



Guide to Schematron Rules and Patterns

NTK Schematron Guide

Version 2015-AUG

August 13, 2015

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Chapter 1 - Introduction

1.1 - Purpose

This is an informative supplement for NTK. This guide is generated from the NTK Schematron rules and provides a consolidated reference for the business rules of this specification.

1.2 - Overview

Chapter 2 is a listing of all the numbered rules in NTK. For each rule, there is a rule description, a code description, and a code block with the Schematron rule.

Chapter 3 is a listing of abstract patterns used in NTK. The abstract patterns may be used in numbered rules or provided as reference for use in rules developed by users of NTK. Each abstract pattern has a code description and a code block with the abstract Schematron pattern.

Chapter 4 is a listing of the master ISM Schematron file with all of the imports of rules and patterns. Many of the rules and patterns listed in Chapters 3 and 4 rely on functions and variables defined in the master file.

Chapter 5 is a listing of rules that have been deleted.

1.3 - Schematron

The business rules for NTK are encoded using ISO Schematron. Schematron is a rule-based validation language that uses XML Path Language to make assertions about an XML document.

NTK uses the XSLT 2.0 implementation of Schematron by Rick Jelliffe (2010-04-14) as its reference implementation. The only available identifying descriptors for this implementation are the implementer's name and date of release. This implementation may be found at the following URL: <http://code.google.com/p/schematron/>.



Important

The Schematron rules in this specification use XSLT 2.0 query binding.

1.4 - Conformance

This guide is informative. The Schematron rules listed here are normative in the sense that they convey criteria that a document **MUST** adhere to, exactly as English may be used to convey normative criteria. It is not necessary for implementers to use the specific Schematron encoding in this specification. Implementers **MAY** use any encodings, tools, or languages desired to implement validation schemes for conformance to this specification. However, to conform to the specification, validation schemes **MUST** match the behavior of the reference Schematron implementation. That is, a validator **MUST** find a document valid *if and only if* the reference Schematron implementation would find the document valid according to NTK's Schematron rules.

Chapter 2 - Rules

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

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

2.1 - ../Rules/general/NTK_ID_00002.sch

Rule Description

[NTK-ID-00002][Error] ntk:RequiresAnyOf and ntk:RequiresAllOf must contain ntk:AccessProfileList. Human Readable: ntk:RequiresAnyOf and ntk:RequiresAllOf must have the child element ntk:AccessProfileList.

Code Description

This rule ensures that ntk:AccessProfileList exist as a child element of ntk:RequiresAnyOf and ntk:RequiresAllOf.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00002">
  <sch:rule context="ntk:RequiresAnyOf|ntk:RequiresAllOf">
    <sch:assert test="ntk:AccessProfileList" flag="error">[NTK-ID-00002][Error] ntk:RequiresAnyOf and ntk:RequiresAllOf must contain ntk:AccessProfileList. Human Readable:
ntk:RequiresAnyOf and ntk:RequiresAllOf must have the child element ntk:AccessProfileList.</sch:assert>
  </sch:rule>
</sch:pattern>
```

2.2 - ../Rules/general/NTK_ID_00004.sch

Rule Description

[NTK-ID-00004][Error] Every attribute in the NTK namespace must be specified with a non-whitespace value.

Code Description

For each element which specifies an attribute in the NTK namespace, this rule ensures that all attributes in the NTK namespace contain a non-whitespace value.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00004">
    <sch:rule context="*[@ntk:*]">
        <sch:assert test="every $attribute in @ntk:* satisfies normalize-space(string($attribute))"
                    flag="error">[NTK-ID-00004][Error] Every attribute in the document must be specified with a non-whitespace value.</sch:assert>
    </sch:rule>
</sch:pattern>
```


2.3 - ../Rules/general/NTK_ID_00006.sch

Rule Description

[NTK-ID-00006][Error]The attribute DESVersion in the namespace urn:us:gov:ic:ntk must be specified. Human Readable: The data encoding specification version must be specified.

Code Description

Make sure that the attribute ntk:DESVersion is specified.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00006">
    <sch:rule context="/*[descendant-or-self::ntk:* or descendant-or-self::*/@ntk:*]">
        <sch:assert test="some $element in descendant-or-self::node() satisfies $element/@ntk:DESVersion"
                    flag="error">[NTK-ID-00006][Error] The attribute DESVersion in the namespace urn:us:gov:ic:ntk must be specified. Human Readable: The data encoding
specification version must be specified.</sch:assert>
        </sch:rule>
    </sch:pattern>
```

2.4 - ../Rules/general/NTK_ID_00007.sch

Rule Description

[NTK-ID-00007][Error] The attribute @ntk:externalReference must be set to true when the ExternalAccess element is used. Human Readable: If the ExternalAccess element is used, then the attribute @ntk:externalReference must have a value of true.

Code Description

Make sure the externalReference attribute is specified with a value of true when the ExternalAccess element is used.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00007">
    <sch:rule context="ntk:ExternalAccess">
        <sch:assert test="@ntk:externalReference=true()" flag="error">[NTK-ID-00007][Error] The attribute @ntk:externalReference must be set to true when the ExternalAccess
element is used. Human Readable: If the ExternalAccess element is used, then the attribute @ntk:externalReference must have a value of true.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.5 - ../Rules/general/NTK_ID_00009.sch

Rule Description

[NTK-ID-00009][Error] The @ism:DESVersion is less than the minimum version allowed: 201508.

Code Description

For all elements that contain @ism:DESVersion, this rule ensures that the version is greater than or equal to the minimum allowed version: 201508.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00009">
    <sch:rule context="*[@ism:DESVersion]">
        <sch:let name="version"
            value="number(if (contains(@ism:DESVersion,'-')) then substring-before(@ism:DESVersion,'-') else @ism:DESVersion)"/>
        <sch:assert test="$version >= 201508" flag="error">[NTK-ID-00009][Error] The @ism:DESVersion is less than the minimum version allowed: 201508.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.6 - ../Rules/MN/NTK_ID_00010.sch

Rule Description

[NTK-ID-00010][Error] Mission Need NTK assertions must use the “datasphere” profile DES.

Code Description

ntk:AccessProfile elements that have an ntk:AccessPolicy child with the MN value (urn:us:gov:ic:aces:ntk:mn) must have an ntk:ProfileDes with the datasphere value (urn:us:gov:ic:ntk:profile:datasphere).

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00010">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:mn']/ntk:ProfileDes">
        <sch:assert test=". = 'urn:us:gov:ic:ntk:profile:datasphere'" flag="error">[NTK-ID-00010][Error] Mission Need NTK assertions must use the "datasphere" profile DES.</
sch:assert>
    </sch:rule>
</sch:pattern>
```

2.7 - ../Rules/MN/NTK_ID_00011.sch

Rule Description

[NTK-ID-00011][Error] The Access Profile Value for MN NTK assertions must use the appropriate subject or region vocabulary.

