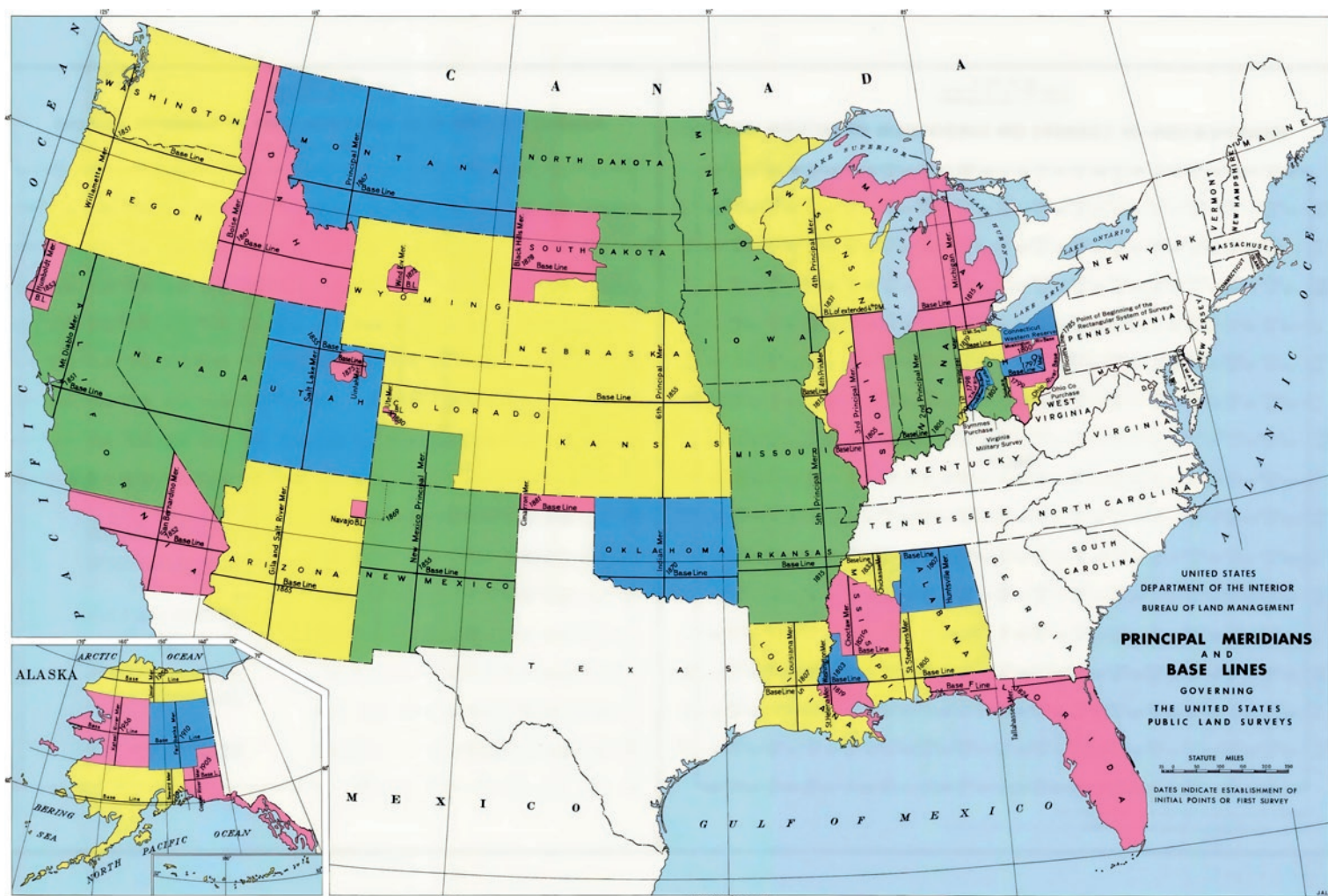


No Nationally Coherent Cadastre in the USA

An extensive Report Card on the U.S. National Spatial Data Infrastructure (NSDI) was published earlier this year, initiated by the Coalition of Geospatial Organizations (COGO). Of the seven data themes assessed, the Cadastral Data theme scored particularly low. There is no government-coordinated national cadastre database or portal, and the evaluating panel of experts does not see evidence of much progress in recent years in establishing a National Cadastral dataset.



