

**Authority and Authoritative Sources:  
Clarification of Terms and Concepts for  
Cadastral Data**

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**FGDC Subcommittee for Cadastral Data**

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## Introduction

Because of legal issues related to ownership and rights in land the use of the terms authority and authoritative for cadastral data need to be clearly articulated. The proliferation of data sets on the internet that propose to represent the extent of rights in land or the status of ownership has already created confusion for the public. The vision for the National Spatial Data Infrastructure (NSDI) and the National Cadastre within the NSDI is to have a single source of authoritative cadastral data that is controlled and managed by designated data stewards. Access to this data is facilitated by compiling and integrating the data into trusted data sources at state or regional levels. This will reduce duplication of effort and assure that the best available information is used in decision making.

The FGDC Subcommittee for Cadastral Data, following the directives in OMB Circular A-16, has developed a series of documents over the past ten years that describe the concepts and polices related to the creation, use and publication of cadastral data. To alleviate confusion about the use of the words authority and authoritative as it applies to cadastral data, this document assembles prior written material about this topic.

## Summary of Terms

It is important to characterize and understand the subtle differences in the following terms:

**Authoritative Data** – Officially recognized data that can be certified and is provided by an *authoritative source*.

**Authoritative Data Source** – An information technology (IT) term used by system designers to identify a system process that assures the veracity of data sources. These IT processes should be followed by all geospatial data providers. The data may be original or it may come from one or more external sources all of which are validated for quality and accuracy.

**Authoritative Source** – An entity that is authorized by a legal authority to develop or manage data for a specific business purpose. The data this entity creates is *authoritative data*.

**Authority** – In the context of public agencies it is the legal responsibility provided by a legislative body to conduct business for the public good.

**Authorization** – The result of an act by a legislative or executive body that declares or identifies an agency or organization as an *authoritative source*.

**Data Steward** – An organization within an authoritative source that is charged with the collection and maintenance of authoritative data. The term *data steward* is often confounded with the term *authoritative source*.

**Trusted Source and Trusted Data** – A service provider or agency that publishes data from a number of *authoritative sources*. These publications are often compilations and subsets of the data from more than one *authoritative source*. It is “trusted” because there is an “official process” for compiling the data from

*authoritative sources* and the limitations, currency and attributes are known and documented.

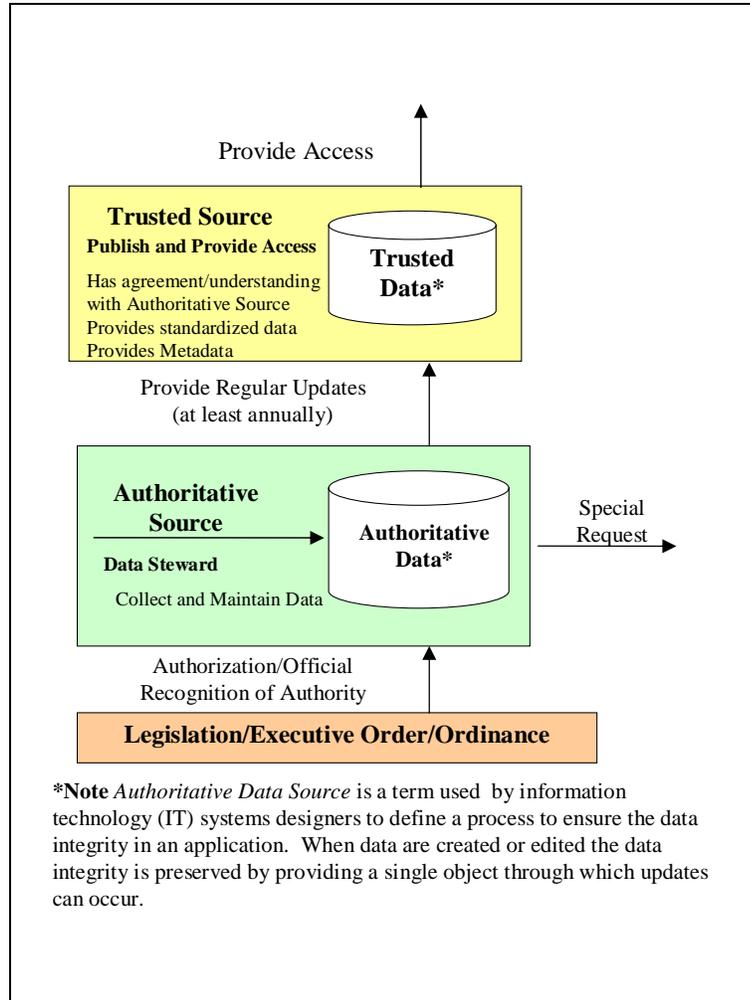


Figure 1 – Illustration of the relationships between the defined terms.

