



Texas Department of Transportation

Using GIS to Create Official Travel Map

Problem

Traditional cartographic methods of updating maps are too difficult and expensive.

Goals

- Make map editing easier.
- Cut expenses associated with updating maps.

Results

- Automated map production process
- Streamlined map editing process
- Process transferrable to other map creation projects

The mission of the Texas Department of Transportation (TxDOT) is to provide safe, effective, and efficient movement of people and goods. The Travel Division of TxDOT supports the TxDOT mission by inspiring safe and pleasurable travel to and within Texas. The Texas Official Travel Map is one of several publications produced by the Travel Division for this purpose.

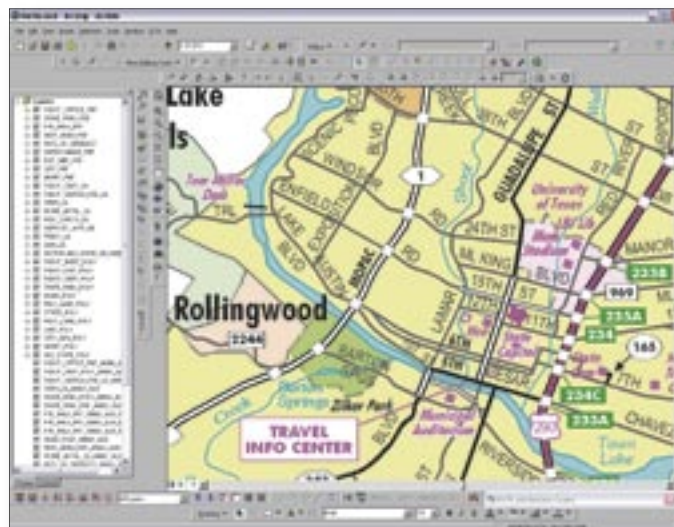
The map is a standard, folded road map with the state of Texas on one side at a scale of approximately 1:1,500,000 and insets of major cities on the other side at various larger scales. When folded, the map has front and back covers that include illustrations and text. The map shows county lines, roads, rivers, lakes, and other feature data and indexes to features such as state parks, national wildlife refuges, forests, and grasslands. Other items on the map include a chart showing the mileage between cities in Texas, various travel information, and a legend.

The Challenge

When the time came to update the map, the Travel Division began by updating its mapmaking processes using geographic information system (GIS) technology from ESRI, which was being used in TxDOT. "All previous editions of the travel map were made using traditional cartographic methods, scribe coat, and stick-up text," explains Dan Mullis, Travel Division's travel map editor. "The processes involved in updating the map had become increasingly difficult and more expensive. Given the impending growth in TxDOT's GIS technology, it became clear that producing the map with GIS technology was our best option. Employing this new technology was essential to modernizing the map."

"The geodatabase used by this project for the production of typical road maps contains all the geographic feature data that TxDOT once kept in a variety of digital formats."

Dan Mullis
Travel Map Editor
Texas Department of Transportation



Texas official travel map updates with PLTS for ArcGIS



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ESRI Software Used

PLTS for ArcGIS

ArcInfo®

ArcSDE®

The Solution

In February 2001, following the issuance of a request for proposal, TxDOT selected ESRI to begin developing database driven processes to create the next version of the *Texas Official Travel Map*, document these processes, and train TxDOT staff on the developed procedures and technology for producing the map in an all digital environment.

“The key to the development of the automated mapping procedure was the implementation of a single centralized database,” explains Mullis. “With ArcGIS and database driven technology, the geodatabase used by this project for the production of typical road maps contains all the geographic feature data that TxDOT once kept in a variety of digital formats.”

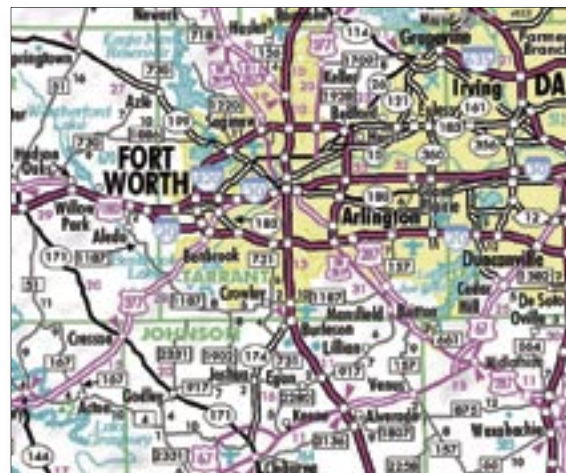
After cartographic finishing and quality control, TxDOT worked with its vendors to create prepress proofs of the map.

Based on the success of a prototype area, TxDOT moved forward with its plans to develop the complete *Texas Official Travel Map* including 26 city insets. To begin this phase, TxDOT completed implementation of an agencywide enterprise geodatabase that is maintained by its Information Systems Division and Geographic Information Systems and Database Administration offices. TxDOT staff migrated statewide data from numerous state and federal sources, many of which were used during prototyping.

Results

ESRI took this migrated data and developed an update scenario with custom software tools that took data from the GIS enterprise geodatabase and pulled the changed features into GIS Data ReViewer; the Travel Division could then update the travel map geodatabase. Says Mullis, “Using the commercial off-the-shelf based GIS Data ReViewer for managing updated features eliminated the need for more expensive custom application development.”

The process developed during this digitization project gives TxDOT more powerful tools to create other map-based products quickly and accurately for the traveling public. “The process we created for the *Texas Official Travel Map* offers several key advantages to TxDOT,” says Holly Ying, ESRI project manager. “It automates and improves the map production process by using a seamless enterprise geodatabase and ArcSDE solution.”



Texas official travel map inset

Adds David Watkins, senior cartographic technical manager, ESRI, “The process allows the Travel Division to easily create map products for additional travel publications or to suit other business objectives. It also streamlines the update process of changes from the TxDOT enterprise geodatabase to the travel map geodatabase.”

For More Information



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