▲ A U.S. Bureau of Land Management map showing all the principal meridians and baselines in the U.S. Public Land Survey System.

The panel of experts awarded the cadastral data in the USA a grade of D+, based on the fact that there is no comprehensive parcel database for cadastral information. A comprehensive parcel database would include past, current and future rights and interests in real property, including the spatial information necessary to describe geographic extents. In addition, no framework exists for the creation of a sustainable and equitable intergovernmental funding programme for the development and maintenance of parcel data. The data for approximately 150 million non-federal land parcels is maintained by approximately 6,700 land-record (cadastral or parcel) data stewards, covering over 3,200 counties and equivalent units of local government.

The D+ grade also reflects the fact that the federal government is unable to adequately address the needs of federal agencies for parcel data and to coordinate the development of a national parcel dataset. Until a comprehensive approach to assembling parcel information from local stewards is adopted, it should be acknowledged that the United States does not have a programme to create and support a national cadastral data theme in the NSDI.

IMPACT

According to the panel of experts, the lack of comprehensive cadastral data is significant and its impact is illustrated by a number of recent events. First, the collapse of the mortgage market shone a spotlight on the consequences of the United States' failure to maintain cadastral data. It is clear that risky securities based on bundles of U.S. mortgages were an underlying cause of the banking crisis which led to a wider financial crisis and almost worldwide recession. Both before and after the start of the crisis, various reports stated that the lack of a sound property rights data infrastructure in the U.S. contributed to the unforeseen collapse of its real estate market and to the subsequent mortgage crisis. Second, the nation's poor response to Hurricane Katrina also highlighted the need for better parcel information that could help officials prepare for and respond to major disasters more effectively. In addition, wildfires like those in the western United States have caused extensive damage to suburban/wildland property, thus showing the need for a parcel data infrastructure to

protect communities from disaster and also help them recover afterwards.

Last but not least, from the local level to the national level, cadastral data that describes the geographic extent of rights, titles and interests in land parcels is used in many aspects of government and business. Such data is essential to property assessment, law enforcement, business location, transportation planning, national disaster response, environmental management, etc. The economic costs of the lack of cadastral data have not been calculated, but the example of the mortgage crisis alone shows that these costs can easily run into billions of dollars.

FRUSTRATED LEAD AGENCY

Cadastral data coordination is carried out under the policy guidance and oversight of the Federal Geographic Data Committee (FGDC). The Bureau of Land Management (BLM) has stewardship of the following four datasets: Federal Parcels Dataset, Geographic Coordinate Data Base, U.S. Official Cadastral Survey Records, and Public Land Survey System (PLSS) Dataset. The PLSS data has been published in the FGDC-endorsed CadNSDI2.0 data standard.

A few years ago, the BLM and other partners commissioned an objective evaluation of the need for federal coordination of the cadastral data theme. The evaluation concluded "that it does not have either the mandate or the proper incentives to assemble parcel data as a standardised public domain database for the nation". The resulting plan and recommendations were endorsed by the National Geospatial Advisory Committee. The BLM asked for resources to implement the plan and recommendations. However, additional resources or a mandate to implement such a programme were not provided.