Code Description

Given an MN NTK assertion (ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:mn'), the ntk:AccessProfileValue elements ntk:vocabulary attribute must be either 'datasphere:mn:issue' or 'datasphere:mn:region'.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00011">
  <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:mn']/ntk:AccessProfileValue">
    <sch:assert test="@ntk:vocabulary = 'datasphere:mn:issue' or @ntk:vocabulary = 'datasphere:mn:region'"
      flag="error">[NTK-ID-00011][Error] The Access Profile Value for MN NTK assertions must use the appropriate subject or region vocabulary.</sch:assert>
  </sch:rule>
</sch:pattern>
```

2.8 - ../Rules/MN/NTK_ID_00012.sch

Rule Description

[NTK-ID-00012][Error] The Access Profile Value must not have an @ntk:qualifier attribute specified for MN NTK assertions.

Code Description

Given an MN NTK assertion (ntk:AccessPolicy = 'urn:us:gov:ic:ntk:profile:mn'), the ntk:AccessProfileValue/@ntk:qualifier attribute is not allowed.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00012">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:mn']/ntk:AccessProfileValue">
        <sch:assert test="not(@ntk:qualifier)" flag="error">[NTK-ID-00012][Error] The Access Profile Value must not have an @ntk:qualifier attribute specified for MN NTK
assertions.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.9 - ../Rules/MN/NTK_ID_00013.sch

Rule Description

[NTK-ID-00013][Error] If Vocabulary Type is specified in an MN NTK assertion, it must specify a version for either the issue (datasphere:mn:issue) or region (datasphere:mn:region) vocabularies.

Code Description

If an ntk:VocabularyType element exists in an MN NTK assertion (ntk:VocabularyType[../ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:mn']), then (1) @ntk:name must be 'datasphere:mn:issue' or 'datasphere:mn:region' and (2) the @ntk:sourceVersion attribute is required.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00013">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:mn']/ntk:VocabularyType">
        <sch:assert test="@ntk:sourceVersion">[NTK-ID-00013][Error] The @ntk:sourceVersion attribute is required.</sch:assert>
        <sch:assert test="@ntk:name = 'datasphere:mn:issue' or @ntk:name = 'datasphere:mn:region'">[NTK-ID-00013][Error] The name attribute must be 'datasphere:mn:issue' or
'datasphere:mn:region'.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.10 - ../Rules/propin/NTK_ID_00014.sch

Rule Description

[NTK-ID-00014][Error] For group-based PROPIN NTK assertions that contain ntk:ProfileDes elements, ntk:ProfileDes must specify the URN for Profile DES type: 'grp-ind'.

Code Description

The value of ntk:ProfileDes element in a PROPIN NTK assertion (the ntk:AccessPolicy value starts with 'urn:us:gov:ic:ntk:propin:') must be 'urn:us:gov:ic:ntk:profile:grp-ind'.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00014">
  <sch:rule context="ntk:AccessProfile[matches(ntk:AccessPolicy, '^urn:us:gov:ic:aces:ntk:propin:[1-2]$\')]/ntk:ProfileDes">
    <sch:assert test="." = 'urn:us:gov:ic:ntk:profile:grp-ind'" flag="error">[NTK-ID-00014][Error] For group-based PROPIN NTK assertions that contain ntk:ProfileDes
elements, ntk:ProfileDes must specify the URN for Profile DES type: 'grp-ind'.</sch:assert>
  </sch:rule>
</sch:pattern>
```


2.11 - ../Rules/propin/NTK_ID_00015.sch

Rule Description

[NTK-ID-00015][Error] Propin NTK assertions that use the urn:us:gov:ic:aces:ntk:propin:2 access policy MUST specify a Profile DES.

Code Description

If an ntk:AccessProfile has an ntk:AccessPolicy element that has a value of ‘urn:us:gov:ic:aces:ntk:propin:2’, then an ntk:ProfileDes MUST be specified.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00015">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:propin:2']">
        <sch:assert test="ntk:ProfileDes" flag="error">[NTK-ID-00015][Error] NTK assertions that use the 'urn:us:gov:ic:aces:ntk:propin:2' access policy must specify an
ntk:ProfileDes element.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.12 - ../Rules/grp-ind/NTK_ID_00016.sch

Rule Description

[NTK-ID-00016][Error] Grp-ind Profile NTK assertions must use appropriate 'group' and 'individual' vocabularies for vocabulary type definitions.

Code Description

For NTK assertions that use the 'urn:us:gov:ic:ntk:profile:grp-ind' profile DES, ntk:VocabularyType/@name must start with 'group:' or 'individual:'.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00016">
  <sch:rule context="ntk:AccessProfile[ntk:ProfileDes = 'urn:us:gov:ic:ntk:profile:grp-ind']/ntk:VocabularyType">
    <sch:assert test="starts-with(@ntk:name, 'group:') or starts-with(@ntk:name, 'individual:')"
              flag="error">[NTK-ID-00016][Error] The @ntk:name attribute must start with either 'group:' or 'individual:'.</sch:assert>
  </sch:rule>
</sch:pattern>
```

2.13 - ../Rules/grp-ind/NTK_ID_00017.sch

Rule Description

[NTK-ID-00017][Error] Grp-ind Profile NTK assertions must use appropriate 'group' and 'individual' vocabularies for access profile values.

Code Description

For NTK assertions that use the 'urn:us:gov:ic:ntk:profile:group' profile DES, ntk:AccessProfileValue/@ntk:vocabulary must start with 'group:' or 'individual:'.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00017">
  <sch:rule context="ntk:AccessProfile[ntk:ProfileDes = 'urn:us:gov:ic:ntk:profile:grp-ind']/ntk:AccessProfileValue">
    <sch:assert test="starts-with(@ntk:vocabulary, 'group:') or starts-with(@ntk:vocabulary, 'individual:')"
              flag="error">[NTK-ID-00017][Error] The @ntk:vocabulary attribute must start with 'group:' or 'individual:'.</sch:assert>
  </sch:rule>
</sch:pattern>
```

2.14 - ../Rules/general/NTK_ID_00018.sch

Rule Description

[NTK-ID-00018][Error] Vocabulary declarations must have a root from one of the built-in types of 'datasphere', 'organization', 'individual', or 'group'. Declaration of custom root types are not permitted.