## Discussion of Terms

Application service providers require official sources of data if their applications are to be credible. This means that the source is authorized by a public body such as a Federal or State Legislature or local government statute or rule. There are two types of “official data”; *authoritative* and *trusted data* and correspondingly there are *authoritative* and *trusted sources* for these two types of data.

Authoritative data comes directly from the creator or authoritative source. It is the most current and accurate and has been vetted according to official rules and policy. The data

has a known accuracy and lineage and can be verified and certified by data stewards in the authoritative source. In some terminology this is termed the “primary” data source.

Trusted data describes a situation where data sets are published by someone other than the authoritative source and is often the compilation of multiple sources of authoritative data. It is “trusted” because there is an “official process” for compiling the data from authoritative sources and the limitations, currency and attributes are known. Metadata are provided, the data are often formatted into a standardized form and linkages to the originating source are provided with the data. This trusted source is recognized by the authoritative source as an “official” publisher of this subset. Typically a trusted source is established to integrate data from multiple jurisdictions and to compile it into a standard format. This trusted data is adequate, convenient and cost effective for users who need a regional view and have to deal with multiple sources of data, but there is an understanding of the necessity when final decisions are being made, particularly about rights and interests of specific properties, that the user must go to an authoritative source and acquire authoritative data directly to ensure that they have the most current and accurate data.

Data stewards have the responsibility to organize, collect, maintain and provide data. Data stewards are those closest to the data creation, they have recognized expertise in the field and follow professional standards. In the realm of cadastral data, the land surveyor is the data steward charged with collecting and interpreting information related to the location and geometry of a parcel and the county tax assessor is the data steward charged with providing the valuation and related property information for the same parcel.

When there is not a single source for data, such as nationwide assessment data which has over 4,000 local government sources, and the effort to acquire authoritative data from individual authoritative sources is impractical, then it is reasonable to acquire trusted data from a trusted source.

Authoritative Data Source is a term used by information technology (IT) systems designers to define a process to ensure the data integrity in an application. When data are created or edited the data integrity is preserved by providing a single object through which updates can occur. When data are imported, which may be from multiple sources, there is a strict vetting process to ensure the integrity of the imported data. The process of managing the updates of records, from the systems designer’s perspectives, results in authoritative data. This is authoritative in a database sense but not necessarily in a legal sense.

Metadata is essential part of the process, it allows the user to determine the usability of the data as well as serving as an audit trail on the authority of the data. Trusted data sources and authoritative data sources must provide accurate metadata that describes the lineage, quality and currency for cadastral data. Additionally the trusted data sources must provide linkages to the authoritative data sources.

## **The Cadastre and Authoritative Data**

Unlike other spatial data (hydrography, topography, orthoimagery, etc), cadastral data defines rights and interests in land and how it is described and presented to the public can cause considerable confusion related to value, ownership etc.. Cadastral data are also unique because it is created and maintained by over 4,000 separate entities across the country. Although the original business purpose is at the local government level for assessment purposes, it has become critical to the efficient operations of many state and national business operations because of the level of detail it provides about the land and the currency of that information. Uses vary widely ranging from emergency response and recovery, environmental management, health and safety, fleet management and more. This means that there is a high demand for compiled and standardized cadastral information that can be incorporated into a wide variety of applications.

All cadastral data collections that do not come from authoritative or trusted sources are “unofficial” copies whose value degrades over time relative to the rate of updates to the authoritative data. Unofficial data is often duplicative and creates redundancy by re-publishing data that are already available from a trusted source. Unofficial sources create confusion among the general consuming public by providing un-maintained duplicative data and “unofficial” parcel-like data sets that can unexpectedly harm or damage property rights with inaccurate out of date information.

Recognizing the importance of authoritative sources for authoritative cadastral data that may be provided through a trusted source will be essential to protect individual land rights, to support local governments and other parcel producers in their authorized role of data stewards and to ensure that the user community has the best available and most current cadastral information.

