

Leading the way in GIS data readiness for NG9-1-1: Iowa's Story



The Project at a Glance

Who: Iowa Homeland Security & Emergency Management

Where: 114 Public Safety Answering Points in 99 counties throughout Iowa

What: NG9-1-1 GIS Data Readiness Project

Why: GIS data is mission critical in a NG9-1-1 environment and it requires each county to assess and improve their GIS data in a consistent manner.

The Challenge: Each of the 99 counties had their own process for maintaining their GIS data

Project Goals: Assess the GIS data, improve the GIS data based on results of assessment, and maintain the GIS data to ensure accurate call routing in the eventual NG9-1-1 system

Project Result: Standardized statewide NG9-1-1 GIS dataset

Overview

In 2014, the Iowa Homeland Security and Emergency Management (Iowa HSEMD) and the Iowa Next Generation 9-1-1 (NG9-1-1) Geographic Information System (GIS) Committee set out to improve the accuracy of and standardize the GIS data used for public safety throughout the state. As the administrator of the Enhanced 9-1-1 (E9-1-1) Program, the Iowa HSEMD realized this was a necessary step to prepare for the industry changes with public safety 9-1-1 call routing in NG9-1-1. 9-1-1 call routing in NG9-1-1 relies significantly on the accuracy and standardization of GIS data, which is a shift in how 9-1-1 calls are routed today using Master Street Addressing (MSAG) and Automatic Location Identification (ALI).

For the Iowa HSEMD project, the state determined they needed to gauge the GIS data readiness across the state in preparation for NG9-1-1 and develop a partnership with a GIS and 9-1-1/NG9-1-1 vendor that had the experience of working on similar projects across the country. With their GIS data readiness goal and approach in mind, the state chose GeoComm as their partner.

"We knew from the outset that we didn't have the staff levels or expertise to manage a project like this ourselves and hiring additional staff was out of the question," stated Blake DeRouchey, E911 Program Manager for the Iowa Homeland Security & Emergency Management. "We were familiar with GeoComm and valued the expertise they were able to bring to the table from their work in other states. Choosing GeoComm was faster and more cost effective to get the project off the ground. We were able to gain positive momentum very quickly."

Iowa's project – while challenging – was straight-forward and achievable. The state set out to:

- **Assess the GIS data**
- **Improve the GIS data based on results of assessment**
- **Maintain the GIS data to ensure accurate call routing in the eventual NG9-1-1 system**

Over a two-year period, the state was able to accomplish each of these steps and the Iowa HSEMD is seeing the value of their investment including compliance to industry standards, ability to quickly share GIS information with other 9-1-1 systems across the state, NG9-1-1 GIS data readiness, and more.

Assessing the GIS Data

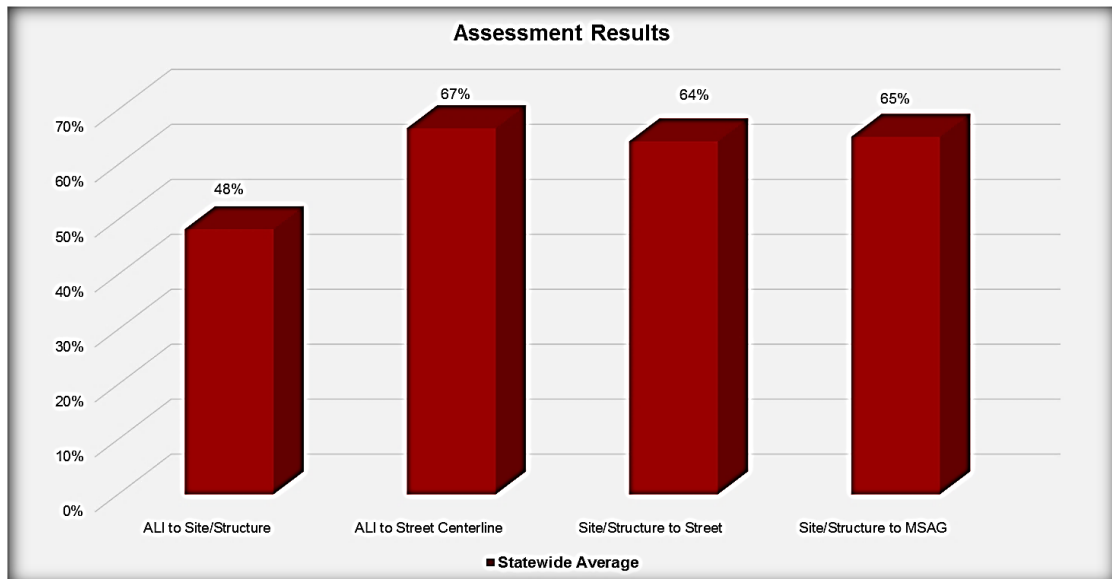
The first step was developing statewide NG9-1-1 GIS standards. If the 114 Public Safety Answering Points (PSAPs) in 99 counties across the state were going to have their GIS data assessed for NG9-1-1 readiness, statewide standards needed to provide the counties with a baseline - an expectation of where the quality of GIS data needed to be.

