FGDC-STD-014.1-2008

Geographic Information Framework Data Content Standard

Part 1: Cadastral

May 2008

Federal Geographic Data Committee

Established by Office of Management and Budget Circular A-16, the Federal Geographic Data Committee (FGDC) promotes the coordinated development, use, sharing, and dissemination of geographic data.

The FGDC is composed of representatives from the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, the Interior, Justice, Labor, State, and Transportation, the Treasury, and Veteran Affairs; the Environmental Protection Agency; the Federal Communications Commission; the General Services Administration; the Library of Congress; the National Aeronautics and Space Administration; the National Archives and Records Administration; the National Science Foundation; the Nuclear Regulatory Commission; the Office of Personnel Management; the Small Business Administration; the Smithsonian Institution; the Social Security Administration; the Tennessee Valley Authority; and the U.S. Agency for International Development.

Additional Federal agencies participate on FGDC subcommittees and working groups. The Department of the Interior chairs the committee.

FGDC subcommittees work on issues related to data categories coordinated under the circular. Subcommittees establish and implement standards for data content, quality, and transfer; encourage the exchange of information and the transfer of data; and organize the collection of geographic data to reduce duplication of effort. Working groups are established for issues that transcend data categories.

For more information about the committee, or to be added to the committee's newsletter mailing list, please contact:

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Foreword

Geographic information, also known as geospatial information, both underlies and is the subject of much of the political, economic, environmental, and security activities of the United States. In recognition of this, the United States Office of Management and Budget issued Circular A-16 (revised 2002), which established the Federal Geographic Data Committee (FGDC) as a coordinating organization.

Work on this standard started under the Geospatial One-Stop e-Government initiative. The standard was developed with the support of the member agencies and organizations of the FGDC and aids in fulfilling a primary objective of the National Spatial Data Infrastructure (NSDI), that is, creation of common geographic base data for seven critical data themes. The seven core data themes are considered framework data of critical importance to the spatial data infrastructure.

As the Geographic Information Framework Data Content Standard was developed using public funds, the U.S. Government will be free to publish and distribute its contents to the public, as provided through the Freedom of Information Act (FOIA), Part 5 United States Code, Section 552, as amended by Public Law No. 104-231, “Electronic Freedom of Information Act Amendments of 1996”.

Introduction

The primary purpose of this part of the Geographic Information Framework Data Content Standard is to support the exchange of cadastral (real property) data. This part seeks to establish a common baseline for the semantic content of cadastral databases for public agencies and private enterprises. It also seeks to decrease the costs and simplify the exchange of cadastral data among local, Tribal, State, and Federal users and producers. That, in turn, discourages duplicative data collection. Benefits of adopting this part of the standard also include the long-term improvement of the geospatial cadastral data within the community.

This part provides a data content and high level Universal Modeling Language (UML) description for cadastral data.

Cadastral data are produced and maintained by thousands of organizations across the county. This part provides a profile of that information to support the facilitation of exchange which has been defined as the information necessary for the navigation to and discovery of cadastral information from the many providers.

Cadastral data are defined as the geographic extent of the past, current, and future rights and interests in real property including the spatial information necessary to describe that geographic extent. Rights and interests are the benefits or enjoyment in real property that can be conveyed, transferred, or otherwise allocated to another for economic remuneration. Rights and interests are recorded in land record documents. The spatial information necessary to describe rights and interests includes surveys and legal description frameworks such as the Public Land Survey System, as well as parcel-by-parcel surveys and descriptions.

The Cadastral Data Content Standard (FGDC-STD-003), upon which this part is based, is intended to support the automation and integration of publicly available land records information. The Cadastral Data Content Standard is intended to be useable by all levels of government and the private sector. That standard contains the standardization of the definition of entities and objects related to cadastral information including survey measurements, transactions related to interests in land, general property descriptions, and boundary and corner evidence data. Any or all of these applications are intended to be supported by the standard.

The intended geographic scope of the Cadastral Data Content Standard and this profile of that standard is all fifty States of the United States including all onshore cadastral as well as marine cadastral information. Applicability of this part of the Framework Data Content Standard in other geographic areas and business processes, such as the Insular Areas of the United States has not been determined.

Framework Data Content Standard – Cadastral

1 Scope, purpose, and application

The Geographic Information Framework Data Content Standard, Part 5: Cadastral part provides the information necessary to identify the existence of parcel-level cadastral information and the source of that information. The geospatial metadata provided in conformance to this part will include the contact, distribution, and access requirements for the cadastral data. Additional information on the content of the full parcel or cadastral data sets, its accuracy, and its spatial projection, is also provided with the metadata.

