MnGeo Priority Projects and Initiatives

March 22, 2017

While there are many worthwhile geospatial projects and endeavors, MnGeo is focusing its efforts and its limited resources on a few projects in order to make meaningful progress. All of these projects are in collaboration with other organizations and are either underway or anticipated to be initiated in the coming months. In alphabetic order, MnGeo's priority projects are:

DPS Crash Portal Project

Project Goal: A collaborative project between MnGeo and the Minnesota Department of Transportation (MnDOT) to provide the Minnesota Department of Public Safety (DPS) with web services and data to be used in their recently released crash system. This new system allows officers to map the locations of vehicle crashes and pull information from GIS data rather than having officers enter location information manually.
Project Status: Web services have been created and are currently being utilized by the MN Crash System. The system is also designed to work in a disconnected mode, so shapefiles have to be produced in a format so that the vendor can automate the updating for all the squads and keep in sync with the web services and map cache. The base map data is derived from the new MnDOT Linear Reference System (LRS) that was recently put into production. Processes are being created to automate the updating, verifying and validating of all the data coming into the DPS Crash data store. MnGeo will be automating the updating, verifying and validating of processes to export to shapefiles and update the basemap map cache to allow the officers to map crashes when not connected to the Internet.
Anticipated Completion and Milestones: The MN Crash application went live January 1, 2016 and is currently utilizing a draft version of the LRS data. MnGeo anticipates that the project will end in spring 2017 and then become an ongoing program to support the MN Crash system by providing quarterly updates to the services and disconnected shapefile data.
Project Funding: The project is currently being funded by DPS and MnDOT.
Project Issues, Concerns and Risks: The MnDOT LRS data production release date has yet to be determined.
Project Contacts: James Bunning (MnGeo) and Norm Anderson (MnGeo)

Drainage Record Modernization

Project Goal: Produce a GIS database template and accompanying data standards for Minnesota's public drainage system records. The database template is available to interested parties statewide and its use will be required for drainage authorities to receive competitive drainage records modernization cost-share, when available. In addition, the Board of Water and Soil Resources (BWSR) publication, *Drainage Records Modernization Guidelines* is updated to reflect the creation of the GIS template and standards.
Project Status: The project has been completed and the database template and updated guidelines document has been delivered to BWSR. For more information on the template, guidelines and data, see the "Drainage Records Modernization" section of BWSR's Drainage webpage.

Anticipated Completion and Milestones:

Project Milestone	Target Completion Date
Project Start	10/1/2014
Specify template objectives and requirements	1/29/2016
Template created by contractor	10/31/2016
Update *Drainage Records Modernization Guidelines* publication	9/30/2016

Disseminate information about template and guidelines	12/30/2016
Project Complete	12/30/2016

Project Funding: $230,000
Project Issues, Concerns and Risks: A condition for use of the template by local drainage authorities is that they share a hydrographic subset of their data publicly on the Geospatial Commons. Some may be unwilling to agree to this.
Project Contacts: Greg Fetter (BWSR, Executive Sponsor), Tim Gillette (BWSR, Business Champion), Jim Krumrie (MnGeo, Project Manager), Brian Fischer (Houston Engineering Inc., Contractor), Al Kean (BWSR, State Consultant)

Geospatial Commons
Operations: The long-range objective of the Commons is to be the best source for the widest variety of geospatial data, services, information, ideas and news in Minnesota. Now fully operational, it allows users to find, view and download data; publish metadata and data; and find and use web services and applications. Operations are headed by MnGeo and supported by MN.IT staff who serve Agriculture, DNR, MnGeo, and MPCA, along with one staff member from the Metropolitan Council GIS Team. We'd like to extend our congratulations to the Geospatial Commons Operations team for winning MN.IT's "Team of the Year" award in January.

Status:
MnGeo and the support team are moving to implement operational improvements that:
1. Stabilize the system's ability to respond to increased demand (completed)
2. Add capacity for new publishers and resources (completed)
3. Reduce excessive or unwanted duplication and replication to agency file servers ("GDRS nodes") (completed)
4. Diversify available methods for publishers to provide resources (implementing)

These improvements will take place over the remaining months in the fiscal year, and are slated behind other projects in terms of timing and priority. During that time, the team continues to focus on governance issues and adding content from new and existing publishers.