Code Description

For all VocabularyType names, ensure that they are all linked to a built-in root vocabulary type.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00018">
    <sch:rule context="ntk:VocabularyType[@ntk:name]">
        <sch:let name="root" value="substring-before(@ntk:name,':')"/>
        <sch:assert test="string-length($root)>0" flag="error">[NTK-ID-00018][Error] Vocabulary declarations must have a root from one of the built-in types of 'datasphere',
'organization', 'individual', or 'group'. Declaration of custom root types are not permitted.</sch:assert>
        <sch:assert test="some $value in ('datasphere', 'organization', 'individual', 'group') satisfies $root=$value"
            flag="error">[NTK-ID-00018][Error] Vocabulary declarations must have a root from one of the built-in types of 'datasphere', 'organization', 'individual', or
'group'. The root vocabulary type found [
            <sch:value-of select="$root"/>] is not valid.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.15 - ../Rules/general/NTK_ID_00019.sch

Rule Description

[NTK-ID-00019][Error] VocabularyTypes must have a source unless being derived from an existing built-in type.

Code Description

For each VocabularyType that does not have a source, make sure that it is one of the built-in types or otherwise already declared with a source.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00019">
    <sch:rule context="ntk:VocabularyType[not(@ntk:source)]">
        <sch:assert test="(some $type in $builtinVocab satisfies $type=@ntk:name)"
                    flag="error">[NTK-ID-00019][Error] VocabularyTypes must have a source unless being derived from an existing built-in type.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.16 - ../Rules/general/NTK_ID_00020.sch

Rule Description

[NTK-ID-00020][Error] All vocabularies used must be of a builtin vocabulary type or be defined in this ntk:AccessProfile in an ntk:VocabularyType.

Code Description

For every AccessProfileValue element, verify that the value of the vocabulary attribute is either one of the builtin vocabulary types or defined in this AccessProfile.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00020">
  <sch:rule context="ntk:AccessProfileValue">
    <sch:let name="definedTypes"
      value="preceding-sibling::ntk:VocabularyType/@ntk:name"/>
    <sch:assert test="(some $value in $builtinVocab satisfies $value=@ntk:vocabulary) or (some $value in $definedTypes satisfies $value=@ntk:vocabulary)"
      flag="error">[NTK-ID-00020][Error] Undefined vocabulary type:
    <sch:value-of select="@ntk:vocabulary"/>. All vocabularies used must be of a builtin vocabulary type or be defined in this ntk:AccessProfile in an ntk:VocabularyType.
  </sch:assert>
  </sch:rule>
</sch:pattern>
```

2.17 - ../Rules/datasphere/NTK_ID_00021.sch

Rule Description

[NTK-ID-00021][Error] Datasphere Profile NTK assertions must use ‘datasphere’ as the prefix for vocabulary names.

Code Description

For NTK assertions that use the ‘urn:us:gov:ic:ntk:profile:datasphere’ profile DES, ntk:VocabularyType/@ntk:name must start with ‘datasphere:’.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00021">
    <sch:rule context="ntk:AccessProfile[ntk:ProfileDes = 'urn:us:gov:ic:ntk:profile:datasphere']/ntk:VocabularyType">
        <sch:assert test="starts-with(@ntk:name, 'datasphere:')" flag="error">[NTK-ID-00021][Error] For ntk:VocabularyType elements in Datasphere NTK assertions, the @ntk:name
attribute must start with 'datasphere:'.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.18 - ../Rules/datasphere/NTK_ID_00022.sch

Rule Description

[NTK-ID-00022][Error] Datasphere Profile NTK assertions must use ‘datasphere’ vocabularies for access profile values.

Code Description

For NTK assertions that use the ‘urn:us:gov:ic:ntk:profile:datasphere’ profile DES, ntk:AccessProfileValue/@ntk:vocabulary must start with ‘datasphere:’.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00022">
    <sch:rule context="ntk:AccessProfile[ntk:ProfileDes = 'urn:us:gov:ic:ntk:profile:datasphere']/ntk:AccessProfileValue">
        <sch:assert test="starts-with(@ntk:vocabulary, 'datasphere:')" flag="error">[NTK-ID-00022][Error] For ntk:AccessProfileValue elements in Datasphere NTK assertions, the
@ntk:vocabulary attribute must start with 'datasphere:'.</sch:assert>
    </sch:rule>
</sch:pattern>
```


2.19 - ../Rules/general/NTK_ID_00023.sch

Rule Description

[NTK-ID-00023][Error] If ntk:AccessProfileValue or ntk:VocabularyType are specified then there must be a Profile DES that defines the use of the ntk:AccessProfile structure.

Code Description

When there is content in an AccessProfile, either AccessProfileValue or VocabularyType, then there must also be a ProfileDes in the AccessProfile.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00023">
    <sch:rule context="ntk:AccessProfile[ntk:AccessProfileValue or ntk:VocabularyType]">
        <sch:assert test="ntk:ProfileDes" flag="error">[NTK-ID-00023][Error] If ntk:AccessProfileValue or ntk:VocabularyType are specified then there must be a Profile DES that
defines the use of the ntk:AccessProfile structure.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.20 - ../Rules/general/NTK_ID_00024.sch

Rule Description

[NTK-ID-00024][Error] If there is a Profile DES specified, then there must be at least one ntk:AccessProfileValue.

Code Description

When ntk:ProfileDes exists, make sure there is a following sibling ntk:AccessProfileValue also.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00024">
    <sch:rule context="ntk:ProfileDes">
        <sch:assert test="following-sibling::ntk:AccessProfileValue" flag="error">[NTK-ID-00024][Error] If there is a Profile DES specified, then there must be at least one
ntk:AccessProfileValue.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.21 - ../Rules/general/NTK_ID_00025.sch

Rule Description

[NTK-ID-00025][Error] Sources cannot be overridden. If a built-in vocabulary type is specified and the source attribute is present it must equal the built-in source.

Code Description

When a builtin vocabulary is specified in an ntk:VocabularyType element and the source attribute is present, then verify that the source specified matches the built in source value.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00025">
    <sch:rule context="ntk:VocabularyType[index-of($builtinVocab, @ntk:name) > 0 and @ntk:source]">
        <sch:let name="index" value="index-of($builtinVocab, @ntk:name)"/>
        <sch:assert test="@ntk:source=$builtinVocabSource[$index]" flag="error">[NTK-ID-00025][Error] Sources cannot be overridden. If a built-in vocabulary type is specified
and the source attribute is present it must equal the built-in source. The source [
        <sch:value-of select="@ntk:source"/>] is invalid with respect to the vocabulary type [
        <sch:value-of select="@ntk:name"/>]. A source of [
        <sch:value-of select="$builtinVocabSource[$index]"/>] is expected.
    </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.22 - ./Rules/ICO/NTK_ID_00026.sch

Rule Description

[NTK-ID-00026][Error] AccessProfiles containing the AccessPolicy [urn:us:gov:ic:aces:ntk:ico] may not have ProfileDes, VocabularyType, or AccessProfileValue elements specified. Human Readable: When the ICO ACES is referenced, no data content may be specified in the AccessProfile.

