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Final Project Report: Montana MSDI/NSDI Transportation Stewardship

Organization:

State of Montana, Department of Administration/Information Technology Services Division/
Base Map Service Center

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<http://giscoordination.mt.gov/default.asp>

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Collaborating Organizations: U.S. Forest Service, U.S. Bureau of Land Management, Confederated Salish and Kootenai Tribes, MT Dept. of Transportation, MT Dept. of Natural Resources, Counties of Montana

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Data themes: Transportation features (roads centerlines, trails, railroads, airports) and tables (address ranges, road attributes)

Executive Summary: The outcome of the 2009 Montana MSDI/NSDI CAP grant for Transportation Stewardship was successful overall with all but one goal completed as proposed. This grant allowed the Base Map Service Center (BMSC) to continue to work towards a federated approach with the GIS community in Montana. Part of this collaborative strategy is securing data-sharing agreements with local data providers to the framework transportation dataset. Progress was made with five agreements in place and several others under consideration by providers. Though agreements were not secured with all data providers, positive relationships were made and will grow and ultimately lead to data-sharing partnerships. Other successes of this grant enabled the completion of templates to streamline new data review, processing and loading the framework; developed web services; and, provided reporting and outreach to the GIS community.

Project Narrative:

a) The Montana Transportation Framework project contains roads centerlines, trails, railroads and airport features, and address ranges and road attributes tables encompassing the State of Montana. A federated approach is used to integrate new data where each provider (federal, tribal, state, county, city, private) manages its datasets to suit its business needs, and the new data gets forwarded to the BMSC where it undergoes quality control/assurance processes then gets integrated into the Framework and made publically available at the BMSC website (<http://giscoordination.mt.gov/default.asp>).

The goals of this project were to improve data quality, expand sustainable operational capabilities and foster long-term partnerships between the state and data providers, as well as the state and federal partners. The deliverables and outcomes are summarized below:

Deliverable 1: Documented relationships and methodologies with data providers to insure maintainability, further collaboration and improve data sharing to reduce duplication of effort, improve data quality and reduce costs related to data development.

This project resulted in building positive relationships through outreach to data providers. We anticipated securing data-sharing agreements (MOU) with at least 40 (of 56) counties to provide the BMSC with updated road centerline and related data at scheduled intervals. We conducted personal outreach to six counties and one tribal nation, as well as telephone and email communication to others, and the BMSC has secured five MOUs. The agreements will improve overall efficiency of workflows and reduced effort required to review and load new datasets. This is an ongoing effort that will take more time to complete. Relationships were developed for long-term partnerships and scheduled framework updates. In some cases, agreements weren't signed but providers indicated that they'll forward updated datasets as changes warrant. The BMSC would like to see cost/benefit strategies from other projects to encourage data sharing. In conjunction with the Montana Department of Commerce, the state's authorized Broadband agency, the BMSC is seeking additional pass-thru funding for 16 rural counties and 7 tribal nations, that will provide additional incentive for those entities to enter in to data sharing agreements.

Deliverable 2: Automate integration and interoperability methodologies with data providers.

Spatial ETL (Extract, Translate, Load) templates were developed using Safe Software's FME (Feature Manipulation Engine) product to load new provider data into the framework feature classes and tables. These templates have functioned well to extract records, transform from native format into the standard format and move into the framework tables. The templates can be modified to accommodate differing data formats. This has increased the efficiency of integrating new data by reducing the time previously required to manipulate and load it.

Task 3: Develop web services to allow data transfer from BMSC to stakeholders.

Roads and Roads Names web map services were developed on ArcGIS Server and published in February. The two services allow users to remotely access and use road lines and/or road names, depending on needs. These first-generation releases were deployed as a Web Map Service (WMS), which don't allow transfer of data. Work is in progress on the next generation, which will be expanded to contain a Web Feature Service (WFS) which permits export of published services data to geodatabase feature classes. This will allow data transfer from the BMSC to the USGS, Census and other stakeholders. The current services may be accessed from ArcMap/ArcCatalog at:

http://gisservice.mt.gov/arcgis/services/MSDI_Framework/

Deliverable 4: Transfer Airports feature class from Critical Structures Framework to Transportation Framework.

The Airports feature class was moved into the Transportation Framework and will be available in the next published version in early August.

Deliverable 5: Reporting and outreach.

Two presentations were given over the course of this grant: One on FME overview and processes was given at the Montana Association of Geographic Information Professionals (MAGIP) 2009 Fall Technical Session in Kalispell. The other presentation was on the interoperability solutions developed for this grant and was provided to the MAGIP 2010 Intermountain Conference in Bozeman in April.

The Framework dataset, metadata and web services are publically available for no charge at the BMSC website (<http://giscoordination.mt.gov>), are discoverable through the Montana GIS Portal (<http://gisportal.msl.mt.gov>), and through the Geospatial One-Stop portal (<http://gos2.geodata.gov/wps/portal/gos>).

b) To meet the needs of The National Map (TNM) as well as a National data store accessed through the Geospatial One-Stop portal, the U.S. Geological Survey (USGS) will access the Montana Transportation Framework data on an as-needed basis. The data and metadata listed above will be provided without restriction to USGS. The metadata is currently registered and available at Geospatial One-Stop. The Framework dataset will provide cartographic, address location, modeling and geocoding capabilities to TNM as well as to other national data stores. In the current environment, a user requirement at the national level is to easily obtain standardized and clean datasets considered the “best-available” that were contributed by the state and compiled from local-level data.

c) Updated datasets are published on a quarterly basis and made available for download via a dedicated Transportation Framework Coordinator. The USGS will determine the schedule of data harvest for inclusion into TNM.

d) The main challenge encountered with this project related to data provider’s institutional/organizational structure was attaining the amount of data-sharing agreements (MOUs) proposed. We anticipated negotiating an MOU with at least 40 of 56 counties, but the process moved forward at a slower pace than expected. This is an ongoing effort that will take more encouragement to make long-tem partnerships.

e) There is currently no need for a formal data sharing agreement between the USGS and the state. The USGS appreciates the outstanding efforts of the state of Montana to build, maintain and provide stewardship of a "best practices" transportation database which serves the needs of the state and will eventually facilitate a national transportation strategy. These combined

efforts formulate a partnership to build state data that can be used at all levels of government in which we have yet to realize all of the benefits.

Feedback on Cooperative Agreement Program

What are the program strengths and weaknesses?

The greatest program strength is that it exists and creates the opportunity for states to contribute to the national effort of collaboration and data sharing. It allowed us to develop relationships with local data providers, which in turn provides a pathway to move authoritative local data to the NSDI.

Where does the program make a difference?

It improves the quality of data available at the national level by facilitating the movement of local authoritative data to the state then to the national level. It also helped to foster relationships with local data providers and emphasize the importance of data sharing which in turn benefits the federal level.

Was the assistance you received sufficient or effective?

Yes, the financial assistance we requested was received and was effective to meet our goals.

What would you recommend doing differently?

Enhance communication between the state and national stewards for scheduled harvest of state data.

Are there factors that are missing or additional needs that should be considered?

No.

Are there program management concerns that need to be addressed?

No.

If you were to do this again, what would you do differently?

Focus more effort initially on developing relationships to partner with local data providers and allow for additional time and funding for more outreach visits.