

# Benefits of Documenting Geospatial Data and Services Using ISO Metadata

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FGDC ISO Metadata Summit  
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# The Census Bureau's Geospatial Metadata Footprint

- The Census Bureau's Geography Division (GEO)
  - Provides the framework for survey design, sample selection, data collection, tabulation, and dissemination
  - Produces geospatial data to support the decennial census and ongoing surveys and offers the data to the public
- GEO publishes over 50,000 metadata files annually for **Topologically Integrated Geographic Encoding and Referencing (TIGER)** products

# Benefits of Using ISO Metadata

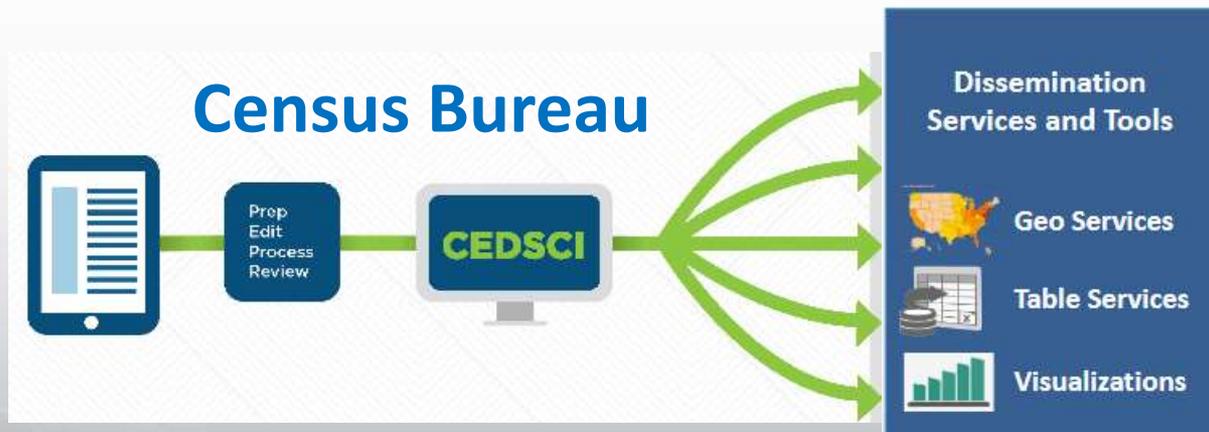
- Enables data for applications
- Documents services
- Availability of support to assist the transition
- Scalable implementation
- Options for efficiencies

# Enables Data for Applications



## □ FGDC Geospatial Platform

provides shared and trusted geospatial data, services, and applications for the advancement of the NSDI



# Documents Services

ISO Service Identification Package includes:

- Service type
- Service type version
- Service keywords
- Service extent
- Coupling type
- Operations

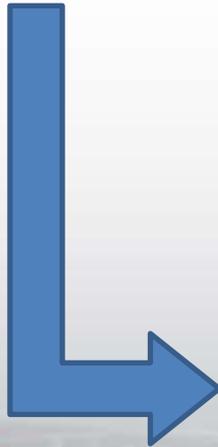


Data Identification:

- Citation
- Abstract
- Purpose

# Service Identification - Type

```
<srv:serviceType>  
<gco:LocalName>urn:ogc:serviceType:WebMapService</gco:LocalName>  
</srv:serviceType>  
<srv:serviceTypeVersion>  
<gco:CharacterString>1.3.0</gco:CharacterString>  
</srv:serviceTypeVersion>
```



## Service Identification

**Abstract:** This web mapping service contains data from the American Community Survey (ACS), which is an ongoing survey that provides data every year in order to give communities the current information they need to plan investments and services. Information from the survey generates data that help determine how more than \$400 billion in federal and state funds are distributed each year. This survey contains information about the age, sex, race, family and relationships, income and benefits, health insurance, education, veteran status, disabilities and the cost of living of the communities surveyed. The Census ACS 2014 WMS web mapping service contains data as of January 1, 2014.

