ISO 19115-1 – Questions and Answers

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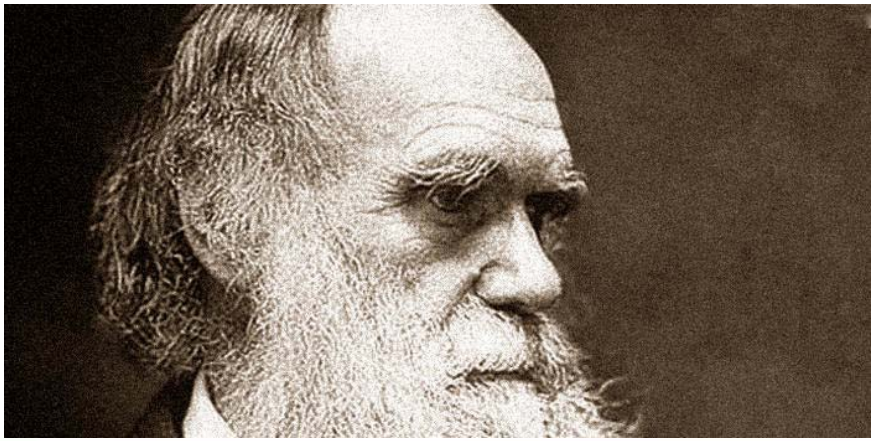
The ISO Standards are evolving.

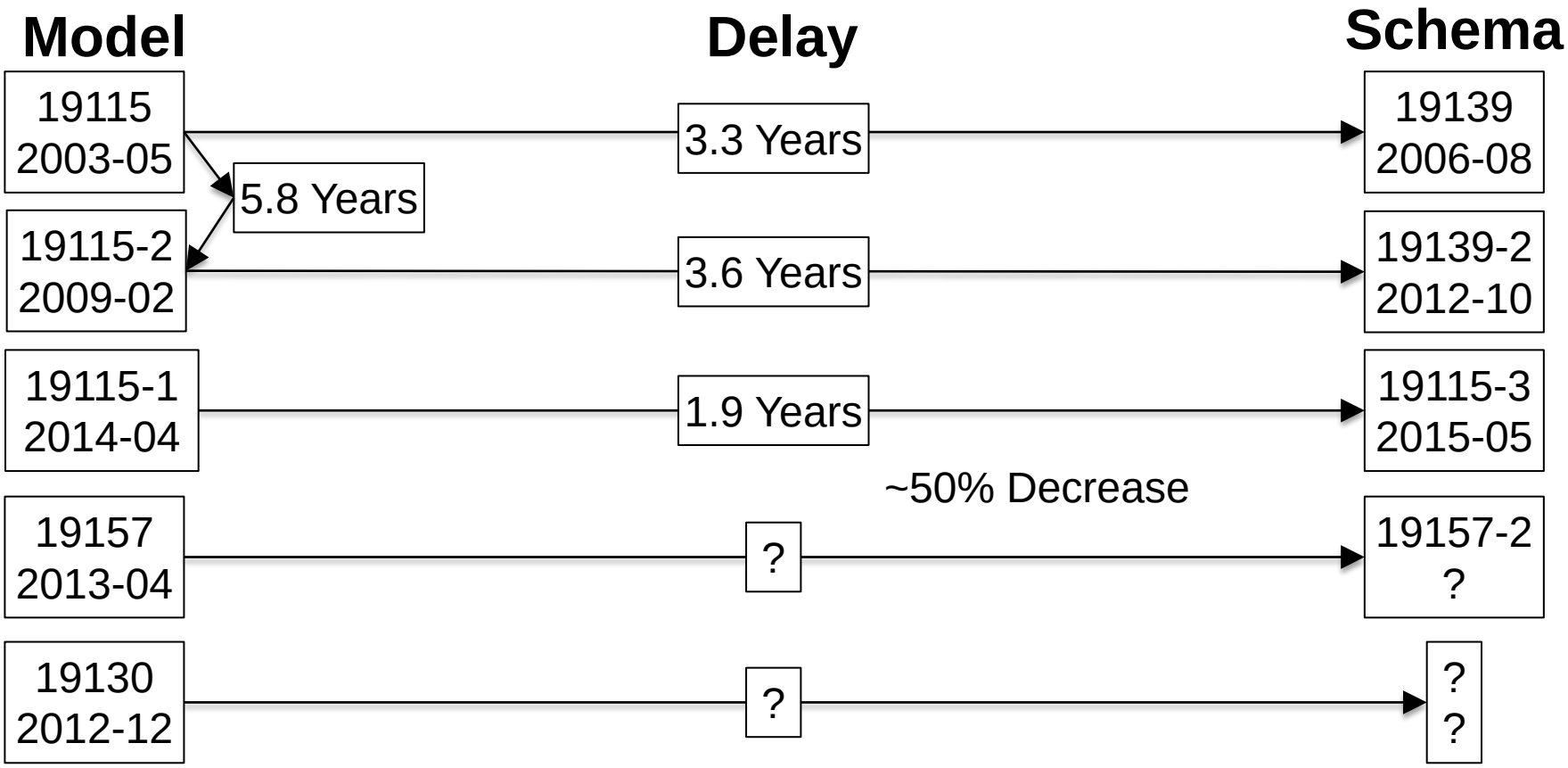
Metadata has been revised from 19115 to 19115-1
Data Quality metadata has moved from ISO 19115 to ISO 19157.

Evolution is good.



Conceptual Models and Implementations

"Conceptual models are useful, but I need XML implementations to get going."



Now creating XML schemas directly from UML models using software developed in OGC Testbed (ShapeChange). This capability is also being added directly into the tool by the vendor (Sparx Systems).

Identifying Metadata Records

"I need to unambiguously identify metadata records in multiple repositories"

ISO 19115 identified metadata records using a single character string that often times had to be overloaded to include the information required for unambiguous identification.

05f314b8-bffe-cb8d-418e-744613aa4f01 → nice opaque identifier, but who owns the metadata record or the identifier?

ISO 19115-1 brings the advantages of the MD_Identifier (+codeSpace) to the identification of the metadata record itself.

```
<mcc:code>
   <gco:CharacterString>05f314b8-bffe-cb8d-418e-744613aa4f01</gco:CharacterString>
</mcc:code>
<mcc:codeSpace>
   <gco:CharacterString>nz.govt.geodata</gco:CharacterString>
</mcc:codeSpace>
```

Tracking the Metadata Life Cycle

"I need to track when changes in my metadata happen"

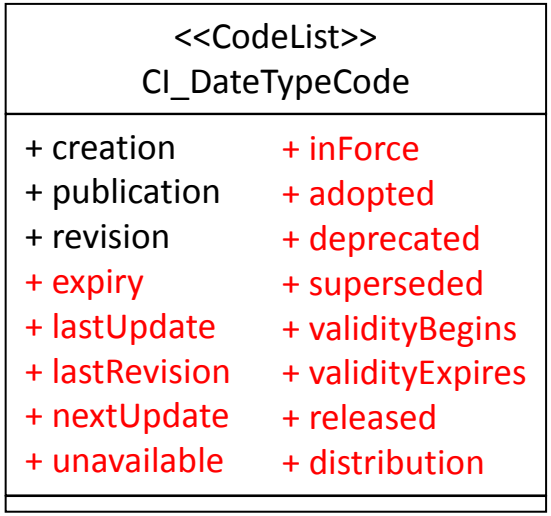
ISO 19115 includes a dateStamp with the creation time for the metadata. Many other kinds of times are also important in the life-cycle of metadata.

ISO 19115-1 includes any number of CI_Date objects for the metadata which allows tracking of the metadata throughout its life-cycle. 19115-1 includes many more dateTypes than 19115.

```
<mdb:dateInfo>
  <cit:CI_Date>
    <cit:date>
      <gco:DateTime>2111-11-11T11:11:11</gco:DateTime>
    </cit:date>
    <cit:dateType>
      <cit:CI_DateTypeCode
            codeList="codeListLocation#CI_DateTypeCode"
            codeListValue="lastUpdate">lastUpdate
            </cit:CI_DateTypeCode>
    </cit:dateType>
  </cit:CI_Date>
</mdb:dateInfo>
```

19115 included 3 dateTypes

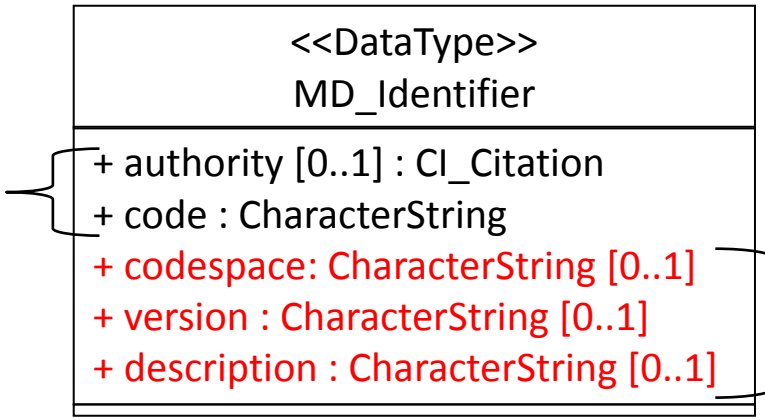
19115-1 adds 13 new dateTypes



Identifiers from Multiple Sources

"My metadata includes identifiers from different sources and namespaces"

19115 identifiers include a code and a citation to the authority of the code. Including a namespace for the identifier is not straightforward.



