Federal Geographic Data Committee

Newsletter

Contents

This issue of the FGDC News highlights new leadership of the FGDC and Geospatial One-Stop

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N S D I

National Spatial Data Infrastructure
*Organizations working together
to find, produce, and share geographic data
to solve community problems.*

Staff Director for FGDC Announced

Ivan B.DeLoatch has been selected as the Staff Director of the Federal Geographic Data Committee (FGDC). As Staff Director, he will provide leadership and management for FGDC operations and activities. Ivan has over 23 years of environmental program, technical, and policy experience in the Federal, State, and private sectors. For the past year, he has served as the Acting Staff Director of the FGDC pursuing the vision to build an effective and efficient NSDI. He has also provided new experience and insight to bring Federal, State, local and industry officials together to build alliances necessary to effect the development of a coordinated NSDI that supports the broad geospatial community. Prior to assignment at USGS, he served as Chief of the Data Acquisition Branch in the Environmental Protection Agency's (EPA) Office

of Environmental Information, where he led the effort to establish EPA's Geospatial Program and implemented innovative approaches to acquire key datasets for agency-wide use. He played a central role in EPA's efforts to develop an enterprise approach for the use of geospatial data, tools and technology that includes key internal and external planning activities. ●

NSDI Nodes Form the Core of geodata.gov

Geospatial One-Stop became a reality on June 30, 2003 when it was launched featuring 5,000 Federal, State, and local data sets and offering Federal data partnership opportunities. Metadata from 18 National Spatial Data Infrastruc-ture (NSDI) nodes were integrated in a single easily searchable "one-stop." This portal provides users access to hundreds of data sources and increases the utility of data collected at all levels of government. In addition, Geospatial One-

Stop will expand the partnership opportunities for Federal, State, and local governments to reduce duplication and save money.

Use of Metadata Standards

The core of the Geospatial One-Stop Portal is the NSDI clearing-house nodes which are maintained by the data owners. The metadata standards used to populate these nodes are the magic that make the Portal work.

Adoption and use of the metadata standards by the data owners make it not only possible to incorporate metadata from all levels of government into a single one-stop source for data, but also to create a virtual partnership marketplace for planning data acquisitions where the cost can be shared among Federal, State, and local partners.

Automated Harvesting

Another innovative development within geodata.gov is the implementation of automated metadata harvesting from the NSDI nodes. Initially, geodata.gov was populated by data owners registering their data sets on the Portal, or by team members manually entering web links or loading metadata files into the Portal. Initial testing has been completed that will allow geodata.gov to begin automated harvesting of metadata from NSDI nodes which have registered with the Portal. NSDI node managers will identify which nodes and how frequently they wish geodata.gov to visit in search of updated or new metadata records for featuring on the Portal. Automated harvesting will ensure that the metadata on the Portal are as current as possible, with the least amount of effort and possibility of data entry error.

Automated harvesting will become operational in February 2004.

Data Category Communities

In addition to meeting all of its 2003 eGov goals (see insert box), Geospatial One-Stop also took innovative steps forward in the area of community management of the Portal. Each of the 17 thematic "Channels" within the geodata.gov has been assigned a Channel

National Spatial Data Infrastructure
Geospatial One-Stop
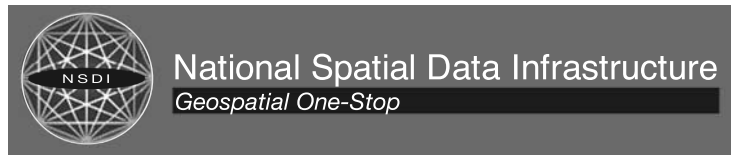
Steward who is an expert in his/her field of geospatial information. The Stewards are in the process of selecting teams of peers to help review metadata added to the Portal. Featured will be those data sets which have demonstrated a level of quality, utility and interest, and innovative web services that deserve particular notice by the user community. More details about these channels and how they work will be featured in the next FGDC newsletter. ●

Geospatial One-Stop Meets 2003 eGov Goals

• Delivered data content standards on September 30, 2003 for:
  - Transportation
  - Elevation
  - Orthoimagery
  - Hydrography
  - Geodetic Control
  - Cadastral
  - Governmental Units
• Operational release of geodata.gov web portal on June 30
• Created a data acquisition marketplace featuring an initial 58 partner opportunities
• Inventoried geospatial metadata government-wide from NSDI nodes

New Geospatial One-Stop Program Director Announced

Hank Garie has been selected to be the Geospatial One-Stop Program Director. Hank will be responsible for the planning, coordination, and implementation of an intergovernmental effort to provide a geospatial information one-stop service in support of the President's Management Agenda initiative for E-government.

