Geospatial Metadata

Metadata Standards

TOM VOUGHT – MSDIS
VOUGHTTH@MISSOURI.EDU

August 15th, 2018

MSDIS
Making
Missouri
Available
Digitally

Does your organization already have a written metadata standard that you, or your employees, need to follow?

MSDIS
Making
Missouri
Available
Digitally

For managers…

Are you happy with the metadata standard that your organization uses?

What does it do well for your organization?

What does it do poorly?

Are you actively considering changing to a different standard?

Have you spoken to your colleagues about the standards that other organizations use?

What are metadata standards

Metadata standards were designed to ensure that every organization that needs to write geospatial metadata doesn't rely on its own custom set of requirements, fields, formats, etc.

The existing metadata standards provide guidelines for what information should be included in geospatial metadata.

There are two primary metadata standards recognized by GIS professionals – the FGDC CSDGM standard and the ISO 19115 standard.

MSDIS
Making
Missouri
Available
Digitally

What are metadata standards – FGDC CSDGM

The Federal Geographic Data Committee (FGDC) originally endorsed the Content Standard for Digital Geospatial Metadata (CSDGM) standard.

The FGDC CSDGM was the primary content standard for geospatial metadata for many federal, state, and local agencies until the advent of the ISO 19115 standard.

While the FGDC CSDGM standard is still viable, the FGDC itself now recommends the ISO 19115 standard.

MSDIS
Making
Missouri
Available
Digitally

What are metadata standards – FGDC CSDGM

Directly from the FGDC.gov website:

"Content Standard for Digital Geospatial Metadata (CSDGM), Vers. 2 (FGDC-STD-001-1998) is the current version of this FGDC authored and endorsed standard. Executive Order 12906*, directed that Federal agencies document geospatial resources using this standard. **Since the publication of EO 12906, the FGDC has endorsed several ISO Geospatial Metadata Standards that are now encouraged for use.**

MSDIS Making Missouri Available Digitally

What are metadata standards – FGDC CSDGM

*Executive Order 12906: COORDINTAING GEOGRAPHIC DATA ACQUISITION AND ACCESS: THE NATIONAL SPATIAL DATA INFRASTRUCTURE

Published, 13 April 1994

Signed by President Bill Clinton, 11 April 1994

Amended by President George W Bush with EO 13286, 05 March 2003

Launched the initiative that would create the NSDI

MSDIS Making Missouri Available Digitally

What are metadata standards – ISO 19115

The International Organization for Standardization (ISO) authored its own geographic metadata standard to establish an internationally recognized set of guidelines.

Like the FGDC CSDGM, the ISO 19115 standard has undergone several revisions, the most recent of which is the ISO 19115:2014, published April 2014

By design, the ISO standard combines different pieces of other organizational standards (including the FGDC CSDGM) to make a more robust, more flexible metadata standard that generally meets the needs of most GIS users and organizations.

MSDIS
Making
Missouri
Available
Digitally

What are metadata standards – FGDC vs ISO

Both standards are perfectly acceptable for use by GIS professionals.

Certainly, ANY widely acknowledged standard is better than no metadata, or some kind of brief text document written at the last moment.

HOWEVER… the existence of two widely known standards is the source of some confusions. For example, in 2002, the MGISAC specifically recommended that FGDC CSDGM should be adopted as the metadata standard for the state, one year before the ISO standard was first published.

MSDIS
Making
Missouri
Available
Digitally

What are metadata standards – FGDC vs ISO

So what should Missouri GIS professionals do?

Most, if not all, of us have used the FGDC CSDGM standard for years.

Certainly most of the metadata of our older datasets, if they use any standard at all, more closely comply with FGDC standards than ISO.

But where should we focus our efforts if even the FGDC has recommended adoption of ISO metadata elements?

MSDIS
Making
Missouri
Available
Digitally

What are metadata standards – FGDC vs ISO

So what is the appeal of the ISO 19115 standard?

Because of its hybrid nature, the ISO 19115 standard is, or can be:

- applicable to a broad range of geospatial data resource types
- flexible and easily customized
- modular and efficient
- standardized across communities

MSDIS Making Missouri Available Digitally

What are metadata standards – FGDC vs ISO

The ISO 19115 standard REQUIRES fewer mandatory elements and fields than the FGDC CSDGM standard, meaning that, if using only the minimum requirements, it is faster and easier to complete.

The ISO 19115 standard INCLUDES extra optional elements, meaning that, is an organization can generate that is more informative than had they used FGDC CSDGM.

