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Guide to Schematron Rules and Patterns

IRM Schematron Guide

Version 8

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Chapter 1 - Introduction

1.1 - Purpose

(U) The following documentation is informative. The actual Schematron files are the normative record. This documentation is generated from the Schematron files via XSLT it may be missing some file or pieces of a file but whatever is here other than titles came from the original file.

(U) It is envisioned that this will be a useful resource to search and read but for questions and debates the source files should be consulted.

(U) Rules identifiers are all of the format IRM-ID-XXXXX, with rule files named IRM_ID_XXXXX.sch. Any other heading indicates a supporting file that may strongly influence a rule but is not actually a numbered rule.

Chapter 2 - Rules

All of the numbered Rules for IRM are listed in this section. These rules may depend strongly on patterns defined in the Abstract Patterns section or on variables defined in the Schematron Schema section.

2.1 - ../Rules/valueEnumerationConstraints/ IRM_ID_00001.sch

Rule Description: IRM-ID-00001 [IRM-ID-00001][Error] If element ddms:countryCode has attribute @ddms:qualifier specified as [urn:us:gov:ic:cvenum:irm:coverage:fips:digraph] then the value of attribute @ddms:value must be in CVENumIRMCoverageFIPSDigraph.xml. Human Readable: FIPS CountryCodes must appear in the FIPS CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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-->
<sch:pattern id="IRM-ID-00001" is-a="ValidateValueExistenceInList">


    <sch:param name="ruleText"
        value="' [IRM-ID-00001][Error] If element
ddms:countryCode has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:coverage:fips:digraph] then the value of attribute
@ddms:value must be in CVENumIRMCoverageFIPSDigraph.xml. Human
Readable: FIPS CountryCodes must in the the FIPS CVE. '"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract pattern to
consolidate logic. It checks that the value in parameter $searchTerm is
contained in the parameter $list. The parameter $searchTerm is relative in
scope to the parameter $context. The value for the parameter $list is a
variable defined in the main document (IRM_XML.sch), which reads values
from a specific CVE file. '"/>

    <sch:param name="context"
value="ddms:countryCode[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:coverage:fip
s:digraph']"/>

    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list" value="$coverageFipsDigraphList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00001][Error] If element
ddms:countryCode has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:coverage:fips:digraph] then the value of attribute
@ddms:value must be in CVENumIRMCoverageFIPSDigraph.xml. Human
Readable: FIPS CountryCodes must in the the FIPS CVE. '"/>
```

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`</sch:pattern>`

2.2 - ../Rules/globalConstraints/IRM_ID_00002.sch

Rule Description: IRM-ID-00002 [IRM-ID-00002][Error] For every attribute in the namespace [urn:us:gov:ic:irm] or [urn:us:mil:ces:metadata:ddms:4], a non-whitespace value must be specified.

Code Description: For each element which specifies an attribute in the IRM or DDMS namespace, we make sure that each attribute in the IRM or DDMS namespace specifies a non-whitespace value.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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-->
<sch:pattern id="IRM-ID-00002">

    <sch:rule context="*[@*[namespace-
uri()='('urn:us:gov:ic:irm', 'urn:us:mil:ces:metadata:ddms:4')]]">
        <sch:assert test="
every $attribute in
*[@*[namespace-uri()='('urn:us:gov:ic:irm', 'urn:us:mil:ces:metadata:ddms:4')]]
satisfies
        normalize-space(string($attribute))"
        flag="error">
            [IRM-ID-00002][Error] For every attribute in the namespace
            [urn:us:gov:ic:irm] or [urn:us:mil:ces:metadata:ddms:4], a non-
            whitespace
            value must be specified.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.3 - ../Rules/valueEnumerationConstraints/ IRM_ID_00003.sch

Rule Description: IRM-ID-00003 [IRM-ID-00003][Error] If element ddms:countryCode has attribute @ddms:qualifier specified as [urn:us:gov:ic:cenum:irm:coverage:iso3166:trigraph] then the value of attribute @ddms:value must be in CVEnumIRMCoverageISO3166trigraph.xml. Human Readable: ISO trigraph CountryCodes must appear in the ISO trigraph CVE

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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-->
<sch:pattern id="IRM-ID-00003" is-a="ValidateValueExistenceInList">

    <sch:param name="ruleText"
        value="' [IRM-ID-00003][Error] If element
ddms:countryCode has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cenum:irm:coverage:iso3166:trigraph] then the value of
attribute @ddms:value must be in CVEnumIRMCoverageISO3166trigraph.xml.
Human Readable: ISO trigraph CountryCodes must in the the ISO trigraph CVE.
'"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract pattern to
consolidate logic. It checks that the value in parameter $searchTerm is
contained in the parameter $list. The parameter $searchTerm is relative in
scope to the parameter $context. The value for the parameter $list is a
variable defined in the main document (IRM_XML.sch), which reads values
from a specific CVE file. '"/>

    <sch:param name="context"
value="ddms:countryCode[@ddms:qualifier='urn:us:gov:ic:cenum:irm:coverage:iso
3166:trigraph']"/>

    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list"
value="$coverageIso3166TrigraphList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00003][Error] If element
ddms:countryCode has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cenum:irm:coverage:iso3166:trigraph] then the value of
```

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```
attribute @ddms:value must be in CVEnumIRMCoverageISO3166trigraph.xml.  
Human Readable: ISO trigraph CountryCodes must in the the ISO trigraph CVE.  
'"/>  
        </sch:pattern>
```

2.4 - ../Rules/valueEnumerationConstraints/ IRM_ID_00005.sch

Rule Description: IRM-ID-00005 [IRM-ID-00005][Error] If element ddms:language has the attribute @ddms:qualifier value of [urn:us:gov:ic:cvenum:irm:iso639:digraph] then the value of attribute @ddms:value must be in CVENumIRMISO639Digraph.xml and no country code portion may be specified in the @ddms:language element value. Human Readable: ISO 639 digraph language codes must be in the ISO 639 digraph CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file. This rule can directly check if the value of element Language is in the appropriate list because if a country code portion is specified in the element ddms:language's value, then the value of element ddms:language will not be found in the appropriate list and the assertion will fail as expected.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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-->
<sch:pattern id="IRM-ID-00005" is-a="ValidateValueExistenceInList">

    <sch:param name="ruleText"
        value="' [IRM-ID-00005][Error] If element
ddms:language has the attribute @ddms:qualifier    value of
[urn:us:gov:ic:cvenum:irm:iso639:digraph] then the value of attribute
@ddms:value must be in CVENumIRMISO639Digraph.xml and no country code portion
may    be specified in the ddms:language element value.    Human Readable:
ISO 639 digraph language codes must be in the ISO 639 digraph CVE.    '"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract pattern to
consolidate logic. It checks that the    value in parameter $searchTerm is
contained in the parameter $list. The parameter    $searchTerm is relative in
scope to the parameter $context. The value for the parameter    $list is a
variable defined in the main document (IRM_XML.sch), which reads    values
from a specific CVE file.    '"/>

    <sch:param name="context"
value="ddms:language[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:iso639:digraph'
]"/>

    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list" value="$iso639DigraphList"/>
    <sch:param name="errMsg">
```

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```
value=" '[IRM-ID-00005][Error] If element
ddms:language has the attribute @ddms:qualifier value of
[urn:us:gov:ic:cvenum:irm:iso639:digraph] then the value of attribute
@ddms:value must be in CVEnumIRMISO639Digraph.xml and no country code portion
may be specified in the ddms:language element value. Human Readable:
ISO 639 digraph language codes must be in the ISO 639 digraph CVE. '"/>
</sch:pattern>
```

2.5 - ../Rules/valueEnumerationConstraints/ IRM_ID_00006.sch

Rule Description: IRM-ID-00006 [IRM-ID-00006][Error] If element ddms:language has the attribute @ddms:qualifier value of [urn:us:gov:ic:cvenum:irm:iso639-2:trigraph] then the value of attribute @ddms:value must be in CVENumIRMISO639-2Trigraph.xml and no country code portion may be specified in the ddms:value attribute value. Human Readable: ISO 639-2 trigraph language codes must be in the ISO 639-2 trigraph CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file. This rule can directly check if the value of element ddms:language is in the appropriate list because if a country code portion is specified in the element ddms:language's value, then the value of element ddms:language will not be found in the appropriate list and the assertion will fail as expected.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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-->
<sch:pattern id="IRM-ID-00006" is-a="ValidateValueExistenceInList">

    <sch:param name="ruleText"
        value="' [IRM-ID-00006][Error] If element
ddms:language has the attribute @ddms:qualifier value of
[urn:us:gov:ic:cvenum:irm:iso639-2:trigraph] then the value of attribute
@ddms:value must be in CVENumIRMISO639-2Trigraph.xml and no country code
portion may be specified in the ddms:value attribute value. Human
Readable: ISO 639-2 trigraph language codes must be in the ISO 639-2
trigraph CVE. '"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract pattern to
consolidate logic. It checks that the value in parameter $searchTerm is
contained in the parameter $list. The parameter $searchTerm is relative in
scope to the parameter $context. The value for the parameter $list is a
variable defined in the main document (IRM_XML.sch), which reads values
from a specific CVE file. '"/>

    <sch:param name="context"
value="ddms:language[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:iso639-2:trigra
ph']"/>

    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list" value="$iso639-2TrigraphList"/>
```

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```
<sch:param name="errMsg"
           value=" '[IRM-ID-00006][Error] If element
ddms:language has the attribute @ddms:qualifier value of
[urn:us:gov:ic:cenum:irm:iso639-2:trigraph] then the value of attribute
@ddms:value must be in CVENumIRMISO639-2Trigraph.xml and no country code
portion may be specified in the ddms:value attribute value. Human
Readable: ISO 639-2 trigraph language codes must be in the ISO 639-2
trigraph CVE. '"/>
</sch:pattern>
```


2.6 - ../Rules/valueEnumerationConstraints/ IRM_ID_00007.sch

Rule Description: IRM-ID-00007 [IRM-ID-00007][Error] If element ddms:language has the attribute @ddms:qualifier value of [urn:us:gov:ic:cvenum:irm:iso639-3:trigraph] then the value of attribute @ddms:value must be in CVEnumIRMISO639-3Trigraph.xml and no country code portion may be specified in the ddms:value attribute value. Human Readable: ISO 639-3 trigraph language codes must be in the ISO 639-3 trigraph CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file. This rule can directly check if the value of element Language is in the appropriate list because if a country code portion is specified in the element ddms:language's value, then the value of element ddms:language will not be found in the appropriate list and the assertion will fail as expected.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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-->
<sch:pattern id="IRM-ID-00007" is-a="ValidateValueExistenceInList">

    <sch:param name="ruleText"
        value="' [IRM-ID-00007][Error] If element
ddms:language has the attribute @ddms:qualifier value of
[urn:us:gov:ic:cvenum:irm:iso639-3:trigraph] then the value of attribute
@ddms:value must be in CVEnumIRMISO639-3Trigraph.xml and no country code
portion may be specified in the ddms:value attribute value. Human
Readable: ISO 639-3 trigraph language codes must in the the ISO 639-3
trigraph CVE. '"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract pattern to
consolidate logic. It checks that the value in parameter $searchTerm is
contained in the parameter $list. The parameter $searchTerm is relative in
scope to the parameter $context. The value for the parameter $list is a
variable defined in the main document (IRM_XML.sch), which reads values
from a specific CVE file. '"/>

    <sch:param name="context"
value="ddms:language[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:iso639-3:trigra
ph']"/>

    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list" value="$iso639-3TrigraphList"/>
```

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```
<sch:param name="errMsg"
  value=" '[IRM-ID-00007][Error] If element
ddms:language has the attribute @ddms:qualifier value of
[urn:us:gov:ic:cvenum:irm:iso639-3:trigraph] then the value of attribute
@ddms:value must be in CVENumIRMISO639-3Trigraph.xml and no country code
portion may be specified in the ddms:value attribute value. Human
Readable: ISO 639-3 trigraph language codes must in the the ISO 639-3
trigraph CVE. '"/>
</sch:pattern>
```

2.7 - ./Rules/valueEnumerationConstraints/ IRM_ID_00008.sch

Rule Description: IRM-ID-00008 [IRM-ID-00008][Error] If element ddms:language has the attribute @ddms:qualifier value of [RFC1766] then the language code portion of the @ddms:value attribute value must be in CVEnumIRMISO639Digraph.xml and the country code portion, if present, must be in CVEnumIRMCoverageISO3166Digraph.xml. Human Readable: RFC1766 language codes must comply with the RFC by using parts from ISO 639 Digraph and ISO 3166 Digraph.

Code Description: Finds ddms:language element and checks its qualifier attribute for a value of [RFC4646]. If this value is found it will ensure that the value of the element's ddms:value attribute exists in the CVEnumIRMISO639Digraph.xml enumeration file represented by the \$iso639DigraphList variable and country code portions (denoted by '-' separation) must be in CVEnumIRMCoverageISO3166Digraph.xml enumeration file represented by the \$coverageIso3166DigraphList variable.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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-->
<sch:pattern id="IRM-ID-00008">

    <sch:rule
context="ddms:language[@ddms:qualifier='RFC1766']">
    <!-- Tokenize the element Language value into a list -->
    <sch:let name="tokens" value="tokenize(@ddms:value, '-')"/>

        <!-- For convenience and readability, save the primary
and secondary subtags
        as defined in RFC 4646 -->
    <sch:let name="primarySubtag" value="$tokens[1]"/>
    <sch:let name="secondarySubtag" value="$tokens[2]"/>

    <sch:let name="badPrimaryValues"
value="
if(index-
of($iso639DigraphList,$primarySubtag)>0)
then
null
else $primarySubtag"/>

    <sch:let name="badSecondaryValues"
value="
if($secondarySubtag
and
index-of($coverageIso3166DigraphList,$secondarySubtag)>
0)
then null
else $secondarySubtag"/>

    <sch:let name="badValues"
value="string-
join(($badPrimaryValues,
$badSecondaryValues), ' ')">
```

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```

        <!-- Check if primary subtag is valid -->
        <sch:let name="primarySubtagValid"
                value="
0                count($badPrimaryValues) =
                "/>

        <!-- Check if secondary subtag is valid -->
        <sch:let name="secondarySubtagValid"
                value="
then true() else                if(not($secondarySubtag))
                                count($badSecondaryValues) = 0
"/>

        <sch:assert test="$primarySubtagValid and
$secondarySubtagValid" flag="error">
        [IRM-ID-00008][Error] If element ddms:language has the attribute
@ddms:qualifier
        value of [RFC1766] then the language code portion of the
@ddms:value attribute
        value must be in CVEnumIRMISO639Digraph.xml and the country code
portion, if
        present, must be in CVEnumIRMCoverageISO3166Digraph.xml.

        Human Readable: RFC1766 language codes must comply with the RFC
by using parts from ISO 639 Digraph
        and ISO 3166 Digraph. The following values were found but are not
in the CVEs:
        <sch:value-of select="for $each in tokenize($badValues, ' ')
return concat(['', $each, ' '])"/>
        </sch:assert>
        </sch:rule>
    </sch:pattern>

```

2.8 - ../Rules/valueEnumerationConstraints/ IRM_ID_00009.sch

Rule Description: IRM-ID-00009 [IRM-ID-00009][Error] If element ddms:language has the attribute @ddms:qualifier value of [RFC3066] then the language code portion of the @ddms:value attribute value must be in CVEnumIRMISO639Digraph.xml or CVEnumIRMISO639-2Trigraph.xml and the country code portion, if present, must be in CVEnumIRMCoverageISO3166Digraph.xml. Human Readable: RFC3066 language codes must comply with the RFC by using parts from ISO 639 Digraph, 639-2 Trigraph, and ISO 3166 Digraph.

Code Description: Finds ddms:language elements and checks its qualifier attribute for a value of [RFC3066]. If this value is found it will ensure that the value of the element's ddms:value attribute exists in the CVEnumIRMISO639Digraph.xml or CVEnumIRMISO639-2Trigraph.xml enumeration files represented by the \$iso639DigraphList or \$iso639-2TrigraphList variables. Country code portions (denoted by '-' separation) must be in the CVEnumIRMCoverageISO3166Digraph.xml enumeration file represented by the \$coverageIso3166DigraphList variable.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00009">

    <sch:rule
context="ddms:language[@ddms:qualifier='RFC3066']">
    <!-- Tokenize the element Language value into a list -->
    <sch:let name="tokens" value="tokenize(@ddms:value, '-')"/>

        <!-- For convenience and readability, save the primary
and secondary subtags
        as defined in RFC 3066 -->
        <sch:let name="primarySubtag" value="$tokens[1]"/>
        <sch:let name="secondarySubtag" value="$tokens[2]"/>

        <sch:let name="badPrimaryValues"
            value="
                if(index-
of($iso639-2TrigraphList,$primarySubtag)>0 or
of($iso639DigraphList,$primarySubtag)>0)
                then
null
            else $primarySubtag"/>

        <sch:let name="badSecondaryValues"
            value="
                if($secondarySubtag
and
index-of($coverageIso3166DigraphList,$secondarySubtag)>0)
                then null
            else $secondarySubtag"/>
```

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```

        <sch:let name="badValues"
            value="string-
join(($badPrimaryValues,
            $badSecondaryValues), ' ')" />

        <!-- Check if primary subtag is valid -->
        <sch:let name="primarySubtagValid"
            value="
0            count($badPrimaryValues) =
            "/>

        <!-- Check if secondary subtag is valid -->
        <sch:let name="secondarySubtagValid"
            value="
then true() else            if(not($secondarySubtag))
            count($badSecondaryValues) = 0
"/>

        <sch:assert test="$primarySubtagValid and
$secondarySubtagValid" flag="error">
            [IRM-ID-00009][Error] If element ddms:language has the attribute
@ddms:qualifier
            value of [RFC3066] then the language code portion of the
@ddms:value attribute
            value must be in CVENumIRMISO639Digraph.xml or
CVENumIRMISO639-2Trigraph.xml
            and the country code portion, if present, must be in
CVENumIRMCoverageISO3166Digraph.xml.