The BLM stewardship situation has been further weakened by duplication of 20 different cadastral datasets that were identified as data managed by nine different federal agencies. Under the new realignment, it is not clear which of the 20 datasets actually comprise the cadastral theme. However, the BLM and the FGDC Cadastral Subcommittee have worked diligently to coordinate cadastral information across the country. The FGDC Cadastral Subcommittee has been a collaborative forum that has engaged stakeholders from federal land agencies, states, counties, tribes and the

GRADE REPORT OF: National Spatial Data Infrastructure (NSDI)			SEMESTER: Fall 2014		
Subject	Dept.	Grade	Subject	Dept.	Grade
CADASTRAL DATA	DOI	D+	CAPACITY	FGDC	C
GEODETIC CONTROL	DOC	B+	CONDITION	FGDC	D
ELEVATION DATA	DOI	C+	FUNDING	Various	D
HYDROGRAPHY DATA	DOI	C	FUTURE NEED	FGDC	D
ORTHOIMAGERY DATA	DOI & USDA	C+	OPERATION & MAINTENANCE	FGDC	C
GOVERNMENT UNITS DATA	DOC	C	PUBLIC USE	FGDC	C
TRANSPORTATION DATA	DOT	D	RESILIENCE	FGDC	C
OVERALL DATA GRADE		C	COMPREHENSIVE GRADE		C-

TO: Federal Geographic Data Committee
590 National Center
Reston, Virginia 20192

FROM: Coalition of Geospatial Organizations (COGO)
<http://www.cogo.org>
See the full report for an explanation of each grade.

▲ The Report Card shows the D+ grade for the Cadastral Data theme. D = AT RISK.

The data theme is in poor to fair condition and mostly below the goals envisioned for the NSDI.

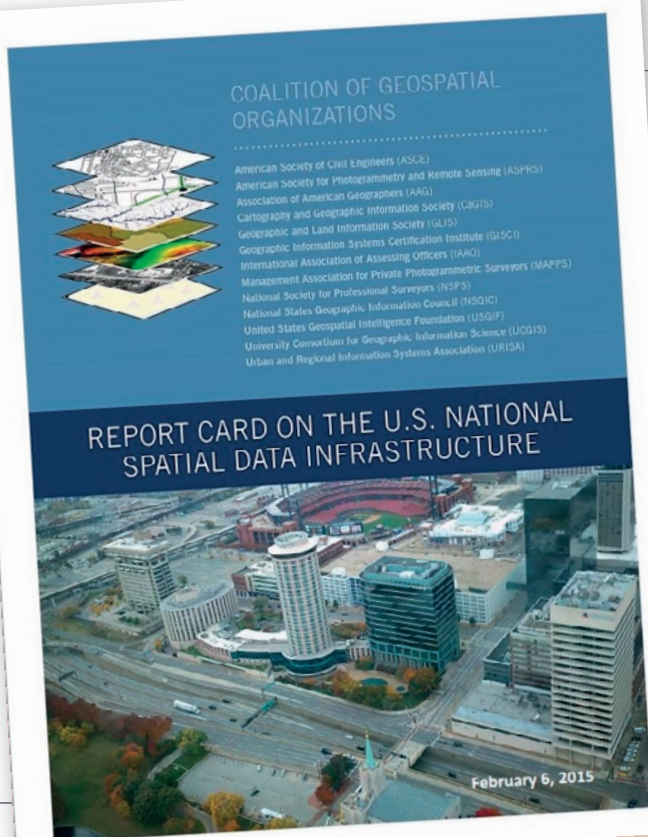
private sector. Working closely with its members, it developed a consensus-based standard that was approved in 2008.

The subcommittee continues to maintain a website that provides online access to a number of reports, standards, cost estimates, best practices, inventories and updated datasets for the PLSS.

NO ACCURATE TALLY OF FEDERAL LANDS

The federal government has an obligation to maintain a cadastre of federal land. Nevertheless, the coordination of federal property is in such a state of flux that the Congressional Research Service found that a coordinated approach to federally managed parcel data still did not exist, and that the best method for obtaining an accurate tally of federal lands is to contact each land management agency individually. The total is estimated to be about 650 million acres or about 28% of the U.S. land area.

