>
          <gmd:date>
            <gmd:CI_Date>
              <gmd:date>
                <gco>Date>2013-04-05</gco>Date>
              </gmd:date>
              <gmd:dateType>
                <gmd:CI_DateTypeCode
                  codeList="" codeListValue="publication"/>
              </gmd:dateType>
            </gmd:CI_Date>
          </gmd:date>
          </gmd:CI_Citation>
        </gmd:specification>
        <!-- An explanation must be provided -->
        <gmd:explanation gco:nilReason="missing" />
        <gmd:pass>
          <gco:Boolean>false</gco:Boolean>
        </gmd:pass>
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_TopologicalConsistency>
</gmd:report>

```

```

        </gmd:DQ_ConformanceResult>
      </gmd:result>
    </gmd:DQ_TopologicalConsistency>
  </gmd:report>

```

38.4.5 Example – pass

```

<gmd:report>
  <gmd:DQ_TopologicalConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
<!-- The title for this report shall always be "INSPIRE Data Specifications - Base
Models - Generic Network Model" -->
              <gco:CharacterString>
INSPIRE Data Specifications - Base Models - Generic Network Model
            </gco:CharacterString>
          </gmd:title>
          <gmd:date>
            <gmd:CI_Date>
              <gmd:date>
                <gco>Date>2013-04-05</gco>Date>
              </gmd:date>
              <gmd:dateType>
                <gmd:CI_DateTypeCode
                  codeList="" codeListValue="publication"/>
              </gmd:dateType>
            </gmd:CI_Date>
          </gmd:date>
        </gmd:CI_Citation>
      </gmd:specification>
      <!-- An explanation must be provided -->
      <gmd:explanation>
        <gco:CharacterString>
          [Some statement on topological consistency]
        </gco:CharacterString>
      </gmd:explanation>
    <gmd:pass>
      <gco:Boolean>>false</gco:Boolean>
    </gmd:pass>
  </gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_TopologicalConsistency>
</gmd:report>

```

38.4.6 Schematron rule

```

<sch:pattern
  fpi="metadata/2.0/req/isdss/topological-consistency-descriptive-results">
  <sch:title>Topological consistency</sch:title>
  <sch:p>
    In the event that a Topological consistency report is required for a Generic
    Network Model dataset, check that the correct date/datatype and boolean values
    are given. Test relies on the citation having the required title...
  </sch:p>
  <sch:let name="GenericNetworkModelValue"
    value="'INSPIRE Data Specifications - Base Models - Generic Network Model'"/>
  <sch:let name="GenericNetworkModelDate" value="'2013-04-05'"/>
  <sch:rule

```

```
context="//gmd:DQ_TopologicalConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Citation/gmd:title/gco:CharacterString[normalize-space(
  text()) = 'INSPIRE Data Specifications - Base Models - Generic Network Model']">
...
<!-- explanation is needed, empty free text is caught elsewhere and gmd:explanation
is required by schema -->
  <sch:assert test="count(following::gmd:explanation/@gco:nilReason) = 0">
    MI-52d: When TopologicalConsistency is for
    <sch:value-of select="$GenericNetworkModelValue"/>, Some statement on
    topological consistency must be provided in the explanation
  </sch:assert>
...
  </sch:rule>
</sch:pattern>
```

38.5 Value shall be false

38.5.1 Error message

434 When TopologicalConsistency is for *INSPIRE Data Specifications - Base Models - Generic Network Model*, The value shall always be false to indicate that the data does not assure the centerline topology for the network

38.5.2 Context

435 DQ_DataQuality > DQ_TopologicalConsistency.result > DQ_Result

38.5.3 Cause

436 The value shall always be false to indicate that the data does not assure the centerline topology for the network, in a Topological Consistencyreport to *INSPIRE Data Specifications - Base Models - Generic Network Model*.

38.5.4 Example – fail

```
<gmd:report>
  <gmd:DQ_TopologicalConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
<!-- The title for this report shall always be "INSPIRE Data Specifications - Base
Models - Generic Network Model" -->
              <gco:CharacterString>
INSPIRE Data Specifications - Base Models - Generic Network Model
              </gco:CharacterString>
            </gmd:title>
          </gmd:CI_Citation>
        </gmd:specification>
      </gmd:result>
    </gmd:DQ_TopologicalConsistency>
  </gmd:report>
```

```

        </gmd:specification>
        <gmd:explanation>
            <gco:CharacterString>
                [Some statement on topological consistency]
            </gco:CharacterString>
        </gmd:explanation>
        <gmd:pass>
<!-- The value shall always be false to indicate that the data does not assure the
centerline topology for the network -->
            <gco:Boolean>true</gco:Boolean>
        </gmd:pass>
    </gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_TopologicalConsistency>
</gmd:report>

```

38.5.5 Example – pass