Hank has over 16 years experience in building and coordinating GIS in New Jersey State government and local communities. For the past 4 years, he has been serving as the State GIS Coordinator directing a program that promotes the use of GIS technology and development of Statewide spatial data resources. His experience includes leadership as President of the National State Geographic Information Council (NSGIC), an organization of States committed to efficient and effective government through the adoption of geographic information technology.

In addition to practical management and GIS implementation experience at the State level, Hank has worked closely with the Federal Geographic Data Committee (FGDC) and several individual Federal agencies to develop and promote strategies for implementing the National Spatial Data Infrastructure (NSDI).

Madison Avenue Tackles Metadata

Selling the business case for quality

By Christopher Cialek, Minnesota Land Management Center

**POWERED BY
metadata**

The FGDC and its partners invest tremendous energy in metadata, crafting landmark content standards, designing software productivity tools and forging cutting-edge web search applications. For over a decade, the goal has remained consistent: To maximize the value of collective investments in geospatial data by investing in well-formulated descriptions of those data.

Like many States, Minnesota grabbed the metadata mantle early. Yet, despite intense promotion, something in our metadata strategy seemed to be missing. We were not communicating a convincing business case for metadata — one expressing the message that metadata is more than just a good idea. It is an essential element of a mature, effective, responsible geographic information system.

Building the business case

Formulating a coherent business case for metadata — one that resonates with GIS users and their sponsors — is every bit as important as standards, software and search tools. The incentives for investing in metadata development are compelling:

- Attention to metadata is characteristic of skilled craftsmanship: commitment to quality, professionalism, efficiency, effectiveness. It demonstrates the opposite of "cutting corners."

- By incorporating metadata into their business practices, data creators guarantee the long-lasting value of their work. It is a sterling example of "small investment/big payoff."

- While it is true metadata requires up-front investments, they produce big paybacks: enterprisewide efficiencies achieved by eliminating repetitive and unproductive data management tasks.

- Policy-makers, legislators and funders, all advocates of IT
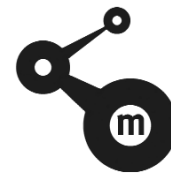
Metadata developers in Minnesota represent a variety of disciplines. Each is encouraged to display the Powered by Metadata *logo to signify their support of quality, standardized data documentation.*

best practices, also benefit from competent data management through metadata. It safeguards the value of their data investments, preventing expensive assets from being undermined, squandered, compromised or lost.

- Funding allocated to support metadata development is money well spent. For public sector practitioners, metadata symbolizes good government: efficient, practical, accessible. It helps to minimize waste, countering the perception that government is inefficient, disorganized or working at cross-purposes.

- Metadata encourages thinking across borders and working together toward a common idea.

Communicating the business case

That last point — metadata breaks down barriers — became the springboard for selling a more comprehensive message about metadata in Minnesota. Armed with an FGDC "Don't Duck Metadata" grant, the Land Management Information Center and the State Archives Department of the Minnesota Historical Society collaborated to create a visible identity to help represent metadata to its various constituencies. Working with a communications professional and graphic design studio, the metadata team set out to design a logo symbolizing the diverse business case for metadata and its value to librarians, archivists, IT professionals, GIS users — information managers of many stripes.

We envisioned a clean design projecting less a corporate image — one tied exclusively to a specific organization — than a brand representing certain innate qualities shared across many organizations. To data creators, managers and administrators, the metadata brand should convey a message of enduring value. To end users, it needs to communicate a sense of confidence.