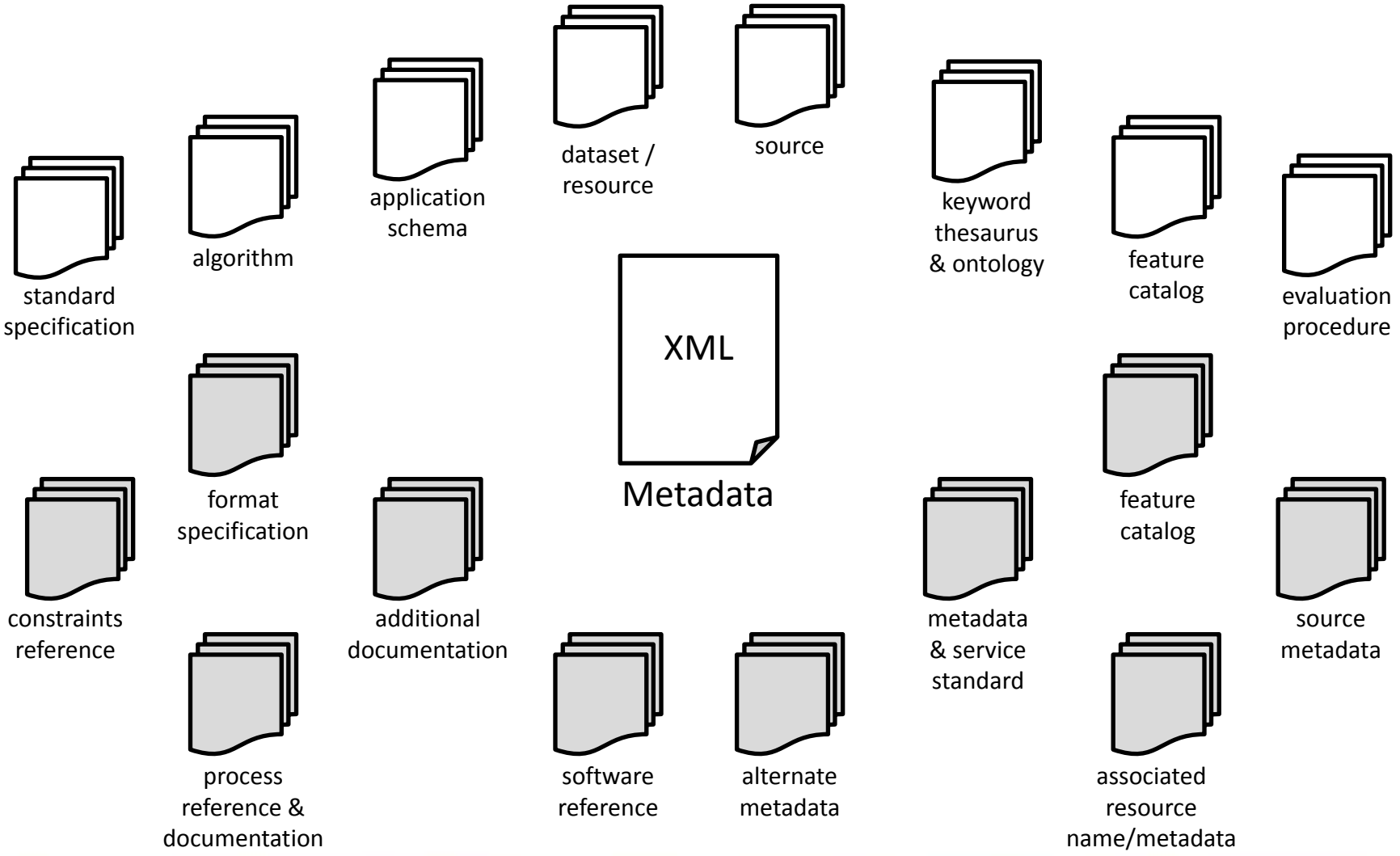
19115-1 adds a namespace (codespace), a version, and a description.

ISO 19115-1 added three important new elements to the MD_Identifier:

1. codespace provides a namespace for the identifier authority
2. version provides a mechanism for including a versioning identifiers
3. description provides a free-text field that can help users understand the identifier.

Connecting Other Documentation

"I have many existing documentation resources that can help users"



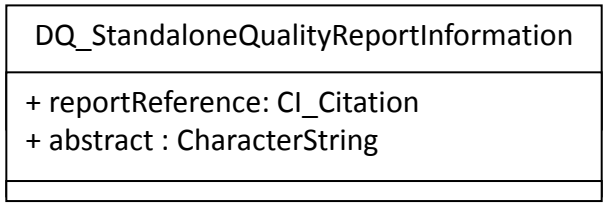
Stand Alone Quality Reports

"There are papers and web pages that describe the quality of my data."

Papers and reports that describe data quality are StandAloneReports. Metadata can include brief descriptions of the results (abstracts) and references to any number of these (citations).

Abstract: The fire training-set may also have been biased against savanna and savanna woodland fires since their detection is more difficult than in humid, forest environments with cool background temperatures [Malingreau, 1990]. There may, therefore, be an under-sampling of fires in these warmer background environments.

Citation: Malingreau J.P, 1990, The contribution of remote sensing to the global monitoring of fires in tropical and subtropical ecosystems. In: *Fire in Tropical Biota*, (J.G. Goldammer , editor), Springer Verlag , Berlin: 337-370.

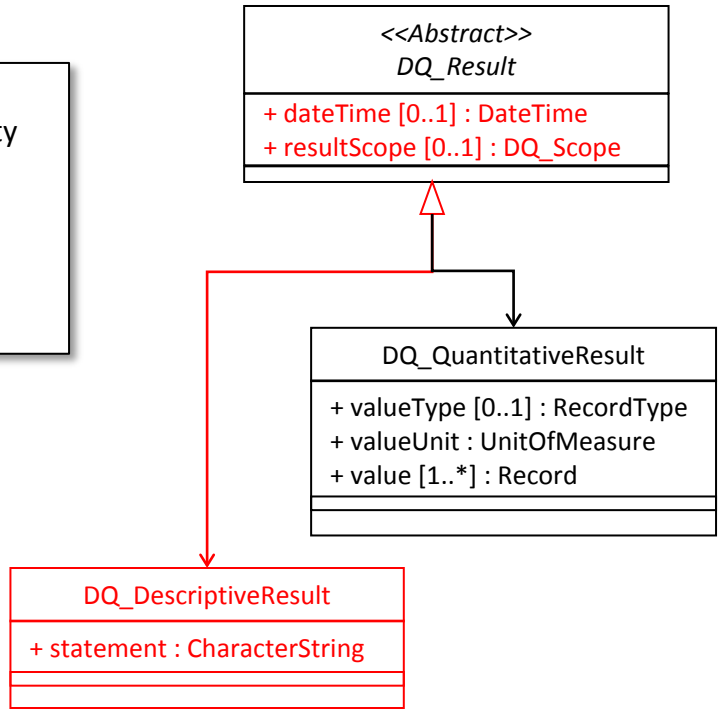


Textual Quality Descriptions

"My metadata includes textual descriptions of quality."

<Quality>
QA performed by CDIAC One of the roles of the Carbon Dioxide Information Analysis Center (CDIAC) is quality assurance (QA) of data. The QA process is an important component of the value-added concept of assuring accurate, usable information for researchers, because data received by CDIAC are rarely in condition for immediate

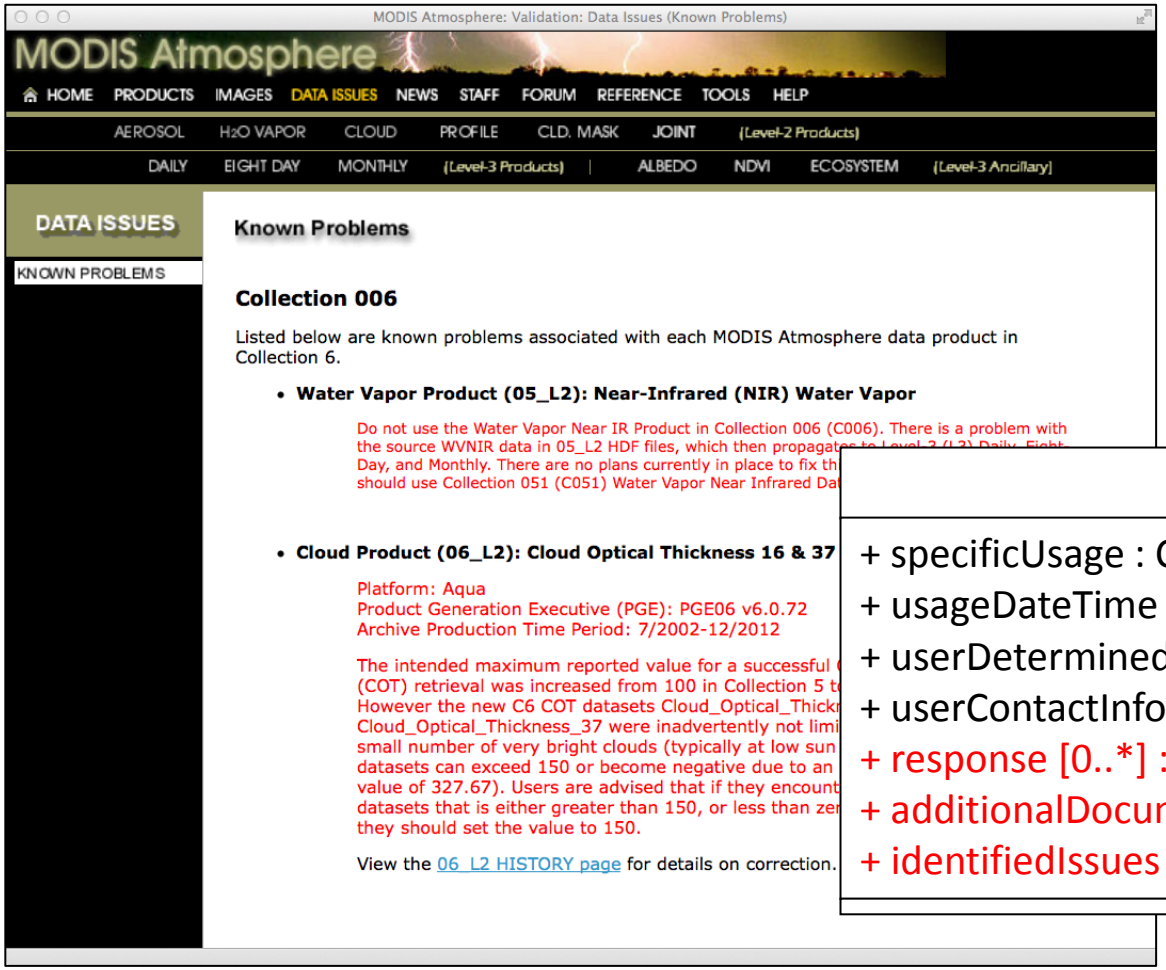
<Quality>
Note that Data File 12, Report #2, TASK 2 (Auclair et al., 1994a) is a Quality Assurance and Quality Control chapter for the areas of Canada, Alaska, United States (48 states), with range estimates of validation and error, a listing of discussions with experts in the field and a review of the draft of data files.
</Quality>



ISO 19157 adds a resultScope that allows multiple scopes in a single DQ_DataQuality object and includes a new kind of report (DQ_DescriptiveResult) that includes a simple text description of the result of the quality test.

