Interoperable Documentation

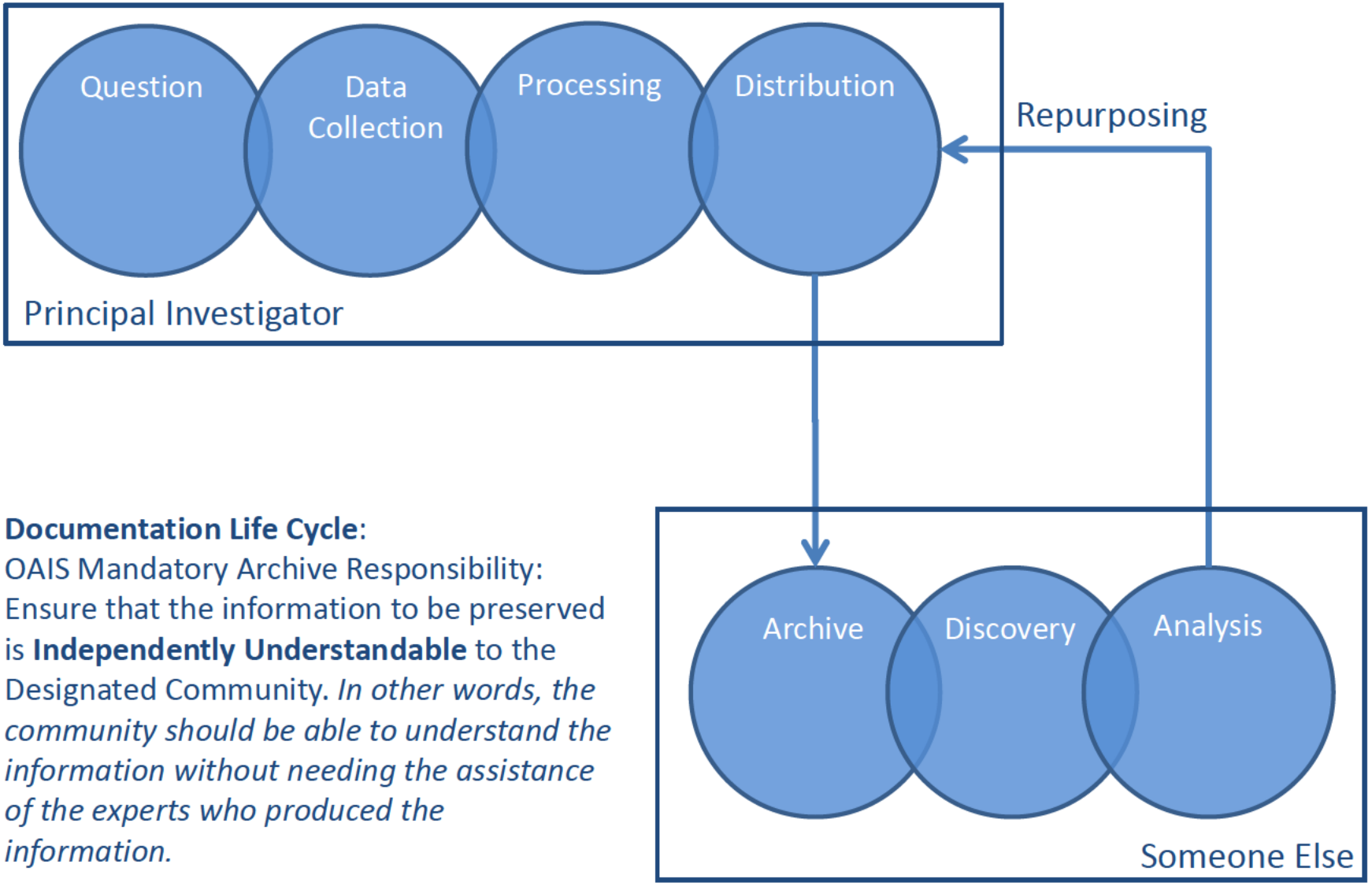
Ted Habermann, NOAA/NESDIS/NGDC
NCAR Earth Observing Laboratory, June 2010

Links:
GEO-IDE Wiki: https://www.nosc.noaa.gov/dmc/swg/wiki/index.php
ISO WAF: http://www.ngdc.noaa.gov/metadata/published/19115/isoMetadataHome.html
THREDDS Extractor: http://www.ngdc.noaa.gov/eds/tds/oceanSITESMetadataAssessment.html
Spirals: https://www.nosc.noaa.gov/dmc/swg/wiki/index.php?title=Creating_Good_Documentation

Questions During Seminar: jweber@unidata.ucar.edu

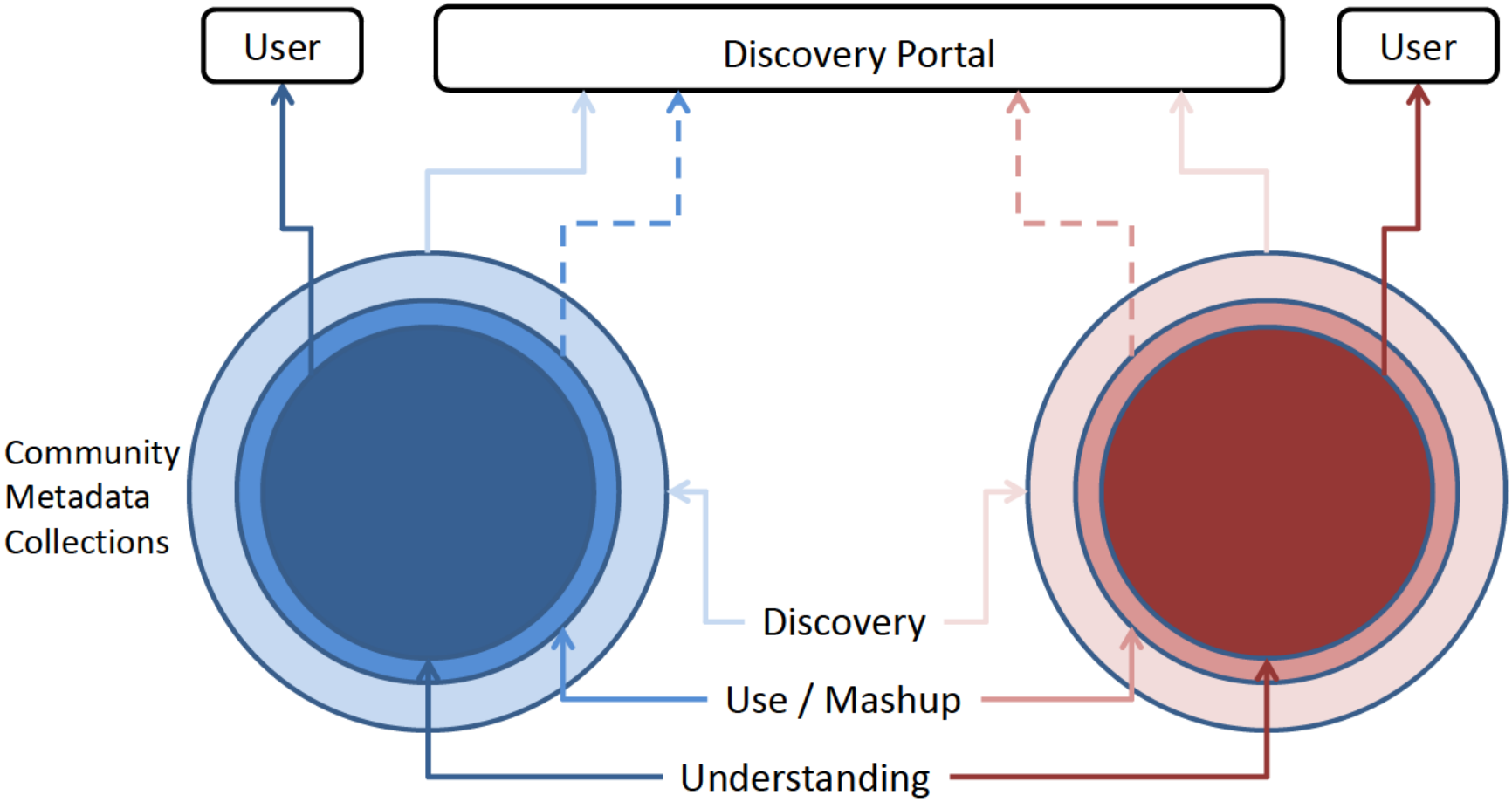
Questions / Comments / Suggestions: ted.habermann@noaa.gov

Data Life-Cycle



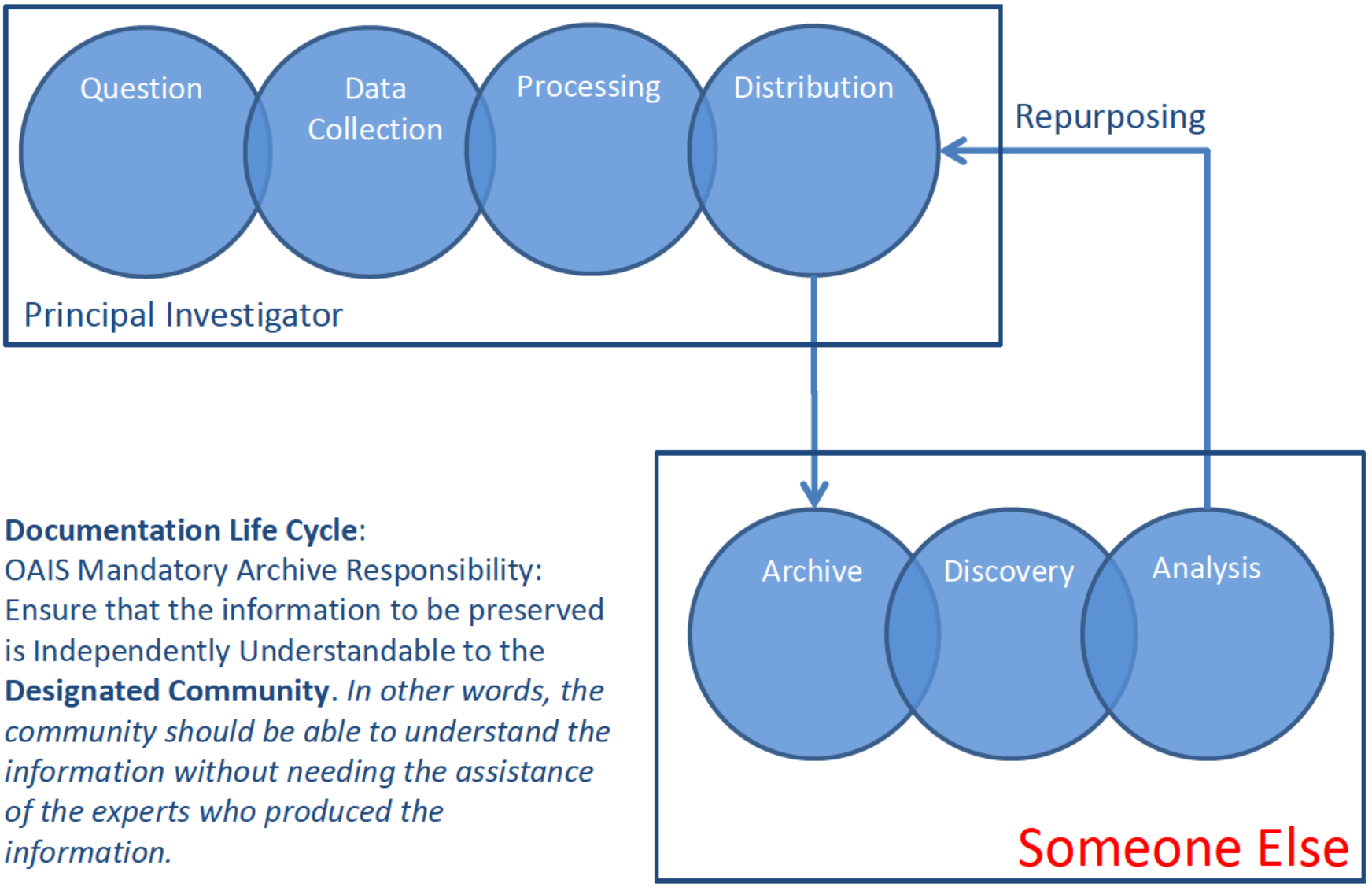
Documentation Life Cycle:
OAIS Mandatory Archive Responsibility: Ensure that the information to be preserved is **Independently Understandable** to the Designated Community. *In other words, the community should be able to understand the information without needing the assistance of the experts who produced the information.*

Metadata Types and Sharing



More documentation is required for understanding data than discovering or using it.