```

<gmd:report>
    <gmd:DQ_TopologicalConsistency>
        <gmd:result>
            <gmd:DQ_ConformanceResult>
                <gmd:specification>
                    <gmd:CI_Citation>
                        <gmd:title>
<!-- The title for this report shall always be "INSPIRE Data Specifications - Base
Models - Generic Network Model" -->
                            <gco:CharacterString>
INSPIRE Data Specifications - Base Models - Generic Network Model
                            </gco:CharacterString>
                        </gmd:title>
                        <gmd:date>
                            <gmd:CI_Date>
                                <gmd:date>
                                    <gco>Date>2013-04-05</gco>Date>
                                </gmd:date>
                                <gmd:dateType>
                                    <gmd:CI_DateTypeCode
                                        codeList="" codeListValue="publication"/>
                                    </gmd:dateType>
                                </gmd:CI_Date>
                            </gmd:date>
                        </gmd:CI_Citation>
                    </gmd:specification>
                    <gmd:explanation>
                        <gco:CharacterString>
                            [Some statement on topological consistency]
                        </gco:CharacterString>
                    </gmd:explanation>
                    <gmd:pass>
<!-- The value shall always be false to indicate that the data does not assure the
centerline topology for the network -->
                        <gco:Boolean>false</gco:Boolean>
                    </gmd:pass>
                </gmd:DQ_ConformanceResult>
            </gmd:result>
        </gmd:DQ_TopologicalConsistency>
    </gmd:report>

```

38.5.6 Schematron rule

```
<sch:pattern
  fpi="metadata/2.0/req/isdss/topological-consistency-descriptive-results">
  <sch:title>Topological consistency</sch:title>
  <sch:p>
    In the event that a Topological consistency report is required for a Generic
    Network Model dataset, check that the correct date/datatype and boolean values
    are given. Test relies on the citation having the required title...
  </sch:p>
  <sch:let name="GenericNetworkModelValue"
    value="'INSPIRE Data Specifications - Base Models - Generic Network Model'"/>
  <sch:let name="GenericNetworkModelDate" value="'2013-04-05'"/>
  <sch:rule
context="//gmd:DQ_TopologicalConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:spe
cification/gmd:CI_Citation/gmd:title/gco:CharacterString[normalize-space(
  text()) = 'INSPIRE Data Specifications - Base Models - Generic Network Model']">
...
    <sch:assert test="following::gmd:pass/gco:Boolean = 'false'">
      MI-52e: When TopologicalConsistency is for
      <sch:value-of select="$GenericNetworkModelValue"/>, The value shall always be
      false to indicate that the data does not assure the centerline topology for
      the network
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

39 ANCILLARY TESTS

39.1 Identification information citation

39.1.1 Error message

437 Identification information citation shall not be null.

39.1.2 Context

438 MD_Metadata.identificationInfo > MD_DataIdentification.citation

439 MD_Metadata.identificationInfo > SV_ServiceIdentification.citation

39.1.3 Cause

440 The citation element can not have a nil reason attribute.

39.1.4 Example – fail

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

39.1.5 Example – success

```
<gmd:MD_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    <gmd:citation>
      ...
    </gmd:citation>
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmd:MD_Metadata>
```

39.1.6 Schematron rule

```
<sch:pattern fpi="Gemini2-at1">
  <sch:title>Data identification citation</sch:title>
  <sch:p>The identification information citation cannot be null.</sch:p>
  <sch:rule
    context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]/gmd:citation">
    <sch:assert test="count(@gco:nilReason) = 0">
      AT-1: Identification information citation shall not be null.
    </sch:assert>
    </sch:rule>
  </sch:pattern>
```

39.2 First identification element (dataset and series)

39.2.1 Error message

441 The first identification information element shall be of type gmd:MD_DataIdentification.

39.2.2 Context

442 MD_Metadata.identificationInfo

39.2.3 Cause

443 Where a metadata instance is for a dataset or a series, the first identificationInfo element must have a child element of the type MD_DataIdentification.

39.2.4 Example – fail

```
<gmd:MD_Metadata>
...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
      codeListValue="dataset">dataset</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  ...
  <gmd:identificationInfo>
    <srv:SV_ServiceIdentification>
      ...
    </srv:SV_ServiceIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

39.2.5 Example – success

```
<gmd:MD_Metadata>
...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
      codeListValue="dataset">dataset</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```


39.2.6 Schematron rule

```
<sch:pattern fpi="Gemini2-at2">
  <sch:title>Metadata resource type test</sch:title>
  <sch:p>
    Test to ensure that metadata about datasets include the
    gmd:MD_DataIdentification element and metadata about services
    include the srv:SV_ServiceIdentification element
  </sch:p>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]">
    <sch:assert test="
      ((../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'dataset' or
      ../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'series') and
      (local-name(*) = 'MD_DataIdentification' or */@gco:isoType =
      'gmd:MD_DataIdentification')) or
      (../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'dataset' and
      ../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'series') or
      count(../gmd:hierarchyLevel) = 0">
      AT-2a: The first identification information element shall be of type
      gmd:MD_DataIdentification.
    </sch:assert>
    ...
  </sch:rule>
</sch:pattern>
```

39.3 First identification element (service)

39.3.1 Error message

444 The first identification information element shall be of type srv:SV_ServiceIdentification.

39.3.2 Context

445 MD_Metadata.identificationInfo

39.3.3 Cause

446 Where a metadata instance is for a service, the first identificationInfo element must have a child element of the type SV_ServiceIdentification.

