

## **Excerpt from the April 20, 2005 Policy Board Meeting Summary:**

### **5b) Vision – E911-Compliant Regional Street Centerline Dataset**

Coordinating Committee Chairperson Read commented that for this Agenda Item and the Item that follows, a business need exists by many stakeholder organizations on many levels for a coordinated regional solution. She also commented that achieving the full potential for each of the proposed visions will require involvement by those who produce street and address data daily (e.g., cities) and that the Metropolitan 911 Board has a need for a regional solution. The 911 Board's acknowledgement of its need for a regional solution made it possible for MetroGIS to support the forum for the visioning that has occurred thus far. Finally, Read noted that due to the complexity of the intergovernmental relationships anticipated to achieve these visions, they are being shared with the Policy Board at this time to identify any policy issues that may have been overlooked before proceeding with development of detailed implementation strategies.

Read then introduced Gordon Chinander, GIS Coordinator for the Metropolitan 911 Board, to explain the key components of the proposed vision to achieve a E911-Compliant Regional Street Centerline Dataset for the seven county Metropolitan Area.

Chinander explained that the Metropolitan 911 Board needs street centerline data that are standardized across the seven county area to effectively support 27 PSAPs (Public Safety Answering Points). He explained the genius for the current vision as an awareness that surfaced last fall. Several cities and counties were considering or had begun developing their own E911-compliant street centerline datasets because the regional street centerline data solution that had been previously endorsed by MetroGIS for address matching did not satisfy their needs. In response, MetroGIS convened a focus group at which all parties concurred that a regional solution, as opposed to continued independent efforts, would be in the public interest.

Chinander then summarized the main points of the vision for the proposed regional solution (refer to the slides at [http://www.metrogis.org/teams/pb/meetings/05\\_0426/e911.pdf](http://www.metrogis.org/teams/pb/meetings/05_0426/e911.pdf) for more information):

- Expand functionality potential associated with the current street centerline dataset to include navigable routes.
- Define a single official source for address data for each distinct area throughout the Metro Area.
- Implement an effective means to capture for the regional solution data pertaining to new streets when produced by local officials.
- Define appropriate organizational roles and responsibilities for all participants, including the regional custodian, which the Metropolitan 911 Board has expressed interest in assuming.
- Define data content standards to facilitate sharing and ease of use by the user community.

He concluded his presentation noting that multiple county E911-compliant street centerline datasets have been previously developed in other parts of the country but that he is not aware if any of those solutions sought to capture street and address data from so many local units of governments at the time they create it.

Member Pistilli asked if there were any plans to expand this concept beyond the seven-county Metropolitan Area. Chinander commented that depending on the outcome of legislation currently being considered, the E911 Board's jurisdiction may be expanded to include counties beyond the Metro Area, which could result in expansion of the vision beyond the seven county area. Regardless, the envisioned solution assumes that a 3<sup>rd</sup> party contractor will provide data for units of government which do not wish to or do not have the resources to transmit the subject data at the time of initial creation. Additionally, this 3<sup>rd</sup> party contractor concept could also be considered for jurisdictions outside of the Metro Area if the local PSAP/E911 entity would so choose.

Member O'Rourke asked for clarification on the timeline for implementation. Staff Coordinator Johnson noted that detailed strategies have not been prepared, awaiting the outcome of the Policy Board's consideration. However, in preliminary discussions, the consensus of those who conceived the vision is that a process of prototyping several scenarios, each of which respects existing and varied intergovernmental relationships, and subsequent demonstration of benefits to cities to encourage participation would comprise anticipated immediate next steps.

Pistilli asked about the expected role of The Lawrence Group (TLG) in the proposed vision. Staff Coordinator Johnson commented that the 3<sup>rd</sup> Party contractor component anticipated in the proposed vision would likely be decided via an RFP process and that there is a general desire to migrate to publicly owned data from the proprietary ownership that currently exists. Johnson noted that he is hopeful that this transition can be successfully negotiated so that locally-produced street centerline data can be shared with the U.S. Census Bureau and become the foundation for the future versions of the Bureau's census geography (TIGER database).