            Human Readable: RFC3066 language codes must comply with the RFC
by using parts from
            ISO 639 Digraph or ISO 639-2 Trigraph and ISO 3166 Digraph. The
following values were found but
            are not in the CVEs:
            <sch:value-of select="for $each in tokenize($badValues, ' ')
return concat(['', $each, ' '])" />
            </sch:assert>
        </sch:rule>
    </sch:pattern>

```

2.9 - ./Rules/valueEnumerationConstraints/ IRM_ID_00010.sch

Rule Description: IRM-ID-00010 [IRM-ID-00010][Error] If element ddms:language has the attribute @ddms:qualifier value of [RFC4646] then the language code portion of the @ddms:value attribute value must be in CVEnumIRMISO639Digraph.xml or CVEnumIRMISO639-2Trigraph.xml and the country code portion, if present, must be in CVEnumIRMCoverageISO3166Digraph.xml. Human Readable: RFC4646 language codes must comply with the RFC by using parts from ISO 639 Digraph or ISO 639-2 Trigraph and ISO 3166 Digraph.

Code Description: Finds ddms:language elements and checks its qualifier attribute for a value of [RFC4646]. If this value is found it will ensure that the value of the element's ddms:value attribute exists in the CVEnumIRMISO639Digraph.xml or CVEnumIRMISO639-2Trigraph.xml enumeration files represented by the \$iso639DigraphList or \$iso639-2TrigraphList variables. Country code portions (denoted by '-' separation) must be in the CVEnumIRMCoverageISO3166Digraph.xml enumeration file represented by the \$coverageIso3166TrigraphList variable.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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-->
<sch:pattern id="IRM-ID-00010">

      <sch:rule
context="ddms:language[@ddms:qualifier='RFC4646']">
      <!-- Tokenize the element Language value into a list -->
      <sch:let name="tokens" value="tokenize(@ddms:value, '-')"/>

      <!-- For convenience and readability, save the primary
and secondary subtags
      as defined in RFC 4646 -->
      <sch:let name="primarySubtag" value="$tokens[1]"/>
      <sch:let name="secondarySubtag" value="$tokens[2]"/>

      <sch:let name="badPrimaryValues"
value="
      if(index-
of($iso639-2TrigraphList, lower-case($primarySubtag))>0 or
index-of($iso639DigraphList, $primarySubtag)>0)
then
null
      else $primarySubtag"/>

      <sch:let name="badSecondaryValues"
value="
      if($secondarySubtag
and
index-of($coverageIso3166DigraphList, $secondarySubtag)>0)
0)
then null
      else $secondarySubtag"/>
```

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```

        <sch:let name="badValues"
            value="string-
join(($badPrimaryValues,
            $badSecondaryValues), ' ')" />

        <!-- Check if primary subtag is valid -->
        <sch:let name="primarySubtagValid"
            value="
0            count($badPrimaryValues) =
            "/>

        <!-- Check if secondary subtag is valid -->
        <sch:let name="secondarySubtagValid"
            value="
then true() else            if(not($secondarySubtag))
            count($badSecondaryValues) = 0
"/>

        <sch:assert test="$primarySubtagValid and
$secondarySubtagValid" flag="error">
            [IRM-ID-00010][Error] If element ddms:language has the attribute
@ddms:qualifier
            value of [RFC4646] then the language code portion of the
@ddms:value attribute
            value must be in CVENumIRMISO639Digraph.xml or
CVENumIRMISO639-2Trigraph.xml
            and the country code portion, if present, must be in
CVENumIRMCoverageISO3166Digraph.xml.

            Human Readable: RFC4646 language codes must comply with the RFC
by using parts
            from ISO 639 Digraph or ISO 639-2 Trigraph and ISO 3166 Digraph.
The following
            values were found but are not in the CVEs:
            <sch:value-of select="for $each in tokenize($badValues, ' ')"
return concat(['', $each, ' '])"/>
            </sch:assert>
        </sch:rule>
    </sch:pattern>

```


2.10 - ./Rules/ddmsConstraints/IRM_ID_00012.sch

Rule Description: IRM-ID-00012 [IRM-ID-00012][Error] There must exist exactly one element ddms:metacardInfo/ddms:identifier which specifies attribute @ddms:qualifier with a value of [IC-ID]. Human Readable: The DDMS card must have a single IC-ID for itself.

Code Description: We make sure that exactly one element ddms:metacardInfo/ddms:identifier specifies attribute @ddms:qualifier with a value of [IC-ID].

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00012">

    <sch:rule context="ddms:metacardInfo">
        <sch:assert test="count(
            $qualifier in ddms:identifier/@ddms:qualifier
            return
            'IC-ID')
            null
            ) = 1"
            flag="error">
            [IRM-ID-00012][Error] There must exist exactly one element
            ddms:metacardInfo/ddms:identifier which specifies attribute
            @ddms:qualifier with a value of [IC-ID].

            Human Readable: The DDMS card must have a single IC-ID for itself.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.11 - ./Rules/ddmsConstraints/IRM_ID_00014.sch

Rule Description: IRM-ID-00014 [IRM-ID-00014][Error] There must exist exactly one element ddms:resource/ddms:identifier which specifies attribute @ddms:qualifier with a value of [IC-ID].
 Human Readable: The DDMS card must have exactly one IC-ID for the referenced resource.

Code Description: We make sure that exactly one element ddms:resource/ddms:identifier specifies attribute @ddms:qualifier with a value of [IC-ID].

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00014">

    <sch:rule context="ddms:resource">
        <sch:assert test="count(
            ddms:identifier/@ddms:qualifier return
            space(string($qualifier)) = 'IC-ID')
            1
            else null
            flag="error">
            [IRM-ID-00014][Error] There must exist exactly one element
            ddms:resource/ddms:identifier which specifies attribute
            @ddms:qualifier
            with a value of [IC-ID].

            Human Readable: The DDMS card must have exactly one IC-ID for
            the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.12 - ./Rules/dateTimeConstraints/IRM_ID_00015.sch

Rule Description: IRM-ID-00015 [IRM-ID-00015][Error] If element ddms:dates exists without one of the attributes @ddms:created or @ddms:posted Human Readable: Every ddms:dates element must have at least one of @ddms:created or @ddms:posted.

Code Description: This rule checks that for each occurrence of ddms:dates that either @ddms:created or @ddms:posted is specified.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00015">

    <sch:rule context="ddms:dates">
        <sch:assert test="@ddms:created or @ddms:posted"
flag="error">
    [IRM-ID-00015][Error] Every ddms:date must have at least one of
@ddms:created or @ddms:posted.
    </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.13 - ./Rules/dateTimeConstraints/IRM_ID_00016.sch

Rule Description: IRM-ID-00016 [IRM-ID-00016][Error] The permissible values for the year range are 1901 through the current year for attributes @ddms:approvedOn, @ddms:dateProcessed, @ddms:receivedOn, @ddms:infoCutOff, @ddms:posted, and @ddms:created. Human Readable: Dates must be after 1901 and in the past for @ddms:approvedOn, @ddms:dateProcessed, @ddms:receivedOn, @ddms:infoCutOff, @ddms:posted, and @ddms:created.

Code Description: This pattern uses abstract rules to consolidate logic. For attributes, we make sure that each date contained within \$dateList has a year value within the range \$minYear and \$maxYear, inclusive.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00016">

    <!-- Use abstract rule to handle required attributes -->
    <sch:rule context="*[@ddms:approvedOn |
@ddms:dateProcessed | @ddms:receivedOn
| @ddms:posted | @ddms:created
| @ddms:infoCutOff]">
        <sch:let name="minYear" value="1901"/>
        <sch:let name="maxYear" value="$currentYear"/>
        <sch:let name="dateList"
            value="
(string(@ddms:approvedOn),
string(@ddms:dateProcessed),
string(@ddms:receivedOn), string(@ddms:posted),
string(@ddms:created), string(@ddms:infoCutOff))"/>
        <sch:let name="errMsg"
            value=" ' [IRM-ID-00016][Error] The
permissible values for the year range are 1901 through the
current year for attributes @ddms:approvedOn,
@ddms:dateProcessed, @ddms:receivedOn, @ddms:infoCutOff,
@ddms:posted, and @ddms:created. Human Readable:
Dates must be after 1901 and in the past for @ddms:approvedOn,
@ddms:dateProcessed, @ddms:receivedOn, @ddms:infoCutOff, @ddms:posted, and
@ddms:created. '"/>
        <sch:extends rule="abs.dateListYearRangeRule"/>
    </sch:rule>
</sch:pattern>
```

2.14 - ./Rules/dateTimeConstraints/IRM_ID_00017.sch

Rule Description: IRM-ID-00017 [IRM-ID-00017][Error] The permissible values for the year range are 1901 through 9999 for attribute @ddms:validTil. Human Readable: @ddms:validTil must be after 1901.

Code Description: This pattern uses abstract rules to consolidate logic. For attributes, we make sure that each date contained within \$dateList has a year value within the range \$minYear and \$maxYear, inclusive.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00017">

    <!-- Use abstract rule to handle required attributes -->
    <sch:rule context="*[@ddms:validTil]">
        <sch:let name="minYear" value="1901"/>
        <sch:let name="maxYear" value="9999"/>
        <sch:let name="dateList"
value="(string(@ddms:validTil))"/>
        <sch:let name="errMsg"
            value=" ' [IRM-ID-00017][Error] The
permissible values for the year range are 1901 through 9999 for
attribute @ddms:validTil. Human Readable:
@ddms:validTil must be after 1901. '"/>
        <sch:extends rule="abs.dateListYearRangeRule"/>
    </sch:rule>
</sch:pattern>
```

2.15 - ./Rules/dateTimeConstraints/IRM_ID_00019.sch

Rule Description: IRM-ID-00019 [IRM-ID-00019][Warning] @ddms:approvedOn must not be later than @ddms:created and @ddms:posted.

Code Description: This rule uses an abstract pattern to consolidate logic. It compares the date contained within the param \$primaryDate to each date contained within the param \$secondaryDateList (using the comparison operator contained in param \$operator) and makes sure that each comparison returns true. Implementation details for the abstract pattern can be found in the abstract pattern definition file located in the Lib directory.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00019" is-a="CompareDateTimes">

    <sch:param name="ruleText"
                value="' [IRM-ID-00019][Warning]
@ddms:approvedOn must not be later than @ddms:created and
@ddms:posted. '"/>

    <sch:param name="codeDesc"
                value="' This rule uses an abstract
pattern to consolidate logic. It compares the date contained within
the param $primaryDate to each date contained within the param
$secondaryDateList (using the comparison operator contained in param
$operator) and makes sure that each comparison returns true.
Implementation details for the abstract pattern can be found in the
abstract pattern definition file located in the Lib directory. '"/>

    <sch:param name="context" value="*[@ddms:approvedOn]"/>
    <sch:param name="primaryDate" value="@ddms:approvedOn"/>
    <sch:param name="operator" value="'&lt;='"/>
    <sch:param name="secondaryDateList"

value="(@ddms:created,
@ddms:posted)"/>
    <sch:param name="flag" value="'error'"/>
</sch:pattern>
```

2.16 - ./Rules/dateTimeConstraints/IRM_ID_00020.sch

Rule Description: IRM-ID-00020 [IRM-ID-00020][Error] @ddms:infoCutOff must not be later than @ddms:created, and @ddms:posted.

Code Description: This rule uses an abstract pattern to consolidate logic. It compares the date contained within the param \$primaryDate to each date contained within the param \$secondaryDateList (using the comparison operator contained in param \$operator) and makes sure that each comparison returns true. Implementation details for the abstract pattern can be found in the abstract pattern definition file located in the Lib directory.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00020" is-a="CompareDateTimes">

    <sch:param name="ruleText"
                value="' [IRM-ID-00020][Error]
@ddms:infoCutOff must not be later than @ddms:created, and
@ddms:posted. '"/>

    <sch:param name="codeDesc"
                value="' This rule uses an abstract
pattern to consolidate logic. It compares the date contained within
the param $primaryDate to each date contained within the param
$secondaryDateList (using the comparison operator contained in param
$operator) and makes sure that each comparison returns true.
Implementation details for the abstract pattern can be found in the
abstract pattern definition file located in the Lib directory. '"/>

    <sch:param name="context" value="*[@ddms:infoCutOff]"/>
    <sch:param name="primaryDate" value="@ddms:infoCutOff"/>
    <sch:param name="operator" value="'&lt;='"/>
    <sch:param name="secondaryDateList"

value="(@ddms:created,
@ddms:posted)"/>
    <sch:param name="flag" value="'error'"/>
</sch:pattern>
```

2.17 - ./Rules/dateTimeConstraints/IRM_ID_00021.sch

Rule Description: IRM-ID-00021 [IRM-ID-00021][Warning] @ddms:validTil must not be earlier than @ddms:created, @ddms:posted, @ddms:infoCutOff, and @ddms:approvedOn.

Code Description: This rule uses an abstract pattern to consolidate logic. It compares the date contained within the param \$primaryDate to each date contained within the param \$secondaryDateList (using the comparison operator contained in param \$operator) and makes sure that each comparison returns true. Implementation details for the abstract pattern can be found in the abstract pattern definition file located in the Lib directory.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00021" is-a="CompareDateTimes">

    <sch:param name="ruleText"
                value="' [IRM-ID-00021][Warning]
@ddms:validTil must not be earlier than @ddms:created, @ddms:posted,
@ddms:infoCutOff, and @ddms:approvedOn. '"/>

    <sch:param name="codeDesc"
                value="' This rule uses an abstract
pattern to consolidate logic. It compares the date contained within
the param $primaryDate to each date contained within the param
$secondaryDateList (using the comparison operator contained in param
$operator) and makes sure that each comparison returns true.
Implementation details for the abstract pattern can be found in the
abstract pattern definition file located in the Lib directory. '"/>

    <sch:param name="context" value="*[@ddms:validTil]"/>
    <sch:param name="primaryDate" value="@ddms:validTil"/>
    <sch:param name="operator" value="'>='"/>
    <sch:param name="secondaryDateList"

value="(@ddms:created,
@ddms:posted,
@ddms:infoCutOff,
@ddms:approvedOn)"/>
    <sch:param name="flag" value="'error'"/>
</sch:pattern>
```


2.18 - ./Rules/dateTimeConstraints/IRM_ID_00022.sch

Rule Description: IRM-ID-00022 [IRM-ID-00022][Error] For any element ddms:temporalCoverage, child element ddms:start must not be later than child element ddms:end. **Human Readable:** For date-time ranges, the start of a range must be earlier than, or equivalent to, the end of that range.

Code Description: This rule uses an abstract pattern to consolidate logic. It compares the date contained within the param \$primaryDate to each date contained within the param \$secondaryDateList (using the comparison operator contained in param \$operator) and makes sure that each comparison returns true. Implementation details for the abstract pattern can be found in the abstract pattern definition file located in the Lib directory.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00022" is-a="CompareDateTimes">

    <sch:param name="ruleText"
        value=" ' [IRM-ID-00022][Error] For any
element ddms:temporalCoverage, child element ddms:start must      not be
later than child element ddms:end. '"/>

    <sch:param name="codeDesc"
        value=" ' This rule uses an abstract
pattern to consolidate logic.      It compares the date contained within
the param $primaryDate to each date      contained within the param
$secondaryDateList (using the comparison operator      contained in param
$operator) and makes sure that each comparison returns      true.
Implementation details for the abstract pattern can be found in the
abstract pattern definition file located in the Lib directory. '"/>

    <sch:param name="context" value="ddms:temporalCoverage"/>
    <sch:param name="primaryDate" value="ddms:start"/>
    <sch:param name="operator" value=" '<='"/>
    <sch:param name="secondaryDateList" value="(ddms:end)"/>
    <sch:param name="flag" value="'error'"/>
</sch:pattern>
```

2.19 - ./Rules/dateTimeConstraints/IRM_ID_00023.sch

Rule Description: IRM-ID-00023 [IRM-ID-00023][Error] The permissible values for the year range are 0001 through 9999 for elements ddms:start and ddms:end. Human Readable: ddms:start and ddms:end must be positive integers less than 10,000.

Code Description: This pattern uses abstract rules to consolidate logic. For attributes, we make sure that each date contained within \$dateList has a year value within the range \$minYear and \$maxYear, inclusive.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00023">

    <!-- Use abstract rule to handle required attributes -->
    <sch:rule context="ddms:start | ddms:end">
        <sch:let name="minYear" value="0001"/>
        <sch:let name="maxYear" value="9999"/>
        <sch:let name="dateList" value="(string(ddms:start),
string(ddms:end))"/>
        <sch:let name="errMsg"
            value=" ' [IRM-ID-00023][Error] The
permissible values for the year range are 0001 through 9999 for
elements ddms:start and ddms:end. Human Readable: ddms:start and
ddms:end must be positive integers less than 10,000. ' "/>
        <sch:extends rule="abs.dateListYearRangeRule"/>
    </sch:rule>
</sch:pattern>
```

2.20 - ./Rules/dateTimeConstraints/IRM_ID_00024.sch

Rule Description: IRM-ID-00024 [IRM-ID-00024][Warning] For elements ddms:start and ddms:end and attributes @ddms:approvedOn, @ddms:dateProcessed, @ddms:receivedOn, @ddms:infoCutOff, @ddms:posted, @ddms:validTil, and @ddms:created, if the time designator (T) is specified, it is recommended that time zone be specified. Human Readable: For elements and attributes of date-time types, if the time designator (T) is specified, it is recommended that time zone be specified.