Designated Communities - Users



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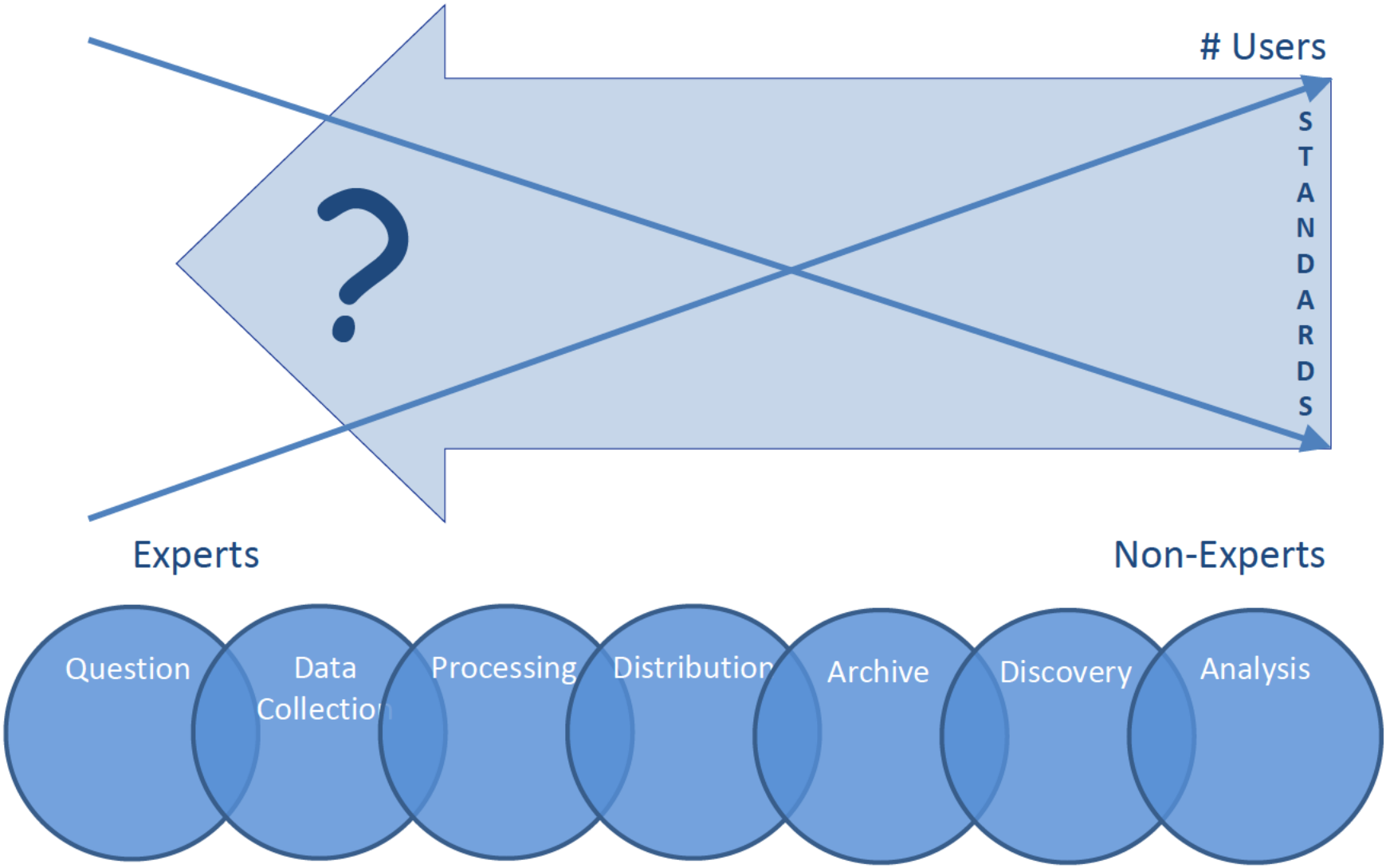
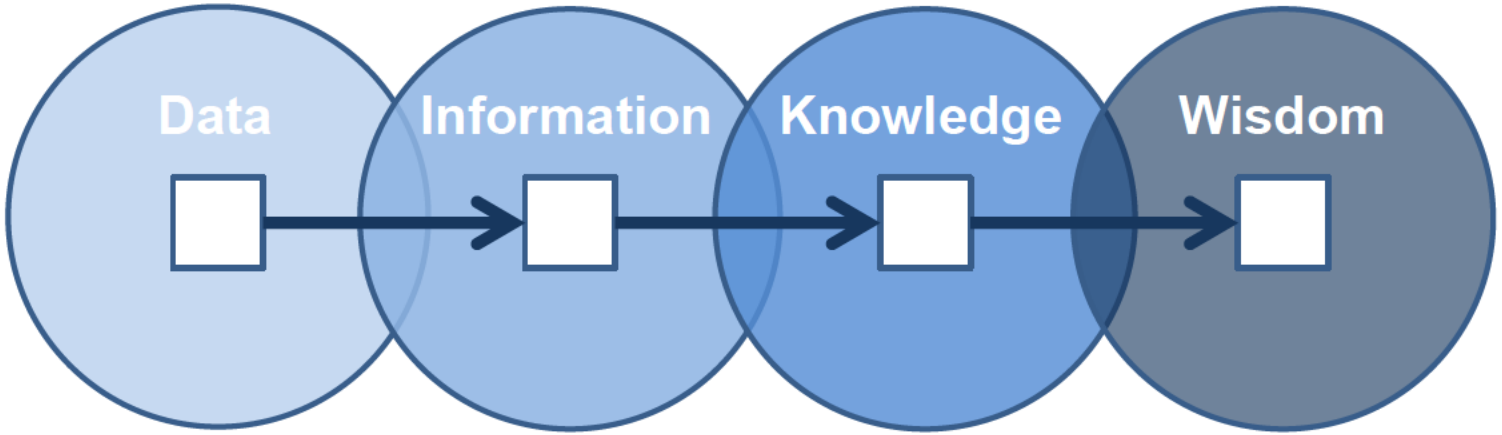
Designated Communities - Users

Data preservation is communicating with the future

Designated Communities - Users



Interoperable Documentation



Many concepts have been well developed and successfully implemented to achieve (or at least improve) data interoperability

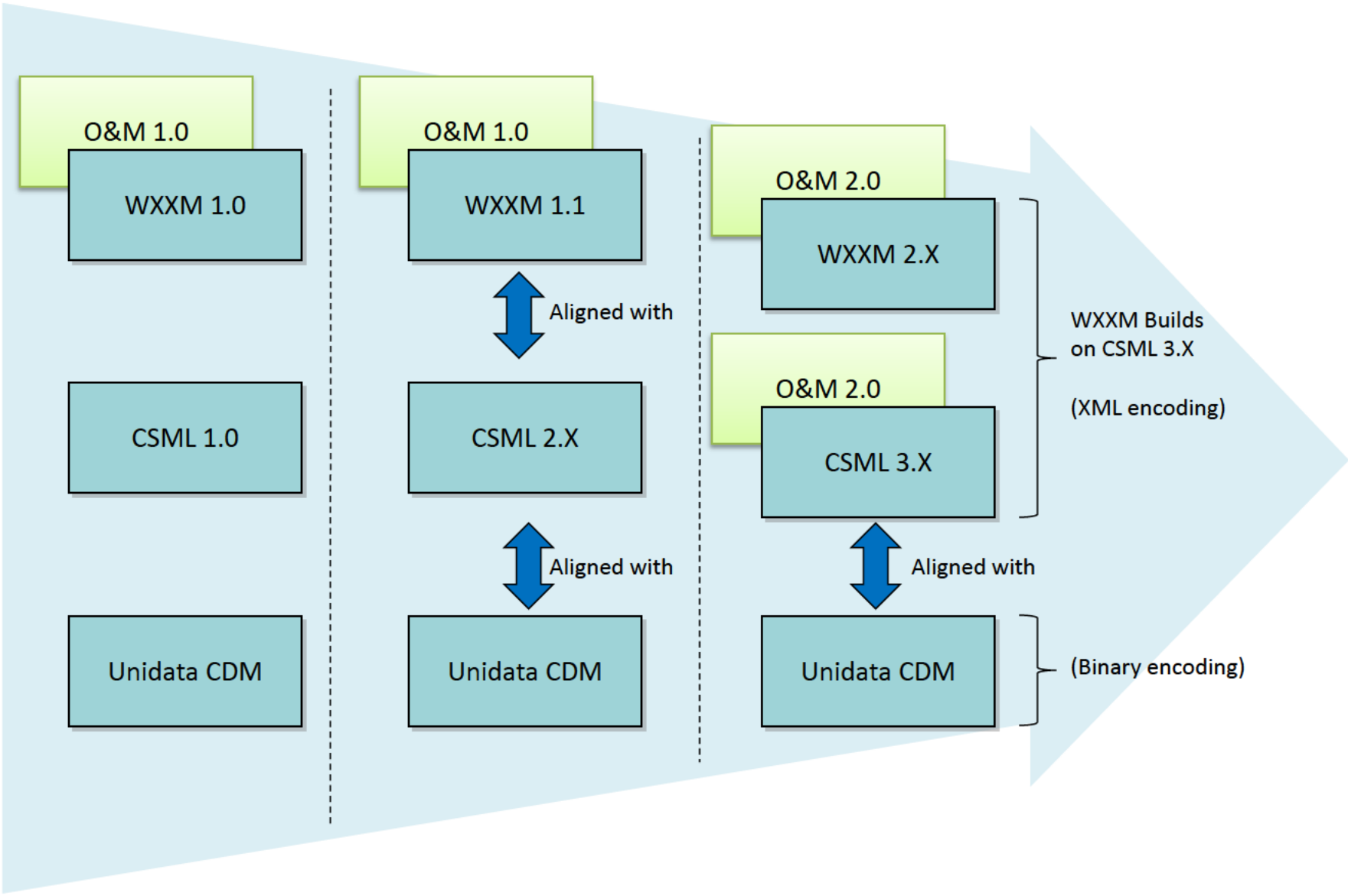
Can the same concepts facilitate interoperable information?

Data to Information Concept Mapping:

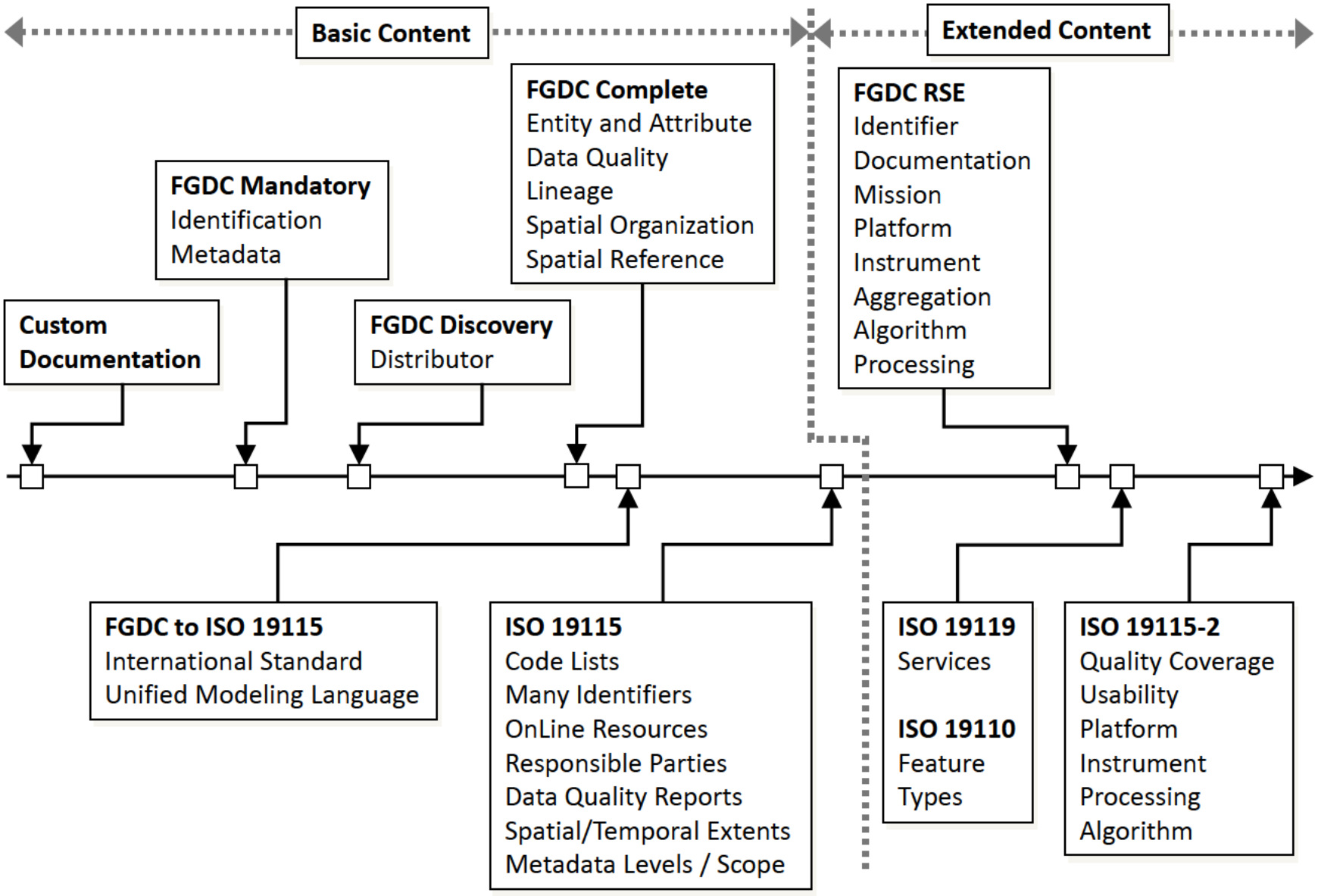
Evolution
Variables and Properties
Multiple Dialects
Persistence vs. Transport
Hierarchical Organizations
Standards and Conventions
Spiral Development
Spatial/Temporal Data
Training