Member Schneider encouraged the workgroup to speak with engineers and planners working for the target local governments early-on to ensure their practices related to street naming and address assignment are clearly understood. He also encouraged the workgroup to be sure to regularly ask those cities that initially opt out (of providing the data directly to the regional solution) whether they wish to reconsider participating in the event their internal situation has changed.

Vice-Chairperson Kordiak asked how much of the desired data already exists. Mark Kotz, member of the MetroGIS Support Staff and lead staff for the regional parcel dataset, commented that much of the data exists but that the lack of standards makes it difficult to readily assemble for routing purposes. He commented that the proposed vision involves creation of an application (Web interface) that would standardize data capture in an attempt to make assembly across various jurisdictions more manageable. Staff emphasized that use of the proposed application and participation, in general, is assumed to be voluntary, hence the emphasis on demonstrating benefits of participation.

Chairperson Reinhardt commented that she believes the most important of the proposed objectives is the call for a single official source, noting that it is not only the foundation of the proposed vision but also most likely the most difficult objective to achieve.

None of the Board members expressed any opposition to the proposed vision. No political issues were raised that had not been previously identified by the workgroup.



**TO:** Policy Board  
**FROM:** Coordinating Committee  
Chairperson: Nancy Read, Metropolitan Mosquito Control District  
Staff Contacts: Michael Dolbow (651-602-1812) and Gordon Chinander (651-603-0054)  
**SUBJECT:** Vision – E911-Compliant Regional Street Centerline Dataset  
**DATE:** April 7, 2005  
(For Apr 20<sup>th</sup> Meeting)

### INTRODUCTION

The Coordinating Committee requests comments from the Policy Board regarding a vision to achieve and sustain an E911-Compliant Regional Street Centerline Dataset. Along with fourteen major objectives stated below, a MetroGIS workgroup drafted the following vision statement:

*MetroGIS seeks a public sector, regionally seamless addressable and routable street centerline dataset that meets the needs of the E911 dispatching community in addition to the functionality provided by the currently endorsed street centerline dataset.*

The Metropolitan 911 Board is acknowledged as an organization with a significant need for the proposed regional solution. Thus the proposed vision is currently being vetted with the public safety community to ensure they are satisfied with the general proposal. The Metropolitan 911 Board Executive Committee is scheduled to comment on this vision on May 4.

This vision also creates the potential to incorporate locally-produced street data into the U.S. Census Bureau's TIGER datafile, which affects the broader MetroGIS community.

If both the Metropolitan 911 Board and the MetroGIS Policy Board conclude that the vision merits consideration, detailed strategies to achieve the technical and organizational components will be developed. These strategies are anticipated to evolve into a formal recommendation to the Policy Board, hopefully within the year.

### RATIONALE FOR REQUESTING COMMENT AT THIS PHASE

This proposal is more ambitious in terms of intergovernmental cooperation than those associated with previously endorsed regional solutions. Thus, comments on potential policy ramifications are sought from both the MetroGIS Policy Board and the Metropolitan 911 Board Executive Committee. These comments will influence several organizational components of the process, such as the 911 Board's willingness to assume the role as Regional Custodian of the centerline dataset.

MetroGIS Policy Board review is essential given the desired extensive involvement of local government officials as active participants in the regional solution. As with all MetroGIS endorsed solutions, participation would be voluntary. The vision calls for individuals who assign addresses and street names to simultaneously update the regional dataset alongside official permitting processes. A backup solution would be developed for circumstances where local officials are not involved, for whatever reason.

### COORDINATING COMMITTEE ACTION

At its March 30, 2005 meeting, the Coordinating Committee unanimously approved the above-cited vision and the associated fourteen major objectives cited below. Refer to the Reference Section for more information about the evolution of this proposal and the Committee's review.