39.3.4 Example – fail

```
<gmd:MD_Metadata>
  ...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
      as/resources/Codelist/gmxCodeLists.xml#MD_ScopeCode"
      codeListValue="service">service</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

39.3.5 Example – success

```
<gmd:MD_Metadata>
  ...
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#MD_ScopeCode"
      codeListValue="service">service</gmd:MD_ScopeCode>
    </gmd:hierarchyLevel>
  ...
  <gmd:identificationInfo>
    <srv:SV_ServiceIdentification>
      ...
    </srv:SV_ServiceIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

39.3.6 Schematron rule

```
<sch:pattern fpi="Gemini2-at2">
  <sch:title>Metadata resource type test</sch:title>
  <sch:p>Test to ensure that metadata about datasets include the
gmd:MD_DataIdentification element and metadata about services include the
srv:SV_ServiceIdentification element</sch:p>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]">
    ...
    <sch:assert test="
      ((../gmd:hierarchyLevel[1]/*[1]/@codeListValue = 'service') and
      (local-name(*) = 'SV_ServiceIdentification' or */@gco:isoType =
'srv:SV_ServiceIdentification')) or
      (../gmd:hierarchyLevel[1]/*[1]/@codeListValue != 'service') or
      count(../gmd:hierarchyLevel) = 0" >
      AT-2b: The first identification information element shall be of type
      srv:SV_ServiceIdentification.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

39.4 File identifier is mandatory

39.4.1 Error message

447 A metadata file identifier shall be provided. Its value shall be a system generated GUID.

39.4.2 Context

448 MD_Metadata.fileIdentifier

39.4.3 Cause

449 The item 'metadata file identifier' is a system level mandatory element. This assertion will fail if it is omitted from a metadata instance or if there is more than one 'metadata file identifier' in a metadata instance.

39.4.4 Example – fail

```
<gmd:MD_Metadata>
...
</gmd:MD_Metadata>
```

39.4.5 Example – success

```
<gmd:MD_Metadata>
  <gmd:fileIdentifier>
    <gco:CharacterString>
      A0810C40-CD23-430E-97D2-18E73DEF9A5D
    </gco:CharacterString>
  </gmd:fileIdentifier>
  ...
</gmd:MD_Metadata>
```

39.4.6 Schematron rule

```
<sch:pattern fpi="Gemini2-at3">
  <sch:title>Metadata file identifier</sch:title>
  <sch:p>A file identifier is required</sch:p>
  <sch:rule context="//gmd:MD_Metadata[1]">
    <sch:assert test="count(gmd:fileIdentifier) = 1">
      AT-3a: A metadata file identifier shall be provided.
      Its value shall be a system generated GUID.
    </sch:assert>
    ...
  </sch:rule>
</sch:pattern>
```

39.5 File identifier shouldn't contain braces

39.5.1 Error message

450 File identifier shouldn't contain braces

39.5.2 Context

451 MD_Metadata.fileIdentifier

39.5.3 Cause

452 The item 'metadata file identifier' shouldn't contain curly braces. This assertion will fail if the file identifier contains any curly braces.

39.5.4 Example – fail

```
<gmd:fileIdentifier>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    {1601f87c-e502-4a83-ae64-47240dc0321b}
  </gco:CharacterString>
</gmd:fileIdentifier>
```

39.5.5 Example – pass

```
<gmd:fileIdentifier>
  <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">
    83c56ad5-2af1-4741-a669-dbbf4d307c6b
  </gco:CharacterString>
</gmd:fileIdentifier>
```

39.5.6 Schematron rule

```
<sch:pattern fpi="Gemini2-at3">
  <sch:title>Metadata file identifier</sch:title>
  <sch:p>A file identifier is required</sch:p>
  <sch:rule context="//gmd:MD_Metadata[1]">
...
    <sch:report test="contains(gmd:fileIdentifier, '{') or
contains(gmd:fileIdentifier, '}')">
      AT-3b: File identifier shouldn't contain braces
    </sch:report>
  </sch:rule>
</sch:pattern>
```

39.6 File identifier not nillable

39.6.1 Error message

453 The gmd:fileIdentifier element is not nillable and shall have a value.

39.6.2 Context

454 MD_Metadata.fileIdentifier

39.6.3 Cause

455 The item 'metadata file identifier' is a system level mandatory element and it must have a valid globally unique value. This assertion will fail the file identifier has a nil reason attribute.

39.6.4 Example – fail

```
<gmd:MD_Metadata>
  <gmd:fileIdentifier gco:nilReason="missing"/>
  ...
</gmd:MD_Metadata>
```

39.6.5 Example – success

```
<gmd:MD_Metadata>
  <gmd:fileIdentifier>
    <gco:CharacterString>A0810C40-CD23-430E-97D2-
18E73DEF9A5D</gco:CharacterString>
  </gmd:fileIdentifier>
  ...
</gmd:MD_Metadata>
```

39.6.6 Schematron rule

```
<sch:pattern is-a="TypeNotNillablePattern" id="Gemini2-at3-NotNillable">
  <sch:param name="context" value="//gmd:MD_Metadata[1]/gmd:fileIdentifier"/>
</sch:pattern>