The Iowa HSEMD project team, NG9-1-1 GIS Committee, and GeoComm worked closely to develop the Iowa statewide NG9-1-1 GIS standards. The project team developed standards that, at its core, followed the *DRAFT NENA Standard for NG9-1-1 GIS Data Model*.

“The project teams recognized that each of the 99 counties had their own processes for maintaining their GIS data,” stated Christy Hayes, ENP, PMP, Director of Project Management. “Their processes and efforts to date were very commendable; however, NG9-1-1 brings the reality that in order to have a successful system, the GIS data becomes mission critical - it has to be assessed and improved in a consistent manner across each jurisdiction.”

Gaining project understanding at the local level was very important to the teams, so they developed an educational approach to gain trust and buy-in at the county level. In order to communicate to the county public safety officials and GIS professionals about the project goals, the HSEMD and GeoComm hosted a series of educational webinars. The webinar covered the project scope, project plan, statewide NG9-1-1 GIS standards, expectations and impact of the project, and other important aspects of the state’s project. Following a successful educational campaign, GeoComm requested GIS data, and MSAG and ALI databases for all 99 counties in Iowa.

Over a six-month period, data was received for 98 counties, and the project team worked to determine the match rate between MSAG and ALI compared to individual GIS layers. In addition, an inventory of the GIS data provided by the counties was compared to the list of required and highly recommended layers documented in Iowa’s NG9-1-1 GIS Standards Document.



The Iowa statewide NG9-1-1 GIS standards included the NENA recommendation (NENA 71-501, Version 1.1, September 8, 2009) that a minimum match rate of 98 percent be set prior to using the GIS data in the Emergency Routing Data Base (ERDB) or the Location to Service Translation (LoST) Protocol services.

Next, the Iowa HSEMD was provided with an assessment summary about the status of GIS data and MSAG and ALI databases and showed the current status for each of the 98 counties that provided their data. This established the baseline accuracy for Iowa.

“The project teams were extremely pleased with the responsiveness of the counties, and along with the assessment summary provided to the state, each county received an individual assessment,” Hayes explained. “We also offered the opportunity to meet with our project team via conference call to review and understand their assessment results.”

As well as reporting each county’s assessment results, GeoComm provided detailed recommendations related to the remediation of discrepancies and GIS data development needs for creating a statewide NG9-1-1 compliant GIS dataset. At a high-level the recommendations included improved synchronization, resolution of discrepancies, GIS data layer development, and documentation of steps towards NG9-1-1 provisioning.

“Through the combination of educational webinars, collaborative creation of NG9-1-1 GIS standards, and assessment results, we were well-positioned for the next steps towards creating a statewide NG9-1-1 GIS dataset,” DeRouchey stated. “We were determined and believed it was important to continue the process of improving the GIS data for NG9-1-1 – we continued the momentum.”

Improving the GIS Data

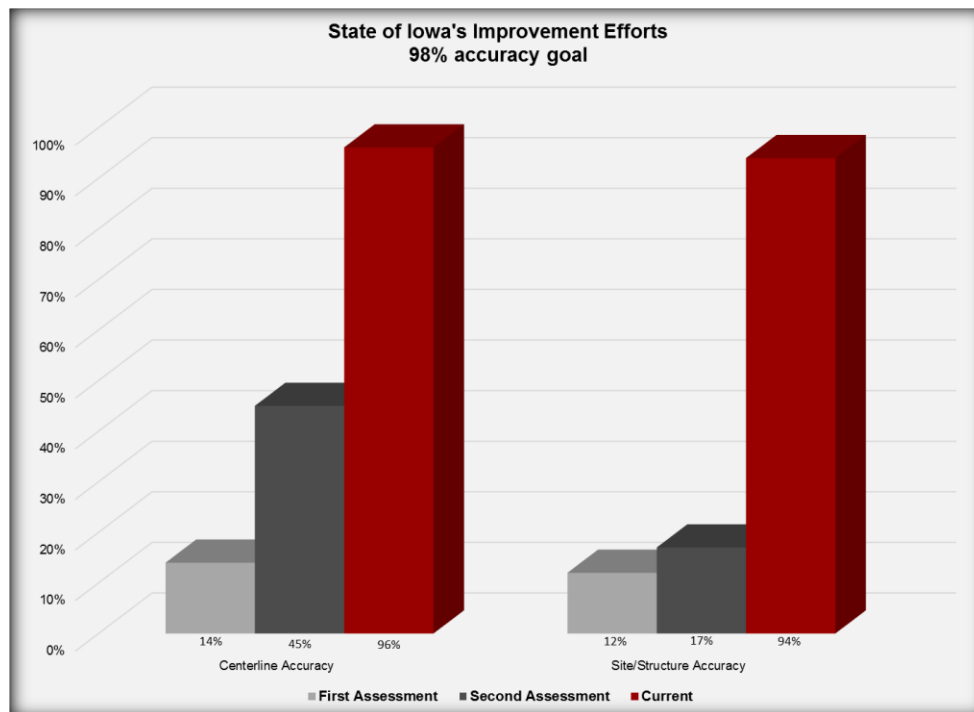
Now that the status of the GIS data across the state was known, the Iowa HSEMD and GeoComm continued the momentum by outlining an improvement plan. The plan included the process of how GeoComm would work with the individual counties and stakeholders to proceed with improvement efforts and work towards the minimum match rate of 98 percent. Counties were aware of this recommendation, and 9-1-1 grants for GIS data improvements were made available to the counties.

