

**National Spatial Data Infrastructure**

# **FGDC Standards Reference Model**

Federal Geographic Data Committee  
March 1996

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Department of Agriculture • Department of Commerce • Department of Defense • Department of Energy  
Department of Housing and Urban Development • Department of the Interior • Department of State  
Department of Transportation • Environmental Protection Agency • Federal Emergency Management Agency  
Library of Congress • National Aeronautics and Space Administration  
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**Federal Geographic Data Committee - Standards Working Group**  
**Standards Reference Model**  
**March 1996**

**1. Introduction**

This document describes a reference model for Federal Geographic Data Committee (FGDC) Standards. It is intended to provide guidance and direction to FGDC Standards developers and users. This document was developed by the FGDC Standards Working Group (SWG).

**1.1 Mission and Goals for the FGDC Standards**

Office of Management and Budget (OMB) Revised Circular A-16, October 1990, (hereafter called Circular A-16) describes the responsibilities of Federal agencies with respect to coordination of Federal surveying, mapping, and related spatial data activities for the purpose of developing a national spatial data information resource, reducing duplication, reducing the expense of data collection, and increasing the sharing of available data. Spatial data are defined in Circular A-16 as geographically referenced features that are described by geographic positions and attributes in an analog and/or computer-readable (digital) form. Circular A-16 creates the FGDC and assigns responsibilities for coordinating geospatial data themes to different Federal Departments, including the establishment and implementation of data standards for quality, content, and transfer.

Executive Order Number 12906, April 1994 designates the FGDC as the lead entity to coordinate the National Spatial Data Infrastructure (NSDI), which is defined as the technology, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve utilization of geospatial data. Section 4 (a) of the EO states:

- (a) General FGDC Responsibility. The FGDC shall develop standards for implementing the NSDI, in consultation and cooperation with State, local, and tribal governments, the private and academic sectors, and, to the extent feasible, the international community, consistent with OMB Circular No. A-119 ("Federal Participation in the Development and Use of Voluntary Standards"), and other applicable law and policies.

The EO further designates standards development responsibilities for a category of data to agencies assigned those categories in OMB Circular No. A-16 and allows other standards to be identified and developed within the FGDC through its members. The FGDC is charged to

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promote the use of these standards and whenever appropriate submit them to the Commerce Department for consideration as Federal Information Processing Standards.

The Federal Geographic Data Committee's (FGDC) Standards Working Group (SWG) was established to help meet the FGDC objectives and activities identified in Circular A-16 and Executive Order 12906. The SWG provides guidance to the FGDC subcommittees and working groups on standards policies and procedures, reviews standards proposals and standards documents for compliance to these policies and procedures, and makes recommendation to the Coordination Group for final FGDC endorsement.

The FGDC Standards Reference Model represents an effort by the SWG to document standards policies and procedures and to provide guidelines by which the FGDC will conduct standards development. This model describes the relationship of FGDC to other standards bodies, identifies the expectations of FGDC standards, defines the various types of geospatial data standards and outlines the FGDC standards development process.

## **1.2 Relationship of FGDC Standards to Other Standards**

There are many standards that may support the NSDI.

**Agency Standards** - Agency standards may be developed to support specific applications or mandates within one agency. Any agency or organization may support or recognize an agency standard. Typically the sphere of influence in the development, maintenance, and use of an agency standard is contained within a single agency. Cooperative agreements between or among agencies to develop specific standards are included in Agency Standards.

**Federal Information Processing System Standards** - Federal Information Processing System (FIPS) Standards are developed to standardize data and processes among federal agencies. Their goal is to gain efficiency and economy through widespread use. These standards are generally mandated for use by federal agencies.

**Federal Geographic Data Committee Standards** - FGDC Standards are developed in response to OMB Circular A-16 and EO 12906 which mandate data sharing and adherence to common standards for Federal agencies. They are intended to be national in scope and to go beyond individual agencies and the federal government enterprise. They support national and collective decision making and applications and are developed jointly by federal, state, and local governments and other interested participants. They are only mandatory for federal agencies.

**Industry Standards** - Industries Standards are developed in the private sector by cooperating firms. Their production may be coordinated by a single firm, a group of firms, a not-for-profit organization or a standards organization. These standards are voluntary unless conformance is mandated through contract or agreement.

**American National Standards** - American National Standards (ANS) are endorsed by the American National Standards Institute (ANSI) and are national in scope. These are voluntary standards developed and supported by commercial industries that implement technology, but any individual or organization including governments can participate in the development of an ANS.

**International Standards** - The International Organization for Standardization (ISO) is the primary international standards organization for information technology. Organizations gain access to ISO through their national standards body. In the U.S. this is ANSI.

