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Guide to Schematron Rules and Patterns

NTK Schematron Guide

Version 8

Date of Draft Release: 27 January 2013

14 January 2013

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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 NTK-ID-XXXXX, with rule files named NTK_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 NTK 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/generalConstraints/NTK_ID_00002.sch

Rule Description: NTK-ID-00002 [MAT-ID-00002][Error] ntk:ExternalAccess and ntk:Access must contain at least one of ntk:AccessIndividualList, ntk:AccessGroupList, ntk:AccessProfileList.

Code Description: We make sure that either ntk:AccessIndividualList, ntk:AccessGroupList, or ntk:AccessProfileList exist as child elements of ntk:Access and ntk:ExternalAccess.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<sch:pattern id="NTK-ID-00002">

    <sch:rule context="ntk:Access|ntk:ExternalAccess">
        <sch:assert test="ntk:AccessIndividualList
or ntk:AccessGroupList          or ntk:AccessProfileList"
                    flag="error">
            [NTK-ID-00002][Error]
            ntk:ExternalAccess and ntk:Access must contain at least one of
            ntk:AccessIndividualList, ntk:AccessGroupList,
ntk:AccessProfileList.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.2 - ./Rules/globalConstraints/NTK_ID_00004.sch

Rule Description: NTK-ID-00004 [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, we make sure that all attributes in the NTK namespace contain a non-whitespace value.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
-->
<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/generalConstraints/NTK_ID_00006.sch

Rule Description: NTK-ID-00006 [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="/">
        <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/generalConstraints/NTK_ID_00007.sch

Rule Description: NTK-ID-00007 [NTK-ID-00007][Error] The attribute @ntk:externalReference must be set to true when the ExternalAccess element is used.

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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    available for use without restriction.
    -->
<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.
    </sch:assert>
    </sch:rule>
    </sch:pattern>
```

2.5 - ../Rules/generalConstraints/NTK_ID_00008.sch

Rule Description: NTK-ID-00008 [NTK-ID-00008][Error] If @ntk:access is used there must be a ntk:Access element present to convey the document level NTK.

Code Description: Make sure ntk:Access element exists if @ntk:access exists in the document.

Schematron Code:

```
<?ICEA pattern?><!-- Notices - Distribution Notice:
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    available for use without restriction.
    -->
<sch:pattern id="NTK-ID-00008">

    <sch:rule context="*[@ntk:access]">
        <sch:assert test="//ntk:Access | //ntk:ExternalAccess"
flag="error">
            [NTK-ID-00008][Error] If @ntk:access is used there must be a
ntk:Access element present to convey the document level NTK.
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

2.6 - ./Rules/generalConstraints/NTK_ID_00009.sch

Rule Description: NTK-ID-00009 [NTK-ID-00009][Error] The @ism:DESVersion is less than the minimum version allowed: 9. Human Readable: The ism version imported by NTK must be greater than or equal to 9.

Code Description: For all elements that contain @ism:DESVersion, we verify that the version is greater than or equal to the minimum allowed version: 9.

Schematron Code:

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

    <sch:rule context="*[@ism:DESVersion]">
        <sch:assert test="number(@ism:DESVersion) >= 9"
flag="error">
    [NTK-ID-00009][Error] The @ism:DESVersion is less than the
minimum version
    allowed: 9.

        Human Readable: The ism version imported by NTK must be greater
than or equal to 9.
    </sch:assert>
    </sch:rule>
</sch:pattern>
```

Chapter 3 - Abstract Patterns

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

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

Rule Description:

Code Description:

Schematron Code:

```
<?ICEA master?><!-- 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--
>
<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"/>

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

<!--(U) generalConstraints-->
    <sch:include href="./Rules/generalConstraints/NTK_ID_00001.sch"/>
        <sch:include href="./Rules/generalConstraints/
NTK_ID_00002.sch"/>
        <sch:include href="./Rules/generalConstraints/
NTK_ID_00005.sch"/>
        <sch:include href="./Rules/generalConstraints/
NTK_ID_00006.sch"/>
        <sch:include href="./Rules/generalConstraints/
NTK_ID_00007.sch"/>
        <sch:include href="./Rules/generalConstraints/
NTK_ID_00008.sch"/>
        <sch:include href="./Rules/generalConstraints/
NTK_ID_00009.sch"/>

        <!--(U) globalConstraints-->
        <sch:include href="./Rules/globalConstraints/NTK_ID_00003.sch"/>
        <sch:include href="./Rules/globalConstraints/
NTK_ID_00004.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/generalConstraints/NTK_ID_00001.sch`

Rule Description: NTK-ID-00001 [NTK-ID-00001] Removed in V4.

5.2 - `./Rules/generalConstraints/NTK_ID_00005.sch`

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

5.3 - `./Rules/globalConstraints/NTK_ID_00003.sch`

Rule Description: NTK-ID-00005 [NTK-ID-00005] Removed in V3.