Brand points

The winning symbol is intended to be displayed on metadata records and websites of any organization that recognizes the value of metadata and practices its use according to an accepted standard. Use of the brand is intended to arouse appealing ideas:

- Brand Promise: metadata makes data quicker to find, simpler to understand, easier to share and use, and safer to trust; with metadata you "know your data."

- Brand Attributes: helpful, practical, sensible, consistent, reliable, trustworthy, efficient, professional, authoritative, accountable, clear, orderly, smart, accessible; not mandating.

- Brand Look: clean, simple, friendly, fresh, inviting, but businesslike; providing a credible, "tight ship" feeling without being intimidating or overly governmental.

Minnesota metadata creators are encouraged to display the brand to identify their commitment. The take-away message we hope to forge between a maturing business case and the brand is straightforward: These data were prepared professionally, with care and according to industry standards, respecting the needs of their end-users, both internal and external. Those users can be confident that they have the information needed to evaluate the quality of our data and their appropriateness of use. Users are thus empowered to put these data resources to the best possible use in the most efficient manner.

Minnesota recognizes three metadata content standards. To learn more about them, visit the State Archives web site at: **www.mnhs.org/ preserve/records/metadata.html** For more information about the State's geospatial metadata standard, including free metadata collection software that works independently or with ESRI's ArcCatalog, visit: **www.lmic.state.mn.us/chouse** or contact the author at 651-297-2488. For more information contact Christopher Cialek at the Minnesota Land Management Information Center. ●

▶ Upcoming Conferences

2004

May 12 – 14	New England GIS	Boxborough, MA
May 23 – 28	ASPRS 2004 Annual Conference	Denver, CO
August 9 – 13	ESRI Annual Conference	San Diego, CA
September 12 – 16	NSGIC	Austin, TN
September 22 – 24	GIS in the Rockies	Denver, CO
November 6 – 10	URISA Annual Conference	Reno, NV

2005

March 19 – 23	ACSM Annual Conference	Las Vegas, NV
April 16 – 25	GSDI 8 Conference	Cairo, Egypt

GIS Day 2003
Federal Agencies show their support of GOS and FGDC

On November 19 and 20, over a thousand people from Federal, State, local governments, and non-governmental organizations, as well as school children from across the Washington, DC region gathered at the Mellon Auditorium and the Ronald Reagan Center to celebrate GIS Day. The focus was on the power of geospatial information to support government decision-making, from the Lewis and Clark Expedition of 200 years ago to the complex data technologies that we know today.

Exhibits from 14 Federal agencies, the Geospatial One-Stop E-Government Initiative and the Federal Geographic Data Committee showcased how the Federal government is using geospatial information technologies such as GOS Portal to partner between agencies and with tribal, State and local governments to meet the needs of customers and do a more effective job of serving all citizens. National Park Service interpreters in costume led visitors back to the days of the Lewis and Clark expedition, bridging the gap of time to remind us of the challenges of information collection in that age.

Information Sessions:

- USGS on *The National Map*
- Census on the MAF/TIGER Enhancement Program
- Geospatial One-Stop Initiative
- GSA on E-Gov initiatives
- EPA on WATERS: Data, Services, and Tools for EPA and our Strategic Partners
- USGS on participation in Federal Enterprise Architecture

- FEMA on HAZUS
- NOAA on Digital Coasts Initiative

FEMA on Multi-Hazard Flood Map Modernization

Public information sessions provided specific information and spirited discussion on Federal geospatial programs and initiatives, and a panel discussion explored issues that would facilitate a new national strategy on using geospatial technology to better enable the business of government, including Federal legislation and best practices in the use of geospatial information. The Federal CIO Council devoted a portion of their regular meeting to GIS and how it supports Federal agency programs.

