INTEGRATING MESO- AND MICRO-SIMULATION MODELS TO EVALUATE TRAFFIC MANAGEMENT STRATEGIES – Year 2

Project PIs
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Abstract:
Currently, traffic management strategies such as adaptive control and ramp metering systems can be tested in simulation using one of the several off-the-shelf-simulation packages such as VISSIM, CORSIM, AIMSUN, etc. Such models and simulation testing have been quite successful for isolated intersections and single intersections, and small networks with 1-3 intersections.

Meso-models that simulate small to large networks, on the other hand, are used mostly at a planning level to evaluate long-term impacts of network wide transportation planning decisions. The integration of micro-and macro- models has been attempted before, but the integration is not as seamless as it should be. Results of a macro model are sent “down” to the micro-model to provide travel demand, usually in a straight-forward manner, but the results of the micro-model are not easily sent “up” to the macro model.

The goal of the project is to develop a multi-resolution micro-/meso-simulation platform to test proactive traffic management strategies. In particular, to keep the project scope manageable and limited, we will integrate an easily available micro-simulation model VISSIM, with an open-source mesoscopic simulator being developed at ASU, DTALite [13]. In Phase 1 (year 1) the project will develop the integrated model referred to as METROSIM (MultiResolution TRaffic Operations SiMulator) In Phase 2 (year 2) the project will evaluate two DMA/ATDM applications that appear to be useful and promising, both via software simulation and hardware-in-the-loop simulations using METROSIM.