### JUSTIFICATION

Most of the 27 Public Safety Answering Points (PSAPs) that serve the seven-county area use GIS mapping applications to accurately locate calls and dispatch emergency services, especially for wireless calls. Many PSAPs currently use or modify the regional centerline dataset endorsed by MetroGIS, which is created and maintained by The Lawrence Group (TLG). However, this dataset was not created for 911

uses and does not satisfy some of the 911 response community's business needs. One of the largest "needs gaps" is the data model's lack of compliance with the Master Street Address Guide (MSAG). Dispatchers and Emergency Responders also need the ability to locate emergency vehicles in areas that are not currently represented, such as private developments, utility access roads, and parking lots.

Presently, three counties and a core city have created or are considering creating and maintaining their own centerlines for a variety of reasons. Four of the counties, to our knowledge, do not have any immediate plans to move away from using the regional solution provided by TLG. The Metropolitan 911 Board recognizes the importance of MetroGIS's efforts to establish data standards that facilitate the integration of data from multiple producers.

The E911 Address & Street Centerline Workgroup has concluded that a regional solution should be pursued to resolve deficiencies in the endorsed regional street centerline dataset with respect to the needs of the E911 community. If possible, this regional solution should also further the integration of locally produced street centerline data into TIGER datafiles maintained by the US Census Bureau. Without the desired organizational interoperability, the following issues persist:

1. Costly duplication of effort pertaining to data capture, management, and customization for E911 dispatch solutions.
2. Difficulties in achieving cross-jurisdictional interoperability of accurate and trusted address **data**, which is critical when coordinating the dispatch of emergency services in a regional context.
3. Higher costs for other government stakeholders using the address data when regional consistency is not maintained – the reason for establishing the current regional solution in the first place.
4. Inconsistencies between the US Census TIGER data and locally produced street data lead to major inefficiencies, and hinder communications with the Census Bureau in regards to geography updates. The proprietary nature of the TLG street centerline dataset currently precludes integration into the TIGER dataset.

### **OVERVIEW OF THE VISION**

**The next-generation regional centerline solution is envisioned as a compilation of geographically separated datasets created and maintained by multiple counties and/or municipalities.** This would require establishing standards for both the spatial and attribute components to ensure compatibility across the seven-county region. The dataset would build upon the currently endorsed regional street centerline dataset created and maintained by The Lawrence Group. It would meet the needs of the E911 community and, if possible, be available for integration with the TIGER datafile maintained by the U.S. Census Bureau.

Before pursuing such a regional solution, a definition of "street centerlines" must be agreed upon. Previous discussions have led to a general consensus, but no definition has been committed in writing. The E911 Workgroup suggests the following definition as it applies to this initiative:

*A **street centerline** represents a discrete, linear, graded land surface navigable by at least one type of vehicle, with at least one established connection to a network of similar elements.*

This definition is highly tailored for E911 response purposes, allowing geographic centerlines to represent almost any location that can be reached by emergency vehicles, including:

- Public and private roads
- Access roads and trails to utilities, train tracks, and private facilities
- Perimeter roads *and* internal parking accessways for mall and shopping centers
- Graded and paved bicycle and/or walking trails navigable by small emergency vehicles
- Newly constructed dirt/gravel roads in new developments
- Navigable emergency easement surfaces for otherwise landlocked developments
- Restricted access turnaround connections on divided highways

The definition *excludes* other features, such as:

- “Platted” centerlines defined by right-of-way parcel boundaries that are NOT navigable due to existing buildings or other permanent obstructions
- Other surface transportation features that are restricted to certain types of vehicles, such as train tracks or water bodies
- Wilderness (non-graded) trails that are inaccessible to the typical emergency vehicle

While this definition expands upon the current TLG data model to include new “feature classes” and more elements from existing classes (such as private roads), it does not shift the paradigm of the data model itself. The main components of the data set are still roads and highways, and the added features “fit” within the established network.

