

Implementing ISO 19115-2 for the US EPA and State of Idaho Clearinghouses

FGDC ISO CAP Grant Update 6/19/2012
by Dan Spinoso

Acknowledgments

Thanks To:

- NOAA: Jacqueline Mize & Staff
 - Great Resource:
<ftp://ftp.ncddc.noaa.gov/pub/Metadata/>
 - ISO Transform over 8,500 lines of XSLT code
- ESRI:
 - Aleta Vienneau, Metadata
 - Martin Hogeweg, Geoportal

Lessons Learned with ISO

- Multiple Technologies
 - Metadata Editing: Tools & Processes
 - XML: Schema, Namespace, XSLT, XPath, etc.
 - Clearinghouse infrastructure: ESRI Geoportal, Asp.Net, SQL Server & other custom applications
- Investment of time to understand!
 - Increased functionality but an evolving and complex standard with multiple flavors
 - Team Effort to understand
 - Leverage the work of others

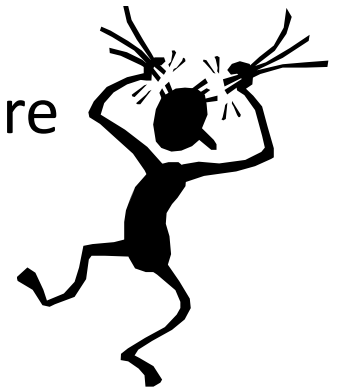


Project Tasks

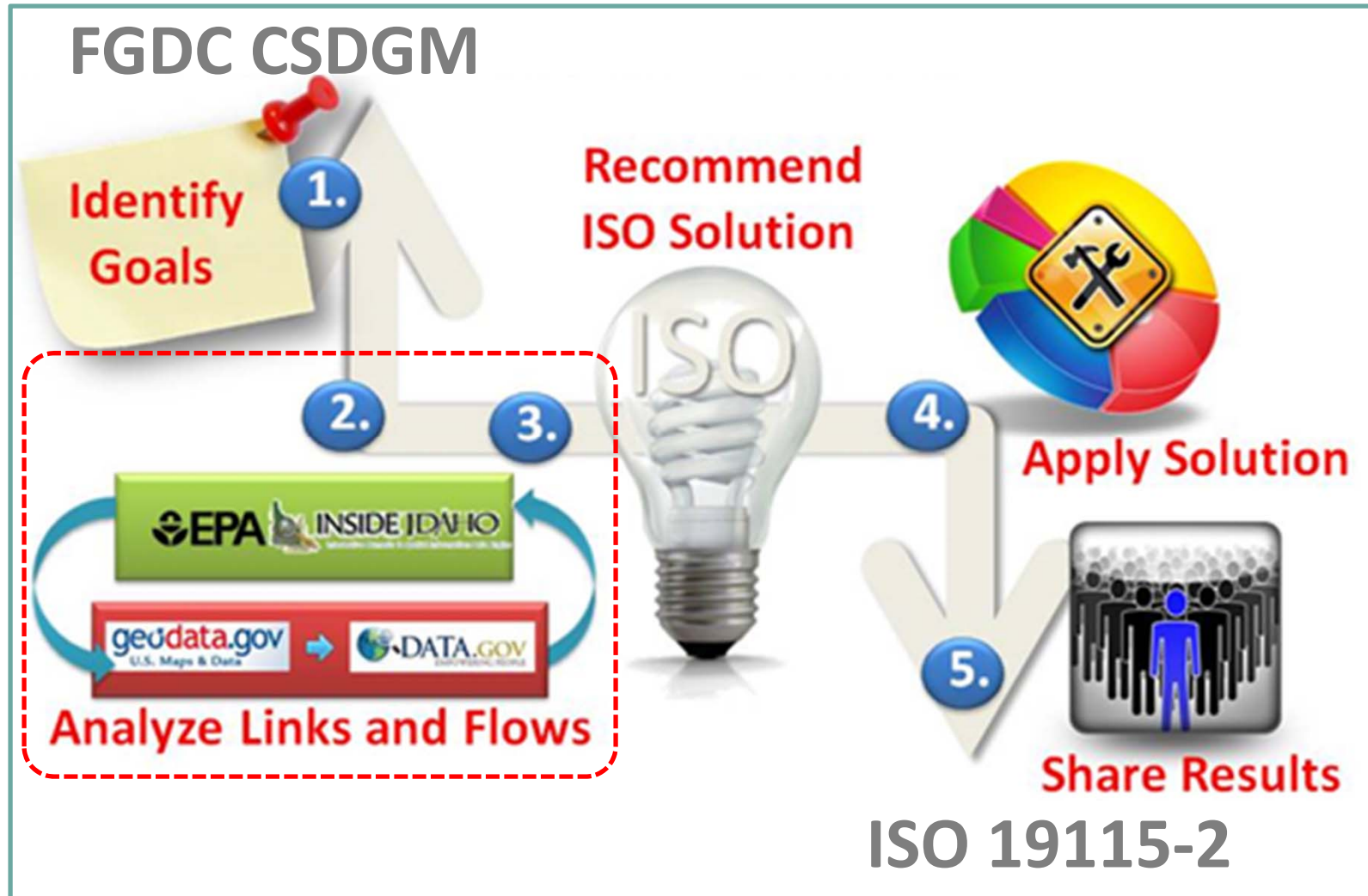


Shared Goals & Challenges

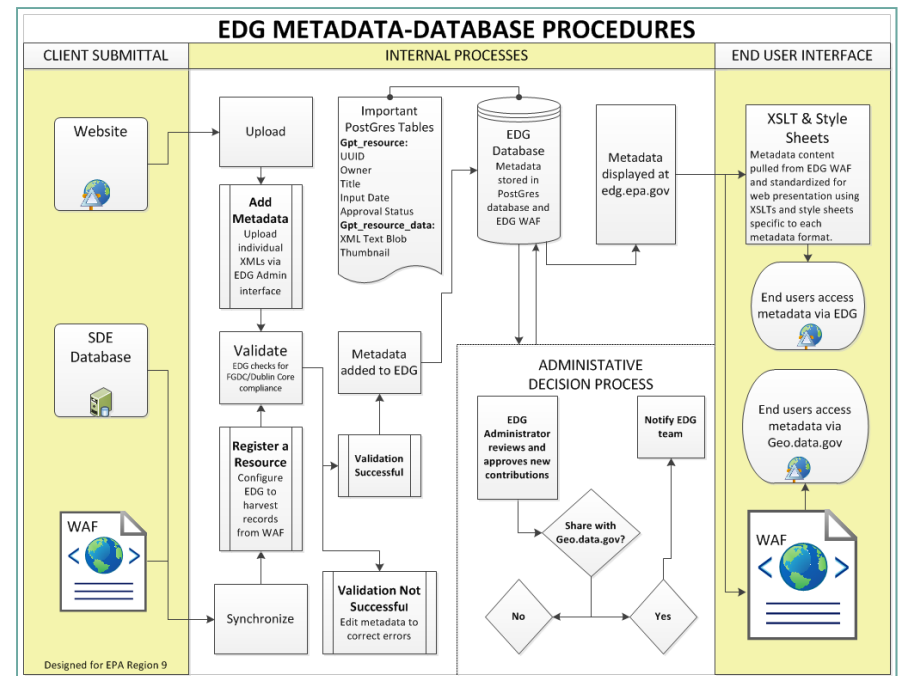
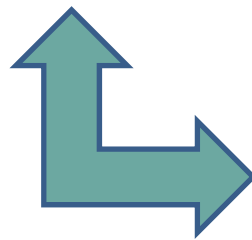
