Final Report

Virginia Metadata Clearinghouse Implementation Support

CAP 2007 Metadata Training Grant

Submitted to the Federal Geographic Data Committee

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Executive Summary

Since 2006, the Commonwealth of Virginia, through Virginia Tech University and the state GIS coordinating office, the Virginia Geographic Information Network (VGIN), has undertaken a concerted effort to increase the metadata proficiency base in Virginia. Since that time, supported by this CAP grant and one other, a body of training materials has been created, the Virginia Metadata Portal has been implemented and over 200 people have been directly trained in the proper creation, maintenance and use of CSDGM compliant metadata. The 2007 fiscal year grant was focused specifically on training state agencies and local governments, the spatial data owners, how to use the Virginia Metadata Portal. These classes rely heavily on the original training materials supplemented with material specific to portal operation created under this grant. The program was so successful that VGIN will need to continue the training program with quarterly metadata classes in order to support the metadata training demand.

Project Narrative

Background

The Virginia Geospatial Extension Program, in collaboration with the Virginia Geographic Information Network [VGIN] (a division of the Virginia Information Technologies Agency [VITA]), and with the support of James Wilson of James Madison University, was provided funding through an FGDC 2007 CAP Grant to support the implementation of a Virginia Metadata Portal.
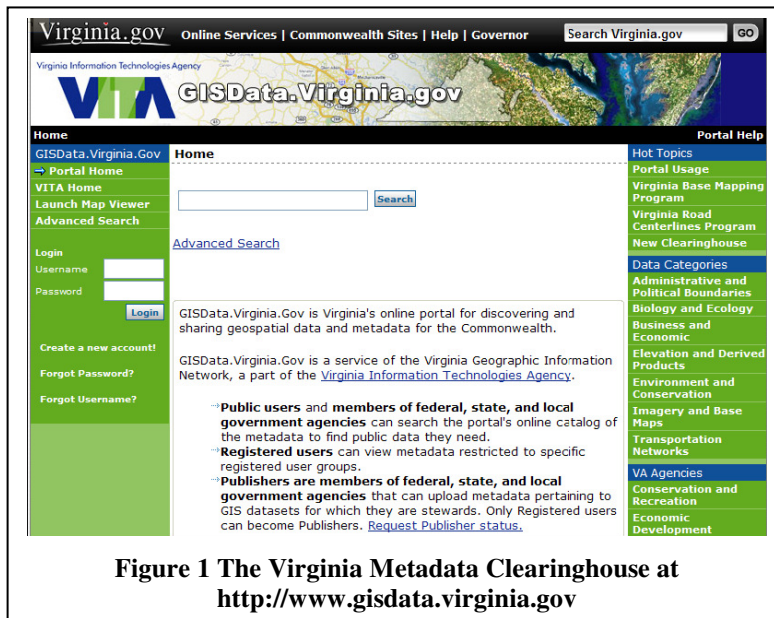

**Figure 1 The Virginia Metadata Clearinghouse at
http://www.gisdata.virginia.gov**

The Virginia Metadata Portal, implemented by VGIN as part of the matching contribution to the grant, is titled GISData.Virginia.gov. It is based on the ESRI Metadata Toolkit, which also provides the functionality of the Federal Geospatial One-Stop at www.geodata.gov. The Virginia portal came online in July 2007. The grant funds were used to provide training on the proper use of the portal and other items in support of the implementation of the Virginia portal. This document provides a summary of the progress and outcomes associated with the training project.

Training Specifics

Based on the experience gained during the 2006 Workshops, funded under FGDC NSDI Cooperative Agreement Number 06HQAG0112, we modified the training and organized it around two types of workshops. The first, titled *"Metadata Creator Workshop,"* mirrors the 2006 efforts and used much of the same training material. The Metadata Creator Workshop is comprehensive in nature, using lecture and exercises covering the nature of metadata, the purpose of metadata and understanding the various metadata standards. The workshop also teaches metadata best practices and introduces metadata clearinghouses.

The second type of workshop, titled *"Metadata Retreat,"* is a hands-on session that encourages attendees to bring their own data. Instructors assist attendees in developing the metadata records and uploading those records to the Virginia Portal. A copy of the agenda for both training types is attached.