**Title:** Census ACS 2014 WMS

**Alternate Title:** WMS (MapServer)

**Date:** 20170309

**Date Type:** Publication Date

**Point Of Contact:**

**Keyword Collection:**

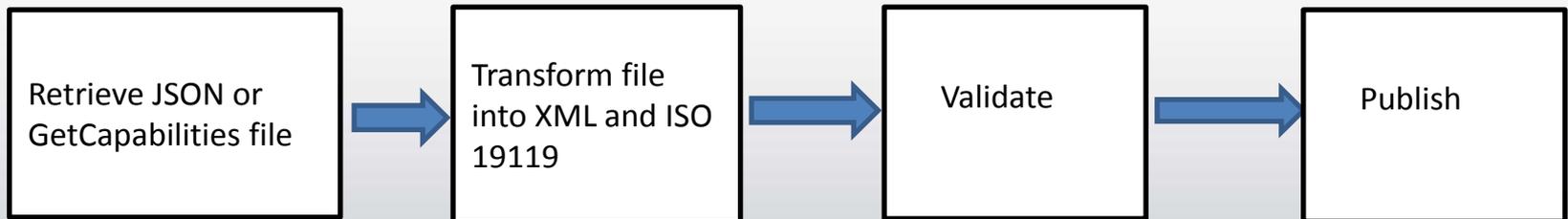
**Keyword:** Census ACS 2014 WMS

**Service Type:** urn:ogc:serviceType:WebMapService

**Service type version:** 1.3.0

# Service Metadata Workflow

- For Representational State Transfer (REST) services:
  - Utilize Java Script Object Notation (JSON)
- For Web Mapping Services (WMS):
  - Utilize GetCapabilities file



# ISO Metadata Support

All updates

## MEETING MATERIALS

The Metadata Working group meets via teleconference twice a year.

- [MWG Meetings](#)

FGDC also hosts a monthly [ISO Geospatial Metadata Implementation Forum](#) where members of MWG actively participate and the materials from the forum including Webinar recordings are available on the forum page.

## RESOURCES

- [Preparing for International Metadata](#) (pdf) - This document provides an overview of ISO 19115 and NAP geospatial metadata and specific guidance on preparing for the transition to ISO standards.
- [2013 ISO Metadata Implementation Webinar](#)
- [2011 FGDC Metadata Summit](#)

## TOOLS

The FGDC ISO Geospatial Metadata Editors Registry was developed to address regular requests from the NSDI community for information about available ISO geospatial metadata editors. The FGDC Metadata Working Group (MWG) provided guidance as to editor features commonly used as selection criteria.

- [FGDC ISO Geospatial Metadata Editors Registry](#)

## PARTICIPATE

The working group welcomes everyone that has an interest in participating and contributing to its activities. Please send an email to Jen Carlino, [jcarlino@usgs.gov](mailto:jcarlino@usgs.gov) to receive instructions on how you can participate.

# FGDC NGDA Metadata Guidelines

[https://cms.geoplatform.gov/sites/default/files/document\\_library/](https://cms.geoplatform.gov/sites/default/files/document_library/)

NGDA\_Metadata\_Guidelines\_v3.pdf

FEDERAL GEOGRAPHIC DATA COMMITTEE

## National Geospatial Data Assets (NGDA) Metadata Guidelines

Metadata Content That Makes Data Discoverable and Usable as an NGDA Dataset

Version 3.0  
7/15/2016





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### Metadata Standards

Metadata or 'the documentation of data' serves the purpose of making data discoverable, usable and understandable. A variety of metadata standards and formats have been developed over time to support data discovery and data documentation.

Metadata can be represented in a number of standards and formats. Many discipline-specific or community-specific metadata standards have been developed to support data management and data discovery systems and to capture and convey information to users. Examples include Directory Interchange Format (DIF), Ecological Metadata Language (EML), Sensor Model Language (SensorML), Climate Science Modeling Language (CSML), and NetCDF Markup Language (NcML). One commonly used metadata standard, the Federal Geographic Data Committee's (FGDC) Content Standard for Digital Geospatial Metadata (CSDGM) was developed in support of the coordinated development, use, sharing, and dissemination of geospatial data on a national basis.