FGDC standards may be impacted in their development or adoption by other standards or may impact or contribute to other standards.

### 1.3 Description of FGDC Standards

As national standards in support of the NSDI, there are several expectations for FGDC Standards.

**Within FGDC Scope** - FGDC Standards will be within the purview and scope of the objectives of the FGDC. FGDC Standards must relate to geospatial data, cover appropriate topical areas, and standardize either data or processes to advance data sharing and minimize duplication of effort.

**Future Focused** - Future focused means that FGDC standards are intended to remove impedances to sharing information rather than changing existing successful data sharing arrangements. FGDC Standards should be developed to promote new and enhanced interaction with existing Federal coordinating mechanisms that have interest in the generation, collection, use, and transfer of spatial data. FGDC standards need to focus on solving future problems. FGDC Standards are not intended to re-formalize existing solutions.

**Structured** - FGDC standards need to be developed and presented in a structured manner that will lead to understandability and useability by consumers. This reference model provides minimal guidelines for development and documentation of standards. There are

many structured methodologies that can be employed by standards developers that will lead to complete and understandable standards. This reference model does not specify a development methodology.

**Technology Independent** - FGDC Standards will not constrain technology development. They will not be developed or implemented in a way that limits the use of new and emerging technologies. They also will not be written or implemented in a way that limits any vendor or technology to maximize the use of the standard.

**Integrated** - FGDC Standards will be integrated with one another and with related standards. This means there will not be overlapping definitions, authorities, or procedures. Standards development will be coordinated to eliminate duplicate efforts and to maximize the efforts of the volunteers contributing to and implementing standards. FGDC Standards will lead to an integrated framework for the NSDI.

**Evolving** - FGDC Standards will evolve as technology and institutional mandates change. The standards will be written to allow for evolution and will accommodate backward compatibility for information gathered under previously known standards. There will be known update and maintenance procedures that are timely and responsive to changes. The procedures will be documented as a part of FGDC Standards.

**Supportable** - FGDC Standards must be supportable by the geospatial vendor community. They will be developed in a manner that is supportable by known or emerging technology.

**Publicly Available** - FGDC Standards will have a broadly based public notice of their availability. FGDC Standards will not be developed from copyrighted or proprietary standards that would limit the ability of the final standard to be publicly available. They will not contain any copyrights or other limitations on their use or reproduction. FGDC Standards will be available electronically when ever possible.

**Complete and Consistent** - FGDC Standards will be complete in terms of the standards components and methodology described in this reference model. FGDC Standards will have a consistent form and format.

If an FGDC standard is to be advanced to ISO or ANSI it must be developed through a process that is approved by ANSI or ISO. ANSI and ISO standards are developed through a consensus process.

#### **1.4 Applicability and Intended Uses of FGDC Standards**

FGDC Standards are intended to increase interoperability among automated geospatial information systems. A major objective of Circular A-16 is the eventual development of a national digital spatial information resource, with the involvement of Federal, State, and local governments, and the private sector. This national information resource, linked by criteria and standards, will enable sharing and efficient transfer of spatial data between producers and users. Enhanced coordination will build information partnerships among government institutions and the public and private sectors, avoiding wasteful duplication of effort and ensuring effective and economical management of information resources in meeting essential user requirements.

FGDC Standards apply to and are mandatory for Federal Agencies as described in OMB Circulars A-16 and A-119 and Executive Order Number 12906. Use by non-Federal and private sector organizations is not mandatory, but is encouraged in order to promote the widest possible use and sharing of data.

### **1.5 Reference Model Development Process**

The Standards Working Group (SWG) defined the need and general content requirements for the Reference Model. All FGDC Subcommittees and Working Groups have representation on the SWG. A subgroup of the SWG with representatives from five FGDC Subcommittees developed several draft versions, which were reviewed by the entire SWG.

The Spatial Data Transfer (SDTS) Standard, ANSI, NIST, ISO, and USGS standards development and maintenance processes were reviewed and discussed in the development of the Reference Model. All comments received were reviewed and incorporated into the Reference Model.

### **1.6 Maintenance of the FGDC Standards Reference Model**

The FGDC SWG is responsible for the maintenance of the FGDC Standards Reference Model. The SWG expects to have regular updates to this document. In the first year or two revisions are expected to occur once per year. Comments can be directed to the SWG through the FGDC Secretariat.

