There are two techniques that can be used to test the ?validity? of ISO metadata in XML. The first is to use the XML schema which defines the structure and types of the elements and the number of times they can occur. Schema validation uses xml schema documents with .xsd extensions. Many time the locations of these documents are given in namespaces declarations.

The second approach is called Schematron validation which is implemented using business rules included in files with .sch extensions.

The CI_ResponsibleParty object provides a good example of the differences between schema and schematron validation.

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Schemas

Schemas define the rules for the structure and content of an XML documents. They describe the data model and defines the objects, attributes, and relationships.

There are multiple ISO schema (EDEN and NGDC are most used with NGDC being recommended) and namespace locations. Once a record is loaded, the proper schema needs to be identified and associated with the file by the user. the schema located at [1] works well for most ISO metadata documents.

See Validation Error Guidance for help with common validation errors.

Schematron

Schematron is a rule-based validation language for making assertions about the presence or absence of elements or patterns in XML documents. These are used in conjunction with the schemas. Schematrons can handle validation that schemas cannot (such as comparing two elements) and can deliver better error messages. Ex: The East Bounding Coordinate is west of the West Bounding Coordinate. Schematrons can also deliver more "human friendly" error messages. Schematrons also allow the user to customize validation to enforce more constraints. This would allow an organization to make certain that particular elements were mandatory or had set domains, etc.

The recommended best practice is to write schematrons following: ISO 19757-3:2006, Information technology-Document Schema Definition Languages (DSDL) - Part 3: Rule-based validation - Schematron .

Validation Tips

If you run into a problem with time periods not validating, make sure that you have the correct gml namespace declaration that corresponds with the schema source. Try switching the gml namespace declaration between http://www.opengis.net/gml and http://www.opengis.net/gml/3.2 . This is why there are issues between the gml namespace and the schema. There are two versions of gml schemas:

GML Version 3.2

- For shcema hosted at tc211 and at NGDC
- deprecated elements are sprinkled throughout all the gml xsds
- namespace declaration: xmlns:gml="http://www.opengis.net/gml

GML Version 3.2.1

- New Eden schemas use this new version of the gml schema
- deprecated elements are all located in one xsd reserved for only deprecated elements (deprecatedTypes.xsd)
- namespace declaration: xmlns:gml="http://www.opengis.net/gml/3.2

Conclusions so far:

The rules are not different b/t v3.2 and v3.2.1 ONLY the organization of the elements in the XSDs
Mixing and matching different versions of the GML schema and the gml namespace declarations causes confusion and sometimes prevents validation of metadata records
I think that if the namespace declation was the same for both versions THEN we will not have any problems
-Can we recommend to opengis or Eden to remove the 3.2 from the gml namespace declaration in all gml schemas?
Since that will not happen, I recommend that we always use the gml v3.2.1 (will need to replace in NGDC schemas) and change all of our gml namespace declarations in the XML records to
o xmlns:gml="http://www.opengis.net/gml/3.2"

Master ISO XML Header

The header below is recommended. Cut and paste this into your metadata in the opening MI_Metadata tag:

```
<gmi:MI_Metadata
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:srv="http://www.isotc211.org/2005/srv"
xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:gsr="http://www.isotc211.org/2005/gsr"
xmlns:gss="http://www.isotc211.org/2005/gss"
xmlns:gts="http://www.isotc211.org/2005/gts"
xmlns:gmx="http://www.isotc211.org/2005/gmx"
xmlns:gmi="http://www.isotc211.org/2005/gmi"
xsi:schemaLocation="http://www.isotc211.org/2005/gmi http://www.ngdc.noaa.gov/metadata/published/x
```