NSGIC

NATIONAL STATES GEOGRAPHIC INFORMATION COUNCIL

✝ Addressing Coordination Issues ✝

The Vision

There will be a continuously updated, nationwide, publicly available address dataset, complete with geographic coordinates, that meets the needs of all stakeholders.

The data will cover all residential and non-residential structures, interior units, and other locations of critical interest. Address data will be available through a distributed system that is built and maintained locally, but accessible through regional and state web-based interfaces. The data will be developed locally, with local and state custodians acting as regional integrators that merge local data into region-wide databases. The data will be updated in a timely and regular manner, including new building permits and construction.

The Need

Addresses are used for essential government services as well as by businesses and individuals in order to connect with others. The table to the right provides examples of how this data is used. Government agencies (listed in bold) require high-quality, current data to function well. Lives and property are at risk, for example, if first responders don't have accurate information about the location of emergency events, they may not arrive in a timely manner.

The example uses at right actually cover five categories of more general uses of addresses:

- Vehicle navigation, including emergency dispatch

USERS	PURPOSE
Emergency Response, E9-1-1	Police, Fire, Ambulance, Rescue
School Districts	School assignment, bus routing
Assessors and Taxation Offices	Building location
Recorders and Auditors	Property records
Voter Registration	Precinct assignment
Planning & Zoning Office	Building permit, planning studies
State Departments of Revenue	Sales tax collection and distribution
State Departments of Transportation	Locate traffic accidents allowing access to FHWA funding to improve dangerous non-state roads.
State Departments of Health and Human Services	Track medical benefits, disease, births/deaths, and vulnerable populations.
U.S. Post Office, UPS, FedEx, etc.	Mail and package delivery
U.S. Census Bureau	Mail out census and survey forms, geocode responses
Federal Emergency Management Agency (FEMA)	Pinpoint disaster areas, provide relief
Department of Homeland Security	Locate & protect critical infrastructure
Utilities (public & private)	Hookup, service calls, billing
Map and address companies (e.g. TeleAtlas, NAVTEQ, Pitney Bowes Group 1)	Sell to insurance companies, location based service companies, utilities, state and local government, etc.
Retail/Services (e.g., Sears, local plumber)	Delivery of goods and services
Internet maps (e.g. Google Maps & MapQuest)	Navigation maps for public use

- Postal and package delivery
- Administrative recordkeeping, including record-matching between different files, departments, or agencies.
- Creation and maintenance of authoritative local address repositories
- Address aggregation into regional, state, and national repositories

Current System is Fractured

Addresses are created by local *Address Authorities*, usually a city or town, but sometimes the county. The new address information is provided to the owner and distributed to other organizations who need it, including various city and county offices, the US Postal Service, the phone company, other utilities, the school district, and the 9-1-1 authority. From that point, each of these offices is responsible for maintaining its own address file. Weaknesses of such a system include:

- No recognized standard for address data
- No central, authoritative database
- Agency databases diverge over time
- No feedback loop to address authority or other stakeholders
- Inconsistent delivery of new addresses to stakeholders
- Spotty capture of geographic coordinates

The 9-1-1/Emergency Response community maintains their own Address Location Identifier (ALI), which links phone number to address and the name of the appropriate fire, police, or ambulance provider for that location. They face a challenge as more homes go without a conventional landline and more 9-1-1 calls come from cell phones. From 2000 to 2006, the number of homes without a telephone doubled to 6.6 million[1]. New investments in Phase II technology, which enables a wireless phone to transmit its geographic coordinates, are helping 9-1-1 centers to properly locate cell phone callers and dispatch the proper first responders who can find those locations. Rural areas are lagging in implementing of this new

technology. The 9-1-1/Emergency Response office generally has the most complete address data, but often is not sharing this information with other government offices. Lack of coordinate information means that outside response teams, perhaps from adjoining communities, struggle to find unfamiliar addresses.

Federal agencies end up creating independent address databases, because there are no consistent or reliable state or local government sources. The U.S. Census Bureau has developed an independent Master Address File (MAF), complete with geographic coordinates, which it cannot share with others because of a federal law, Title 13 of the US Code, that many feel is outdated in its treatment of addresses based on privacy issues. The Department of Homeland Security has hired contractors to identify and locate critical infrastructure, because few states have that information available. This widespread duplication of effort in collecting the same basic information is inefficient and uneconomical.

Problems We Face Today

Lives and property are lost because first responders cannot quickly and accurately locate the address of an emergency. This is a serious problem. It has occurred in every large city and in rural areas as well. It was a problem in the wake of Hurricane Katrina where rescue and recovery

operations were slowed by the lack of information about where people lived. The problem continues today as properties go into foreclosure. Inconsistent address systems clog communication among courts, sheriff offices, banks, inspectors, and residents. It's an ongoing problem for accidents at construction sites where workmen are injured and 9-1-1 entities haven't yet recorded an address for the worksite.

Other problems resulting from this fragmented system include:

- Tax-payer money is wasted as multiple agencies collect and maintain similar data. The Census Bureau spent $444 million of tax-payer money to create address points for the 2010 Census[2] and cannot release the data for others to use.

- The US Postal Service (USPS) cannot keep up with the 2 million addresses added each year by new construction and conversions of existing buildings into multiple occupancy units. They rely on input from cities and their own carriers, but that data is often inconsistent or untimely.[3]

- Many jurisdictions try to maintain redundant or inconsistent address data about the same territory, causing significant additional expenses. These include the city, county, school district, watershed district, election office, and emergency responders. The city of St. Paul spent 1,000 hours of staff time on the 2000 Census LUCA (Local Update of Census Addresses) activity, mostly because of record disparities among the various city departments maintaining address files.[4]

- Homeowners are frustrated by late or missed deliveries and service appointments. Those problems cause additional costs and

lost revenue for the private sector as it faces corrective measures and lost business.