Code Description: The pattern applies to ddms:start and ddms:end elements, as well as any element that contains one or more attributes @ddms:approvedOn, @ddms:infoCutOff, @ddms:posted, and @ddms:created. It joins each of these attribute values, if present, into a larger space-separated string. It then breaks this string into tokens at each space character. If the value of the token contains the time zone designator (T), then it makes sure that the token value matches the regular expression for a timeZone, which is defined in the main schema file (IRM_XML.sch).

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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-->
<sch:pattern id="IRM-ID-00024">

    <!-- Abstract rule, which asserts that if the date $primaryDate
    specifies the
    time designator (T), then the timezone is specified -->
    <sch:rule abstract="true" id="abs.rule00024">
        <sch:assert test="
            every $date in $dateList
            satisfies
                if($date castable as xs:dateTime and
                contains(string($date),'T'))
                    then matches(string($date),
                    $endsWithTimeZoneRegEx)
                    else true()"
                    flag="warning">
            [IRM-ID-00024][Warning] For elements and attributes of date-time
            types, if the
            time designator (T) is specified, it is recommended that time
            zone be specified.
        </sch:assert>
    </sch:rule>

    <!-- Begin using abstract rule on required elements and
    attributes -->
    <sch:rule context="ddms:start">
        <sch:let name="dateList" value="."/>
        <sch:extends rule="abs.rule00024"/>
    </sch:rule>

    <sch:rule context="ddms:end">
```

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```

        <sch:let name="dateList" value="."/>
        <sch:extends rule="abs.rule00024"/>
    </sch:rule>

    <sch:rule context="*[@ddms:approvedOn
|
@ddms:receivedOn |
|
@ddms:infoCutOff |
        @ddms:dateProcessed |
        @ddms:posted
        @ddms:created |
        @ddms:validTil]">
        <sch:let name="dateList"
            value="
(@ddms:approvedOn,
@ddms:receivedOn,
@ddms:created,
@ddms:validTil)
            @ddms:dateProcessed,
            @ddms:posted,
            @ddms:infoCutOff,
            " />
        <sch:extends rule="abs.rule00024"/>
    </sch:rule>
</sch:pattern>
```

2.21 - ./Rules/ismConstraints/IRM_ID_00025.sch

Rule Description: IRM-ID-00025 [IRM-ID-00025][Error] The attribute @ism:excludeFromRollup must not be specified for any element in the namespace [urn:us:mil:ces:metadata:ddms:4] except security. Human Readable: The only DDMS 4.0 element whose ISM attributes are allowed to be excluded from roll-up to the Resource element is ddms:security.

Code Description: For any element in the ddms namespace containing the ism:excludeFromRollup attribute, the rule will be satisfied if the name of the element is security.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
      This document has been approved for Public Release and is
available for use without restriction.
-->
<sch:pattern id="IRM-ID-00025">

      <sch:rule context="*[@ism:excludeFromRollup and namespace-
uri()='urn:us:mil:ces:metadata:ddms:4']">
          <sch:assert test="local-name() = 'security'"
flag="error">
              [IRM-ID-00025][Error] The attribute @ism:excludeFromRollup must
not be specified for any element
              in the namespace [urn:us:mil:ces:metadata:ddms:4] except security.
          </sch:assert>
      </sch:rule>
</sch:pattern>
```

2.22 - ../Rules/ddmsConstraints/IRM_ID_00029.sch

Rule Description: IRM-ID-00029 [IRM-ID-00029][Error] If element ddms:geospatialCoverage has attribute @ddms:precedence with a value of [Secondary], there must be at least one sibling element ddms:geospatialCoverage for which attribute @ddms:precedence has a value of [Primary]. Human Readable: If a secondary country code is provided, there must also be a primary country code.

Code Description: If there is an element geospatialCoverage with attribute precedence specified with a value of [Secondary], then we make sure that there is at least one sibling geospatialCoverage element with attribute precedence specified with a value of [Primary].

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00029">

    <sch:rule
context="ddms:geospatialCoverage[@ddms:precedence='Secondary']">
    <sch:assert test="../
ddms:geospatialCoverage[@ddms:precedence='Primary']" flag="error">
        [IRM-ID-00029][Error]
        If element ddms:geospatialCoverage has attribute @ddms:precedence
with a value of [Secondary],
        there must be at least one sibling element
ddms:geospatialCoverage for which attribute
        @ddms:precedence has a value of [Primary].
    </sch:assert>
    </sch:rule>
    </sch:pattern>
```

2.23 - ./Rules/ddmsConstraints/IRM_ID_00030.sch

Rule Description: IRM-ID-00030 [IRM-ID-00030][Error] If attribute @ddms:order is specified with integer value N, there must exist other @ddms:order attributes with values 1 to N-1 with no duplicates. Human Readable: The values of attribute @ddms:order must be numbered sequentially with no duplicates, beginning at 1.

Code Description: A list, named \$orderList, is created containing the value of each order attribute within the document after normalizing to remove extra white-space. If the total number of items in \$orderList does not equal the number of distinct values in \$orderList, then a duplicate exists and we return false. Otherwise, we make sure that each number from 1 to N, where N is the number of items in \$orderList, is contained within \$orderList. If each number is contained, then we return true. Otherwise, false.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00030">

    <sch:rule context="ddms:resource[//@ddms:order]">
    <sch:let name="orderList"
        value="tokenize(string-join(//@ddms:order/
normalize-space(), ' '), ' ')/">
    <sch:assert test="(count(distinct-values($orderList)) =
count($orderList)
count($orderList)
xs:string($index)))
                                and (every $index in 1 to
                                satisfies index-of($orderList,
                                "
                                flag="error">

        [IRM-ID-00030][Error]
        If attribute @ddms:order is specified with integer value N, there
must exist
        other @ddms:order attributes with values 1 to N-1 with no
duplicates.

        Human Readable: The values of attribute @ddms:order must be
numbered
        sequentially with no duplicates, beginning at 1.
    </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.24 - ./Rules/valueEnumerationConstraints/ IRM_ID_00031.sch

Rule Description: IRM-ID-00031 [IRM-ID-00031][Error] The element ddms:countryCode must have the attribute ddms:qualifier specified with a value in CVEnumIRMCompoundCountryCodeQualifierType.xml. Human Readable: If a qualifier is specified for a country code, it must have be defined in the CompoundCountryCodeQualifierType CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<sch:pattern id="IRM-ID-00031" is-a="ValidateValueExistenceInList">

    <sch:param name="ruleText"
        value="' [IRM-ID-00031][Error] The element
ddms:countryCode must have the attribute ddms:qualifier specified with a
value in CVEnumIRMCompoundCountryCodeQualifierType.xml. '"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract pattern to
consolidate logic. It checks that the value in parameter $searchTerm is
contained in the parameter $list. The parameter $searchTerm is relative in
scope to the parameter $context. The value for the parameter $list is a
variable defined in the main document (IRM_XML.sch), which reads values
from a specific CVE file. '"/>

    <sch:param name="context" value="ddms:countryCode"/>
    <sch:param name="searchTerm" value="@ddms:qualifier"/>
    <sch:param name="list"
value="$compoundCountryCodeQualifierTypeList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00031][Error] The element
countryCode must have the attribute qualifier specified with a value in
CVEnumIRMCompoundCountryCodeQualifierType.xml. '"/>
</sch:pattern>
```


2.25 - ./Rules/valueEnumerationConstraints/ IRM_ID_00033.sch

Rule Description: IRM-ID-00033 [IRM-ID-00033][Error] If element ddms:mimeType is specified, it must have a value from CVEnumIRMMimeType.xml. Human Readable: Values for ddms:mimeType must be defined in the MimeType CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<sch:pattern id="IRM-ID-00033" is-a="ValidateValueExistenceInList">

    <sch:param name="ruleText"
        value="' [IRM-ID-00033][Error] If element
ddms:mimeType is specified, it must have a value from
CVEnumIRMMimeType.xml. '"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract pattern to
consolidate logic. It checks that the value in parameter $searchTerm is
contained in the parameter $list. The parameter $searchTerm is relative in
scope to the parameter $context. The value for the parameter $list is a
variable defined in the main document (IRM_XML.sch), which reads values
from a specific CVE file. '"/>

    <sch:param name="context" value="ddms:mimeType"/>
    <sch:param name="searchTerm" value="."/>
    <sch:param name="list" value="$mimeTypeList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00033][Error] If element
ddms:mimeType is specified, it must have a value from
CVEnumIRMMimeType.xml. '"/>
    </sch:pattern>
```

2.26 - ./Rules/valueEnumerationConstraints/ IRM_ID_00034.sch

Rule Description: IRM-ID-00034 [IRM-ID-00034][Error] For element ddms:language, attribute ddms:qualifier must have a value in CVEnumIRMCompoundLanguageQualifierType.xml.

Human Readable: If a qualifier is specified for a language, it must appear in the CompoundLanguageQualifierType CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<sch:pattern id="IRM-ID-00034" is-a="ValidateValueExistenceInList">

    <sch:param name="ruleText"
        value="' [IRM-ID-00034][Error] For element
ddms:language, attribute ddms:qualifier must have a value in
CVEnumIRMCompoundLanguageQualifierType.xml. '"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract pattern to
consolidate logic. It checks that the value in parameter $searchTerm is
contained in the parameter $list. The parameter $searchTerm is relative in
scope to the parameter $context. The value for the parameter $list is a
variable defined in the main document (IRM_XML.sch), which reads values
from a specific CVE file. '"/>

    <sch:param name="context" value="ddms:language"/>
    <sch:param name="searchTerm" value="@ddms:qualifier"/>
    <sch:param name="list"
value="$compoundLanguageQualifierTypeList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00034][Error] For element
ddms:language, attribute ddms:qualifier must have a value in
CVEnumIRMCompoundLanguageQualifierType.xml. '"/>
    </sch:pattern>
```

2.27 - ./Rules/ddmsConstraints/IRM_ID_00035.sch

Rule Description: IRM-ID-00035 [IRM-ID-00035][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:resource must specify at least one element ddms:language. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify the language of the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:resource specifies at least one element ddms:language.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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available for use without restriction.
      -->
<sch:pattern id="IRM-ID-00035">

      <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
      <sch:assert test="ddms:language" flag="error">
[IRM-ID-00035][Error] If MIN_DISCOVERABLE_OR_GREATER, element
ddms:resource
      must specify at least one element ddms:language.

      Human Readable: If this IRM instance complies with the minimum
discoverability rules, then the DDMS card must specify the
language of
      the referenced resource.
      </sch:assert>
      </sch:rule>
</sch:pattern>
```

2.28 - ../Rules/xlinkConstraints/IRM_ID_00036.sch

Rule Description: IRM-ID-00036 [IRM-ID-00036][Error] For any element, if any attribute is specified with the xlink namespace [http://www.w3.org/1999/xlink], then attributes @xlink:type and/or @xlink:href must be specified. Human Readable: If any XLink attributes are specified for an element, then the type and/or URL of the link must also be specified.

Code Description: Makes sure that for each element that has any attribute in the xlink namespace has either xlink:type or xlink:href specified.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00036">

    <sch:rule context="*[@xlink:*]">
        <sch:assert test="normalize-
space(string(@xlink:type))    or normalize-space(string(@xlink:href))"
            flag="error">
            [IRM-ID-00036][Error] For any element, if any attribute is
            specified with the
            xlink namespace [http://www.w3.org/1999/xlink], then attributes
            @xlink:type and/or
            @xlink:href must be specified.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.29 - ./Rules/ddmsConstraints/IRM_ID_00037.sch

Rule Description: IRM-ID-00037 [IRM-ID-00037][Error] For elements ddms:creator, ddms:publisher, ddms:contributor, and ddms:pointOfContact, if the attribute ism:pocType is specified with a value of [ORCON], then the element ddms:phone must be specified with a non-whitespace value. Human Readable: Elements ddms:creator, ddms:publisher, ddms:contributor, and ddms:pointOfContact must specify a phone number if they are denoted as the POC for an ORIGINATOR CONTROLLED data.

Code Description: For elements ddms:creator, ddms:publisher, ddms:contributor, and ddms:pointOfContact which specify attribute ism:pocType with a value of [ORCON], we make sure that a decendent element specifies element ddms:phone with a non-whitespace value.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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available for use without restriction.
-->
<sch:pattern id="IRM-ID-00037">

      <sch:rule
context="ddms:creator[util:containsAnyOfTheTokens(@ism:pocType, ('ORCON'))]
|
ddms:publisher[util:containsAnyOfTheTokens(@ism:pocType, ('ORCON'))]
|
ddms:contributor[util:containsAnyOfTheTokens(@ism:pocType, ('ORCON'))]
|
ddms:pointOfContact[util:containsAnyOfTheTokens(@ism:pocType, ('ORCON'))]">
      <sch:assert test="normalize-
space(string(descendant::ddms:phone[1]))" flag="error">
[IRM-ID-00037][Error]
      For elements ddms:creator, ddms:publisher, ddms:contributor,
and ddms:pointOfContact, if the attribute ism:pocType is
specified with
      a value of [ORCON], then the element ddms:phone must be specified
with a
      non-whitespace value.

      Human Readable: Elements ddms:creator, ddms:publisher,
ddms:contributor,
      and ddms:pointOfContact must specify a phone number if they are
denoted as the POC for an ORIGINATOR CONTROLLED data.
      </sch:assert>
      </sch:rule>
</sch:pattern>
```

2.30 - ./Rules/ddmsConstraints/IRM_ID_00038.sch

Rule Description: IRM-ID-00038 [IRM-ID-00038][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:resource must specify at least one element ddms:publisher. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify the publisher of the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:resource specifies at least one element ddms:publisher.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00038">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
        <sch:assert test="ddms:publisher" flag="error">
            [IRM-ID-00038][Error] If MIN_DISCOVERABLE_OR_GREATER, element
ddms:resource
            must specify at least one element ddms:publisher.

            Human Readable: If this IRM instance complies with the minimum
discoverability rules, then the DDMS card must specify the
publisher of
            the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.31 - ./Rules/ddmsConstraints/IRM_ID_00039.sch

Rule Description: IRM-ID-00039 [IRM-ID-00039][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:subjectCoverage must specify at least one element ddms:productionMetric. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify a production metric of the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:subjectCoverage specifies at least one element ddms:productionMetric.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
    This document has been approved for Public Release and is
    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00039">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
        <sch:assert test="//ddms:subjectCoverage/
ddms:productionMetric" flag="error">
            [IRM-ID-00039][Error] If MIN_DISCOVERABLE_OR_GREATER, element
            ddms:subjectCoverage must specify at least one element
            ddms:productionMetric.

            Human Readable: If this IRM instance complies with the minimum
            discoverability rules, then the DDMS card must specify a
            production metric
            of the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.32 - ./Rules/ismConstraints/IRM_ID_00040.sch

Rule Description: IRM-ID-00040 [IRM-ID-00040][Error] If element ddms:type is specified with a qualifier of [urn:us:gov:ic:cenum:irm:activity], then attribute ism:classification must also be specified.

Code Description: For each ddms:type element which specifies attribute ddms:qualifier with a value of [urn:us:gov:ic:cenum:irm:activity], we make sure that attribute ism:classification is specified.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
    This document has been approved for Public Release and is
    available for use without restriction.
-->
<sch:pattern is-a="IsmEnforcement" id="IRM-ID-00040">

    <sch:param name="ruleText"
                value="'[IRM-ID-00040][Error]          If element
ddms:type is specified with a qualifier of
[urn:us:gov:ic:cenum:irm:activity], then          attribute
ism:classification must also be specified.'"/>
    <sch:param name="codeDesc"
                value="'          For each ddms:type element
which specifies attribute ddms:qualifier with          a value of
[urn:us:gov:ic:cenum:irm:activity],          we make sure that attribute
ism:classification is specified.'"/>

    <sch:param name="context"
value="ddms:type[@ddms:qualifier='urn:us:gov:ic:cenum:irm:activity']"/>
    <sch:param name="errMsg"
                value="'          [IRM-ID-00040][Error]
If element ddms:type is specified with a qualifier of
[urn:us:gov:ic:cenum:irm:activity], then          attribute
ism:classification must also be specified.'"/>
    </sch:pattern>
```


2.33 - ./Rules/ismConstraints/IRM_ID_00041.sch

Rule Description: IRM-ID-00041 IRM-ID-00041][Error] If element ddms:type is specified with a qualifier of [urn:us:gov:ic:irm:intel:disciplines], then attribute ism:classification must also be specified.