GIS Day Participating Agencies/ Organizations:

EPA

Department of Health and Human Services

Department of Defense

National Capitol Planning Commission

Department of Energy

Department of Education

Department of Transportation

Small Business Administration

Department of Interior

Department of Commerce

Department of Homeland Security

Department of Agriculture

Department of Justice

Office of Management and Budget

Pictured at the 2004 GIS Day Exhibit, (left to right) Karen Siderelis, GIO, USGS; Ivan Deloatch, staff director, FGDC; and Kim Nelson, Assistant Administrator and CIO — EPA

A New NSDI Search Tool Ready for Surfing

Recently the FGDC launched a new web resource "NSDI Geographic Information Resources" (**www.fgdc.gov/apps/glist.new/index.php**) to provide more extensive information about and access to Federal and non-Federal government programs/activities that produce and use geospatial data in either a national or regional environment. This "Resource" is *not* a one-stop-shop for data. Although some of the resource sites do have data available, the intent is to provide a resource that links together information across government about geospatial data programs/products/activities.

The objective of this effort has been to create a user-friendly, easily up-dateable, and versatile system to present and catalog hundreds of government GIS web resources using a variety of navigable formats, with the most powerful search allowing anyone to search across ALL government geospatial programs.

This "Resource" is built upon information gathered from agencies/organizations web sites. While this 'Resource' does provide links to existing web sites, its most important and powerful feature is that it extracts information from all of these web sites. The search engine is programmed to extract information from all the links on the entry-level page on the web site plus down two additional levels of content. Our current "Resource" has almost 1000 web sites, containing 150,000 URLs, and 55,000 documents. Twice a month the search engine revisits all the web sites and refreshes its content. We need your help keeping this "Resource" maintained and useful to the broad geospatial community. Let us know (**bmckenzi@fgdc.gov**) if there any additional urls that you believe will enhance this community resource. ⬭

Geospatial Standards: Part 1 of 4

Part 1, Introduction

This article begins a four part series of articles describing Geospatial Standards and the standards bodies working on these standards. Parts 2 – 4, which will be published in subsequent issues of the FGDC newsletter, will focus on the main organizations dealing with and developing geospatial standards as follows:

Part 2 *— International Organization for Standardization (ISO) Technical Committee (TC) 211, Geographic information/Geomatics*

Part 3 *— American National Standards Institute (ANSI), Inter-National Committee for Information Technology Standards (INCITS) Technical Committee L1, Geographic Information Systems*

Part 4 *— Federal Geographic Data Committee (FGDC). This*

article will discuss what geospatial standards are and why they matter, identify major standards organizations, and list the characteristics of successful geospatial standards.
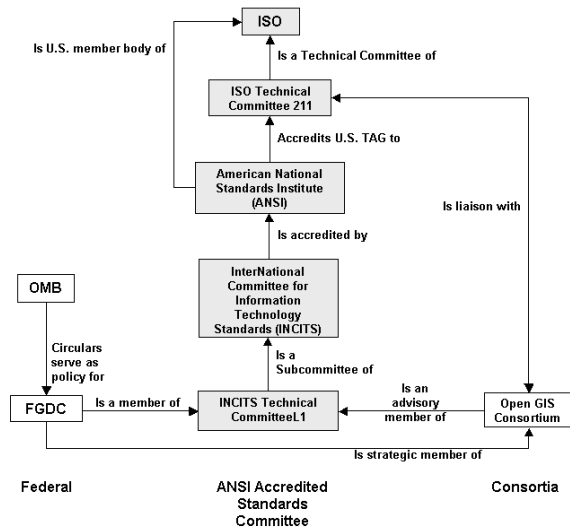
What are Standards?

ISO (**www.iso.org**) defines standards as "documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, procedures, and services are fit for their purpose." Further, "standards contribute to making life simpler, and to increasing the reliability and effectiveness of the goods and services we use." The purpose of geospatial standards is to facilitate data sharing and increase inter-operability among automated geospatial information systems.

Need for Geospatial Standards in Today's World

With Global Positioning System (GPS) receivers in the hands of the average person, there has been an explosion of interest in and utilization of geographic information. Use ranges from hand-held GPS receivers; to automated location-based mobile systems in automobiles and emergency vehicles; to tracking our complex transportation, communications, and utilities networks; to mapping, modeling, and simulating the world in all its thematic glory. At the same time, there has been an exponential increase in the number of public and private decisions involving some form of geographic information. It is estimated that 80% of all data has a locational component. Linking this data

together through relevant geospatial standards should now be considered a priority national goal.