## **2. Organization of Standards Work Within FGDC (TBD)**

## **3. Types of FGDC Standards**

The goal of the FGDC SWG is to provide guidelines for the development and documentation of FGDC Standards with a minimal structure for standards developers. This

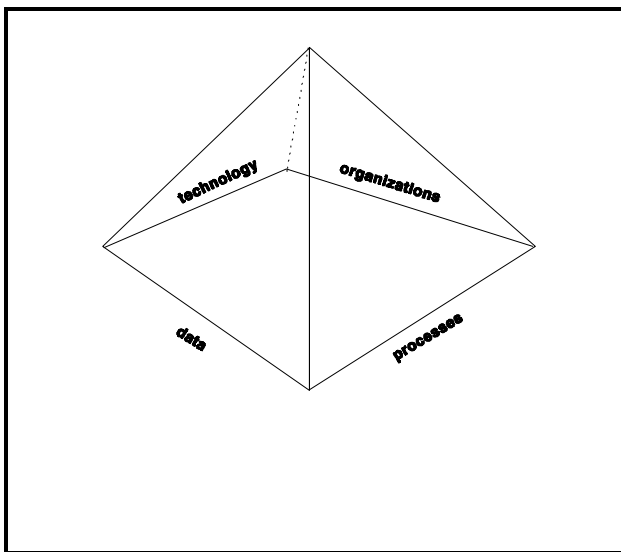
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structure is intended to support FGDC Subcommittees and Working Groups in their efforts to develop, adopt, and encourage the use of geospatial standards.

In addition to the wide array of topics there are different types of standards that will be developed by different subcommittees and working groups. The taxonomy of standards for the FGDC is derived from the principles of information engineering as modified by the FGDC SWG Technical Advisory Group. Information engineering is a design and standards development technique developed by IBM in the late 1970's and early 1980's. It is often applied to systems development and has been used for standards development and maintenance. An information engineering approach was selected because it provides minimal guidance on structure, yet allows for standards to achieve coordination and interoperability status. This approach does not dictate step-by-step processes.

One way that information engineering provides a structured approach to standards development is by providing a method to describe different standards types. It also provides a means to describe the relationships among various standards of the same type. For example, two data standards can be related to one another, eliminating duplicate definitions and domains of values. In this manner it is well adapted to the diversity of the NSDI and the FGDC.

The four basic categories of the information engineering standards are: data, processes, organizations, and technology. One FGDC Standard may contain several categories of standards. Figure 1(a) illustrates the basic information engineering four sided pyramid. The four components each form a side of the pyramid. Figure 1(b) illustrates a single FGDC Standard within the pyramid, that has addressed aspects of all four components. A standard may also be entirely within one component, in which case it would be illustrated as one side of the pyramid.





Information Engineering Pyramid  
Sample Standard Within Pyramid

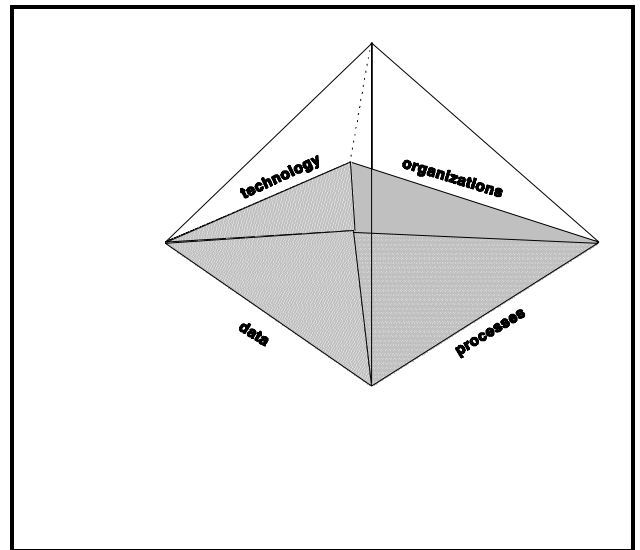
Figure 1(a)

Figure 1(b)

### 3.1 Data

Data are the most widely recognized and documented component of standards and information technology. Data modeling describes how the bits of information are defined and structured so they can be applied in a meaningful way. Most FGDC Standards will be of this type.

Data standards describe objects, features or items that are collected, automated, or affected by activities or functions of agencies. Data are organized and managed by institutions. Data standards are semantic definitions that are structured in a model.



#### Types of Data Standards

**Data Classification** - Data classification standards provide groups or categories of data that serve an application. Data classification data standards are the attributes common to elements of a group. Examples are wetland and soil classifications. See process standards for standards on how to apply a data classification standard.

**Data Content** - Data content standards provide semantic definitions of a set of objects. Data content standards may be organized and presented in a data model such as an entity-relationship model or an IDEF1X model.

**Data Symbology or Presentation** - Data symbology or presentation standards define graphic symbols. They standardize the language for describing those symbols. See processes standards for methods for applying symbols and the rules for displaying them.

