



Minnesota Geospatial Information Services (MnGeo)

Service Description Version 1.01

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Purpose

This Enterprise Service Description is applicable to **MnGeo Services** offered by MN.IT Services and described in the MN.IT Services Catalog.

Overview

Geographic Information System (GIS) is a computer system capable of capturing, storing, managing, analyzing and displaying geographically referenced information (i.e. data identified based on its location). It is a blending of cartography, statistical analysis and database technology.

The Minnesota Geospatial Information Office (MnGeo) was established in 2009 by the Minnesota legislature. It succeeds the Land Management Information Center (LMIC), created in 1978 to promote the introduction and development of GIS technology in the state. While MnGeo's principal mission is to coordinate GIS activities within Minnesota, it also offers essential GIS professional services on a fee-for-service basis.

Geospatial Coordination Services

As specified in legislation and supported by a legislative appropriation, MnGeo provides coordination services that support the development, implementation and use of geospatial technology in Minnesota. Guided by state agencies, other government and non-government stakeholders, its coordination activities focus on six core activities including community outreach, communications, geospatial data and technology coordination, data and web services, training and technical guidance.

Minnesota Geospatial Commons

Mid to late 2014 will see the release of the Minnesota Geospatial Commons, a collaborative place for users and publishers of geospatial resources in Minnesota. Users can find data from a specific organization or category, or use an interactive map to define an area of interest, or use a search bar and filters to narrow a search. Users can also connect to map services or Application Programming Interfaces (APIs). The Minnesota Geospatial Commons can be found at <http://gisdata.mn.gov>. Contact MnGeo (gisinfo.mngeo@state.mn.us) for details regarding how to become a publisher.

Shared Geospatial Infrastructure

In mid-2014, MnGeo and MN.IT Services will establish a managed hosting environment for the delivery of geospatial data, services and applications. Geospatial Managed Hosting is a cloud-based service provided by a central team in the State's enterprise data centers. The service provides geospatial production, test and development environments to help meet agency geospatial needs.

Managed Hosting provides Operating System (OS), geospatial software, professional services and underlying infrastructure support to ensure the environment meet the geospatial requirements of the agency.

Service includes:

- Server with base OS and geospatial application tier software installation
- OS patch management and OS-level monitoring
- ArcGIS server install and patching
- Geoprocessing and extensions install and patching
- Geospatial database install and patching (Oracle, MS SQL, PostgreSQL)
- ArcSDE install and patching
- Application support (e.g. move from test to production)
 - Web services publishing
 - Application integration
- Back-up and restore

Geospatial Professional Services

For more than 30 years – first as LMIC – MnGeo has offered a diverse set of GIS professional services on a fee-for-service basis. MnGeo staff works closely with its clients to define a suitable scope for the service, identify tasks and deliverables, create and refine a work plan and budget, execute, and manage the defined effort to completion. Typically client needs require a mix of project design, database development, applications development, spatial analysis and map production. Efforts vary in length and complexity, with some taking a few hours and costing little and others extending over several years and involving significant expenditures. Core geospatial services include providing assistance for developing business requirements, designing solutions, data and systems development, implementation, operations and maintenance. Professional map printing also is available for existing content.

MnGeo Commons

The Minnesota Geospatial Commons is a collaborative place for users and publishers of geospatial resources in Minnesota. It is powered by The Minnesota Geospatial Information Office (MnGeo), a program of MN.IT Services, the State of Minnesota's single provider of Information Technology.

The Minnesota Geospatial Commons is primarily for geospatial data consumers: people who need data for a project, services for an application, or some other resource required for a GIS-based use. It will be a robust data distribution site that can be used by both traditional and non-traditional GIS users, such as web developers, journalists and others. The Minnesota Geospatial Commons is not intended to provide web mapping functionality like "Google Maps" or "ArcGIS Online."

