



The OpenMNND Project
A Minnesota - North Dakota Application Development Collaborative



2006 FGDC CAP Grant
(Category 2 - Framework Client Development Project)

Interim Report

04/25/2007

Agreement #: 06HQAG0115

Project Title: Collaborative Client Software Development for Local Governments

Organization:

Richland County, ND
413 3rd AVE N
Wahpeton, ND

<http://mylocalgov.com/richlandcountynd/Index.asp?section=1>

Project Leader:

Matthew Syvertson
701-642-7860

matthews@co.richland.nd.us

Collaborating Organizations:

Randy Knippel, GIS Manager
Dakota County, MN
Western Service Center
14955 Galaxie Ave.

Apple Valley, MN 55124

www.co.dakota.mn.us

Dr. Nancy Read, Technical Services
Metropolitan Mosquito Control District
2099 University Ave. W.
St. Paul, MN 55104

<http://www.mmcd.org/>

David Bitner, GIS Coordinator
Metropolitan Airports Commission

6040 28th Ave S.
Minneapolis, MN 55450
<http://www.macnoise.com/>

Bob Nutsch, GIS Coordinator
State of North Dakota GIS
600 E. Boulevard Ave, Dept. 112
Bismarck, ND 58505
<http://www.nd.gov/gis/>

Bob Basques, GIS Application Developer
City of St. Paul, MN
1000 City Hall Annex
25 West Fourth Street
St. Paul, MN 55102
<http://www.ci.stpaul.mn.us/>

Brian Fischer, GIS Project Manger
Houston Engineering, Inc.
6901 East Fish Lake Road, Suite 140
Maple Grove, MN 55369
www.houstonengineeringinc.com

Project Narrative

Richland County, ND and its collaborators have been awarded a FGDC 06' CAP grant to improve the ability of local government agencies to deliver enhanced public access to GIS data through the development of client applications providing a consistent look and feel across jurisdictions. These development efforts center on providing public users greater access to data from multiple agencies without the need for learning new Graphical User Interfaces (GUI) or presentation techniques. Also contained within the scope of this project is the development of client-side interactive mapping tools delivering operational and functional consistency between multiple sites, making it easier for the general public to understand and use framework data. Further aims of this project include designing and constructing a software architecture that allows for ease of future development and integration of additional specific GIS applications, thereby providing increased use of Framework data. Finally, the scope of this project aims at collaboratively designing and developing client-side code for MapServer to provide local governments a cost-effect method to share cadastral framework data and use WFS data services.

The project has taken the name of OpenMNND to represent collaboration for shared application development between organizations in Minnesota and North Dakota. The project team has created a website (www.openmnnd.org) providing basic information about the project. The project team has completed its research on developing client software and has chosen to build upon a client framework started by the City of St. Paul, MN called GeoMOOSE.

GeoMOOSE (<http://www.geomoose.org/moose>), is the official Open Source project that will continue after the FGDC grant funding ends. The GeoMOOSE website is set up to house the infrastructure needed for an Open Source project to grow. The OpenMNND project is currently adding functionality to the GeoMOOSE framework that was identified in our grant and is promoting the shared application development and shared data services amongst local government organizations.

One of the challenges we are finding up front is the lack of education amongst local governments to understand OGC specifications such as WMS and WFS. Most GIS users have not considered using data services and rely on storing all data locally. Our goal is to change the way local governments think about framework data and demonstrate how they can leverage data services with our client software. There are also very few WFS cadastral data services available for testing within our geographic area.