**Data Transfer** - Data transfer standards are independent of technology and applications and facilitate moving data among systems, without prior specification of the intended end use of the data. The Spatial Data Transfer Standard (SDTS) is an example of a data transfer standard, which is endorsed by FGDC. SDTS is FIPSPUB 173. Profiles or domains of values for SDTS will be defined by FGDC Subcommittees and working groups. Transfer standards that are specific to a technology, such as the FTP (File Transfer Protocol) on the Internet, are outside the scope of FGDC.

**Data Useability-** Data Useability standards describe how to express the applicability or essence of a data set or data element and include data quality, assessment, accuracy, and reporting or documentation standards. The FGDC Content Standard for Geospatial Metadata Standard is an example of a Data Useability standard.

### 3.2 Processes

Processes or functions describe tasks and how information and technology are used to accomplish organizational goals. Process standards may also be called service standards. They describe how to do something, procedures to follow, methodologies to apply, procedures to present information, or business process rules to follow to implement other standards. A smaller portion of FGDC Standards will be process standards.

The intent of FGDC Process standards are:

- to establish a threshold for minimally acceptable data,
- to determine the best data for an application, or
- to promote interoperability and broad based use of data.

#### Types of Process Standards

**General Data Transfer Procedures** - General data transfer procedure standards are the activities required to convert data to a general data format, such as SDTS, for general access.

**(specific data requires Specific Data Transfer Procedures)** - Specific data transfer procedure standards are the activities or requirements to fulfil a specific data request for a known activity in a known data structure.

**Existing Data Access Procedures** - Existing data access procedure standards are the procedures required to gain access to an existing data set in a known data format, such as the methods and procedures required to access an existing data posting on the World Wide Web or a bulletin board.

**Classification Methodology** - Classification methodology standards are the procedures to follow to implement a data classification standard. It describes how data are analyzed to produce a classification. The processes that are followed to achieve data precision are examples of classification methodologies.

**Data Collection** - Data collection procedure standards are the methods and processes for the collection of new or conversion of existing data.

**Storage Procedures** - Storage procedure standards address the mechanisms and schedules for archiving or backing up data. If appropriate, the storage procedures also address the storage media.

**Presentation Standards** - Presentation standards are the methods for displaying or formatting information from a data set or data standard.

**Data Analyzing Procedures** - Analytical procedures include the methods for computing, comparing, contrasting, assembling, or evaluating a data set for an application or specified product.

**Data Integration** - Data integration procedures are the methods for combining various data sets into a unified, geographically harmonious data set. Data generalization standards are a data integration process standard.

**Quality Control and Quality Assurance** - Quality control and quality assurance processes are respectively the methods followed to achieve a specified quality and the methods to check the quality of an existing data set. Precision for measurements or other activities are included in these standards.

### 3.3 Organizations

The organizational component of information engineering consists of the rules for assigning responsibilities and authorities for the people who perform tasks and use technology. These include things like who does which tasks, what data do they need, and what are the attendant skill requirements.

Organizational or institutional standards are the specifications for communication among communities. These are the human and institutional interactions necessary to carry out data, activity, and technology standards. Ways to organize, communicate, identify responsible parties, and coordinate roles are examples of organizational standards. The FGDC will not be developing organizational standards.

### 3.4 Technology

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Technology includes things like software, hardware, and system protocols. In system design the technology may be specifically described in terms of known application solutions such as computer aided mass appraisal, topologic processing, or coordinate geometry computations.

Technology standards relate to the tools, environment, and interfaces among systems, and are often called information technology specifications. They are the tools to produce, manipulate, manage, organize, disseminate, or otherwise implement activity or data standards. The FGDC will not be developing technology standards.

#### **4. FGDC Standards Development Process**

FGDC Standards development occurs in 12 steps from initial standard proposal through FGDC adoption. Standard maintenance is not included in the standards development process. These steps have been adopted for use by the FGDC from those used in ANSI and ISO processes.

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These steps are organized into five stages.

Proposal Stage	Steps 1 - 2
Project Stage	Step 3
Draft Stage	Steps 4 - 5
Review Stage	Steps 6 - 11
Final Stage	Step 12

■ Proposal Stage

The Proposal Stage defines the needs for and benefits of a standard. At the end of the Proposal Stage the FGDC recognizes the standard as a project and adds it to the standards's register, but work or funding for the standard may not yet be identified.

■ Project Stage

The Project Stage defines the funding and administration for the standard. The development methodology, work groups and members, and development schedule are documented. At the end of the Project Stage work begins on standards development.

■ Draft Stage

The Draft Stage is the standard development stage. The standard receives comments and input from as many constituent groups as possible. At the end of the Draft Stage the Standard is ready for public review.

