NSDI Cooperative Agreements Program
Metadata Training & Outreach Project
<u>Final Project Report</u>

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Final Report

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Project Narrative

The goals of the project were to 1) assist state and local agencies in creating FGDC-compliant metadata records; 2) provide training to these agencies, if needed; 3) provide online metadata tools for use by these agencies; 4) broaden exposure to datasets held by these agencies via serving their metadata on the RGIS NSDI clearinghouse node; and 5) promote and encourage development of metadata at state and local meetings. This latter aim included demonstrating the online metadata tools and recognizing the benefits of making agencies' metadata available to a broader user community. The project focused on state and local agencies within New Mexico, including environment, water, public health, transportation, forestry, geology, mining/minerals, and biology.

This project was composed of several key elements. These included technical considerations that required some programming tasks; conducting a survey of capabilities and needs of project partners regarding developing and serving metadata records; and providing metadata training via several workshops. Some of these tasks were performed simultaneously and some were approached sequentially. One of the initial goals was to provide online metadata tools so that partners could build their records and submit them directly to the Resource Geographic Information System (RGIS) clearinghouse. One of the barriers encountered was that these tools could not be provided online in a way that would net a satisfactory result. Instead, the project team turned to writing a program that would accept multiple metadata records and format them so they would parse and index correctly for inclusion on the clearinghouse node. This exercise proved to be the primary weakness in the project. The expectations that were described in the proposal for streamlining metadata development and presentation to the clearinghouse were not entirely successful.

The most successful aspect of the project was the outreach and training component. The partners were very eager and willing to be trained in how to build their metadata. Their primary interest was to receive training using the ArcCatalog tool (training using the ArcView Metadata

Collector tool also was offered). The workshops were well-attended and the team received positive feedback from the participants. Details are provided in the section below.

One of the challenges to be addressed in the future is to build the links between partner organizations so that all their metadata can be accessed via the RGIS clearinghouse. Many partners, while serving metadata for internal use, are not in a position to provide access to those outside their organizations. The team also observed inconsistencies in metadata provided by some partners. In addition, the partner organizations face a resource challenge in building and maintaining metadata. These resources are basically financial, which includes devoting person hours for the task.

The major organizational outcome that came out of this project relates to the development of metadata conversion capabilities that will ultimately be used for the back-end processing of metadata records that are submitted by organizational partners, either via disk, or ultimately through online methods. These capabilities were developed in such a way that they can be run from a variety of interfaces, including direct execution from the command prompt, through automated execution triggered by interaction with a web page, or scheduled execution through regular system processes.

Metadata training and outreach assistance

Four one-day metadata training classes were held which were attended by 36 individuals representing 19 organizations. It is interesting to note that all sectors were represented, including tribal government and private industry. Table 1 summarizes attendance at the workshops.

Table 1. List of organizations and number of individuals who received metadata training.

Organizations	Number of Individuals
NM Department of Energy, Minerals, & Natural Resources	1
NM Department of Transportation	1
New Mexico Department of Health	1
New Mexico Office of the State Engineer	4
NM Bureau of Geology and Mineral Resources	1
Bernalillo County	2
Middle Rio Grande Council of Governments	1
University of New Mexico	5
US Army Corps of Engineers	2
US Forest Service	4
Bureau of Land Management	3
U.S. Geological Survey	1
Navajo Nation	2
Sandia National Laboratories	2
Public Service Company of New Mexico	1
SAIC	2
Daggett Enterprises	1
Architectural Research Consultants	1
Environmental Geo	1
TOTAL	**36**

The sessions were "hands-on" laboratory classes where each person was assigned to a computer and experienced first-hand how to build an FGDC-compliant metadata record. Each participant received a comprehensive workbook that included sections on the FGDC Content Standard for Digital Geospatial Metadata, examples of compliant metadata, descriptions of metadata tools, guidelines on building a record, and links to helpful hints. Levels of proficiency of the participants varied from no experience with metadata to those with some experience building a record. The classes were conducted using ArcCatalog because most of the participants requested training using this tool.