Using this training curriculum, eight metadata workshops were provided to local, regional, and state government personnel in August 2007. A summary is listed below:

Workshop Type	Date	Location	Resulting Publishers	Instructors
Metadata Creator	1Aug07	Virginia Beach, VA	2	J. McGee, J. Wilson, L. Hornbaker
Metadata Retreat	2Aug07	Richmond, VA	1*	J. McGee, L. Hornbaker
Metadata Retreat	3Aug07	Richmond, VA	1*	J. McGee, L. Hornbaker
Metadata Retreat	7Aug07	Harrisonburg, VA	1	J. Wilson, L. Hornbaker
Metadata Retreat	8Aug07	Blacksburg, VA	7	J. McGee, L. Hornbaker
Metadata Retreat	9Aug07	Danville, VA	8	J. McGee, L. Hornbaker
Metadata Creator	14Aug07	Richmond, VA	6	J. McGee, L. Hornbaker
Metadata Retreat	15Aug07	Richmond, VA	9	L. Hornbaker

Table 1: 2007 Workshop Locations. (***Note: Some attendees were already registered as Publishers**)

As reported in the Interim Report, the training was well received and increased the level of metadata proficiency in the state. Immediately after these classes were completed, VGIN felt the need to reorganize the training from general metadata training to training that focused on uploading records to the newly implemented Virginia Metadata Portal. This was due to the fact that VGIN began enforcing the reporting of spatial data holdings as required by Section 2.2-2027.B.7 of the Code of Virginia:

> *"7. …All state agencies that maintain GIS databases shall report to the Division the details of the data that they develop, acquire, and maintain. Each agency shall submit quarterly reports to the Division specifying all updates to existing data as well as all data development and acquisition currently in progress. ..."*

The *"Metadata Creator Workshop,"* devoted the morning to basic metadata information and the early afternoon to basic metadata record creation. This timeline did not leave enough time to write records for attendee layers and learn to upload those records to the portal. While the *"Metadata Retreat,"* was designed to focus on record creation and upload to the portal, it did not include instruction in standards compliance, Additionally, users could not devote two days to the training. Thus, VGIN created a *"Comprehensive Metadata Class,"* combining the most successful aspects of the Creator and Retreat workshops into a single 7 hour training session. The morning of the comprehensive class consists of basic metadata education, standards compliance and metadata best practices, while the afternoon of each session focuses on hands-on exercises developing metadata for the attendee's data and experience in uploading the records created in the exercise to the portal.

The comprehensive class ran smoothly but it soon became apparent that the pace needed to cover the entire body of metadata material required that some of the most basic material be dropped from the class or covered only lightly. In turn, this meant that class attendees needed, as a prerequisite, a basic level of metadata experience. Unfortunately, some users reported that the class pace was too fast. They were not able to keep up and ultimately felt dissatisfied with the level of metadata knowledge gained.

To remedy the situation, the classes were again broken into two levels. The *"Metadata – Beginner"* class covers basic metadata understanding and brings the attendees up to the point of writing a basic metadata record. The *"Metadata – Intermediate"* class dispenses with some of the introductory material and focuses on standards compliance, developing a sound metadata program in the organization, writing well structured metadata on the attendees own data and uploading those records to the portal. Lastly a 4 hour *"Metadata – Bootcamp"* class has been created for advanced users who only need to understand the Virginia Spatial Metadata Lite standard and how to upload records to the Virginia Metadata Portal.

The ability to modify the curriculum to meet the specific needs of the attendees is a testament to the strength and flexibility of the materials created to support the training. Each module can be taught individually or together with other modules. The table below illustrates how the curriculum modules are divided amongst the current class structure.

Modified Virginia Metadata Curriculum						
Metadata - Basic						
	Metadata - Intermediate					(Time Permitted)
	(Review)			Metadata- Bootcamp		
Intro - What is Geospatial Metadata?	The Value of Geospatial Metadata	Why Standardize Metadata?	Writing Basic Metadata	CSDGM & Virginia Spatial Metadata Lite	Metadata for Your Data / Uploading to the Portal	Third Party Validation and Editing Tools

Table 2: Lesson Distribution.