MnGeo Infrastructure

Datasets can be stored and will eventually be consolidated at the common infrastructure. Every dataset, app, or service must have a metadata record. In addition to the metadata record, a few other pieces of information are required. In the current Minnesota Geospatial Commons model, these additional pieces of information are stored in a Geospatial Data Resource Site (GDRS). Together the metadata records and the GDRS data "feed" the content of the site. Many state agencies already store their data and metadata in a GDRS; however, many organizations that would like to contribute to the Minnesota Geospatial Commons do not yet have, or might not want to set up a GDRS. For this reason, the ability to publish data on the MnGeo Infrastructure will be accomplished in stages, with different steps required for each stage. Input from potential data publishers will help determine the exact requirements.

Benefits

MnGeo is recognized within Minnesota and around the nation for its history of innovative and successful projects. MnGeo's business benefits are:

- Legislatively mandated to coordinate and support GIS technology in the state
- Broad support and interest of government and non-government stakeholders
- Experienced, knowledgeable and diverse staff of GIS experts
- Repeated success for creative applications of GIS to support client needs
- Extensive experience with building large and complex GIS databases
- Extensive customer knowledge from repeat business
- Leverage relationships with other state agencies with GIS capabilities and needs
- Agency and Intergovernmental Technology Standards
- Common site and infrastructure for data access and posting

Standard Features

All services are requested or purchased through the MN.IT Services Catalog. Please discuss your geospatial needs with MnGeo staff. They will work with you and your account manager to ensure that you are getting all of the benefits from these valuable services. These are designed services that are provided to meet customer's technical and business requirements. These services provide the following features:

Geospatial Coordination Services

Leadership, Coordination, Outreach and Communication

1. Providing leadership for state agencies and active outreach to the state's partners and customers
2. Providing coordination for the shared funding of significant investments such as statewide aerial imagery
3. Assisting agencies who are implementing GIS for the first time
4. Increasing the awareness of GIS initiatives and programs within state government - [Minnesota Geospatial Information Office](#)

Data Coordination

1. Providing coordination to secure multi-agency funding of significant data investments such as statewide LiDAR collection and distribution
2. Facilitating common access to the State's GIS data assets through the Minnesota Geospatial Clearinghouse and the Minnesota Geospatial Commons, a collaborative place for users and publishers of geospatial resources in Minnesota. The site is expected to be available in the latter half of 2014.
3. Promoting and facilitating increased levels of standardization and quality for newly created data (e.g., geospatial metadata standards).

Technology Coordination

1. Reviewing geospatial procurements of significant size
2. Preparing master contracts and enterprise license agreements for GIS software acquisition or the purchase of geospatial services
3. Identifying and assisting with the implementation of shared service centers
4. Identifying enterprise approaches for new geospatial investments

Shared Geospatial Infrastructure

1. Establishing and promoting a managed hosting geospatial computing environment focused on geospatial data, services and applications which use MN.IT Services equipment
2. Providing cost-effective access to commercial geo-processing tools such as Esri's ArcGIS through enterprise license agreements
3. Promoting open-sourced solutions when feasible

Data Services

1. Inventorying state agency geospatial data assets
2. Establishing/hosting an enterprise geospatial data library and assisting state agencies with the integration of their data in the library

Web Services

1. Coordinating the implementation of web mapping services accessible to all state agencies such as the [Minnesota Geospatial Image Service](#) which is available as a plugin to any map viewer
2. Providing geospatial technical architecture and web service design advice
3. Creating/hosting geospatial capability services such as geocoding and address verification

Technical Support & Training

1. Creating/hosting a geospatial resource directory for state agencies
2. Coordinating GIS mentoring and training
3. Incidents and service requests are managed through the MN.IT Services service desk

Geospatial Professional Services

Geospatial Business Analysis and Strategic Planning

MnGeo staff work closely with clients to ascertain and document how GIS technology can best meet their business requirements. Services provided include:

1. Assisting business areas, agencies and programs with planning for, developing and implementing GIS technology
2. Coordinating/leveraging GIS partnerships with other agencies and organizations to minimize data and applications redundancy thereby lowering costs

Geospatial Data Development

Virtually 80% of business data is spatial in nature. The challenge is to convert or process the data using tools and techniques that make it useable for GIS. MnGeo has a great deal of experience building and converting data.