Status of Metadata Service

Eighty new metadata records were added to the RGIS clearinghouse as a direct result of this project. These came from the New Mexico Office of the State Engineer and were provided in an XML format. Other metadata records were developed by participating partners, but they are not being served via RGIS and the actual number is not known.

The metadata records provided by the OSE were added to the web accessible directory (as a specific sub-directory) that has been registered with the Geospatial One-Stop for RGIS.

The challenge in maintaining a metadata service for organizations who received assistance through this project is basically financial. This is key to sustaining accurate and up-to-date metadata in RGIS that are provided by partner agencies. The approach so far has been based on casual or informal cooperation that is primarily agreed orally. No written MOUs, CAs, or other similar mechanisms have been implemented. In future, more formal arrangements might be investigated. The reluctance at this point stems from the lack of funds for both parties to sustain a regular metadata program. In short, financial assistance is desired.

Next Steps

As with previous Cooperative Agreements awarded to EDAC, the activities of the project are expected to continue. EDAC already is refining its clearinghouse and web mapping capabilities to improve services to the GIT community. Metadata training has been conducted on an "as needed" basis for the past seven years. Inquiries have been received regarding a schedule for future sessions.

The capabilities developed and knowledge gained regarding automated metadata processing will be integrated into the next version of RGIS, currently under development. These activities will include the converting over 2000 existing metadata records to XML, and developing metadata QA/QC tools for infusing over 10000 additional XML metadata records anticipated for addition to RGIS in the near future.

Organizationally, the greatest difficulty the project encountered is management of legacy metadata, some of which is nearly a decade old. Unfortunately, the records, while valid when they were created, now encounter problems when trying to convert them to current XML standard formats. This issue reappears in a different form when working with organizational partners that are using different tools to create metadata, each of which seems to produce slightly different metadata, which ideally would need to be parsed into a common representation for efficient use within the metadata management system.

One major area of work in this project was an attempt to reconcile metadata records that had gone through MP's conversion process into XML against an XML schema for the FGDC standard. Additional tools from FGDC to perform validation and conversion based upon the XML schema for the metadata would be helpful.

The ability to register "nested" web accessible directories within Geospatial One-stop would be nice. In the RGIS clearinghouse operation a high-level metadata collection is maintained, but occasionally there is a need to call out a subset of metadata for separate registration (as was done with the metadata provided by the OSE). With the migration to GOS2 the previously registered nested metadata collections were identified as duplicate entries that had to be eliminated. While recognizing that the storage and indexing of redundant metadata records is undesirable, the addition of a capability to GOS to separately register subsets of an existing collection would be useful.

Feedback on Cooperative Agreements Program

The Earth Data Analysis Center (EDAC) has been fortunate in receiving several of the FGDC Cooperative Agreement awards. Each award was valuable because it offered opportunities that might otherwise not have been possible due to resource and technology limitations at EDAC. As a result, EDAC has become a leader in metadata development and training, clearinghouse services, and web mapping services in the state. Overall, the CAP makes a difference because it provides guidance and seed money that allows for a network of experienced players to expand their expertise to a broader community, thereby growing the vision of FGDC.

The level of funding received for this project was sufficient for the training and outreach, but turned out not to support all of the technical requirements for accomplishing the vision for streamlining submission of records to the Clearinghouse. This is partly due to the team's under estimation of the complexity of this task.

The implementation of this project was delayed because of administrative barriers. The University of New Mexico incorrectly listed EDAC as the primary organization rather than the University itself. The cooperative agreement was written to indicate EDAC as the legal entity for drawing funds for this project, but EDAC had no legal authorization to do so within the University's infrastructure. USGS maintained that it could not change the agreement. A solution finally was found, but this delayed the project by several months.

EDAC looks forward to participating in future Cooperative Agreement opportunities. However, one of the drawbacks recently is the cost-share requirement. Though EDAC has provided cost-share in past awards, the University is becoming increasingly negative on this issue.

In the future we would more carefully scope the magnitude of the metadata validation and conversion process to properly reflect the magnitude of the problem.