

3-201. Geospatial metadata standard.

[Section 3-201 appears after this cover page in a legacy format.]

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URL: <http://nitc.nebraska.gov/standards/3-201.pdf>

1.0 Standard

All state agencies and entities that receive state funding used, directly or indirectly, for geospatial data development or maintenance shall ensure that geospatial data it collects, produces, maintains, or purchases and which is used for policy development, implementation, or compliance review is documented with metadata compliant with the latest version of the ISO 19115:2003 group of metadata standards for geographic information. Metadata created for datasets using Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata or other standards will need to be translated, updated, or recreated using the ISO 19115 standards.

1.1 Steps/Timeline for Implementation

- a. State agencies and other applicable state funded entities shall institute procedures for complying with standard for new geospatial data development or acquisition upon adoption of standard by the NITC.
- b. State agencies and other applicable state funded entities shall complete initial listing of existing, applicable geospatial data holdings within three months of the adoption of standard by NITC.
- c. State agencies and other applicable state funded entities shall complete minimum documentation of existing, applicable geospatial data holdings within six months of the adoption of standard by NITC. More information about minimum requirements are identified in Appendix I. Metadata Categories and Definitions.
- d. State agencies and other applicable state funded entities shall complete ISO 19115-compliant metadata documentation of existing and applicable geospatial data holdings within 12 months of the adoption of standard by NITC. Complete metadata categories and definitions are located in Appendix I.

1.2 Maintenance

The reporting of maintained metadata is important to assure correct documentation and support for intended uses of the data. Entities responsible for creating geospatial data will need to assure metadata is updated and maintained on an ongoing basis and in a timely manner. When modifications to the spatial or attribute data is completed the metadata information will also need to be updated. If necessary, these changes will need to be provided to the appropriate entity(s) responsible for performing quality control and maintenance of the metadata.

1.2.1 Reporting Errors and Handling Updates

The reporting of errors need to be directed to the primary contact identified in the metadata in a timely manner. Updated spatial and attribute information in the data will also need to be redistributed. The date field in the metadata when the last record was modified will also need to be updated to ensure proper records management and communication with others in the workflow.

2.0 Purpose and Objectives

The purposes of this standard is to preserve the public's investment in geospatial data, to save public resources by avoiding unnecessary duplication of expensive geospatial data acquisition, to minimize errors through inappropriate application of geospatial data, and to facilitate harmonious trans-agency public policy decision-making and implementation through the use of shared geospatial data.

2.1 Background

Broadly defined, geospatial data is any data that includes locational or positional information about features in the dataset. Geospatial data provides the data foundation for applications of Geographic Information System (GIS) technology.

The development and maintenance of geospatial data is usually the most expensive component in the implementation of GIS technology. In most cases, this high initial investment is justifiable because of the powerful capabilities of the technology and the fact that, if appropriately maintained, the data will be useful for a very long period, and in many cases, for a wide range of applications.

Most geospatial datasets include numerous attributes and parameters that relate to data variables, methodologies and assumptions. Knowledge and understanding of the implications of these variables is a key to the appropriate utilization of that data. Without appropriate documentation, this specialized knowledge usually resides only in the memory of the GIS specialist(s) who developed the original data. Because of the power of the GIS technology, geospatial analysis is increasingly being used to develop and implement a wide range of public policy. In many cases, these public policy applications endure long past the availability of the GIS-specialist(s) who developed one or more of the original geospatial datasets upon which the public policy and its subsequent implementation are based. Without appropriate documentation of attributes and parameters of a geospatial dataset assumptions and variables, it may be difficult for an agency to determine the appropriate use of a dataset after the GIS specialist who originally created the data is no longer available. Without this documentation, it may also be difficult to appropriately maintain the dataset and therefore maintain the value of the original public investment in the data. In the case of a legal challenge to a public policy or its implementation, for which geospatial data application is integral, it may be difficult to defend that application if the original data developer is no longer available and the dataset was not appropriately documented.

Due to the relatively high costs of developing and maintaining many geospatial datasets, it is important that public investments in this data are undertaken in a manner to maximize the long-term return on these public investments. Appropriately documenting a dataset is one way to ensure a dataset's long-term usability. It is also a key to enabling the use of that dataset for multiple applications by multiple users. Without documentation, it is difficult for other users within the same agency, in other state agencies, or other public entities at various levels of government to be confident they are appropriately utilizing a geospatial dataset.