## **Partial List of Reference Documents**

### ***FGDC Subcommittee for Cadastral Data Charter***

Adopted in 1995 - Revised in 2005

<http://www.nationalcad.org/showdocs.asp?docid=31&navsrc=Organization&navsrc2=OrgDoc>

This exhibit addresses lead agency and subcommittee responsibilities for the coordination of cadastral data-related activities among federal agencies and between federal agencies and state, local, tribal and private organizations including the coordination, construction, publication and maintenance of the national cadastre. It also documents responsibilities for the coordinated development, use, sharing and dissemination of cadastral data financed in whole or in part by federal funds, needed in support of federal applications and activities in support of the nation cadastre.

Under the Office of Management and Budget Circular A-16, revised 2002, responsibility to coordinate cadastral data-related activities is assigned to the Department of Interior. This government-wide leadership for cadastral data coordination is carried out under the policy guidance and oversight of the Federal Geographic Data Committee (hereafter called the FGDC) Subcommittee for Cadastral Data and the Bureau of Land Management Cadastral Survey.

Pertinent enabling authority also resides in the language of 43 U.S.C. § 2.

The lead agency responsible for the coordination, management and dissemination of cadastral data is the Bureau of Land Management Cadastral Survey. This organization will develop and implement a plan to coordinate cadastral data-related activities among federal agencies, Tribal, state and local agencies and the private sector and will report on its activities to the FGDC. In carrying out its government-wide leadership in coordinating cadastral data activities, the Bureau of Land Management Cadastral Survey is directly responsible and ensures compliance with objectives and guidance provided by the FGDC. The Subcommittee will make all reports and activities available through its website at <http://www.nationalcad.org>. This site will contain the most current information regarding Subcommittee activities and events.

### ***FGDC Subcommittee for Cadastral Data - Vision and Working Principles***

Adopted in 2002 – Revised in 2006

<http://www.nationalcad.org/showdocs.asp?docid=138&navsrc=Organization&navsrc2=OrgDoc>

Decision makers and interested parties will be able to access and use property information to meet their ongoing land record needs as well as regional needs such as strategic planning and response to emergency situations. The property information at their fingertips will be comprehensive and current including detailed information about who owns the land and what are the limitations and restrictions to use. The information will be readily accessible, locally maintained, and may reside among organizations at distributed locations. By providing community leaders with better more comprehensive information we are enabling them to make better decisions related to facilitating economic growth, authorizing the use of land resources, maintaining livable communities and responding more effectively to emergency situations.

### ***OMB Circular A-16***

[http://www.whitehouse.gov/omb/circulars/a016/a016\\_rev.html](http://www.whitehouse.gov/omb/circulars/a016/a016_rev.html)

This Circular provides requirements and guidance for the management of data and federal information assets that relate to geographic locations.

Agency Responsibilities and Reporting Requirements

8. What are the federal responsibilities?

In order to use federal resources wisely, and to build the NSDI, all agencies that collect, use, or disseminate geographic information and/or carry out related spatial data activities will, both internally and through their activities involving partners, grants, and contracts: coordinate and work in partnership with federal, state, tribal and local government agencies, academia and the private sector to efficiently and cost-effectively collect, integrate, maintain, disseminate, and preserve spatial data, building upon local data wherever possible.

### ***Production versus Publication Environments***

<http://www.nationalcad.org/showdocs.asp?docid=22&navsrc=Report&navsrc2=>

Published 2002 updated 2007

The production environment is the operation and maintenance component for geographic information. This is the environment where data custodians<sup>1</sup> update, add, edit and manage versions of their information. This is the environment for the internal maintenance staff with heavy-duty data management tools and software. Often information in the production environment is under various stages of construction. For example, attributes related to a parcel ownership transaction might be processed before images of the transaction documents are connected to those attributes.

The publication environment is the consumptive environment. This is the environment where other users access and consume information from data producers or data custodians. The consumer can not change the published data, but they can incorporate it into their own data production processes, query it, add value to it, expand it, make reports, or do any number of analytic or reporting operations.

The data consumer or data user does not change published data. The published information is the result of a known maintenance cycle and is complete information with metadata and associated linkages. The data producer has run quality assurances processes.

### ***State Parcel Data Stewardship***

<http://www.nationalcad.org/showdocs.asp?docid=1013&navsrc=Project>

Published 2007

### **Assumptions and Foundations**

The scenarios and roles have several basic ground rules or starting points.