Code Description

For every ntk:AccessProfile that has an ntk:AccessPolicy of [urn:us:gov:ic:aces:ntk:ico], the profile does not specify any of the data elements of ntk:ProfileDes, ntk:VocabularyType, or ntk:AccessProfileValue.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00026">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy='urn:us:gov:ic:aces:ntk:ico']">
        <sch:assert test="not(ntk:ProfileDes | ntk:VocabularyType | ntk:AccessProfileValue)">[NTK-ID-00026][Error] AccessProfiles containing the AccessPolicy
[urn:us:gov:ic:aces:ntk:ico] may not have ProfileDes, VocabularyType, or AccessProfileValue elements specified. Human Readable: When the ICO ACES is referenced, no data content may be
specified in the AccessProfile.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.23 - ../Rules/general/NTK_ID_00027.sch

Rule Description

[NTK-ID-00027][Error] organization:usa-agency vocabulary values must exist in the USAgency CVE.

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="ValidateTokenValuesExistenceInList" id="NTK-ID-00027">
    <sch:param name="context"
        value="ntk:AccessProfile/ntk:AccessProfileValue[@ntk:vocabulary='organization:usa-agency']"/>
    <sch:param name="searchTermList" value="."/>
    <sch:param name="list" value="$usagencyList"/>
    <sch:param name="errMsg"
        value="'[NTK-ID-00027][Error] organization:usa-agency vocabulary values must exist in the USAgency CVE.'"/>
</sch:pattern>
```

2.24 - ../Rules/agencyDissem/NTK_ID_00028.sch

Rule Description

[NTK-ID-00028][Error] An Agency Dissemination NTK must have one and only one entry qualified as the originator.

Code Description

For every ntk:AccessProfile with an ntk:ProfileDes of [urn:us:gov:ic:ntk:profile:agencydissem], this rule ensures that it has one and only one ntk:AccessProfileValue element with an @ntk:qualifier of [originator].

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00028">
    <sch:rule context="ntk:AccessProfile[ntk:ProfileDes='urn:us:gov:ic:ntk:profile:agencydissem']">
        <sch:assert test="count(ntk:AccessProfileValue[@ntk:qualifier='originator']) = 1">[NTK-ID-00028][Error] An Agency Dissemination NTK must have one and only one entry
qualified as the originator.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.25 - ../Rules/general/NTK_ID_00029.sch

Rule Description

[NTK-ID-00029][Error] An @ntk:sourceVersion must be specified for the built-in organization:usa-agency vocabulary type.

Code Description

Use the VocabHasCorrespondingVersion abstract pattern to require an ntk:VocabularyType with @sourceVersion specified and @name = 'organization:usa-agency'.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern is-a="VocabHasCorrespondingVersion" id="NTK-ID-00029">
    <sch:param name="context"
               value="ntk:AccessProfile[ntk:AccessProfileValue/@ntk:vocabulary='organization:usa-agency']"/>
    <sch:param name="vocab" value="'organization:usa-agency'"/>
    <sch:param name="errMsg"
               value="'[NTK-ID-00029][Error] An @ntk:sourceVersion must be specified for the built-in organization:usa-agency vocabulary type.'"/>
</sch:pattern>
```

2.26 - ../Rules/MN/NTK_ID_00030.sch

Rule Description

[NTK-ID-00030][Error] datasphere:mn:issue vocabulary values must exist in the Mission Need Issue CVE.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern is-a="ValidateTokenValuesExistenceInList" id="NTK-ID-00030">
    <sch:param name="context"
        value="ntk:AccessProfileValue[@ntk:vocabulary='datasphere:mn:issue']"/>
    <sch:param name="searchTermList" value="."/>
    <sch:param name="list" value="$issueList"/>
    <sch:param name="errMsg"
        value="'[NTK-ID-00030][Error] datasphere:mn:issue vocabulary values must exist in the Mission Need Issue CVE.'"/>
</sch:pattern>
```


2.27 - ../Rules/MN/NTK_ID_00031.sch

Rule Description

[NTK-ID-00031][Error] datasphere:mn:region vocabulary values must exist in the Mission Need Region CVE.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern is-a="ValidateTokenValuesExistenceInList" id="NTK-ID-00031">
    <sch:param name="context"
        value="ntk:AccessProfileValue[@ntk:vocabulary='datasphere:mn:region']"/>
    <sch:param name="searchTermList" value="."/>
    <sch:param name="list" value="$regionList"/>
    <sch:param name="errMsg"
        value="'[NTK-ID-00031][Error] datasphere:mn:region vocabulary values must exist in the Mission Need Region CVE.'"/>
</sch:pattern>
```

2.28 - ../Rules/general/NTK_ID_00032.sch

Rule Description

[NTK-ID-00032][Error] An @ntk:sourceVersion must be specified for the built-in datasphere:mn:issue vocabulary type.

Code Description

Use the VocabHasCorrespondingVersion abstract pattern to require an ntk:VocabularyType with @sourceVersion specified and @name = 'datasphere:mn:issue'.

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="VocabHasCorrespondingVersion" id="NTK-ID-00032">
    <sch:param name="context"
        value="ntk:AccessProfile[ntk:AccessProfileValue/@ntk:vocabulary='datasphere:mn:issue']"/>
    <sch:param name="vocab" value="'datasphere:mn:issue'"/>
    <sch:param name="errMsg"
        value="'[NTK-ID-00032][Error] An @ntk:sourceVersion must be specified for the built-in datasphere:mn:issue vocabulary type.'"/>
</sch:pattern>
```

2.29 - ../Rules/general/NTK_ID_00033.sch

Rule Description

[NTK-ID-00033][Error] An @ntk:sourceVersion must be specified for the built-in datasphere:mn:region vocabulary type.

Code Description

Use the VocabHasCorrespondingVersion abstract pattern to require an ntk:VocabularyType with @sourceVersion specified and @name = 'datasphere:mn:region'.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern is-a="VocabHasCorrespondingVersion" id="NTK-ID-00033">
    <sch:param name="context"
               value="ntk:AccessProfile[ntk:AccessProfileValue/@ntk:vocabulary='datasphere:mn:region']"/>
    <sch:param name="vocab" value="'datasphere:mn:region'"/>
    <sch:param name="errMsg"
               value="'[NTK-ID-00033][Error]An @ntk:sourceVersion must be specified for the built-in datasphere:mn:region vocabulary type.'"/>
</sch:pattern>
```

2.30 - ../Rules/missive/NTK_ID_00034.sch

Rule Description

[NTK-ID-00034][Error] Use of the missive access policy requires the Group & Individual Profile DES.