This part of the standard is not intended to support homeland security, citizen query and access, real estate records, or other application-based information. The Cadastral part includes only the minimum data necessary to facilitate locating the existence of parcel-level information and identifying the source. These data, along with the appropriate metadata, will provide the information describing how and where to get the data needed to support applications.

The purpose of this standard part is to facilitate the exchange of cadastral (real property) data. The Cadastral part is one of seven themes presently included in the National Spatial Data Infrastructure (NSDI).

Data complying with the FGDC's Cadastral Data Content Standard (FGDC-STD-003) would be necessary to locate a parcel by site address and to display the assessed value of property. The Cadastral part is a profile of the FGDC Cadastral Data Content and all of the elements in this profile are included in the full content standard. The Cadastral part profile supports the discovery of and the navigation to cadastral information. Associated metadata will identify the providers of additional cadastral information. The FGDC Subcommittee for Cadastral Data publishes and maintains other cadastral profiles of the Cadastral Data Content Standard based on identified business processes and application needs. These profiles can be found at http://www.nationalcad.org

Cadastral data works in harmony with other data sets. For example, to determine whether there is parcel or cadastral information available in a specified city, users will need to navigate to that geography and then verify that the minimum core parcel information and its metadata have been made available for that area.

The Cadastral part can be implemented using a variety of software packages and is designed to accommodate data encoded without geometry as well as to support the exchange of data encoded in a variety of GIS formats.

2 Normative references

Annex A lists normative references applicable only to the Cadastral part. Annex A of the Base Document (Part 0) lists normative references applicable to two or more parts of the standard. Annex D of the Base Document lists informative references applicable to all of the parts.

3 Maintenance authority

3.1 Level of responsibility

The FGDC is the responsible organization for coordinating work on all parts of the Geographic Information Framework Data Content Standard. The Subcommittee for Cadastral Data, working with the FGDC, is directly responsible for development and maintenance of the Geographic Information Framework Data Content Standard, Part 1: Cadastral. The United States Department of the Interior - Bureau of Land Management - Geographic Sciences Team currently leads the Federal Geographic Data Committee, Subcommittee on Cadastral Data.

3.2 Contact information

Address questions concerning this part of the standard to:

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4 Terms and definitions

Definitions applicable to the Cadastral part are listed below. More general terms and definitions can be found in the Base Document (Part 0). Users are advised to consult that part for a complete set of definitions.

4.1
owner type

classification of the ownership for the primary surface interest

4.2
parcel identifier

primary permanent identifier for the parcel defined by the jurisdiction referenced in the **source identifier**

4.3
parcel map

collection of **parcel polygons**, usually from a single source

4.4
parcel point

point feature within the **parcel polygon** that can be used to attach related information

NOTE The parcel point provides a general reference for locating a parcel. Parcel points can be provided when parcel polygons are not available or they can be provided as a supplementary geographic representation.

4.5
parcel polygon

geographic extent of the parcel, as depicted using an area feature

NOTE The parcel polygon is a closed polygon.

4.6
primary

Boolean (True or False) that indicates whether the **parcel identifier** and the source for that **parcel identifier** are the primary identifier and primary source

NOTE If the primary is True then the parcel identifier and the source identifier are primary. If the primary is False then the parcel identifier and the source of that parcel identifier are secondary or alternative. There can be multiple alternative parcel identifiers and associate source identifiers but there can only be one primary parcel identifier and associate source for any parcel feature.

4.7
source identifier

permanent identifier for the agency, organization, or jurisdiction that assigns and maintains the **parcel identifier**; that is to say, namespace

NOTE The source should identify itself using the appropriate jurisdiction Federal Information Processing System (FIPS) code where possible.

5 Requirements

5.1 Application schema

The Cadastral part extends the basic Framework Data Content Standard UML model by adding five part-specific classes, as shown in Figure 1. The primary class for the Cadastral part is the Parcel. These classes define the Cadastral part referenced in the Base Document. The five Cadastral part classes are described below.

5.1.1 Parcel class

The Parcel class is the main class to convey cadastral information. It is stereotyped as a <<Feature>> and as such has identity and geometry properties.

5.1.2 OwnerType class

The OwnerType class is a code list of valid values that classify the owner type. This is not the ownership type, but rather is the classification of the owner.

5.1.3 ParcelSource class

The ParcelSource class groups elements regarding each parcel and its source information.

5.1.4 ParcelGeometry class

This class represents a choice between a centroid or polygon representation of the parcel.