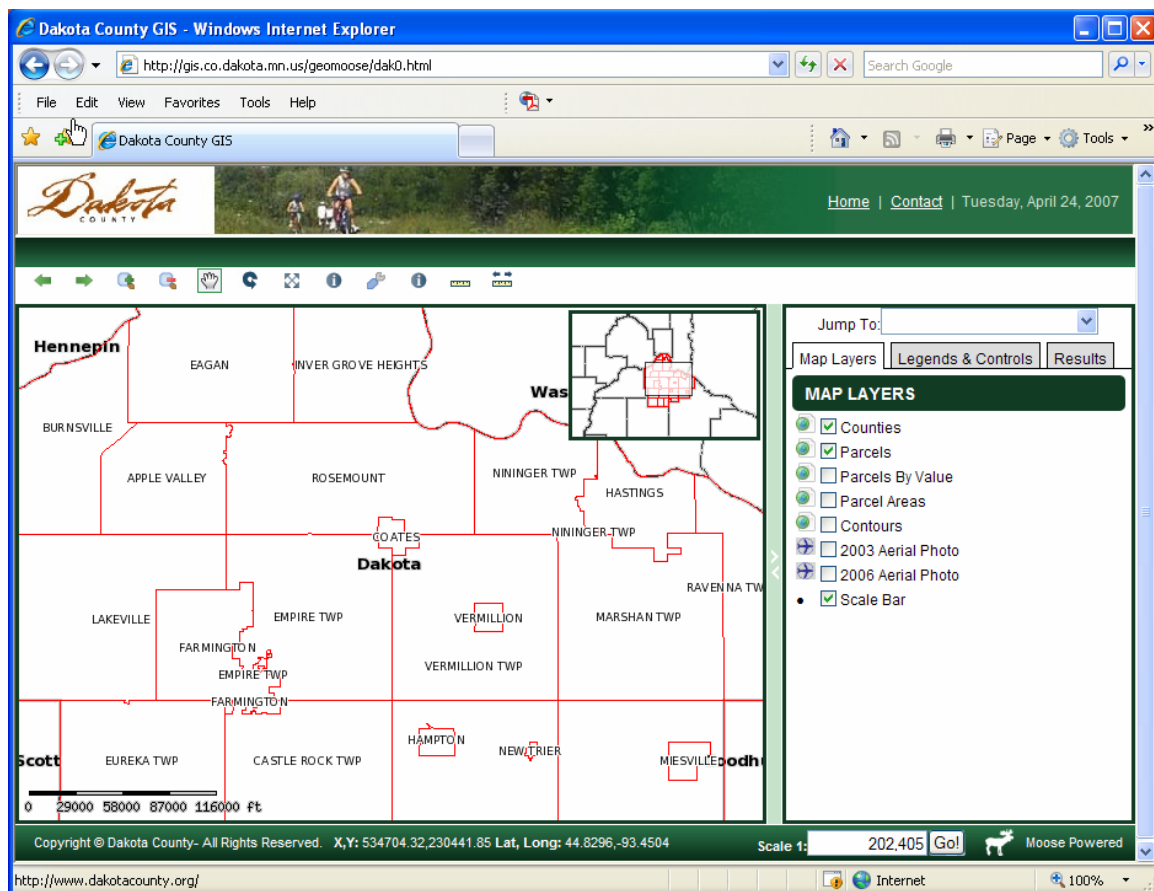


Figure 1. Collaborator Dakota County is running GeoMOOSE for their Cadastral Data.

The OpenMNND project is having great success in attracting interested organizations to help with testing and feedback. Many local organizations are excited about possibility of providing public access to cadastral data in an application that is cost effective for them to develop and maintain. We have also heard positive feedback amongst organizations wanting a consistent look and feel between applications. We feel we are well on our way to providing an open source solution that meets the needs of most local government applications.

Status of Data Access Activities

- 1) *What Framework data theme(s) will be accessed under this project?*
 - a. Orthoimagery, cadastral, hydrography, governmental units, transportation. This is really dependent on the purpose of a particular application for an organization. Any framework data theme could be used with the client software.

- 2) *What is the data volume of Framework data anticipated for access (geographic extent)?*
 - a. This is dependent of the organization. The client software is architected to handle a single city with only a few layers to a state organization with many layers. The volume of features also largely depends on the organization. An example is Douglas County, MN which has approximately 25,000 features in their cadastral layer.