Forty-five resources have been published since our last report, and two new publishers have been brought on board (Legislative GIS Office and St. Louis County). As of March 8, the count of published resources accessible through the Commons totals 635:

Organization	Resource Count
Natural Resources Department	158
Metropolitan Council	144
Geospatial Information Office	79
Dakota County	61
Agriculture Department	30
Minnesota Geological Survey	26
Pollution Control Agency	24
MetroGIS	18
Legislative GIS Office	16
Education Department	14

Transportation Department	12
University of Minnesota, Twin Cities	11
Ramsey County	8
Rice County	6
Health Department	5
Board of Water and Soil Resources (BWSR)	5
Waseca County	5
Itasca County	4
Lake County	3
Revenue Department	2
Minnesota Valley Transit Authority	1
Minnesota Board of Animal Health	1
Secretary of State	1
Saint Louis County	1

Funding: Agencies currently provide funding for the operations of the MN Geospatial Commons. Currently there are no dedicated funds for enhancements to the site, although a small amount of project funding has been provided this biennium for a series of improvements. MnGeo is providing a quarter time Operations Manager, technical and administrative support. Staff members from several State agencies (most notably: DNR, Agriculture and MPCA) have committed to assisting with operational support. Other resources are expected to be made available by MN.IT Services as needed.

Issues, Concerns and Risks: Several issues that will likely require future input from leadership and advisory Councils/Committees have arisen, including a precise definition of *how* those decisions are made, and *when* leadership input is required. A draft governance model has been created and is expected to be shared soon. It addresses issues including, but not limited to:

- Scope of allowable data formats
- Stewards for federal agency datasets (customized for MN) and datasets that do not have an "obvious" steward
- Large data set replications to multiple GDRS nodes
    - Related: do we continue to store/serve/host "purely local" data, or do we aggregate first?

Contact: Mike Dolbow (Operations Manager)


Next Generation 9-1-1 (NG9-1-1)

Project Goal: NG9-1-1 implementation will depend on current and accurate GIS data. Geospatial data will be used for location validation, call routing and emergency response. With the Minnesota Department of Public Safety serving as the lead state agency for NG9-1-1, MnGeo will identify, inventory and collaborate with the public-safety answering points (PSAPs) and 9-1-1 entities to obtain, develop and distribute core geospatial data required to support the program. To succeed, this effort will require several critical, statewide data sets:

- Street centerlines, with address ranges (described below)
- Address points (described below)
- PSAP boundary polygon(s)
- Emergency response – law enforcement, fire and EMS boundary polygon(s)
- NG9-1-1 Data Maintenance boundary polygon(s) – GIS data authority for a given area

All GIS data will need to be validated with legacy Enhanced 9-1-1 data.

Project Status:

- MnGeo is collecting GIS data from all regions in the state. The GIS data are being compared to corresponding 9-1-1 data (MSAG, ALI, ELT) to gain a better understanding of data readiness for each county and PSAP. The results are compiled into data readiness profiles and reports, which are shared with each county and PSAP during their Data Preparation kickoff meetings. MnGeo is meeting individually with each PSAP and their GIS agencies/vendors to discuss their data readiness findings and kickoff their Data Preparation effort. Thus far, MnGeo has met with all counties in the NE and SE regions. The Metropolitan Emergency Services Board is working with the Metro region on their data preparation. The Central region meetings are currently being scheduled and conducted. The goal is to meet with all counties by fall of 2017. Another major goal is to complete all necessary Data Preparation work in the Metro and NE regions by the end of 2017.

