Research Summary

An Asset Management Approach for Mobility and ITS Devices

As transportation technologies and innovations advance, many of the transportation systems nationally and worldwide and the assets they manage continue to grow to include Intelligent Transportation System (ITS) components and new mobility technologies. These assets must be managed and maintained to focus on life-cycle cost analysis. Targeted levels of service provide net benefits, and cost-savings approaches help reduce risks in the management approach.

This project addressed evolving technologies and practices concerning asset management for ITS and other new mobility assets through a comprehensive literature review and state of the practice survey, an assessment of several state-published Transportation Asset Management Plans (TAMPs), and the development and application of a tool for use in varied settings across the state. The findings of this research are applicable to Missouri Department of Transportation (DOT) and other state DOTs.

Asset management has fundamental elements, including identification of specific performance goals and how the performance of assets will be measured, making informed decisions using high quality information and established analytic tools, and monitoring performance and costs against agency goals to improve decisions and operations. While different agencies have different approaches to integrating ITS assets into existing TAM strategies, commonalities and best practices were identified.

Risk management and life cycle planning remain critical components of transportation asset management strategies. By understanding the risks to different asset classifications, more informed decisions can be made about investment strategies. Proper investment of funds and planning will aid an agency in reaching its performance goals and help mitigate risks associated with any high costs.

"The use of TAM principles will enhance the ability to ensure that the residents of Missouri receive the economic benefit of transportation investments for years to come."

Data on ITS and other mobility assets is maintained and collected via a variety of different methods. State DOTs not only vary in the physical assets that they track and incorporate into their TAM processes, but also in their data collection methods from visual inspections, spreadsheets and other methods. Based on survey, a list of ITS asset classes and data collection methods were recommended, including that data be stored and integrated statewide and a data quality management plan be created and followed.
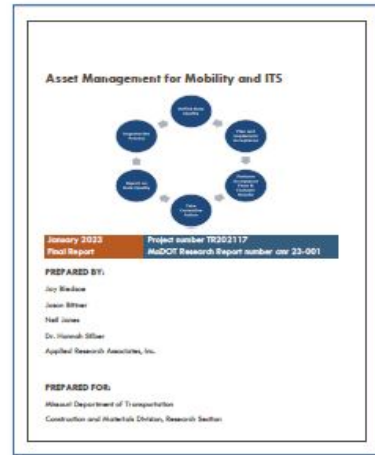
State transportation asset management plans were reviewed, including plans from Nevada, Minnesota, Utah, and Colorado DOTs and the California Transportation Commission. Recent state TAMPs show a tendency for agencies to treat ITS assets the way they treat pavement and bridges. ITS assets provide unique attributes as compared to pavements and bridges, including software/firmware updates, dependence on communications and power for operation, technological obsolescence, and security concerns. When creating a reliable inventory of ITS assets, the agency should create a centralized location for all ITS asset information; a lot of states store ITS asset information across multiple locations such as location, status, condition and maintenance information in other tracking software. A centralized location will make the data easier to aggregate for analysis.

Finally, a tool was created that functions statewide that provides inventory, management, and analysis of ITS assets using Microsoft Excel, allowing MoDOT to keep all their own data and records in house, eliminating any data security concerns that can arise from using transportation asset management tools. The spreadsheet allows enables a central database to track and manage various ITS assets and includes functions to instantly create preliminary budget analysis and other reports as part of the asset management process.

Figure 1: Data Quality Management Cycle.

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