One of the great strengths of GIS technology is the ability to integrate and analyze disparate data based on its common or adjacent location. GIS has evolved to be a mainstream technology, used for a very wide range of applications, highly integrated with other information technology, and employed by users with a wide range of technical expertise and knowledge. As GIS has evolved, users now routinely access geospatial data, via the Internet, from multiple sources and integrate that data with other geospatial data and make public policy decisions based on analysis of the interaction of those datasets. Only when a geospatial dataset is adequately documented is it prudent to incorporate that data into a GIS analysis.

To address this wide range of concerns and needs for geospatial data documentation, the Federal Geographic Data Committee (FGDC) has worked with a wide spectrum of geospatial data users to develop a national standard for documenting geospatial data. The FGDC has endorsed and are transitioning users from the Content Standard for Digital Geospatial Metadata (CSDGM) to the ISO Metadata Standards.

2.2 Objectives

This standard requiring the documentation of geospatial data with standardized metadata has the following objectives:

- 2.2.1 Preserve public investment in data collection/development beyond the tenure or availability of the original data developer.
- 2.2.2 Preserve the background geospatial information used to justify and make public policy decisions and preserve the information needed to guide appropriate implementation of those decisions beyond the tenure of a particular data developer.
- 2.2.3 Save public resources by facilitating the sharing of expensive geospatial data among public agencies or sub-divisions of agencies and avoid the costly duplication of developing similar geospatial datasets.
- 2.2.4 Minimize problems and potential liability that might be caused by the inappropriate use of undocumented geospatial data.
- 2.2.5 Facilitate harmonious, trans-agency public policy decision-making and implementation by enabling multiple agencies and levels of government to access and appropriately use common geospatial datasets and thereby make it more likely that intersecting public policy decisions, across levels of government, will be based on the same information.

3.0 Definitions

Content Standard for Digital Geospatial Metadata - A comprehensive national metadata standard developed and adopted by the Federal Geographic Data Committee (FGDC) under the authority of Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," which was signed on April 11, 1994, by President William Clinton. Section 3, Development of a National Geospatial Data Clearinghouse, paragraph (b) states: "Standardized Documentation of Data, ... each agency shall document all new geospatial data it collects or produces, either directly or indirectly, using the standard under development by the FGDC, and make that standardized documentation electronically accessible to the Clearinghouse network." This standard is the data documentation standard referenced in the executive order. Since its initial development, this metadata content standard has undergone revision as deemed necessary by the FGDC, and will like undergo further revisions in the future.

Geospatial Data - A term used to describe a class of data that has a geographic or spatial nature. The data will usually include locational information (latitude/longitude or other mapping coordinates) for at least some of the features within the database/dataset.

ISO 19115:2003 – International Standards Organization (ISO) defines the schema required for describing geographic information and services. It provides information about the identification, the extent, the quality, the spatial and temporal schema, spatial reference, and distribution of digital geographic data. It is applicable to: the cataloguing of datasets, clearinghouse activities, and the full description of datasets; and geographic datasets, dataset series, and individual geographic features and feature properties. It defines: mandatory and conditional metadata sections, metadata entities, and metadata elements; the minimum set of metadata required to serve the full range of metadata applications (data discovery, determining data fitness for use, data access, data transfer, and use of digital data); optional metadata elements - to allow for a more extensive standard description of geographic data, if

required; and a method for extending metadata to fit specialized needs. It is applicable to digital data, its principles can be extended to many other forms of geographic data such as maps, charts, and textual documents as well as non-geographic data.

Metadata - Data describing a GIS database or data set including, but not limited to, a description of a data transfer mediums, format, and contents, source lineage data, and any other applicable data processing algorithms or procedures.

4.0 Applicability

4.1 State Government Agencies

State agencies that have the primary responsibility for geospatial data development, maintenance, or purchasing data which is used for policy development, implementation, or compliance review for a particular jurisdiction(s) or geographic area (e.g. for counties for which it has assumed the primary role) are required to comply with the standards as described in this standard. Those state agencies with oversight responsibilities in this area are required to ensure that their oversight guidelines, rules, and regulations are consistent with these standards.

4.2 State Funded Entities

Entities that are not State agencies but receive State funding, directly or indirectly, for geospatial data development (i.e. Legislative appropriations, Enhanced Wireless 911 Fund, Infrastructure Fund, etc.) are required to comply with this standard.

4.3 Other

Other entities, such as city and local government agencies that receive state funds for geospatial data development, maintenance, or purchasing geospatial data which is used for policy development, implementation, or compliance review are required to comply with this standard.