5.1.5 ParcelCollection class

These features were introduced for conformance with the other Geographic Information Framework Data Content Standard parts and as such are not a part of the Cadastral part. These represent a super type of data collection with metadata. They are a set of features that occur within the context of a container object known as a “feature collection”. This is a convention used to delimit a group of features of a given type and common schema.

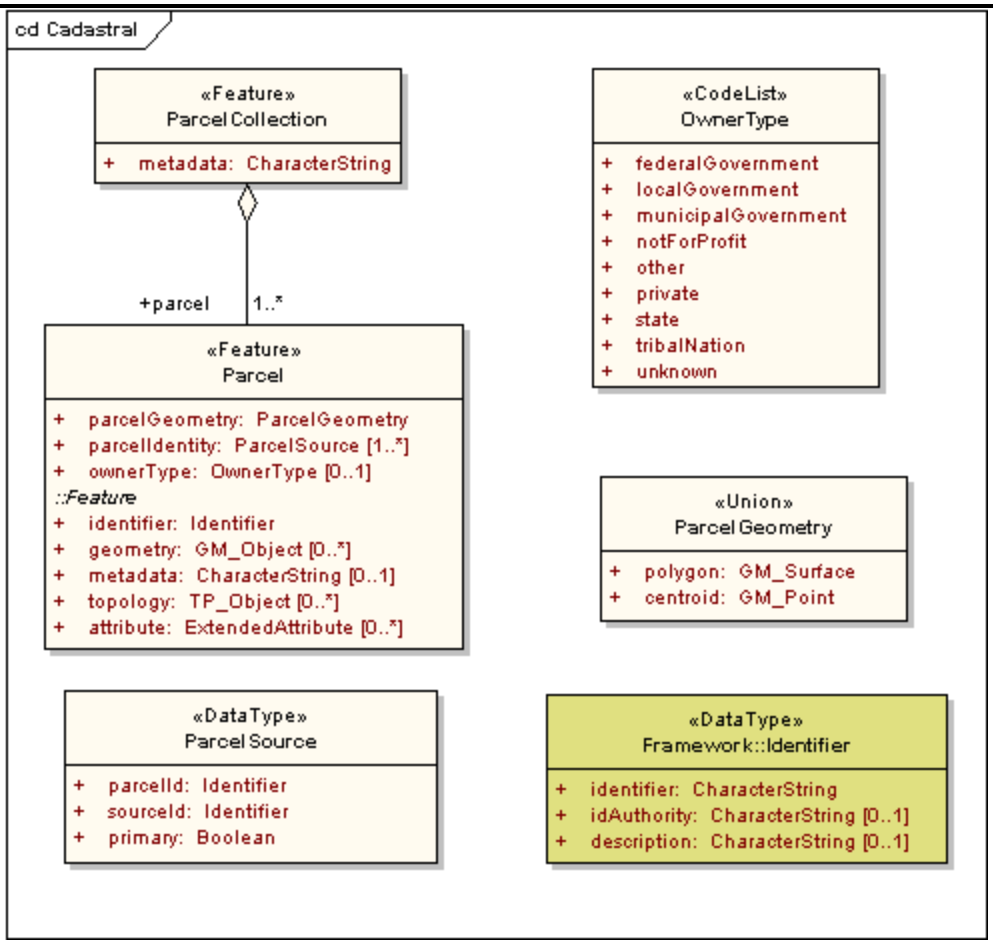

Figure 1 – Cadastral UML model

The class shown in green or gray is an inherited class and is shown for convenience. The tan or light gray classes are the Cadastral theme classes and are described below.

5.2 Data dictionary

Table 1 – Data dictionary for cadastral

Line	Name/Role Name	Definition	Obligation/ Condition	Maximum Occurrence	Data Type	Domain
1	ParcelCollection				<<Feature>>	Lines 2-3
2	metadata	Information that describes this information transfer represented as a URL or as a block of text	M	1	CharacterString	Unrestricted
3	Role name: parcel	Links ParcellCollection to the Parcel that belongs to the ParcelCollection	M	*	Parcel	Unrestricted
4	Parcel				<<Feature>>	Lines 5-12
5	parcelGeometry	Centroid or polygon representation of parcel location	M	1	<<Union>> ParcelGeometry	GM_Polygon or GM_Point
6	parcelIdentity	Parcel identifier	M	*	<<DataType>> ParcelSource	CharacterString and Boolean
7	ownerType	Classification of the ownership for the primary surface interest	O	1	<<CodeList>> OwnerType	Unrestricted
8	Framework::Feature::identifier	Feature identifier for the Parcel	M	1	<<DataType>> Framework::Identifier	Unrestricted
9	Framework::Feature::geometry	Shape and geolocation of a feature	O	*	<<Type>> GM_Object	Defined in ISO 19107
10	Framework::Feature::metadata	Structured or unstructured metadata as defined by the community of practice	O	1	CharacterString	May be text or structured metadata fragment
11	Framework::Feature::topology	Connectivity of the participating elements	O	*	<<Interface>> TP_Object	Defined in ISO 19107
12	Framework::Feature::attribute	Producer-defined attribute for inclusion in transfer	O	*	<<DataType>> Framework::	Unrestricted