Geospatial Standards Activities

The figure shows the relationship between the FGDC and principal international and national organizations that are involved in geospatial standardization activities.

Several Office of Management and the Budget (OMB) Circulars (**www.whitehouse.gov/omb/circulars**) set policy for Federal use of standards, of which OMB Circulars A-16 and A-119 will be discussed. OMB Circular A-16 affirms and describes the National Spatial Data Infrastructure (NSDI) and establishes the FGDC as the interagency coordinating body for NSDI-related activities. OMB Circular A-119 directs Federal agencies to participate in voluntary consensus standards organizations and use voluntary consensus standards in lieu of government-unique standards except "where inconsistent with law or otherwise impractical."

The FGDC (**www.fgdc.gov**) develops geospatial data standards for the NSDI only when there are no externally developed standards appropriate for Federal use. FGDC standards are developed in consultation and cooperation with State, local, and tribal governments, the private sector and academic community, and, to the extent feasible, the international community. FGDC standards are intended to be national in scope and go beyond individual agencies and the Federal government enterprise. Federal agencies are required to use FGDC standards. State and local agencies are not required to use FGDC standards, but are encouraged to do so to promote data sharing between different levels of government.

American National Standards (ANS) are endorsed by ANSI (**www.ansi.org**) and are national in scope. These standards are voluntary consensus standards that are developed and supported by standards development organizations accredited by ANSI.

ANSI has accredited INCITS (**www.incits.org**) to develop standards for Information and Communications Technologies (ICT). INCITS Technical Committee L1, Geographic Information Systems, adopts or adapts information technology standards, such as those developed by ISO Technical Committee 211, and develops digital geographic data standards that are relevant to Geographic Information Systems (GIS). INCITS L1 membership includes the FGDC, individual FGDC member agencies,

academia, professional societies, software vendors, and systems integrators.

ISO is the primary international standards organization for information technology. Organizations gain access to ISO through their national standards body. ANSI is the U.S. member body of ISO. ISO Technical Committee 211, Geographic information/Geomatics (**www.isotc211.org**) aims to "establish a structured set of standards for information concerning objects or phenomena that are directly or indirectly associated with a location relative to the Earth." Its work will link to appropriate standards for information technology and data where possible, and provide a framework for the development of sector-specific applications using geographic data. INCITS Technical Committee L1 serves as the U.S. Technical Advisory Group (TAG) to ISO Technical Committee 211.

The OpenGIS Consortium (OGC, **www.opengis.org**) goal is to promote and establish interoperability for technologies involving spatial information and location through the development of interface specifications. While OGC is not accredited by ANSI, ANSI's National Standards Strategy for the United States encourages organizations such as OGC to review their objectives to determine where closer interaction with the formal system will help add value to their efforts. OGC has submitted several of its interface specifications for inclusion in ISO Technical Committee 211's program of work. OGC is an advisory member of INCITS Technical Committee L1 and has a liaison relationship with ISO Technical 211.

7

Organizations not shown in Figure 1 that are involved in activities that support geospatial interoperability include the Object Management Group (OMG, **www.omg.org**) for the Unified Modeling Language (UML) and the World Wide Web Consortium (**www.w3c.org**) for eXtensible Markup Language (XML).

Characteristics of Geospatial Standards:

The FGDC Standards Reference Model (**www.fgdc.gov/standards/refmod97.pdf**) provides expectations for FGDC standards and describes characteristics of geospatial standards. They are: *within-scope, future-focused, structured, technology-independent, integrated, evolving, supportable, publicly-available, complete,* and *consistent.*

ANSI's National Standards Strategy for the United States notes that standards developed through successful standards process have the following characteristics:

- Standards are *relevant*, meeting agreed criteria and satisfying real needs by providing added value.

- Standards are *responsive* to the real world; they use available, current technology and do not unnecessarily invalidate existing products or processes.

- Standards are *performance-based,* specifying essential characteristics rather than detailed designs.