- States working to collect and distribute sales taxes are struggling to do their work economically and equitably. Tax rates can vary across the state because of local additions to the state rate. Knowing which addresses are in each taxing jurisdiction is necessary when collecting taxes on goods purchased by mail order or Internet.[5] This information should be accessible to merchants at the time of purchase, but is often not available.

Best Practices

The National States Geographic Information Council (NSGIC) has identified a number of state, county, and regional Best Practices around the country.[6] The authority to generate new addresses typically remains with the city or town, with counties often providing addresses in unincorporated areas. The well-established USPS standard is generally used and the emerging URISA/FGDC standard builds on the USPS standard. New addresses are as-

signed as early as possible within the subdivision/building permit process. Secondary names are included where appropriate; e.g., City Hall, St. John's Hospital. Geographic coordinates are added from GPS field measurements, from orthophotography, or from official maps and sketches of building location submitted with the permit application. New entries are verified with quality control before being accepted. Information is sent to all stakeholders as soon as the address is issued, either directly or via a regional custodian.

The county or 9-1-1 authority becomes the regional custodian, assuming responsibility for maintaining a central authoritative database. The regional custodian is responsible for synchronizing new information streaming in from cities and towns with various levels of computer sophistication. Corrections identified by any of the participants are reported back to the local and regional custodians where they are verified, implemented, and distributed. Addresses and geographic coordinates are made available to the public via the Internet, while personal information, name and phone number, are typically kept private.

Several states have developed statewide systems or support their counties in the development of federated systems that maintain and deliver address data across the state. The states of Maine, Connecticut, and Vermont in New England are collecting this data from their towns and Rhode Island is developing such a system. Ohio, Indiana, and West Virginia are working to build systems that will collect the data from their counties. Arkansas has created a state-level database of address ranges. The cost of the Vermont system is covered by normal 9-1-1 fees. Ohio, whose program includes both roads and addresses, matches local efforts with state capital funding and a mix of other sources.

Footnotes

1. US Census Bureau: 2000 Census and 2006 American Community Survey.

2. Commerce Department, 2010 Census: Quarterly Report to Congress, December 2010, Office of Inspector General, Report OIG 19791-2

3. Clayton Bonnell, "Postal Service addressing problem," US Postal Service, email sent to representatives of GITA, NENA, NSGIC, and URISA on December 3, 2007

4. Mark VanderSchaaf, former employee of St. Paul Department of Planning and Development, personal conversation, March 29, 2006.

5. The Streamlined Sales and Use Tax agreement involves a majority of the states; see http://www.streamlinedsalestax.org/

6. See http://www.nsgic.org/committees1/bestPractices.cfm?cid=105.

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Graphic at left provided by Robert Hanson of Michael Baker Corporation

The Ideal System

A national system of addresses should be created with government and the private sector each playing their part. This system should provide data seamlessly to those who need it for issues that cross political boundaries. This would result in many life- and cost-saving benefits. The ideal role played by each is outlined below.

1. Local Government Address Authorities – Cities and Counties

- Use best practices, including standards, for assigning and disseminating data about new addresses.

- Each maintains an authoritative database of their own addresses.

- All departments draw from that database and provide feedback on changes.

- Submit updated address information to the regional custodian

- **Benefit:** Saves resources. Local entities gain value from standard database that minimizes redundancy and error.

2. Counties or 9-1-1 authorities serve as the regional custodians of the data.

- Maintain an address database that includes information from all address authorities within their region.

- Receive updates from address authorities and verify the quality of that information.

- Distribute address and coordinate data free of charge to the public and all participants.

- **Benefit:** Gains access to current, reliable data for internal use and trust from local governments by providing data service.

3. States provide statewide coordination and support to counties and 9-1-1 authorities

- Provide a central website for accessing address data from regional custodians: counties and 9-1-1 authorities.

- Provide training, technical guidance and standards to counties and 9-1-1 authorities.

- Serve as a backup system for the regional systems.

- Fill gaps by helping small and less affluent places fulfill their role.

- Provide matching grants to local government to develop their systems.

- **Benefit:** States gain ability to access data for internal purposes; e.g., sales tax management and medical benefits.

4. Federal government

- U.S. Postal Service, U.S. Census Bureau, Department of Homeland Security, and others are able to access and use data nationwide in a standard format (e.g. Lat/Long and U.S. National Grid coordinates).

- U.S. Census Bureau and U.S. Postal Service send notice of address data inconsistency to state and local governments whenever they are found. Note: U.S. Census Bureau is currently unable to participate because of Title 13.

- U.S. Census Bureau is able to release geographic coordinate data, saving local government the expense of collecting that information. Access to coordinate data is also restricted by Title 13.

- **Benefit:** Federal government saves money and has access to current and accurate local data.

5. Private sector

- Assists with local implementation and maintenance on a fee for service basis.

- Provides technical resources for each level of government to fulfill its role.

- Provides business services for the aggregation, maintenance, and use of address data in government and the private sector.

- Uses nation-wide address data to develop new products and services to meet the needs of citizens, government, and the private sector.

- **Benefit:** Cheaper, better, and quicker for local government.

ABOUT NSGIC — The National States Geographic Information Council (NSGIC) is an organization of States committed to efficient and effective government through the prudent adoption of geospatial information technologies. Members of NSGIC include delegations of state GIS coordinators and senior state GIS managers from across the United States. Other members include representatives from Federal agencies, local government, the private sector, academia and other professional organizations. A rich and diverse group, the NSGIC membership includes nationally and internationally recognized experts in GIS, geospatial data production and management, and information technology policy.