Data Usage

"Users increase our understanding of data quality. We need to keep them in the loop."



MD_Usage
+ specificUsage : CharacterString + usageDateTime [0..1] : DateTime + userDeterminedLimitations [0..1] : CharacterString + userContactInfo [1..*] : CI_ResponsibleParty + response [0..*] : CharacterString + additionalDocumentation [0..*] : CI_Citation + identifiedIssues [0..1] : CI_Citation

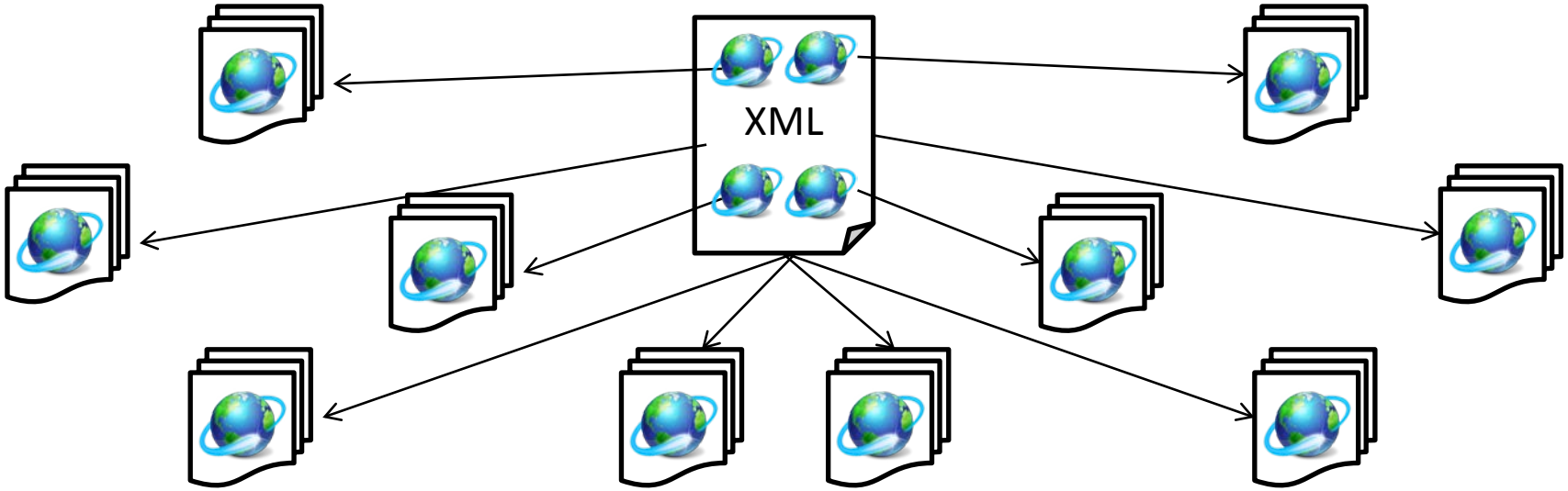
Connecting to Resources on the Web

"I have many existing web resources that can help users"

The ISO 19115 CI_Citation worked well for citing books, journal articles, and other physical resources.

ISO 19115-1 added two important new elements to the CI_Citation:

1. onlineResource provides a web address for the cited resource
2. graphic provides a graphic that can be used for display of the cited resource.

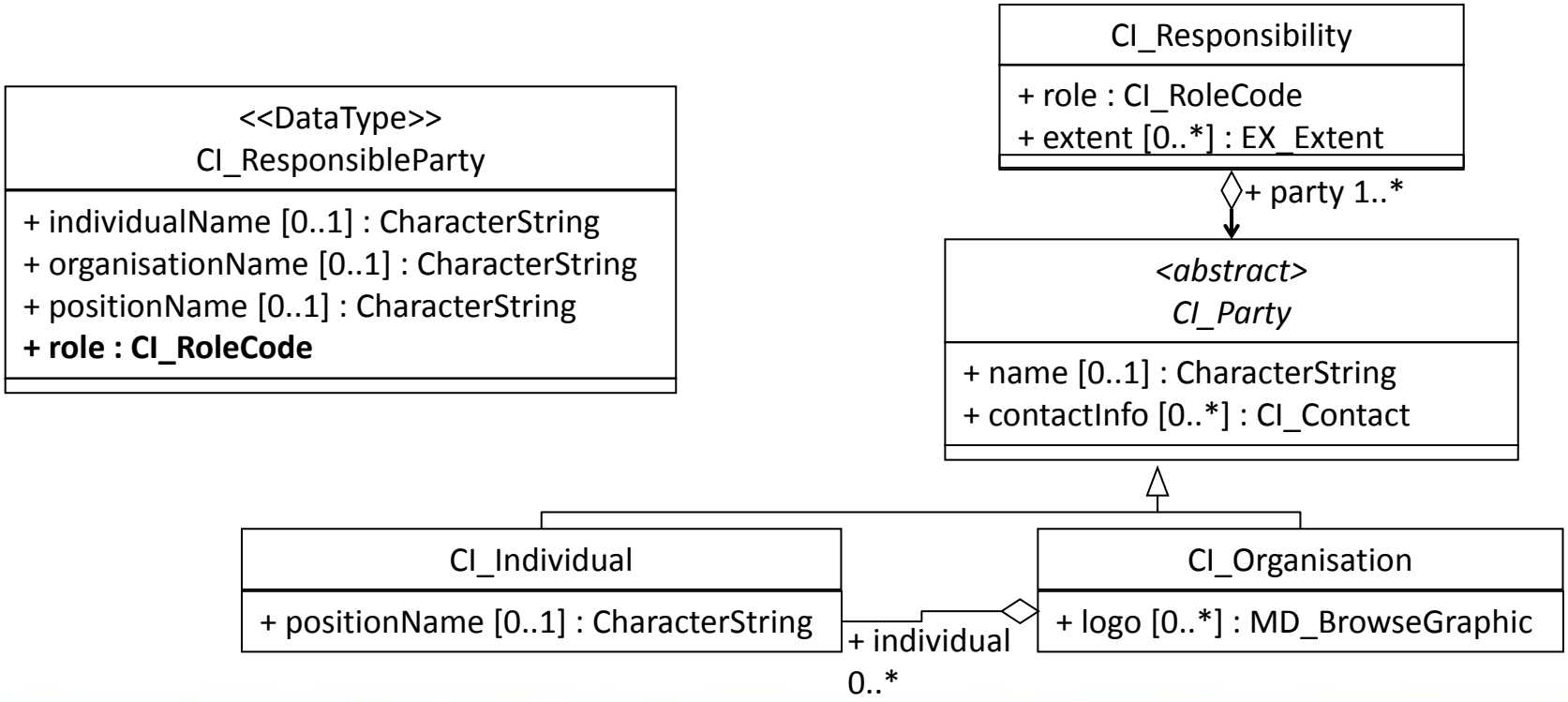


Individuals, Organizations, and Roles

"I need consistent information about people and organizations."

The ISO 19115 CI_ResponsibleParty object included a codeList for roles that people and organizations played. This made it difficult to reuse information in multiple records.

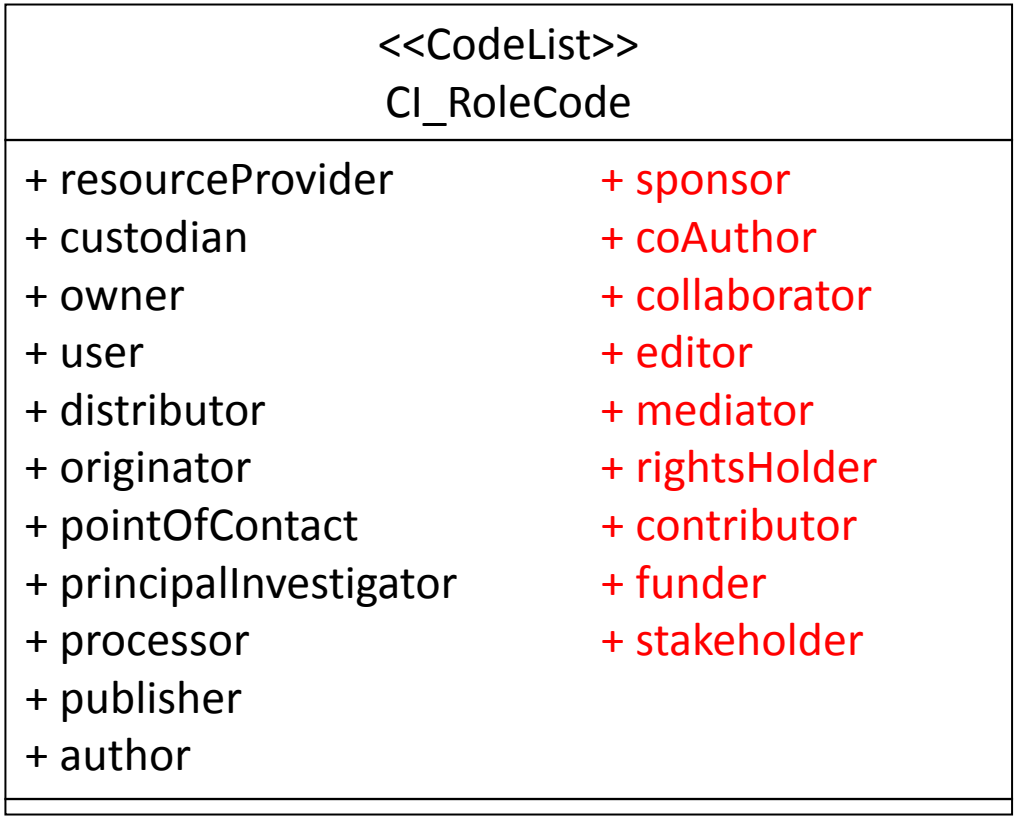
ISO 19115-1 separated the role codeList so that people and organizations can be re-used.