Code Description

If ntk:AccessProfile has an ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:missive', ntk:ProfileDes must be 'urn:us:gov:ic:ntk:profile:grp-ind'.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00034">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy='urn:us:gov:ic:aces:ntk:missive']/ntk:ProfileDes">
        <sch:assert test=". = 'urn:us:gov:ic:ntk:profile:grp-ind'" flag="error">[NTK-ID-00034][Error] Use of the missive access policy requires the Group and Individual
Profile DES.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.31 - ../Rules/agencyDissem/NTK_ID_00035.sch

Rule Description

[NTK-ID-00035][Error] The @ntk:qualifier attribute value of either 'originator' or 'dissemto' is required on every AccessProfileValue element for NTK Access Profiles based on the Agency Dissemination profile DES.

Code Description

Given an ntk:AccessProfile with an ntk:ProfileDes value of 'urn:us:gov:ic:ntk:profile:agencydissem', one of ntk:AccessProfileValue/@qualifier='originator' or ntk:AccessProfileValue/@qualifier='dissemto' must exist.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00035">
  <sch:rule context="ntk:AccessProfile[ntk:ProfileDes='urn:us:gov:ic:ntk:profile:agencydissem']/ntk:AccessProfileValue">
    <sch:assert test="@ntk:qualifier = 'originator' or @ntk:qualifier = 'dissemto'">[NTK-ID-00035][Error] The @ntk:qualifier attribute value of either 'originator' or
'dissemto' is required on every AccessProfileValue element for NTK Access Profiles based on the Agency Dissemination profile DES.</sch:assert>
  </sch:rule>
</sch:pattern>
```

2.32 - ./Rules/propin/NTK_ID_00036.sch

Rule Description

[NTK-ID-00036][Error] PROPIN access policies must have characters after the predefined portion ‘urn:us:gov:ic:aces:ntk:propin:’.

Code Description

Given an ntk:AccessPolicy that starts with ‘urn:us:gov:ic:aces:ntk:propin:’, the string length must be greater than 30 (that is, there must be characters after the predefined portion).

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00036">
    <sch:rule context="ntk:AccessPolicy[starts-with(., 'urn:us:gov:ic:aces:ntk:propin:'])">
        <sch:assert test="string-length(.) > 30" flag="error">[NTK-ID-00036][Error] PROPIN access policies must have characters after the predefined portion
urn:us:gov:ic:aces:ntk:propin:'.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.33 - ../Rules/restrictive/NTK_ID_00037.sch

Rule Description

[NTK-ID-00037][Error] Use of the restrictive access policy requires the Group & Individual Profile DES.

Code Description

If ntk:AccessProfile has an ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:restrictive', ntk:ProfileDes must be 'urn:us:gov:ic:ntk:profile:grp-ind'.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00037">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy='urn:us:gov:ic:aces:ntk:restrictive']/ntk:ProfileDes">
        <sch:assert test=". = 'urn:us:gov:ic:ntk:profile:grp-ind'" flag="error">[NTK-ID-00037][Error] Use of the restrictive access policy requires the Group and Individual
Profile DES.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.34 - ../Rules/restrictive/NTK_ID_00038.sch

Rule Description

[NTK-ID-00038][Error] Use of the restrictive access policy requires a Group vocabulary type.

Code Description

If ntk:AccessProfile has an ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:restrictive', then ntk:AccessProfileValue/@ntk:vocabulary must start with 'group:'.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00038">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy='urn:us:gov:ic:aces:ntk:restrictive']/ntk:AccessProfileValue">
        <sch:assert test="starts-with(@ntk:vocabulary, 'group:')" flag="error">[NTK-ID-00038][Error] Use of the restrictive access policy requires a Group vocabulary type.</
sch:assert>
    </sch:rule>
</sch:pattern>
```


2.35 - ./Rules/orcon/NTK_ID_00039.sch

Rule Description

[NTK-ID-00039][Error] ORCON requires the USA-Agency Vocabulary (organization:usa-agency).

Code Description

If AccessPolicy for the AccessProfile is ORCON, then the vocabulary for the AccessProfileValue must be USA-Agency.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00039">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:oc']/ntk:AccessProfileValue">
        <sch:assert test="@ntk:vocabulary = 'organization:usa-agency'">[NTK-ID-00039][Error] ORCON requires the USA-Agency Vocabulary (organization:usa-agency).</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.36 - ../Rules/exdis/NTK_ID_00040.sch

Rule Description

[NTK-ID-00040][Error] EXDIS requires the USA-Agency Vocabulary (organization:usa-agency).

Code Description

If AccessPolicy for the AccessProfile is EXDIS, then the vocabulary for the AccessProfileValue must be USA-Agency.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00040">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:xd']/ntk:AccessProfileValue">
        <sch:assert test="@ntk:vocabulary = 'organization:usa-agency'">[NTK-ID-00040][Error] EXDIS requires the USA-Agency Vocabulary (organization:usa-agency).</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.37 - ../Rules/general/NTK_ID_00041.sch

Rule Description

[NTK-ID-00041][Error] Source versions (@ntk:sourceVersion) must be consistent for all NTK Profiles within a document that contribute to the actual overall access restrictions of the document.