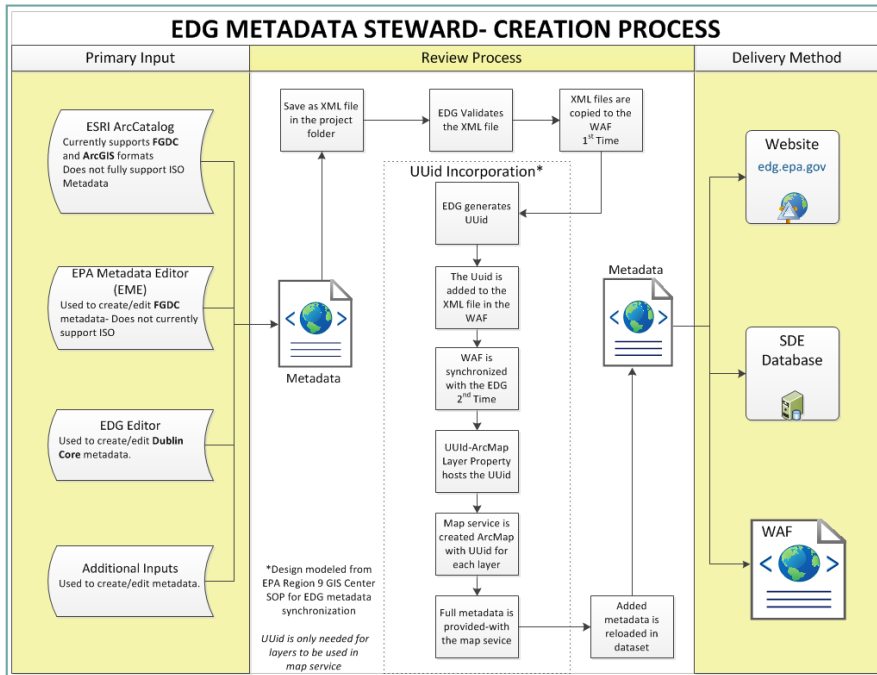
- Support ISO 19115-2 w/in their clearinghouses
 - Upgrade Expense, Level of Effort...
- Provide assistance to contributors
 - Adapt training documentation and tools
 - Selecting the correct tool w/the needed functionality
- Implement the same as others (best practices)
- Acquire better knowledge of the ISO standard among clearinghouse staff
 - Understand implications for existing and future applications
 - Adapt Business Processes