Code Description: For each ddms:type element which specifies attribute ddms:qualifier with a value of [urn:us:gov:ic:irm:intel:disciplines], we make sure that attribtue ism:classification is specified.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="IsmEnforcement" id="IRM-ID-00041">

    <sch:param name="ruleText"
                value="'[IRM-ID-00041][Error]          If element
ddms:type is specified with a qualifier of
[urn:us:gov:ic:irm:intel:disciplines], then          attribute
ism:classification must also be specified.'"/>
    <sch:param name="codeDesc"
                value="'          For each ddms:type element
which specifies attribute ddms:qualifier with          a value of
[urn:us:gov:ic:irm:intel:disciplines],          we make sure that attribtue
ism:classification is specified.'"/>

    <sch:param name="context"
value="ddms:type[@ddms:qualifier='urn:us:gov:ic:irm:intel:disciplines']"/>
    <sch:param name="errMsg"
                value="'          [IRM-ID-00041][Error]
If element ddms:type is specified with a qualifier of
[urn:us:gov:ic:irm:intel:disciplines], then          attribute
ism:classification must also be specified.          '"/>
    </sch:pattern>
```

2.34 - ./Rules/ismConstraints/IRM_ID_00042.sch

Rule Description: IRM-ID-00042 [IRM-ID-00042][Error] If element ddms:type is specified with a qualifier of [urn:us:gov:ic:cenum:irm:intel:subdisciplines], then attribute ism:classification must also be specified.

Code Description: For each ddms:type element which specifies attribute ddms:qualifier with a value of [urn:us:gov:ic:cenum:irm:intel:subdisciplines], we make sure that attribtue ism:classification is specified.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="IsmEnforcement" id="IRM-ID-00042">

    <sch:param name="ruleText"
        value="'[IRM-ID-00042][Error]          If element
ddms:type is specified with a qualifier of
[urn:us:gov:ic:cenum:irm:intel:subdisciplines], then          attribute
ism:classification must also be specified.'"/>
    <sch:param name="codeDesc"
        value="'          For each ddms:type element
which specifies attribute ddms:qualifier with          a value of
[urn:us:gov:ic:cenum:irm:intel:subdisciplines],          we make sure that
attribtue ism:classification is specified.'"/>

    <sch:param name="context"
value="ddms:type[@ddms:qualifier='urn:us:gov:ic:cenum:irm:intel:subdiscipline
s']"/>
    <sch:param name="errMsg"
        value="'          [IRM-ID-00042][Error]
If element ddms:type is specified with a qualifier of
[urn:us:gov:ic:cenum:irm:intel:subdisciplines], then          attribute
ism:classification must also be specified.          '"/>
    </sch:pattern>
```

2.35 - ./Rules/ismConstraints/IRM_ID_00043.sch

Rule Description: IRM-ID-00043 If element ddms:type is specified with a qualifier of [urn:us:gov:ic:cenum:irm:intel:subdisciplinetechnique], then attribute ism:classification must also be specified.'

Code Description: For each ddms:type element which specifies attribute ddms:qualifier with a value of [urn:us:gov:ic:cenum:irm:intel:subdisciplinetechnique], we make sure that attribtue ism:classification is specified.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="IsmEnforcement" id="IRM-ID-00043">

    <sch:param name="ruleText"
                value="'[IRM-ID-00043][Error]                If element
ddms:type is specified with a qualifier of
[urn:us:gov:ic:cenum:irm:intel:subdisciplinetechnique], then
attribute ism:classification must also be specified.'"/>

    <sch:param name="codeDesc"
                value="'                For each ddms:type element
which specifies attribute ddms:qualifier with                a value of
[urn:us:gov:ic:cenum:irm:intel:subdisciplinetechnique],                we make sure
that attribtue ism:classification is specified.'"/>

    <sch:param name="context"
value="ddms:type[@ddms:qualifier='urn:us:gov:ic:cenum:irm:intel:subdiscipline
technique']"/>

    <sch:param name="errMsg"
                value="'                [IRM-ID-00043][Error]
If element ddms:type is specified with a qualifier of
[urn:us:gov:ic:cenum:irm:intel:subdisciplinetechnique], then
attribute ism:classification must also be specified.                '"/>
</sch:pattern>
```

2.36 - ./Rules/ismConstraints/IRM_ID_00044.sch

Rule Description: IRM-ID-00044 [IRM-ID-00044][Error] If element ddms:type is specified with a qualifier of [urn:us:gov:ic:irm:productline] then attribute ism:classification must also be specified.

Code Description: For each ddms:type element which specifies attribute ddms:qualifier with a value of [urn:us:gov:ic:irm:productline], we make sure that attribtue ism:classification is specified.'

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
    This document has been approved for Public Release and is
    available for use without restriction.
-->
<sch:pattern is-a="IsmEnforcement" id="IRM-ID-00044">

    <sch:param name="ruleText"
        value="'[IRM-ID-00044][Error]          If element
ddms:type is specified with a qualifier of
[urn:us:gov:ic:irm:productline] then attribute ism:classification
must      also be specified.'"/>

    <sch:param name="codeDesc"
        value="'          For each ddms:type element
which specifies attribute ddms:qualifier with      a value of
[urn:us:gov:ic:irm:productline], we make sure that attribtue
ism:classification is specified.'"/>

    <sch:param name="context"
value="ddms:type[@ddms:qualifier='urn:us:gov:ic:irm:productline']"/>
    <sch:param name="errMsg"
        value="'          [IRM-ID-00044][Error]
If element ddms:type is specified with a qualifier of
[urn:us:gov:ic:irm:productline] then attribute ism:classification
must      also be specified.      '"/>
    </sch:pattern>
```

2.37 - ./Rules/ismConstraints/IRM_ID_00045.sch

Rule Description: IRM-ID-00045 [IRM-ID-00045][Error] Element ddms:geospatialCoverage must have ISM classification markings.

Code Description: For each ddms:geospatialCoverage element, we make sure that attribute ism:classification is specified.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00045">

    <sch:rule context="ddms:geospatialCoverage">
        <sch:assert test="@ism:classification" flag="error">
            [IRM-ID-00045][Error] Element ddms:geospatialCoverage must have
ISM        classification markings.
        </sch:assert>
        </sch:rule>
    </sch:pattern>
```

2.38 - ./Rules/valueEnumerationConstraints/ IRM_ID_00046.sch

Rule Description: IRM-ID-00046 [IRM-ID-00046][Error] If element ddms:type has attribute @ddms:qualifier specified as [urn:us:gov:ic:cvenum:irm:intel:subdisciplinetechniques] the attribute @ddms:value must be in CVENumIRMIntelSubDisciplineTechniques.xml. Human Readable: Intel Sub Discipline Techniques must be in the CVENumIRMIntelSubDisciplineTechniques CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00046">

    <sch:param name="ruleText"
        value="" [IRM-ID-00046][Error]
    If element ddms:type has attribute @ddms:qualifier specified as
    [urn:us:gov:ic:cvenum:irm:intel:subdisciplinetechniques] the
    attribute @ddms:type must be in
    CVENumIRMIntelSubDisciplineTechniques.xml. Human Readable:
    Intel Sub Discipline Techniques must be in the
    CVENumIRMIntelSubDisciplineTechniques CVE.
    "/>

    <sch:param name="codeDesc"
        value="" This rule uses an abstract
    pattern to consolidate logic. It checks that the value in parameter
    $searchTerm is contained in the parameter $list. The parameter
    $searchTerm is relative in scope to the parameter $context. The value for the
    parameter $list is a variable defined in the main document
    (IRM_XML.sch), which reads values from a specific CVE file.
    "/>

    <sch:param name="context"
    value="ddms:type[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:intel:subdiscipline
    techniques']"/>

    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list"
    value="$subDisciplineTechniquesList"/>
    <sch:param name="errMsg"
```

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```
value=" ' [IRM-ID-00046][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:intel:subdisciplinetechniques] the
attribute @ddms:type must be in
CVEnumIRMIntelSubDisciplineTechniques.xml. Human Readable:
Intel Sub Discipline Techniques must be in the
CVEnumIRMIntelSubDisciplineTechniques CVE. '"/>
</sch:pattern>
```

2.39 - ./Rules/valueEnumerationConstraints/ IRM_ID_00047.sch

Rule Description: IRM-ID-00047 [IRM-ID-00047][Error] If element ddms:type has attribute @ddms:qualifier specified as [urn:us:gov:ic:cvenum:irm:intel:subdisciplines] the attribute @ddms:value must be in CVENumIRMIntelSubDisciplines.xml. Human Readable: Intel Sub Disciplines must be in the CVENumIRMIntelSubDisciplines CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00047">

    <sch:param name="ruleText"
        value="' [IRM-ID-00047][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:intel:subdisciplines] the attribute
@ddms:value must be in CVENumIRMIntelSubDisciplines.xml.
Human Readable: Intel Sub Disciplines must be in the
CVENumIRMIntelSubDisciplines CVE.'"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
'"/>

    <sch:param name="context"
value="ddms:type[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:intel:subdiscipline
s']"/>

    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list" value="$intelSubDisciplinesList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00047][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:intel:subdisciplines] the attribute
```

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```
@ddms:value must be in CVEnumIRMIntelSubDisciplines.xml.  
Human Readable: Intel Sub Disciplines must be in the  
CVEnumIRMIntelSubDisciplines CVE.          '"/>  
        </sch:pattern>
```

2.40 - ./Rules/valueEnumerationConstraints/ IRM_ID_00048.sch

Rule Description: IRM-ID-00048 [IRM-ID-00048][Error] If element ddms:type has attribute @ddms:qualifier specified as [urn:us:gov:ic:cvenum:irm:intel:disciplines] the attribute @ddms:value must be in CVENumIRMIntelDisciplines.xml. Human Readable: Intel Disciplines must be in the CVENumIRMIntelDisciplines CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00048">

    <sch:param name="ruleText"
        value="' [IRM-ID-00048][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:intel:disciplines] the attribute
@ddms:value must be in CVENumIRMIntelDisciplines.xml. Human
Readable: Intel Disciplines must be in the CVENumIRMIntelDisciplines
CVE.' "/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
' "/>

    <sch:param name="context"
value="ddms:type[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:intel:disciplines']
"/>

    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list" value="$intelDisciplinesList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00048][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:intel:disciplines] the attribute
```

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National Intelligence. See 'Distribution Notice' for details.

```
@ddms:value must be in CVEnumIRMIntelDisciplines.xml. Human
Readable: Intel Disciplines must be in the CVEnumIRMIntelDisciplines
CVE.      '"/>
          </sch:pattern>
```

2.41 - ./Rules/valueEnumerationConstraints/ IRM_ID_00049.sch

Rule Description: IRM-ID-00049 [IRM-ID-00049][Error] If element ddms:subDivisionCode has attribute @ddms:qualifier specified as [urn:us:gov:ic:cvenum:irm:coverage:iso3166-2:subcountry] the attribute @ddms:value must be in CVEnumIRMCoverageISO3166-2SubCountry.xml. Human Readable: ISO 3166-2 Sub Country codes must be in the CVEnumIRMCoverageISO3166-2SubCountry CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00049">

    <sch:param name="ruleText"
        value="' [IRM-ID-00049][Error]
If element ddms:subDivisionCode has attribute @ddms:qualifier specified
as [urn:us:gov:ic:cvenum:irm:coverage:iso3166-2:subcountry]
the attribute @ddms:value must be in
CVEnumIRMCoverageISO3166-2SubCountry.xml. Human Readable:
ISO 3166-2 Sub Country codes must be in the
CVEnumIRMCoverageISO3166-2SubCountry CVE.' "/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
' "/>

    <sch:param name="context"
value="ddms:subDivisionCode[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:coverage
:iso3166-2:subcountry']"/>
    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list"
value="$coverageIso3166-2SubCountryList"/>
    <sch:param name="errMsg"
```

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National Intelligence. See 'Distribution Notice' for details.

```
value=" ' [IRM-ID-00049][Error]
If element ddms:subDivisionCode has attribute @ddms:qualifier specified
as [urn:us:gov:ic:cenum:irm:coverage:iso3166-2:subcountry]
the attribute @ddms:value must be in
CVEnumIRMCoverageISO3166-2SubCountry.xml. Human Readable:
ISO 3166-2 Sub Country codes must be in the
CVEnumIRMCoverageISO3166-2SubCountry CVE. ' "/>
</sch:pattern>
```

2.42 - ./Rules/valueEnumerationConstraints/ IRM_ID_00050.sch

Rule Description: IRM-ID-00050 [IRM-ID-00050][Error] For element ddms:productionsMetrics, attribute @ddms:subject must be in CVENumIRMProductionMetricsSubject.xml. Human Readable: Production Metric Subjects must be in the CVENumIRMProductionMetricsSubject CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:


```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00050">

    <sch:param name="ruleText"
        value="' [IRM-ID-00050][Error]
For element ddms:productionsMetrics, attribute @ddms:subject must be
in CVENumIRMProductionMetricsSubject.xml. Human Readable:
Production Metric Subjects must be in the
CVENumIRMProductionMetricsSubject CVE. '"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
'"/>

    <sch:param name="context"
value="ddms:productionMetric[@ddms:subject]"/>
    <sch:param name="searchTerm" value="@ddms:subject"/>
    <sch:param name="list"
value="$productionMetricsSubjectList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00050][Error]
For element ddms:productionsMetrics, attribute @ddms:subject must be
in CVENumIRMProductionMetricsSubject.xml. Human Readable:
Production Metric Subjects must be in the
CVENumIRMProductionMetricsSubject CVE. '"/>
```

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National Intelligence. See 'Distribution Notice' for details.



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

2.43 - ./Rules/valueEnumerationConstraints/ IRM_ID_00051.sch

Rule Description: IRM-ID-00051 [IRM-ID-00051][Error] For element ddms:productionsMetrics, attribute @ddms:coverage must be in CVENumIRMPProductionMetricsCoverage.xml. Human Readable: Production Metric Coverage values must be in the CVENumIRMPProductionMetricsCoverage CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:


```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00051">

    <sch:param name="ruleText"
        value=" ' [IRM-ID-00051][Error]
For element ddms:productionsMetrics, attribute @ddms:coverage must
be in CVENumIRMPProductionMetricsCoverage.xml. Human
Readable: Production Metric Coverage values must be in the
CVENumIRMPProductionMetricsCoverage CVE. '"/>

    <sch:param name="codeDesc"
        value=" ' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
' "/>

    <sch:param name="context"
value="ddms:productionMetric[@ddms:coverage]"/>
    <sch:param name="searchTerm" value="@ddms:coverage"/>
    <sch:param name="list"
value="$productionMetricsCoverageList"/>
    <sch:param name="errMsg"
        value=" ' [IRM-ID-00051][Error]
For element ddms:productionsMetrics, attribute @ddms:coverage must
be in CVENumIRMPProductionMetricsCoverage.xml. Human
Readable: Production Metric Coverage values must be in the
CVENumIRMPProductionMetricsCoverage CVE. '"/>
```

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National Intelligence. See 'Distribution Notice' for details.



`</sch:pattern>`

2.44 - ./Rules/valueEnumerationConstraints/IRM_ID_00052.sch

Rule Description: IRM-ID-00052 [IRM-ID-00052][Error] If element ddms:organization has attribute @ddms:acronym specified, then the value must be in CVEnumIRMAgencyAcronym.xml. Human Readable: Agency acronyms must be in the CVEnumIRMAgencyAcronym CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.


Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00052">

    <sch:param name="ruleText"
        value="' [IRM-ID-00052][Error]
If element ddms:organization has attribute @ddms:acronym specified,
then the value must be in CVEnumIRMAgencyAcronym.xml.                Human
Readable: Agency acronyms must be in the CVEnumIRMAgencyAcronym CVE.
'"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
'"/>

    <sch:param name="context"
value="ddms:organization[@ddms:acronym]"/>
    <sch:param name="searchTerm" value="@ddms:acronym"/>
    <sch:param name="list" value="$agencyAcronymList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00052][Error]
If element ddms:organization has attribute @ddms:acronym specified,
then the value must be in CVEnumIRMAgencyAcronym.xml.                Human
Readable: Agency acronyms must be in the CVEnumIRMAgencyAcronym CVE.
'"/>
```