<!-- Test that an element has a value - the value is not nillable -->
<sch:pattern abstract="true" id="TypeNotNillablePattern">
  <sch:rule context="$context">
    <sch:assert test="string-length(.) > 0 and count(./@gco:nilReason) = 0">
      AP-2: The <sch:name/> element is not nillable and shall have a value.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

39.7 Constraints

39.7.1 Error message

456 Limitations on public access and use constraints are required.

39.7.2 Context

457 MD_Metadata.identificationInfo > MD_DataIdentification.resourceConstraints

458 MD_Metadata.identificationInfo > SV_ServiceIdentification.resourceConstraints

39.7.3 Cause

459 The resourceConstraints element, within which the constraints metadata items 'limitations on public access' and 'use limitation' are encoded, is an optional element. This assertion is included to ensure that a warning is issued if it is omitted from metadata, to indicate that the constraints items are missing. This assertion fails if resourceConstraints is omitted from metadata.

39.7.4 Example – fail

```
<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  ...
</gmd:MD_Metadata>
```

39.7.5 Example – success

```
<gmd:MD_Metadata>
  ...
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      ...
      <gmd:resourceConstraints>
        ...
      </gmd:resourceConstraints>
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
```

```
...
</gmd:MD_Metadata>
```

39.7.6 Schematron rule

```
<sch:pattern fpi="Gemini2-at4">
  <sch:title>Constraints</sch:title>
  <sch:p>Constraints (Limitations on public access and use constraints) are
required.</sch:p>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:identificationInfo[1]/*[1]">
    <sch:assert test="count(gmd:resourceConstraints) &gt;= 1">
      AT-4: Limitations on public access and use constraints are required.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

39.8 One creation date

39.8.1 Error message

460 The shall not be more than one creation date.

39.8.2 Context

461 CI_Citation.date > CI_Date.dateType

462 Note that, uniquely, the context is not based in MD_Metadata. This assertion tests all CI_Citation elements that occur in a metadata instance.

39.8.3 Cause

463 This assertion fails if there is more than one date element with a date type of 'creation'.

39.8.4 Example – fail

```
<gmd:CI_Citation>
  ...
  <gmd:date>
    <gmd:CI_Date>
      <gmd:date>
        <gco:Date>2003-02-17</gco:Date>
      </gmd:date>
      <gmd:dateType>
        <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#CI_DateTypeCode"
codeListValue="creation">creation</gmd:CI_DateTypeCode>
        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  </gmd:date>
  <gmd:CI_Date>
    <gmd:date>
      <gco:Date>2003-02-17</gco:Date>
    </gmd:date>
    <gmd:dateType>
      <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
```

```
as/resources/Codelist/gmxCodelists.xml#CI_DateTypeCode"
codeListValue="creation">creation</gmd:CI_DateTypeCode>
  </gmd:dateType>
</gmd:CI_Date>
</gmd:date>
...
</gmd:CI_Citation>
```

39.8.5 Example – success

```
<gmd:CI_Citation>
...
  <gmd:date>
    <gmd:CI_Date>
      <gmd:date>
        <gco:Date>2003-02-17</gco:Date>
      </gmd:date>
      <gmd:dateType>
        <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#CI_DateTypeCode"
codeListValue="creation">creation</gmd:CI_DateTypeCode>
        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  <gmd:date>
    <gmd:CI_Date>
      <gmd:date>
        <gco:Date>2003-02-17</gco:Date>
      </gmd:date>
      <gmd:dateType>
        <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schem
as/resources/Codelist/gmxCodelists.xml#CI_DateTypeCode"
codeListValue="publication">publication</gmd:CI_DateTypeCode>
        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  </gmd:CI_Citation>
```

39.8.6 Schematron rule

```
<sch:pattern fpi="Gemini2-at5">
  <!-- metadata/2.0/req/common/max-1-date-of-creation -->
  <sch:title>Creation date type</sch:title>
  <sch:p>Constrain citation date type = creation to one occurrence.</sch:p>
  <sch:rule context="//gmd:CI_Citation |
  //*[@gco:isoType = 'gmd:CI_Citation'] [1]">
    <sch:assert test="count (gmd:date/*[1]/gmd:dateType/*[1][@codeListValue =
'creation']) <= 1">
      AT-5: There shall not be more than one creation date.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

39.9 Non-empty free text content

39.9.1 Error message

464 Free text elements should not be empty

39.9.2 Context

465 MD_Metadata.identificationInfo

39.9.3 Cause

466 A free text element such as gco:CharacterString or gmx:Anchor, shall have some meaningful content.

39.9.4 Example – fail

```
<gmd:contact>
  <gmd:CI_ResponsibleParty>
    <gmd:individualName gco:nilReason="missing">
      <gco:CharacterString/>
    </gmd:individualName>
    <gmd:organisationName>
      <gco:CharacterString>
        Angus Council
      </gco:CharacterString>
    </gmd:organisationName>
```

