

**Project Number**

BDV29-977-09

Project Manager

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*Florida International University***Florida Department of Transportation Research****Decision Support Tools for Transportation System Management and Operations (TSM&O)***January 2016***Current Situation**

The Transportation System Management and Operations (TSM&O) program of the Florida Department of Transportation (FDOT) has seven objectives, which are listed in the TSM&O Tier 2 business plan. Two important objectives of the program are to “continually measure success of TSM&O by developing the ability to measure and report TSM&O performance gains” and “improve the performance of the network.” To meet the above objectives, there is a need to develop tools and methods for off-line and real-time measurement of performance, benefit-cost analysis, and the support of decisions associated with active management strategies.



TSM&O can provide management tools that promote greater efficiency of existing roadways.

Research Objectives

The goal of this project is to produce a support environment that supports the objectives and activities of the TSM&O program by utilizing data from multiple sources.

Project Activities

Two previously developed software tools were integrated into a single environment and extended to provide the functionalities required. The integrated environment makes a wider variety of analyses available for both real-time and off-line decision making. The tool, referred to as ITS Data Capture and Performance Management (ITSDCAP), captures data from multiple sources, estimates various performance measures (mobility, reliability, safety and environmental), performs data mining techniques, support benefit-cost analysis, and allows visualization of data for off-line applications. The real-time component displays regionally shared information and provides a decision support environment for transportation system management agencies in a region.

In addition, new methods and modules were developed in this project to provide the functionality required by this environment. The previously developed tool mainly focused on freeway corridor performance measurements. In this project, the tool was upgraded to provide performance measurement of both freeways and arterials and to allow users to create customized dashboards. New capabilities include real-time prediction of breakdown probability on freeways and arterial streets and a benefit-cost module for arterial incident management evaluation. A work zone evaluation module based on real-world data was also developed to provide data analysis and modeling support for construction impact analysis. The tool suite also includes a signal timing diagnostic system that combines low-cost data from Wi-Fi or Bluetooth readers with data from signal controllers for diagnosis of signal operations. The researchers also investigated use of the *Highway Capacity Manual* urban street procedures to predict travel time on urban streets under rainy conditions in real-time.

Project Benefits

Development of TSM&O tools offers improved understanding and management of traffic flows on Florida’s roadways and can contribute to greater efficiency of existing infrastructure.

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