

Tech Brief

Evaluation and Development of MIS Interface

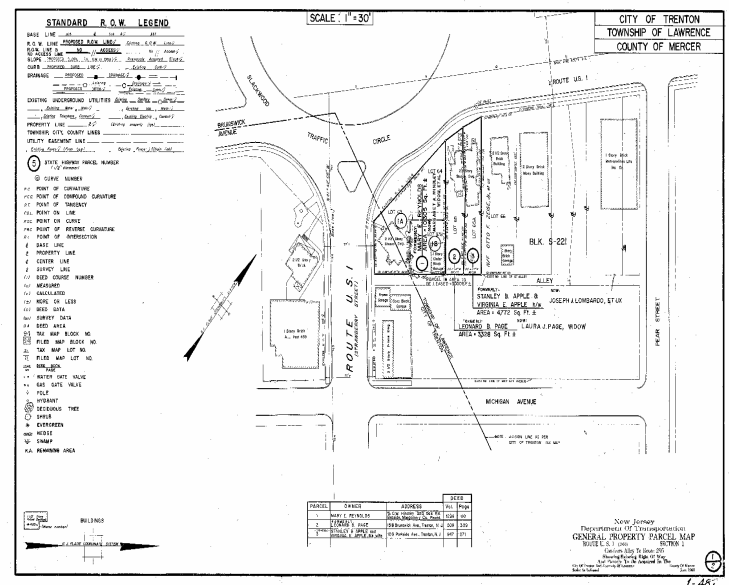
Need a solution?
Think Jersey DOT

FHWA-NJ-2003-002-TB

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HERE'S THE PROBLEM

The New Jersey Department of Transportation has been involved with the creation of a digital database of its roadway plans and Right-of-Way (ROW) maps by scanning them to allow for easy access to prospective users. Scanned documents are location specific, and can be referenced to a specific geographical location on the New Jersey Highway System. While this system is quite logical, an intelligent and simple way of processing the large database of digital roadway plans and maps is needed.



AND, HERE IS THE SOLUTION...

To create a system that integrates digitized documents with a Geographical Information System (GIS)-Based highway database.

BUT, HOW CAN IT BE DONE?

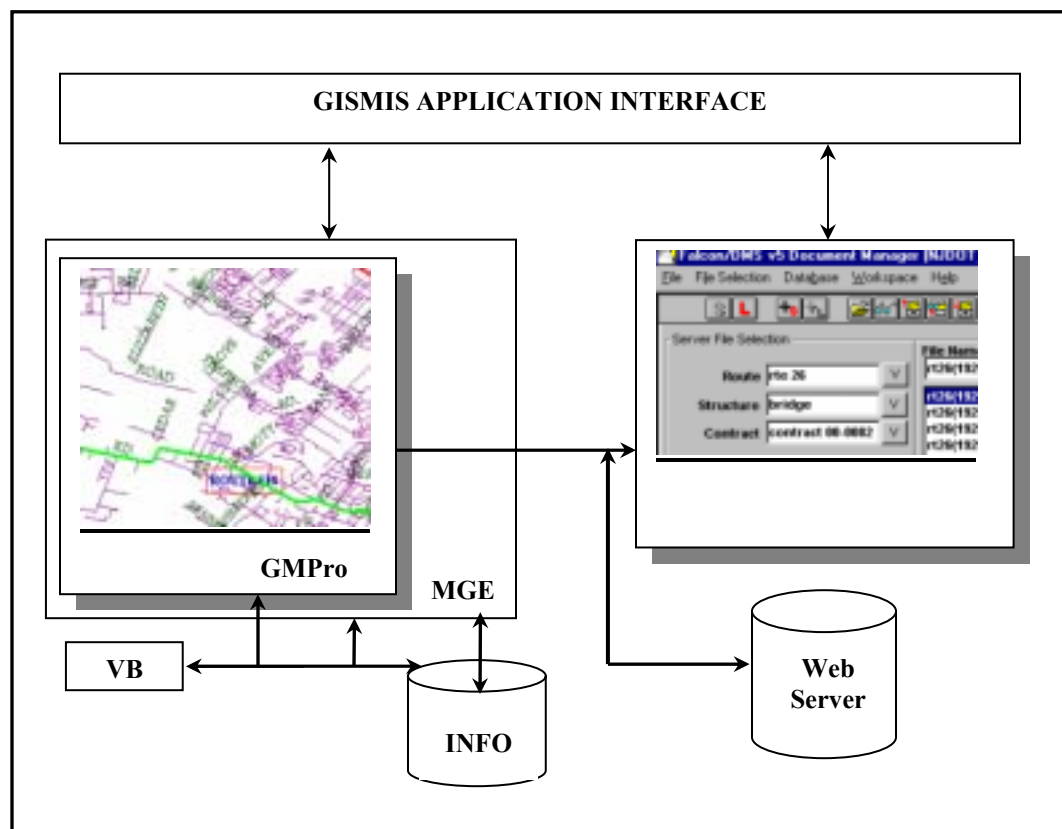
By developing a prototype GIS-Based Information System (GISMIS) that is managed by a third party product which manages the large database of digital roadway plans and ROW maps that the user can easily use to find their new location on the GIS map.