Code Description

For any given vocabularyType that is tied to a CES, determine how many distinct versions of that CES are specified. Report an error if there is more than one version found.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00041">
  <sch:rule abstract="true" id="abs_rule_00041">
    <sch:let name="versions"
      value="distinct-values(for $version in //ntk:Access//ntk:VocabularyType[@ntk:name=$vocab]/@ntk:sourceVersion return $version)"/>
    <sch:assert test="not(count($versions)>1)" flag="error">[NTK-ID-00041][Error] Source versions (@ntk:sourceVersion) must be consistent for all NTK Profiles within a
document that contribute to the actual overall access restrictions of the document. Found
    <sch:value-of select="$vocab"/>versions:
    <sch:value-of select="$versions"/>
    </sch:assert>
  </sch:rule>
  <sch:rule context="ntk:Access//ntk:VocabularyType[@ntk:name='datasphere:mn:region']">
    <sch:let name="vocab" value="'datasphere:mn:region'"/>
    <sch:extends rule="abs_rule_00041"/>
  </sch:rule>
  <sch:rule context="ntk:Access//ntk:VocabularyType[@ntk:name='datasphere:mn:issue']">
    <sch:let name="vocab" value="'datasphere:mn:issue'"/>
    <sch:extends rule="abs_rule_00041"/>
  </sch:rule>
  <sch:rule context="ntk:Access//ntk:VocabularyType[@ntk:name='organization:usa-agency']">
    <sch:let name="vocab" value="'organization:usa-agency'"/>
    <sch:extends rule="abs_rule_00041"/>
  </sch:rule>
  <sch:rule context="ntk:Access//ntk:VocabularyType[@ntk:name='datasphere:license']">
    <sch:let name="vocab" value="'datasphere:license'"/>
    <sch:extends rule="abs_rule_00041"/>
  </sch:rule>
</sch:pattern>
```

2.38 - ../Rules/general/NTK_ID_00042.sch

Rule Description

[NTK-ID-00042][Error] If an access policy URN begins with ‘urn:us:gov:ic:aces:ntk’, the value must exist in the list of allowed values.

Code Description

For AccessPolicy that start with 'urn:us:gov:ic:aces:ntk:', invoke abstract rule ValueExistsInList to check if the value exists in the NTKAccessPolicy CVE.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00042" is-a="ValueExistsInList">
    <sch:param name="context"
               value="ntk:AccessPolicy[starts-with(., 'urn:us:gov:ic:aces:ntk:')]"/>
    <sch:param name="list" value="$accessPolicyList"/>
    <sch:param name="errMsg"
               value="'[NTK-ID-00042][Error] Access Policy URNs that start with IC CIO reserved portion must exist in NTKAccessPolicy CVE.'"/>
</sch:pattern>
```

2.39 - ../Rules/general/NTK_ID_00043.sch

Rule Description

[NTK-ID-00043][Error] The source version (@ntk:sourceVersion) must match the version of the CVE being used to validate values of the NTK instance.

Code Description

For any given vocabularyType that is tied to a CES, check the claimed sourceVersion against the version of the CVE file being used for validation and ensure they are equal.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00043">
  <sch:rule abstract="true" id="abs_rule_00043">
    <sch:assert test="$cve/@specVersion = @ntk:sourceVersion" flag="error">[NTK-ID-00043][Error] The source version (@ntk:sourceVersion) must match the version of the CVE
being used to validate values of the NTK instance. The NTK claims that the vocabulary
    <sch:value-of select="@ntk:name"/>is compliant with
    <sch:value-of select="@ntk:sourceVersion"/>, but the CVE used points at spec version
    <sch:value-of select="$cve/@specVersion"/>.
  </sch:assert>
  </sch:rule>
  <sch:rule context="ntk:Access//ntk:VocabularyType[@ntk:name='datasphere:mn:region']">
    <sch:let name="cve" value="document('../..//CVE/MN/CVEnumMNRegion.xml')//cve:CVE"/>
    <sch:extends rule="abs_rule_00043"/>
  </sch:rule>
  <sch:rule context="ntk:Access//ntk:VocabularyType[@ntk:name='datasphere:mn:issue']">
    <sch:let name="cve" value="document('../..//CVE/MN/CVEnumMNIssue.xml')//cve:CVE"/>
    <sch:extends rule="abs_rule_00043"/>
  </sch:rule>
  <sch:rule context="ntk:Access//ntk:VocabularyType[@ntk:name='datasphere:license']">
    <sch:let name="cve"
      value="document('../..//CVE/LIC/CVEnumLicLicense.xml')//cve:CVE"/>
    <sch:extends rule="abs_rule_00043"/>
  </sch:rule>
  <!-- USAgency 2015-FEB does not currently have the spot for the version. It will be added the next time
USAgency revs. Uncomment this on next revision of NTK following a new version of USAgency--><!--<sch:rule context="ntk:Access//ntk:VocabularyType[@ntk:name='organization:usa-agency']">
<sch:let name="cve" value="document('../..//CVE/USAgency/CVEnumUSAgencyAcronym.xml')//cve:CVE"/>
<sch:extends rule="abs_rule_00043"/>--><!--</sch:rule>--></sch:pattern>
```

2.40 - ../Rules/general/NTK_ID_00044.sch

Rule Description

[NTK-ID-00044][Error] An @ntk:sourceVersion must be specified for the built-in datasphere:license vocabulary type.

Code Description

Use the VocabHasCorrespondingVersion abstract pattern to require an ntk:VocabularyType with @sourceVersion specified and @name = 'datasphere:license'.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern is-a="VocabHasCorrespondingVersion" id="NTK-ID-00044">
    <sch:param name="context"
               value="ntk:AccessProfile[ntk:AccessProfileValue/@ntk:vocabulary='datasphere:license']"/>
    <sch:param name="vocab" value="'datasphere:license'"/>
    <sch:param name="errMsg"
               value="'[NTK-ID-00044][Error]An @ntk:sourceVersion must be specified for the built-in datasphere:license vocabulary type.'"/>
</sch:pattern>
```

2.41 - ../Rules/general/NTK_ID_00045.sch

Rule Description

[NTK-ID-00045][Error] If an ntk:AccessProfileValue with @ntk:vocabulary of [datasphere:license] is specified, then the value must exist in the LIC.CES License CVE (CVEnumLicLicense.xml).

Code Description

For AccessProfileValue with vocabulary 'datasphere:license', invoke abstract rule ValueExistsInList to check if the value exists in the License CVE.

Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00045" is-a="ValueExistsInList">
    <sch:param name="context"
        value="ntk:AccessProfileValue[@ntk:vocabulary='datasphere:license']"/>
    <sch:param name="list" value="$licenseList"/>
    <sch:param name="errMsg"
        value="'[NTK-ID-00045][Error] If an ntk:AccessProfileValue with @ntk:vocabulary of [datasphere:license] is specified, then the value must exist in the LIC.CES
License CVE (CVEnumLicLicense.xml)'" />
</sch:pattern>
```

2.42 - ./Rules/MN/NTK_ID_00046.sch

Rule Description

[NTK-ID-00046][Error] When both issues (datasphere:mn:issue) and regions (datasphere:mn:region) are specified for in a Mission Need NTK instance, the version of the list specified for both must be the same.

Code Description

For Mission Need profile NTK instances that have Vocabulary Types of both issue and region, the verify that the @ntk:sourceVersion attribute values specified for both datasphere:mn:issue and datasphere:mn:region are the same.

Schematron Code