Seven classes have been taught using the revised curriculums. A summary is listed below:

Workshop Type	Date	Location	Resulting Publishers	Instructors
Comprehensive Metadata Class	10Jan08	Chester, VA	8	L. Hornbaker
Comprehensive Metadata Class	11Jan08	Chester, VA	9	L. Hornbaker
Comprehensive Metadata Class	25Jan08	Abingdon, VA	6	L. Hornbaker
Comprehensive Metadata Class	28Jan08	Chesapeake, VA	6	L. Hornbaker
Metadata - Intermediate	21Feb08	Chester, VA	3	L. Hornbaker
Metadata - Basic	22Feb08	Chester, VA	8	L. Hornbaker
Metadata - Bootcamp	1Apr08	Richmond, VA	4	L. Hornbaker

Table 3: 2008 Workshop Locations.

In the future, most of the courses will be taught as a series of two classes on two separate days, "*Metadata – Beginner"* on the first day and "*Metadata – Intermediate"* on the second day. This will allow attendees with little or no metadata experience to attend the Beginner class and then stay for the intermediate class on the following day, should they so desire. It will also allow more advanced users the opportunity to attend the Intermediate class without covering old material.

All of the curriculum materials are available on the Virginia Metadata Portal at http://gisdata.virginia.gov/Portal/. The materials are under the "Portal Usage" channel on the right hand side of the home page. Of particular interest is the availability of the CD-Rom distributed at the class, which is downloadable as an iso image.

Outcomes and Impacts

The first measurable outcome is the numbers of individuals given the metadata training. The training was attended by 66 individuals in 2007. Even with smaller, more focused classes, an additional 40 individuals attended in 2008. Combined with the 2006 training effort, approximately 200 people have directly benefited from the Virginia Metadata training. The results in a solid base of individuals in Virginia with sound metadata knowledge and experience.

Second, considering that the training was undertaken in support of the newly implemented Virginia Metadata Portal, metrics on the use of the portal are also germane. As of the date of this report, the portal contains 99 metadata records covering a wide variety of spatial data information. This number is growing weekly as State agencies begin reporting their spatial data holdings. Currently, the portal has 95 individuals with publishing rights. Most represent local and state entities but there are several publishers from Federal agencies.

Third, many useful materials were developed to support this training. Developed for the 2006 Training sessions, the basic curriculum materials were reused for the 2007-2008 program. In 2007, several other materials were created specific to using the Virginia

Metadata Portal. These include a "Virginia Metadata Portal User Guide", an update to the "Virginia Spatial Metadata Lite" metadata specification and a "Portal Publishing Quickstart Guide". In addition, several shorter guides were created specifically to help publishers with specific issues. Two examples of these materials are "Choosing the appropriate upload methodology" and "Using the Theme Keywords data element properly.". All of these materials are available on the Virginia Metadata Portal at http://gisdata.virginia.gov/Portal/. The materials are under the "Portal Usage" channel on the right hand side.

Fourth, evaluating the results of the 2006 effort indicated a need to promote the notion of metadata along with the education provided by the workshops. Attached please find a copy of *"Mind over Metadata,"* the brochure created to fill this need.

The fifth impact is somewhat more subjective. During the training, attendees began to understand the importance of metadata in data discovery phase of a mapping project. They wanted to make sure that their metadata would be available to assist others in those efforts. To meet that goal, they requested assistance in publishing their metadata as widely as possible, often asking if the portal will appear on standard Internet search engines. Since then, the Virginia Metadata Portal has been successfully registered as a repository with the Geospatial One-Stop and has undergone several harvesting cycles. This places Virginia metadata on a Federal metadata site.

The final impact however, is the most important. A significant metadata "buzz" was created during the previous Virginia Metadata training and strengthened with the implementation of the portal and the training efforts undertaken via this grant award. As a perfect example of the breadth of exposure, James Madison University sponsors a program titled "Geospatial Semester" that engages high school students in using geospatial technology as part of a high school course. This program will use the Virginia Metadata Portal and the metadata contact from the Virginia Department of Emergency Management for projects.

