GeoComm

State of Nebraska Public Service Commission

Address Point Layer Comments

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Comments

Geo-Comm, Inc. ("GeoComm") submits the following comments in response to the Nebraska Public Service Commissions' Application no. 911-057/PI-187 regarding the development of a GIS address point layer for public safety purposes. These comments are requested at a timely juncture in the public safety community. The National Emergency Number Association (NENA) recently initiated the Site/Structure Address Point (SSAP) workgroup to establish documentation for developing an address point layer for 9-1-1. NENA recognizes the importance of an address point layer as it relates to both Next Generation 9-1-1 (NG9-1-1) and E9-1-1. Specifically, the need for address point layers has increased in demand based on the core location-based address/location validation and emergency call routing in a NENA i3 NG9-1-1 Emergency Services Network. However, an address point layer has always played a role in accurate public safety GIS mapping for dispatch mapping, vehicle navigation, emergency notification, and Computer-Aided Dispatching.

An address point layer is a Geographic Information Systems (GIS) data layer that uses discrete coordinates to represent the geographic location of sites and structures within a jurisdiction. Address points typically contain detailed information about each location such as physical address, resident or business name, phone number, parcel information, special notes, or hyperlinks to floor plans, and structure photos. Two or even three-dimensional discrete geographic location such as a latitude/longitude coordinate is also embedded within each address point.

Developing a field-verified address point layer for public safety enables call-takers and dispatchers to more accurately determine the location of an emergency call and dispatch responders to the critical location.

It is also interesting to note that the state of North Dakota is currently developing a statewide, field-verified address point layer and road centerline, the State of Iowa is developing a statewide address point layer through a project with the Department of Natural Resources, the State of Colorado is considering the development and maintenance of a statewide address point layer using resources created during their broadband internet service mapping project , and the State of Kansas recently issued an RFI pertinent to the development of GIS data for NG9-1-1. These states are approaching this as a ground up, county-by-county, statewide address point layer project. It is also interesting to look into what the State of New York is doing for their statewide addressing program – they have specifically outlined point placement and attributes for a statewide GIS for public safety.

An Address Point Layer for E9-1-1

An address point layer, related to E9-1-1 is beneficial for:

- Faster and more accurate location identification in dispatch mapping application
- Better decision making in an emergency and for disaster planning
- Additional data about a location

- Identification of addressing anomalies
- Advanced synchronization of GIS data, Mater Street Address Guide (MSAG), and Automatic Location Identification (ALI) database

Using an address point layer, a caller's actual location – rather than estimated location – is displayed in your 9-1-1 call center mapping software. Emergency responders will be directed right to the doorstep of an emergency instead of the other end of the block, as may be the case currently with plotting calls based on address ranges on the road centerline.

An address point file may also provide dispatchers and emergency response personnel access to special attribute information to help them better assess the emergency situation. Additional information may include: resident/business/other location name, phone number(s), parcel and property ownership info, apartment number, number of apartments, suites, units within the building, special notes: dangerous animals, wheel chair, sex offender, hazardous materials, etc.

Accurately pinpointing the location of a 9-1-1 caller can be difficult if inaccurate addressing exists within your jurisdiction. Address anomalies such as house numbers out of sequence, duplicate addresses, or incorrect odd/even parity can cause confusion as to where the caller is actually located. With the development of an address point layer, agencies can accurately map the location of such anomalies so 9-1-1 calls plot in the correct location in the dispatch center. Also, by identifying anomalies, an agency has the opportunity to correct the anomaly.

An address point file promotes better synchronization of your GIS data with the MSAG and ALI database than the centerline alone is able to provide. By comparing the ALI database to your address point layer, incorrect addresses in the ALI database can be easily identified and investigated. Also, a comparison of the address point layer against the road centerline and/or MSAG will ensure that both resources accommodate all addresses in the county – not just those with landline telephones.

Accurate and reliable GIS data is essential for accurately routing NG9-1-1 calls and responding to emergency incidents. Many different layers of GIS data are used to support NG9-1-1 call routing and emergency response today. One of the most important GIS data layers is an address point layer.