The Iowa counties had the choice to improve their data in-house or contract out the improvement work. Regardless of the approach, there were two goals established to meet the NENA recommendation:

- **Clean up, develop, and/or enhance the 9-1-1 GIS data**
- **Standardize to the Iowa NG911 GIS data standard**

“The Street Centerline and Site/Structure accuracy is vital to accurate call routing and location validation in the NG9-1-1 environment, thus a

primary focus of GIS data improvement.” Hayes explained. “The teams are confident that the 98 percent goal can be achieved by following the established on-going processes, and through proper planning Iowa has allowed the time to get to the point of having their GIS data ready for NG9-1-1.”



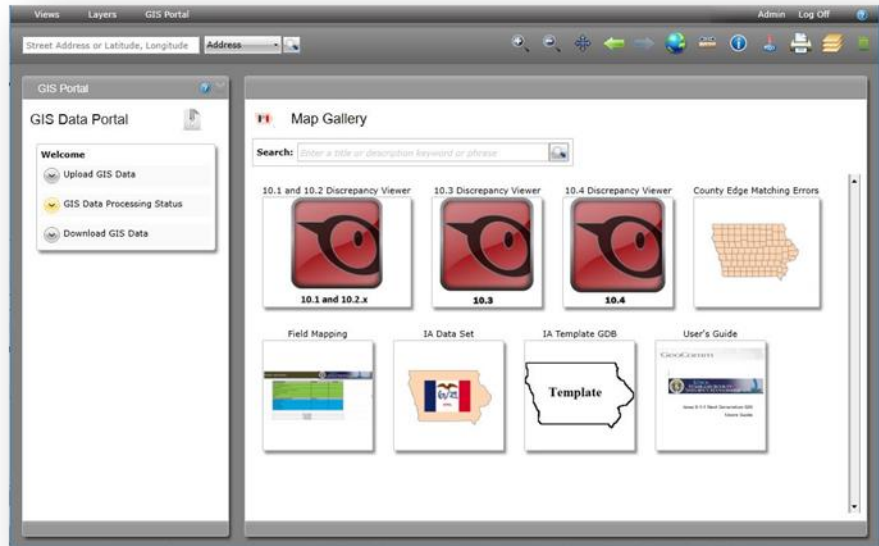
Maintaining the GIS Data

Iowa desired an on-going sustainable way to maintain the quality of the local level GIS datasets and process them into the statewide dataset. Iowa chose to utilize GeoComm's GIS Managed Services Bureau and a suite of GeoComm tools for data submission and QC reporting.

Iowa HSEMD project team participated in maintenance workflow work sessions in order to document the roles, responsibilities, and activities of the process that would be required to maintain the GIS data.

The workflow outlined processes such as:

- **Local authoritative GIS data update incorporation including reviewing, tracking, and management by counties**
- **Review, editing, and management of addressing information from other authoritative sources by counties**
- **Provisioning of GIS updates into the GeoLynx Server GIS Portal**
- **Extract, Transform, and Load (ETL) routines**
- **QA/QC to ensure data integrity and NG9-1-1 usage**
- **Mechanisms for propagating GIS changes to the ECRF/LVF servers**
- **Continuous reporting metrics and measurements on the quality of the GIS data**



Once the workflows had been reviewed and approved by the Iowa HSEMD project team, GeoComm's team trained the Iowa HSEMD project team and county users on the software tools and workflows that would be utilized to maintain the GIS data.