Additionally, the International Organization for Standardization (ISO) developed a series of standards to describe geographic information. The use of metadata to document environmental data is described in NOAA Administrative Order 212-15 which outlines the Management of Environmental Data and Information. NOAA's Environmental Data Management Committee's (EDMC) Data Documentation Planning Directive "establishes ISO 19115 Parts 1 and 2 and a recommended representation standard (ISO 19139) for documenting NOAA's environmental data and information."

### Metadata Creation

The production, validation, and management of metadata records can be challenging and time consuming. A number of content sources, formats, storage structures and standards exist and change over time. Metadata creation is often further impeded by complex of metadata standards and a variety of available tool-sets. Some methods for automating metadata transformations are described in XML Transformations.

### Metadata Training



# NOAA Metadata Support

<https://www.ncddc.noaa.gov/metadata-standards/>

# Scalable Implementation

- Phase 1 – get familiar with the ISO format via the crosswalk; transform a CSDGM file to ISO
- Phase 2 – produce ISO metadata, but without detailed entity and attribute information
- Phase 3 – incorporate re-usable components
- Phase 4 – produce complete ISO metadata records for all data and services

# CSDGM to ISO Crosswalk

| FGDC Name                          | FGDC XML Tag | ISO Name   | Comment  |
|------------------------------------|--------------|--|--|
| Time Period of Content             | timeperd     |  | Compound element, unnecessary mapping  |
| Time Period Information            | timeinfo     | MD_Metadata, identificationInfo, MD_DataIdentification, extent, EX_Extent, temporalElement, EX_TemporalExtent, gml:TimePeriod  | TimePeriod seems to make more sense since this is referring to the time period of the content; refer to Time Period Information Section for further mapping guidance |
| Source Time Period of Content      | srctime      |  | Compound element, unnecessary mapping  |
| Process Date                       | procdate     | MD_Metadata, gmd:dataQualityInfo, gmd:DQ_DataQuality, gmd:lineage, gmd:LI_Lineage, gmd:processStep, gmd:LI_ProcessStep, gmd:dateTime                                       |  |
| Beginning Date of Attribute Values | begdatea     | gfc:FC_FeatureCatalogue, gfc:featureType, gfc:FC_FeatureType, gfc:carrierOfCharacteristics, gfc:FC_FeatureAttribute, gfc:constrainedBy, gfc:FC_Constraint, gfc:description | convert the date from FGDC format to ISO format, if this exists, HC 'Beginning Date of Attribute Values:' and map value  |
| Ending Date of Attribute Values    | enddatea     | gfc:FC_FeatureCatalogue, gfc:featureType, gfc:FC_FeatureType, gfc:carrierOfCharacteristics, gfc:FC_FeatureAttribute, gfc:constrainedBy, gfc:FC_Constraint, gfc:description | convert the date from FGDC format to ISO format, if this exists, HC 'Ending Date of Attribute Values:' and map value   |
| Format Version Date                | formverd     | MD_Metadata, gmd:distributionInformation, gmd:MD_Distribution, gmd:distributionFormat, gmd:MD_Format, gmd:version  | should this be mapped to gmd:amendmentNumber instead? According to FGDC def, it is the DATE of the format version. What fits best? This really could go either way.  |

# Options for Efficiencies - xlink

## Full contact information:

```
• <gmd:contactInfo>
•   <gmd:CI_Contact>
•     <gmd:phone>
•       <gmd:CI_Telephone>
•         <gmd:voice>
•           <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">301-763-1128</gco:CharacterString>
•         </gmd:voice>
•         <gmd:facsimile>
•           <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">301-763-4710</gco:CharacterString>
•         </gmd:facsimile>
•       </gmd:CI_Telephone>
•     </gmd:phone>
•     <gmd:address>
•       <gmd:CI_Address>
•         <gmd:deliveryPoint>
•           <gco:CharacterString xmlns:gco="http://www.isotc211.org/2005/gco">4600 Silver Hill Road, Stop 7400</gco:CharacterString>
```

## Contact information component with xlink:

```
<gmd:contact xlink:title="U.S. Department of Commerce, U.S. Census Bureau, Geography Division, Geographic Products Branch" xmlns:gmd="http://www.isotc211.org/2005/gmd" xlink:href="https://www.ngdc.noaa.gov/docucomp/c5ceb003-1ed6-4126-8a16-bc08ce8fc267" xmlns:xlink="http://www.w3.org/1999/xlink"/>
```

