



OPPORTUNITY TO COMMENT ON OREGON METADATA STANDARD

The entire GIS Community in Oregon, including local governments, state agencies, federal agencies, tribal governments, regional governments and agencies, and GIS-related private sector companies, are invited to comment on the proposed adoption of the Federal Geographic Data Committee's (FGDC) **Content Standard for Digital Geospatial Metadata** as the ***Oregon Metadata Standard***. The proposed Standard is attached as a PDF file. This document describes the Oregon Standards Development Effort, explains why metadata and a metadata standard are important, and provides some information about the relatively limited nature of the mandatory data elements of the proposed Metadata Standard, as well as information about tools that have been developed to make it easy to comply with the Metadata Standard. *Adoption of this standard does not mean that everyone will be expected to immediately comply with the standard, but that compliance can be achieved over time based on a common understanding and agreement regarding appropriate data documentation using metadata.*

Oregon Standards Development Effort

The Oregon Geographic Information Council (OGIC) has recently undertaken a data content standards development and approval initiative. This initiative is part of the National Spatial Data Infrastructure Framework data development effort being led in Oregon by the OGIC's Framework Implementation Team.

The OGIC Framework Implementation Team has identified 13 primary Framework data themes, containing over 100 individual data elements. The thirteen Oregon Framework themes include the seven nationally defined Framework themes, as well as six additional data themes that are widely shared or needed in Oregon, as follows:

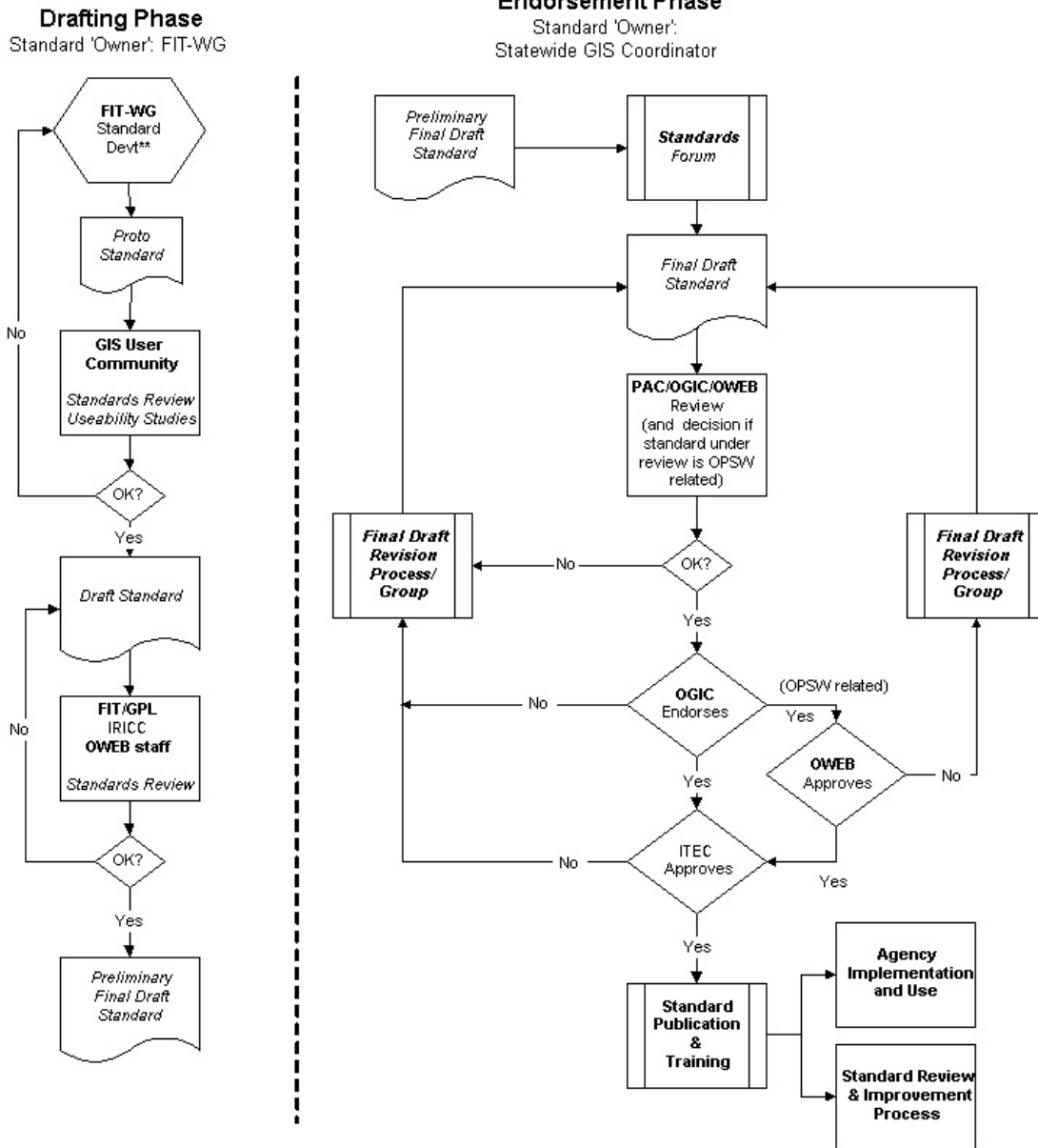
- Geodetic Control
- Elevation
- Cadastral
- Administrative Boundaries
- Hydrography
- Transportation
- Orthoimagery
- Bioscience
- Geoscience
- Cultural
- Climate
- Utilities
- Landcover/Landuse