Individuals, Organizations, and Roles

"I have people and organizations in many roles."

19115 included 11 standard CI_RoleCodes



19115-1 adds 9 new CI_RoleCodes

Using Common Open Source Licensing

"I use a Creative Commons License for my data"

ISO 19115 included limited descriptions of constraints related to the data (useLimitations) or imposed by organizations (legal and security constraints). This made it difficult to describe commonly used open source licenses.

The Marine Community Profile extended 19115 to include Creative Commons License.

ISO 19115-1 included the necessary elements.

MD_Commons
+ useLimitation [0..*] : CharacterString + jurisdictionLink : URL + licenseLink : URL + imageLink : URL + licenseName : CharacterString + attributionConstraints : CharacterString

MD_Constraints
+ useLimitation [0..*] : CharacterString + constraintApplicationScope [0..1]: MD_Scope + graphic [0..*] : MD_BrowseGraphic + reference [0..*] : CI_Citation + MD_Releasability [0..1] : MD_Releasability + responsibleParty [0..*] : CI_Responsibility

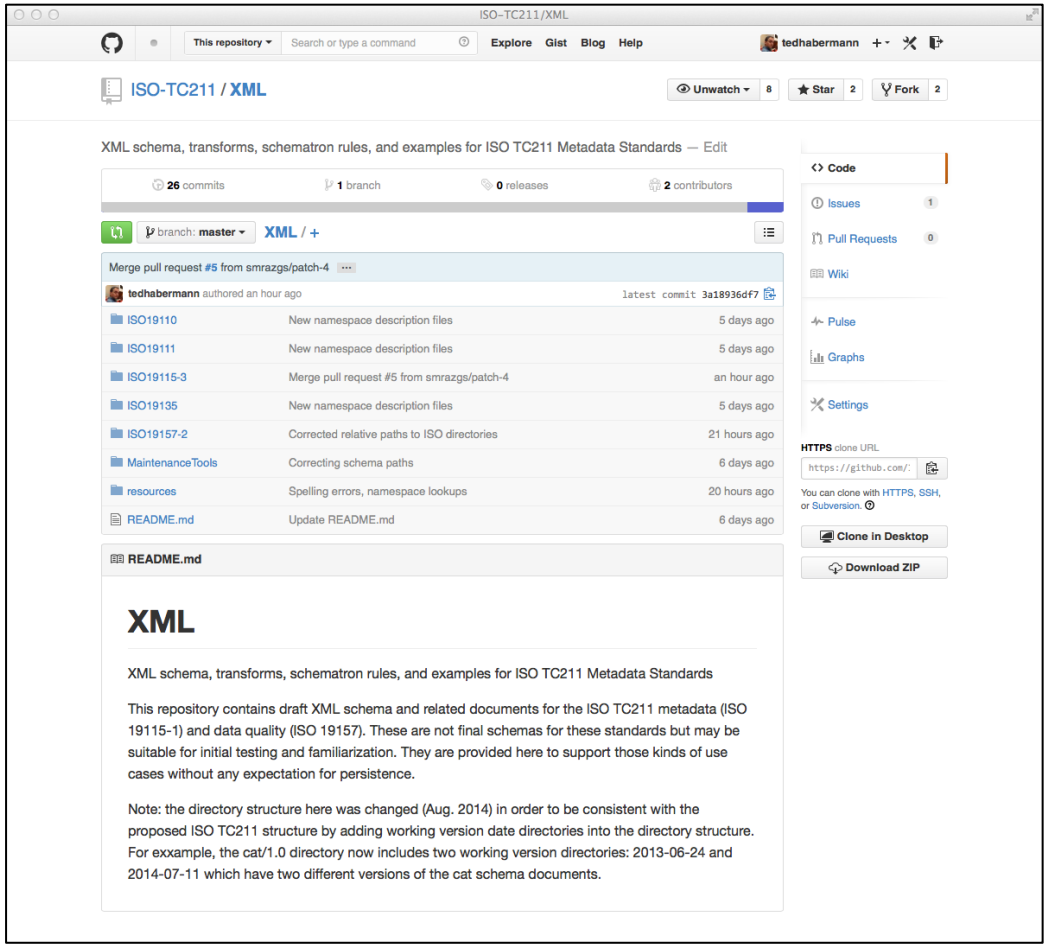
jurisdictionLink : URL ----------> responsibleParty
licenseLink : URL ----------> reference
imageLink : URL ----------> graphic
licenseName : CharacterString ----------> reference
attributionConstraints : CharacterString ----------> reference

Schema Repository

"How do I become familiar with and help test the new implementations?"

The XML schemas and other resources and RDF/OWL implementations are available at:

