Florida Department of Transportation Research

Developing Data Sources and Standards for Supporting Arterial TSM&O Implementation of the Statewide Arterial Management Program (STAMP)

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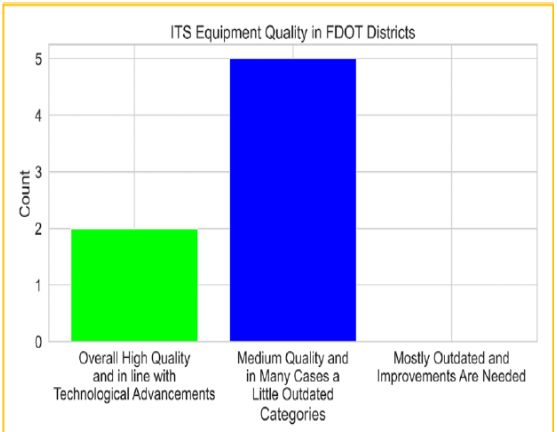
Current Situation

The Florida Department of Transportation (FDOT) has ambitious goals to make arterial roads safer and more efficient, but current Transportation Systems Management & Operations (TSM&O) and data practices are fragmented, inconsistent, and often unable to provide the real-time, actionable insights needed for modern traffic operations. FDOT's districts collect and use data in different ways, making it hard to share information and make unified decisions that improve signal timing, congestion relief, and incident response across the state.

FDOT could benefit from better tools, data, and standards to support effective arterial traffic management under its Statewide Arterial Management Program (STAMP).



A survey for this project inquired about the quality of Intelligent Transportation Systems (ITS) equipment. This visualization shows most districts have medium to high quality ITS equipment.

Research Objectives

The project aimed to develop data sources, standards, and actionable guidance that FDOT can use to strengthen arterial TSM&O implementation statewide. This included reviewing the literature, evaluating existing software tools, identifying best practices from other departments of transportation, and creating recommendations tailored to Florida's districts.

Project Activities

The University of Central Florida research team conducted a thorough literature review on big data, real-time analytics, SPaT prediction, and transportation data systems; evaluated traffic management tools like Normalized Operational Equipment Management Initiative (NOEMI) and Automated Traffic Signal Performance Measures (ATSPM); and consulted with multiple state DOTs to gather best practices. They analyzed current and emerging data sources and how they could support traffic operations, and reviewed software capabilities to improve traffic flow decision-making. Surveys and district visits were used to assess local needs, infrastructure, and practices, leading to customized district recommendations. Stakeholder workshops and feedback were synthesized to inform strategic recommendations for data integration, system design, and operational improvements.

Project Conclusions and Benefits

The project produced a comprehensive set of recommendations for enhanced data use, software and tool adoption, data integration and storage practices, and district-specific strategies to improve arterial management. It identified vendor and big data applications that can support real-time traffic monitoring and recommended ways to improve traffic signal performance, data security, and cross-district collaboration.

Tailored guidance gives each FDOT district practical steps to address its unique challenges, and future-focused suggestions promote ongoing data evaluation, emerging technology integration, and staff training. Altogether, the findings and tools developed provide FDOT with a roadmap to make arterial traffic management more efficient, coordinated, and technologically advanced.

For more information, please see fdot.gov/research.