The data content standards initiative also includes some crosscutting issues, such as metadata, data integration, and data archival. The Framework Implementation Team has published a Standards Guideline document providing direction for the individual Framework Committees that will propose a standard for each Framework theme.

The individual Framework Committees will conduct research to determine if a national standard or other state standard exists that will meet the needs of the GIS Community in Oregon, perhaps with slight modification. The flowchart below indicates the drafting and endorsement phases of the standards initiative. A semiannual Standards Forum for presentation and endorsement of each standard is a key element of the process.

The standards process indicated in the diagram is a very inclusive process driven by the needs of the GIS Community. When the community has determined the appropriate standards, those standards will be endorsed at the executive level in state government, mandated for state agencies and academic institutions, and strongly recommended for adoption and use by other levels of government and the private sector.

Oregon Standards Development Flowchart



** The relationship of any specific standard under development to the Oregon Plan for Salmon and Watersheds (OPSW) will be made explicit as early as possible.

The Value of Metadata

Two very similar paintings of circus performers by Picasso from 1904 are put on the auction block; one brings tens of millions of dollars, the other hundreds of thousands. What is the difference? In one case, the ownership of the painting can be traced through sales slips and auction house records back to the estate of Picasso's dealer. The other painting appeared suddenly on the art market. It looks almost identical, but lacking documentation, how can one be sure it's authentic?

Just as a work of art can change hands many times, so can geospatial data. Once created, data can travel almost instantaneously through a network and be used for any number of different kinds of spatial analysis. Thus transformed, these data can be retransmitted to another user. Change is the essence of geospatial data in a networked environment. The word metadata shares the same Greek root as the word metamorphosis. Meta means change and metadata, or "data about data" describe the origins of and track the changes to geospatial data.

Metadata can help the city planner, the graduate student in geography, or the forest manager find and use geospatial data, but they also benefit the primary creator of the data by maintaining the value of the data and assuring their continued use over a span of years.

What are Metadata?

The concept of metadata is familiar to most people who deal with spatial issues. A map legend is pure metadata. The legend contains information about the publisher of the map, the publication date, the type of map, a description of the map, spatial references, the map's scale and its accuracy, among many other things. Metadata are simply that type of descriptive information applied to a digital geospatial file. They're a common set of terms and definitions to use when documenting geospatial data. Most digital geospatial files now have some associated metadata.

Why bother with Metadata?