NG911 Data Preparation
Kickoff Meetings

- The Data Preparation projects involve six phases of NG9-1-1 GIS data cleanup, including Community Name Validations, Street Name Validations, Address Validations, Geospatial Validations, Emergency Service Boundary Validations, and Edge Matching. The primary objectives of these Data Preparation projects are to improve and qualify the local GIS data for mission-critical use in NG9-1-1.
- Development is underway for the MN NG9-1-1 GIS Standards, which will serve as a guide for preparing and maintaining GIS data for NG9-1-1 in Minnesota. A NG9-1-1 GIS Standards WG has been tasked with recommending and developing standards needed to integrate locally collected and maintained GIS data into statewide layers deemed critical for the Emergency Call Routing Function (ECRF) and Location Validation Function (LVF) of NG9-1-1. The workgroup has been meeting weekly since the beginning of September 2015. MnGeo and the workgroup are nearly finished with reviewing and responding to the second round of stakeholder comments and questions. Revisions are being made to the existing sections and the boundary sections (PSAP, Fire, Law, EMS, Data Maintenance Authority) are being added in preparation for the third stakeholder review. The third review period is anticipated to take place in March/April and from there, formal stakeholder approval will be pursued. The goal is to gain formal approval of the standards by this summer.
- MnGeo is currently documenting requirements and workflows for the recurring data upload, normalization, and validation maintenance processes. MnGeo will begin focusing on the aggregation and provisioning process requirements this summer. ECN and MnGeo would also like to conduct 2-3 proof of concept projects related to GIS-based MSAG creation, ECRF, and LVF in the coming year, which will include 1-2 counties in the Metro and Northeast regions.
- MnGeo is developing a map viewer and associated user documentation to manage the emergency service boundaries (PSAP, Fire, Law, and EMS) statewide. The initial goal is to resolve gaps and overlaps among PSAP boundaries in order to produce a seamless, relatively accurate statewide PSAP boundary layer for use in text-to-911 and eventually the ECRF. The map viewer will be piloted in the NE region in the coming weeks before expanding to cover the entire state of Minnesota. We are asking the local 9-1-1 GIS authorities to work with their PSAP managers to resolve the gaps and overlaps. We would like all gaps and overlaps removed by this June, so the seamless PSAP boundaries are available for the text-to-911 deployments.
- The latest project newsletter is available on the "GIS Information" page of the ECN website: https://dps.mn.gov/divisions/ecn/programs/911/Pages/gis-information.aspx
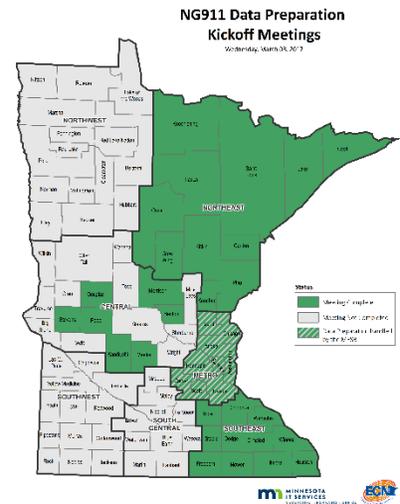
Anticipated Completion and Milestones: Although an official completion date has yet to be established, it is anticipated that geospatial data will need to be ready for NG9-1-1 deployment in 2018. Below is a list of current project tasks with estimated completion dates.

- **Outreach to PSAPs and GIS Sources** – ongoing
- **Project newsletter** – quarterly
- **MN NG9-1-1 GIS Standards** – approve Version 1 by Summer 2017
- **Seamless statewide PSAP boundaries** – complete by Summer 2017
- **Data Preparation kickoffs** – complete by Fall 2017
- **NG9-1-1 Portal onboarding** – complete by Fall 2017

Project Funding: $600K per year for 3 years

Project Issues, Concerns and Risks: Issues, concerns and risks are being identified and logged throughout the project.

Project Contacts: Dan Ross (Executive Sponsor), Adam Iten (Project Manager)

OSA Portal Project

Project Goal: A year-long project for the Minnesota Office of the State Archaeologist (OSA) that was designed to create a branded web application providing a digital, secure, and up-to-date inventory of archaeological sites and associated forms. This system streamlines internal administrative tasks for OSA and also those of tiered external users in an effort to better preserve historical cultural resources across Minnesota. This project is made possible through an inter-agency agreement between MnDOT and MnGeo on behalf of OSA and in consultation with the Minnesota State Historic Preservation Office (SHPO).