# Challenges to Implementing ISO Metadata

- It is a change
- ISO metadata files are larger in size than CSDGM files
- Naming convention for metadata files
  - For publishing CSDGM and ISO files
  - For publishing detailed entity and attribute info

# Questions?

## Contact Information

[lynda.a.liptrap@census.gov](mailto:lynda.a.liptrap@census.gov)

[matthew.j.mccready@census.gov](mailto:matthew.j.mccready@census.gov)

[charles.s.spicer.ii@census.gov](mailto:charles.s.spicer.ii@census.gov)

# Facilitate Discovery

- Manage large homogenous collections by establishing parent/child relationships
  - Query returns one metadata record per collection
  - Explore collection to access single data file and documentation
  - Homogeneous collection established via harvest source
  - Child metadata file has link to parent record

# Collection vs. Single Records

## **Collection** TIGERweb, 2017, Series Information for the TIGERweb, Web Mapping Service and REST files

*US Census Bureau, Department of Commerce* – TIGERweb allows the viewing of TIGER spatial data online and for TIGER data to be streamed to your mapping application. TIGERweb consists of a web mapping service...

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Federal

## California State Waters Map Series--Hueneme Canyon Web Services

*U.S. Geological Survey, Department of the Interior* – In 2007, the California Ocean Protection Council initiated the California Seafloor Mapping Program (CSMP), designed to create a comprehensive seafloor map of...

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Federal

## California State Waters Map Series--Drakes Bay Web Services

*U.S. Geological Survey, Department of the Interior* – In 2007, the California Ocean Protection Council initiated the California Seafloor Mapping Program (CSMP), designed to create a comprehensive seafloor map of...

[Esri REST](#) [HTML](#) [WMS](#) [HTML](#) [Esri REST](#) [WMS](#) 2 more in dataset

Federal

# Configure a Homogeneous Collection

Establish harvest source in data.gov

Harvest source is an alias (optional) which is used to identify the source. Harvest sources can be other harvests or Web Accessible Folders (WAF) (depending on the actual harvesters enabled for this instance).

URL:

Title:   
URL:

Description:

Source type:  CDM  Cost Server  Web Accessible Folder (WAF)  Single spatial metadata document  Geospatial Service  Web Accessible Folder (WAF) Homogeneous Collection  ZIP file  Metadata file  Other

Update frequency:

Collection Metadata List:

Validation:

Indicate here if the harvest source is a homogeneous collection

Insert the URL for the series information file here

Link to parent in child metadata file:

```
<gmd:parentIdentifier>  
  <gco:CharacterString>Series Information for the 2016 Cartographic Boundary File,  
  Current Block Group , 1:500,000</gco:CharacterString>  
</gmd:parentIdentifier>
```

# TIGER/Line Collection

## Collection:

**Collection** TIGER/Line Shapefile, 2016, Series Information for the Current Unified School Districts Shapefile State-based Shapefile [10 recent views](#)

The TIGER/Line shapefiles and related database files (.dbf) are an extract of selected geographic and cartographic information from the U.S. Census Bureau's Master Address File...

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## 55 datasets found

### TIGER/Line Shapefile, 2016, state, Puerto Rico, Current Unified School Districts Shapefile State-based

*US Census Bureau, Department of Commerce* – The TIGER/Line shapefiles and related database files (.dbf) are an extract of selected geographic and cartographic information from the U.S. Census Bureau's Master...

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### TIGER/Line Shapefile, 2016, state, Colorado, Current Unified School Districts Shapefile State-based

*US Census Bureau, Department of Commerce* – The TIGER/Line shapefiles and related database files (.dbf) are an extract of selected geographic and cartographic information from the U.S. Census Bureau's Master...

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# TIGERweb Collection

## Collection:

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TIGERweb allows the viewing of TIGER spatial data online and for TIGER data to be streamed to your mapping application. TIGERweb consists of a web mapping service and a REST...

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### 2017 Census Tracts and Blocks REST File

*US Census Bureau, Department of Commerce* – Census REST files provide a way for users to request TIGERLine information from Census GIS servers files through Representational State Transfer (REST) technology...

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