Geospatial Metadata

A short introduction on the importance and purpose of geospatial metadata

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Welcome

My plan for today:

Introduce the general concept of geospatial metadata and why it is important to all of us here today

Discuss the two primary metadata standards

Discuss the most important metadata sections and fields that should be completed by any agency for any dataset

Discuss reliable third-party software for writing, editing, or even just viewing metadata

Provide demonstrations of using ArcCatalog for writing metadata

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Welcome

The example datasets used today can be downloaded from the MSDIS Data Archive at:

http://msdis-archive.missouri.edu/archive/MSDIS_Outbox/MetadataWorkshopExamples/

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Welcome

MSDIS would like to thank the following for helping to make this workshop possible:

MGISAC, for being the driving force behind making the workshop happen.

University of Missouri Dept of Geography, for allowing MSDIS to spend time on preparing and executing the workshop

LETI, for the use of their classroom while the MoNo conference room is currently in a state of disrepair.

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Welcome

MSDIS would like to thank the following for helping to make this workshop possible:

Tim Donze, for lunch.

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Who am I and why am I here?

Tom Vought, Senior GIS Specialist and Data & Operations Manager for MSDIS

What is MSDIS?
The geospatial data clearinghouse for the state of Missouri.

A platform for finding/distributing/downloading/querying GIS data generated by agencies and offices from across the state.

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Who am I and why am I here?

MSDIS has a vested interest in your metadata being both complete and reliable.

As we share more and more Missouri GIS data, we invite more and more users to ask more and more questions.

Those questions range from whether or not a dataset has been updated, who is responsible for a dataset, when a dataset was created, and what certain attributes of a dataset mean.

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Why are you here?

Please give your name, your office/agency/organization, and a **brief** explanation of what you hope to learn from this workshop.

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How many people here currently write, or have written, metadata for spatial data?

Has anyone here never written metadata for spatial data?

Why is MGISAC hosting an entire workshop about metadata?

Metadata is a **CRITICAL** part of any geospatial dataset.

In some cases, and in many ways, it is just as important as the spatial data itself.

Good metadata provides a record of the trustworthiness of a dataset that explains how reliable the information is.

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Why is MGISAC hosting an entire workshop about metadata?

Metadata is, without a doubt, the most overlooked component of geospatial data.

Writing metadata is often put off until the end of the data creation process, which means that it is usually forgotten once the data creator moves on to a different project.

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Why is MGISAC hosting an entire workshop about metadata?

Because of competing standards and confusing interfaces, metadata can easily be seen as a too-complicated inconvenience for data creators - what are you supposed to document and how are you supposed to format the information?

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Why is MGISAC hosting an entire workshop about metadata?

Data creators rarely need metadata for their own data because they know what the attributes mean and how the information was created.

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Alright, but why is good metadata so important?

In a world where GIS data is increasingly available through services such as ArcGIS Online and open data portals, good metadata means that people will easily identify your data as accurate and trustworthy.

If GIS users are able to easily identify accurate and trustworthy data, their work will be better.

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Alright, but why is good metadata so important?

Good metadata means that people who were not standing directly over your shoulder while you created a dataset won't need to ask you as many questions about your work.

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As an example, consider the following…

You work for days to generate an accurate spatial dataset for your organization, but the metadata file does not include descriptions of the non-spatial attributes.

Through one method or another (MSDIS, ArcGIS Online, etc), that dataset is made freely available to the public.

The following scenarios are now possible…

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As an example, consider the following…

…your dataset, which is perfectly reliable, is simply ignored by potential GIS professionals.

…a different, but similar and less reliable dataset, may be used by GIS professionals instead.

…you, or your organizations GIS point of contact, are repeatedly asked the same questions about the dataset that could have been answered in the metadata.

…the point of contact for the platform distributing your data is repeatedly asked the same questions about the dataset that could have been answered in the metadata.

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Important questions ***all*** METADATA ***should*** answer…

WHY?

Why was this dataset created?

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Important questions ***all*** METADATA ***should*** answer…

WHERE?

Where, on the face of the Earth, does this dataset represent?

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Important questions ***all*** METADATA ***should*** answer…

WHO?

Who made this dataset?

Who is responsible for updating this dataset?

Who should I contact if I have questions about this dataset?