As part of defining and establishing regional data standards, this project also proposes additional centerline attributes, changes to the centerline geography standards, and changes to the current maintenance requirements. The attribute standards are the minimum deemed necessary to standardize the regional data solution for emergency response purposes. Other attributes can be added by the data producers for internal or external use, producing a single product that still meets many business needs. Some attributes may not be required for certain data producers, who **would not** be asked to populate an attribute in the proposed standard unless they perceive an internal business need to do so.

In summary, the desired end product would be a compilation of multiple centerline datasets provided by local data producers, collected and re-assembled to form a seamless region-wide layer. It would utilize the data standards endorsed by the Metro911/MetroGIS communities to ensure MSAG compliance and compatibility between data producers.

### **MAJOR OBJECTIVES**

This broad vision incorporates the following major objectives, which outline a process to define the technical and organizational components necessary for an interoperable, multiple-use “centerline” product. *(Not intended to be listed in any order of priority. The numbering is provided only to facilitate comment):*

1. Continue to pursue the concept of a “single official” source of street centerline data for any given jurisdiction, or “Core Geographic Division”. This was a core objective of MetroGIS’s 1998 endorsement of the TLG Street Centerline Dataset as the preferred geocoding solution for the metropolitan area. Defining a “single source” of street centerline data for a given Core Geographic Division reduces the potential for inaccurate/inconsistent addresses and streamlines the process of mitigating anomalies, as they arise. Within a Core Geographic Division, this authority needs to maintain a relationship with both Emergency Responders and the other personnel involved in (and affected by) the efforts outlined in this vision.
2. Each Core Geographic Division (based on county, PSAP response area, and/or city jurisdictions) would readily nest with adjoining core geographies to achieve interoperable street centerline data across the entire seven-county metropolitan area. In many cases, Core Geographic Divisions could include multiple municipalities.
3. The Metropolitan 911 Board would serve as the Regional Custodian for E911 purposes, monitoring user satisfaction and supporting desired modifications to practices and policies. Depending on the result, the community may wish to ask the Metropolitan Council to continue as Regional Custodian for non-E911 centerline data business needs.
4. Organizations and their personnel responsible for local government procedures pertaining to approval of new streets (public and private) would be encouraged to serve in the capacity of a Primary Producer. As new streets are approved, a Primary Producer would either directly add and modify street data (geography and attributes) for the Core Geographic Division’s datafiles or work closely with a Third Party to maintain the currency of the data. The vision currently assumes the Metropolitan 911 Board, as Regional Custodian, would be responsible for coordinating such efforts. A funding allocation structure for compensating third parties has not yet been determined.
5. The datafile for each Core Geographic Division would be accessible by an individual(s) with read/write privileges from each jurisdiction that has authority and GIS capabilities to modify street

- data within that jurisdiction. Each authorized individual would have the ability (and responsibility) to modify, add, or delete data within their jurisdiction as necessary.
6. The proposed vision assumes multiple avenues for creating, maintaining and storing centerline data, and providing periodic updates to the Regional Custodian. For example, some individual cities might maintain local databases for just their jurisdiction, and other larger government units (PSAPs or Counties) might maintain data for multiple cities and townships. However, this will require significant negotiation, as overlapping jurisdictions with differing topologic requirements will have a conflict with this procedure.
  7. The Regional Custodian would be responsible for overseeing aggregation of the Core Geographic Divisions into a seven county datafile for stakeholders who need simultaneous access to multiple Core Geographic Divisions. *This may be a virtual aggregation as it is currently for access to the regional parcel dataset.*
  8. The proposed solution needs to have an outreach component to inform all affected and relevant interests about its benefits, and to grow participation in reporting anomalies as they are identified.
  9. Procedures for maintenance of street centerline data would be fully coordinated with procedures to maintain the proposed Regional Occupiable Unit Regional Dataset. (See Agenda Item 5c.)
  10. Some mechanism (likely a new attribute field) would be incorporated into the data model to handle new public and/or private streets that are being built under existing construction contracts, but are not yet “platted” by the local government. These centerline elements would be added to the Core Geographic Divisions as “Streets under Construction”, in anticipation of their imminent navigability.
  11. The vision requires reconciling the regional GIS centerline database with the MSAG database to ensure data compatibility and correct any errors that may be found. The centerline dataset uses a completely different addressing standard (USPS) than the MSAG, which hinders current dispatch efforts. Once this reconciliation is complete, a software solution, such as “Graphic MSAG”, could be used to simultaneously maintain both databases (MSAG & GIS). However, it is important to prevent MSAG formatting requirements from conflicting with locally established procedures. (See the Background Section for more information about MSAG conventions.)
  12. The final proposal needs to recommend accuracy guidelines and procedures as regional best practices. A variety of positional accuracies may be acceptable if they are clearly documented.
  13. Achieving the vision requires compliance with the Attribute, Topology and Maintenance specifications presented in the document reviewed by the Coordinating Committee on March 30, 2005 and entitled: “General Specifications for an Addressed Centerline Map Layer for Local Public Safety Agencies”. These specifications build upon the current procedures of many E911 and emergency response data producers. They can be reviewed at [http://www.metrogis.org/teams/workgroups/e911\\_streets/specs.pdf](http://www.metrogis.org/teams/workgroups/e911_streets/specs.pdf).
  14. Any privacy and access issues must be appropriately addressed.

