

**NSDI Cooperative Agreements Program
Framework Client Development
Interim Project Summary**



Title: Creating an enterprise municipal boundary data service using the OGC WFS specification

Agreement number: 05HQAG0117

Report type: Interim

Organization: Land Management Information Center
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Project narrative

LMIC proposed to refine the state's municipal boundary annexation authorization and documentation procedures in a way that integrates: 1) emerging Framework content standards, 2) the Web Feature Service capabilities of Minnesota MapServer software, and 3) the state's GIS coordinating council recommendations for an enterprise solution that serves local, state and federal government needs from a single authoritative source.

Significant progress has been made toward this end. A compliant OGC Web Feature Service¹ has been implemented through MapServer v.4.8. The service hosts two data sets – municipal boundaries and municipal boundary changes – stored and accessed through ArcSDE. The service was successfully tested using Carbon Project GAIA OGC-compliant viewer in July and again tested and determined compliant on August 10, 2006

¹ URL to WFS service:
<http://geoint.lmic.state.mn.us/cgi-bin/mapserv483?map=/home/httpd/html/cap/gubs.map&service=WFS&version=1.0.0&request=GetCapabilities>

with ESRI's Data Interoperability Extension (developed by Safe Software) at the ESRI conference in San Diego.

The effort to develop the institutional relationships necessary to provide a single, authoritative enterprise-wide boundary data file has encountered challenges. A process to convert legal description to geospatial data has been developed and demonstrated. Verifying the accuracy of both legal description and geospatial data derivative, and establishing the subsequent institutional procedures to address errors, inconsistencies and questions have not been sufficiently developed to yield an authoritative data set.

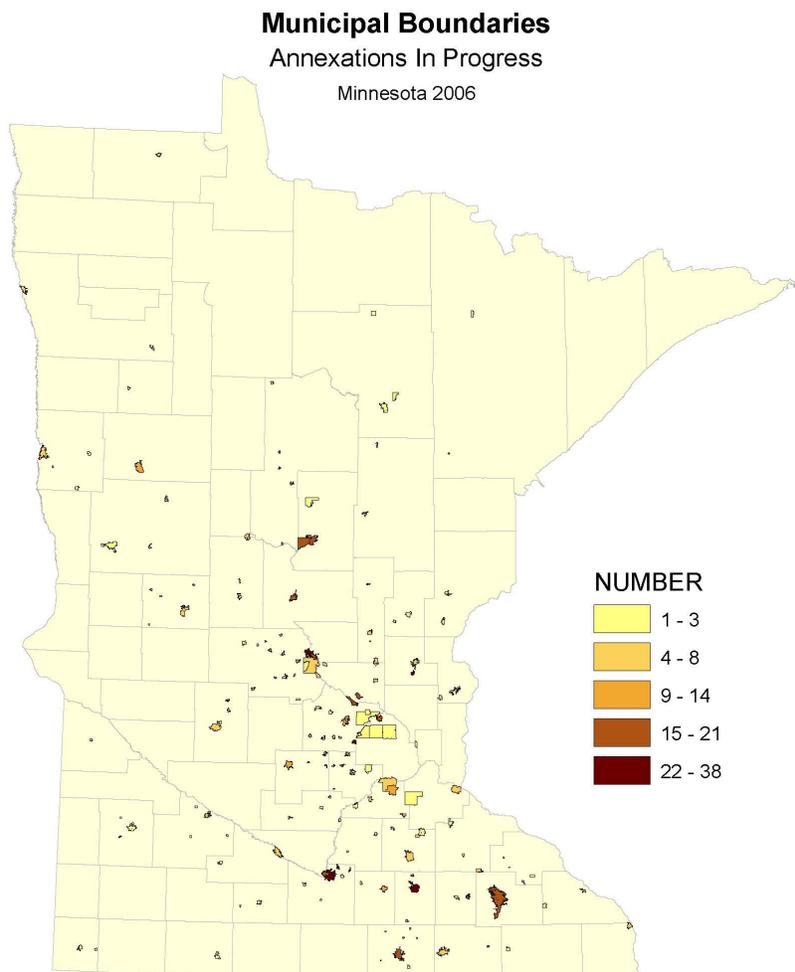


Figure 1. More than 400 municipal boundary changes are processed in Minnesota each year. The prospect of a continuously changing map of municipal boundaries presents challenges in delivering timely and accurate geospatial data.

In the absence of a definitive geospatial boundary file, LMIC is serving a working file, updated for the Department of Revenue on a quarterly basis. It represents our best effort attempt at incorporating boundary changes that reflect annexation activities throughout the state. However, it is neither comprehensive nor authoritative. Efforts to design a generally recognized “official” municipal boundary data layer are underway and involve LMIC, the State’s Office of Administrative Hearings – Municipal Boundary Adjustments Unit and the Department of Transportation. This project will continue to serve the latest version of this data set until a comprehensive data set is developed.

FGDC content standards for GBUs have not yet been applied as the data currently being served is not in a form expected to be final. Investigation of the standard requirements has not yet been undertaken.

Status of your data access activities

What Framework data theme(s) will be accessed under this project?

- Governmental Boundary Units

What is the data volume of Framework data anticipated for access?

- Geographic coverage: State of Minnesota
- Dataset size:
 - MCD2003: 5.504 MB
Metadata: <http://geogateway.state.mn.us/documents/show.php?nd=0&n=1>
 - MUNI: 2.366 MB (Source: Mn/DOT, reflecting changed boundary segments only)
- Feature count:
 - Political Units:

Cities:	852
Townships:	1,791
Unorganized Territories:	94
 - Annexations: Typically 400-500 annexation requests are made annually. Over the past two years this has resulted in the following number of adjustments to the state municipal boundary file:

Boundary segments adjusted:	1,008 (658 closed successfully)
Annexations:	218 (128 closed successfully)

What are the primary organizations providing data for this project?

- MN Office of Administrative Hearings Boundary Adjustment Unit
- MN Department of Transportation
- Affected Municipalities

Status of framework client development

LMIC's proposal did not include a client software development component. We intend to rely on and test with readily-available COTS clients. Our intention is to create the WFS service, serve a new Framework data layer through it, and employ Minnesota MapServer to host the service.

Project management

After the project is complete, deliverables will be maintained and served through LMIC as part of its operational responsibilities as host to Minnesota's Geographic Data Clearinghouse.

Efforts to integrate the work of a variety of state agencies toward a unified, current and maintained municipal boundary geospatial dataset are ongoing.

Feedback on CAP

Conference calls have proven to be an effective method to provide information and exchange ideas. Success can be illustrated by pointing to the fact that two participating organizations have been able to modify their projects to include MapServer after encountering barriers to progress in their original project plan and talking through alternative approaches during these conference calls.

The primary benefit offered by this program to LMIC is the widespread dissemination of new technologies provided in an environment of cooperative collaboration and financial support. Without this mix of incentives, WFS would likely not be explored as deeply in Minnesota state government.