Integration of the ADAPTS Activity-based Model and TRANSIMS (Mahmoud Javanmardi, Abolfazl (Kouros) Mohammadian, Ph.D. - University of Illinois at Chicago)

While travel demand and traffic assignment models become more and more mature, and while each model is highly dependent on the other one, a real dynamic integrated model has not been implemented yet. The work that is presented in this paper is an effort toward advancing the state of integration between activity-based models and traffic assignment routines.

In this study, the Transportation Analysis and Simulation System (TRANSIMS) has been integrated with the Agent-based Dynamic Activity Planning and Travel Scheduling (ADAPTS), a dynamic activity based travel demand model calibrated for the Chicago region. What makes this study different than similar studies is that, the ADAPTS model is dynamic in the sense that activities are generated and passed to the network assignment as they are scheduled, rather than pre-defining daily activity schedules for agents to assign at one time. This allows for dynamic interaction effects within the demand model and network simulator, including such things as opportunistic scheduling, en-route replanning, etc., which cannot be handled using loosely coupled models. Meanwhile, despite other integration studies, which use predetermined level of services (LOS) for generating activity plans, in this work the most updated LOS information from the DTA model is used in updating activity plans and schedules during the simulation. That is the integrated model generates travel activities of individuals and simulates them on the network while uses the latest network condition to update the activity plans and schedules at the end of each time-step.