Integrating Bluetooth-based Travel Time Data for Real-Time Traffic Operations Use
By Mr. Henson, TransCore and Mr. Lyons, Iteris

Lakewood, Colorado, one of the largest suburbs in the Denver metropolitan area, has had a TransCore TransSuite® arterial traffic management system since 1998, handling signal coordination at its ~200 signalized intersections. In 2012, Lakewood applied for and received a federal grant from the Denver Regional Council of Governments (DRCOG) to upgrade their traffic management system’s capabilities. In addition to the enhancement to that critical central system component of their traffic system operations, the project included deploying several different hardware components on their roadways to collect flow data. These new data points were envisioned to be sufficient and appropriate to obtain a robust monitoring and performance measurement capability. Furthermore, these important data would be brought into TransSuite for analysis and reporting.

Using a systems engineering approach with assistance from TransCore, Lakewood selected the Iteris Vantage® Velocity™ Travel Time system to supply the real-time traffic flow data for this new functionality. Velocity utilizes Bluetooth device data to produce travel time and speed data between fixed field sites.

The pilot deployment was along the main corridor through Lakewood, Wadsworth Blvd; it saw seven field units deployed along the six-mile north/south corridor, with the live data being directly inputted from Velocity into TransSuite via a standard XML-formatted feed. The entire Velocity pilot corridor deployment was completed in less than four hours, with data streaming into TransSuite immediately after the field units were deployed – a seamless integration that impressed the city.

“I was a bit concerned about the timeline for the installation of the Iteris field units. I was expecting at least 2 days for the work to be completed. I was amazed when all of the readers were in place in such a short time and was pleased that the data feed was available immediately. The integration into the TransSuite system was seamless. Finally - - a product that does what it says it will do!” (Jim Richey – City of Lakewood, CO Traffic Operations Manager)

The real-time travel time data that Lakewood receives on an immediate basis from Velocity will be utilized to track travel time along this critical north-south route through the central part of the city. With these data, the city will be able to better monitor their coordination timing effectiveness and also assist with developing future timing plans for event management, congestion mitigation efforts, and alternate route plans.

Crucial Integration to Lakewood’s Traffic Control System
TransCore was instrumental in integrating the data feed from Velocity into their TransSuite Traffic Control System Module, which allows a user to view the real-time Velocity results within the TransSuite GUI. Once the data are received within the TransSuite system, the data points are fully integrated with the system and processed as if from any existing source. Hence, they can be used for any purpose (i.e., integrated into travel-time routes, utilized in MOE calculation and automatically displayed on DMS or website). An additional output that the city requested was the ability to overlay the data within TransSuite’s real-time timespace diagram. The display of real-time travel-time allows a traffic engineer to analyze the signal timing as related to both the posted speed limits and the actual travel-time along the corridor.

Along with the additional benefits of the data being used in conjunction with timing plans, TransCore developed an iOS and Android application for smartphones and tablets that provides the agency and residents of the city the ability to view travel time, congestion, and delay along monitored corridors in real time.

This application now being adopted in Lakewood was originally deployed by TransCore in the City of Arcadia, California, and is available for other future cities using TransSuite. The application will overlay the travel-time data on a map display allowing a user to select a starting point and will display the current travel times within the jurisdiction. When additional TransSuite modules are installed, the mobile application also can display traffic speeds, camera images, DMS messages, incident information, weather data, and current roadwork.

The City intends to deploy additional Velocity units along other key corridors, so as to provide more comprehensive coverage with this live travel time functionality. Additionally, when most of the city’s corridors are monitored, Velocity will provide for future O-D (origin-destination) studies, a highly useful regional network characteristic that is important for transportation planning and modeling purposes.

About the Authors
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