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Important questions ***all*** METADATA ***should*** answer…

WHEN?

When was this dataset created?

When did this dataset best represent ground conditions?

When will this dataset be updated?

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Important questions ***all*** METADATA ***should*** answer…

HOW?

How was this dataset created?

- What software was used?
- What input datasets were used?
- What processes or tools were used?
- What standards/quality controls were used?

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Important questions that ***all*** METADATA ***should*** answer…

WHAT?

What real world feature or phenomena does this dataset represent?

What are the non-spatial attributes and what do they mean?

What are the spatial and temporal scales of this dataset?

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What does YOUR agency need metadata to do?

No two agencies are alike, and neither are their GIS data needs.

Please take a few minutes to work with the people around you to make a brief list of the three PRIMARY questions that a metadata document should answer.

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Creating geospatial metadata

Good metadata demands that a GIS professional document A LOT of things about the data that they created, their workflow, and the organization that they represent.

Fortunately, there are many programs (including free, open source options) that break the metadata file down into simple, bite-sized pieces.

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Creating geospatial metadata - Editors

ArcCatalog

ArcCatalog will be the option that most GIS professionals are familiar with.

In addition to treating metadata like a fillable form, with the proper set-up, ArcCatalog will identify which fields are required for ISO-compliant metadata.

Unfortunately, the metadata editing process in ArcCatalog is not immediately obvious to new GIS users.

Additionally, as with most ESRI products, ArcCatalog is not a free software package, so this may not be an option for organizations with budget constraints.

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Creating geospatial metadata - Editors

QGIS

QGIS is a free, open-source GIS package similar to ArcGIS.

Owing to the fact that QGIS is not an ESRI product, many of the workflows that GIS professionals are familiar with may not be applicable.

Additionally, metadata editing IS NOT a native feature to QGIS, and the metadata editor must be downloaded as an add-on.

HOWEVER… the current version of the metadata add-on is not yet compatible with the latest version of QGIS (v3.2), so organizations that wish to exercise this option will need to download an earlier version of QGIS (such as the GUPS-compatible v2.8.3).

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Creating geospatial metadata - Editors

tkme

tkme is a free, open-source metadata editor from USGS.

Unlike ArcCatalog or QGIS, tkme is JUST a metadata editor. It has no spatial analysis or mapping capabilities.

Finding specific metadata fields to edit using tkme can be slightly more confusing than other editors, and ISO-required fields are not marked, but the very simple nature of the program may be a benefit to organizations that just want to edit metadata.

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Creating geospatial metadata – Metadata Fields

For many new GIS users, the most daunting part of completing metadata is not finding an editor, but knowing which of the many fields should be addressed.

At first glance, many fields may seem fairly redundant. For example, two of the first fields that ArcCatalog present are "Summary" and "Description".

Depending on the editor being used, some fields – including ISO-required fields – may be nested WITHIN other fields or sections. For example, successfully completing the "Process" fields as presented in ArcCatalog relies on filling in fields within nested, expandable sections.

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Creating geospatial metadata – Metadata Fields

Ultimately, the single biggest time commitment of completing good geospatial metadata are the non-spatial attributes.

Depending on the dataset, the number of attributes, organizational requirements, the attribute types, and the range of possible values, fully describing the non-spatial attributes may take longer than the rest of the metadata combined.

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Creating geospatial metadata – Additional Challenges

Competing organizational and regional requirements

Different offices, agencies, states, and countries will have different metadata standards and requirements.

Some agencies will have NO metadata standards or requirements.

No two agencies will consider the same set of fields as important.

Because some agencies have generated metadata for many years, following now-replaced standards, not all metadata will meet modern requirements or expectations.

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Creating geospatial metadata – Additional Challenges

Advancing technology and data delivery

Advancing technology and new ways to distribute spatial data require new metadata formats (coverage files > shapefiles > geodatabases > online mapping applications and services > ArcGIS Online > ESRI Portal and Open Data > whatever comes next).

ArcGIS Online has metadata options – including required fields – for data services, interactive maps, and story maps.

In some cases, the metadata for these new technologies will be drastically different from the metadata expected for individual datasets.

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Creating geospatial metadata – Additional Challenges

Finding or training people familiar with metadata standards **and affording them the time to complete metadata.**

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- Questions?

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