

# Utah's GIS Database Enhancing Transportation Performance Management

## It Starts with a Vision

Transportation organizations being largely full of engineers often jump in and immediately look at data. However, Utah Department of Transportation (UDOT) took a different approach and started with a vision. The vision is based less on data and more on community values. A summary of their vision statement can be seen in their strategic goals: Take Care of What We Have, Make the System Better, Improve Safety, Improve the Economy, and Increase Capacity. Once these values were identified and a vision was created, UDOT could look to the data to fulfill their vision basing their performance areas and targets on these strategic goals. Though, collection data and sharing it among decisionmakers can be a challenge.

## Getting to the Data

Like many States, Utah used to store all their data in a variety of places, a hard drive here and another one over there. Staff protected their data and data was not easily shared. They had some very valid concerns, including security of information. In order to address the need for sharing data, 5 years ago UDOT started developing a Geographic Information System (GIS) repository. At the time, they had no data related to GIS including any knowledgeable staff. Since they had no internal resources when they started this project, UDOT hired consultants to assist in the creation of their GIS repository, including developers writing the code for the custom applications.

From the efforts of UDOT and their consultants, they created *UPlan*, an interactive mapping platform that supports UDOT by helping visualize their data, track assets, and strengthen

## KEY ACCOMPLISHMENTS

- Enhanced performance based planning through the use of a GIS web-based analytical database.
- Applied performance based GIS model to plan future projects.
- Improved project decisions by using GIS database investment scenarios.
- Created an environment where all partners can use the same GIS database tools to make decisions.
- Used inventory databases to monitor assets and predict future transportation infrastructure status.

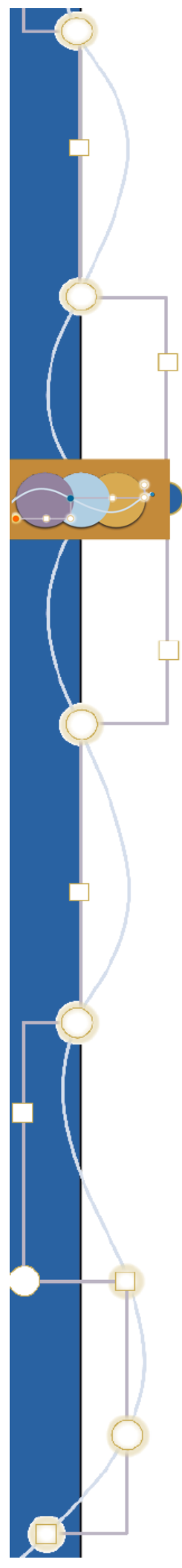
transportation planning with better analysis and collaborative information. *UPlan*, has made maintaining data much more efficient. Prior to *UPlan*, UDOT had a person walking around with a flash drive to update the layers of data. Now, while still a work in progress, *UPlan* has made data sharing much more dynamic with automatic and regular refreshing of data to keep the layers current.

## Data Sharing for Positive Collaboration

An advantage of having a centralized GIS analytical database, such as *UPlan*, is that UDOT can incorporate other geo-referenced data if it is public information. UDOT used to think that they had to do all their own data collection, but with the new GIS system they can utilize any public data. For example, they use census data, FHWA data, and other jurisdictions' and agencies' information.

Since one of the features of UDOT's new GIS analytic database is a sharing feature, it allows them to better collaborate on planned transportation





activities with their Metropolitan Planning Organizations (MPOs) and other stakeholders. The goal is to use *UPlan* to support the project-based and long-term decisionmaking processes. For example, if UDOT has a road project, they can invite the stakeholders to share layers of information such as wildlife corridor and wetland data. Then UDOT and their stakeholders can review together what the potential impacts are within the project limits. They can all speak to the same information and make knowledge-based decisions. UDOT has found utilizing the GIS-based analytical system saves them time and resources as they can now share information and data more easily and efficiently.

With data sharing, security and privacy were a major concern for UDOT. One feature of the *UPlan* database system is the ability to limit access to data. UDOT can upload data and limit permissions as to who can see the information. A committee from one of multiple jurisdictions can create a group so only committee members can view certain information, allowing for more directed and secured data sharing. Much of the data is publicly accessible and a citizen can easily make their own map showing different layers from the database, or look up information such as a pavement status or a roadway corridor.

### Creating a Better Future with Performance Scenarios

UDOT's robust GIS-based analytical database, *UPlan*, is also being put to use to support making performance-based investment decisions. They utilize their database system to run models of various performance scenarios enhancing their long range planning efforts. *UPlan* has greatly reduced the time it takes to review performance scenarios making the process much more efficient and effective. Within the database UDOT's initial performance scenario parameters included five areas of performance measurement: Safety, Congestion, Economy, Environment, and Asset Management. Future measures are being developed for analysis within the database.

With these original parameters input into *UPlan*, UDOT could predict how proposed

projects would impact their performance measures. In addition, the information can be used to review past projects as well as choose future projects by creating the investment scenarios. This is the first time UDOT is using an integrated statewide planning model for these efforts.

### Results

With *UPlan*, the GIS-based analytical database, UDOT gained a clearer vision and an improved understanding of their needs. When initially looking to create a GIS-based analytical database, UDOT had no related data to GIS, yet today UDOT has thousands of layers of GIS data for various queries and data mining and staff to help process it. UDOT has utilized their database to improve investment decisions and visually represent their transportation issues to better communicate their needs. As a result of their efforts, *UPlan* is an off the shelf GIS-based analytical database system and is being utilized by over a dozen other States. UDOT's interactive database, *UPlan*, can be found at: <http://uplan.maps.arcgis.com/home/>.

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