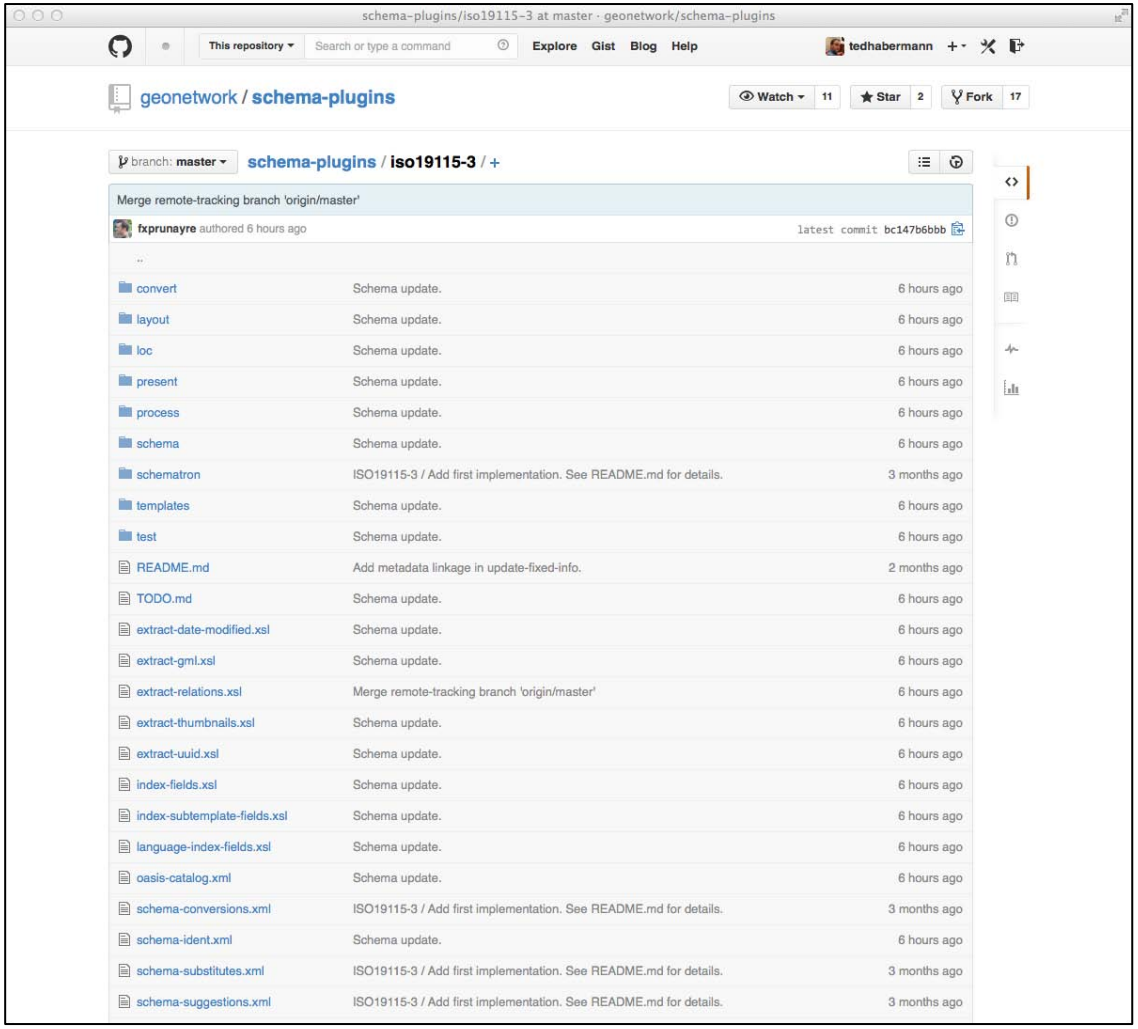
https://github.com/ISO-TC211



GeoNetwork Testing

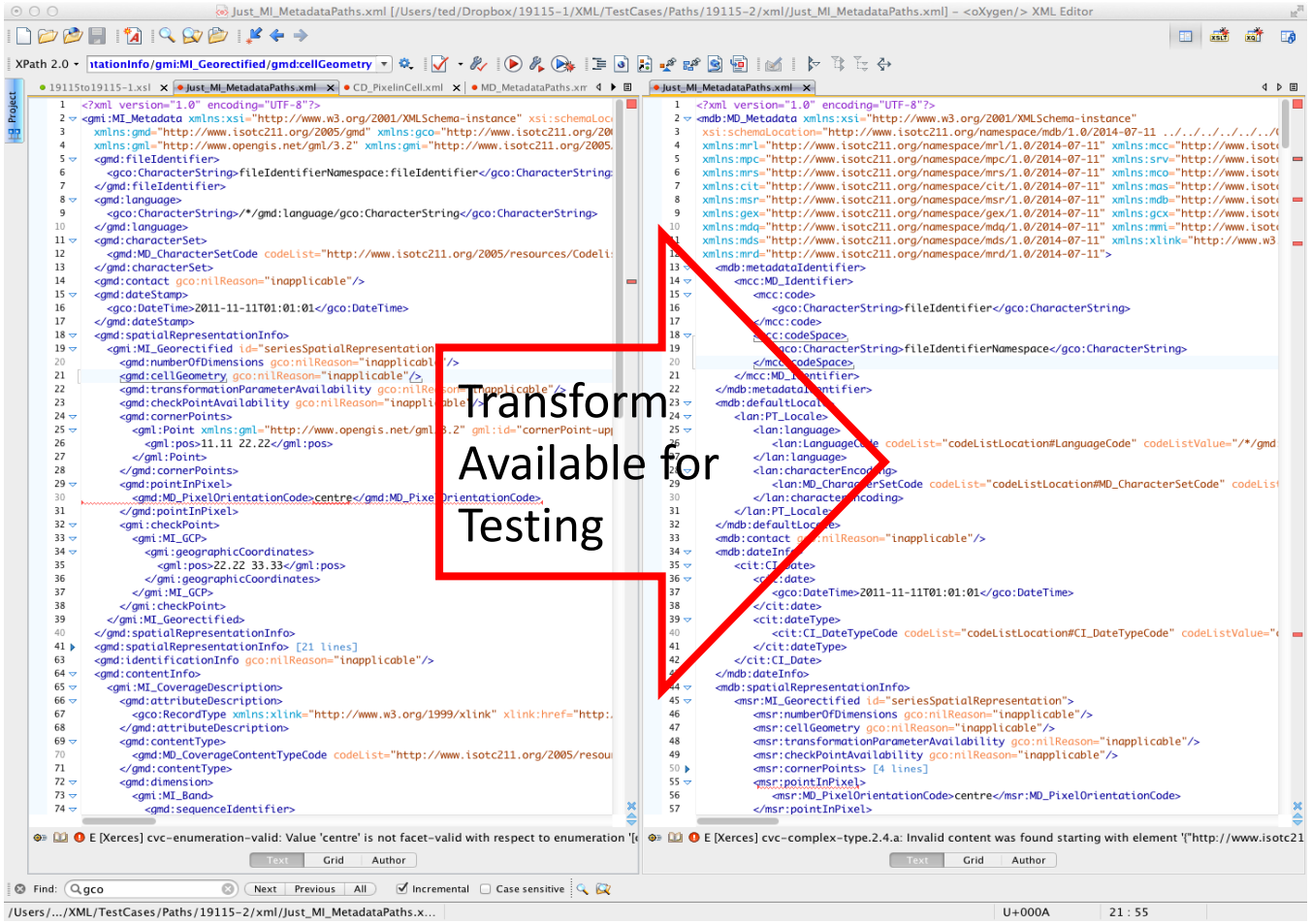
"I use GeoNetwork to manage metadata. How can I try 19115-1?"

GeoNetwork 19115-3 resources are available at: https://github.com/geonetwork/schema-plugins/tree/master/iso19115-3#iso-19115-3-schema-plugin



Metadata Migration

"Can I migrate my existing metadata to 19115-1?"



https://github.com/ISO-TC211/XML/blob/master/resources/transforms/19115to19115-1.xsl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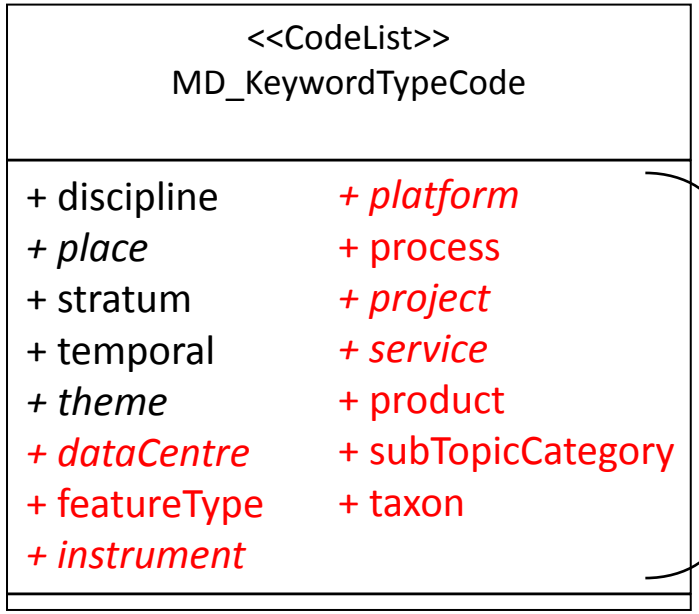
Keyword Types

"I use many shared vocabularies for consistency across collections."

19115 keyword types are limited to traditional types supported in CSDGM



19115-1 adds ten keyword types

Keywords are the largest single component of many metadata collections, regardless of the dialect. Using common types to classify these keywords is critical for consistent discovery, particularly using faceted searches. Shared vocabularies that include these new types are important contributor to consistent, interoperable metadata. The keyword types in *italics* are supported by NASA Global Change Master Directory (GCMD) and used in many existing metadata collections.

Connecting to Collections

"My datasets are parts of larger collections"

MD_Metadata
… **+ parentIdentifier [0..1] : CharacterString** …

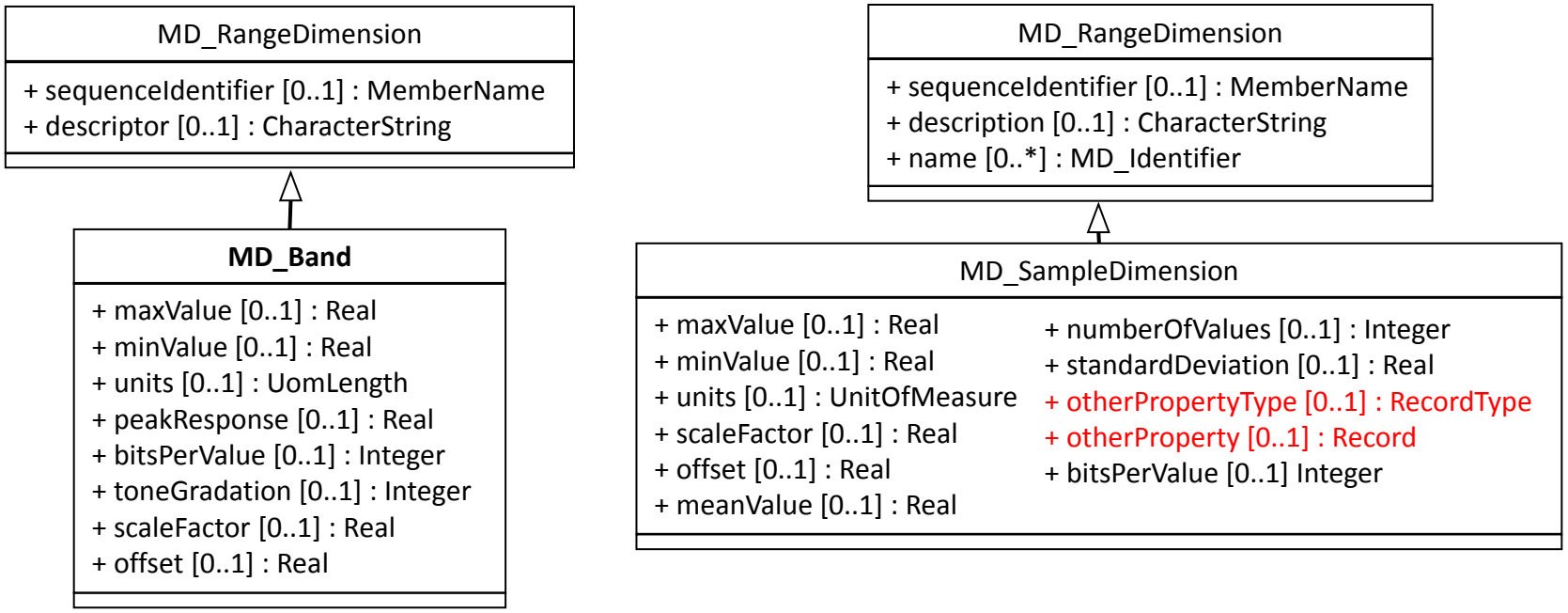
MD_Metadata
… + parentMetadata [0..1] : CI_Citation …

The concept of parent/child relationships between metadata for collections and for items in collections has been supported in many metadata dialects. ISO 19115 included a CharacterString as a parentIdentifier.

ISO 19115-1 brings the advantages of a complete CI_Citation for specification of the parent metadata. That CI_Citation includes any number of MD_Identifiers that provide unambiguoius identification of the parent metadata.

Product Specific Attributes

"My products need specific metadata that are not included in the general model"