`</sch:pattern>`

2.45 - ./Rules/valueEnumerationConstraints/ IRM_ID_00053.sch

Rule Description: IRM-ID-00053 [IRM-ID-00053][Error] If element ddms:type has attribute @ddms:qualifier specified as [urn:us:gov:ic:cvenum:irm:activity] the attribute @ddms:value must be in CVENumIRMAActivity.xml. Human Readable: Activity must be in the CVENumIRMAActivity CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00053">

    <sch:param name="ruleText"
        value="' [IRM-ID-00053][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:activity] the attribute @ddms:type must be
in CVENumIRMAActivity.xml. Human Readable: Activity must be
in the CVENumIRMAActivity CVE. '"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
'"/>

    <sch:param name="context"
value="ddms:type[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:activity']"/>
    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list" value="$activityList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00053][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:activity] the attribute @ddms:type must be
in CVENumIRMAActivity.xml. Human Readable: Activity must be
in the CVENumIRMAActivity CVE. '"/>
</sch:pattern>
```


2.46 - ./Rules/valueEnumerationConstraints/ IRM_ID_00054.sch

Rule Description: IRM-ID-00054 [IRM-ID-00054][Error] If element ddms:geospatialCoverage has attribute @ddms:precedence specified, then the value must be in CVEnumIRMCoveragePrecedence.xml. Human Readable: ddms:geospatialCoverage/@ddms:precedence must be in the CVEnumIRMCoveragePrecedence CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.


Schematron Code:

```
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00054">

    <sch:param name="ruleText"
        value=" ' [IRM-ID-00054][Error]
If element ddms:geospatialCoverage has attribute @ddms:precedence
specified, then the value must be in
CVEnumIRMCoveragePrecedence.xml. Human Readable:
ddms:geospatialCoverage/@ddms:precedence must be in the
CVEnumIRMCoveragePrecedence CVE. '"/>

    <sch:param name="codeDesc"
        value=" ' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
'"/>

    <sch:param name="context"
value="ddms:geospatialCoverage[@ddms:precedence]"/>
    <sch:param name="searchTerm" value="@ddms:precedence"/>
    <sch:param name="list" value="$coveragePrecedenceList"/>
    <sch:param name="errMsg"
        value=" ' [IRM-ID-00054][Error]
If element ddms:geospatialCoverage has attribute @ddms:precedence
specified, then the value must be in
CVEnumIRMCoveragePrecedence.xml. Human Readable:
ddms:geospatialCoverage/@ddms:precedence must be in the
CVEnumIRMCoveragePrecedence CVE. '"/>
```



`</sch:pattern>`

2.47 - ./Rules/ddmsConstraints/IRM_ID_00055.sch

Rule Description: IRM-ID-00055 [IRM-ID-00055][Error] If ddms:geospatialCoverage/@order is specified then there must be one and only one of ddms:geospatialIdentifier/ddms:countryCode or ddms:geospatialIdentifier/ddms:subDivisionCode. Human Readable: A single order value must be applied to one country code or one subdivision code but not to both.

Code Description: Make sure that there is only one ddms:countryCode or order ddms:subDivisionCode when ddms:geospatialCoverage uses the order attribute.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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-->
<sch:pattern id="IRM-ID-00055">

    <sch:rule context="ddms:geospatialCoverage[@ddms:order]">
        <sch:assert id="IRM-00055"
            test="count(ddms:geographicIdentifier/
ddms:countryCode) + count(ddms:geographicIdentifier/ddms:subDivisionCode) = 1"
            flag="error">
            [IRM-ID-00055][Error] If ddms:geospatialCoverage/@order is
specified then
            there must be one and only one of ddms:geospatialIdentifier/
ddms:countryCode or
            ddms:geospatialIdentifier/ddms:subDivisionCode. Human Readable: A
single order value
            must be applied to one country code or one subdivision code
        </sch:assert>
    </sch:rule>
</sch:pattern>
```


2.48 - ./Rules/ddmsConstraints/IRM_ID_00056.sch

Rule Description: IRM-ID-00056 [IRM-ID-00056][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:resource must specify at least one element ddms:title. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify the title of the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:resource specifies at least one element ddms:title.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00056">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
        <sch:assert test="ddms:title" flag="error">
            [IRM-ID-00056][Error] If MIN_DISCOVERABLE_OR_GREATER, element
            ddms:resource must specify at least one element ddms:title.

            Human Readable: If this IRM instance complies with the minimum
            discoverability rules, then the DDMS card must specify the title
            of the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.49 - ./Rules/ddmsConstraints/IRM_ID_00059.sch

Rule Description: IRM-ID-00059 [IRM-ID-00059][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:resource must specify at least one element ddms:subjectCoverage. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify a subjectCoverage of the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:resource specifies at least one element ddms:subjectCoverage.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00059">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
        <sch:assert test="ddms:subjectCoverage" flag="error">
            [IRM-ID-00059][Error] If MIN_DISCOVERABLE_OR_GREATER, element
            ddms:resource must specify at least one element
            ddms:subjectCoverage.

            Human Readable: If this IRM instance complies with the minimum
            discoverability rules, then the DDMS card must specify a
            subjectCoverage
            of the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.50 - ./Rules/ddmsConstraints/IRM_ID_00061.sch

Rule Description: IRM-ID-00061 [IRM-ID-00061][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:resource must specify at least one of the following elements: ddms:creator, ddms:publisher, ddms:contributor, or ddms:pointOfContact. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify a creator, publisher, contributor, or pointOfContact for the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:resource specifies at least one of the following elements: ddms:creator, ddms:publisher, ddms:contributor, or ddms:pointOfContact.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00061">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
    <sch:assert test="ddms:publisher or ddms:creator or
ddms:contributor or ddms:pointOfContact"
        flag="error">
        [IRM-ID-00061][Error] If MIN_DISCOVERABLE_OR_GREATER, element
        ddms:resource must specify at least one of the following elements:
        ddms:creator, ddms:publisher, ddms:contributor, or
ddms:pointOfContact.

        Human Readable: If this IRM instance complies with the minimum
        discoverability rules, then the DDMS card must specify a creator,
        publisher, contributor, or pointOfContact for the referenced
resource.
    </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.51 - ./Rules/ddmsConstraints/IRM_ID_00062.sch

Rule Description: IRM-ID-00062 [IRM-ID-00062][Error] The value of an IC-ID identifier must follow standardized convention.

Code Description: When IC-ID is specified as the value of ddms:identifier/@ddms:qualifier, @ddms:value should follow the regex [Gg][Uu][Ii][Dd][Ee]://[0-9]{4}/[A-Za-z0-9_-\.\.]{1,43}

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
    -->
<sch:pattern id="IRM-ID-00062">

    <sch:rule context="ddms:identifier[@ddms:qualifier='IC-
ID']">
        <sch:let name="icidRegEx"
            value="'[Gg][Uu][Ii][Dd][Ee]://[0-9]{4}/[A-Za-
z0-9_-\.\.]{1,43}'"/>
        <sch:assert test="matches(string(@ddms:value),
$icidRegEx)" flag="error">
            [IRM-ID-00062][Error] The value of an IC-ID identifier must
follow
            standardized convention.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.52 - ./Rules/ddmsConstraints/IRM_ID_00063.sch

Rule Description: IRM-ID-00063 [IRM-ID-00063][Error] Element ddms:resource/ddms:creator/ddms:organization must specify attribute @ddms:acronym. Human Readable: The DDMS card must specify the creator organization of the referenced resource.

Code Description: We make sure that element ddms:resource/ddms:creator/ddms:organization exists and specifies attribute @ddms:acronym.

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00063">

    <sch:rule context="ddms:resource">
        <sch:assert test="ddms:creator/ddms:organization/
@ddms:acronym" flag="error">
            [IRM-ID-00063][Error] Element
            ddms:resource/ddms:creator/ddms:organization must specify
attribute
            @ddms:acronym.

            Human Readable: The DDMS card must specify the creator
organization of
            the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.53 - ./Rules/ddmsConstraints/IRM_ID_00064.sch

Rule Description: IRM-ID-00064 [IRM-ID-00064][Error] Element ddms:resource/ddms:dates must specify attribute @ddms:created. Human Readable: The DDMS card must specify the date on which the referenced resource was created.

Code Description: We make sure that element ddms:resource/ddms:dates exists and specifies attribute @ddms:created.

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00064">

    <sch:rule context="ddms:resource">
        <sch:assert test="ddms:dates/@ddms:created" flag="error">
[IRM-ID-00064][Error] Element ddms:resource/ddms:dates must
specify
        attribute @ddms:created.

        Human Readable: The DDMS card must specify the date on which the
        referenced resource was created.
    </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.54 - ./Rules/ddmsConstraints/IRM_ID_00065.sch

Rule Description: IRM-ID-00065 [IRM-ID-00065][Error] Attribute ddms:resource/ddms:dates/@ddms:created must be castable as an xs:dateTime type. Human Readable: The date on which the referenced resource was created must be a dateTime type.

Code Description: We make sure that attribute dms:resource/ddms:dates/@ddms:created is castable as an xs:dateTime type.

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00065">

    <sch:rule context="ddms:resource/ddms:dates[@ddms:created]">
        <sch:assert test="@ddms:created castable as xs:dateTime"
flag="error">
        [IRM-ID-00065][Error] Attribute ddms:resource/ddms:dates/
@ddms:created
        must be castable as an xs:dateTime type.

        Human Readable: The date on which the referenced resource was
created
        must be a dateTime type.
    </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.55 - ./Rules/ddmsConstraints/IRM_ID_00066.sch

Rule Description: IRM-ID-00066 [IRM-ID-00066][Error] For element ddms:security/ddms:noticeList, element ism:Notice must specify attribute ism:externalNotice with a value of [true]. Human Readable: Notices within a ddms:security element always refer to the referenced resource.

Code Description: For element ddms:security/ddms:noticeList/ism:Notice, we make sure that it specifies attribute ism:externalNotice with a value of [true].

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00066">

    <sch:rule context="ddms:security/ddms:noticeList/
ism:Notice">
        <sch:assert test="@ism:externalNotice = true()"
flag="error">
            [IRM-ID-00066][Error] For element ddms:security/ddms:noticeList,
element ism:Notice
            must specify attribute ism:externalNotice with a value of [true].

            Human Readable: Notices within a ddms:security element always
refer
            to the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```


2.56 - ./Rules/ddmsConstraints/IRM_ID_00067.sch

Rule Description: IRM-ID-00067 [IRM-ID-00067][Error] For element ddms:security, element ntk:Access must specify attribute ntk:externalReference with a value of [true]. Human Readable: NTK information within a ddms:security element always refers to the referenced resource.

Code Description: For element ddms:security/ntk:Access, we make sure that it specifies attribute ntk:externalReference with a value of [true].

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00067">

    <sch:rule context="ddms:security/ntk:Access">
        <sch:assert test="@ntk:externalReference = true()"
flag="error">
    [IRM-ID-00067][Error] For element ddms:security, element
ntk:Access
    must specify attribute ntk:externalReference with a value of
[true].

    Human Readable: NTK information within a ddms:security element
always
    refers to the referenced resource.
    </sch:assert>
    </sch:rule>
    </sch:pattern>
```

2.57 - ./Rules/ddmsConstraints/IRM_ID_00068.sch

Rule Description: IRM-ID-00068 [IRM-ID-00068][Error] For element ddms:taskID, if attribute xlink:href exists, then the attribute must have a non-null value.

Code Description: The normalize-spaced value of attribute xlink:href is checked to make sure the length of the resulting string is greater than zero, which indicates non-whitespace content.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00068">

    <sch:rule context="ddms:taskID[@xlink:href]">
        <sch:assert test="normalize-space(string(@xlink:href))"
flag="error">
            [IRM-ID-00068][Error]
            For element ddms:taskID if attribute xlink:href exists, then the
attribute must have
            a non-null value.
        </sch:assert>
    </sch:rule>

</sch:pattern>
```

2.58 - ./Rules/ddmsConstraints/IRM_ID_00069.sch

Rule Description: IRM-ID-00069 [IRM-ID-00069][Error] If attribute network is not specified for element ddms:taskID, which allows the attribute, then attribute otherNetwork must not be specified for the same element.

Code Description: If element ddms:taskID does not have attribute network specified and does have attribute otherNetwork specified, then return false.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00069">

    <sch:rule context="ddms:taskID">
        <sch:assert test="
@otherNetwork)          if(not(@network) and
                        then false()          else true())"
                        flag="error">
        [IRM-ID-00069][Error]
        If attribute network is not specified for element ddms:taskID,
        which allows the
        attribute, then attribute otherNetwork must not be specified for
        the same element.
        </sch:assert>
    </sch:rule>

</sch:pattern>
```

2.59 - ./Rules/valueEnumerationConstraints/ IRM_ID_00070.sch

Rule Description: IRM-ID-00070 [IRM-ID-00070][Error] If element ddms:type has attribute @ddms:qualifier specified as [urn:us:gov:ic:cvenum:irm:executableindicator] the attribute @ddms:value must be in CVENumIRMExecutableIndicator.xml. Human Readable: Executable Indicator Value must be in the CVENumIRMExecutableIndicator CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00070">


    <sch:param name="ruleText"
               value="' [IRM-ID-00070][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:executableindicator] the attribute
@ddms:type must be in CVENumIRMExecutableIndicator.xml.
Human Readable: Executable Indicator Value must be in the
CVENumIRMExecutableIndicator CVE. '"/>

    <sch:param name="codeDesc"
               value="' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
'"/>

    <sch:param name="context"
               value="ddms:type[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:executableindicator
']"/>

    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list" value="$executableIndicatorList"/>
    <sch:param name="errMsg"
               value="' [IRM-ID-00070][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:executableindicator] the attribute
@ddms:type must be in CVENumIRMExecutableIndicator.xml.
Human Readable: Executable Indicator Value must be in the
CVENumIRMExecutableIndicator CVE. '"/>
```

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`</sch:pattern>`

2.60 - ./Rules/valueEnumerationConstraints/ IRM_ID_00071.sch

Rule Description: IRM-ID-00071 [IRM-ID-00071][Error] If element ddms:type has attribute @ddms:qualifier specified as [urn:us:gov:ic:cvenum:irm:maliciouscodeindicator] the attribute @ddms:value must be in CVENumIRMMaliciousCodeIndicator.xml. Human Readable: Malicious Code Indicator values must be in the CVENumIRMMaliciousCodeIndicator CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.

Schematron Code:

```
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00071">


    <sch:param name="ruleText"
                value="' [IRM-ID-00071][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:maliciouscodeindicator] the attribute
@ddms:type must be in CVENumIRMMaliciousCodeIndicator.xml.
Human Readable: Malicious Code Indicator values must be in the
CVENumIRMMaliciousCodeIndicator CVE.
'"/>

    <sch:param name="codeDesc"
                value="' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
'"/>

    <sch:param name="context"
                value="ddms:type[@ddms:qualifier='urn:us:gov:ic:cvenum:irm:maliciouscodeindica
tor']"/>

    <sch:param name="searchTerm" value="@ddms:value"/>
    <sch:param name="list" value="$maliciousCodeIndicatorList"/>
    <sch:param name="errMsg"
                value="' [IRM-ID-00071][Error]
If element ddms:type has attribute @ddms:qualifier specified as
[urn:us:gov:ic:cvenum:irm:maliciouscodeindicator] the attribute
@ddms:type must be in CVENumIRMMaliciousCodeIndicator.xml.
Human Readable: Malicious Code Indicator values must be in the
CVENumIRMMaliciousCodeIndicator CVE.
'"/>
```

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`</sch:pattern>`

Chapter 3 - Abstract Patterns

All of the Abstract Patterns for IRM are listed in this section. These patterns may depend strongly on variables defined in the Schematron Schema section.

3.1 - ../Lib/CompareDateTimes.sch

Rule Description: CompareDateTimes

Code Description:

Schematron Code:

```
<?ICEA abstractPattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
--><!--
    $context := an xpath to an element
    $primaryDate := an xpath, relative to $context, to a date to compare
    against all dates in $secondaryDateList
    $secondaryDateList := a list of xpaths, relative to $context, each to a
    dates in which to compare against $primaryDate
    $operator := the equality operator to use for comparing each date in
    $secondaryDateList to $primaryDate

    First, we make sure that the primaryDate is an allowable date format. If
    the primary date is not a valid
    date format, then we return true because we cannot guarantee the value
    provided is not allowed. Then, for
    each date in $secondaryDateList we perform the same check for a valid
    date format and compare the
    secondaryDate to the primaryDate. To perform comparisons between dates,
    we use the comparison operator
    contained in the param $operator and make sure that all comparisons
    between primary and secondary dates
    returns true.
-->
<sch:pattern abstract="true" id="CompareDateTimes">

    <sch:rule context="$context">
        <sch:assert test="
            dtf:isAllowableDateTimeFormat(string($primaryDate))
            $secondaryDate in $secondaryDateList satisfies
            if(dtf:isAllowableDateTimeFormat(string($secondaryDate))
            then dtf:compareDateTimeRanges(string($primaryDate), $operator,
            string($secondaryDate))
            else true()
            true()
            "
            flag="warning">
            <sch:value-of select="$ruleText"/>
        </sch:assert>
        <sch:assert test="
            dtf:isAllowableDateTimeFormat(string($primaryDate))
            $secondaryDate in $secondaryDateList satisfies
            if(dtf:isAllowableDateTimeFormat(string($secondaryDate))
            then
            dtf:compareDateTimeRanges(string($primaryDate), $operator,
            string($secondaryDate))
            else true()
            else
```

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```
true()          "  
                flag="error">  
                <sch:value-of select="$ruleText"/>  
            </sch:assert>  
        </sch:rule>  
    </sch:pattern>
```

3.2 - ../Lib/IsmEnforcement.sch

Rule Description: IsmEnforcement

Code Description:

Schematron Code:

```
<?ICEA abstractPattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
--><!--
    This abstract pattern checks that if a particular qualifier is specified
    on a
    ddms:type element that ism:classification is also specified.