39.9.5 Example – pass

```
<gmd:contact>
  <gmd:CI_ResponsibleParty>
    <gmd:individualName gco:nilReason="missing" />
    <gmd:organisationName>
      <gco:CharacterString>
        Angus Council
      </gco:CharacterString>
    </gmd:organisationName>
```

or

```
<gmd:contact>
  <gmd:CI_ResponsibleParty>
    <gmd:organisationName>
      <gco:CharacterString>
        Angus Council
      </gco:CharacterString>
    </gmd:organisationName>
```

39.9.6 Schematron rule

```
<sch:pattern fpi="Gemini2-at6">
  <sch:title>Non-empty free text content</sch:title>
  <sch:p>Don't allow empty Free text gco:CharacterString or gmx:Anchor</sch:p>
  <sch:rule context="//gco:CharacterString | //gmx:Anchor">
    <sch:assert test="normalize-space(.)">
      AT-6: Free text elements should not be empty
    </sch:assert>
  </sch:rule>
</sch:pattern>
```


39.10 One revision date

39.10.1 Error message

467 There shall not be more than one revision date

39.10.2 Context

468 CI_Citation.date > CI_Date.dateType

39.10.3 Cause

469 This assertion fails if there is more than one date element with a date type of 'revision'.

39.10.4 Example – fail

```
<gmd:CI_Citation>
...
<gmd:date>
  <gmd:CI_Date>
    <gmd:date>
      <gco:Date>2003-02-17</gco:Date>
    </gmd:date>
    <gmd:dateType>
      <gmd:CI_DateTypeCode
        codeList="gmxCodelists.xml#CI_DateTypeCode"
        codeListValue="revision" />
      </gmd:dateType>
    </gmd:CI_Date>
  </gmd:date>
  <gmd:date>
    <gmd:CI_Date>
      <gmd:date>
        <gco:Date>2013-05-17</gco:Date>
      </gmd:date>
      <gmd:dateType>
        <gmd:CI_DateTypeCode
          codeList="gmxCodelists.xml#CI_DateTypeCode"
          codeListValue="revision" />
        </gmd:dateType>
      </gmd:CI_Date>
    </gmd:date>
  ...
</gmd:CI_Citation>
```

39.10.5 Example – pass

```
<gmd:CI_Citation>
...
<gmd:date>
  <gmd:CI_Date>
    <gmd:date>
      <gco:Date>2003-02-17</gco:Date>
    </gmd:date>
    <gmd:dateType>
      <gmd:CI_DateTypeCode
        codeList="gmxCodelists.xml#CI_DateTypeCode"
        codeListValue="publication" />
      </gmd:dateType>
    </gmd:CI_Date>
  </gmd:date>
  ...
</gmd:CI_Citation>
```

```

    </gmd:CI_Date>
  </gmd:date>
</gmd:date>
  <gmd:CI_Date>
    <gmd:date>
      <gco>Date>2013-05-17</gco>Date>
    </gmd:date>
    <gmd:dateType>
      <gmd:CI_DateTypeCode
        codeList="gmxCodelists.xml#CI_DateTypeCode"
        codeListValue="revision" />
    </gmd:dateType>
  </gmd:CI_Date>
</gmd:date>
...
</gmd:CI_Citation>

```

39.10.6 Schematron rule

```

<sch:pattern fpi="metadata/2.0/req/common/max-1-date-of-last-revision">
  <sch:title>Revision date type</sch:title>
  <sch:p>Constrain citation date type = revision to one occurrence.</sch:p>
  <sch:rule
    context="//gmd:CI_Citation | //*[@gco:isoType = 'gmd:CI_Citation'] [1]">
    <sch:assert test="count (gmd:date/*[1]/gmd:dateType/*[1] [@codeListValue =
'revision']) <= 1">
      AT-7: There shall not be more than one revision date.
    </sch:assert>
  </sch:rule>
</sch:pattern>

```

39.11 Legal Constraints

39.11.1 Error message

470 AT-8: There must be at least two Legal Constraints sections (gmd:resourceConstraints/gmd:MD_LegalConstraints) in the metadata but we have (0 or 1). One section shall be provided to describe the "Limitations on public access" and another shall be provided to describe the "Conditions for access and use"

39.11.2 Context

471 ...

39.11.3 Cause

472 There must be at least two Legal Constraints sections (gmd:resourceConstraints/gmd:MD_LegalConstraints) in the metadata and the metadata has fewer than that. One section shall be provided to describe the "Limitations on public access" and another shall be provided to describe the "Conditions for access and use"

39.11.4 Example – fail

```
...
</gmd:descriptiveKeywords>
<!-- At least two gmd:resourceConstraints sections are expected here -->
<gmd:resourceConstraints xlink:title="Conditions">
  <gmd:MD_LegalConstraints>
    <gmd:useConstraints>
      <gmd:MD_RestrictionCode codeList="gmxCodeLists.xml#MD_RestrictionCode"
codeListValue="otherRestrictions"/>
    </gmd:useConstraints>
    <gmd:otherConstraints>
      <gmx:Anchor xlink:href="#">Conditions apply</gmx:Anchor>
    </gmd:otherConstraints>
  </gmd:MD_LegalConstraints>
</gmd:resourceConstraints>
<gmd:spatialRepresentationType>
...
```