Project Status: This project has been completed, enhancing OSA's Archaeological Sites Database with content and design improvements developed in conjunction with MnDOT's Cultural Resources Unit (CRU) and the Minnesota Historical Society's SHPO. The project consisted of:

- redesigning the database model
- migrating all records from an old Access database into a secure, maintained enterprise environment
- Providing administrative functionality to interactively manage existing sites and propose new site entries
- Implementing geospatial data entry application
- Standing up complementary map services to be utilized for browsing and querying the database at a variety of levels based on user role
- Providing an additional publicly accessible view of the data generalized to protect vulnerable sites

The project team is currently providing a beta testing period to the clients before the full production environment is activated.

Anticipated Completion and Milestones: The design and development phase of this project was completed on February 17, 2017. A separate Project Hosting contract has been executed and is being used to stand up a permanent production implementation of the application and hosting services through fiscal year 2017.

Project Funding: $180,000 through a federal grant managed and administered through MnDOT. $20,000 in a separate hosting contract with MnDOT and the MN Department of Administration.

Project Issues, Concerns and Risks: Cut over to production date not yet firmly established.

Project Contacts: Michael Bergervoet (MnDOT/CRU), Christopher Cialek (MN.IT Services)

Parcels, Street Centerline and Address Point Collection

Project Goal: To collect, standardize and aggregate county parcel, street centerline and address point data into statewide datasets for use by NG9-1-1 as well as for other state agency purposes. MnGeo asks for parcel, centerline and address point data in a single request to counties.

Project Status:

Parcels

The parcels project has been underway for several years. MnGeo has collected parcels for 86 counties to date *(see full-size map). There is no data available for the Red Lake tribal nation.* The MN.IT @ DNR team has been able to create a standardized and aggregated file for internal state use.

MnGeo continues to work with the MN Department of Revenue to determine how the Parcels Project complements Revenue's PRISM (Property Record Information System of Minnesota) Project; however, based on timing and the need to move forward, the Parcels and Land Records Committee and the Standards Committee are proceeding with standards approval for an updated version of the DCDATS proposed standard in the interim.

Anticipated Completion and Milestones:
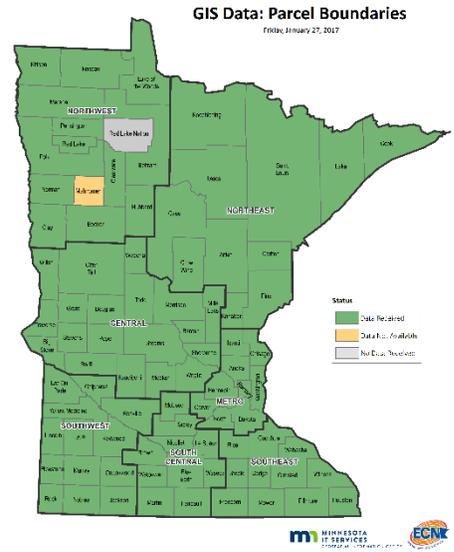
Milestones	Anticipated Due Date
Collect all available data	December 2016
Standardize the three layers (in progress, 59 counties so far)	February 2017
Aggregate the three layers into single regional or statewide datasets (in progress, 59 counties so far)	June 2017

It is hoped that complete statewide parcel, centerline and address point data layers will be available in two years.

Project Funding: There are no dedicated funds for this project.

Project Issues, Concerns, and Risks: Project success is dependent on counties developing and sharing both spatial and attribute data. Challenges include: Some counties have been reluctant to share their data, data content and quality varies between counties (and in some cases within counties), no established standard for parcel, address or centerline data in MN currently exists (although we are working toward the DCDATS standard), and time/personnel needed to complete collection, standardization and aggregation processes. **While the data will be available to government agencies, many counties have asked the state not to share parcels obtained for their counties. With that approach it is likely we will never achieve a statewide shared parcel layer.**

Project Contact: Dan Ross (Executive Sponsor)

Road Centerlines

Project Goal: Create an authoritative, multi-purpose, public-domain centerline spatial dataset representing the entire state of Minnesota that can be relied upon to accurately represent (to the best extent possible) the actual roadway assets of the state. This data layer is to be collaboratively built and maintained to reduce cost, eliminate redundant efforts, facilitate better data capture, provide inter-agency reporting and address a variety of needs from roadway data consumers.