■ Review Stage

The first portion of the review stage is for public comment and official public review. The latter portion of this stage is for internal FGDC format and integration review. At the end of this stage the standard is ready for FGDC approval.

■ Final Stage

The Final Adoption Stage is where the standard becomes an officially recognized FGDC Standard.

In each step an identified group has responsibility for the standard this is the custodian. The custodian is responsible for determining when the standard is ready to advance to the next step. Each step is described below with a description of the activities and custodian for the standard. A diagram of the steps follows the descriptions.

#### 4.1 Proposal Stage

**Step 1. Develop Proposal** - A new National Spatial Data Infrastructure (NSDI) standards project proposal is submitted. Custodian: Standards Working Group.

A standards proposal identifies the need, the scope of the project, the benefits of the new standards, the consequences of not standardizing, and a date by which the new standard is needed. The proposal may be for development of a new standard or adaptation or adoption of an existing standard. The proposal may suggest a target authorizing body outside of the FGDC, such as the National Institute for Standards and Technology (NIST), the American National Standards Institute (ANSI), or International Standards Organization (ISO). A proposal may be made by any FGDC subcommittee or working group, any member agency, any agency of the Federal government, State or local government agencies, or national or regional government councils. Project proposals will also be considered from non-government groups such as professional societies, private companies, and consortia which participate with the FGDC in the development of the NSDI. The elements of a standards proposal are described in Appendix A.

**Step 2. Review Proposal** - The SWG reviews and evaluates the standard proposal.  
Custodian: Standards Working Group

Standards proposals are submitted to the SWG, which distributes the proposals to the chairs of each FGDC Subcommittee and Working Group. The SWG with input from the FGDC Subcommittees and Working Groups evaluates the standard project proposal using criteria from Section 1.3 of this Reference Model. See Appendix B for specific details on the application of the criteria.

If a proposal is approved, the SWG will assign the approved project to the appropriate FGDC Subcommittee or Working Group and register the proposal as an FGDC approved standards project. When no appropriate group exists, the SWG will identify the need for the creation of a new subcommittee or working group and make a recommendation to the Coordination Group.

If disapproved, the proposal is returned to the proposer with a statement outlining the objections to the proposal. When appropriate, the SWG will suggest changes to the proposal that would make it acceptable. SWG decisions may be appealed to the FGDC Coordination Group.

## 4.2 Project Stage

**Step 3. Set Up Project** - The FGDC Subcommittee or Working Group establishes the project and activates standards development. Custodian: FGDC Subcommittee or Working Group.

An approved standards project is initiated by the Subcommittee or Working Group assigned to lead the activity. A project leader is assigned for each standards project. This

may be, but is not necessarily, the group leader (for example, a Subcommittee Chair). A subgroup of the Subcommittee or Working Group may be formed. A project editor should also be assigned for each standards project. The editor maintains all documentation and makes all official revisions to drafts of the standard. Project leaders and editors are registered with the SWG and added to the standard register.

### 4.3 Draft Stage

**Step 4. Produce Working Draft** - The Standards Development Group proceeds with standard development. Custodian: Standards Development Group.

The Standards Development Group determines a development approach. The group identifies existing related standards and standards development activities and assesses their relevance to the standards project in accordance with OMB Circular A-119. Adoption of existing specifications, whether those be international, national, agency, or de facto standards should be considered first. If an existing standard cannot be adopted, the Standards Development Group may consider adapting an existing standard, which is using an existing standard as the basis for a new standard. When adoption or adaptation of existing standards are inappropriate or insufficient, the Standards Development Group may begin development of a new standard.

The Standards Development Group may involve representatives outside FGDC and the Federal Government in the development process.

**Step 5. Review Working Draft** - The Standards Development Group submits the working draft for pre-public review. Custodian: FGDC Subcommittee or Working Group.

The pre-public review of the working draft is coordinated by the Standards Development Group. In this step the working draft standard is provided to the sponsoring FGDC Subcommittee or Working Group for broader input and review. The Subcommittee or Working Group may choose to obtain comments from other Federal and non-Federal groups that would be effected by the working draft, but at this stage the review is targeted and does not constitute an open, public review of the standard. The working draft is revised as needed following FGDC standards guidelines. After this step the standard becomes a Committee Draft.

### 4.4 Review Stage

**Step 6. Review and Evaluate** - The SWG evaluates the Committee Draft of the standard and approves it for further processing. Custodian: Standards Working Group.

The SWG reviews the Committee Draft and it follows the FGDC Standards guidelines. The SWG with input from the FGDC Subcommittees and Working Groups evaluates the Committee Draft using criteria from Section 1.3 of this Reference Model. See Appendix B for specific details on the application of the criteria.