```
<!-- Notices - Distribution Notice:
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-->
<sch:pattern id="NTK-ID-00046">
  <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:mn'] [ntk:VocabularyType[@ntk:name='datasphere:mn:issue'] and
ntk:VocabularyType[@ntk:name='datasphere:mn:region']] ">
    <sch:assert test="ntk:VocabularyType[@ntk:name='datasphere:mn:issue']/@ntk:sourceVersion = ntk:VocabularyType[@ntk:name='datasphere:mn:region']/@ntk:sourceVersion">[NTK-
ID-00046][Error] When both issues (datasphere:mn:issue) and regions (datasphere:mn:region) are specified for in a Mission Need NTK instance, the version of the list specified for both must be
the same.</sch:assert>
  </sch:rule>
</sch:pattern>
```


2.43 - ../Rules/general/NTK_ID_00048.sch

Rule Description

[NTK-ID-00048][Error] ntk:AccessPolicy, ntk:ProfileDes, and ntk:AccessProfileValue are required to have text content.

Code Description

ntk:AccessPolicy, ntk:ProfileDes, and ntk:AccessProfileValue are required to have text content.

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="NTK-ID-00048">
    <sch:rule context="ntk:AccessPolicy | ntk:ProfileDes | ntk:AccessProfileValue">
        <sch:assert test="not(empty(text()))" flag="error">[NTK-ID-00048][Error] ntk:AccessPolicy, ntk:ProfileDes, and ntk:AccessProfileValue are required to have text
content.</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.44 - ../Rules/orcon/NTK_ID_00049.sch

Rule Description

[NTK-ID-00049][Error] ORCON profiles requires ntk:ProfileDes with type agencydissem (urn:us:gov:ic:ntk:profile:agencydissem).

Code Description

If AccessPolicy for the AccessProfile is ORCON, then the ProfileDes must be agencydissem.

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="NTK-ID-00049">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:oc']">
        <sch:assert test="ntk:ProfileDes = 'urn:us:gov:ic:ntk:profile:agencydissem'">[NTK-ID-00049][Error] ORCON profiles requires ntk:ProfileDes with type agencydissem
(urn:us:gov:ic:ntk:profile:agencydissem).</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.45 - ../Rules/exdis/NTK_ID_00050.sch

Rule Description

[NTK-ID-00050][Error] EXDIS profiles requires ntk:ProfileDes with type agencydissem (urn:us:gov:ic:ntk:profile:agencydissem).

Code Description

.

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="NTK-ID-00050">
    <sch:rule context="ntk:AccessProfile[ntk:AccessPolicy = 'urn:us:gov:ic:aces:ntk:xd']">
        <sch:assert test="ntk:ProfileDes = 'urn:us:gov:ic:ntk:profile:agencydissem'">[NTK-ID-00050][Error] EXDIS profiles requires ntk:ProfileDes with type agencydissem
(urn:us:gov:ic:ntk:profile:agencydissem).</sch:assert>
    </sch:rule>
</sch:pattern>
```

2.46 - ../Rules/general/NTK_ID_00051.sch

Rule Description

[NTK-ID-00051][Error] If a profile DES URN begins with ‘urn:us:gov:ic:ntk:’, the value must exist in the list of allowed values.

Code Description

If ProfileDes starts with 'urn:us:gov:ic:ntk', invoke abstract rule ValueExistsInList to check if the value exists in the NTKProfileDes CVE.

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="NTK-ID-00051" is-a="ValueExistsInList">
    <sch:param name="context"
        value="ntk:ProfileDes[starts-with(., 'urn:us:gov:ic:ntk:')]"/>
    <sch:param name="list" value="$profileDESList"/>
    <sch:param name="errMsg"
        value="'[NTK-ID-00051][Error] Profile DES URNs that start with IC CIO reserved portion must exist in NTKProfileDes CVE.'"/>
</sch:pattern>
```

Chapter 3 - Abstract Patterns

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

3.1 - ./Lib/ValidateTokenValuesExistenceInList.sch

Code Description

This abstract pattern checks to see if an attribute of an element exists in a list or matches the pattern defined by the list. The calling rule must pass the context, search term list, attribute value to check, and an error message.

Schematron Code

```
<!--
  This abstract pattern checks to see if an attribute of an element exists in a list or matches the pattern defined by the list.

  $context      := the context in which the searchValue exists
  $searchTermList := the set of values 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="@ism:releasableTo"/>
    <sch:param name="searchTermList" value="."/>
    <sch:param name="list" value="$releasableToList"/>
    <sch:param name="errMsg" value="'
      [ISM-ID-00265][Error] Any @ism:releasableTo must
      be a value in CVEnumISMRelTo.xml.
    '"/>
  </sch:pattern>

  Note: $iso4217TrigraphList is defined in the main document, IRM_XML.xml.
-->
<sch:pattern abstract="true" id="ValidateTokenValuesExistenceInList">
  <sch:rule context="$context">
    <sch:assert test="every $searchTerm in tokenize(normalize-space(string($searchTermList)), ' ') satisfies $searchTerm = $list or (some $Term in $list satisfies
(matches(normalize-space($searchTerm), concat('^',$Term,'$'))))"
      flag="error">
      <sch:value-of select="$errMsg"/>
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

3.2 - ./Lib/ValueExistsInList.sch

Code Description

This abstract pattern verifies that a value at a given context matches fome value in a list using regular expression matching. The calling rule must pass the context, search term list, attribute value to check, and an error message.

Schematron Code

```
<!--
  This abstract pattern verifies that a term matches a value in a list using regular expression matching.

  $context      := the context in which the searchValue exists
  $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="ValueExistsInList" id="IRM_ID_00027" xmlns:sch="http://purl.oclc.org/dsdl/schematron">
    <sch:param name="context" value="@ism:releasableTo"/>
    <sch:param name="searchTermList" value="."/>
    <sch:param name="list" value="$releasableToList"/>
    <sch:param name="errMsg" value="'
      [ISM-ID-00265][Error] Any @ism:releasableTo must
      be a value in CVEnumISMRelTo.xml.
    '"/>
  </sch:pattern>

-->
<sch:pattern abstract="true" id="ValueExistsInList">
  <sch:rule context="$context">
    <sch:assert test="some $Term in $list satisfies (matches(normalize-space(.), concat('^',$Term,'$')))"
      flag="error">
      <sch:value-of select="$errMsg"/>
    </sch:assert>
  </sch:rule>
</sch:pattern>
```

3.3 - ../Lib/VocabHasCorrespondingVersion.sch

Code Description

Abstract pattern to require an ntk:VocabularyType with @ntk:sourceVersion for a specified vocabulary.