#### 1. Defined Inter Governmental Use and Business Needs:

The uses and applications for the parcel data are based on specific identified business functions provided by government agencies or their designees. In some states, depending on the culture and past history of GIS data use and distribution, parcel information may be readily provided to any requester or through public access portals. Montana and North Carolina are two of the most developed examples of this approach. However the assembling of parcel information at the state level to serve the response to emergency situations or other important government functions is the driving force

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<sup>1</sup> Data Custodians are now called data stewards but in this paper they were called data custodian

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behind the Subcommittee's perspective of pre-deployed<sup>2</sup> parcel information. There is no implication that the parcel data must be freely provided to all requesters. The data distribution described in this document can be limited by agreement to serve the needs of specific applications.

2. The State is an integrator of information:

The primary role for the state described in this document is an assembling point, data integrator and distributor of information produced by other agencies and jurisdictions. The Subcommittee recognizes that some states also have a parcel collection and maintenance role and that it is the state's responsibility for public lands parcels. This document does not diminish those important activities. The goal of the activities in this document is to make the best available parcel information available for use in decision making.

3. County or locally managed data is the most current, complete and trusted source:

Counties or other local units of governments (municipalities, Tribes, etc) are typically the closest to the land transactions that define parcel data. In some cases state agencies produce parcel data for the counties and in these cases the state agencies are working on behalf of local governments. The concepts in this document do not change or suggest a change in the parcel production stewards. This locally created and maintained data is the best available and the most trusted source. If additional detail about parcels that is not included in the core information is needed, requesters would be referred to the local parcel producers.

4. Update Cycle is at least annually:

Most parcel data producers update their data sets continually. With daily land transactions and the nearly continuous assessment and valuation activities in local governments, most local governments conduct routine maintenance to keep up with the steady flow of transactions. Based on the analysis of the critical applications and business needs that depend on parcel data across jurisdictional lines the Subcommittee has found that annually updated information meets a majority of the needs. In some states more frequent updates may be feasible and may enhance the number of uses for the parcel data.

***Strategy for the Creation of a High Accuracy Parcel Level Cadastral Spatial Data***

Adopted in 2001

<http://www.nationalcad.org/showdocs.asp?docid=43&navsrc=Organization&navsrc2=OrgDoc>

Our ability to maintain livable communities and manage natural resources in concert with encouraging economic development is becoming increasingly complex. Sophisticated tools,

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<sup>2</sup> Pre-deployed generally refers to emergency response situations where acceptable reaction time is measured in hours. It ideally means that the data from multiple sources (counties for parcels) have been standardized and integrated into a regional (statewide) coverage so that it can be readily incorporated into any GIS application.

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like GIS, are becoming common place in organizations charged with balancing the myriad of demands that society places upon the land. Such data and technology significantly increase the capacity of local communities to respond to emergencies in a timely and effective manner. At the heart of our ability to effectively use these technical tools is the foundation of accurate and consistent cadastral data that is available on a regional basis.

In order to support decision-making and the balancing of community interests, the Western Governor's Association has developed and endorsed Policy Resolution 00-005 Public Lands Survey System (PLSS) and Ownership Database. This resolution states that to address multiple land related issues, it is necessary to collect, integrate, maintain, and distribute geographic data representing land ownership and related information. They have also recognized the importance of information technology to significantly increase the capacity of local communities to respond in timely, effective ways. However, use of this technology is hampered due to variations in data content and standards, and current information technology limitations which prevent the combination and integration of information from many local units into a single regional coverage. The National Cadastral Infrastructure attempts to address this issue by establishing communication protocols, data standards, and technology guidelines to achieve a consistent representation of landownership and related information across the nation.

*Objectives:*

1. Finalize the vision, goal, and objectives for establishing and maintaining a national infrastructure for cadastral property information.
2. Establish a state-by-state baseline of cadastral related activities, including a description of the current status of cadastral information, ongoing initiatives (technology, skills, funding etc.), and its ability to meet local as well as regional business needs.
3. Develop state-by-state plans to establish and implement common procedures and practices to capture, integrate and share cadastral information and examine ways to integrate technology into business practices.
4. Implement content and positional data standards to the minimal levels (Core Level) required to effectively share information across jurisdictional boundaries and process information in a regional setting.
5. Share responsibilities, scarce skills and funding through partnerships to maximize the efficiencies of governmental as well as private industry resources and minimize duplication of effort.
6. Conduct six to seven prototype projects in the U.S. to refine scope and gather cost metrics as well as other information that will provide direction to the national effort and guidance to the other states.
7. Continue to advance and increase awareness and support for the project including developing educational materials, web site presence, and presentations