- 3) *Who are the primary organizations providing the data for this project?*
 - a. A data provider could be anyone with data in a format supported by MapServer, WMS or WFS service. For the proposes of the organizations involved in the project and our demo's the data providers are the Minnesota Land Management Information Center (LMIC), MetroGIS, Minnesota DNR, Douglas County, Dakota County, Richland County and the North Dakota GIS HUB.

Status of Framework Client Development

- 1) *What is the status of software development?*
 - a. GeoMOOSE is currently on Version 1.0 Release Candidate 1. We hope to have a finalized 1.0 release by mid-May. The current functionality available at the 1.0 release can be seen in the gallery page on the GeoMOOSE website.

The OpenMNND project team is also evaluating a “proof of concept” for direct WFS rendering in a browser. The OpenMNND project is funding part of the OpenLayers vector branch development available in version 2.4 to evaluate this proof on concept. The code is functional, but is still under-going testing and evaluation by the OpenMNND project team for practicality in a production level application for a local government. The code can be downloaded from the OpenLayers project and an example can be seen at <http://openlayers.org/dev/examples/openmnnd.html>.

- 2) *How will the client software be evaluated and quality assured?*
 - a. The client software is currently being tested and evaluated by all collaborating organizations and other local government organizations that have gauged interested in the project. It is also available for testing by

anyone in the public. This is a benefit of the client software being an open source project.

- 3) *Describe your experience and purpose in accessing the data services?*
 - a. The OpenMNND project is targeting local units of government as their primary audience. With the GeoMOOSE client code it is easy for a local government to configure an application with some of their own local data, but then have the flexibility to add WMS or WFS services from the Federal, State or other surrounding local governments.
- 4) *Describe any internal or external users that are using the client.*
 - a. GeoMOOSE is currently being used by a number of organizations for both internal and external applications. A number of organizations have prototype applications in the works that are being tested before they are rolled out in a production environment. Some of the organizations include Dakota County, MN, Douglas County, MN, McLeod County, MN, City of St. Paul, Metropolitan Mosquito Control District, Buffalo-Red River Watershed District and Richland County, ND.