If approved, the SWG sends the Committee Draft and a recommendation to advance the standard to public comment to the FGDC Coordination Group. If not approved, the Committee Draft is returned to the Standard Development Group (Step 4). Recommendations from the SWG can be appealed to the FGDC Coordination Group.

**Step 7. Act on Recommendation** - The FGDC Coordination Group reviews the recommendation of the SWG. Custodian: FGDC Coordination Group.

The FGDC Coordination Group reviews the SWG's recommendation.

If approved, the FGDC Coordination Group submits the Committee Draft to the FGDC Secretariat to be announced for public comment in the Federal Register. At this point the standard becomes an FGDC Proposed Standard. If not approved the FGDC Coordination Group returns the Recommendation to the SWG for revisions or additional action.

**Step 8. Coordinate Public Review** - The FGDC Secretariat announces and coordinates a public review of the Proposed FGDC Standard. Custodian: FGDC Secretariat.

Coordinating Public Review encompasses making public announcements, handling distribution, and receiving public comments. At a minimum, the Proposed Standard is announced in the Federal Register with a request for comments. The announcement may also be published in professional journals, in trade magazines, and on the Internet to obtain the widest possible public exposure. The FGDC Secretariat, the SWG, the responsible Subcommittee or Working Group, or the Standard Development Group may conduct presentations about the standard at public meetings and conferences, including those involving state and local governments, and the private sector.

Testing of the Proposed FGDC Standard is done as part of the public review. This may be coordinated by the Standards Development Group. Test results should become part of the information contained in the public review submitted to the FGDC Secretariat. All comments are directed to the FGDC Secretariat, and upon completion of the review period, and all comments are forwarded to the Standards Development Group.



**Step 9. Respond to Public Comments** - The Standards Development Group reviews all comments and produces a comment response document: Custodian: Standards Development Group.

The Standards Development Group receives all public comments. These are examined for scope and content. The Standards Development Group determines which comments will correct or add substance to the Proposed FGDC Standard.

The Standards Development Group resolves all comments and determines what revisions are to be made. They also determines whether there were enough substantial changes to the review version of the standard to require another public review. The Standards Development Group either prepares a public response document or moves the Proposed Standard back to Step 4.

**Step 10. Evaluate Responsiveness to Public Comments** - The Proposed FGDC Standard and Public Response Document are reviewed by the Standards Working Group. Custodian: Standards Working Group.

The SWG examines the revised Proposed FGDC Standards and the Public Response Document using criteria from Section 1.3 of this Reference Model. See Appendix B for specific details on the application of the criteria.

The SWG makes a determination of whether the criteria has been met. If it has, the SWG advances the Proposed Standard along with a recommendation for adoption to the FGDC Coordination Group. If the public comments and revisions to the Proposed Standard do not meet the criteria, the SWG sends the Proposed Standard back to the Standards Development Group (Step 9). SWG recommendations may be appealed to the FGDC Coordination Group.

**Step 11. Act on Recommendation** - The FGDC Coordination Group reviews the recommendation of the SWG. Custodian: FGDC Coordination Group.

If the recommendation is approved, the Proposed FGDC Standard is forwarded to the FGDC Steering Committee for formal adoption. If not approved, it is returned, with comment, to the SWG for appropriate action.