ISO Technical Committee 211 standards activities will be discussed in detail in the next issue of the FGDC newsletter.

For more information contact Julie Binder Maitra, FGDC, at **jmaitra@fgdc.gov**, or Norman Andersen, Chair, NCITS L1 at **norman.c.andersen@lmco.com**

GSDI Formalizes Organization

Amid the gothic architecture of St. John's College at historic Cambridge University, the Global Spatial Data Infrastructure (GSDI) Association was formalized in July of 2003. At its July meeting in Cambridge, England, the GSDI Association approved its By-Laws, giving formal structure for the first time to the Association. During its nearly eight centuries, Cambridge University has seen many timeless events take place on its campuses. In the history of mapping and particularly digital spatial data, however, the formation of the GSDI Association marks a significant milestone in the view that people will have of their world.

The GSDI was created in 1996 as a loose gathering of visionaries, dedicated to promoting global spatial data, accessible through the Internet. The primary purpose of the GSDI at that time was to gather mapping and charting

leaders from around the world on an annual basis, to discuss ideas and techniques for promoting the infrastructure to accomplish that task. Five conferences were held in Europe, Africa, Europe, North America, and South America. By the time of the Sixth GSDI Conference in Budapest, Hungary, in September 2002, the Conference was attracting representatives from more than fifty countries.

In August 2002, the GSDI Association began with its incorporation in the Commonwealth of Virginia. In July of 2003, the GSDI Council was invited to hold its meeting at the quadrennial Cambridge Conference. The Cambridge Conference is hosted by the UK Ordinance Survey, and brings together the elite of the mapping world. By inviting the GSDI to hold its meeting during the conference, this elite gathering gave recognition

to GSDI as the leading global proponent of spatial data.

Also approved at the meeting were the dues structure, allowing the GSDI to accept paying members and contributions, and an initial version of the vision, goals, and objectives of the Association. The vision is to "Support all societal needs for access to and use of spatial data." Key elements of the GSDI efforts will include 1) awareness and exchanges on infrastructure issues, 2) standards-based data access/discovery through the Internet, 3) capacity building, 4) SDI development research, and 5) active programs for funding and resources to accomplish its Vision and Goals.

The Association will approve the first draft of its Strategic Implementation Plan at the Seventh GSDI Conference in Bangalore, India, in February 2004.

2003 Cooperative Agreements Program—Award Winners Announced

Fifty-one local, State, Federal, academic, and regional organizations were awarded funding totaling $1,076,000 under the 2003 Cooperative Agreements Program (CAP). Funding categories this year include providing assistance to organizations implementing, providing training and outreach for metadata; extending clearinghouse functionality integrating web mapping service; and establishing a spatial data infrastructure collaborative project between US and Canadian organizations. For information on awarded projects, see the FGDC CAP web page. *The 2004 NSDI CAP Program* this year will be a joint effort between Geospatial One-Stop, FGDC and *The National Map.* Application materials can be found at the FGDC website.
Proposal period closes June 4.

Watch the FGDC website for the announcement of awards expected summer 2004. ◆

NBII Map Services Registry Under Development

As a component of the ongoing development of National Biological Information Infrastructure (NBII) Geospatial Standards for Interoperability, work is currently underway to create a NBII Map Services Registry, which will support the data discovery of the NBII and other Federal Agency Internet mapping applications for NBII users.

There are two primary uses of the Map Services Registry. First, Internet search users looking for geographically referenced biological data and/or map services will benefit from the data contained in the central registry since the data will be searchable not only by NBII search engines, such as those in the NBII Metadata Clearinghouse, but will be exposed to external search engines such as Google through HTML/XML pages.

The metadata standard for these registry entries is based on the Dublin Core standard with additional NBII elements added. These metadata will contain information on the Internet mapping application as it pertains to the compilation of the individual layers, which is significantly different than the metadata required by the Federal Geographic Data Committee (FGDC) on the individual layers. This makes the content of the metadata very important, especially the keyword, common name, and scientific name fields that are additions to the Dublin Core standard.

