OneGeology Web Map and Feature Service Deployment Using GeoSciML-Portrayal

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Contents

Introduction

Congratulations for taking the first step in deploying USGIN/OneGeology web map and feature services! This document outlines the process of transforming your geologic data into interoperable, publicly available OGC web services that meet GeoSciML and OneGeology specifications.

The purpose of this document is to provide an Excel and ArcGIS based workflow that will enable you to prepare, transfer and publish your geologic data as GeoSciML portrayal services. Please refer to the Deployment of geologic map services using GeoSciML-Portrayal tutorial for more detailed information about USGIN, OneGeology, GeoSciML and GeoSciML Portrayal.

Required materials

This document outlines an ArcGIS implementation of GeoSciML portrayal Web Map Services (WMS) and Web Feature Services (WFS). Superscript heading notation for each section indicates whether or not you should be working in Excel (*section*^{E}), ArcGIS-(*section*^{A}) or both (*section*^{AE}).

You will need the following:

1. Your own geologic data
2. usginOneGeology template
3. A laptop with ArcGIS Desktop

1 Prepare roadmap^{AE}

In this section, you will prepare a roadmap that enables you to identify which fields in your data correspond to the GeoSciML portrayal (GSML-P) fields.

Your data will map into one of three GSML-P feature classes, ContactView, ShearDisplacementView and GeologicUnitView. Use the GeoSciMLRoadmap workbook to make notes about how you'll fill out each and every field in the GSML-P layers. This workbook contains a worksheet, with the field listings, for each GSML-P view:

- ContactView
- ShearDisplacementStructure
- GeologicUnitView

Will one of your data fields map directly into one of the GSML-P fields? Will one GSML-P field require you to look at a related table in your source data? Put this information in the “Notes” column, because it really will help you keep organized.

2 Map features to GeoSciML Portrayal[AE]

In this section, you will map your unique features types to the GSML-P schema specifications.

2.1 Identify "types" of features you have[A]

You'll need to identify the unique feature types in your dataset that map to the GSML-P. One option is to prepare summary tables (.dbf) of your feature types that you want to represent in the GSML-P.

Depending on your data, this could be a simple summary of a single field in an existing feature class or a more in-depth process where you'll need to concatenate several fields into a single field to get an accurate representation of all feature types in your dataset. You may even need to combine or parse datasets. The idea is to get your original data into three feature classes that begin to resemble the feature class structure in the GeoSciML-Portrayal.gdb.

The value that you choose to summarize on will serve as the "key" for future joins.

2.2 Copy unique feature type values into correlation tables[E]

In Excel, open .dbf summary tables you created in step 2.1. Copy and paste the unique values from the summary tables into the GeoSciMLCorrelation.xls"TYPE" field in the appropriate correlation worksheet (ContactView, ShearDisplacementView, GeologicUnitView). You should have one row, and only one row, for each unique feature type.

2.3 Fill out correlation tables[E]

The next step is to fill out each of the GeoSciMLCorrelation.xls worksheets (ContactView, ShearDisplacementStructure, GeologicUnitView). You'll mostly be identifying URI's and adding them to the correlation tables. For ContactView and ShearDisplacementView, you'll also want to identify a genericSymbolizer.

To aid you in identifying which URI's to enter into the worksheet, please visit the searchable vocabulary service: http://geomaps.usgin.org/admin/ncgmp/vocabulary/

Username: vocab
Password: usgin

Click on "Vocabularies" to reveal a listing of searchable terms.

GeoSciMLVocabularies.xls also contains vocabulary terms.

2.3.1 ContactView

For each unique feature type, identify the URI that best represents that feature type. Refer to the ContactType Terms from the searchable vocabulary service. Determine which URI from this service best represents your unique feature type. Copy this value and paste it into the **contactType_uri** field for that feature row in the GeoSciMLCorrelation.xls, ContactView worksheet.

genericSymbolizer values to use for this exercise:

Value	Feature Type
1.1.1	contact, accurately located
1.1.3	contact, approximately located
1.1.7	contact, concealed

A layer for ContactView that references these values is included in the wms.mxd document.

2.3.2 ShearDisplacementView

For each unique feature type, identify the URI that best represents that feature type. Refer to the FaultType Terms , FaultMovementType Terms, DeformationStyle Terms from the searchable vocabulary service. For representative age URI's, refer to the ***vICS2009TimeScale*** sheet in the workbook. Determine which URI from the service and worksheet best represents your unique feature type. Copy the values and paste it into the **faultType_uri, movementType_uri, deformationStyle_uri, representativeAge_uri, representativeOlderAge_uri** and **representativeYoungerAge_uri** field for that feature row in the GeoSciMLCorrelation.xls, ShearDisplacementStructureView worksheet.

genericSymbolizer values to use for this exercise:

Value	Feature Type
2.1.1	fault, accurately located
2.1.3	fault, approximately located
2.1.7	fault, concealed

A layer for ShearDisplacementView that references these values is included in the wms.mxd document.

2.3.3 GeologicUnitView

For each unique feature type, identify the URI that best represents that feature type. Refer to the GeologicUnitType Terms, SimpleLithology Terms. For representative age URI's, refer to the ***vICS2009TimeScale*** sheet in the workbook. Copy and paste URI's t into the **geologicUnitType_uri, representativeLithology_uri, representativeAge_uri, representativeOlderAge_uri** and **representativeYoungerAge_uri** field for that feature row in in the GeoSciMLCorrelation.xls, GeologicUnitView worksheet.

Layers for representative age and representative lithology symbology are included in the wms.mxd document.

2.4 Join correlation tables to your original data[AE]

The next step is to join the correlation tables you created in section 2.3 to the feature classes that contain the unique feature type key. You may also need to join tables from your original dataset to

the feature class with the key. Once all of your joins have been made, export the feature classes to the scratch.gdb to preserve joined data. This will be your staged data.

3 Load Data into GeoSciML portrayal database[A]

In this section, you will load staged data to GeoSciML-Portrayal.gdb. You can use the **Load Data** option in ArcCatalog or the **Append** tool in the ***ArcToolbox***. Schema mapping is a critical component to this step. You may need to refer back to your road map for this step.

4 Create ArcMap projects[A]

The Template projects directory contains two ArcMap project files: ***wfs.mxd*** and ***wms.mxd***. Assuming all of your data has been loaded correctly into the GeoSciML-Portrayal.gdb, you should be able to open these documents and see your data!

The wms.mxd contains the layers for the WMS service that meets OneGeology publication guidelines. The wfs.mxd contains the layers for a GeoSciML-portrayal compliant WFS service. Symbology has already been defined for contacts, faults, geologic age and lithology in the wms.mxd. You will define symbology for the lithostratigraphy layer. Ideally, you have a style file or layer file that you can use to symbolize this layer.

4.1.1 wms.mxd

Open **wms.mxd.** Save it with a new name, in the ***projects*** directory, that follows the naming convention described in Appendix C.2 Service Title and Service Name Requirements of the Deployment of geologic map services using GeoSciML-Portrayal tutorial.

Rename the layers so that they follow the Layer Name convention in Appendix C.3 Layer Naming and Title Conventions.

Save document.

4.1.2 wfs.mxd

Open **wfs.mxd.** Save it with a new name, in the ***projects*** directory, that matches the wms name you chose in section 4.1, appended with _WFS.

Save document.

5 Deploy your services

Refer to the Deployment of geologic map services using GeoSciML-Portrayal tutorial to deploy services.