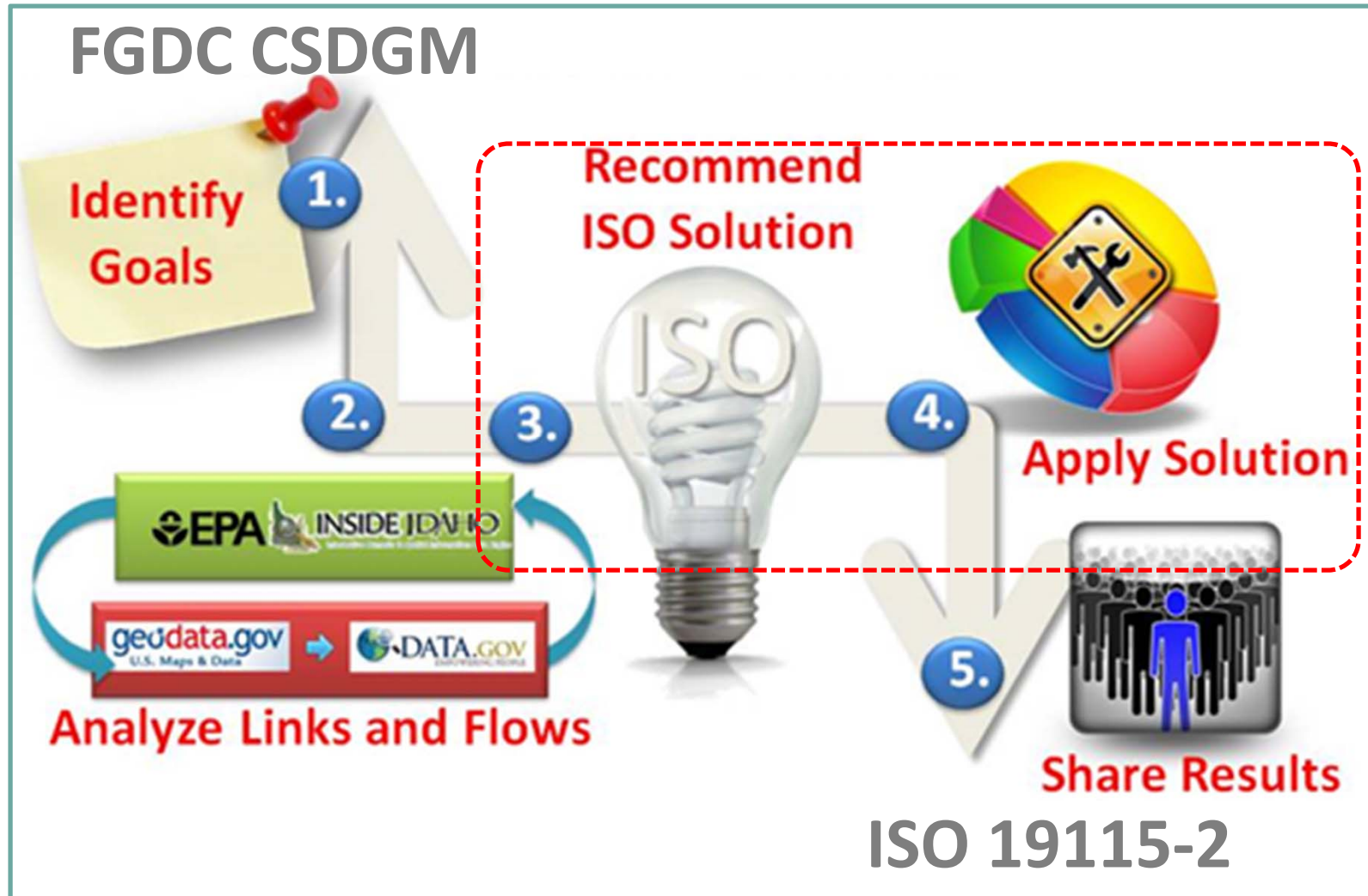
Project Tasks



EDG Business Processes



Project Tasks

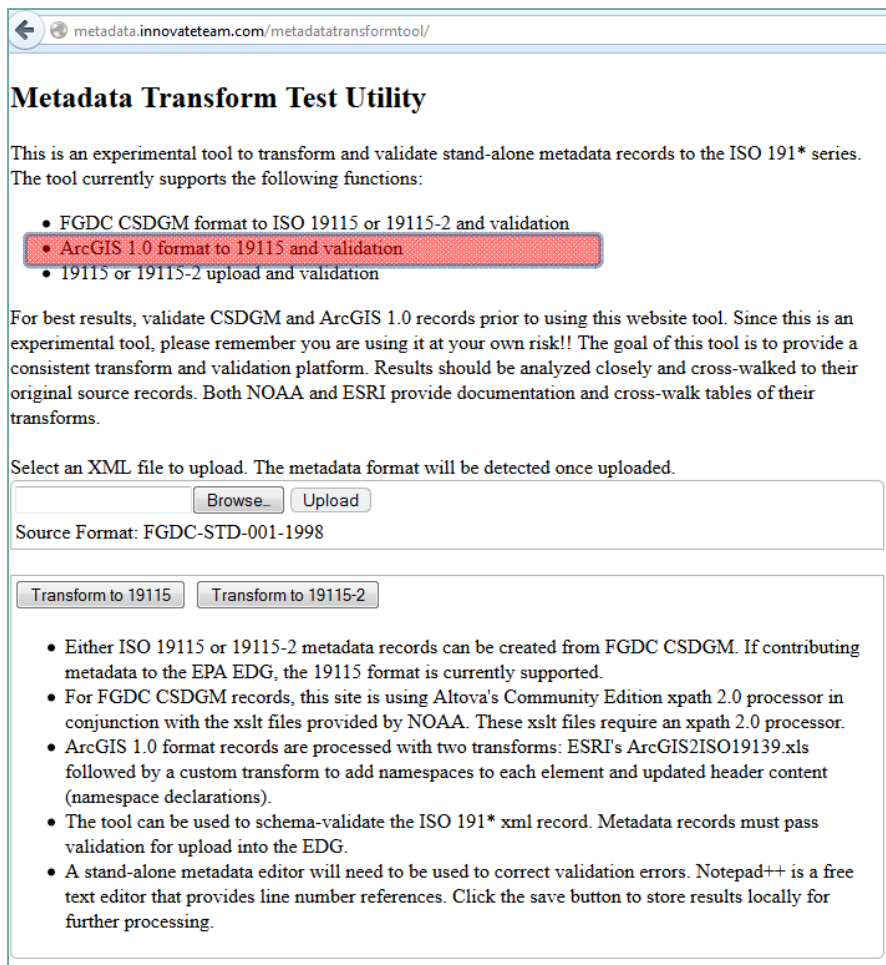


Develop & Test Solution

- Creating Clean ISO 19115-2 records
 - Transformation, Validation, & Corrections
- Harvesting and Displaying ISO 19115-2
 - Test & Document ISO w/in Clearinghouses



Transforming Metadata



The screenshot shows a web browser window with the URL `metadata.innovateteam.com/metadatastransformtool/`. The page title is "Metadata Transform Test Utility". Below the title, there is a paragraph explaining that this is an experimental tool for transforming and validating stand-alone metadata records to the ISO 191* series. A list of supported functions is provided, with "ArcGIS 1.0 format to 19115 and validation" highlighted in a red box. Below the list, there is a warning paragraph advising users to validate records before using the tool. The interface includes a file upload section with a "Browse..." button and an "Upload" button. Below the upload section, the "Source Format" is displayed as "FGDC-STD-001-1998". There are two buttons: "Transform to 19115" and "Transform to 19115-2". At the bottom, there is a detailed list of notes regarding the tool's capabilities and limitations.

Metadata Transform Test Utility

This is an experimental tool to transform and validate stand-alone metadata records to the ISO 191* series. The tool currently supports the following functions:

- FGDC CSDGM format to ISO 19115 or 19115-2 and validation