Second, the Map Services Registry will serve as a source of data for dynamic access by all types of Internet mapping applications. Essentially, registering an individual map service within the registry will expose that map service to all other NBII Map services. The types of applications required to meet this standard will be documented within the NBII Geospatial Standards for Interoperability, but in general will be those that are persistent and not temporary in nature, and those that do not have proprietary or sensitive data that should not be exposed without control.

The use of a NBII Map Services Registry will both increase the overall visibility of NBII Internet Mapping applications, and allow interoperability across NBII Node and partner applications. The prototype of the NBII Map Services Registry was completed in June 2003 and full implementation is scheduled for 2004. For more information about the Map Services Registry, please contact Donna Roy at **droy@usgs.gov** or 703-648-4209.

The NBII (**www.nbii.gov**) is a broad, collaborative program to provide increased access to data and information on the nation's biological resources. Coordinated by the U.S. Geological Survey, the NBII links diverse, high-quality biological databases, information products, and analytical tools maintained by NBII partners and other contributors in government agencies, academic institutions, non-government organizations, and private industry. The NBII Program has developed a biological "profile" of the FGDC Content Standard for Digital Geospatial Metadata that can be used for documenting biological data and information of all types (see **www.nbii.gov/datainfo/metadata/ standards/index.html**). ◆

Yakama Cadastral GIS Project

The Yakama Cadastral/GIS Project (Yakama Model) is a cooperative venture of the BIA, BLM, and Yakama Indian Nation of Washington State. The Project combines the disciplines of Land Surveying, Realty, Cartography, Photogrammetry and Computer Science into a computer database of land status.

Organization:

A BLM Land Surveyor develops the Geographic Coordinate Database (GCDB).

The Surveyor is responsible for acquisition and analysis of all survey records, parcel descriptions, and land conveyances. The cadastral lines are developed to the parcel level and become the base layer of the GIS. The BIA provides access to their Trust Land Records including Title Status Reports (TSR), lease and idle lands records, and the billing records of the Wapato Irrigation Project (WIP). The Yakama Nation maintains a GIS staff consisting of a Coordinator and support personnel. They develop and administer the database of records from the Yakama Nation, BIA, BLM, and Yakima County to produce mapping products.

Program Abilities:

The combination of GCDB with GIS creates an inventory of the cadastral information with the individual parcel attributes yielding a graphic picture of the relationship of land descriptions to the actual lands being described. This project incorporates information from programs dealing with health, housing, zoning, realty, probate, environmental protection, natural resources including forestry, fisheries, wildlife, water resources, and archeology. The information has always been available but not linked together in one information source. Locating these records in one database has dramatically improved access to land information of the different departments as well as provided a means to cross-check and verify the status of the Trust Lands. Conflicts between records of different departments and actual activity in the field are now evaluated within known reference marks. The Project is allowing the front-line managers of the BIA and BLM to address their Trust responsibility in cooperation with the Yakama Nation and direct their limited research and surveying dollars to the areas of most concern. ◗

OpenGIS Consortium Partnership with the FGDC

The OpenGIS Consortium, Inc. (OGC), FGDC and many of FGDC's member agencies have worked together for the last ten years to help build the National Spatial Data Infrastructure. Their common goal is to make it easier for people to find and use geographic information and to make it easier and less expensive for governments and businesses to develop, share and maintain high quality geographic information. Their collaboration contributes to government's effectiveness and the growth of the information economy. OGC members include many government agencies, universities, and key GIS vendors who together define and implement common-use specifications that promote interoperability for real-world applications.

OGC's work complements FGDC's: FGDC focuses on *data consistency* and common approaches to spatial information management. OGC focuses on *technical interoperability,* that is, encodings and interfaces that enable geoprocessing systems to communicate with each other. OGC's industry standards — OpenGISÆ Specifications — help integrate GIS (and other geoprocessing technologies like Earth imaging, facilities management, navigation, etc.) into the web.