Line	Name/Role Name	Definition	Obligation/ Condition	Maximum Occurrence	Data Type	Domain
					ExtendedAttribute	
13	ParcelSource	Group of parcel source information that is maintained together			<<DataType>>	Lines 14-16
14	parcelId	Unique identifier for the parcel	M	1	<<DataType>> Framework::Identifier	Framework::Identifier
15	sourceId	The linkage to the agency or organization that assigned the parceled	M	1	<<DataType>> Framework:Identifier	Framework::Identifier
16	primary	Designation that the current record describes the primary parcel	M	1	Boolean	True or False
17	ParcelGeometry	Choice of centroid or polygon representation of the parcel			<<Union>>	Lines 18-19
18	polygon		M	1	<<Type>> GM_Surface	Unrestricted
19	centroid		M	1	<<Type>> GM_Point	Unrestricted

5.3 Code list

OwnerType is a CodeList of the parcel owner's administrative designation.

Table 2 – CodeList for OwnerType

Name	Definition
federalGovernment	The United States federal government and its agencies and departments
localGovernment	A county, parish, or borough government
municipalGovernment	A municipality of government
notForProfit	A not for profit organization which is also exempt from real estate taxes
other	Any other organization
private	A private firm, for profit organization, or an individual or group of individuals
state	A State government or the city of Washington DC
tribalNation	An American Indian Tribe or nation
unknown	The type of ownership is not known

Annex A
(normative)
Normative references

This annex lists normative standards that support only this part of the Framework Data Content Standard. Annex A of the Base Document (Part 0) lists normative references applicable to two or more parts of the standard.

ANSI and ISO standards may be purchased through the ANSI eStandards Store at http://webstore.ansi.org/ansidocstore/default.asp, accessed October 2006.

ANSI NCITS 353:2001, Spatial data standard for facilities, infrastructure, and environment

FGDC-STD-003-2003, Cadastral data content standard, Version 1.3, http://www.fgdc.gov/standards/projects/FGDC-standards-projects/cadastral/?searchterm=cadastral%20data%20content%20standard, accessed October 2006

Annex B
(informative)
Sample diagram

The diagram below shows four parcel polygons each with a centroid and a related table that contains attributes for those features.

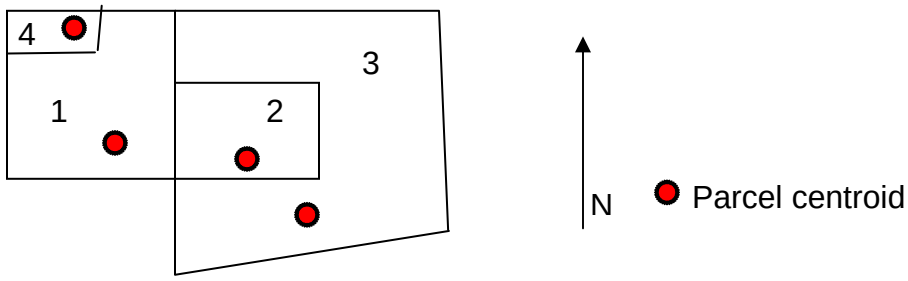

Figure B.1 – Four parcel polygons with centroids and ParcelIDs

The table below contains attributes for the features in the figure above.

Table B.1 – ParcelIDs related to a ParcelSource and OwnerType

ParcelID	ParcelSource	OwnerType
1	39-063	TribalNation
2	39-063	LocalGovernment
3	39-063	Private
4	39-063	Private

Annex C
(informative)
Additional resources

The FGDC Subcommittee for Cadastral Data in partnership with Federal agencies, Tribes, State and local governments and agencies, and the private sector maintains reference information and educational materials in support of the profile described in this document as well as profiles serving many other business processes and applications. If an organization needs additional attributes or has implementation questions there are profiles for various business cases on the nationalcad site. This information is freely available and can be found at http://www.nationalcad.org. Other information related to implementation, jurisdictions serving cadastral information, and ongoing projects can be found at this site.

ANSI and ISO standards may be purchased through the ANSI eStandards Store at http://webstore.ansi.org/ansidocstore/default.asp, accessed October 2006.