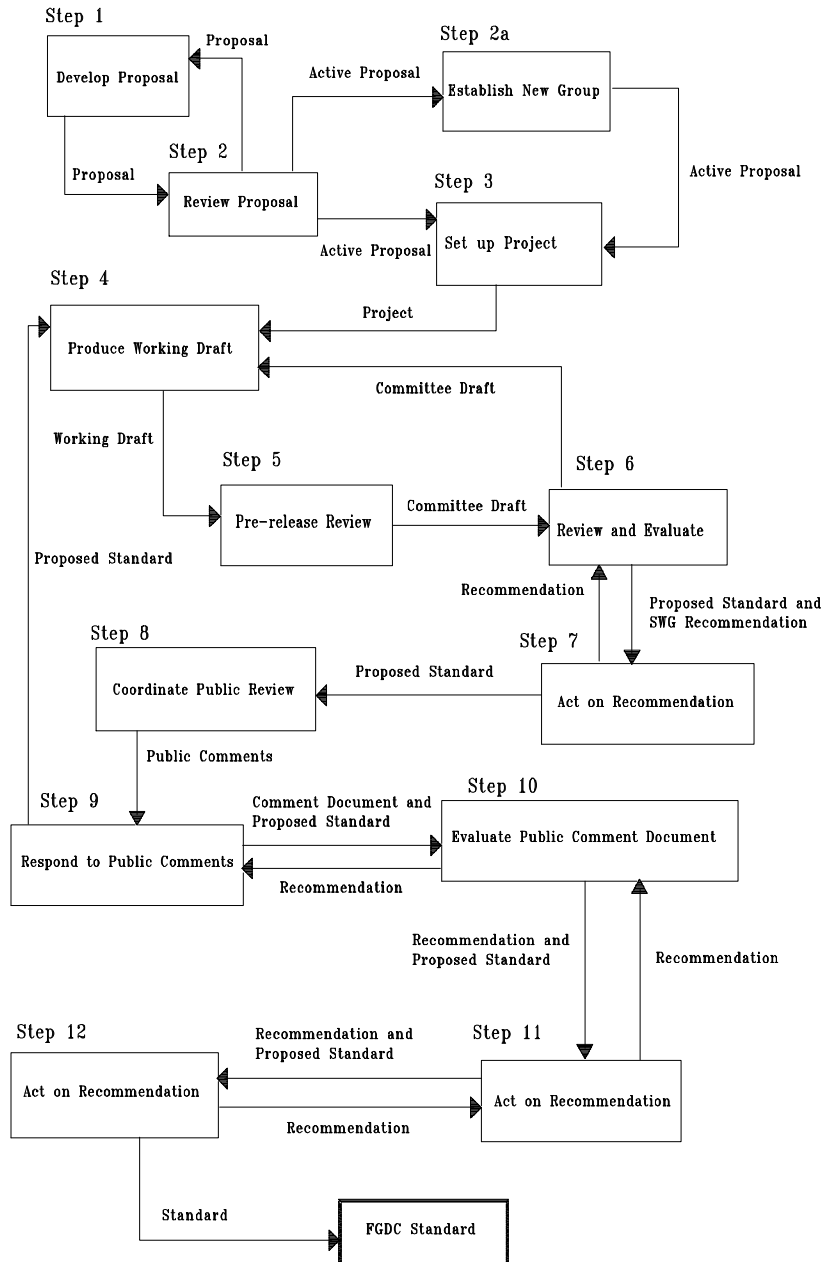
#### 4.5 Final Stage

**Step 12.** The FGDC Steering Committee reviews the recommendation of the FGDC Coordination Committee. Custodian: FGDC Steering Committee.

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If the recommendation of the FGDC Coordination Group is approved, the standard is signed by the FGDC Chair. Approved FGDC Standards are submitted for final publication and public release. If not approved, the recommendation is returned to the FGDC Coordination Group.

FGDC Standards Process Flow Diagram  
 Figure 2



## **5. FGDC Standards Formats**

FGDC Standards will have a title page that will include the title of the standard, the responsible FGDC Subcommittee or Working Group, and FGDC's postal and E-mail addresses.

FGDC Standards will have a table of contents. All pages will be numbered.

FGDC Standards will contain an introduction that will describe the following:

- Mission and Goals of Standard
- Relationship to Existing Standards
- Description of Standard
- Applicability and Intended Uses of Standard
- Standard Development Procedures
  - Participants
  - Comments and Reviews
- Maintenance of the Standard

The body of the standard will follow the introduction.

References will be listed in a separate section and will be formatted according to the US Government Style Manual. Reference citations within the standard will also follow the US Government Style Manual.

The FGDC will receive a digital copy of the standard. The digital copy will be submitted in an appropriate and previously agreed upon format.

The development group may produce a hypertext version of the standard for inclusion on the FGDC Homepage or to be accessible from the FGDC Homepage.

If the standard is expected to move on to another authorizing body, the Standard should be presented in a format that is compatible with that body. Deviations from the FGDC format are acceptable to meet those needs. However, FGDC will distribute the Standard, both manually and electronically, with an FGDC Standard Title and FGDC contact information.

This Reference Model document conforms to the FGDC standards format.

## **6. Methodologies and Content Model (TBD)**

## **7. FGDC Standards Maintenance and Distribution (TBD)**

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**8. Related Standards Bodies (TBD)**

## **FGDC Standards Reference Model Appendix A - Standard Proposal Contents (Draft)**

### FGDC Standards Proposal Content

The standard proposal is described in Step 1 of the FGDC Standards Development Process. This is in Section 3 of this report. The following describes the content of an FGDC proposal.

The standard subject area scope within the requirements of Circulars A-16, A-119, Executive Order 12094, and this Reference Model

Identify what is being standardized, the scope of the standards project, and the type of standard as described in the Reference Model that will be developed. Describe why FGDC is an appropriate place for the standard to be developed and adopted as well as other standard organizations that may be interested in the proposal.