The Continuum of Understanding, Nathan Shedroff

Evolution: Data



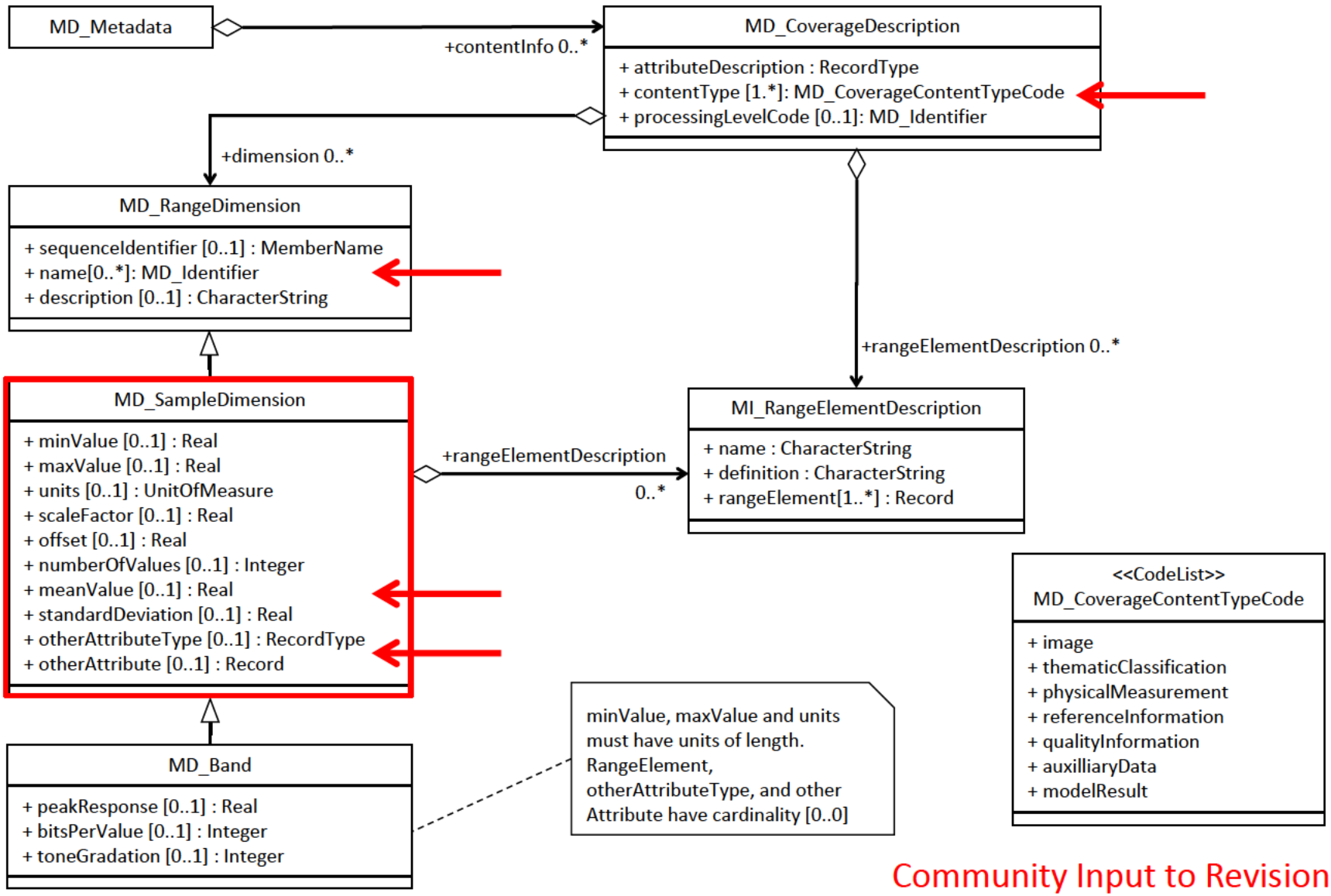
Evolution: Documentation Standards



Variables and Properties - Data

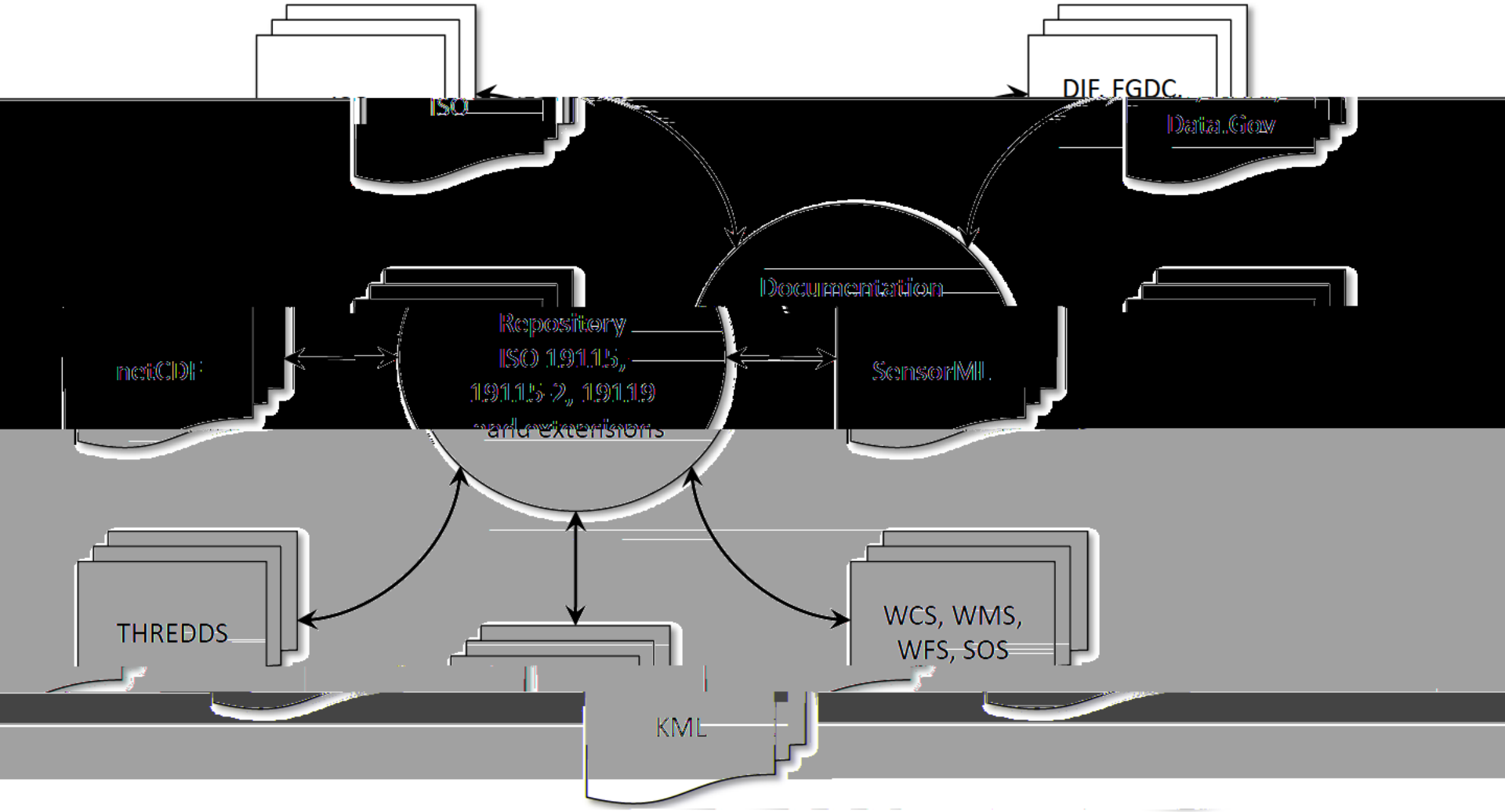
```
<variable name="MHchla" type="float" shape="time altitude lat lon">
  <attribute name="_CoordinateAxes" value="time altitude lat lon "/>
  <attribute name="_FillValue" value="-9999999.0 " type="float"/>
  <attribute name="actual_range" value="0.01  63.997 " type="float"/>
  <attribute name="coordsys" value="geographic"/>
  <attribute name="fraction_digits" value="2 " type="int"/>
  <attribute name="long_name" value="Chlorophyll-a, Aqua MODIS, NPP, 0.05
    degrees, Global, Science Quality"/>
  <attribute name="missing_value" value="-9999999.0 " type="float"/>
  <attribute name="numberOfObservations" value="9664503 " type="int"/>
  <attribute name="percentCoverage" value="0.2589298000257202 "
    type="double"/>
  <attribute name="standard_name"
    value="concentration_of_chlorophyll_in_sea_water"/>
  <attribute name="units" value="mg m-3"/>
</variable>
```