39.11.5 Example – pass

```
...
</gmd:descriptiveKeywords>
<!-- At least two gmd:resourceConstraints sections are expected here... -->
<gmd:resourceConstraints xlink:title="Limitations">
  <gmd:MD_LegalConstraints>
    <gmd:accessConstraints>
      <gmd:MD_RestrictionCode
codeList="gmxCodeLists.xml#MD_RestrictionCode"
codeListValue="otherRestrictions"/>
    </gmd:accessConstraints>
    <gmd:otherConstraints>
      <gmx:Anchor xlink:href="http://inspire.ec.europa.eu/metadata-
codelist/LimitationsOnPublicAccess/INSPIRE_Directive_Article13_1e">
otherRestrictions
      </gmx:Anchor>
    </gmd:otherConstraints>
  </gmd:MD_LegalConstraints>
</gmd:resourceConstraints>
<gmd:resourceConstraints xlink:title="Conditions">
```

```
<gmd:MD_LegalConstraints>
  <gmd:useConstraints>
    <gmd:MD_RestrictionCode
      codeList="gmxCodelists.xml#MD_RestrictionCode"
      codeListValue="otherRestrictions"/>
    </gmd:useConstraints>
    <gmd:otherConstraints>
      <gmx:Anchor xlink:href="#">Conditions apply</gmx:Anchor>
    </gmd:otherConstraints>
  </gmd:MD_LegalConstraints>
</gmd:resourceConstraints>
<gmd:spatialRepresentationType>
...
```

