Florida Department of Transportation Research
Data and Modeling Support of Off-Line and Real-Time Decisions Associated with Integrated Corridor Management

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Current Situation

As Florida's population, tourism, and freight traffic increase and, with them, the number of vehicles on the road, transportation managers seek new ways of making current roadways more efficient. Because a major roadway can run through many jurisdictions, optimizing roadway efficiency requires agencies in these jurisdictions to collaborate. Integrated Corridor Management (ICM) addresses this challenge by facilitating higher levels of collaboration among these as well as higher levels of integration of existing infrastructure. Collaboration can raise many questions and computerized decision support systems (DSS) are considered an important tool for ICM.

The I-4 corridor in Central Florida is a candidate for ICM.

Research Objectives

Florida International University researchers assessed the applicability, feasibility, and effectiveness of data, analysis, modeling, and simulation approaches to support the decision-making process associated with offline and real-time operations of ICM.

Project Activities

The researchers reviewed available models and methods and their applicability to Florida ICM. They described DSSs for three large projects: US-75 in Dallas, TX; I-15 in San Diego, CA; and I-210 in Los Angeles, CA. The researchers identified five elements of an ICM DSS: offline use of modeling for planning for operations; real-time data collection and fusion; user interface; real-time response plan recommendations; and model-based real-time predictive engine. They explored how these elements function in existing ICM installations.

The researchers then focused on ICM DSS concepts that are applicable to Florida, considering the three examples already mentioned as well as preliminary efforts to establish ICM in Central Florida, Jacksonville, and Broward County. They identified 15 software applications, how they are used in the decision-making process, and how they form a range of alternatives for informing ICM decisions. Applications included dynamic ramp management, traffic adaptive signal control, hard shoulder running, and disaster response, and others.

The researchers then outlined the capabilities needed to implement and utilize analysis and modeling to support ICM decisions. They considered staff requirements, data, tools, and resources needed by the Florida Department of Transportation (FDOT). Managers of transportation system management and operations (TSM&O) programs in four FDOT districts were interviewed. Capability maturity modeling, adapted from software development, was used to structure the information gathered up to this point in the project.

The researchers concluded by demonstrating the ability of data and modeling analytics to support decisions. For example, they showed how clustering analysis could be used to identify traffic patterns and how connected vehicle data could help identify patterns of congestion.

Project Benefits

This project helps lay a foundation for the use of ICM in Florida, which can help make heavily used, multijurisdictional corridors more efficient.

For more information, please see dot.state.fl.us/research-center