5.0 Responsibility

5.1 NITC

The NITC shall be responsible for adopting minimum technical standards, guidelines, and architectures upon recommendation by the technical panel. Neb. Rev. Stat. § 86-516(6)

5.2 State Agencies

Each state agency will be responsible for ensuring that geospatial data developed, maintained, or purchased and which is used for policy development, implementation, or compliance review will be documented consistent with this standard. The State of Nebraska, Office of the CIO (OCIO) GIS Shared Services will be responsible for assuring that metadata is completed and the data is registered and available for distribution through NebraskaMAP.

5.3 Granting Agencies and Entities

State granting or fund disbursement entities or agencies will be responsible for ensuring geospatial metadata documentation requirements are included in requirements and regulations related to fund disbursements.

5.4 Other

Local government agencies that have the primary responsibility and authority for developing geospatial datasets with state appropriated funds will be responsible for ensuring that those subsections defined in Section 1 will be incorporated in the overall data development efforts and publishing of metadata prior to distribution.

6.0 Authority

6.1 NITC GIS Council

According to Neb. Rev. Stat. § 86-572(2), the GIS Council shall: Establish guidelines and policies for statewide Geographic Information Systems operations and management (a) The acquisition, development, maintenance, quality assurance such as standards, access, ownership, cost recovery, and priorities of data bases; (b) The compatibility, acquisition, and communications of hardware and software; (c) The assessment of needs, identification of scope, setting of standards, and determination of an appropriate enforcement mechanism; (d) The fostering of training programs and promoting education and information about the Geographic Information Systems; and (e) The promoting of the Geographic Information Systems development in the State of Nebraska and providing or coordinating additional support to address Geographic Information Systems issues as such issues arise.

7.0 Related Documents

- 7.1 Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata (FGDC-STD-001-1998). <http://www.fgdc.gov/standards/projects/FGDC-standards-projects/metadata/base-metadata/index.html>
- 7.2 Federal Geographic Data Committee (FGDC) Geospatial ISO Metadata Standards Transition. <http://www.fgdc.gov/metadata/geospatial-metadata-standards>
- 7.3 ISO 19115:2003(E) North American Profile (NAP) Metadata Standards. National Oceanic and Atmospheric Administration (NOAA). January 2012.
- 7.4 International Standards Organization (ISO). ISO 19115:2003. <http://www.iso.org>
- 7.5 Technical Support Guides at NebraskaMAP.gov. Guides to translate existing metadata to the new standard, required core elements, and workbook for ISO standards.

Appendix I – Metadata Categories and Definitions

This document provides categories and definitions of metadata information required for State of Nebraska geospatial data layers. The minimum and complete metadata requirements and timelines for completion involve the following:

- **Minimum**, completed within six months of data origination
(Minimum fields are indicated with a **bold (M)** throughout this document.)

Minimum: A subset of the ISO 19115-compliant metadata used primarily for the purposes of cataloging and enabling the use of automated search tools to find and access available geospatial data. Does not fully document the dataset's variables, assumptions or development process that is commonly needed to guide appropriate use.

- Complete Metadata, optional categories, recommended to be completed within 12 months

Complete Metadata: Remainder of ISO 19115-compliant metadata beyond minimum as indicated throughout this document.

1. Overview

a. Item Description

- i. **(M) Title - The name by which the resource is known.**
- ii. Thumbnail - *A small graphic file stored that graphically identifies the resource.*
- iii. Tags - *A set of terms that can be used to search for the resource.*
- iv. Summary(Purpose) - *A summary of the intentions with which the resource was developed.*
- v. **(M) Description (Abstract) - A brief narrative summary of the resources content.**
- vi. Credits - *A recognition of those who created or contributed to the resource.*
- vii. Use Limitation - *Describes limitations affecting the fitness of use of the resource.*
- viii. Appropriate Scale Range - *The range of scales at which this resource should be used.*

b. Topics & Keywords

- i. **(M) ISO topic categories - Identifies the primary ISO themes associated with the resources content.**

Utilities & Communication	Military & Intelligence	Boundaries	Farming
Atmospheric Sciences	Economy	Elevation	Biota
Environment	Geoscientific	Health	Society
Imagery & Base Maps	Structure	Inland Waters	Transportation
Planning & Cadastral	Oceans	Location	