FGDC and its agency members have worked with other OGC members on a number of OGC Interoperability Initiatives — testbeds, pilot projects and demonstrations. These include:

- The U.S. Census Bureau sponsored the second phase of the OpenGIS Consortium Critical Infrastructure Protection Initiative (CIPI-2) to advance standards that will help Census make a web-based system for revising State, county and local government unit boundary information. The new system, called WebBAS, will provide a completely online process that governments can use to file quarterly updates. CIPI-2 also helped Census develop a standards-based web server for its Topologically Integrated Geographic Encoding and Referencing (TIGER) data.

- OGC partnered with the US Department of Transportation (Bureau of Transportation Statistics) and FGDC to test and demonstrate the use of FGDC's draft Framework Road Transportation Data Content Standard with software products that comply with the OpenGIS Web Feature Service (WFS) and Geography Markup Language (GML) specifications. The project

produced a mechanism to generate GML from the models in the draft Road Standard and prototyped "translating Web Feature Servers" to convert native content on-the-fly into the common data structure (GML) defined by the Standard. Servers at the State of California, the State of Oregon, Jackson County Oregon, and Siskiyou County California are now serving structurally identical roads data matching the draft Framework Standard.

- The Environmental Protection Agency (EPA), the National Aeronautics and Space Administration (NASA) and other sponsors of the second thread of the OGC Web Services Initiative Phase 1 (OWS-1.2) helped develop new interface specifications in the areas of image handling, sensor web enablement, service chaining, and feature handling. The demonstration showed users easily discovering, accessing, superimposing, and portraying satellite and aerial imagery, vector data, and scientific data stored on servers in Europe, North America, and Australia. New draft OpenGIS Specifications for meta-

data and services were used to implement registries to facilitate discovery of data and geoprocessing services. Interfaces based on OGC's Sensor Web Enablement work enabled discovery of and real-time access to measurements from meteorological, water quality, air quality, and seismic sensors. The OpenGIS Web Coverage Service, providing access to raw raster and 'surface' data, and the Coverage Portrayal Service were demonstrated accessing visible, hyperspectral, and radar imagery.

- In OGC's recently launched OWS-2 testbed, FGDC, NASA and other public and private sector organizations are building on previous work in OGC to extend and "ruggedize" existing and draft OpenGIS standards into a robust and complete interoperability framework for implementing multi-vendor and multi-organizational enterprise solutions in government and business.

Outside of OGC, organizations are collaborating with their data sharing partners in their own small experiments and pilot projects. The lessons are clear:

- Work to harmonize data models and move toward nationally and internationally accepted data content standards.

- Create — and publish — metadata that comply with FGDC's and emerging ISO metadata standards.

- Upgrade online GIS servers with free or low-cost OGC-compliant "plug-ins" or "connectors" that make those servers interoperable with other GISs, portals, and application software.

The logic of doing this becomes inescapable, because we have the constant reminder of the web: HTML and HTTP show the value of software systems "speaking the same language," particularly when that language is not bound to any particular vendor or type of system. We are building the "Spatial Web," and every node in the network increases in value as other nodes are added.

For more information on OpenGIS activities visit **www.opengis.org** ⬬

New Partnership with FGDC and the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA)

The FGDC has recently signed an interagency agreement with the DHS/FEMA to promote the building of the National Spatial Data Infrastructure (NSDI) in tribal communities. This will help tribal governments better protect their communities against all hazards, by allowing better data collection, data sharing, and identification of shortfalls in emergency operations planning.

This important agreement allows FGDC and FEMA to further expand its support of tribal governments

and to enhance the pre-disaster planning in these rural communities. Tribal governments welcome the building of the NSDI as it strengthens their ability to readily update spatial data as the community changes, especially in times of disaster to identify special populations, determining evacuation routes and coordination of resources.

Under the agreement, tribal representatives will be able to attend two new course offerings: "Basic

HAZUS Multi-Hazard" and "Emergency Management Framework for Tribal Governments." The training will be held at FEMA's Emergency Management Institute in Emmitsburg, MD. There is no fee for tuition and lodging in the courses. Travel costs incurred and the small fee for meals are reimbursable. For further information on course details and dates, please contact Bonnie Gallahan, FGDC Tribal Liaison at **bgallahan@usgs.gov** or 703-648-6084. ⬬

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