Metadata helps people who use geospatial data find the data they need and determine how best to use it. Metadata benefit the data-producing organization, as well. As personnel change in an organization, undocumented data may lose their value. Later, workers may have little understanding of the contents and uses for a digital database and find they can't trust results generated from these data. Lack of knowledge about other organizations' data can lead to duplication of effort. It may seem burdensome to add the cost of generating metadata to the cost of data collection, but in the long run it's worth it.

How can Metadata be produced?

The information needed to create metadata is often readily available when the data are collected. A small amount of time invested at the beginning of a project may save money

in the future. Data producers and users cannot afford to be without documented data. The initial expense of documenting data clearly outweighs the potential costs of duplicated or redundant data generation. The FGDC metadata standard provides a systematic way to collect metadata.

Why use a standard?

When producing a map, the cartographer must organize all the descriptive information that goes into the map legend in a particular format. Titles are put in a specific place, tick marks are made a certain way, meters may be used instead of feet, and so forth. A metadata standard is simply a common set of terms and definitions that describe geospatial data.

What standard should be used?

The FGDC has adopted a content standard for metadata. According to an Executive order signed by President Clinton on April 11, 1994, all Federal agencies began to use this standard to document newly created geospatial data as of January 1995. This standard provides a consistent approach and format for the description of data characteristics. The standard was developed over a two-year period, with extensive review by professionals at all levels of government. The standard provides a way for data users to know:

- what data are available
- whether the data meet their specific needs
- where to find the data
- how to access the data

Because these standards are now in place, and large amounts of Federal data is available in these standards, data managers from State and local governments and private industry have an incentive to adopt these standards to document their own data. The FGDC has also sponsored the creation of a National Geospatial Data Clearinghouse, which points users toward the spatial data that are best for their particular project. The intent is not to centralize all geographic data in one location, but to provide links through the Internet to distributed sites where data are produced or maintained. Managers who document their data using the metadata standards can provide these metadata to the National Geospatial Data Clearinghouse so that users can easily find data. Easier access to data will mean that a company's customers or an agency's cooperators could be increased.

Why use metadata?

Thirty-three years ago, humans landed on the Moon. Data from that era are still being used today, and it is reasonable to assume that today's geospatial data could still be used in the year 2030 and beyond to study climate change, ecosystems, and other natural processes. Metadata standards will increase the value of such data by facilitating data sharing through time and space.

The value of Picasso's painting did not depend solely on his having signed the work, a signature that could easily have been forged. Information about the painting, where it came from and where it had been, increased its value. So, when a manager launches a new project, investing a small amount of time and resources at the beginning will pay dividends in the future.

The following link contains additional information related to the demystification of metadata: <http://buccaneer.geo.orst.edu/myst/>

How the Metadata Standard is Organized

The FGDC Metadata Standard is composed of sections, compound elements, and data elements. Sections are the main divisions of the Standard. The Sections contain the data elements and compound elements and are like the "chapters" of the Standard. The Metadata Standard contains seven main sections and three supporting sections. The main sections are listed below.

1. **Identification**
General information about the data set.
2. **Data Quality**
Information about the quality of horizontal and vertical positions, and the attributes assigned to features.
3. **Spatial Data**
Organization Information about the data types contained in the data set.
4. **Spatial Reference**
Information about the coordinates used to describe locations in the data set.
5. **Entity and Attribute**
Names, definitions, and other information about the features and their attributes found in the data set.
6. **Distribution**
Information about how the data set is distributed.
7. **Metadata Reference**
Metadata about the metadata file. This section contains information about the metadata file itself.

The three supporting sections are described below.

8. **Citation**
This section contains a structure to create a bibliographic reference to a data set.
9. **Time Period**
This section contains three structures for expressing dates and times.
10. **Contact**
This section contains information used to contact someone to ask questions about the metadata file or the data set.

The seven main sections call on the three supporting sections when the main section has a metadata structure specified in the supporting section. The supporting sections are never used alone. They are only used when called on by a main section. Taken together, these 10 sections contain the metadata elements used to document a data set.

Data elements are the key terms that contain the metadata. In the language of a database, they are the "fields" that you fill with data. Compound elements are collections of data elements that are grouped together because they are related, or depend on the other components of the compound element. Compound elements may contain other compound elements as well as data elements.