    $qualifier      := the qualifier value that requires ism to be present
    $errMsg         := the error message text to display when the assertion fails

    Example usage:
    <sch:pattern is-a="DdmsTypeIsmEnforcement" id="IRM_ID_00039"
xmlns:sch="http://purl.oclc.org/dsdl/schematron">
    <sch:param name="ruleText" value=""/>
    <sch:param name="codeDesc" value=""/>
    <sch:param name="context" value="ddms:type[@ddms:qualifier=$qualifier]"/>
    <sch:param name="errMsg" value="'
    [IRM-ID-00039][Error]
    If ddms:type is specified with a qualifier of
urn:us:gov:ic:irm:productline then
    ism:classification must also be specified.
    '"/>
    </sch:pattern>

    Note: $iso4217TrigraphList is defined in the main document, IRM_XML.xml.
-->
<sch:pattern abstract="true" id="IsmEnforcement">

    <sch:rule context="$context">
        <sch:assert test="@ism:classification" flag="error">
            <sch:value-of select="$errMsg"/>
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

3.3 - ../Lib/ValidateValueExistenceInList.sch

Rule Description: ValidateValueExistenceInList

Code Description:

Schematron Code:

```
<?ICEA abstractPattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
--><!--
    This abstract pattern checks to see if an attribute of an element exists
    in a list.

    $context      := the context in which the searchValue exists
    $searchTerm    := the value which you want to verify is in the list
    $list          := the list in which to search for the searchValue
    $errMsg        := the error message text to display when the assertion fails

    Example usage:
    <sch:pattern is-a="ValidateValueExistenceInList" id="IRM_ID_00027"
xmlns:sch="http://purl.oclc.org/dsdl/schematron">
    <sch:param name="context" value="//
irm:CountryCode[@irm:vocabulary='FIPS']"/>
    <sch:param name="searchTerm" value="."/>
    <sch:param name="list" value="$coverageFipsDigraphList"/>
    <sch:param name="errMsg" value="'
        [IRM-ID-00027][Error]
        If element CountryCode has attribute vocabulary specified as FIPS
        the element value must be in CVEnumIRMCoverageFIPSDigraph.xml.
    '"/>
    </sch:pattern>

    Note: $iso4217TrigraphList is defined in the main document, IRM_XML.xml.
-->
<sch:pattern abstract="true" id="ValidateValueExistenceInList">

    <sch:rule context="$context">
        <sch:assert test="
            $token = $searchTerm or
            matches($searchTerm, concat('^', $token, '$'))
            flag="error">
            <sch:value-of select="$errMsg"/>
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

Chapter 4 - Min Accessible Rules

All of the numbered Rules for IRM that are specifically required for the MIN_ACCESSIBLE compliesWith mode are listed in this section. These rules are also enforced when the compliesWith mode is set to MIN_DISCOVERABLE since that is a super set. There are other rules that could come into play when using MIN_ACCESSIBLE if you add any data that would trigger a rule. This set of rules is called out to help understand what MIN_ACCESSIBLE means. These rules may depend strongly on patterns defined in the Abstract Patterns section or on variables defined in the Schematron Schema section.

4.1 - ../Rules/ddmsConstraints/IRM_ID_00012.sch

Rule Description: IRM-ID-00012 [IRM-ID-00012][Error] There must exist exactly one element ddms:metacardInfo/ddms:identifier which specifies attribute @ddms:qualifier with a value of [IC-ID]. Human Readable: The DDMS card must have a single IC-ID for itself.

Code Description: We make sure that exactly one element ddms:metacardInfo/ddms:identifier specifies attribute @ddms:qualifier with a value of [IC-ID].

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00012">

    <sch:rule context="ddms:metacardInfo">
        <sch:assert test="count(
            $qualifier in ddms:identifier/@ddms:qualifier
            return
            'IC-ID')
            null
            ) = 1"
            flag="error">
            [IRM-ID-00012][Error] There must exist exactly one element
            ddms:metacardInfo/ddms:identifier which specifies attribute
            @ddms:qualifier with a value of [IC-ID].

            Human Readable: The DDMS card must have a single IC-ID for itself.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

4.2 - ../Rules/ddmsConstraints/IRM_ID_00014.sch

Rule Description: IRM-ID-00014 [IRM-ID-00014][Error] There must exist exactly one element ddms:resource/ddms:identifier which specifies attribute @ddms:qualifier with a value of [IC-ID].
 Human Readable: The DDMS card must have exactly one IC-ID for the referenced resource.

Code Description: We make sure that exactly one element ddms:resource/ddms:identifier specifies attribute @ddms:qualifier with a value of [IC-ID].

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00014">

    <sch:rule context="ddms:resource">
        <sch:assert test="count(
            ddms:identifier/@ddms:qualifier return
            space(string($qualifier)) = 'IC-ID')
            1
            else null
            flag="error">
            [IRM-ID-00014][Error] There must exist exactly one element
            ddms:resource/ddms:identifier which specifies attribute
            @ddms:qualifier
            with a value of [IC-ID].

            Human Readable: The DDMS card must have exactly one IC-ID for
            the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

4.3 - ./Rules/valueEnumerationConstraints/IRM_ID_00052.sch

Rule Description: IRM-ID-00052 [IRM-ID-00052][Error] If element ddms:organization has attribute @ddms:acronym specified, then the value must be in CVEnumIRMAgencyAcronym.xml. Human Readable: Agency acronyms must be in the CVEnumIRMAgencyAcronym CVE.

Code Description: This rule uses an abstract pattern to consolidate logic. It checks that the value in parameter \$searchTerm is contained in the parameter \$list. The parameter \$searchTerm is relative in scope to the parameter \$context. The value for the parameter \$list is a variable defined in the main document (IRM_XML.sch), which reads values from a specific CVE file.


Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern is-a="ValidateValueExistenceInList" id="IRM-ID-00052">

    <sch:param name="ruleText"
        value="' [IRM-ID-00052][Error]
If element ddms:organization has attribute @ddms:acronym specified,
then the value must be in CVEnumIRMAgencyAcronym.xml.                Human
Readable: Agency acronyms must be in the CVEnumIRMAgencyAcronym CVE.
'"/>

    <sch:param name="codeDesc"
        value="' This rule uses an abstract
pattern to consolidate logic. It checks that the value in parameter
$searchTerm is contained in the parameter $list. The parameter
$searchTerm is relative in scope to the parameter $context. The value for the
parameter $list is a variable defined in the main document
(IRM_XML.sch), which reads values from a specific CVE file.
'"/>

    <sch:param name="context"
value="ddms:organization[@ddms:acronym]"/>
    <sch:param name="searchTerm" value="@ddms:acronym"/>
    <sch:param name="list" value="$agencyAcronymList"/>
    <sch:param name="errMsg"
        value="' [IRM-ID-00052][Error]
If element ddms:organization has attribute @ddms:acronym specified,
then the value must be in CVEnumIRMAgencyAcronym.xml.                Human
Readable: Agency acronyms must be in the CVEnumIRMAgencyAcronym CVE.
'"/>
```

`</sch:pattern>`

4.4 - ../Rules/ddmsConstraints/IRM_ID_00062.sch

Rule Description: IRM-ID-00062 [IRM-ID-00062][Error] The value of an IC-ID identifier must follow standardized convention.

Code Description: When IC-ID is specified as the value of ddms:identifier/@ddms:qualifier, @ddms:value should follow the regex [Gg][Uu][Ii][Dd][Ee]://[0-9]{4}/[A-Za-z0-9_-\.\.]{1,43}

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
    -->
<sch:pattern id="IRM-ID-00062">

    <sch:rule context="ddms:identifier[@ddms:qualifier='IC-
ID']">
        <sch:let name="icidRegEx"
            value="'[Gg][Uu][Ii][Dd][Ee]://[0-9]{4}/[A-Za-
z0-9_-\.\.]{1,43}'"/>
        <sch:assert test="matches(string(@ddms:value),
$icidRegEx)" flag="error">
            [IRM-ID-00062][Error] The value of an IC-ID identifier must
follow
            standardized convention.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

4.5 - ../Rules/ddmsConstraints/IRM_ID_00063.sch

Rule Description: IRM-ID-00063 [IRM-ID-00063][Error] Element ddms:resource/ddms:creator/ddms:organization must specify attribute @ddms:acronym. Human Readable: The DDMS card must specify the creator organization of the referenced resource.

Code Description: We make sure that element ddms:resource/ddms:creator/ddms:organization exists and specifies attribute @ddms:acronym.

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00063">

    <sch:rule context="ddms:resource">
        <sch:assert test="ddms:creator/ddms:organization/
@ddms:acronym" flag="error">
            [IRM-ID-00063][Error] Element
            ddms:resource/ddms:creator/ddms:organization must specify
attribute
            @ddms:acronym.

            Human Readable: The DDMS card must specify the creator
organization of
            the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

4.6 - ../Rules/ddmsConstraints/IRM_ID_00064.sch

Rule Description: IRM-ID-00064 [IRM-ID-00064][Error] Element ddms:resource/ddms:dates must specify attribute @ddms:created. Human Readable: The DDMS card must specify the date on which the referenced resource was created.

Code Description: We make sure that element ddms:resource/ddms:dates exists and specifies attribute @ddms:created.

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
    This document has been approved for Public Release and is
    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00064">

    <sch:rule context="ddms:resource">
        <sch:assert test="ddms:dates/@ddms:created" flag="error">
[IRM-ID-00064][Error] Element ddms:resource/ddms:dates must
specify
        attribute @ddms:created.

        Human Readable: The DDMS card must specify the date on which the
        referenced resource was created.
    </sch:assert>
    </sch:rule>
</sch:pattern>
```

4.7 - ../Rules/ddmsConstraints/IRM_ID_00065.sch

Rule Description: IRM-ID-00065 [IRM-ID-00065][Error] Attribute ddms:resource/ddms:dates/@ddms:created must be castable as an xs:dateTime type. Human Readable: The date on which the referenced resource was created must be a dateTime type.

Code Description: We make sure that attribute dms:resource/ddms:dates/@ddms:created is castable as an xs:dateTime type.

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
    -->
<sch:pattern id="IRM-ID-00065">

    <sch:rule context="ddms:resource/ddms:dates[@ddms:created]">
        <sch:assert test="@ddms:created castable as xs:dateTime"
flag="error">
        [IRM-ID-00065][Error] Attribute ddms:resource/ddms:dates/
@ddms:created
        must be castable as an xs:dateTime type.

        Human Readable: The date on which the referenced resource was
created
        must be a dateTime type.
    </sch:assert>
    </sch:rule>
</sch:pattern>
```

4.8 - ../Rules/ddmsConstraints/IRM_ID_00067.sch

Rule Description: IRM-ID-00067 [IRM-ID-00067][Error] For element ddms:security, element ntk:Access must specify attribute ntk:externalReference with a value of [true]. Human Readable: NTK information within a ddms:security element always refers to the referenced resource.

Code Description: For element ddms:security/ntk:Access, we make sure that it specifies attribute ntk:externalReference with a value of [true].

Schematron Code:

```
<?ICEA pattern?><?ICEA min_accessible?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00067">

    <sch:rule context="ddms:security/ntk:Access">
        <sch:assert test="@ntk:externalReference = true()"
flag="error">
    [IRM-ID-00067][Error] For element ddms:security, element
ntk:Access
    must specify attribute ntk:externalReference with a value of
[true].

    Human Readable: NTK information within a ddms:security element
always
    refers to the referenced resource.
    </sch:assert>
    </sch:rule>
    </sch:pattern>
```

Chapter 5 - Min Discoverable Rules

All of the numbered Rules for IRM that are specifically required for the MIN_DISCOVERABLE compliesWith mode are listed in this section. The rules in the section Min Accessible Rules are also enforced when the compliesWith mode is set to MIN_DISCOVERABLE since this is a super set. There are other rules that could come into play when using MIN_DISCOVERABLE if you add any data that would trigger a rule. This set of rules is called out to help understand what MIN_DISCOVERABLE means. These rules may depend strongly on patterns defined in the Abstract Patterns section or on variables defined in the Schematron Schema section.

5.1 - ../Rules/ddmsConstraints/IRM_ID_00035.sch

Rule Description: IRM-ID-00035 [IRM-ID-00035][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:resource must specify at least one element ddms:language. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify the language of the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:resource specifies at least one element ddms:language.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00035">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
        <sch:assert test="ddms:language" flag="error">
            [IRM-ID-00035][Error] If MIN_DISCOVERABLE_OR_GREATER, element
ddms:resource
            must specify at least one element ddms:language.

            Human Readable: If this IRM instance complies with the minimum
discoverability rules, then the DDMS card must specify the
language of
            the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```


5.2 - ../Rules/ddmsConstraints/IRM_ID_00038.sch

Rule Description: IRM-ID-00038 [IRM-ID-00038][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:resource must specify at least one element ddms:publisher. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify the publisher of the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:resource specifies at least one element ddms:publisher.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00038">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
        <sch:assert test="ddms:publisher" flag="error">
            [IRM-ID-00038][Error] If MIN_DISCOVERABLE_OR_GREATER, element
ddms:resource
            must specify at least one element ddms:publisher.

            Human Readable: If this IRM instance complies with the minimum
discoverability rules, then the DDMS card must specify the
publisher of
            the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

5.3 - ../Rules/ddmsConstraints/IRM_ID_00039.sch

Rule Description: IRM-ID-00039 [IRM-ID-00039][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:subjectCoverage must specify at least one element ddms:productionMetric. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify a production metric of the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:subjectCoverage specifies at least one element ddms:productionMetric.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00039">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
        <sch:assert test="//ddms:subjectCoverage/
ddms:productionMetric" flag="error">
            [IRM-ID-00039][Error] If MIN_DISCOVERABLE_OR_GREATER, element
            ddms:subjectCoverage must specify at least one element
            ddms:productionMetric.

            Human Readable: If this IRM instance complies with the minimum
            discoverability rules, then the DDMS card must specify a
            production metric
            of the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

5.4 - ../Rules/ddmsConstraints/IRM_ID_00056.sch

Rule Description: IRM-ID-00056 [IRM-ID-00056][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:resource must specify at least one element ddms:title. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify the title of the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:resource specifies at least one element ddms:title.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00056">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
        <sch:assert test="ddms:title" flag="error">
            [IRM-ID-00056][Error] If MIN_DISCOVERABLE_OR_GREATER, element
            ddms:resource must specify at least one element ddms:title.

            Human Readable: If this IRM instance complies with the minimum
            discoverability rules, then the DDMS card must specify the title
            of the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

5.5 - ../Rules/ddmsConstraints/IRM_ID_00059.sch

Rule Description: IRM-ID-00059 [IRM-ID-00059][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:resource must specify at least one element ddms:subjectCoverage. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify a subjectCoverage of the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:resource specifies at least one element ddms:subjectCoverage.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00059">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
        <sch:assert test="ddms:subjectCoverage" flag="error">
            [IRM-ID-00059][Error] If MIN_DISCOVERABLE_OR_GREATER, element
            ddms:resource must specify at least one element
            ddms:subjectCoverage.

            Human Readable: If this IRM instance complies with the minimum
            discoverability rules, then the DDMS card must specify a
            subjectCoverage
            of the referenced resource.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

5.6 - ../Rules/ddmsConstraints/IRM_ID_00061.sch

Rule Description: IRM-ID-00061 [IRM-ID-00061][Error] If MIN_DISCOVERABLE_OR_GREATER, element ddms:resource must specify at least one of the following elements: ddms:creator, ddms:publisher, ddms:contributor, or ddms:pointOfContact. Human Readable: If this IRM instance complies with the minimum discoverability rules, then the DDMS card must specify a creator, publisher, contributor, or pointOfContact for the referenced resource.

Code Description: If MIN_DISCOVERABLE_OR_GREATER, we make sure that element ddms:resource specifies at least one of the following elements: ddms:creator, ddms:publisher, ddms:contributor, or ddms:pointOfContact.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="IRM-ID-00061">

    <sch:rule
context="ddms:resource[$MIN_DISCOVERABLE_OR_GREATER]">
    <sch:assert test="ddms:publisher or ddms:creator or
ddms:contributor or ddms:pointOfContact"
        flag="error">
        [IRM-ID-00061][Error] If MIN_DISCOVERABLE_OR_GREATER, element
        ddms:resource must specify at least one of the following elements:
        ddms:creator, ddms:publisher, ddms:contributor, or
ddms:pointOfContact.