- ii. Content Type - *Indicates how you can access a shared copy of the resource.*
- iii. Keywords - *Keywords that associate the resource with a subject or topic.*

c. Citation

- i. **(M) Title – Title of the map that describes the manner in which the resource is represented. Could represent years and general idea of extent such as county or city.**
- ii. Presentation Form - *Indicates the form in which the resource is provided.*

iii. **(M) Date - Date when the resource was created, published or revised.**

d. Citation Contacts

- i. Name - *The name of a person associated with the resource.*
- ii. Organization - *The name of an organization associated with the resource.*
- iii. Position - *The name of a role or position associated with the resource.*
- iv. Role - *Identifies the association between the responsible party and the resource.*

2. Metadata

a. Details

- i. **(M) File Identifier - A unique identifier for the metadata. Typically a GUID, or country code.**
- ii. Parent Identifier - *Unique identifier of the dataset to which this metadata is a subset.*
- iii. Dataset URI - *The Uniform Resource Identifier (URI) of the resource.*
- iv. Function - *Identifies the function available at the specified URI for this resource.*
- v. **(M) Date - The date when the metadata was created or updated.**
- vi. **(M) Language - The primary language of the information provided in the metadata.**
- vii. **(M) Country - The country of the location.**
- viii. Character Set - *The character encoding used for the metadata. Typically UTF-8.*
- ix. Hierarchy Level - *The hierarchical scope to which the metadata applies.*

b. Contacts

- i. **(M) Name - The name of a person associated with the resource metadata.**
- ii. **(M) Organization - The name of an organization associated with the resource metadata.**
- iii. **(M) Position - The name of a role or position associated with the resource metadata.**
- iv. **(M) Role - Identifies the association between the responsible party and the resource metadata.**

Roles can include: Resource Provider, Custodian, Owner, User, Distributor, Originator, Point of Contact, Principal Investigator, Processor, Publisher, Author, Collaborator, Editor, Mediator, Rights Holder

- v. **(M) Address – The address for the point of contact.**
- vi. **(M) Phone – The primary phone number for the point of contact.**

c. Maintenance

- i. **(M) Update Frequency - The frequency with which the metadata is updated.**
- ii. Next Update - *The scheduled revision date.*
- iii. Scope - *The scope of data for which this maintenance information applies.*
- iv. Contact - *Contact information for the individual associated with metadata maintenance.*
- v. Maintenance Note - *Describes the specific requirements for maintaining the metadata.*

d. Constraints

- i. General - *Describes limitations affecting the fitness of use of the metadata.*
- ii. Legal - *Restrictions, limitations, or warnings on using the metadata. (If applicable)*
- iii. Security - *Identifies any handling restrictions on the metadata. (if applicable)*

3. Resource

a. Details

- i. Status - *The status of the resource. (Ex - Under Development, Ongoing, Completed, etc.)*
- ii. Credit - *A recognition of those who created or contributed to the resource.*
- iii. Language - *The language of the information used within the data.*
- iv. Country - *The country of the location.*
- v. Spatial Representation Type - *Identifies the method used to spatially represent geographic information. (Ex - Vector, Raster, Tin, etc.)*
- vi. Scale/distance Resolution - *Level of detail provided by the resource, expressed as the scale of a comparable hardcopy map or chart.*
- vii. Browse Graphic - *File name of the graphic that provides an illustration of the resource.*
- viii. Processing Environment - *Describes the data's processing environment, including the software and operating system used, and the file name and size.*
- ix. Supplemental Information - *Provides additional descriptive information about the resource.*

b. Service Details

- i. Name - *A name identifying the type of service provided by the resource. (Ex - WFS)*
- ii. Codespace - *Identifies the authority (Ex - 1.0.0 or 1.1.0)*
- iii. Access Properties
 1. Fees - *Describes any fees or terms for obtaining resource.*
 2. Availability Date/Period - *The date and time when the resource will be available.*
 3. Ordering Instructions - *Describes instructions, terms, and services provided by the distributor.*

c. Extents

- i. Description - *Describes the extent of the resource. (Ex - Nebraska)*
- ii. **(M) Bounding box - Extents expressed in decimal degrees longitude and latitude.**
- iii. Temporal Period - *The start and end time period associated with the resources content.*

d. Points of Contact

- i. Name - *The name of a person associated with the resource.*
- ii. Organization - *The name of an organization associated with the resource.*
- iii. Position - *The name of a role or position associated with the resource.*
- iv. Role - *Identifies the association between the responsible party and the resource.*