“GeoComm has demonstrated a great level of expertise in NG9-1-1 GIS standards throughout this project. The communication from the project team has been consistent and frequent; their plan was very effective in rolling out the new standards to the counties throughout the state,” states DeRouchev. “As a result of this project our GIS data will be adequately prepared for an NG9-1-1 environment.”

The GIS data created and improved throughout the state followed the Iowa NG9-1-1 GIS standards and will serve the purpose of validating civic address locations, defining PSAP and Emergency Services boundaries for the routing and transfer of 9-1-1 calls, and defining the authoritative data sources at the local, regional, and state level. The resulting GIS data can then be coalesced and provisioned into the State of Iowa's NG9-1-1 system.

Recognizing the Project's Value

The project teams know that the efforts have provided value, and the Iowa HSEMD reports already recognizing the benefits of the time and investment. Some of their documented successes include:

- **The GIS data continues to improve on a daily basis, which is critical in NG9-1-1. Offering the 9-1-1 grants was a key incentive to keeping the project moving; it allowed the counties to continue the GIS improvement efforts into maintenance mode.**
- **Reports documenting the improved the accuracy and reliability of the GIS data.**
- **Compliance with industry standards and enabling a jurisdiction to quickly share GIS information with other 9-1-1 systems.**
- **Ability to use the GIS data beyond 9-1-1; improved GIS data quality is benefitting the public along with numerous local and state departments.**
- **Ability to provide a standardized statewide NG9-1-1 GIS dataset.**
- **Consistent GIS data expectations, standards, and maintenance workflows across the state.**
- **Prepared to support the NG9-1-1 systems when the time comes.**
- **Working with a vendor that had worked with other counties, regions, and states across the country on GIS data readiness projects for 9-1-1 provided “peace-of-mind” that Iowa was going down the right path.**

Iowa moved to the maintenance phase in 2016. The Iowa HSEMD and GeoComm continue to work with all stakeholders for on-going sustainability by providing quality control checks and aggregating the local datasets into the statewide dataset. Through the use of GeoComm's GIS Managed Services Bureau and tools, the counties can upload data weekly or monthly. Each time a county submits their GIS data they receive a QC report provided by GeoComm, and the state receives a monthly report on the progress.

“One of the most impressive stats we are seeing is for counties who have submitted their GIS data multiple times for quality control,” Hayes states. “For those counties, we are seeing a 60 percent improvement in the GIS data quality month-to-month.”

The project was a critical investment for the state and maintaining the GIS data for 9-1-1 use requires a commitment of 24 hours a day, 7 days a week, and 365 days a year. For agency's going down this path, Hayes suggests:

Provide your stakeholders education about 9-1-1 and the role of GIS for N9-1-1 as well as information about the assess and improve steps – it will be a continuous process

Make sure you know the GIS data requirements for your NG9-1-1 call-routing system

Provide an open door for questions on how to improve the 9-1-1 GIS data

Have a process and conduct routine Quality Control metrics

“One key for our state was recognizing that each of the phases: assess, improve, and maintain are vital to accurate NG9-1-1 call routing,” DeRouchey explained. “Our stakeholders have been very supportive of the process and look forward to continuing to provide reliable 9-1-1 service to the public.”

GeoComm thanks the Iowa HSEMD, NG9-1-1 GIS Committee, and counties for their participation in this important project and for allowing their story to be shared with others that are working towards GIS data NG9-1-1 readiness.

About Iowa's E911 Program

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Iowa's E911 Program is a part of the Iowa Homeland Security and Emergency Management Department. The program is primarily responsible for Wireless 911 throughout the state and currently has a functional NG9-1-1 Emergency Services IP Network (ESInet).

The state is also rapidly approaching a fully end-to-end NENA i3 environment with enhancements that are ongoing at the PSAPs. In Iowa, the legacy wireline environment is mostly overseen by local E911 Service Boards.

To learn more about Iowa's E911 Program, please visit http://www.homelandsecurity.iowa.gov/programs/E_911.html

About GeoComm

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GeoComm was founded in 1995 to provide county governments with turnkey emergency 9-1-1 development services. Over the subsequent 21 years, the company has grown to serve local, regional, statewide, and military agencies in forty-nine states, helping to keep more than 100 million people safe. Today, GeoComm has a national reputation as a leading provider of public safety GIS systems that route emergency calls to the appropriate call center; map the caller's location on call taker or dispatcher maps, and guide emergency responders to the scene of the accident on mobile displays within police, fire and ambulance vehicles. Our NG9-1-1 GIS solutions provide GIS data quality control, transformation, and aggregation services as well NG9-1-1 system emergency call routing.

To learn more about GeoComm, please visit www.geo-comm.com