- **ArcGIS 1.0 format to 19115 and validation**
- 19115 or 19115-2 upload and validation

For best results, validate CSDGM and ArcGIS 1.0 records prior to using this website tool. Since this is an experimental tool, please remember you are using it at your own risk!! The goal of this tool is to provide a consistent transform and validation platform. Results should be analyzed closely and cross-walked to their original source records. Both NOAA and ESRI provide documentation and cross-walk tables of their transforms.

Select an XML file to upload. The metadata format will be detected once uploaded.

Source Format: FGDC-STD-001-1998

- Either ISO 19115 or 19115-2 metadata records can be created from FGDC CSDGM. If contributing metadata to the EPA EDG, the 19115 format is currently supported.
- For FGDC CSDGM records, this site is using Altova's Community Edition xpath 2.0 processor in conjunction with the xslt files provided by NOAA. These xslt files require an xpath 2.0 processor.
- ArcGIS 1.0 format records are processed with two transforms: ESRI's ArcGIS2ISO19139.xls followed by a custom transform to add namespaces to each element and updated header content (namespace declarations).
- The tool can be used to schema-validate the ISO 191* xml record. Metadata records must pass validation for upload into the EDG.
- A stand-alone metadata editor will need to be used to correct validation errors. Notepad++ is a free text editor that provides line number references. Click the save button to store results locally for further processing.