The need for the standard

Identify why this standard is being proposed, describe as possible the benefits of developing standard, and the consequences of not developing the standard.

Standard project time line and resources

Describe the proposed time line for development and adoption. Characterize as possible the budget and personnel resources anticipated to completed the standard as well as the resources required for maintenance if known.

Participation

Identify participating agencies or organizations and methods that will be used to assure a consensual development process if these methods are known.

Integration

Describe the relationship of this standard proposal to ongoing FGDC standards efforts and existing FGDC standards. If there are relationships with other existing standards, identify both the standard and the relationship.

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### **Appendix B - Standards Working Group Evaluation Criteria (Draft)**

The Standards Working group reviews documents at three different steps in the standards development process. A standard proposal is reviewed at step 2, a pre-public review of the standard takes place at step 6, and a pre-endorsement review takes place at step 10. The following describes the review criteria used at each of these steps.

**Step 2.           Review Proposal** - The SWG reviews and evaluates the standard proposal.  
Custodian: Standards Working Group

For this step the following elements from Section 1.3 of the Reference Model are used in the evaluation.

#### Within FGDC Scope

- Is the Standard topic included OMB Circulars A-16 or A-119 or Executive Order 12096?
- Is the type of standard proposed a data standard or a process standard?
- Does the Standard Proposal relate to geospatial data or processes?
- Does the Standard Proposal advance data sharing or minimize duplication?
- Does the Standard Proposal have a national scope?

#### Future Focused

- Does the Standard Proposal remove an impedance to data sharing?
- Does the Standard Proposal promote new or enhanced coordination?
- The Standard does not re-formalize an existing standard or procedure.

#### Technology Independent

- Does the Standard Proposal stand independent of a specific technology solution?
- The Standard Proposal does not limit any appropriate vendor from access.

#### Integrated

- Are there other similar standards available or are there other similar standards development ongoing?
- The Standard Proposal does not overlap with an existing standards
- The Standard development is coordinated with related standards

Publicly Available

- The Standard will not be developed from proprietary information
- The Standard does not carry any copyright or licensing limitation on use.
- What are the proposed mechanisms for making the Standard available electronically?

Complete and Consistent

- Does the Proposal have all the necessary components?
- Does the Proposal follow a reasonable methodology for development
- Is the Proposal in a consistent and readable format and presentation?

**Step 6. Review and Evaluate** - The SWG evaluates the Committee Draft of the standard and approves it for further processing. Custodian: Standards Working Group.

For this step the following elements from Section 1.3 of the Reference Model are used in the evaluation.

Structured

- Is the Standard presented in an understandable and useable manner?
- Does the Standard follow the format of the Reference Model?
- Does the Standard contain all necessary documentation?

Technology Independent

- Does the Standard stand independent of a specific technology solution?
- The Standard does not limit any appropriate vendor from access.

Integrated

- Are there other similar standards available or are there other similar standards development ongoing?
- The Standard does not overlap with an existing standards
- The Standard development is coordinated with related standards

Evolving

- Does the Standard allow for updates?
- Does the Standard include documented maintenance and update procedures?
- Are the ways to submit updates documented in the Standard?



Publicly Available

- The Standard is not developed from proprietary information
- The Standard does not carry any copyright or licensing limitation on use.
- What are the mechanisms for making the standard available electronically?

Complete and Consistent

- Does the Standard have all the necessary components?
- Does the Standard follow a reasonable methodology for development?
- Is the Standard in a consistent and readable format and presentation?
- Does the Standard reflect the requirements of the original proposal?

**Step 10. Evaluate Public Comment Document** - The Proposed FGDC Standard and Public Comment Document are reviewed by the Standards Working Group.  
Custodian: Standards Working Group.

For this step the following elements from Section 1.3 of the Reference Model are used in the evaluation.

Technology Independent

- Does the Standard stand independent of a specific technology solution?
- The Standard does not limit any appropriate vendor from access.

Integrated

- Are there other similar standards available or are there other similar standards development ongoing?
- The Standard does not overlap with an existing standards
- The Standard development is coordinated with related standards

Supportable

- Can the Standard be implemented with known technology?
- Are there identified consumers for the Standard?

Publicly Available

- The Standard is not developed from proprietary information
- The Standard does not carry any copyright or licensing limitation on use.
- What are the mechanisms for making the standard available electronically?

Complete and Consistent

- Does the Standard have all the necessary components?
- Does the Standard follow a reasonable methodology for development
- Is the Standard in a consistent and readable format and presentation?
- Does the Standard reflect the requirements of the original proposal?
- Were the public reviews based on a broad cross section of users?
- Was the Standard development responsive to the comments raised in public reviews?