Variables and Properties - Documentation

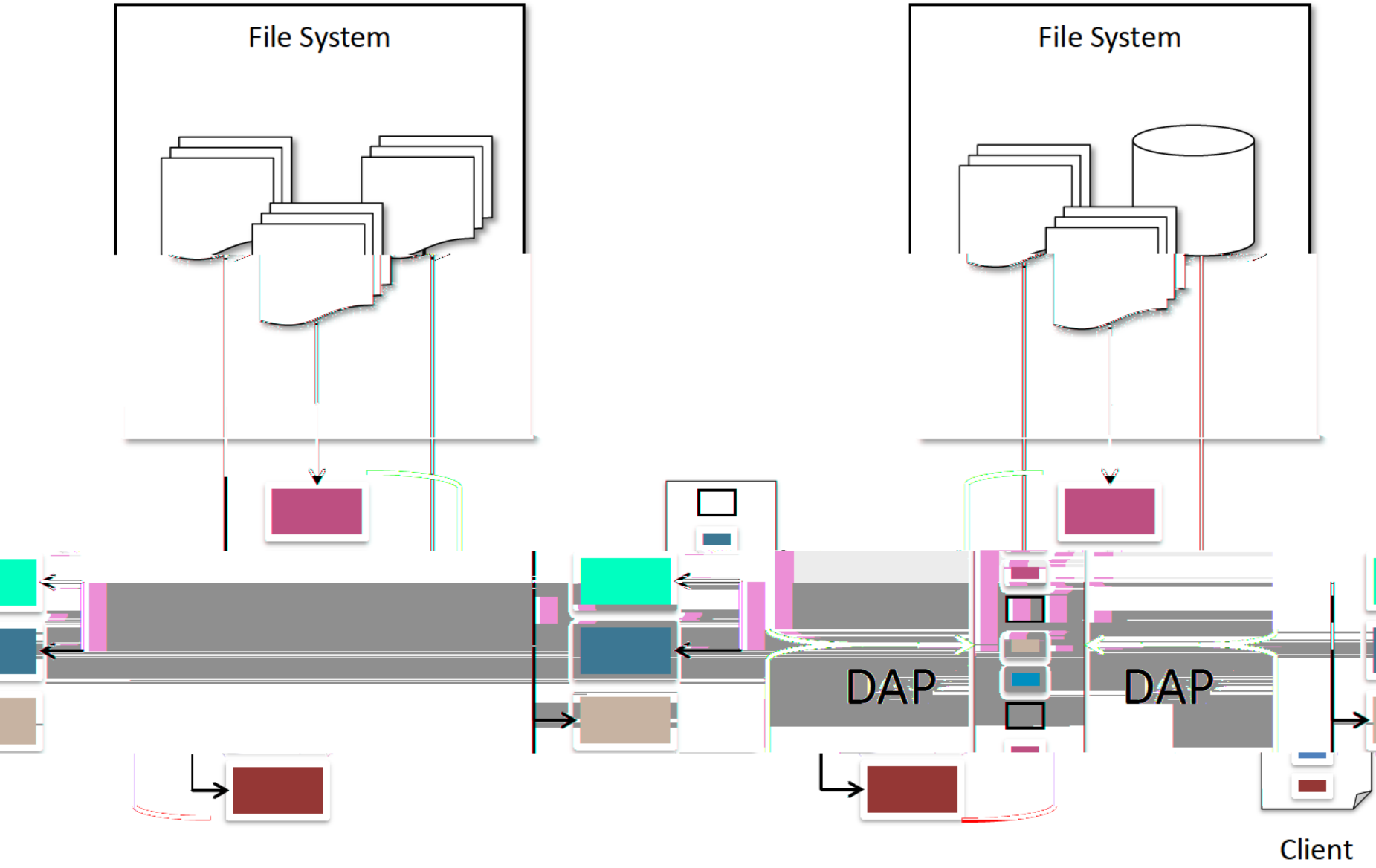


Community Input to Revisions

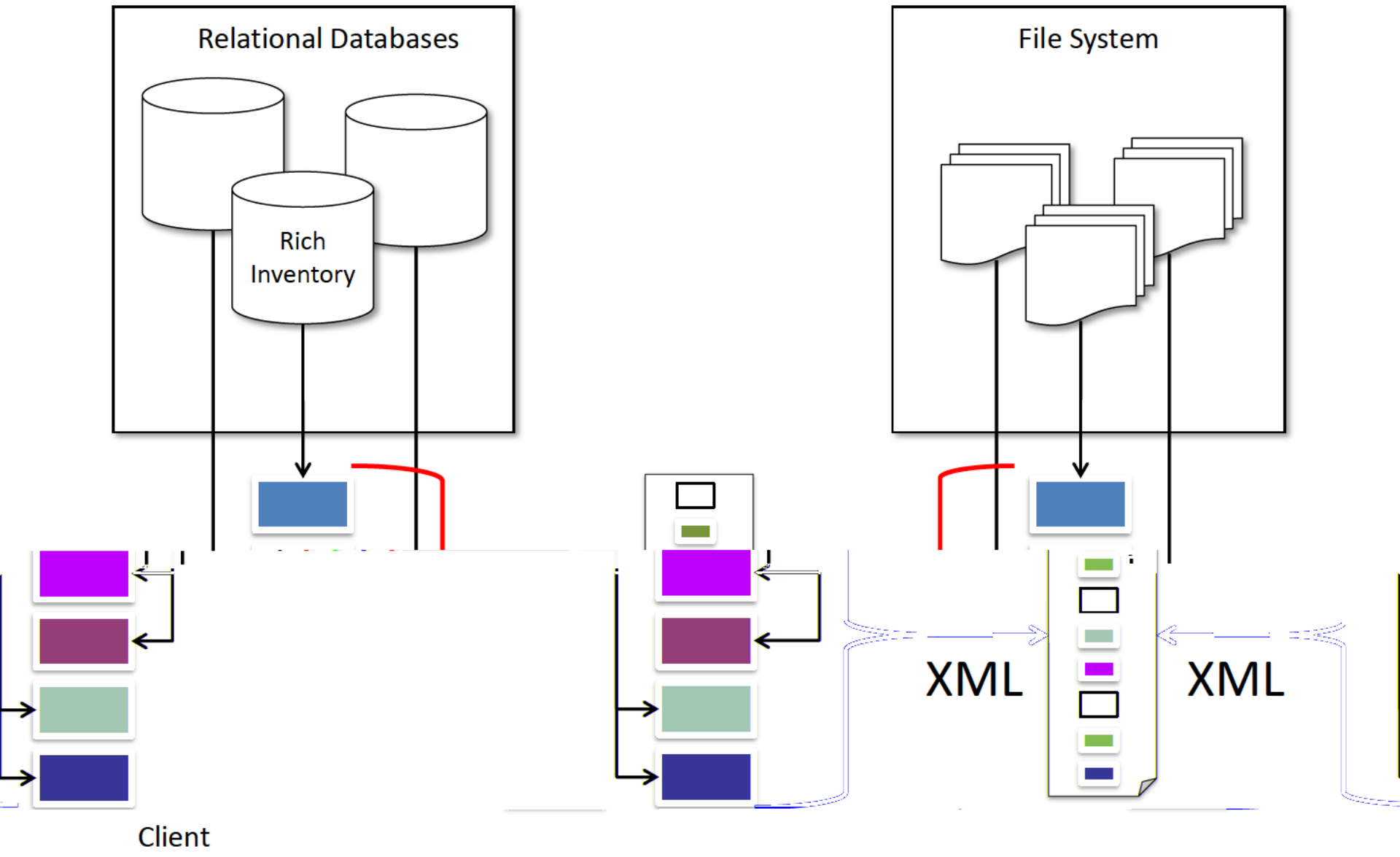
Documentation in Multiple Dialects



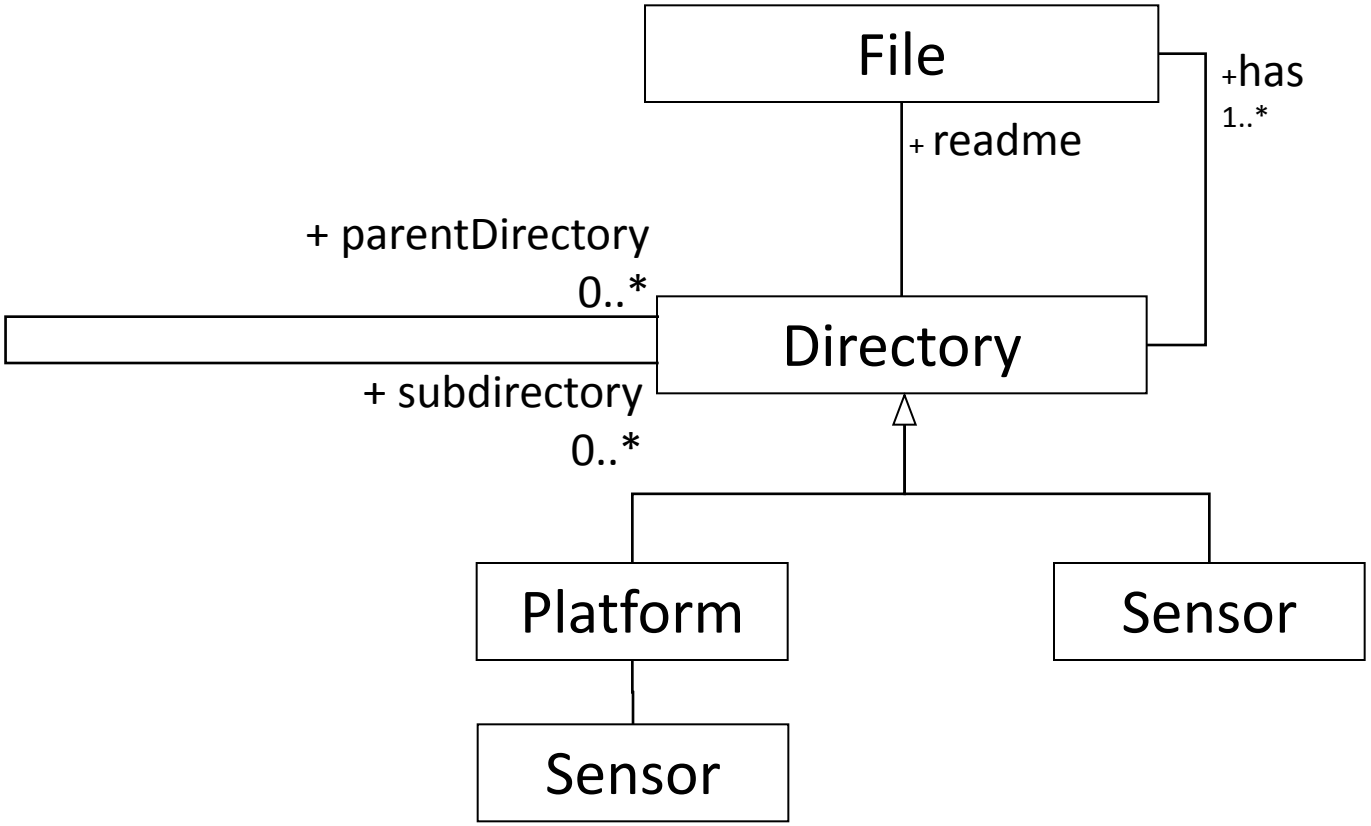
Persistence vs. Transport - OPeNDAP



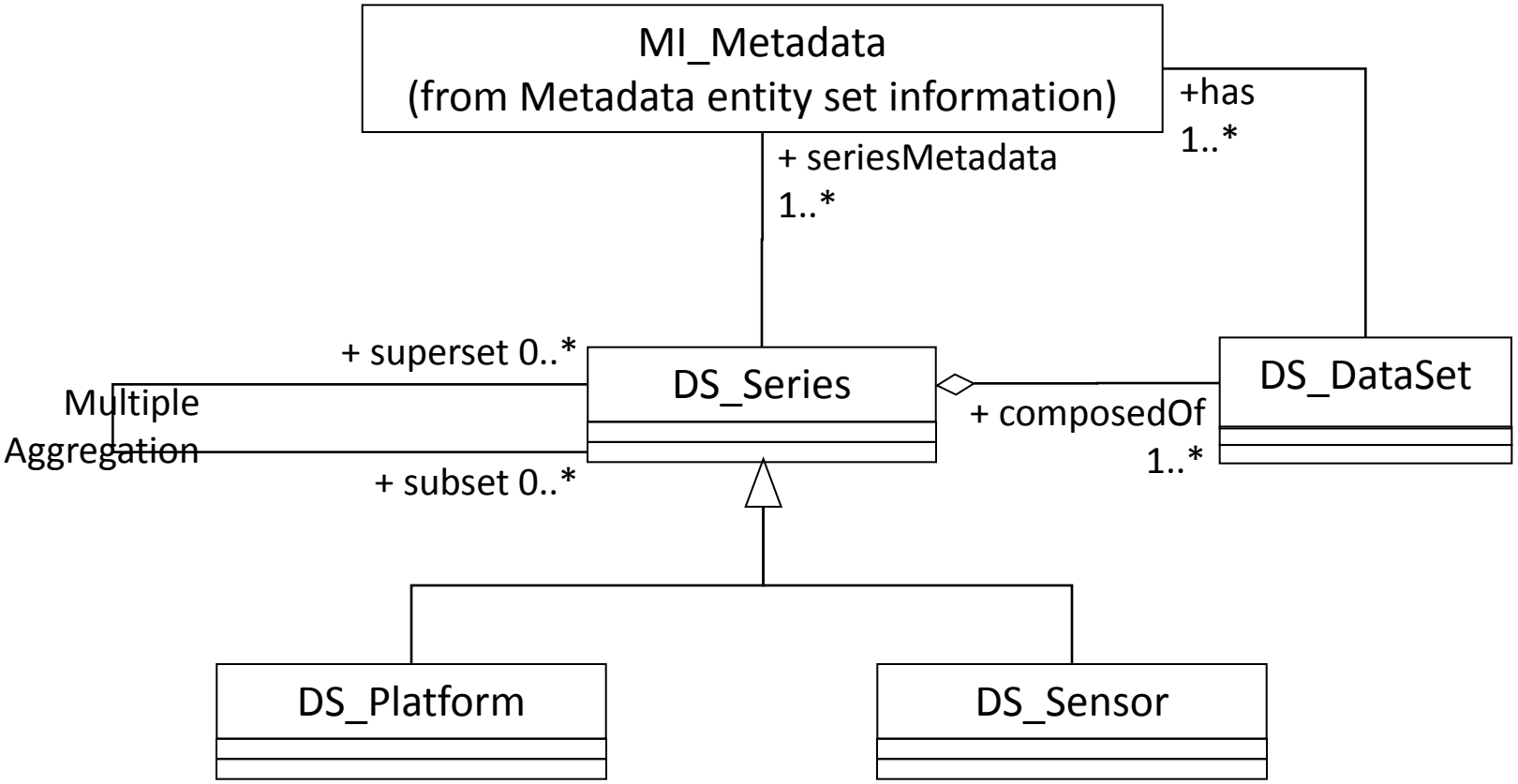
Persistence vs. Transport - Documentation



