09-130: An Intelligent Transportation System Evaluation Tool in the FSUTMS Regional Demand Modeling Environment

Topic Area: Management Systems

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Abstract: A number of sketch planning tools have been developed to evaluate Intelligent Transportation Systems (ITS). These sketch planning tools act as post processors to travel demand models. The disadvantages with this approach include the inconsistency in the evaluation between sketch planning tools and demand modeling procedures and the extra work to reformat the demand forecasting outputs as inputs to the sketch planning tools. This paper reports on an effort initiated by the Florida Department of Transportation (FDOT) to overcome these shortcomings by implementing ITS evaluation as part of the Florida Standard Urban Transportation Model Structure (FSUTMS). The FSUTMS represents standard modeling procedures for travel demand forecasting throughout the State of Florida.

The developed tool has been implemented using the script language of Cube, the modeling engine of the FSUTMS. The developed tool is a flexible and extendable evaluation environment that eliminates the need for file conversion between the FSUTMS regional demand models and the
sketch planning tools. The tool uses the calibrated regional models, uses up to date methods and parameters, and allows the development of advanced data handling capability and state-of-the-art user interfaces. The types of ITS deployments that can be evaluated using the tool include ramp metering, incident management systems, highway advisory radio (HAR) and dynamic message signs (DMS), advanced travel information systems, managed lanes, signal control, transit vehicle signal priority, emergency vehicle signal priority, advanced public transit systems, smart work zones, and road weather information systems. The tool and methods developed in this study will be implemented in the Florida Metropolitan Planning Organization (MPO) approved regional demand models.

Keywords: Intelligent Transportation Systems, Benefit-Cost, Sketch Planning Tools, Evaluation