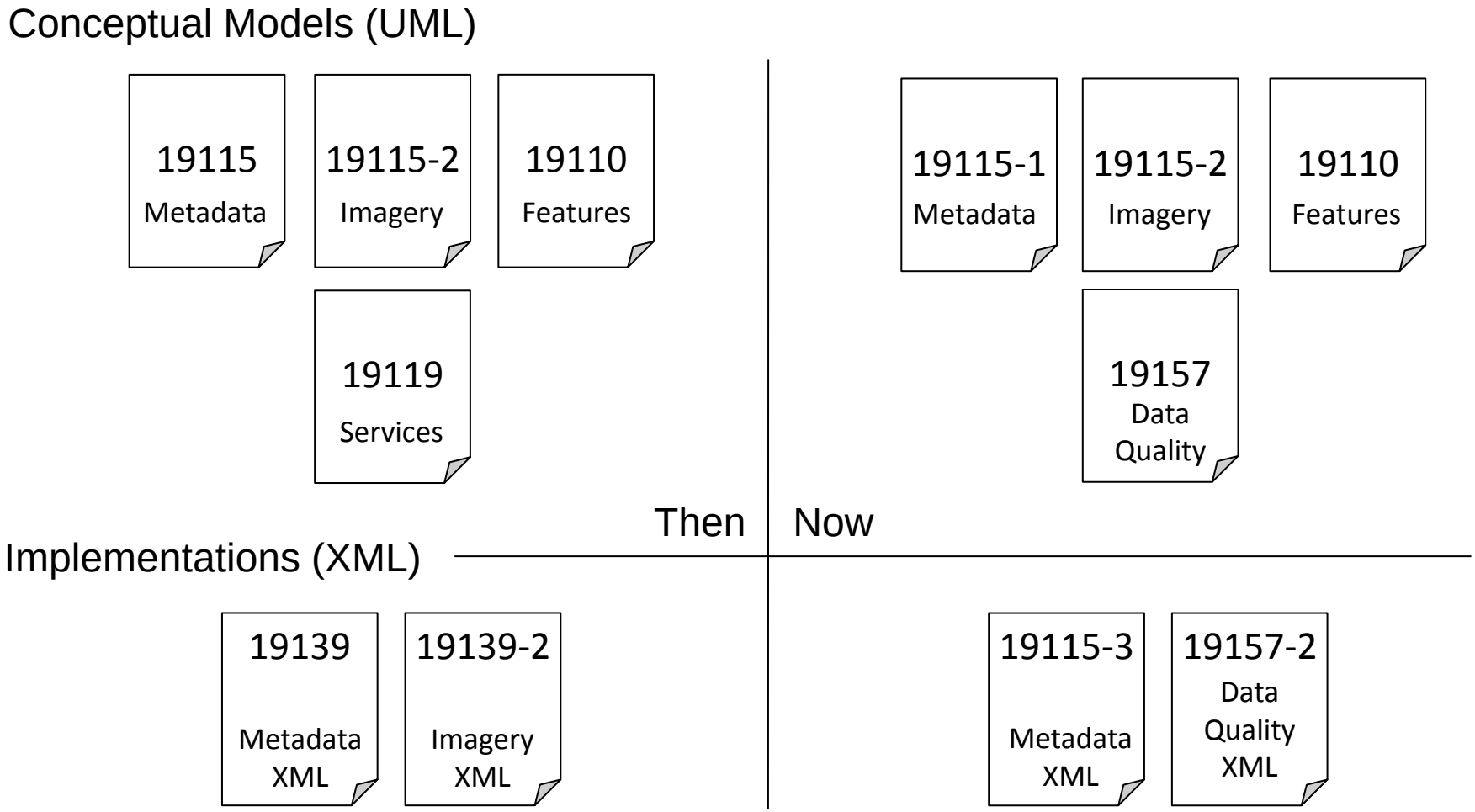


The ISO 19115 MD_Band object included a fixed set of image-specific properties.

ISO 19115-1 introduces the MD_SampleDimension which includes the capability to add product specific attributes using standard ISO objects.

ISO Metadata Standards

"I am confused by all of these numbers!"

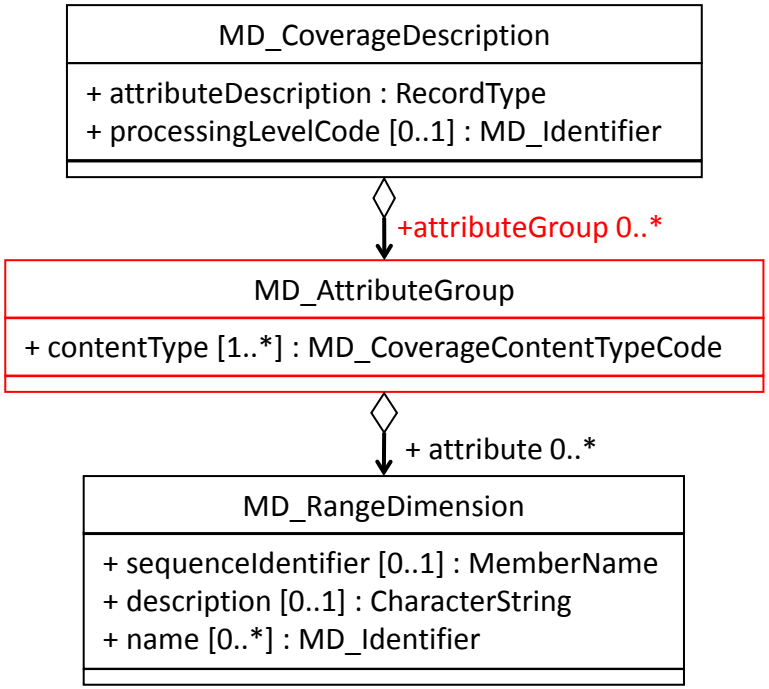


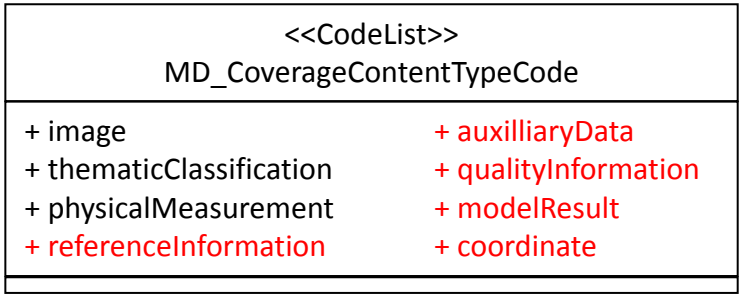
Organizing Parameters

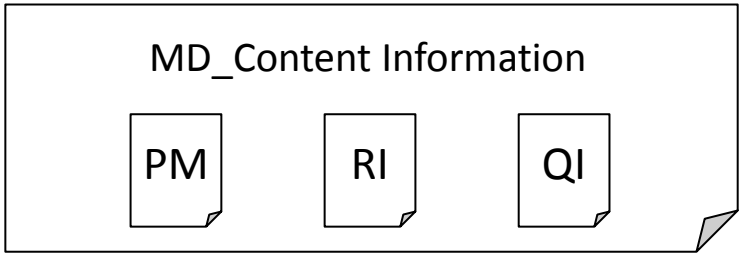
"My datasets include measured parameters, reference and quality information"

The ISO 19115 allowed only one type of information in each contentInfo section.

ISO 19115-1 adds the capability to group similar coverages and introduces more coverage types.





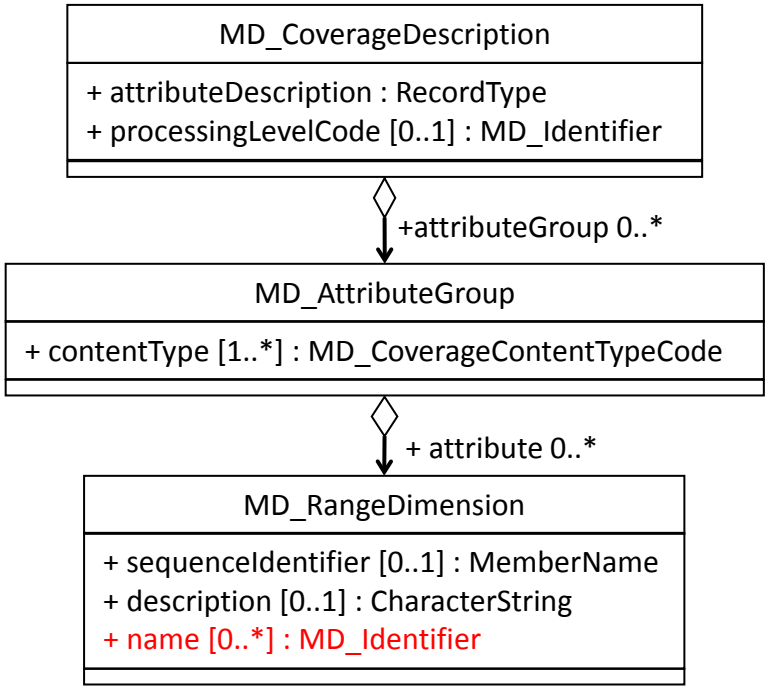


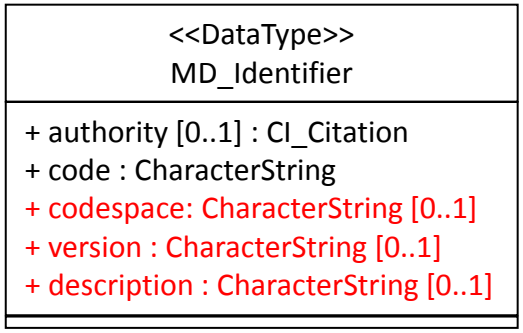
Multiple Parameter Names

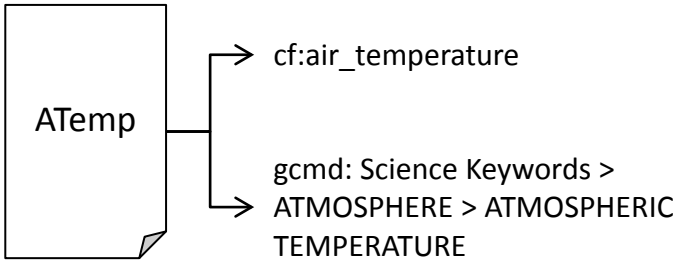
"My group uses local parameter names but we need standard names to share"

The ISO 19115 sequenceIdentifier only allowed one local name for parameters

ISO 19115-1 adds the capability to add multiple names for parameters and to identify the sources for those names.