39.11.6 Schematron rule

```
<sch:pattern fpi="Gemini2-at8">
  <sch:title>Legal Constraints</sch:title>
  <sch:p>To satisfy INSPIRE TG Requirement C.18, there must be at least two
gmd:resourceConstraints : md:MD_LegalConstraints element blocks
  One for "Limitations on public access" and the other for "Conditions for
access and use". Applies to all metadata</sch:p>
  <sch:rule context="//gmd:MD_Metadata[1]/gmd:identificationInfo">
    <sch:let name="legalCons"
value="count(//gmd:MD_Metadata[1]/gmd:identificationInfo/*[1]
/gmd:resourceConstraints/gmd:MD_LegalConstraints)"/>
    <sch:assert test="$legalCons > 1">
      AT-8: There must be at least two Legal Constraints sections
(gmd:resourceConstraints/gmd:MD_LegalConstraints) in the metadata but we have
<sch:value-of select="$legalCons"/>.
      One section shall be provided to describe the "Limitations on public
access" and another shall be provided to describe the
      "Conditions for access and use"
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

APPENDIX 1

Context expression

473 The context will be expressed in the following way:

474 `ClassName.propertyName > ClassName.propertyName`

475 For example:

476 `MD_Metadata.identificationInfo > MD_DataIdentification`

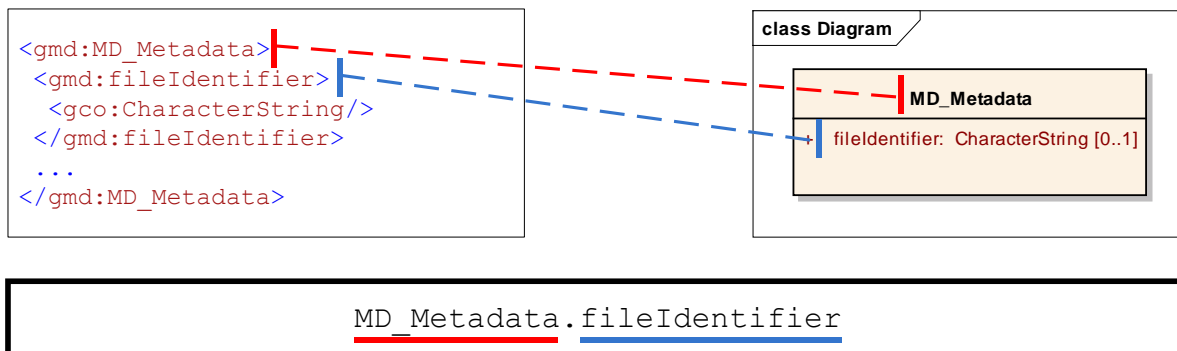


Figure 1 – Context expression for fileIdentifier

477 Figure 1 is an attempt to show how the context expression signifies the structure in XML and ISO 19115 UML classes. In this case the context is the fileIdentifier property of the class MD_Metadata. The red and blue lines indicate how the XML elements on the left are represented in a UML class diagram, which is a simplified view of ISO 19115. Below is the corresponding context expression.

478 An example which resolves to a deeper level is shown in Figure 2. The context is the class MD_DataIdentification. This class is the type of the identificationInfo property of the class MD_Metadata. The context expression resolves to `MD_Metadata.identificationInfo > MD_DataIdentification`.

479 The class MD_DataIdentification is a sub-type of the class MD_Identification. The class SV_ServiceIdentification is also a sub-type of the class MD_Identification. The corresponding XML may, as a result, exhibit either an element named `gmd:MD_DataIdentification` (for dataset or series metadata) or an element named `srv:SV_ServiceIdentification` (for service metadata), as an element of `gmd:identificationInfo`. Both sub-type classes inherit properties of the class MD_Identification. The property `descriptiveKeywords`, for example, is inherited by both. So, descriptive keywords may occur in the context:

480 `MD_Metadata.identificationInfo > MD_DataIdentification`

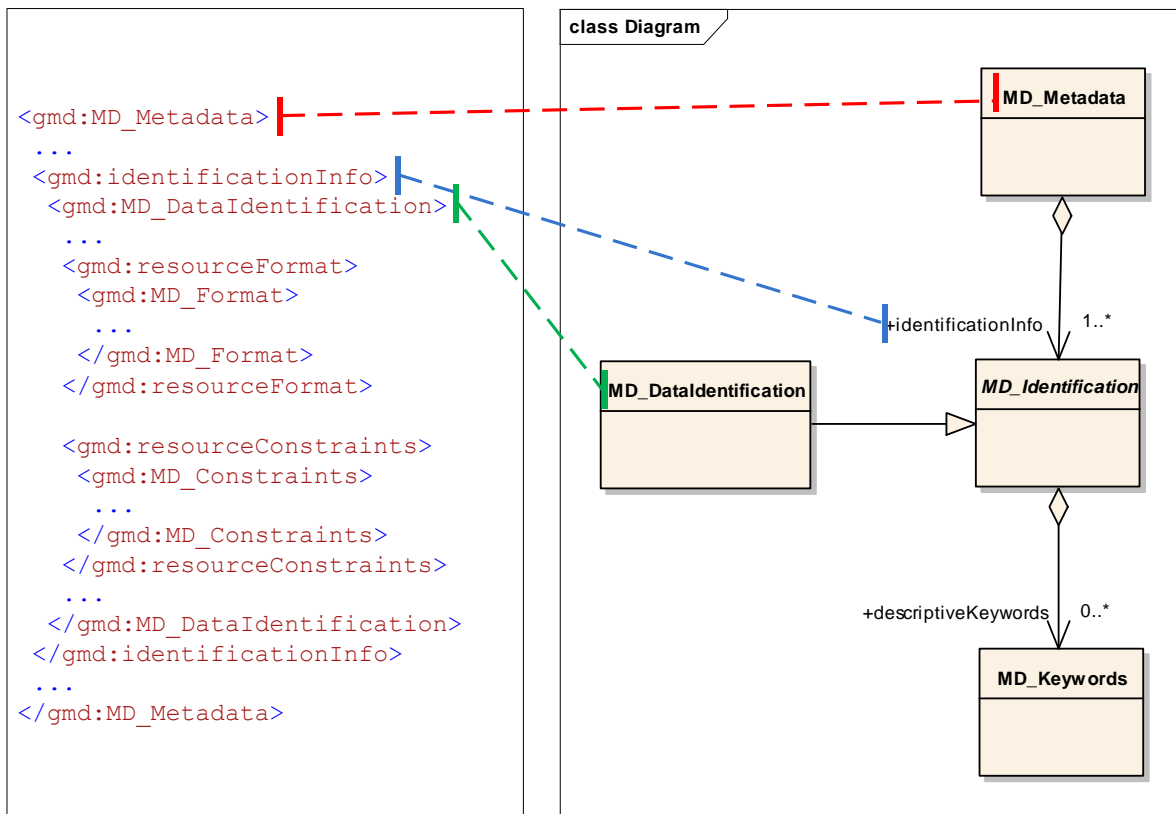
481 or

482 `MD_Metadata.identificationInfo > SV_ServiceIdentification`

483 In this and similar cases, the context expression will show both cases.

484 Incidentally, the element `gmd:MD_Identification` can never appear in XML because it is an abstract type. Abstract types can never be instantiated.

485 Figure 3 shows the context expression diagrammatically.



MD_Metadata.identificationInfo > MD_DataIdentification

Figure 2 – Context expression for MD_DataIdentification

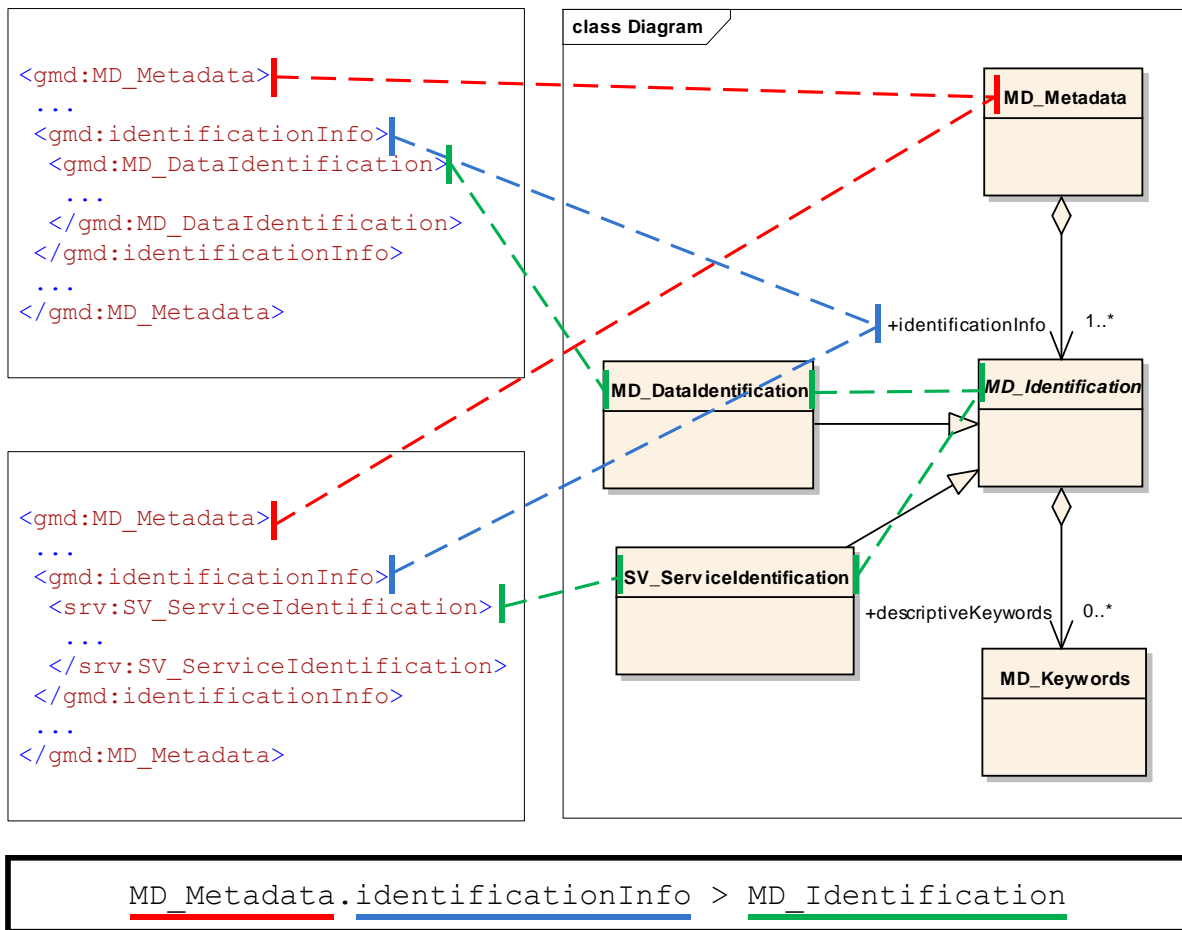


Figure 3 – Context for MD_Identification