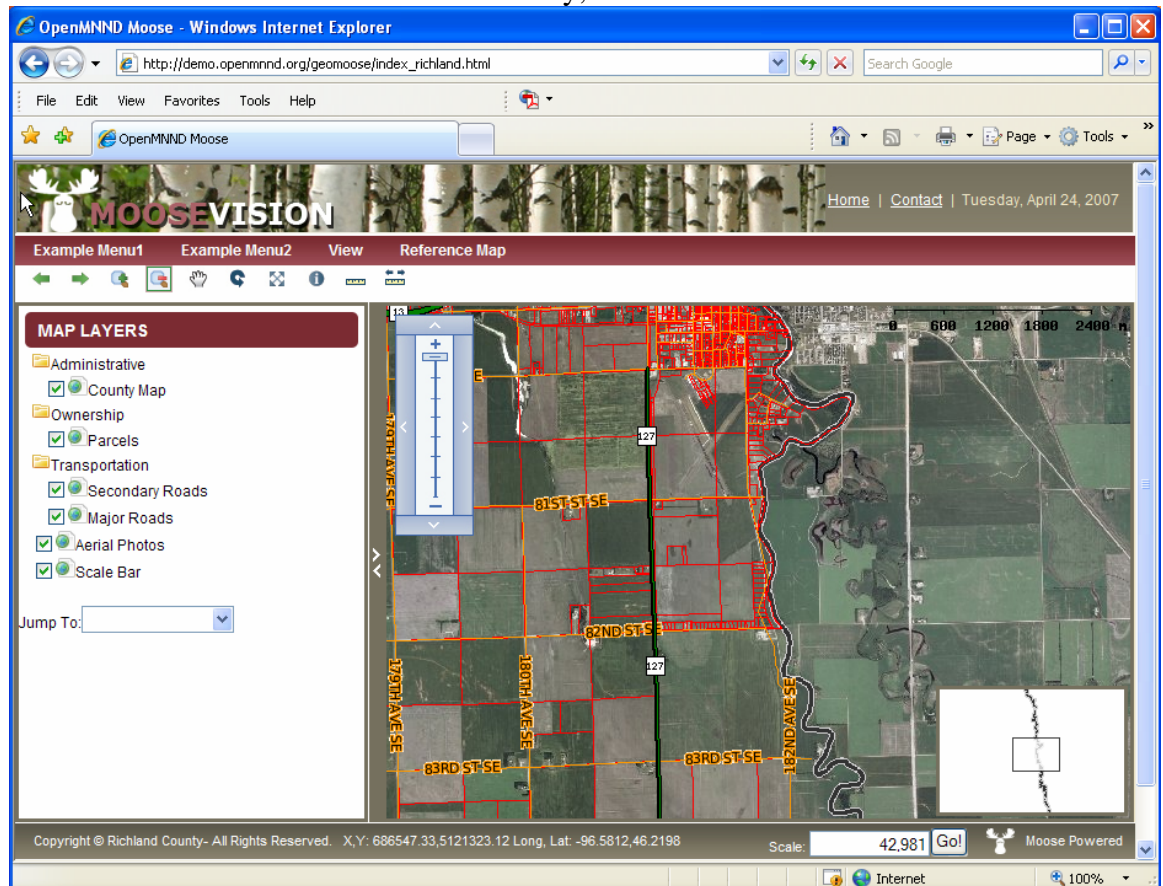


Figure 2. Richland County, ND Demo Site

- 5) *Identify plans for promotion and distribution of this software.*
 - a. The OpenMNND project team has been promoting the software and open source project at a number of conferences, meetings and informally

amongst the GIS community in MN and ND. After version 1.0 is finalized and been tested for release the project teams plans to widen the promotion of the software to a wider audience. We are envisioning the MapServer community, National Association of Counties and National Association of Assessing Officers. Tentative plans are to present the project at this year's OSGEO, MN GIS users, and ND GIS conferences. We intend to use the GeoMOOSE website as the primary distribution method for the software. The software has also been package for use with MapServer as a MS4W (<http://www.maptools.org/ms4w/index.phtml>) download package.

Project Management

- 1) *Will this project's activities continue in the future?*
 - a. Yes, we have every belief this project will continue as an Open Source project into the future. It has a lot of momentum behind it right now in Minnesota and North Dakota. We hope to grow that through the GeoMOOSE Open Source project.

- 2) *Describe the next phase in your project.*
 - a. The next phase includes adding better support for external services which are needed to integrate with the cadastral framework layer, printing support, resolution on WFS browser rendering and improving the ease of GeoMOOSE configuration for non-programmers. The GeoMOOSE website is also under developed in terms of documentation. We also plan to address documentation in the next phases of the project.

- 3) *Requirements (more technical assistance, software, other)?*
 - a. One of the issues we have identified with WFS rendering in the browser is speed and limited support in browsers for vector data. More lobbying is needed to convince browser developers to standardize support for vector rendering. A compressed or reduced version of GML is also needed to help with speed issues and with large WFS layers.

- 4) *What areas need work?*
 - a. We need to improve the documentation for users and work on configurability issues for local governments. We also need to keep promoting the use of WFS and WMS to local governments for their cadastral data applications. We also need to put more thought into how to handle the wide variety of external services that could be used with our client software.