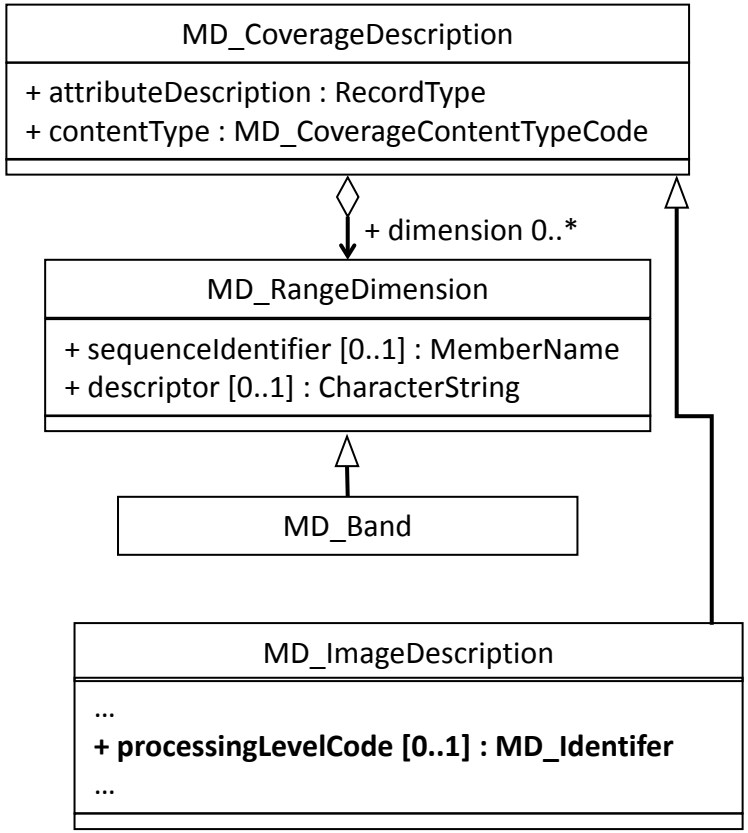


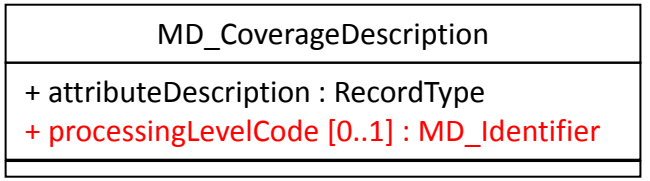




Describe Coverage Processing Levels

"My data have multiple bands and processing levels"



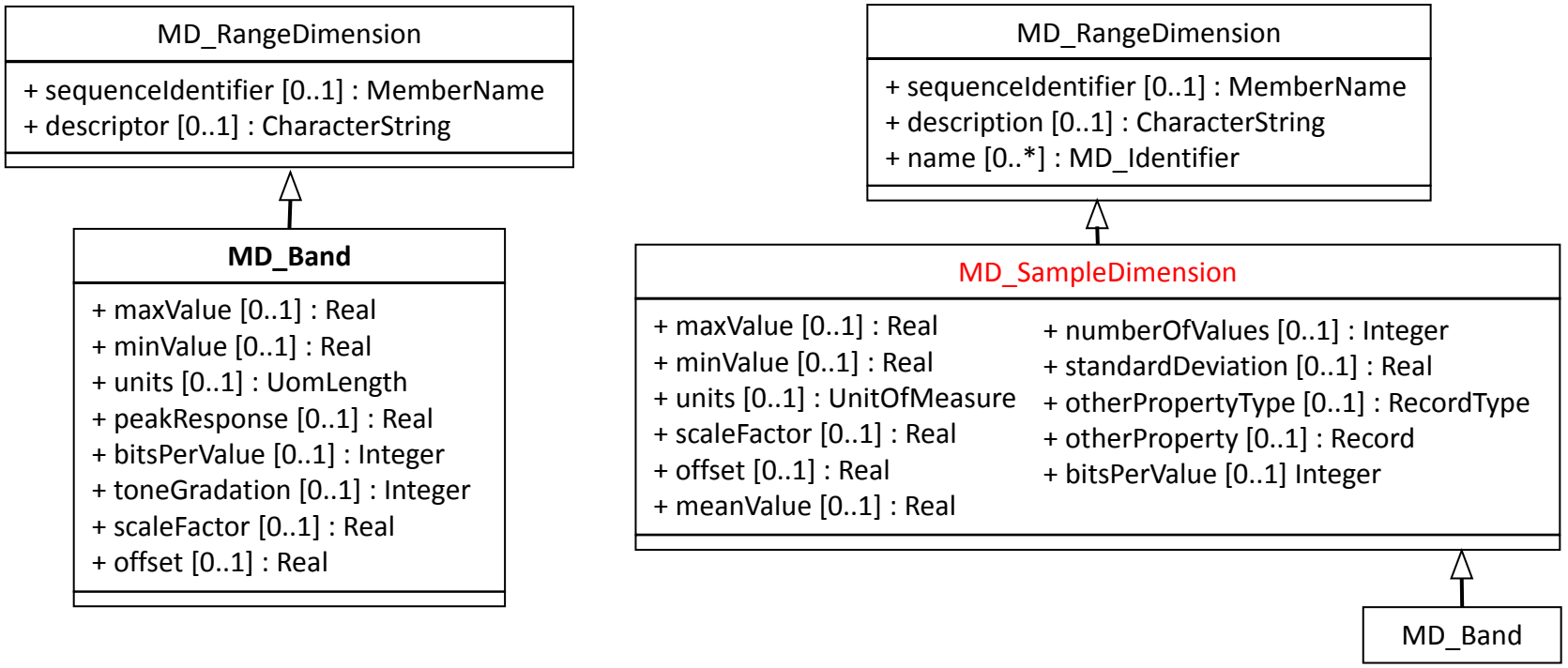


ISO 19115 includes a processingLevelCode as part of the MD_ImageDescription object. This means that coverages that use MD_RangeDimension (or MD_Band) objects can not use the processingInformation codes.

ISO 19115-1 moves the processingLevelCode into the MD_CoverageDescription object allowing it to be used for either type of coverage.

Describe Higher Level Products

"My data are higher level products that need summary statistics"

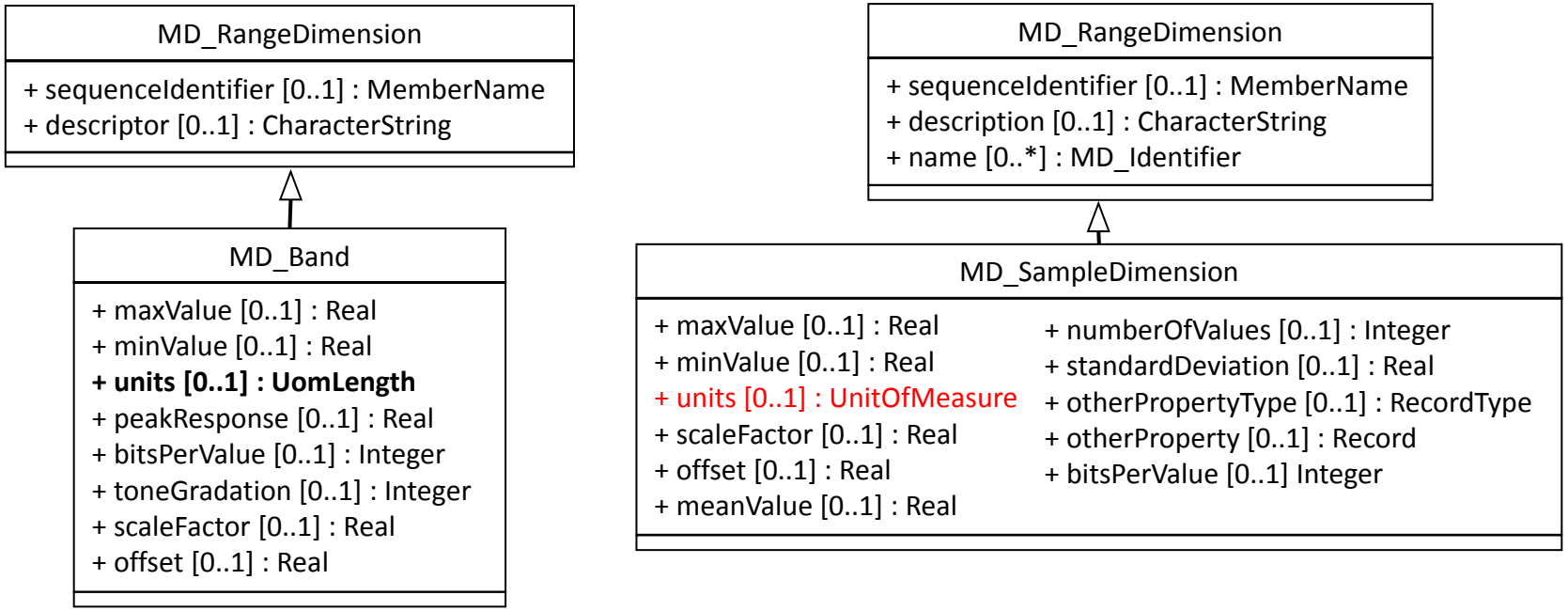


The ISO 19115 MD_Band object is designed to describe low-level (Level 1) data as collected from an instrument.

ISO 19115-1 introduces the MD_SampleDimension which includes many general summary statistics for each band. MD_Band still exists as a specialized case.

Provide Product Units

"Users need to know the units of my products so that they can use them correctly"