The inventory of federal lands may require legislation to fix the problem. Much of the confusion is based on the inherent ambiguity in the integration of databases and the poor articulation of responsibilities. Several federal committees have addressed the coordination of federal land data since the 1980s. The Federal Lands Workgroup that represents all stakeholders was created in 2012 and is now a subgroup of the National Boundaries Group, which includes 25 federal agencies. This new arrangement for the coordination of governmental units may make sense, according to the panel of experts in the Report Card.



EVALUATION

Earlier this year, the Coalition of Geospatial Organizations (COGO) in the U.S. published a Report Card that is intended to address the condition of the U.S. National Spatial Data Infrastructure and help spur additional progress. The completeness and suitability of data on the basic themes – from cadastral to transportation – was evaluated during 2014 by a seven-member expert panel chaired by (former Governor of Wyoming) James E. Geringer, who is currently the director of policy and public sector strategies with Esri. The panel also included vice-chairs Dr David Cowen, Professor Emeritus of the University of South Carolina, and John J. Moeller, former staff director of the Federal Geographic Data Committee. The April 2015 edition of *GIM International* covered the evaluation of orthoimagery data and the May 2015 edition published an interview with COGO chair Mike Vanhook. COGO is a coalition of 13 national professional societies, trade associations and membership organisations in the geospatial field, representing more than 170,000 individual producers and users of geospatial data and technology. For more information visit www.cogo.pro.

LIMITED ACCESS

Measuring the current status of cadastral data in the United States is not a straightforward process. The creation and maintenance of the geometric features and related attribute data are primarily functions of local government. The data only has limited sharing among state and federal agencies through partnerships, most of which are voluntary.

It is estimated that there are approximately 150 million privately owned properties which define the majority of parcel records in the United States and another 8 to 10 million which represent public lands. Surveys conducted by the FGDC Cadastral Subcommittee suggest that about 123 million or 82% of the private parcels and only about 55% of the public land areas are 'GIS ready'. In addition, the National States Geographic Information Council estimated that 17 states do not have state-wide parcel datasets in development.

The Department of Housing and Urban Development (HUD) hired consultants to assemble parcel data from 127 counties. After months of effort the consultants were only able to obtain useful data from 86% of the counties. Their HUD 2013 report noted major challenges including: (1) lack of full data documentation from many of the counties, (2) variations in each dataset's comprehensiveness, attribute definitions and formats, and accuracy, (3) unclear

and very diverse methods for internally validating data in each county, (4) wide variations in nomenclature and definitions for attributes (from land use codes to even basic assessment values), and (5) incorrectly identified or duplicate values for similar attributes within datasets. Although an increasing number of states have worked to create consistent, state-wide coverage, many of these efforts are limited to government-to-government access agreements.

As noted by the Government Accountability Office, the numerous federal programmes that require access to parcel data license the data from the private sector. While several firms create, consolidate and standardise parcel data for parts of the country, Core Logic, a publicly traded company, is building a national geospatial solution that captures boundary and centroid data for 2,658 counties accounting for 140.8 million parcels nationwide, 137.1 million of which are actual parcel boundaries.

NO WILL FOR ACTION

The conclusions and recommendations provided in the COGO Report Card regarding the status of the cadastral theme of the U.S. NSDI are clear. Years of trying have resulted in some progress towards a nationally coherent cadastre that serves multiple purposes, yet the prospect of a complete national cadastral data layer remains dim at the present time. Based on past

performance, it is apparent that collaboration and voluntary efforts alone will not work in such a complex situation. New authority and legislative action will be needed to turn a national parcel dataset into reality.

In view of this situation, a new model for NSDI framework data that acknowledges the importance of local partners must be adopted. This model should be transaction-based and emphasise the use of current information technologies, federated and web-based capabilities, and should support web-based services and applications. Since local partners hold responsibility for most of the parcel data in the United States, budgetary and leadership investments need to support a 'bottom-up' rather than a 'top-down' approach that must be considered in order to facilitate the creation of a national cadastral/parcel data layer. If such investment in current information technology does not occur then national efforts will remain divided among local responsibilities and redundant collections. ◀

FRÉDÉRIQUE COUMANS



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