GIS Data: Road Centerlines

Project Status: The MnDOT LRS tools were put into production internally earlier in 2016. MnDOT has been working to update the data that was frozen during the project. MnGeo is working with MnDOT and has defined data workflows that provide data updates from both non-state road authorities and state agencies to a single repository where the data will be standardized and aggregated. The project team is currently working on implementing a database model within MnGeo that will meet the needs of NG9-1-1 that can be shared with non-state participants; 86 counties have provided data so far *(see full-size map)*. The statewide team has agreed to use the data model created from the NG9-1-1 effort for centerlines which used the Metro Region Centerline Collaborative work as a starting point. MnGeo will be responsible for bringing data together from MnDOT and from other state and non-state road authorities.

Anticipated Completion and Milestones: The draft of the standard is being vetted by stakeholders and should be available Summer 2017. A secure repository, data model and database has been set up within MnGeo and many counties are currently submitting their centerlines and other NG9-1-1 data to the repository.

Project Funding: DPS and MnGeo are covering staff time and infrastructure to build out the repository, data model, and work flow as the data and system will be used for NG9-1-1.

Project Issues, Concerns and Risks: The project is heavily dependent on requirements, tools, standards and timelines being provided for the NG9-1-1 project.

Project Contacts: Dan Ross (Executive Sponsor), Adam Iten (Project Manager)
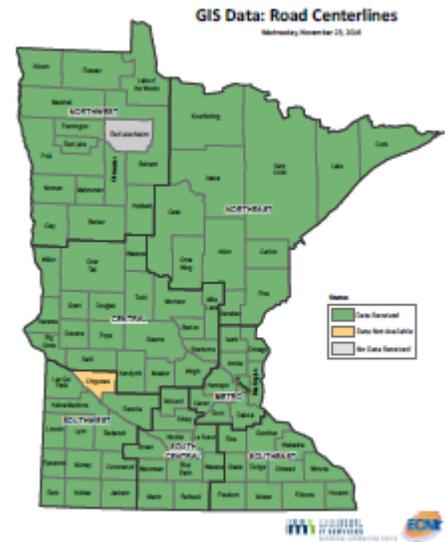
Address Point Collection

Project Goal: Create an authoritative, multi-purpose, public-domain address point dataset representing the entire state of Minnesota that can be relied upon to accurately represent (to the best extent possible) the actual location of addresses in Minnesota. This data layer is to be collaboratively built and maintained to reduce cost, eliminate redundant efforts, facilitate better data capture, provide inter-agency reporting and address a variety of needs from address data consumers.

GIS Data: Address Points

Project Status: MnGeo is working with PSAP (Public Safety Answering Points) and local authorities to define data standards that will be used to build out a standard statewide dataset. In August, the NG9-1-1 draft standard was compared to the Metro Address Standard. The two teams have come together to create a crosswalk between the two. Some form of address point data has been obtained from 77 counties *(see full-size map)*. Many, however, show gaps in the data where cities are located. MnGeo will continue to work with local partners in the coming months to fill in those gaps.
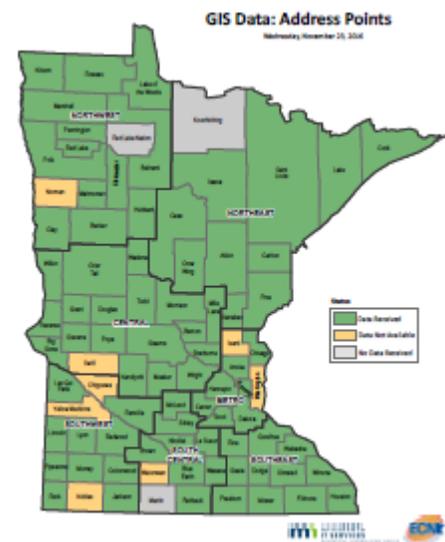
Anticipated Completion and Milestones: The first draft of the standard and data model are available for review by stakeholders. The data flow and repository to support moving data from partners into the NG9-1-1 repository have been put in place and counties are submitting their data to the repository.

Project Funding: DPS and MnGeo are covering staff time and infrastructure to build out the repository, data model, and work flow as the data and system will be used for NG9-1-1.

Project Issues, Concerns and Risks: The project is heavily dependent on requirements, tools, standards and timelines being provided for the NG9-1-1 project.

Project Contacts: Dan Ross (Executive Sponsor), Adam Iten (Project Manager)