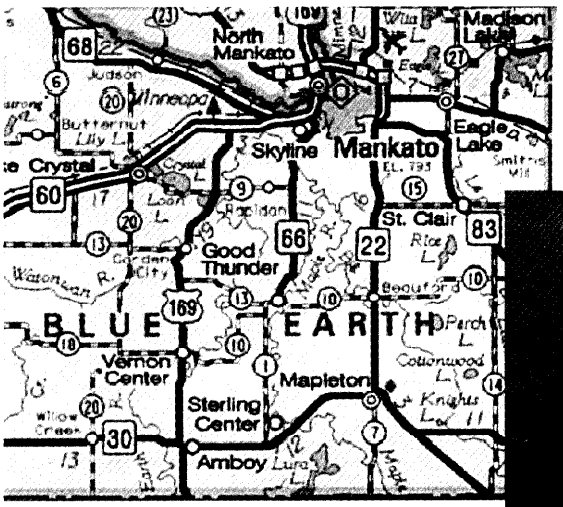
Technology in Rural Transportation "Simple Solution" #2

ENTER@PRISE

United States Department of Transportation
Federal Highway Administration
Federal Transit Administration

Coordinate Addressing System



Introduction

This application was identified as a promising rural Intelligent Transportation Systems (ITS) solution under a project sponsored by the Federal Highway Administration (FHWA) and the ENTERPRISE program. This summary describes the solution as well as opportunities for expansion into the broader context of rural ITS.

Technology Overview

In some rural areas of the United States, streets are not named or identified, potentially creating delays for emergency or delivery services that must visit private residences. This simple solution is to assign every residence to a coordinate mapping system, enabling easy navigation to specific sites.

***Real-World Example* - Rural Coordinate Addressing System**

Overall goal: To improve emergency services and others' ability to locate rural locations through a low-cost addressing system.

Technical approach: By truncating state plane coordinates to an accuracy of 100 feet, rural locations in Blue Earth County, Minnesota, were assigned unique addresses consisting of two numbers that are compatible with GIS. These addresses aid emergency services and others in locating the site. The state plane coordinates were collected for each driveway outside city limits using portable GPS units and then input into a GIS database. These addresses were related to phone numbers so that when a 9-1-1 call comes in from a rural location, the site appears on a digital map. The database may also be used for creating postal addresses and provided to utilities and delivery companies to help them locate addresses.

Current status: A pilot project that collected data for one township and created the GIS database has taken place. This demonstrated the coordinate addressing system's potential for locating incident sites. The local County Commissioners have requested that an RFP be developed to determine the cost of collecting data and implementing the system countywide.

Location / geographic scope: The system can be used in rural counties that do not have traditional addressing and that cannot afford street signs and street naming.

Agencies involved: The pilot project was developed by the Blue Earth County Highway Department and performed by a team comprised of the highway department, Minnesota Guidestar, the University of Minnesota and Castle Rock Consultants.

Cost information: No information is currently available on the projected costs for complete deployment in Blue Earth County. The pilot project, which included developing addressing rules and investigating the compatibility of this system with the National Emergency Number Association (NENA) and the US Postal Service, had a budget of $10,000.

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Have goals been achieved? The primary goal of developing a low-cost addressing system has been achieved and tested. The system has not yet been implemented on a large-scale basis.

Solution timeline: There is no set time frame, but the County would like to deploy the GIS display system for emergency services by September, 1997. The County hopes to employ this system or find a way to finance a traditional street sign and naming system.

Further Description of Application

Additional technologies may include:

Triangulation off cellular phones or radio would be another application for this simple solution. In some areas, identifying approximate locations by the cell being utilized could also be useful. These options offer ease of use and site identification, however, the tracking method would be less precise.

Potential additional uses for this technology may include:

This technology could also be used to log the locations of a number of different types of objects, such as roadway signs, fire hydrants, and telephone boxes. The locations of some of these objects will already be contained in separate databases used by different organizations. However, the creation of a standard locating and database system for a variety of different objects would aid inter-agency communication and collaboration for maintenance and repair purposes, for example.

This addressing system could also be used as part of a traveler information system, for example, enabling the communication of the precise locations of sites of interest, such as rest stops, gas stations, or unique historic markers, to travelers.

Benefits of Application

	Benefits to the community	Benefits to business/industry	Benefits to the public sector
Direct benefits	Rural residents will have improved service in case of emergencies or when needing home deliveries	Increased efficiency when delivering products or services to residents of rural areas	Improved ease and speed of locating rural addresses for the emergency services Significant cost savings over purchasing large quantities of road signs
Indirect benefits	Improved perceptions of accessibility and safety for rural residents	Increased potential customer base	

Probable Implementation Process

Step One: Rural areas and small cities must first determine how their area is currently being impacted by the lack of a such a system, in order to ascertain whether the investment in creating an addressing database will be a worthwhile use of their resources.

Step Two: Agencies should determine what items will be coded within the addressing database. In addition to residences and other structures, various other objects could also be addressed as was outlined previously.

Step Three: The addressing process itself must be carried out.

Step Four: Emergency services, and any other organizations in the area needing access to the addressing information, must be equipped with systems enabling them to receive data and respond to this data to find coded locations.

Potential Implementation Issues

A number of different types of organizations could benefit from a rural addressing system including utility companies, couriers, and store delivery services, for example, in addition to the emergency services. Should a city, county or region decide to proceed with creating an addressing system, the development and maintenance costs of the system could perhaps be offset by selling the addressing information to private companies.

An agency considering creating an addressing system should evaluate not only the cost of the initial development of the database but also the ongoing maintenance costs. Access to a GIS basemap indicating local routes will also be required. As new homes or other structures are built, the database will need updating on a regular basis to ensure that information is accurate and current.

Solution's Contribution to Broader Rural ITS Developments

This simple solution is an example of a low-cost method of improving the quality and accuracy of the locational data required by agencies in pinpointing a rural address. The potential contribution of this solution in the rural ITS development is described below.

Incident Management - This solution will assist emergency and incident response agencies to respond in a timely and accurate manner to citizens requiring their assistance in rural areas.

Roadway Management - This solution plays a fundamental role in managing roadway systems by allowing a universal method for describing locations within the rural transportation system.

The Technology in Rural Transportation: "Simple Solutions" Project

This project was performed within the ENTERPRISE pooled-fund study program, and aimed to identify and describe proven, cost-effective, "low-tech" solutions for rural transportation-related problems or needs. "Simple solutions" studied within the project focussed on practical applications of technologies, which could serve as precursors to future applications of more advanced systems, or intelligent transportation systems (ITS).

More than fifty solutions were initially identified and documented. Of these, fourteen solutions were documented and analyzed in detail. The transportation technology applications were also categorized according to the seven Critical Program Areas (CPAs) defined within the U.S. Department of Transportation's Advanced Rural Transportation Systems Program. It is hoped to utilize the information gathered within this study to perform outreach to local level transportation professionals to introduce them to ITS and its potential benefits.

For More Information: A full report on this study is available from the FHWA R&T Report Center, telephone no. 301-577-0818. **Title:** Technology in Rural Transportation: "Simple Solutions." **Publication No.:** FHWA-RD-97-108. This research was conducted by Castle Rock Consultants, Eagan, Minnesota. For more information, contact Paul Pisano of FHWA, HSR-30, 703-285-2498. For more information about ENTERPRISE, contact Bill Legg, Washington State DOT, 206-543-3332.

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