APPENDIX 2

Schematron pattern

486 A rule in a Schematron schema contains an unordered collection of assertions. An assertion is a statement that a logical test is true. An assertion either succeeds or fails. If, during a validation process, one or more assertions in a Schematron schema fails, the XML instance being validated is said to be invalid with respect to the Schematron schema.

487 A rule has a context. The context defines where, in the hierarchy of an XML instance, the assertions contained in the rule will fire. The context is expressed using XPath. For example, the context for the Keyword rule is:

488 `/*[1]/gmd:identificationInfo[1]/*[1]`

489 The declaration [1] in the XPath indicates that the first child element in the tree is tested. There may be more than one gmd:identificationInfo element in a metadata instance, but for the purposes of GEMINI and INSPIRE, only the first is considered. However, there can only be one parent of gmd:identificationInfo, and it can contain only one child element, so the other [1] declarations may seem superfluous. These were added to the Schematron schema because GeoNetwork inserts other child elements to XML as part of its internal validation processes. The [1] declarations prevent these from being assessed by the Schematron schema and causing irrelevant errors. In terms of ISO 19115 classes and properties, the XPath can be expressed as:

490 `MD_Metadata.identificationInfo > MD_Identification`

491 Any assertion listed in the Keyword rule will fire only in the context of the MD_Identification class. This is reasonable because keywords in ISO 19115 are found as a property of MD_Identification.

492 An assertion has a test. The test must evaluate to true for an assertion to succeed. The Keyword rule has only one assertion and the test, expressed in XPath again, is:

493 `count(gmd:descriptiveKeywords) >= 1`

494 This is how it is expressed in the Schematron schema. The characters '>' are a way of writing the '>' character in XML. This character is reserved in XML because it is part of the element name notation so a means of showing that we really do mean the character '>' and not the end of an XML element name is needed. Other escape sequences, as these sets of characters are known, in use in the Schematron schema are '&' for the character '&' and '<' for the character '<'.

495 In natural language, this test means that the count of gmd:descriptiveKeywords elements [in the context of MD_Metadata.identificationInfo > MD_Identification] must be greater than or equal to one.

496 Put simply, Keywords is a mandatory element in GEMINI and must occur at least once in a metadata instance.

497 An assertion also has a value. In the case of Keywords, the value is:

498 Descriptive keywords are mandatory

499 This text appears in the Schematron schema output if the assertion fails, that is to say that the metadata instance being validated has no gmd:descriptiveKeywords elements.

500 The Schematron pattern for Keywords is shown below.


```
<sch:pattern fpi="Gemini2-mi6">
  <sch:title>Keyword</sch:title>
  <sch:rule context="/*[1]/gmd:identificationInfo[1]/*[1]">
    <sch:assert test="count(gmd:descriptiveKeywords) >= 1">
      Descriptive keywords are mandatory.
    </sch:assert>
  </sch:rule>
</sch:pattern>
```