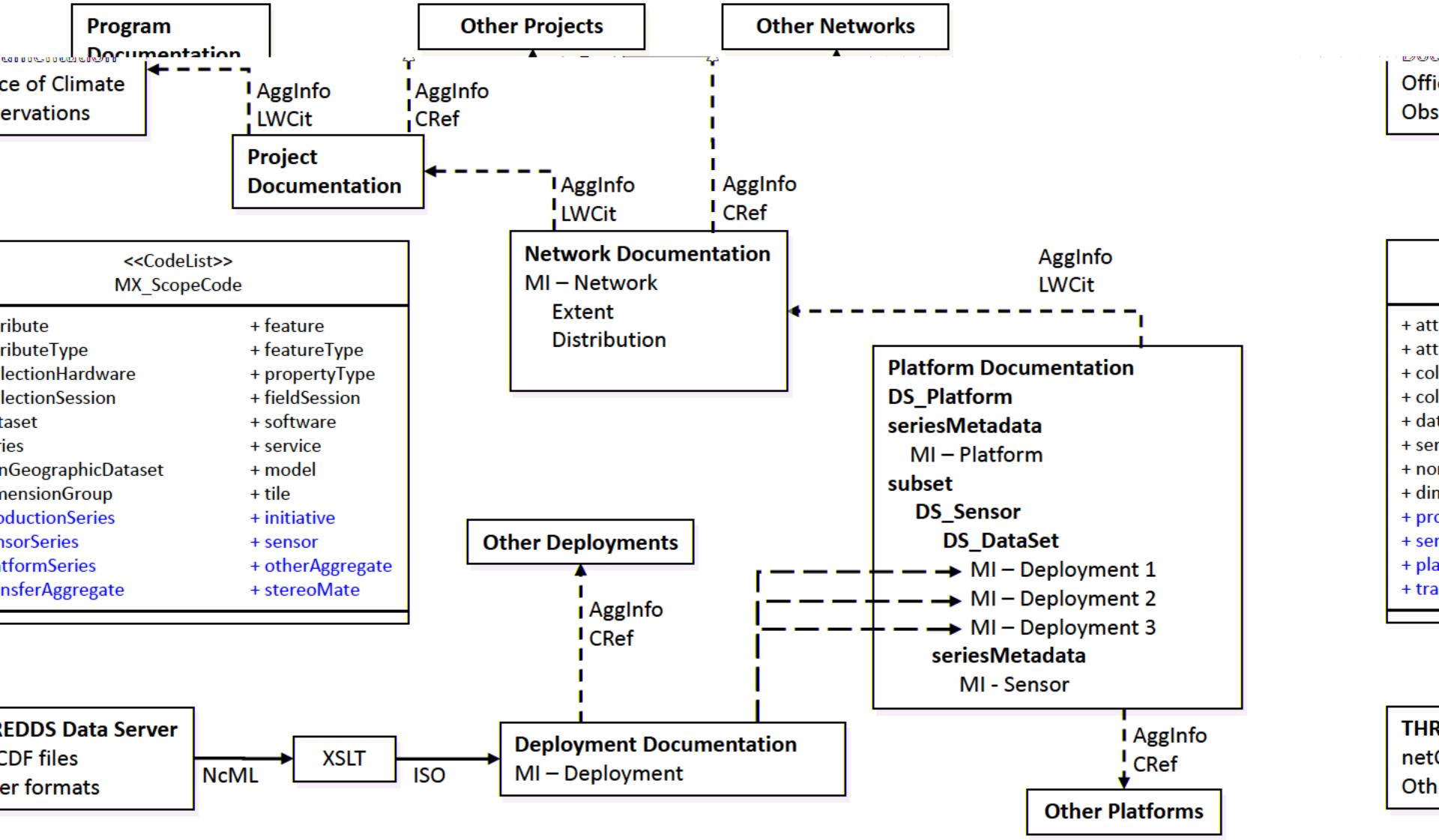
Hierarchical Organization: Data



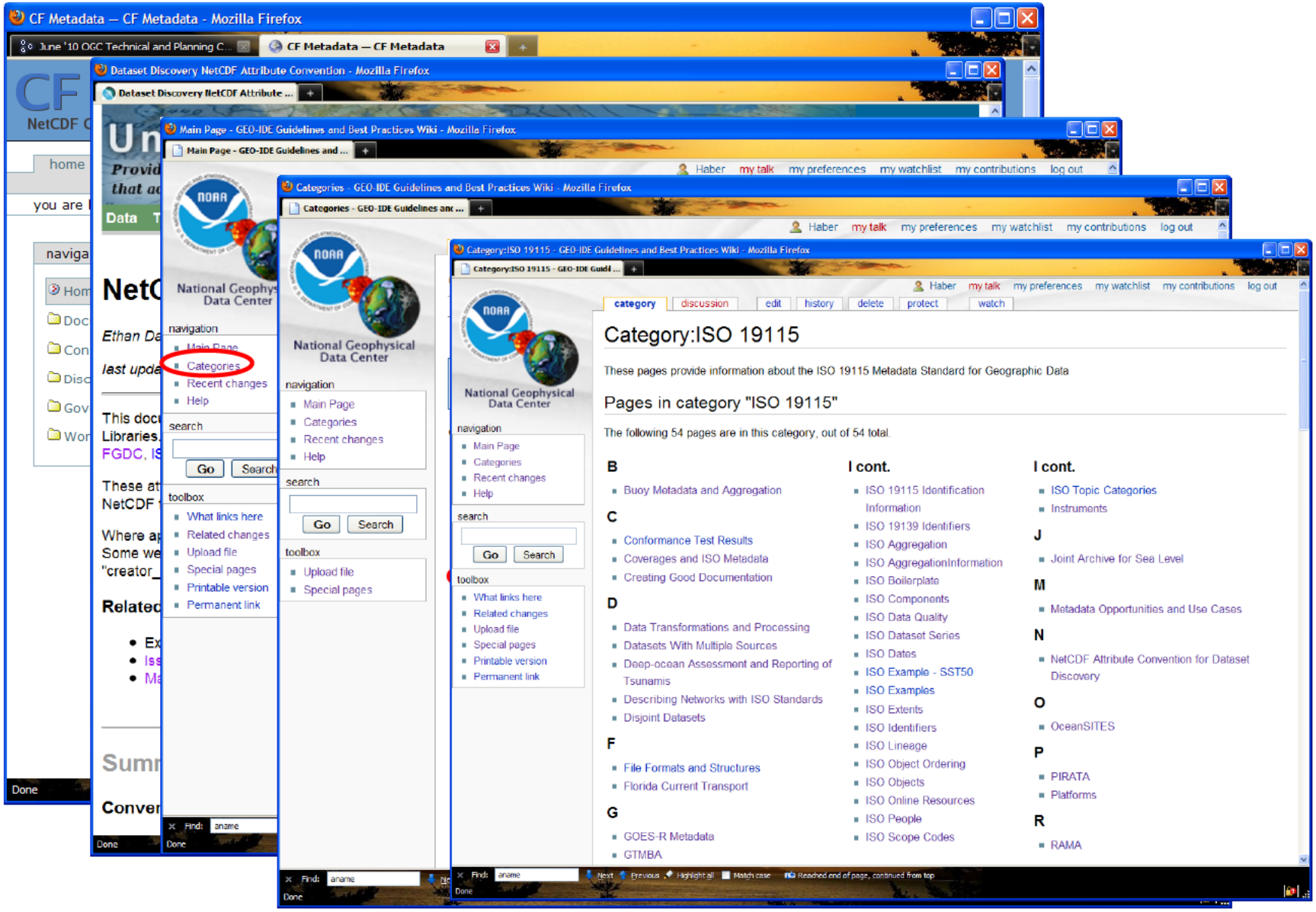
Hierarchical Organization: Documentation



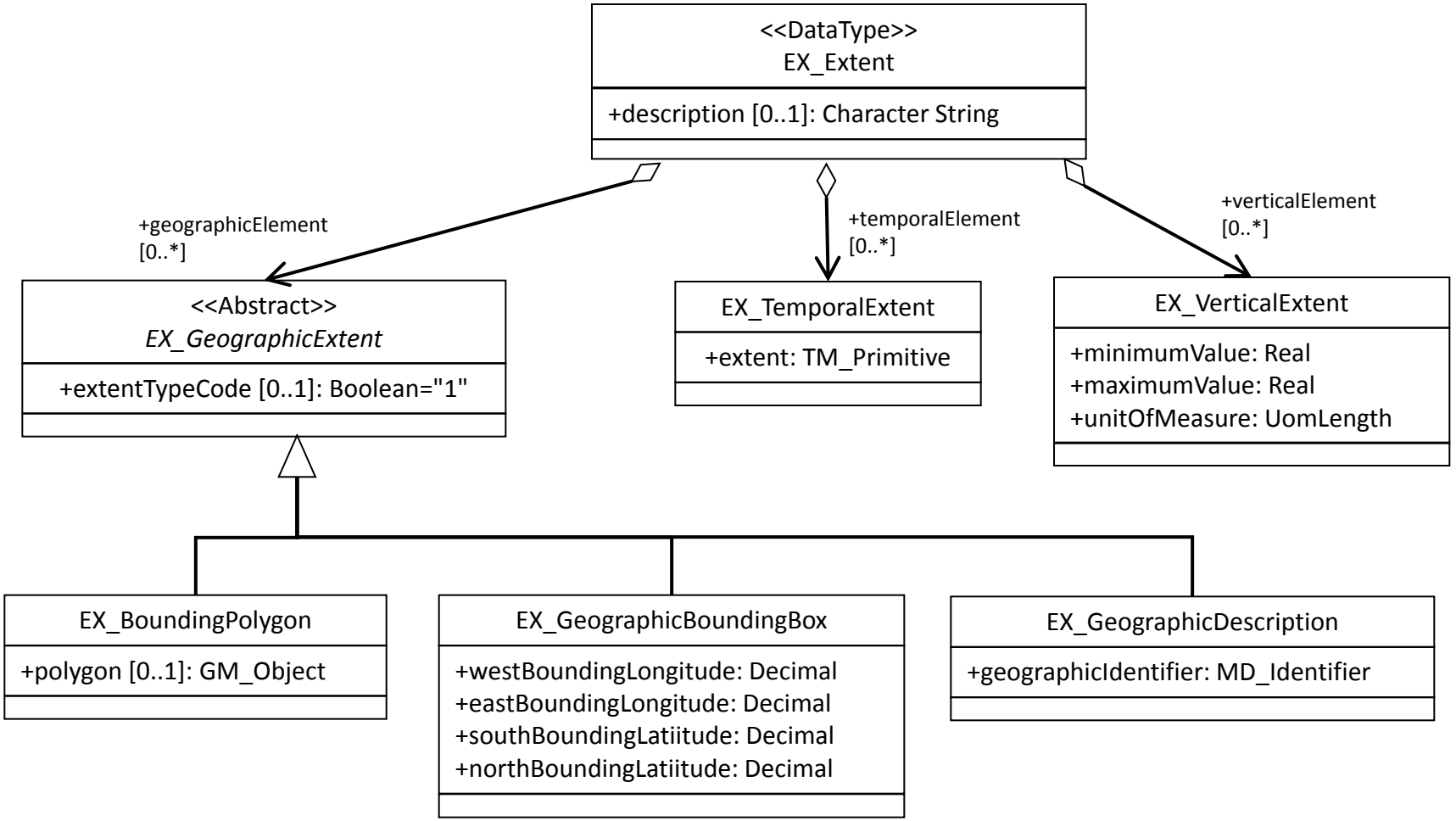
Hierarchical Organization: InSitu Documentation