MSDIS
Making
Missouri
Available
Digitally

What are metadata standards – FGDC vs ISO

"The North American Profile of ISO 19115:2003 is a regional profile that modifies ISO 19115:2003. One of its roles is to add values to ISO 19115:2003 codelists that correspond with element values defined in the *CSDGM*. **The *CSDGM* is based on typing content into a textual document, and suggests standardized values in some elements such as audio when describing a resource's format—possibly for a recording of wildlife sounds. ISO 19115:2003 incorporates the idea of controlled vocabularies, where a value must be selected from a predefined codelist.** The ISO metadata codelist for describing an item's format doesn't have a value for audio resources. The North American Profile adds values to various ISO codelists to ease the transition between the two content standards, including adding values to the format codelist for audio resources."

-http://desktop.arcgis.com/en/arcmap/latest/manage-data/metadata/support-for-iso-metadata-standards.htm

MSDIS Making Missouri Available Digitally

What are metadata standards – FGDC vs ISO

The ISO 19115 standard also introduced the 19 topic categories that are now commonly used to search geospatial metadata.

These 19 subject headings facilitate high-level/concept data searches

- Farming
- Biota
- Boundaries
- climatologyMeteorologyAtmosphere
- Economy
- Environment
- geoscientificInformation
- Health
- imageryBaseMapsEarthCover
- intelligenceMilitary
- inlandWaters
- Location
- Oceans
- planningCadastre
- Society
- Structure
- Trasnportation
- utilitiesCommunication

MSDIS Making Missouri Available Digitally

What are metadata standards – ISO vs ISO

ArcCatalog offers multiple different ISO standards for metadata creation, 19115 & 19139.

ISO19139 – "This style allows you to view and edit a complete metadata document that complies with ISO standards 19115 and 19139. When metadata is exported to an ISO 19139-format XML file using other applications in the ArcGIS platform, the resulting file can be validated with versions of the ISO 19139 XML schemas that use an older version of GML."

-http://pro.arcgis.com/en/pro-app/help/metadata/create-iso-19115-and-iso-19139-metadata.htm

MSDIS Making Missouri Available Digitally

Essential Metadata Components

ArcCatalog divides metadata into three broad chapters – OVERVIEW, METADATA, and RESOURCE.

Each of these three chapters are, themselves, divided into 4-15 smaller sections.

Within each small section, ArcCatalog will present a series of fillable blanks, radio buttons, and dropdown menus.

A red 'X' will be displayed next to any section that is missing a component required by the FGDC standard. The incomplete component will also be highlighted pink when viewing the corresponding section.

MSDIS Making Missouri Available Digitally

Essential Metadata Components - OVERVIEW

The OVERVIEW chapter contains the following sections:

- Item Description
- Topics & Keywords
- Citation
- Citation Contacts
- Contacts Manager*
- Locales

This chapter describes many of the broad details of a dataset, including its general purpose.

*Contacts Manager is not a fillable section. It is used to save, or delete, the information previously entered into any of the three Contacts sections. This can be very helpful when only a handful of people within an organization are responsible for generating data or metadata.

MSDIS Making Missouri Available Digitally

Essential Metadata Components - METADATA

The METADATA chapter contains the following sections:

- Details
- Contacts
- Maintenance
- Constraints

This chapter contains sections to identify the primary contact person and the maintenance schedule FOR THE METADATA DOCUMENT, as well as sections for including a Data URI for automated downloads.

Essential Metadata Components - RESOURCE

The RESOURCE chapter contains the following sections:

- Details
- Service Details
- Extents
- Points of Contact
- Maintenance
- Constraints
- Spatial Reference
- Spatial Data Representation
- Content
- Quality
- Lineage
- Distribution
- Fields
- References
- Geoprocessing History

MSDIS Making Missouri Available Digitally

Essential Metadata Components – RESOURCE

The RESOURCE chapter is the primary section for describing the SPATIAL AND NON-SPATIAL DATA associated to the metadata document.

This chapter includes the sections to identify the data maintenance schedule, the content and quality of the data, the data creation process, and the non-spatial attributes.

The RESOURCE chapter will, almost always, take the most time to complete.

MSDIS
Making
Missouri
Available
Digitally

Which Metadata Standard is the Correct One?

There is no silver bullet answer.

The 'correct' metadata standard for your organization is whichever best meet your needs. Personally, I prefer the additional required components of the FGDC CSDGM standard, but some of those additional elements may not be important for your organizations.

My goal in leading this workshop is not to tell you which standard is the best for your data or to force you to memorize all of the ISO or FGDC fields.

My goal today is to provide you with the tools and insights to fill out NECESSARY information that any GIS professional would find helpful, regardless of standard.

MSDIS
Making
Missouri
Available
Digitally

- Questions?

MSDIS
Making
Missouri
Available
Digitally