• Web-based Tool

- Metadata.InnovateTeam.com (Transform Tool)
- Available to anyone & easy to use
- Consistent transform & validation test platform
- Leverages NOAA's investment (transforms, style sheets, crosswalk)
- Supports both clearinghouse needs (CSDGM, ArcGIS, & ISO)
- .NET-code base reusable by clearinghouse BP's
 - .NET XML objects
 - Altova free XPath 2.0 processor

Transforming Metadata

ArcCatalog ArcGIS2ISO Export

```
<MD_Metadata xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:gml="http://www.opengis.net/gml"
xmlns:srv="http://www.isotc211.org/2005/srv"
xmlns:gts="http://www.isotc211.org/2005/gts"
xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.isotc211.org/2005/gmd">
+ <language>
+ <characterSet>
+ <hierarchyLevel>
+ <hierarchyLevelName>
+ <contact>
+ <dateStamp>
- <metadataStandardName>
  <gco:CharacterString>ISO 19139 Geographic Information - Metadata -
  Implementation Specification</gco:CharacterString>
</metadataStandardName>
- <metadataStandardVersion>
  <gco:CharacterString>2007</gco:CharacterString>
</metadataStandardVersion>
+ <spatialRepresentationInfo>
+ <identificationInfo>
+ <distributionInfo>
+ <dataQualityInfo>
+ <metadataMaintenance>
</MD_Metadata>
```

- Header Content
- Namespaces
- metadataStandardName & Version

Customized ArcGIS 1.0 to ISO

```
<gmd:MD_Metadata xsi:schemaLocation="http://www.isotc211.org/2005/gmd
http://www.ngdc.noaa.gov/metadata/published/xsd/schema/gmd/gmd.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:srv="http://www.isotc211.org/2005/srv"
xmlns:gts="http://www.isotc211.org/2005/gts"
xmlns:gss="http://www.isotc211.org/2005/gss"
xmlns:gsm="http://www.isotc211.org/2005/gsm"
xmlns:gmx="http://www.isotc211.org/2005/gmx"
xmlns:gml="http://www.opengis.net/gml"
xmlns:gmi="http://www.isotc211.org/2005/gmi"
xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.isotc211.org/2005/gmd">
+ <gmd:language>
+ <gmd:characterSet>
+ <gmd:hierarchyLevel>
+ <gmd:hierarchyLevelName>
+ <gmd:contact>
+ <gmd:dateStamp>
+ <gmd:metadataStandardName>
  <gco:CharacterString>ISO 19115 Geographic information -
  Metadata</gco:CharacterString>
</gmd:metadataStandardName>
+ <gmd:metadataStandardVersion>
  <gco:CharacterString>ISO 19115:2003(E)</gco:CharacterString>
</gmd:metadataStandardVersion>
+ <gmd:spatialRepresentationInfo>
+ <gmd:identificationInfo>
+ <gmd:distributionInfo>
+ <gmd:dataQualityInfo>
+ <gmd:metadataMaintenance>
</gmd:MD_Metadata>
```

Validating ISO Metadata

- Processing Sample Records
- Documenting common errors and solutions (Resolve w/in CSDGM record, or transformed ISO record??)



```
Validate to Schema  
Validation Results:  
Error on line 311 at gmd:type  
Message: The element 'MD_Keywords' in namespace  
'http://www.isotc211.org/2005/gmd' has invalid child element  
'type' in namespace 'http://www.isotc211.org/2005/gmd'. List  
of possible elements expected: 'keyword' in namespace  
'http://www.isotc211.org/2005/gmd'.
```

The Next Steps

- Creating Clean ISO 19115-2 records
 - Transformation, Validation, & Corrections

- Harvesting and Displaying ISO 19115-2
 - Test & Document ISO w/in Clearinghouses



ISO Test Run (In Progress)

- EDG & INSIDE Idaho capabilities
- Problem Areas
- Solutions
 - Code developed from Online Transform Tool
 - NOAA transforms, style sheets, documentation, & staff!
 - Create roadmap for supporting ISO 191* series
 - Tools for authoring metadata (e.g., EME v4.0?)
 - EDG & INSIDE Idaho Clearinghouse under review



Thank you!

Visit us at the ESRI UC:

UC391 - Implementing ISO Metadata for EPA and Idaho
Geospatial Clearinghouses

Thursday July 11, 10:15am - 11:30am Room 27 A

CAP Grant Metadata Resources:
Metadata.InnovateTeam.com

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