Standards / Conventions / Best Practices



Spatial/Temporal Data

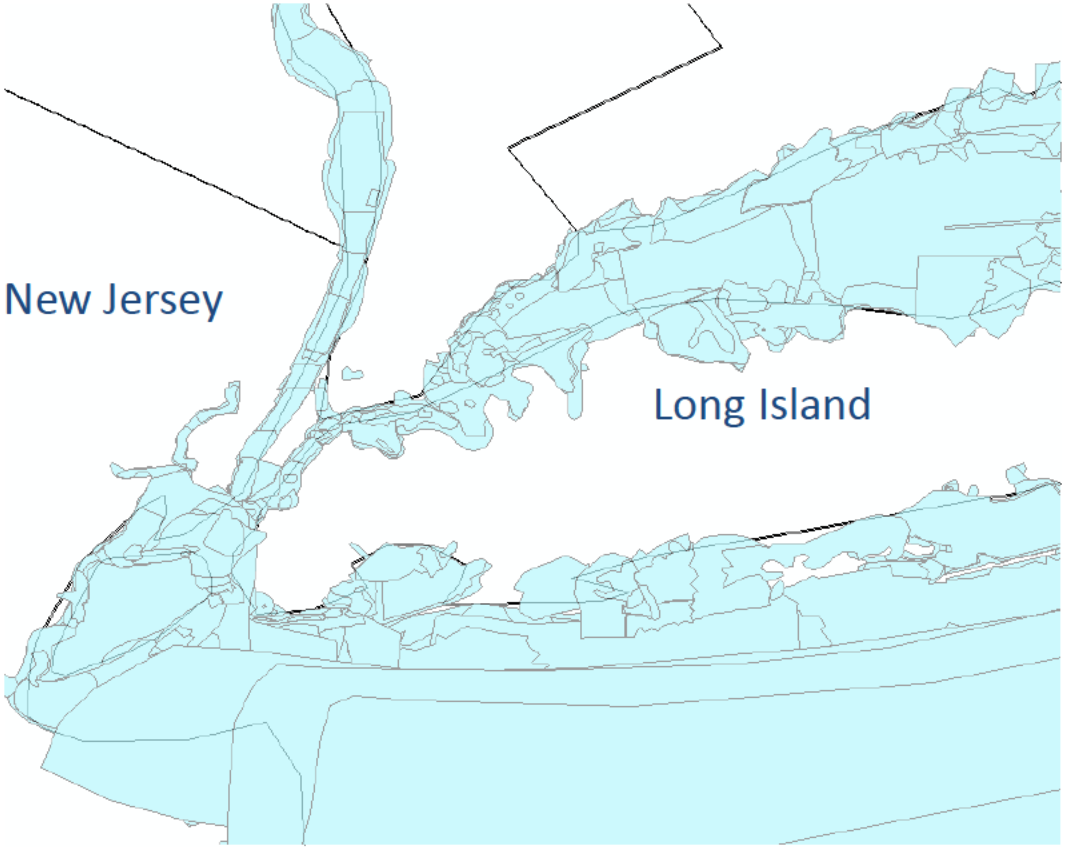


Ex_Extents can be used to describe datasets, sources, and quality reports.

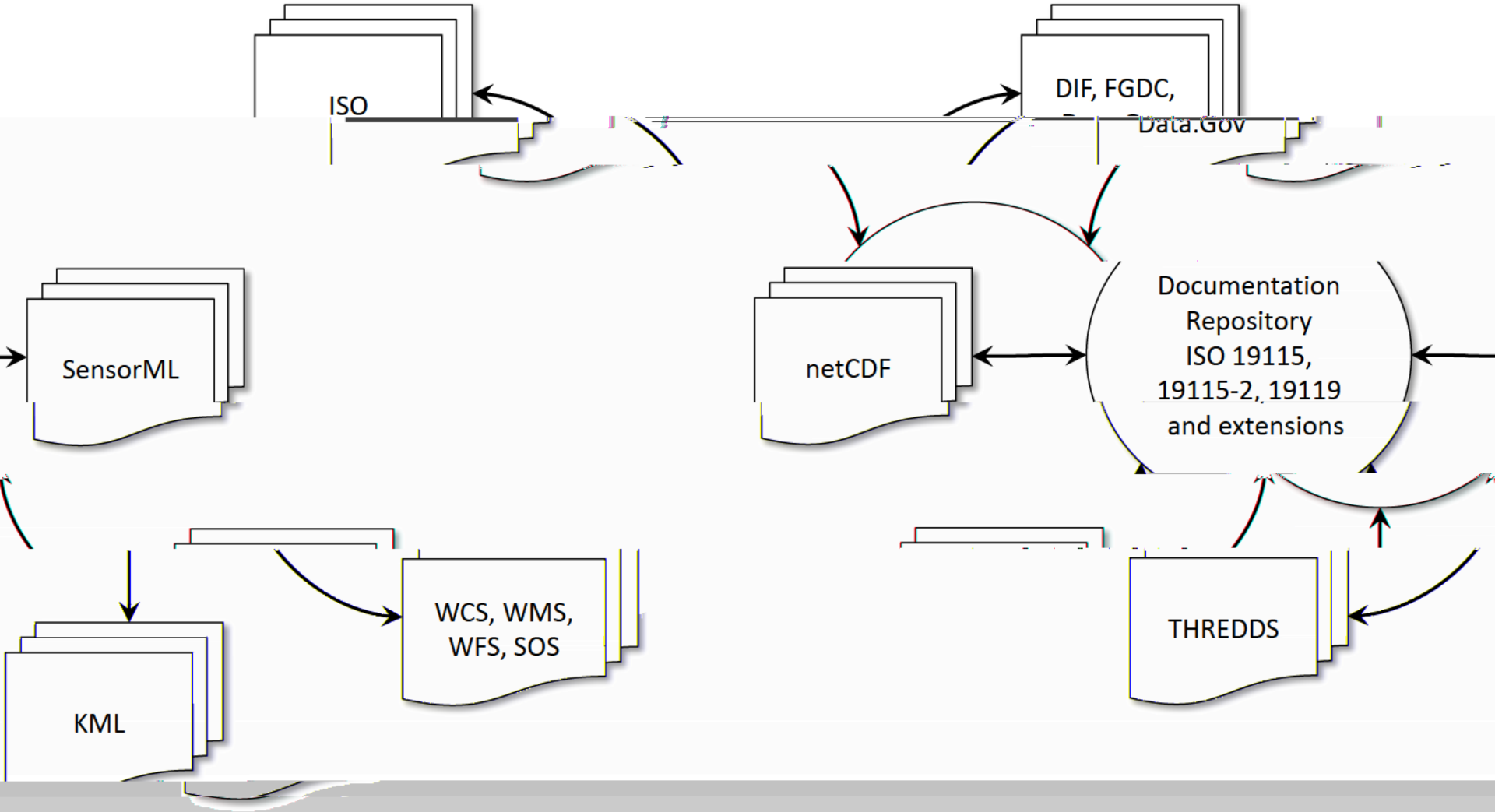
Spatial/Temporal Data

The National Ocean Service Hydrographic Survey dataset includes many sources collected at different locations and times. These extents can be described clearly using the ISO objects discussed in this presentation.

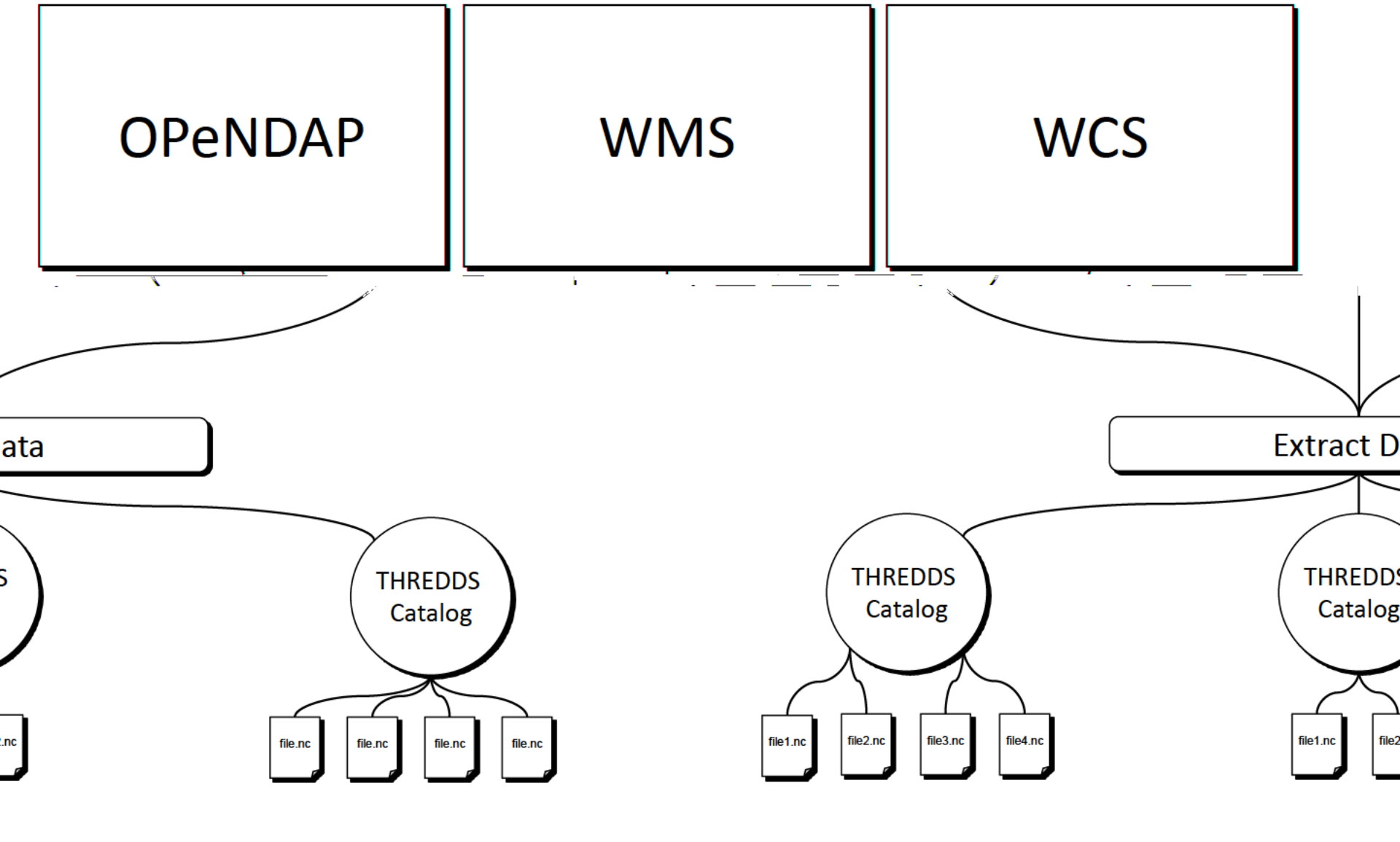
The metadata evolves from a single extent to a complete spatial / temporal dataset.