        Human Readable: If this IRM instance complies with the minimum
        discoverability rules, then the DDMS card must specify a creator,
        publisher, contributor, or pointOfContact for the referenced
resource.
    </sch:assert>
    </sch:rule>
</sch:pattern>
```

Chapter 6 - Schematron Schema

The top level Schematron file for IRM is in this section. This file imports all of the others and also defines many global variables they are all dependent on.

6.1 - ./IRM_XML.sch

Rule Description: This is the root file for the IRM Schematron ruleset. It loads all of the required CVEs, declares some variables, and includes all of the Rule .sch files.

Code Description: This is the root file for the IRM Schematron ruleset. It loads all of the required CVEs, declares some variables, and includes all of the Rule .sch files.

Schematron Code:

```
<?ICEA master?><!-- UNCLASSIFIED --><!-- Notices - Distribution Notice:
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    to Federal, State, Local, Tribal, and Foreign Partners and
associated contractors. Approval for
    any further distribution must be coordinated via the Intelligence
Community Chief Information
    Officer, Mission Engagement Division at standardssupport@dni.gov--
><!-- WARNING:
    Once compiled into an XSLT the result will
    be the aggregate classification of all the CVES
    and included .sch files
-->
<sch:schema xmlns:cve="urn:us:gov:ic:cve" xmlns:xsl="http://www.w3.org/
1999/XSL/Transform"
            queryBinding="xslt2">
    <sch:ns uri="http://www.w3.org/2001/XMLSchema"
prefix="xsd"/>
    <sch:ns uri="urn:us:gov:ic:ism" prefix="ism"/>
        <sch:ns uri="urn:us:gov:ic:irm" prefix="irm"/>
        <sch:ns uri="urn:us:gov:ic:ntk" prefix="ntk"/>
    <sch:ns uri="urn:us:mil:ces:metadata:ddms:4" prefix="ddms"/>
    <sch:ns uri="urn:us:gov:ic:cve" prefix="cve"/>
    <sch:ns uri="http://www.w3.org/1999/xlink" prefix="xlink"/>
    <sch:ns uri="http://www.w3.org/1999/XSL/Transform"
prefix="xsl"/>
    <sch:ns uri="date:time:function" prefix="dtf"/>
        <sch:ns prefix="util" uri="urn:us:gov:ic:irm:xsl:util"/>

    <sch:let name="IRM_COMPLIES_WITH"
        value="irm:ICResourceMetadataPackage/
@irm:compliesWith"/>
    <sch:let name="MIN_DISCOVERABLE_OR_GREATER"
value="util:containsAnyOfTheTokens($IRM_COMPLIES_WITH,
('MIN_DISCOVERABLE'))"/>
    <sch:let name="MIN_ACCESSIBLE_OR_GREATER"
        value="$MIN_DISCOVERABLE_OR_GREATER or
util:containsAnyOfTheTokens($IRM_COMPLIES_WITH, ('MIN_ACCESSIBLE'))"/>

    <!-- (U) Resources -->
```

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```

    <sch:let name="agencyAcronymList"
              value="document('.../CVE/IRM/
CVENumIRMAgencyAcronym.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <sch:let name="compliesWithList"
              value="document('.../CVE/IRM/
CVENumIRMCompliesWith.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <sch:let name="coverageFipsDigraphList"
              value="document('.../CVE/IRM/
CVENumIRMCoverageFIPSDigraph.xml')//cve:CVE/cve:Enumeration/cve:Term/
cve:Value"/>
    <sch:let name="coverageIso3166DigraphList"
              value="document('.../CVE/IRM/
CVENumIRMCoverageISO3166Digraph.xml')//cve:CVE/cve:Enumeration/cve:Term/
cve:Value"/>
    <sch:let name="coverageIso3166TrigraphList"
              value="document('.../CVE/IRM/
CVENumIRMCoverageISO3166Trigraph.xml')//cve:CVE/cve:Enumeration/cve:Term/
cve:Value"/>
    <sch:let name="coverageIso3166-2SubCountryList"
              value="document('.../CVE/IRM/
CVENumIRMCoverageISO3166-2SubCountry.xml')//cve:CVE/cve:Enumeration/cve:Term/
cve:Value"/>
    <sch:let name="iso639DigraphList"
              value="document('.../CVE/IRM/
CVENumIRMISO639Digraph.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <sch:let name="iso639-2TrigraphList"
              value="document('.../CVE/IRM/
CVENumIRMISO639-2Trigraph.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <sch:let name="iso639-3TrigraphList"
              value="document('.../CVE/IRM/
CVENumIRMISO639-3Trigraph.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <sch:let name="mimeTypeList"
              value="document('.../CVE/IRM/
CVENumIRMMimeType.xml')//cve:Value"/>
    <sch:let name="compoundCountryCodeQualifierTypeList"
              value="document('.../CVE/IRM/
CVENumIRMCompoundCountryCodeQualifierType.xml')//cve:Value"/>
    <sch:let name="compoundLanguageQualifierTypeList"
              value="document('.../CVE/IRM/
CVENumIRMCompoundLanguageQualifierType.xml')//cve:Value"/>
    <sch:let name="subDisciplineTechniquesVlList"
              value="document('.../CVE/IRM/
CVENumIRMIntelSubDisciplineTechniques.xml')//cve:Value"/>
    <sch:let name="subDisciplineTechniquesList"
              value="document('.../CVE/IRM/
CVENumIRMIntelSubDisciplineTechniques.xml')//cve:Value"/>
    <sch:let name="intelSubDisciplinesList"
              value="document('.../CVE/IRM/
CVENumIRMIntelSubDisciplines.xml')//cve:Value"/>
    <sch:let name="intelDisciplinesList"
              value="document('.../CVE/IRM/
CVENumIRMIntelDisciplines.xml')//cve:Value"/>
    <sch:let name="productionMetricsSubjectList"
              value="document('.../CVE/IRM/

```



```

CVerenumIRMProductionMetricsSubject.xml' )//cve:Value"/>
    <sch:let name="productionMetricsCoverageList"
        value="document( '../.. /CVE/IRM/
CVerenumIRMProductionMetricsCoverage.xml' )//cve:Value"/>
    <sch:let name="activityList"
        value="document( '../.. /CVE/IRM/
CVerenumIRMActivity.xml' )//cve:Value"/>

    <sch:let name="executableIndicatorList"
        value="document( '../.. /CVE/IRM/
CVerenumIRMExecutableIndicator.xml' )//cve:Value"/>

    <sch:let name="maliciousCodeIndicatorList"
        value="document( '../.. /CVE/IRM/
CVerenumIRMMaliciousCodeIndicator.xml' )//cve:Value"/>

    <sch:let name="coveragePrecedenceList"
        value="document( '../.. /CVE/IRM/
CVerenumIRMCoveragePrecedence.xml' )//cve:Value"/>

    <!-- ***** -->
    <!-- * General Global Variables * -->
    <!-- ***** -->

    <sch:let name="currentYear" value="year-from-dateTime(current-
dateTime())"/>
    <sch:let name="timeZoneRegEx" value="'Z|[\+-]\d{2}:\d{2}'"/>
    <sch:let name="endsWithTimeZoneRegEx" value="concat('^.*',
$timeZoneRegEx, '$')"/>
    <sch:let name="startDateTimeTemplate"
value="'0001-01-01T00:00:00.000'"/>
    <sch:let name="endDateTimeTemplate"
value="'9999-12-01T23:59:59.999'"/>
    <sch:let name="defaultTimeZone" value="'Z'"/>

    <!-- ***** -->
    <!-- * Abstract Rule and Pattern Includes * -->
    <!-- ***** -->

    <sch:include href="./Lib/ValidateValueExistenceInList.sch"/>
    <sch:include href="./Lib/DateListYearRangeRule.sch"/>
    <sch:include href="./Lib/DateYearRangeRule.sch"/>
    <sch:include href="./Lib/CompareDateTimes.sch"/>
    <sch:include href="./Lib/IsmEnforcement.sch"/>

    <!-- ***** -->
    <!-- * Custom XSLT2 Function Definitions * -->
    <!-- ***** -->

    <!--
    Returns true if any token in the attribute value matches at least one
    token in the provided list.
    -->
    <xsl:function name="util:containsAnyOfTheTokens" as="xs:boolean">

```

```

        <xsl:param name="attribute"/>
        <xsl:param name="tokenList" as="xs:string+"/>
        <xsl:value-of select="some $attrToken in
tokenize(normalize-space(string($attribute)), ' ') satisfies $attrToken =
$tokenList"/>

    </xsl:function>

    <!--
    Returns the maximum day of the month for an xs:date as an
xs:string.
    @param {xs:date} date The date time from which to get the month
    @returns {xs:string} String representation of the maximum day of the
month
    -->
    <xsl:function name="dtf:getMaxDay" as="xs:string">
        <xsl:param name="date" as="xs:date"/>
        <xsl:variable name="month"
select="number(dtf:getMonth(string($date)))/">
        <xsl:choose>
            <xsl:when test="$month = (1,3,5,7,8,10,12)">
                <xsl:value-of select="31"/>
            </xsl:when>
            <xsl:when test="$month = (4,6,9,11)">
                <xsl:value-of select="30"/>
            </xsl:when>
            <xsl:otherwise>
                <xsl:choose>
                    <xsl:when
test="dtf:isLeapYear(string($date))">
                        <xsl:value-of select="29"/>
                    </xsl:when>
                    <xsl:otherwise>
                        <xsl:value-of select="28"/>
                    </xsl:otherwise>
                </xsl:choose>
            </xsl:otherwise>
        </xsl:choose>
    </xsl:function>

    <!--
    @param {xs:date} date String representation of a date
    @returns {xs:boolean} Returns true if the date provided occurs in a
    leap year; otherwise returns false.
    -->
    <xsl:function name="dtf:isLeapYear" as="xs:boolean">
        <xsl:param name="date" as="xs:string"/>
        <xsl:variable name="year" as="xs:integer"
select="xs:integer(dtf:getYear($date))"/>
        <xsl:choose>
            <xsl:when test="$year mod 100 = 0">
                <xsl:choose>
                    <xsl:when test="$year mod 400 =
0">
                        <xsl:value-of

```

```

select="true()"/>
                                </xsl:when>
                                <xsl:otherwise>
                                    <xsl:value-of
select="false()"/>
                                </xsl:otherwise>
                                </xsl:choose>
</xsl:when>
<xsl:otherwise>
    <xsl:choose>
        <xsl:when test="$year mod 4 = 0">
            <xsl:value-of
select="true()"/>
        </xsl:when>
        <xsl:otherwise>
            <xsl:value-of
select="false()"/>
        </xsl:otherwise>
    </xsl:choose>
</xsl:otherwise>
</xsl:choose>
</xsl:function>

<!--
    Replaces the day portion of the provided dateTime with the new day
provided.
    @param {xs:dateTime} dateTime An xs:dateTime to be updated with new
day.
    @param {xs:string} newDayString String representation of day portion
of a date.
    @returns {xs:dateTime} Returns new xs:dateTime with updated day
portion.
    leap year; otherwise returns false.
-->
<xsl:function name="dtf:replaceDateTimeDay" as="xs:dateTime">
    <xsl:param name="dateTime" as="xs:dateTime"/>
    <xsl:param name="newDayString" as="xs:string"/>
    <xsl:variable name="beforeDay"
select="substring(string($dateTime), 1, 8)"/>
    <xsl:variable name="afterDay"
select="substring(string($dateTime), 11)"/>
    <xsl:value-of select="concat($beforeDay,
$newDayString, $afterDay)"/>
</xsl:function>

<!--
    Returns a string representation of the year portion of the date
represented by the provided string.
    @param {xs:string} dateString String representation of a date in one
of the allowable formats.
    @returns {xs:string} String representation of the year portion of the
date represented by the provided string.
-->
<xsl:function name="dtf:getYear" as="xs:string">

```

```

        <xsl:param name="dateString" as="xs:string"/>
        <xsl:value-of
select="substring(dtf:removeTimeZone($dateString), 1, 4)"/>
        </xsl:function>

        <!--
        Returns a string representation of the month portion of the date
        represented by the provided string.
        @param {xs:string} dateString String representation of a date in one
            of the allowable formats.
        @returns {xs:string} String representation of the month portion of
the
        date represented by the provided string.
        -->
        <xsl:function name="dtf:getMonth" as="xs:string">
            <xsl:param name="dateString" as="xs:string"/>
            <xsl:value-of
select="substring(dtf:removeTimeZone($dateString), 6, 2)"/>
            </xsl:function>

            <!--
            Returns a string representation of the day portion of the date
            represented by the provided string.
            @param {xs:string} dateString String representation of a date in one
                of the allowable formats.
            @returns {xs:string} String representation of the day portion of the
            date represented by the provided string.
            -->
            <xsl:function name="dtf:getDay" as="xs:string">
                <xsl:param name="dateString" as="xs:string"/>
                <xsl:value-of
select="substring(dtf:removeTimeZone($dateString), 9, 2)"/>
                </xsl:function>

                <!--
                Returns a string representation of the timezone portion of the date
                represented by the provided string.
                @param {xs:string} dateString String representation of a date in one
                    of the allowable formats.
                @returns {xs:string} String representation of the timezone portion of
                the date represented by the provided string.
                -->
                <xsl:function name="dtf:getTimeZone" as="xs:string">
                    <xsl:param name="dateString" as="xs:string"/>
                    <xsl:variable name="dateTimeEndingWithTimezone"
as="xs:string"
                        select="concat('^.*(', $timezoneRegEx, '
$')"/>
                    <xsl:choose>
                        <xsl:when test="matches($dateString,
$dateTimeEndingWithTimezone)">
                            <xsl:value-of
select="replace($dateString, $dateTimeEndingWithTimezone, '$1')"/>
                        </xsl:when>

```

```

        <xsl:otherwise>
            <xsl:value-of
select="$defaultTimeZone"/>
        </xsl:otherwise>
    </xsl:choose>
</xsl:function>

<!--
    Returns true if the year portion of the date represented by the
provided
    string contains four (4) digits; otherwise returns false.
    @param {xs:string} dateString String representation of a date in one
        of the allowable formats.
    @returns {xs:string} true if the year portion of the date represented
by
        the provided string contains four (4) digits; otherwise returns
false.
-->
    <xsl:function name="dtf:yearPortionHasFourDigits" as="xs:boolean">
        <xsl:param name="dateString" as="xs:string"/>
        <xsl:variable
name="dateWithOnlyFourDigitYearAndOptionalTimeZoneRegEx" as="xs:string"
            select="concat('^d{4}(', $timeZoneRegEx, ')?
$')"/>
        <xsl:variable
name="dateStartingWithFourDigitYearRegEx" as="xs:string" select="'^d{4}-.*
$'"/>
        <xsl:value-of select="matches($dateString,
$dateWithOnlyFourDigitYearAndOptionalTimeZoneRegEx)
or
        matches($dateString,
$dateStartingWithFourDigitYearRegEx)"/>
    </xsl:function>

<!--
    Removes the timezone portion of the date represented by the provided
string and returns all remaining portions.
    @param {xs:string} dateString String representation of a date in one
        of the allowable formats.
    @returns {xs:string} String representation of a date without a
timezone
        portion.
-->
    <xsl:function name="dtf:removeTimeZone" as="xs:string">
        <xsl:param name="dateString" as="xs:string"/>
        <xsl:value-of select="replace($dateString,
$timeZoneRegEx, '')"/>
    </xsl:function>

<!--
    Uses the template provided to fill in missing portions of the string
representation of a dateTime provided and returns a full xs:dateTime.
The dateString provided must not contain a timezone.
    @param {xs:string} dateString String representation of a date in one
        of the allowable formats.