Graphically, data elements appear as three-dimensional boxes with their keyword name inside. Compound elements appear as boxes surrounding data elements and/or other compound elements.

Conditionality of Metadata Elements

The FGDC Metadata Standard specifies three conditions that are applied to each section, compound element, and data element. These three conditions are:

- **Mandatory**
To conform to the Standard, this information must be provided.
- **Mandatory if Applicable**
If the data being document contains the characteristic described by this section, compound element, or data element, then the information must be provided to conform to the Standard.
- **Optional**
This information is optional and the user decides if it will be included in the metadata file.

Mandatory Metadata Elements

There is abundant interest in exactly what elements need to be completed in order to build minimal but compliant FGDC-style metadata. The following mandatory list, in the same outline format as the Standard with mandatory elements in bold font, constitutes a minimal adequate set for general "catalog" use:

Mandatory GIS Metadata

Identification Information

Citation

Citation Information

Originator:

Publication Date:

Title:
Description
Abstract:
Purpose:

Time Period of Content
Time Period Information
Single Date/Time (or Multiple Dates or Range of Dates)
Calendar Date:
Currentness Reference:

Status
Progress:
Maintenance and Update Frequency:

Spatial Domain
Bounding Coordinates
West Bounding Coordinate:
East Bounding Coordinate:
North Bounding Coordinate:
South Bounding Coordinate:

Keywords
Theme
Theme Keyword:
Access Constraints:
Use Constraints:

Metadata Reference Information

Metadata Date:
Metadata Contact
Contact Information
Contact Organization Primary (or Contact Organization Primary)
Contact Organization:
Contact Address
Address Type:
Address:
City:
State or Province:
Postal Code:
Contact Voice Telephone:
Metadata Standard Name:
Metadata Standard Version:

The following example illustrates the use of the Metadata Standard to create compliant metadata for a dataset in the Dynamic Estuary Management Information System.

The Abstract below is from[Dynamic Estuary Management Information System \(DEMIS\)](#) -

Coos Bay Region



Data Layer	habsepb
Data Title	The Oregon Estuary Plan Book
Data Originator	Robert Cartright, Jeffrey Weber, Robert Bailey
Publisher	Oregon DLCD
Publication Place	Salem, Oregon
Publication Date	1987
Abstract	This coverage represents estuary habitats defined by Oregon Fish and Wildlife
Purpose	This coverage is part of a larger data set which comprises the Oregon Estuary Plan Book in digital format.
Beginning Date of Content	Unknown
Ending Date of Content	Unknown
Progress	NA
Update Frequency	NA
Access Constraints	NA
Use Constraints	NA
West Bounding Coordinate	-124.35859941
East Bounding Coordinate	-124.12212495
North Bounding Coordinate	43.48188642
South Bounding Coordinate	43.25093979
Keywords	Estuary; Coos; Coos Bay
Location	The Coos Bay estuary as defined in the Oregon Estuary Plan Book
Scale	1: 12,000
Map Projection	Lambert Conformal Conic
Spatial Reference Method	Vector
Contact Person/Organization	Oregon Geospatial Data Clearinghouse
Contact Street Address	955 Center St. NE, Room 470
Contact City, State, Zip Code	Salem, OR 97301 USA
Contact Telephone Number	(503) 378-2166
Contact E-mail Address	gis@web1.css.das.state.or.us
Metadata Date	07-14-1997

Metadata Entry Tools

There are a number of tools available now for creating digital FGDC-compliant metadata. Some of these tools are interactively available on the Internet, such as the FGDC's Metadata Entry System. The following URL leads to the FGDC's page about this System: <http://www.fgdc.gov/clearinghouse/metadataesystem/metaover.html>

The link below leads to a page that contains a summary of most of the existing metadata creation tools from all sources, as well as links to many of those tools.

<http://badger.state.wi.us/agencies/wlib/sco/metatool/mtools.htm>

An interactive tool will be made available in the near future, following adoption of an Oregon Metadata Standard, at the Oregon Geospatial Data Clearinghouse to enable users to create metadata compliant with the Oregon Metadata Standard.