To date, the portal also records some 186 individuals who have become "registered users" from all over the country. These are in addition to the 95 publishers listed on the portal. Since a user does not have to register to search the portal, it can be assumed that the numbers of people using the metadata portal is even greater. Local governments and state agencies have continued to request additional metadata training opportunities. Publishing one's metadata on the Virginia Portal has become an important goal of many local governments and state agencies.

Next Steps

VGIN is directly mandated in section 2.2-2027.B.7 of the Code of Virginia to:

> *"7. Compile a data catalog consisting of descriptions of*
> *GIS coverages maintained by individual state and local*
> *government agencies;"*

The Virginia Metadata Portal fills that mandate. The key to a useful metadata portal, however, is a good quantity of quality metadata. For this reason, anyone wanting to publish metadata to the portal is required to complete the metadata training. VGIN has

determined that regular quarterly training classes will be needed to meet the demand and will hold classes in February, May, August and November of each year. We expect continued requests for the training by state agencies but will continue to encourage local governments and higher education data owners to take the training and upload records.

We consider the training developed under the grant as successful. The Interim Report on this grant reported only moderate success in translating training into actual use of the portal. We can now say that publishing metadata to the portal is successful and it appears that many data users are finding the portal in their data discovery efforts. A large portion of this success is due to the Code of Virginia mandate. As it requires state agencies to apply resources to meet that mandate, this turns the portal into a good repository of Virginia state agency metadata.

For publishers not under the mandate, some barriers still exist. Informal discussions with training attendees has helped us identify the most important barriers to creating metadata and placing it on the portal.

1. There is still a perceived "lack of time/resources" to develop metadata. Small GIS operations are particularly susceptible to this barrier. This generally applies to current data holdings and developing metadata on legacy data will continue to be an issue. On the positive side, we have seen a marked increase in organizations including metadata as a deliverable in data contracts.

   a. Planned Action – The training will continue to focus on the importance of metadata to the GIS operation and reinforce the notion that including metadata in the data development cycle is critical. We must probably accept that creating metadata for legacy data is difficult at best. The continued success and use of the portal will encourage development and maintenance of metadata by all entities, both state and local.

   b. Possible Action – If a "Retreat style" workshop is requested to help with developing Metadata for existing holdings, we can easily work that into the training schedule.

   c. Indirect Action – As the use of metadata and the Virginia portal gains momentum, participation in portal will begin to be perceived as "important" in advertising and distributing spatial data. This can help to raise the level of resources applied.

2. Inconsistencies in the Metadata Portal upload process causes uploading to be difficult and continues to frustrate users. The most troubling problem is that there are two separate metadata validation processes that differ depending on whether the file is uploaded via ArcCatalog or as a file using the portal's "Upload Metadata" utility. These differences are separate and distinct from the CSDGM Standard. The portal's "Create Metadata" webform also has a set of constraints different from either of the upload processes.

   a. Planned Action – A series of materials created by VGIN, along with ESRI's own documentation, will be used to make publishers aware of the differences. The training will help to overcome the frustration by teaching the proper use of the tools.

Feedback on Cooperative Agreements Program (CAP)

The Metadata Training workshops have been extremely well received in Virginia. The FGDC CAP grant has, to date, basically served as a seed grant to help Virginia gain momentum with respect to metadata training and encourage implementation measures. The program now has a significant amount of momentum and regular training is now on the schedule.

The strengths of the CAP program are that the program remains flexible enough to accommodate the variety of needs of different states. Another strength of the program is that there are already some tremendous resources available that can be easily customized and applied to support the variety of contexts and needs of the participating organizations.

Specific to the metadata workshop, the FGDC has contact people in place that are familiar with the participant's work. These contact people are able to provide additional support and exposure to the latest metadata news and innovations through conference calls. In addition, the point of contact is very responsive to email and phone inquiries. Our program felt as though there was a support structure available to us when we required it.

The main limitation, identified in 2006 and continuing in 2007, is not a limitation of the CAP program, but with the metadata development tool options. Both participants and workshop leaders agree that metadata development tools are not "as far along" as they could be. This shortcoming is, unfortunately, outside of the scope of the CAP program.