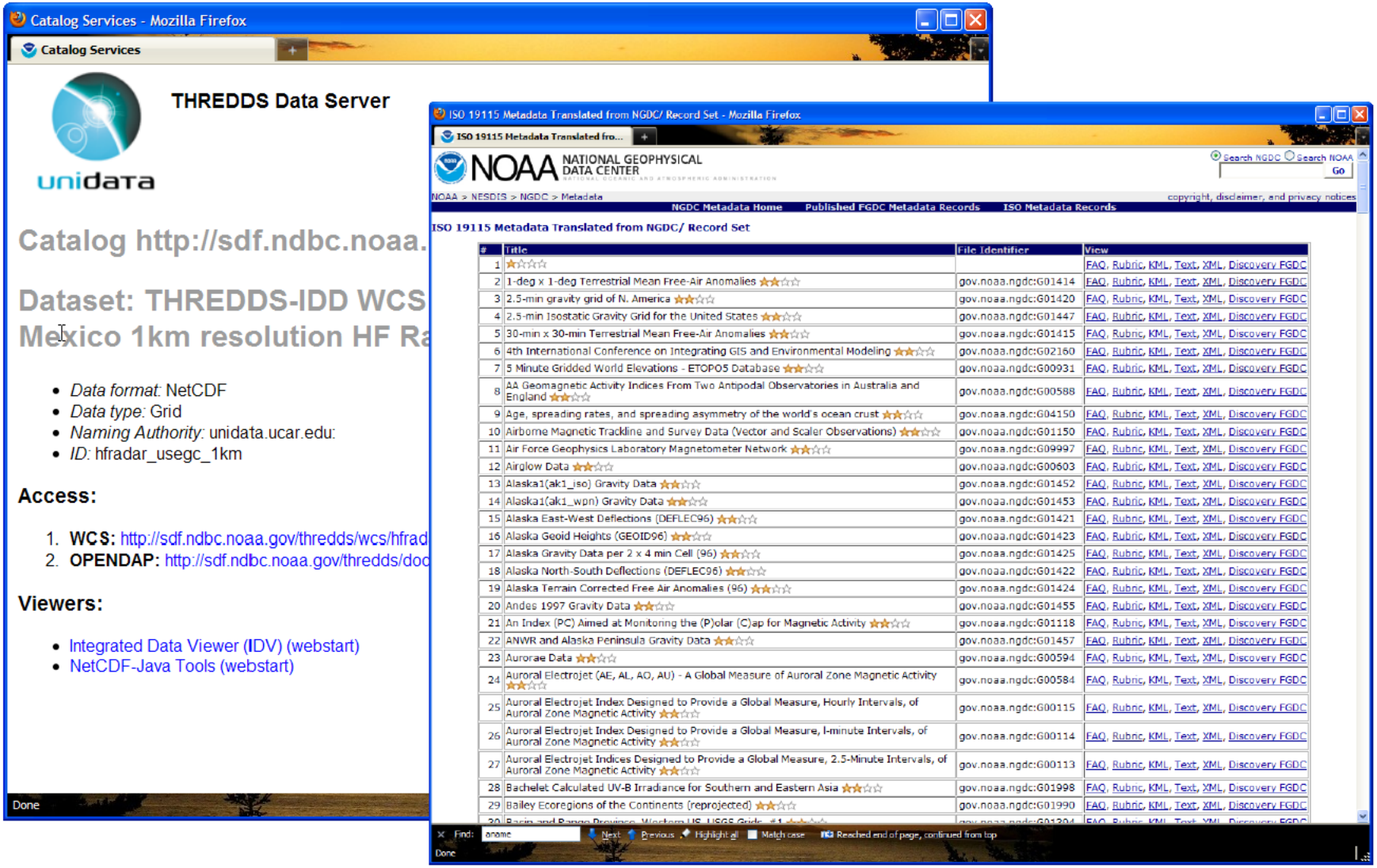
Multiple Dialects Revisited



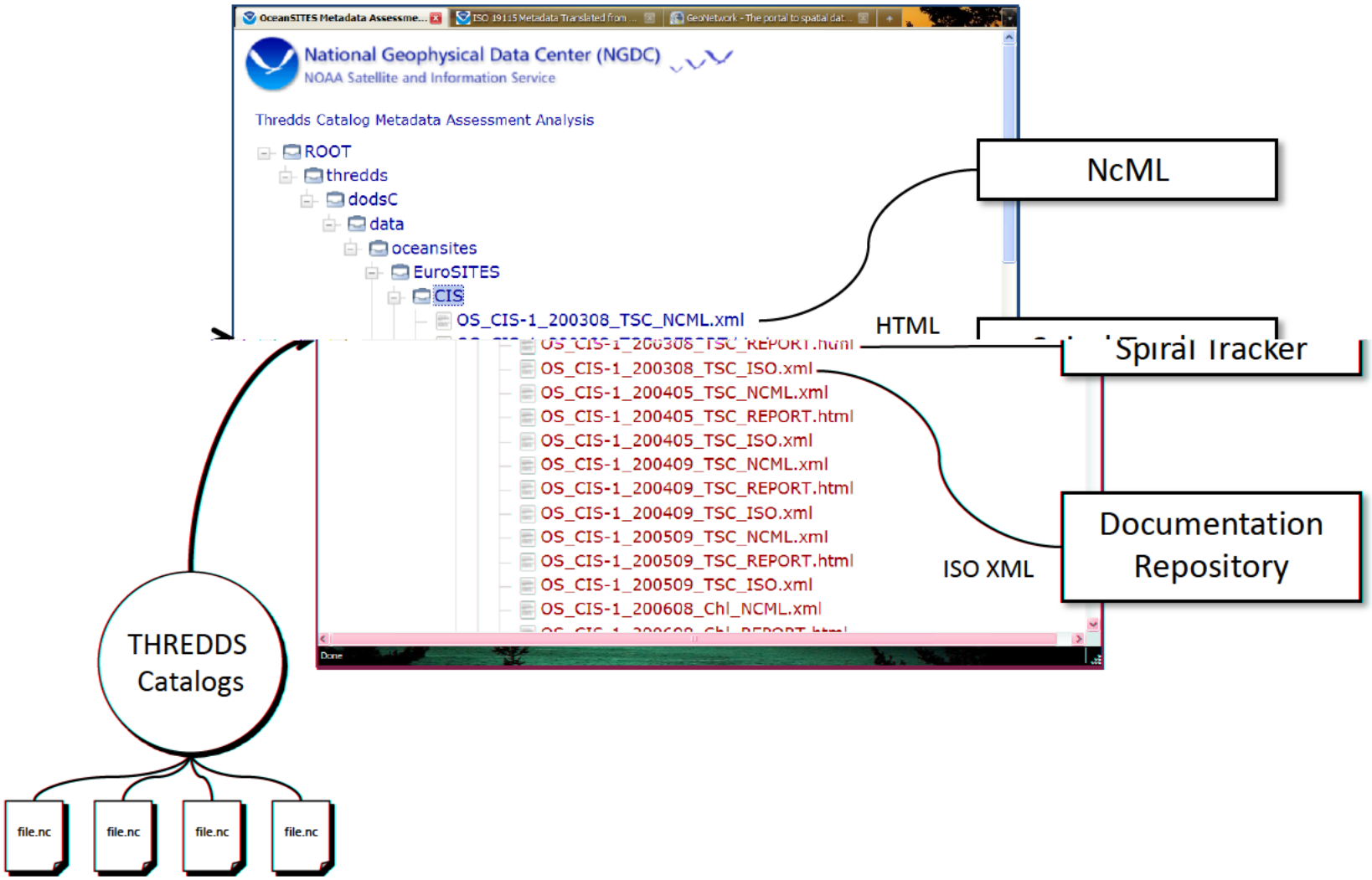
Multiple Dialects: THREDDS Data Server



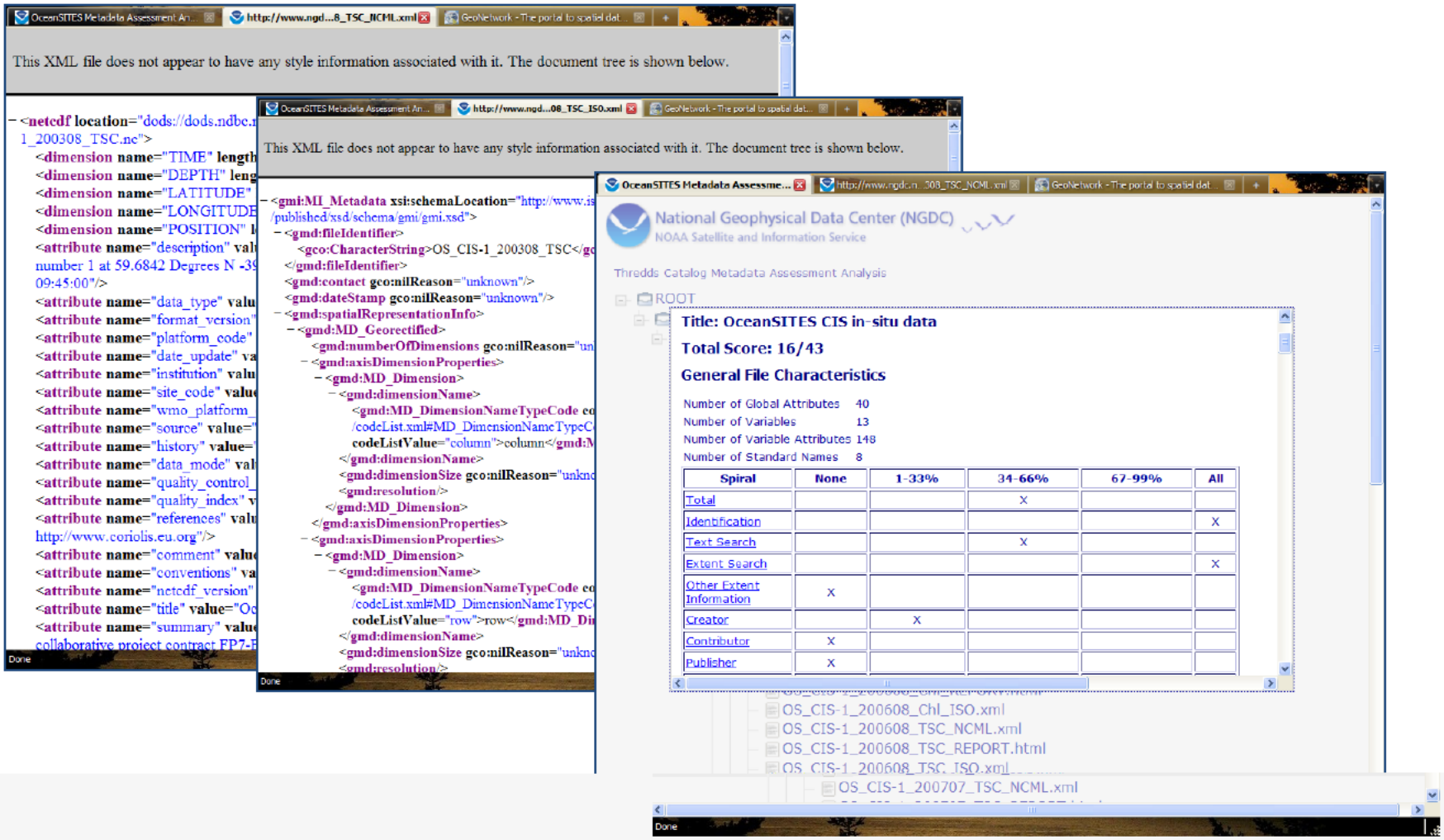
Multiple Dialects: Web Accessible Folders