#### **RECOMMENDATION**

No action is requested. Comment is, however, encouraged regarding any aspect(s) of the vision that raises doubts from a policy perspective.

## REFERENCE SECTION

### **BACKGROUND ON WORKGROUP**

1. The MetroGIS E911 Address and Street Centerline Workgroup initial met on December 2, 2004. The participants learned of two counties and Minneapolis' efforts to develop their own street centerline datasets because the endorsed regional solution was not meeting their Emergency Response needs. The participants concurred that a regional solution to the need for an E911 compliant regional street centerline dataset should be pursued. As such, the project was included in MetroGIS's 2005 workplan and a formal workgroup was established by the Coordinating Committee at its December 2004 meeting.
2. Survey of E911 Technology Requirements and Specifications: in January 2005, the Workgroup decided to survey the 10 vendors who provide E911 CAD/GIS software and services to the PSAPs in the Metropolitan Area. The survey was developed by listing the general requirements of an E911 system that is well known by the staff at LOGIS, and asking vendors to identify those specifications as required, not required, or prohibitive to their solution. Seven of the ten vendors replied, and while many of them had similar requirements, none of the specifications were listed as prohibitive to their solution. Thus, the results of the survey have been integrated into the General Specifications document.
3. The workgroup's membership, meeting agendas and summaries, findings of investigations, etc. can be viewed at [http://www.metrogis.org/teams/workgroups/e911\\_streets/index.shtml](http://www.metrogis.org/teams/workgroups/e911_streets/index.shtml).
4. Michael Dolbow of the MetroGIS support team and Gordon Chinander, GIS Coordinator for the Metropolitan 911 Board are co-facilitating the workgroup. Participants in the workgroup include:
  - Ben Verbick, LOGIS
  - Erin Naughton, City of Minneapolis
  - Scott Simmer, Hennepin County
  - Kent Tupper, Dakota County
  - Dan Pfeffer, Scott County
5. On March 30, 2005, the Committee unanimously recommended that the MetroGIS community pursue the vision outlined herein. The details of the Committee's discussion can be viewed at [http://www.metrogis.org/teams/cc/meetings/m\\_03\\_30\\_05.pdf](http://www.metrogis.org/teams/cc/meetings/m_03_30_05.pdf) (Agenda item 5b[1]).

### **MASTER STREET ADDRESS GUIDE (MSAG)**

"MSAG compliant" is defined as meeting the Master Street Address Guide to road naming conventions and Proper address ranges. This standard is endorsed by NENA (National Emergency Number Association). This organization creates national E911 GIS data standards.

A better definition and description of the MSAG and its connection to E911 processes and GIS/CAD solutions will be included in the white paper to be produced as part of this project.