THESE ARE OBJECTIVES OF THE STUDY...

- To bring GIS based New Jersey transportation network data into a unified data management environment capable of integrating digital roadway and ROW maps.
- To employ visual and geographical analysis capabilities of GIS, along with implementation of database operations.
- To enable a wide range of users, with different requirements and capabilities, to gain easy access to the digital document database.
- To integrate a third party product with capabilities of GIS.

AND, HERE'S WHAT WE DID...

This project began with development of a custom application for the NJDOT that enabled a unified platform for integrating several software tools and controls to provide capabilities able to respond to all of the potential users' needs. The key to the system is the effective access to data stored in several databases via GIS Mapping Window, with a full range of analysis capabilities offered by GeoMedia Professional software (GMPPro).



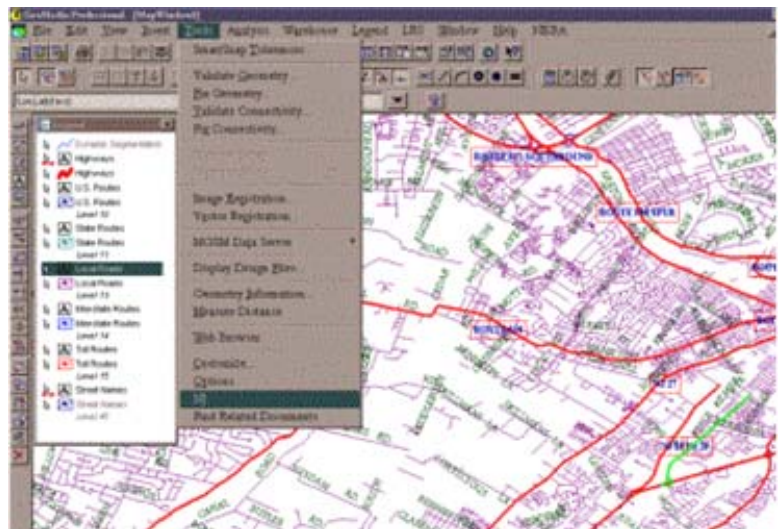
The database contains scanned roadway plans and ROW maps generated for each state road section in New Jersey. The GIS application has been integrated with the existing document viewing and management tool.

Due to new requirements of the NJDOT for accessing roadway plans and ROW maps in a more efficient way, and to remedy inconsistencies that existed between the digital scanned files and the existing NJDOT GIS map, dynamic segmentation was needed to narrow down the number of related documents identified by the search process. Dynamic segmentation was used to modify links on the GIS map as to reflect smaller lengths covered by related documentation.

Implementation of the prototype application began creating the basis for the GIS map. Microsoft Access databases used by NJDOT were used to create these maps. Site implementation was then accomplished through installation procedures deployed at a site visit to NJDOT.

Improvements and modifications were made as a result of feedback obtained from NJDOT professionals. A survey was prepared and submitted to users for further improvements. Based on the survey and other inputs, optimized requirements for the user's work were established.

The developed GISMIS prototype was implemented with minor modifications and improvements, and installed at NJDOT. Training for users began with an introduction of the system to the users; concise training and a user's manual were prepared.



CONCLUSION...

The GIS-Based Management System (GISMIS) was a success in regards to its original criteria, which was the development of a user-friendly graphic interface for retrieval of roadway plans and ROW maps. Due to constraints of the software used in this project, which require each user to own a copy of the GeoMedia Professional in order to use the prototype, this solution is likely not the most efficient one.

WHAT IS THE NEXT STEP?

If the New Jersey Department of Transportation intends to pursue the development of the prototype on a large scale, hardware requirements can also be a problem due to demanding CPU and memory requirements of the prototype application, as well as the software requirements. In order to enhance the prototype, new web-based techniques that may replace the existing desktop set-up should be explored. In addition, a study of safety, security, and other maintenance implications of using web-based solutions must be considered. Implementation of the newly available GIS-based prototype using GeoMedia Web Map may also be a possibility.

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A final report is available online at
<http://www.state.nj.us/transportation/research/research.html>

If you would like a copy of the full report, please FAX the NJDOT, Bureau of Research, Technology Transfer Group at (609) 530-3722 or send an e-mail to
Research.Bureau@dot.state.nj.us and ask for:

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