```

```

    @param {xs:string} dateTemplateString String template of a default
date
    from which to pad missing portions of the dateString parameter.
    @returns {xs:dateTime} An xs:dateTime represented by the string date
provided.
-->
    <xsl:function name="dtf:padDateTimeWithTemplate" as="xs:dateTime">
        <xsl:param name="dateString" as="xs:string"/>
        <xsl:param name="dateTemplateString"
as="xs:string"/>
        <xsl:value-of select="concat($dateString,
substring($dateTemplateString, string-length(normalize-space($dateString))
+1))"/>
    </xsl:function>

    <!--
Returns true if the string provided represents an allowable dateTime
format; false, otherwise. The allowable dateTime formats are defined
in the DES for the PUBS.XML specification.
    @returns {xs:boolean} Returns true if the string provided represents
an
        allowable dateTime format; false, otherwise.
-->
    <xsl:function name="dtf:isAllowableDateTimeFormat" as="xs:boolean">
        <xsl:param name="input" as="xs:string"/>
        <xsl:variable name="trimmedInput" as="xs:string"
select="normalize-space($input)"/>

        <!-- year -->
        <xsl:variable name="YYYY" as="xs:string" select="'^\\d{4}(Z|[\\+-]\\d{2}:
\\d{2})?$'"/>

        <!-- year, month -->
        <xsl:variable name="YYYY-MM" as="xs:string" select="'^\\d{4}-\\d{2}(Z|[\\
+-]\\d{2}:\\d{2})?$'"/>

        <!-- year, month, day -->
        <xsl:variable name="YYYY-MM-DD" as="xs:string"
            select="'^\\d{4}-\\d{2}-\\d{2}(Z|[\\+-]\\d{2}:
\\d{2})?$'"/>

        <!-- year, month, day, hour, minute -->
        <xsl:variable name="YYYY-MM-DDThh-mm" as="xs:string"
            select="'^\\d{4}-\\d{2}-\\d{2}T\\d{2}:\\d{2}(Z|
[\\+-]\\d{2}:\\d{2})?$'"/>

        <!-- year, month, day, hour, minute, seconds,
optional milliseconds -->
        <xsl:variable name="YYYY-MM-DDThh-mm-ss" as="xs:string"
            select="'^\\d{4}-\\d{2}-\\d{2}T\\d{2}:\\d{2}:
\\d{2}(\\.\\d{1,3})?(Z|[\\+-]\\d{2}:\\d{2})?$'"/>

        <xsl:value-of select="
$YYYY) or matches($trimmedInput, $YYYY-MM) or matches($trimmedInput,

```

```

$YYYY-MM-DD) or      matches($trimmedInput, $YYYY-MM-DDThh-mm) or
matches($trimmedInput, $YYYY-MM-DDThh-mm-ss)      "/>
      </xsl:function>

      <!--
      Returns the earliest xs:dateTime possible for the provided string
      representation of a dateTime. Fills in missing portions of the
      dateTime with the earliest possible values. Default values for missing
      portions:
      MM = 01
      DD = 01
      hh = 00
      mm = 00
      ss = 00
      s  = 000
      @param {xs:string} dateString String representation of a date in one
      of the allowable formats.
      @returns {xs:dateTime} The earliest xs:dateTime possible for the
      provided string representation of a dateTime.
      -->
      <xsl:function name="dtf:startDate" as="xs:dateTime">
          <xsl:param name="dateString" as="xs:string"/>
          <xsl:variable name="timeZonePortion"
select="dtf:getTimeZone($dateString)"/>
          <xsl:variable name="dateTimePortion"
select="dtf:removeTimeZone($dateString)"/>
          <xsl:variable name="outputDate"

select="dtf:padDateTimeWithTemplate($dateTimePortion,
$startDateTimeTemplate)"/>
          <xsl:value-of select="concat($outputDate,
$timeZonePortion)"/>
      </xsl:function>

      <!--
      Returns the latest xs:dateTime possible for the provided string
      representation of a dateTime. Fills in missing portions of the
      dateTime with the latest possible values. Default values for missing
      portions:
      MM = 12
      DD = maximum day of the month
      hh = 23
      mm = 59
      ss = 59
      s  = 999
      @param {xs:string} dateString String representation of a date in one
      of the allowable formats.
      @returns {xs:dateTime} The latest xs:dateTime possible for the
      provided string representation of a dateTime.
      -->
      <xsl:function name="dtf:endDate" as="xs:dateTime">
          <xsl:param name="input" as="xs:string"/>
          <xsl:variable name="timeZonePortion"
select="dtf:getTimeZone($input)"/>

```

```

        <xsl:variable name="dateTimePortion"
select="dtf:removeTimeZone($input)"/>
        <xsl:variable name="outputDate"

select="dtf:padDateTimeWithTemplate($dateTimePortion, $endDateDateTimeTemplate)"/>
        <xsl:variable name="outputWithCorrectedDay"

select="dtf:replaceDateTimeDay($outputDate, dtf:getMaxDay($outputDate))"/>
        <xsl:choose>
            <xsl:when test="dtf:getDay($input)">
                <xsl:value-of
select="concat($outputDate, $timeZonePortion)"/>
            </xsl:when>
            <xsl:otherwise>
                <xsl:value-of
select="concat($outputWithCorrectedDay, $timeZonePortion)"/>
            </xsl:otherwise>
        </xsl:choose>
    </xsl:function>

    <!--
        Calculates the date range implied for both primary and secondary and
        determines if there is any overlap between the two ranges. Overlap is
        defined as the start of primary date range less than or equal to the
        end of secondary date range, inclusive, and the start of the secondary
        date range less than or equal to the end of the primary date range.
        Returns true if there is any overlap; otherwise, returns false.
        @param {xs:string} primary String representation of a date in one
            of the allowable formats.
        @param {xs:string} secondary String representation of a date in one
            of the allowable formats.
        @returns {xs:boolean} Returns true if the date ranges implied by
primary
        and secondary overlap at all; otherwise, returns false.
    -->
    <xsl:function name="dtf:overlaps" as="xs:boolean">
        <xsl:param name="primary" as="xs:string"/>
        <xsl:param name="secondary" as="xs:string"/>
        <xsl:variable name="primaryStart" as="xs:dateTime"
select="dtf:startDate($primary)"/>
        <xsl:variable name="primaryEnd" as="xs:dateTime"
select="dtf:endDate($primary)"/>
        <xsl:variable name="secondaryStart"
as="xs:dateTime" select="dtf:startDate($secondary)"/>
        <xsl:variable name="secondaryEnd" as="xs:dateTime"
select="dtf:endDate($secondary)"/>
        <xsl:value-of select="$primaryStart <=
$secondaryEnd and $secondaryStart <= $primaryEnd"/>
    </xsl:function>

    <!--
        Determines if the date range implied by the string representation in
        primary is strictly before the date range implied by the string
        representation in secondary. Returns true if the end of the date

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    range implied by primary is less than the start of the date range
    implied by secondary; otherwise, returns false.
    @param {xs:string} primary String representation of a date in one
        of the allowable formats.
    @param {xs:string} secondary String representation of a date in one
        of the allowable formats.
    @returns {xs:boolean} Returns true if the date range implied by
primary
    is strictly earlier than the date range implied by secondary;
otherwise,
    returns false.
-->
<xsl:function name="dtf:isBefore" as="xs:boolean">
    <xsl:param name="primary" as="xs:string"/>
    <xsl:param name="secondary" as="xs:string"/>
    <xsl:variable name="primaryEnd" as="xs:dateTime"
select="dtf:endDate($primary)"/>
    <xsl:variable name="secondaryStart"
as="xs:dateTime" select="dtf:startDate($secondary)"/>
    <xsl:value-of select="$primaryEnd <
$secondaryStart"/>
</xsl:function>

<!--
    Determines if the date range implied by the string representation in
    primary is strictly after the date range implied by the string
    representation in secondary. Returns true if the end of the date
    range implied by primary is less than the start of the date range
    implied by secondary; otherwise, returns false.
    @param {xs:string} primary String representation of a date in one
        of the allowable formats.
    @param {xs:string} secondary String representation of a date in one
        of the allowable formats.
    @returns {xs:boolean} Returns true if the date range implied by
primary
    is strictly later than the date range implied by secondary;
otherwise,
    returns false.
-->
<xsl:function name="dtf:isAfter" as="xs:boolean">
    <xsl:param name="primary" as="xs:string"/>
    <xsl:param name="secondary" as="xs:string"/>
    <xsl:variable name="primaryStart" as="xs:dateTime"
select="dtf:startDate($primary)"/>
    <xsl:variable name="secondaryEnd" as="xs:dateTime"
select="dtf:endDate($secondary)"/>
    <xsl:value-of select="$secondaryEnd <
$primaryStart"/>
</xsl:function>

<!--
    Determines if the date range implied by the string representation in
    primary satisfies the comparison to the date range implied by
secondary

```

```

        using the provided comparison operator; otherwise, returns false.

Both primary and secondary must be in one of the allowable formats
and represent dates with four digits in the year portion.
@param {xs:string} primary String representation of a date in one
    of the allowable formats.
@param {xs:string} secondary String representation of a date in one
    of the allowable formats.
@returns {xs:boolean} Returns true if the date range implied by
primary
    satisfies the comparison to the date range implied by secondary
using
    the provided comparison operator; otherwise, returns false.
-->
<xsl:function name="dtf:compareDateTimeRanges" as="xs:boolean">
    <xsl:param name="primary" as="xs:string"/>
    <xsl:param name="operator" as="xs:string"/>
    <xsl:param name="secondary" as="xs:string"/>
    <xsl:variable
name="primaryAndSecondaryYearPortionsHaveFourDigits" as="xs:boolean"

select="dtf:yearPortionHasFourDigits($primary) and
dtf:yearPortionHasFourDigits($secondary)"/>
        <xsl:choose>
            <xsl:when
test="$primaryAndSecondaryYearPortionsHaveFourDigits">
                <xsl:variable name="primaryStart"
as="xs:dateTime" select="dtf:startDate($primary)"/>
                <xsl:variable name="primaryEnd"
as="xs:dateTime" select="dtf:endDate($primary)"/>
                <xsl:variable name="secondaryStart"
as="xs:dateTime" select="dtf:startDate($secondary)"/>
                <xsl:variable name="secondaryEnd"
as="xs:dateTime" select="dtf:endDate($secondary)"/>
                <xsl:choose>
                    <!-- 'Less Than' Edge Case -->
                    <!-- 2010-01-01T00:00:00.000Z < 2010 -->
                    <xsl:when test="($operator = 'lt' or $operator = '<');
and
                (($primaryStart = $primaryEnd and $primaryStart =
$secondaryStart) or
                ($primaryStart = $primaryEnd and
$primaryStart = $secondaryEnd) or
                ($secondaryStart =
$secondaryEnd and $primaryStart = $secondaryStart))">
                        <xsl:value-of
select="false()"/>
                                </xsl:when>

                                <!-- 'Greater Than' Edge Case -->
                                <!-- 2010-12-31T23:59:59.999Z > 2010 -->
                                <xsl:when test="($operator = 'gt' or $operator = '>');
and
                (($primaryStart = $primaryEnd and $primaryEnd =
$secondaryEnd) or
                ($primaryStart = $primaryEnd and $primaryEnd =
$secondaryStart) or
                ($secondaryStart = $secondaryEnd and
$primaryEnd = $secondaryEnd))">
                        <xsl:value-of

```

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select="false()"/>
</xsl:when>

<!-- 'Less Than' and 'Less Than
or Equal' -->
    <xsl:when test="$operator = 'lt' or $operator = '<=' or
$operator = '<=' ">
        <xsl:value-of
select="dtf:isBefore($primary, $secondary) or dtf:overlaps($primary,
$secondary)"/>
    </xsl:when>

    <!-- 'Greater Than' and 'Greater
Than or Equal' -->
    <xsl:when test="$operator = 'gt' or $operator = '>=' or
$operator = '>=' ">
        <xsl:value-of
select="dtf:isAfter($primary, $secondary) or dtf:overlaps($primary,
$secondary)"/>
    </xsl:when>

    <!-- Default to false() -->
    <xsl:otherwise>
        <xsl:value-of
select="false()"/>
    </xsl:otherwise>
</xsl:choose>
</xsl:when>
<xsl:otherwise>
    <xsl:value-of select="false()"/>
</xsl:otherwise>
</xsl:choose>
</xsl:function>

<!--*****-->
<!-- (U) IRM ID Rules -->
<!--*****-->

<!--(U) dateTimeConstraints-->
    <sch:include href="./Rules/dateTimeConstraints/IRM_ID_00015.sch"/>
    <sch:include href="./Rules/dateTimeConstraints/
IRM_ID_00016.sch"/>
    <sch:include href="./Rules/dateTimeConstraints/
IRM_ID_00017.sch"/>
    <sch:include href="./Rules/dateTimeConstraints/
IRM_ID_00018.sch"/>
    <sch:include href="./Rules/dateTimeConstraints/
IRM_ID_00019.sch"/>
    <sch:include href="./Rules/dateTimeConstraints/
IRM_ID_00020.sch"/>
    <sch:include href="./Rules/dateTimeConstraints/
IRM_ID_00021.sch"/>
    <sch:include href="./Rules/dateTimeConstraints/
IRM_ID_00022.sch"/>

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<sch:include href="./Rules/dateTimeConstraints/
IRM_ID_00023.sch"/>
<sch:include href="./Rules/dateTimeConstraints/
IRM_ID_00024.sch"/>

<!--(U) ddmsConstraints-->
<sch:include href="./Rules/ddmsConstraints/IRM_ID_00011.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00012.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00013.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00014.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00029.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00030.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00032.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00035.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00037.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00038.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00039.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00055.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00056.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00057.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00058.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00059.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00060.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00061.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00062.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00063.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00064.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00065.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00066.sch"/>
<sch:include href="./Rules/ddmsConstraints/
IRM_ID_00067.sch"/>
<sch:include href="./Rules/ddmsConstraints/
```

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IRM_ID_00068.sch"/>
    <sch:include href="./Rules/ddmsConstraints/
IRM_ID_00069.sch"/>

    <!--(U) globalConstraints-->
    <sch:include href="./Rules/globalConstraints/IRM_ID_00002.sch"/>

    <!--(U) ismConstraints-->
    <sch:include href="./Rules/ismConstraints/IRM_ID_00025.sch"/>
    <sch:include href="./Rules/ismConstraints/
IRM_ID_00026.sch"/>
    <sch:include href="./Rules/ismConstraints/
IRM_ID_00040.sch"/>
    <sch:include href="./Rules/ismConstraints/
IRM_ID_00041.sch"/>
    <sch:include href="./Rules/ismConstraints/
IRM_ID_00042.sch"/>
    <sch:include href="./Rules/ismConstraints/
IRM_ID_00043.sch"/>
    <sch:include href="./Rules/ismConstraints/
IRM_ID_00044.sch"/>
    <sch:include href="./Rules/ismConstraints/
IRM_ID_00045.sch"/>

    <!--(U) valueEnumerationConstraints-->
    <sch:include href="./Rules/valueEnumerationConstraints/IRM_ID_00001.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00003.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00004.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00005.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00006.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00007.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00008.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00009.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00010.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00027.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00028.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00031.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00033.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00034.sch"/>
    <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00046.sch"/>

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                <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00047.sch"/>
                <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00048.sch"/>
                <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00049.sch"/>
                <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00050.sch"/>
                <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00051.sch"/>
                <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00052.sch"/>
                <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00053.sch"/>
                <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00054.sch"/>
                <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00070.sch"/>
                <sch:include href="./Rules/valueEnumerationConstraints/
IRM_ID_00071.sch"/>

                <!--(U) xlinkConstraints-->
                <sch:include href="./Rules/xlinkConstraints/IRM_ID_00036.sch"/>
        </sch:schema>
```

Chapter 7 - Removed Rules

All of the numbered Rules for IRM that have been removed are listed in this section. This section is just a reference for what rule numbers have been dropped. In many but not all cases there will be a reason listed. In all cases the version that the rule was dropped in is listed.

7.1 - `./Rules/valueEnumerationConstraints/IRM_ID_00004.sch`

Rule Description: IRM-ID-00004 [IRM-ID-00004][] Removed in V4.

7.2 - `./Rules/ddmsConstraints/IRM_ID_00011.sch`

Rule Description: IRM-ID-00011 [IRM-ID-00011][Error] Rule removed in V8 because it is covered by rule IRM-ID-00012.

7.3 - `./Rules/ddmsConstraints/IRM_ID_00013.sch`

Rule Description: IRM-ID-00013 [IRM-ID-00013][Error] Rule removed in V8 because it is covered by rule IRM-ID-00014.

7.4 - `./Rules/dateTimeConstraints/IRM_ID_00018.sch`

Rule Description: IRM-ID-00018 [IRM-ID-00018][Error] Rule removed in V7.

7.5 - `./Rules/ismConstraints/IRM_ID_00026.sch`

Rule Description: IRM-ID-00026 [IRM-ID-00026][] Removed in V4.

7.6 - `./Rules/valueEnumerationConstraints/IRM_ID_00027.sch`

Rule Description: IRM-ID-00027 [IRM-ID-00027][] Removed in V6.

7.7 - `./Rules/valueEnumerationConstraints/IRM_ID_00028.sch`

Rule Description: IRM-ID-00028 [IRM-ID-00028][] Removed in V6.

7.8 - `./Rules/ddmsConstraints/IRM_ID_00032.sch`

Rule Description: IRM-ID-00032 [IRM-ID-00032][] Removed in V6.

7.9 - ./Rules/ddmsConstraints/IRM_ID_00057.sch

Rule Description: IRM-ID-00057 [IRM-ID-00057][Error] Rule introduced in V8 and removed during V8 CR adjudication. Never part of a signed release.

7.10 - ./Rules/ddmsConstraints/IRM_ID_00058.sch

Rule Description: IRM-ID-00058 [IRM-ID-00058][Error] Rule introduced in V8 and removed during V8 CR adjudication. Never part of a signed release.

7.11 - ./Rules/ddmsConstraints/IRM_ID_00060.sch

Rule Description: IRM-ID-00060 [IRM-ID-00060][Error] Rule introduced in V8 and removed during V8 CR adjudication. Never part of a signed release.