e. Maintenance

- i. Update Frequency - *The frequency with which the resource is updated.*
- ii. Next Update - *The scheduled revision date.*
- iii. Scope- *The scope of data for which this maintenance information applies.*
- iv. Contact - *Contact information for the individual associated with resource maintenance.*
- v. Maintenance Note - *Describes the specific requirements for maintaining the resource.*

f. Constraints

- i. General - *Describes limitations affecting the fitness of use of the resource.*
- ii. Legal - *Restrictions, limitations, or warnings on using the resource. (If applicable)*
- iii. Security - *Identifies any handling restrictions on the resource. (if applicable)*

g. Spatial Reference

- i. **(M) Dimension - Horizontal, vertical or temporal.**
 - ii. **(M) Code - An alphanumeric value that identifies an authoritative reference (WKID)**
 - iii. **(M) Code Space - An alphanumeric value that identifies an authoritative reference (Ex - EPSG)**
 - iv. **(M) Version - An numeric value that identifies an authoritative reference (Ex - 8.2.6)**
 - v. **(M) Authority Citation**
 - 1. **Title - The name by which the cited resource is known (Ex- NAD_1983_StatePlane_Nebraska_FIPS_2600_Feet)**
 - 2. **Date - The date the cited resource was created, published or revised.**

- h. Spatial Data Representation
 - i. Grid Spatial, Georectified, Georeferenceable, Vector or Indirect

- i. Content Information
 - i. Coverage description- *Identifies the information conveyed by the raster data.(if applicable)*
 - ii. Image description - *Identifies the information conveyed by the raster data.(if applicable)*
 - iii. Feature Catalogue - *Describes OGC catalogue compliance, name, codespace, language and country. (if applicable)*

- j. Quality
 - i. Scope Level - *Describes the specific data to which the data quality information applies.*
 - ii. Level Description - *Identifies the instance to which the information applies.*
 - iii. Extent - *Describes the extent of the resource.*
 - iv. Report
 - 1. Report Type - *Identifies the characteristic of the data whose quality was measured.*
 - 2. Dimension - *Identifies the axis to which the spatial quality information applies.*
 - 3. Description - *A description of the evaluation method.*
 - 4. Evaluation Method - *Identifies the type of method used to evaluate the quality of the data.*

- k. Lineage
 - i. Statement -*Provides a general description of the resource's lineage.*
 - ii. Data Source - *A detailed description of the source.*
 - iii. Process Step -
 - 1. **(M) Description - Describes the event, transformation, or process that occurred while maintaining the resource, including any parameters or tolerances that were used.**
 - 2. Rationale - *Describes why the process step occurred.*
 - 3. **(M) Date - Identifies the date when the process step occurred.**
 - 4. Processor - *The name of a person or organization associated with the process step.*

- l. Distribution
 - i. **(M) Distribution Format**
 - 1. **(M) Format Name - The name of the data transfer format.**
 - 2. **(M) Format Version - The version of the data transfer format (if applicable)**
 - ii. Distributor
 - 1. Contact- *The name of a person or organization that is the distributor.*
 - 2. Ordering Process - *Fees and availability and instructions.*

3. Distribution Format - *Format name and version.*
4. Digital transfer options- *Units and transfer size, or online resource.*

m. Fields

i. (M) Label - The name of the resource.

1. Entity Type
 - a. Object - *An indication of the resource's type. (Ex. Table, feature class)*
 - b. Count - *The number of objects contained by the resource.*
 - c. **(M) Definition - A description of the features contained by the dataset.**
 - d. **(M) Definition Source - The authority that provided the definition.**
2. **(M) Attribute (for each column)**
 - a. **(M) Label - The name of the field. This must match the name of a column of data in the resource.**
 - b. **(M) Definition - The description of the data contained by the field.**
 - c. **(M) Definition Source - The authority that provided the description of the field.**
 - d. **(M) Type - Indicates the data type used to store values in this field.**
 - e. **(M) Width - The number of bytes that will be used to store the data in this column for one row.**
3. **(M) Domain**
 - a. **(M) Value - Describes one of the repeating values that may occur in the field.**
 - b. **(M) Definition - A description of the value or code stored in this field.**
 - c. **(M) Source - The authority that provided the description of the value.**

ii. Overview

1. Summary - *A detailed summary of the information provided by the data.*
2. Citation - *A reference to the document that provides a complete description of the features, fields, and values that are provided by the resource.*

n. References

- i. Aggregate - Citation for the aggregate information.*
- ii. Portrayal Citation - The name by which the cited resource is known.*
- iii. Application Schema Information - Citation for the schema.*

o. Geoprocessing History