

The Development and Implementation of a Comprehensive Transportation GIS Network

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Abstract

Geographic Information Systems (GIS) technology is rapidly being introduced into various facets of transportation planning. In many cases, GIS is implemented to address a specific need, which has left agencies with fragmented GIS networks and tools. SEMCOG, the Southeast Michigan Council of Governments, in cooperation with state and local agencies, is addressing this potential problem by working together to create a comprehensive transportation GIS network for planning applications in the region. The objective of this work is to establish a common base containing essential attributes to be utilized by both the state and local agencies.

This paper presents the initial development of the comprehensive transportation GIS network, including the lessons learned in conflating/merging multiple GIS and non-GIS files into a composite regional transportation base, and the strengths and limitation of current technology, such as the problems, challenges and solutions of interfacing between software packages. In addition the challenges of working with multiple agencies that have varied goals and objectives, products and time frames are also presented. Examples of transportation planning applications to date are the developing, updating and displaying of the Tranplan's travel demand forecast results, traffic safety analyses and the use of GIS in intelligent transportation systems operations in transit and general planning applications.

The next step in development and implementation of the GIS network is to make it a more comprehensive system including all roads in the State of Michigan, where initially, efforts focused merely on roads functionally classified as collector and arterial. The comprehensive GIS network will allow for data sharing between agencies by creating common platforms and data transfer standards. Key agencies have come together to create a common base GIS network in the state. This common network will have the demographic information and geocoding capabilities of TIGER, the positional accuracy needed for planning applications from the Michigan Resource Information System (MIRIS) GIS network and a completed Linear Referencing System (LRS) on the remaining roads for the entire state. With this in place, all of the agencies involved, as well as local agencies around the state, will be able to access all data linked to the comprehensive network. Key partners include; Michigan Department of Transportation (MDOT), Michigan State Police, Michigan Department of Natural Resources (MDNR), Secretary of State, Michigan Information Center (MIC), and SEMCOG.

As GIS becomes more of an essential tool in the data input, query, display and analysis of transportation planning, it will become even more important for all agencies to be able to easily share information through a common base. It is anticipated that this project would provide the framework to foster greater coordination and communication among all agencies involved in GIS implementation in Michigan.