Services include:

1. Data conversion
 - from paper to digital
 - tabular to map form
 - GPS to GIS data file
2. Database design and implementation
3. Data cross mapping (these fields in table x = these fields in table y)
4. Geospatial merging of individual data sets to produce business specific information for decision making
5. Extract, Transform and Load (ETL) Services for automation of dataset loading
6. Creating thematic data layers
7. Geocoding (determining associated geographic coordinates, such as latitude/longitude, from sources such as street addresses, or ZIP codes). This process typically includes address scrubbing (identifying and correcting ambiguous addresses) and post processing rejected addresses to achieve maximum results.
8. Address verification (a process which matches mailing list addresses with address data maintained by the US Postal Service)
9. Organizing spatial data to maximize its utility
10. Preparing data documentation (metadata), data management, data sharing and archival plans
11. Spatial data compilation and delivery

Geospatial Data Modeling and Analysis

Existing GIS software includes many powerful tools to manipulate, combine and analyze geospatial data.

1. Performing spatial and statistical analysis to identify and map trends, patterns, problem areas, etc.
2. Performing network analysis for transportation (time/distance analysis), business/program location or utility purposes
3. Performing LiDAR terrain analysis

Geospatial Applications Development

1. Providing web-based mapping applications developed using Open Source or proprietary tools
2. Creating interactive mapping applications and plugins using tools such as ArcGIS Online® or Bing Maps®
3. Mobile-based mapping applications
4. Building data capture and editing functions/applications into mapping services
5. Geospatial integration with business systems and applications

Geospatial Hosting Services

MnGeo offers hosting services for applications requiring geospatial technology and data services or other specialized functionality available through MN.IT Services' maintained server infrastructure. Rates are determined for each case and reflect staff time required to manage and maintain the site the software supporting it, the use of special software licenses required for the operation of the site, disk space needs, user demand on the server and a portion of the cost for hosting the web server. Rates reflect those established by the MN.IT Services Rate Schedule.

Map Sales and Cartographic Support

In addition to maps produced to meet client project requirements, MnGeo produces standardized and custom maps for a fee.

1. Several standardized maps are offered for sale.
2. Map design services that result in easy to read and understand digital and paper maps
3. Map atlas production and publishing
4. "Smart Map" creation (i.e., dynamic PDF products that can be updated without GIS tools and easily shared)

Geospatial Services Desk Support

1. Geospatial software installation and support
2. Geospatial incident resolution

Geospatial Training

MnGeo offers interested businesses an introduction to GIS and will assist agencies and business areas with defining and identifying solutions for their geospatial training needs.

Geospatial Partner Services

For those clients whose business needs require a consolidated set of GIS services, MnGeo offers a comprehensive, project-driven suite of services:

1. Project Assessment & Design
 - GIS requirements gathering (data requirements and sources, products – static and/or dynamic maps, etc.)
 - Cost analysis and budget preparation
 - Database design and optimization
2. Project Implementation
 - Geospatial data development
 - Cartographic design and map production
 - GIS applications, design, development and implementation including map driven web services

Geospatial Services Procurement

In the event that needed GIS services are not available from MnGeo, it can assist with:

1. Identifying and evaluating commercial solutions
2. Preparing Request for Proposals (RFP) including contractor selection criteria
3. Evaluating potential contractors
4. Contract preparation

5. Providing GIS centric project management

Related Information

Minnesota Statutes Chapter 16E ([MN.IT Services](#))

Minnesota Statutes Chapter 13, [Minnesota Data Practices Act](#)

NIST 800-27 (<http://csrc.nist.gov/publications/nistpubs/800-27A/SP800-27-RevA.pdf>)

Operational documents / information on MN.IT website:

- MnGeo Service Level Agreement
- State of Minnesota Information and Telecommunications Technology Systems and Services Master Plan (April 2012) <http://mn.gov/oet/governance/strategic-plans/strategic-plans.jsp> (Reports and Strategic Plans)
- Enterprise Security Policies and Standards [http://mn.gov/oet/policies-and-standards/information-security/Information Security Policies](http://mn.gov/oet/policies-and-standards/information-security/Information%20Security%20Policies)
- NASCIO Security Services Taxonomy http://www.nascio.org/publications/documents/NASCIO_CoreSecuritySevices.pdf