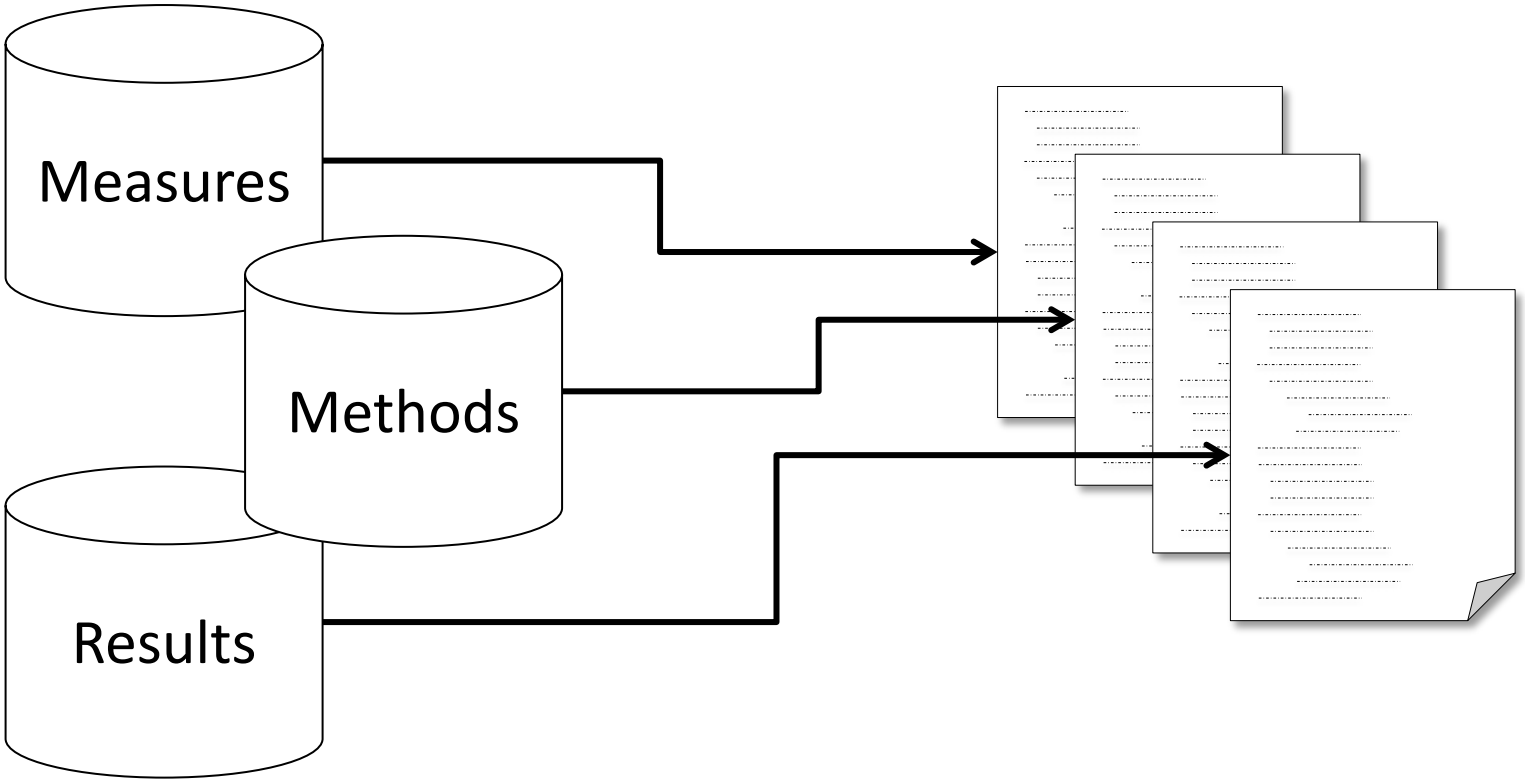
The ISO 19115 MD_Band units are defined as the units used to define the minimum and maximum wavelength for the band. They are units of length. They were not related to the data.

ISO 19115-1 MD_SampleDimension units is defined as the units of the data in the coverage. They can be any unit of measure. They are related to the data.

Modular Data Quality Information

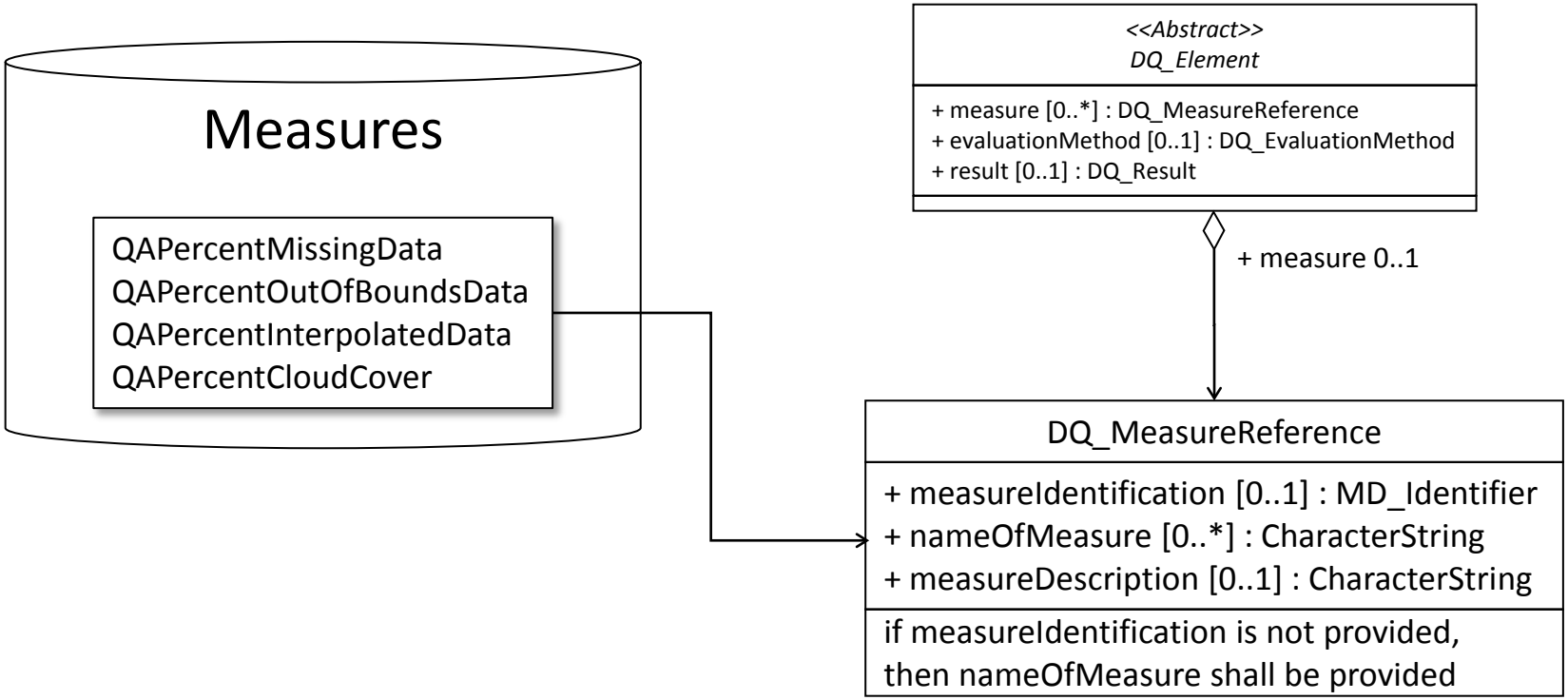
"My data quality information exists in databases or web services."

Major elements of the 19157 conceptual model are separate components that can be independently connected to the metadata and reused in multiple records.



Standard Data Quality Measures

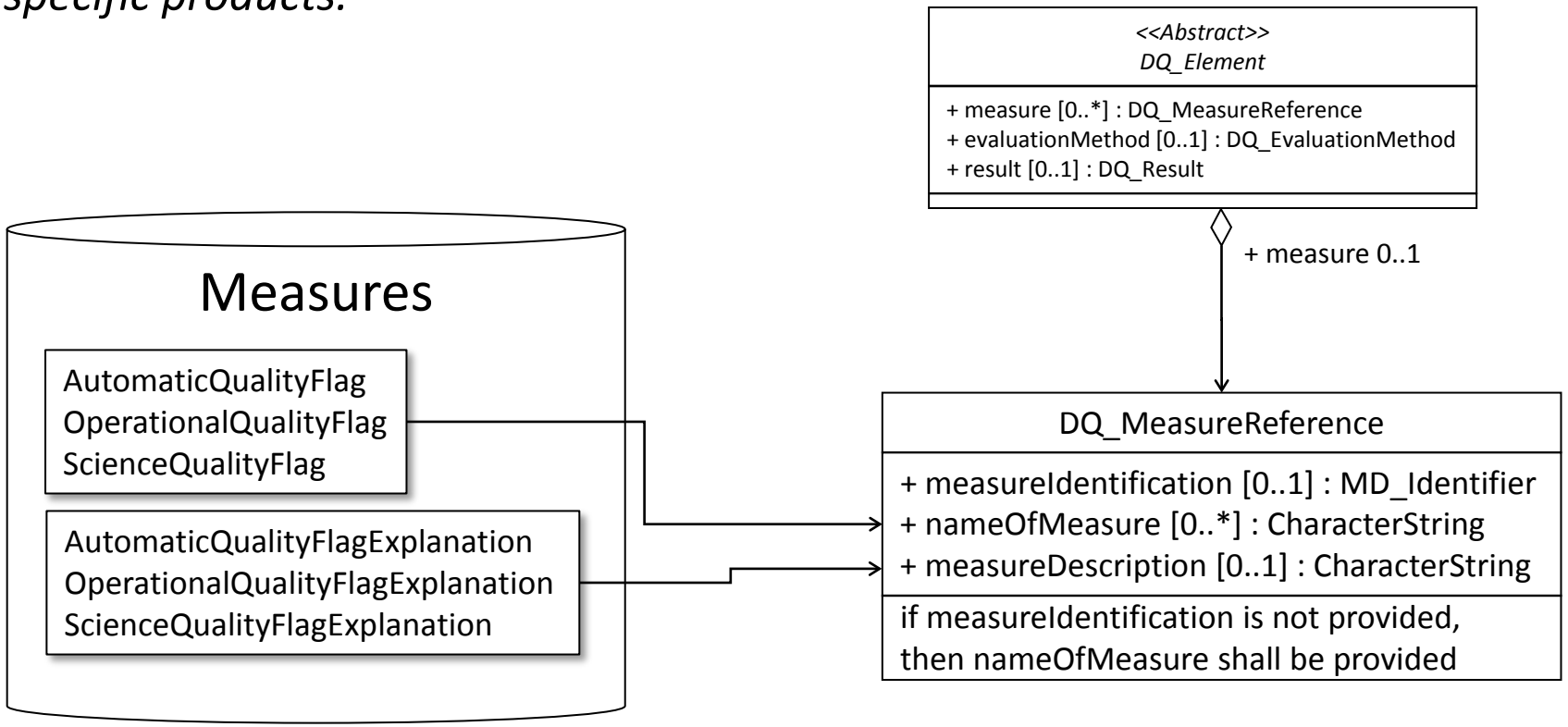
"We use standard quality measures for all products."



Data quality measures that are the same across many products can be referenced from a measure database using a name or identifier.

Data Quality Measures

"We use classes of quality measures that need implementation details for specific products."



ISO 19157 data quality measure references identify measures in several ways and provides a brief description of the measure.

Acknowledgements

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