Schematron Code

```
<sch:pattern abstract="true" id="VocabHasCorrespondingVersion">
  <sch:rule context="$context">
    <sch:assert test="ntk:VocabularyType[@ntk:name=$vocab]/@ntk:sourceVersion"
              flag="error">
      <sch:value-of select="$errMsg"/>
    </sch:assert>
  </sch:rule>
</sch:pattern>
```


Chapter 4 - Schematron Schema

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

4.1 - ./NTK_XML.sch

Schematron Code

```
<?ICEA master?>
<!-- Notices - Distribution Notice:
      This document has been approved for Public Release and is available for use without restriction.
-->
<sch:schema queryBinding="xslt2">
    <sch:ns uri="urn:us:gov:ic:pubs" prefix="pubs"/>
    <sch:ns uri="urn:us:gov:ic:cve" prefix="cve"/>
    <sch:ns uri="http://www.w3.org/1999/xlink" prefix="xlink"/>
    <sch:ns uri="urn:us:gov:ic:ism" prefix="ism"/>
    <sch:ns uri="urn:us:gov:ic:mat" prefix="mat"/>
    <sch:ns uri="urn:us:gov:ic:ntk" prefix="ntk"/>
    <sch:ns uri="urn:us:gov:ic:irm" prefix="irm"/>
    <sch:ns uri="http://www.w3.org/2001/XMLSchema" prefix="xs"/>
    <sch:include href="Lib/VocabHasCorrespondingVersion.sch"/>
    <sch:include href="Lib/ValueExistsInList.sch"/>
    <sch:include href="Lib/ValidateTokenValuesExistenceInList.sch"/>
    <!--*****--><!-- (U) Global Lets      --><!--*****--><!-- Built in vocabulary types (builtinVocab) and their sources
(buildinVocabSource).
      These two lists must be kept in sync and order matters. -->
    <sch:let name="builtins"
        value="( ('group:iaaems','JWICS:IAAEMS'), ('individual:icpki','IC-PKI:DN'), ('individual:cadpki','CAD-PKI:DN'), ('individual:acsspki','ACSS-PKI:DN'),
('organization:usa-agency','urn:us:gov:ic:cvenum:usagency:agencyacronym'), ('datasphere:license','urn:us:gov:ic:cvenum:lic:license'), ('datasphere:mn:issue','urn:us:gov:ic:cvenum:mn:issue'),
('datasphere:mn:region','urn:us:gov:ic:cvenum:mn:region'))"/>
    <!-- Split out the built ins for ease of use -->
    <sch:let name="builtinVocab"
        value="for $each in $builtins[position() mod 2 eq 1] return $each"/>
    <sch:let name="builtinVocabSource"
        value="for $each in $builtins[position() mod 2 eq 0] return $each"/>
    <!-- (U) Resources -->
    <sch:let name="accessPolicyList"
        value="document('.../CVE/NTK/CVEnumNTKAccessPolicy.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <sch:let name="profileDESList"
        value="document('.../CVE/NTK/CVEnumNTKProfileDes.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <sch:let name="licenseList"
        value="document('.../CVE/LIC/CVEnumLicLicense.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <sch:let name="usagencyList"
        value="document('.../CVE/USAgency/CVEnumUSAgencyAcronym.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <sch:let name="issueList"
        value="document('.../CVE/MN/CVEnumMNIssue.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <sch:let name="regionList"
        value="document('.../CVE/MN/CVEnumMNRegion.xml')//cve:CVE/cve:Enumeration/cve:Term/cve:Value"/>
    <!--*****--><!-- (U) NTK ID Rules --><!--*****--><!--(U) ICO-->
    <sch:include href="./Rules/ICO/NTK_ID_00026.sch"/>
    <!--(U) MN-->
    <sch:include href="./Rules/MN/NTK_ID_00010.sch"/>
    <sch:include href="./Rules/MN/NTK_ID_00011.sch"/>
    <sch:include href="./Rules/MN/NTK_ID_00012.sch"/>
    <sch:include href="./Rules/MN/NTK_ID_00013.sch"/>
    <sch:include href="./Rules/MN/NTK_ID_00030.sch"/>
```

```

        <sch:include href="./Rules/MN/NTK_ID_00031.sch"/>
        <sch:include href="./Rules/MN/NTK_ID_00046.sch"/>
        <!--(U) agencyDissem-->
<sch:include href="./Rules/agencyDissem/NTK_ID_00028.sch"/>
        <sch:include href="./Rules/agencyDissem/NTK_ID_00035.sch"/>
        <!--(U) datasphere-->
<sch:include href="./Rules/datasphere/NTK_ID_00021.sch"/>
        <sch:include href="./Rules/datasphere/NTK_ID_00022.sch"/>
        <!--(U) exdis-->
<sch:include href="./Rules/exdis/NTK_ID_00040.sch"/>
        <sch:include href="./Rules/exdis/NTK_ID_00050.sch"/>
        <!--(U) general-->
<sch:include href="./Rules/general/NTK_ID_00002.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00004.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00006.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00007.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00009.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00018.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00019.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00020.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00023.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00024.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00025.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00027.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00029.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00032.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00033.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00041.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00042.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00043.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00044.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00045.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00048.sch"/>
        <sch:include href="./Rules/general/NTK_ID_00051.sch"/>
        <!--(U) grp-ind-->
<sch:include href="./Rules/grp-ind/NTK_ID_00016.sch"/>
        <sch:include href="./Rules/grp-ind/NTK_ID_00017.sch"/>
        <!--(U) orcon-->
<sch:include href="./Rules/orcon/NTK_ID_00039.sch"/>
        <sch:include href="./Rules/orcon/NTK_ID_00049.sch"/>
        <!--(U) permissive-->
<sch:include href="./Rules/permissive/NTK_ID_00034.sch"/>
        <!--(U) propin-->
<sch:include href="./Rules/propin/NTK_ID_00014.sch"/>
        <sch:include href="./Rules/propin/NTK_ID_00015.sch"/>
        <sch:include href="./Rules/propin/NTK_ID_00036.sch"/>
        <!--(U) restrictive-->
<sch:include href="./Rules/restrictive/NTK_ID_00037.sch"/>
        <sch:include href="./Rules/restrictive/NTK_ID_00038.sch"/>
</sch:schema>
```

Chapter 5 - Removed Rules

All of the numbered Rules for NTK 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.

5.1 - `./Rules/deleted/NTK_ID_00001.sch`

Rule Description

[NTK-ID-00001] Removed in V4.

5.2 - `./Rules/deleted/NTK_ID_00003.sch`

Rule Description

[NTK-ID-00003] Removed in V3.

5.3 - `./Rules/deleted/NTK_ID_00005.sch`

Rule Description

[NTK-ID-00005] Removed in version 7. Moved to restriction in schema during adjudications.

5.4 - `./Rules/deleted/NTK_ID_00008.sch`

Rule Description

[NTK-ID-00008][Error] Removed in v2015-AUG.

5.5 - `./Rules/deleted/NTK_ID_00047.sch`

Rule Description

[NTK-ID-00047][Error] Removed in v2015-AUG.