Multiple Dialects: Documentation Extraction



Documentation in Three Dialects

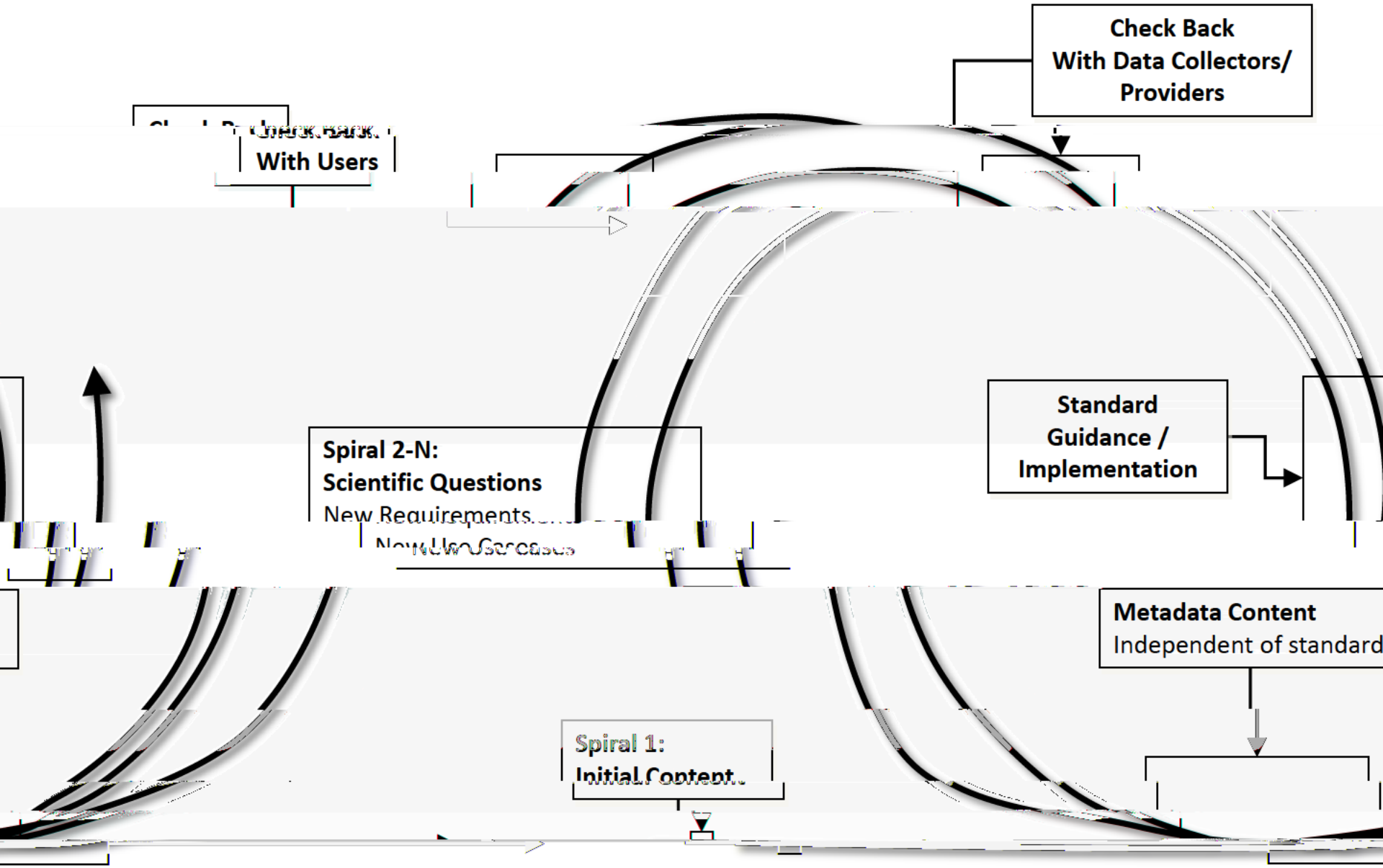


NcML

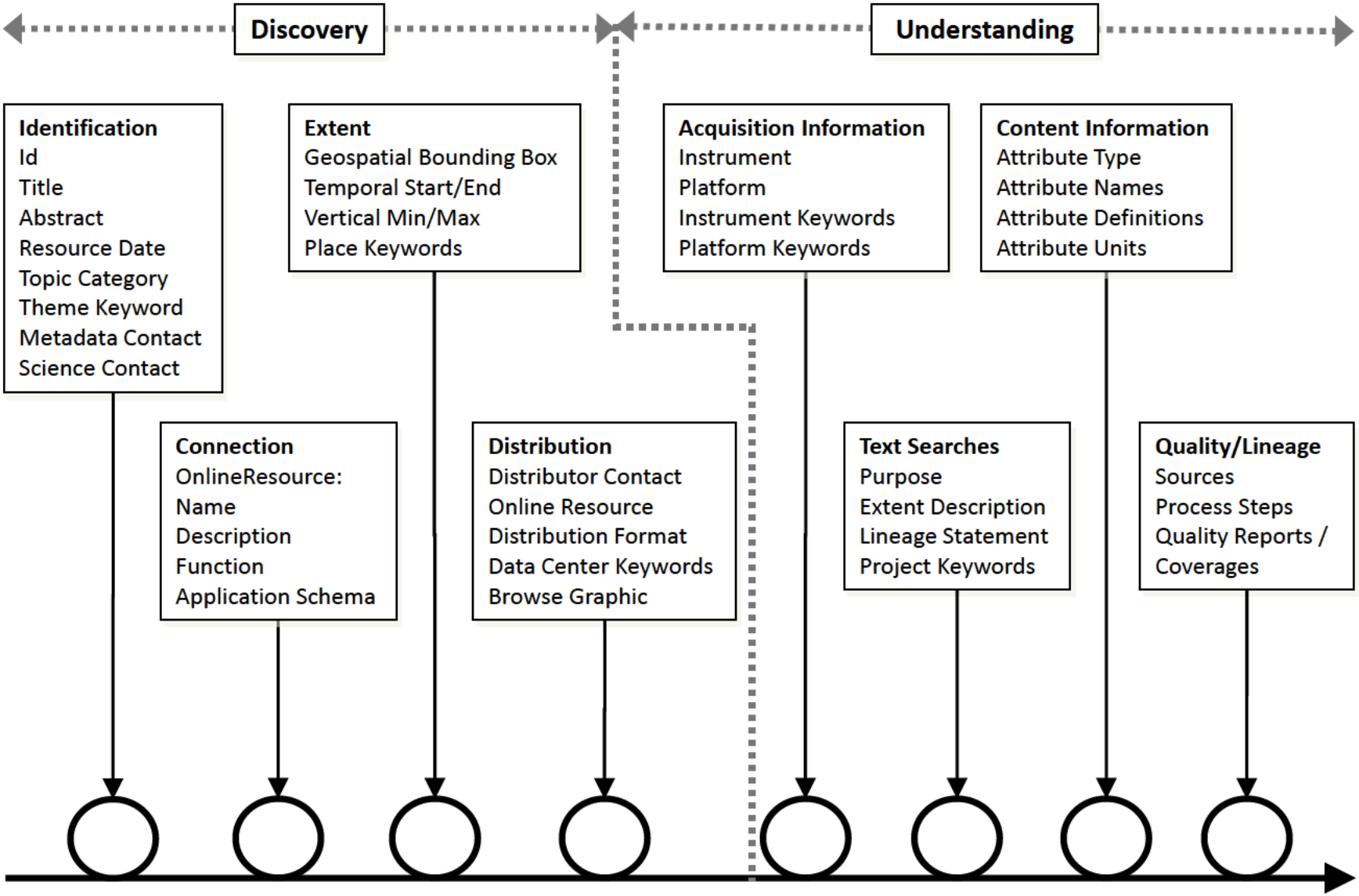
Documentation Repository

Spiral Tracker

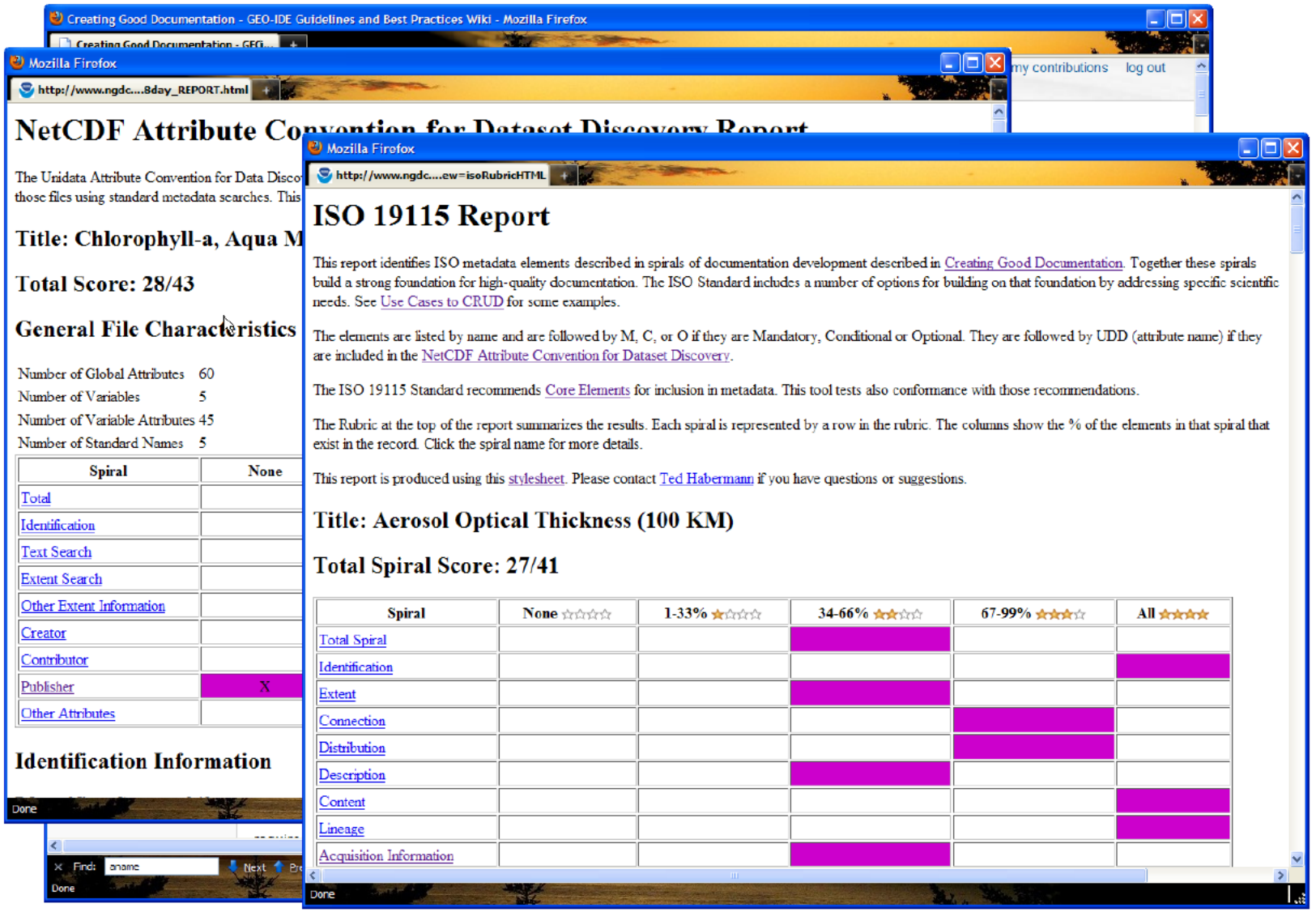
Spiral Development / Training



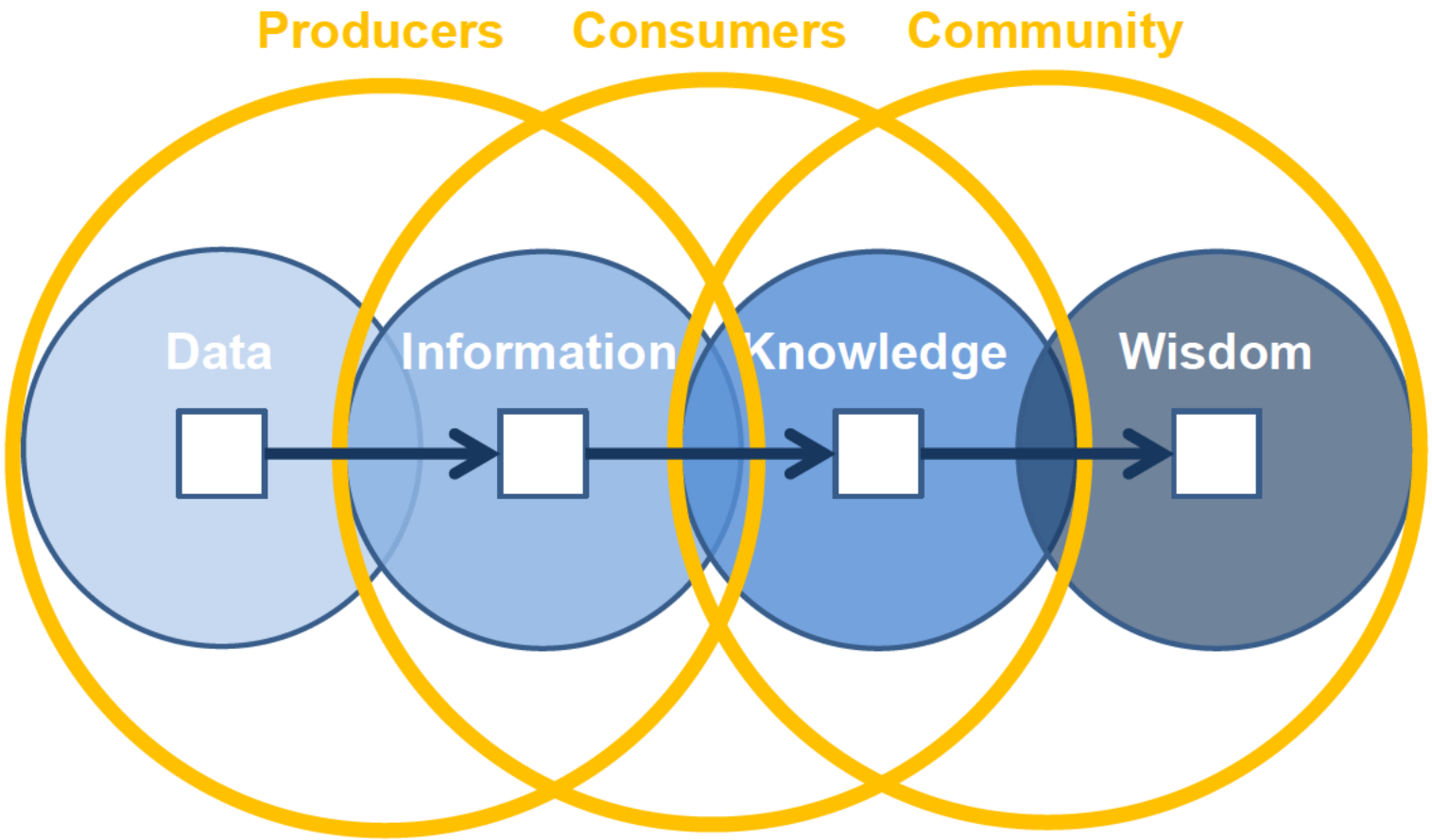
Spiral Development / Training: Potential Spirals



Spiral Development / Training: Rubrics



Data and Information: End-to-End Process



Data to Information Concept Mapping

Variables and Properties
Multiple Dialects
Persistence vs. Transport

Standards and Conventions
Spiral Development
Spatial/Temporal Data Systems

Hierarchical Organizations
Training
Evolution

Questions?