An Address Point Layer for NG9-1-1

An address point layer related to NG9-1-1 is beneficial for:

- Ensures accuracy in NG9-1-1 call routing
  - An address point layer provides the core location validation database for NG9-1-1 and can validate sub-address elements of building name, unit, room, seat, and place type, unlike tabular 9-1-1 MSAGs.
  - It also provides the core emergency call routing GIS database for devices referenced by civic address locations, such as wireline telephones and other fixed location devices.

- There is also a critical linkage between caller location and NG9-1-1 additional data associated with a location for discovering additional premise, owner, and tenant data using an Emergency Call Routing Function (ECRF).
- An address point layer is able to store more finite information about a location than an MSAG or road centerline; such as building name, unit, room, etc.

- Discovers additional data about a location

NENA 71-001 v1 NG9-1-1 Additional Data describes several informational data structures that can be associated with a 9-1-1 call. The call data structure includes device specific information, such as make, model, and type of device, from which a 9-1-1 call is placed. The call data structure includes human information, such as emergency contacts and potentially other information such as electronic health records. The Public Safety Answering Point (PSAP) data structure includes information added by the PSAP, such as call taker notes. Finally, the location data structure can include information about a premise such as:

- Owner and tenant contact information
- Security contact information
- Building maintenance and structural engineering contacts
- Floor plans
- HVAC, alarm, and sensor status
- Automatic defibrillator locations
- Surveillance

A location data structure for a premise is referenced by a Uniform Resource Identifier/Uniform Resource Locator (URI/URL). The additional location information URI/URL is an attribute field within an address point layer provisioned to the NG9-1-1 ECRF. An authorized application, such as a PSAP mapping system, discovers the additional location data URI/URL by querying an ECRF provisioned with an address point layer containing the additional location data URI/URL attribute field. Therefore, address point layers are critical for discovering NENA 71-001 NG9-1-1 Additional Data associated with a location.

Necessary Steps and Estimated Costs

The State of Nebraska should consider the following necessary steps, specifically related to developing an address point layer for public safety. Ideally, the state would determine a statewide address point layer standard format. This statewide standard would need to consider public safety GIS data standards, NENA recommendations, and other GIS standards from the postal service and so on. A consistent standard across the state would provide for a more smooth transition when the state decides to implement a NG9-1-1 network with geographic location-based address validation and call routing to the 9-1-1 call center, the state would need to reevaluate and update the GIS across the state to interoperate. However,

it is not necessary to start out with a statewide address point layer standard. A county or city developing an address point layer to meet various NENA and other GIS standards is a good approach as well. There are various ways to update the data down the road.

From the point of having a statewide address point layer standard, the state could consider two approaches:

- The State could assess and fund local efforts to develop a statewide address point layer to match the state's address point layer standard, or
- The State could develop a statewide address point layer as a state project

There are numerous considerations when determining which development path to choose. For example, if the state funds local projects to meet a statewide standard the projects are managed at the local level and done on varying timeframes over the course of a number of years depending on funding allocations.
If the state determines it would like to develop a statewide address point layer efficiencies can be gained in grouping counties into regions therefore combining on-site trips and streamlining work processes across all counties. Also, there is a potential data deliverable on a schedule that includes the entire state.

That said there are also considerations for methodology which directly affect pricing. There are a number of methodologies to consider for developing an address point layer. Each methodology has pros and cons. Considerations include:

- Methodology for developing the address point layer
- The level of accuracy desired and what standards will be followed
- Point placement
- Desired attributes
- Project timeline
- What is considered an addressable structure for the address point layer
- Do addressable structures already have visible addresses
- What attributes will be in the address point layer
- What existing resources are available to begin the project; for example, does an agency have an existing address point layer that needs to be cleaned up or verified, does the agency have an accurate parcel layer that can be used as a starting point for an initial layer
- Does the agency have recent, high resolution imagery and are you able to see addressable structures or is there a lot of tree coverage
- While in the field, are there other attributes to capture or verify such as the road center line
- The size of the jurisdiction; number of road miles to drive to field-verify the address point layer

All of these factors, and many others, affect the scope of the project and pricing.