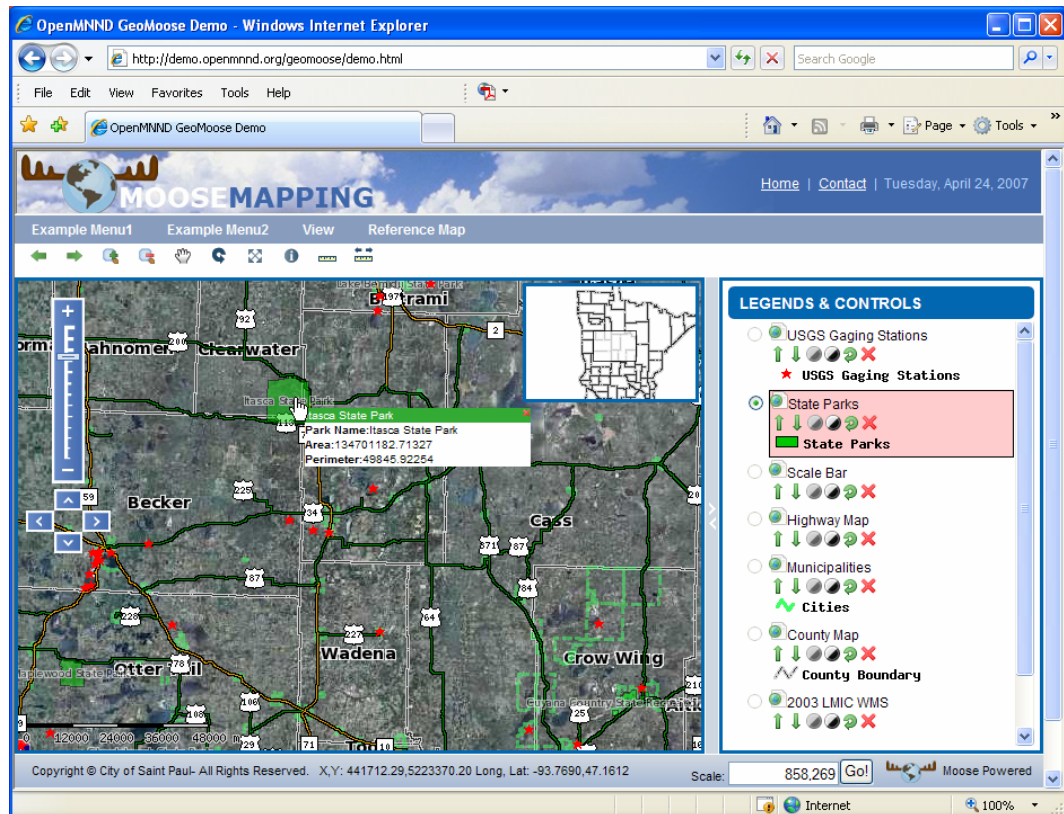


Figure 3. State of Minnesota Demo Application Package with the Software Download.

Feedback on Cooperative Agreements Program

- 1) *What are the program strengths and weaknesses?*
 - a. The strength of the program is the ability to promote OGC specifications and open data formats.
- 2) *Where does the program make a difference?*
 - a. The program provides a mechanism to support the NSDI's goals and promotion of framework data layers. Many organizations could not afford to understand or take an initiative to support NSDI's goals and OGC specifications without the support of the program.
- 3) *Was the assistance you received sufficient or effective?*
 - a. Yes, the FGDC staff is very responsive and prompt.
- 4) *What would you recommend doing differently?*
 - a. No, we can not think of anything to recommend for handling the program differently.
- 5) *Are there factors that are missing or need to consider that were missed?*
 - a. It would be good to have a category in the CAP grant that focused specifically on local government initiatives and the cadastral framework

data. Local governments make up such a large demographic of GIS users and the cadastral data is need by all levels of government, private sector and the public for decision making.

- 6) *Are there program management concerns that need to be addressed?*
 - a. No, we have no concerns about the program management.

- 7) *If you were to do this again, what would you do differently?*
 - a. When multiple organizations are involved in the project, the organization and planning phase starts off fairly slow. We would allow more time for planning and organization in our timeline. Otherwise we feel the program is functioning well and would not change anything else.