

IntelliDriveSM Pooled Fund Study

Program to Support the Development and Deployment of Infrastructure IntelliDriveSM Applications

University of Virginia Center for Transportation Studies

Progress Report
June 2010

Project Activities/Progress

Project Management

1. *A follow-up conference call held on June 2nd*

- To follow up on the discussions from the face-to-face meeting on May 5th in Texas, a conference call was held on June 2nd 2:15-4:00PM EST.
- Major items discussed/presented at this call were:
 - Organizational/process changes,
 - Proposed process for project selection, and
 - Planning for year 2 program discussions.
- Action items identified from the conference call included:
 - **Core members** – provide feedbacks on technical team selection and any related issues to the management team.
 - **Management team** – finalizes the technical teams and provides the core members with the modified version of the technical teams diagram presenting four technical tracks and the designated chairs for each of the tracks.
 - **Designated chairs** (Greg Larson, Richard McDonough, Alex Power and Elizabeth Birriel) – send an email to their members to solicit ideas on applications.

2. *A face-to-face meeting held on June 22nd*

- In conjunction with the AASHTO meeting, a face-to-face meeting took place at 8:30-12:00EDT on June 22nd in Dulles, Virginia.
- At this meeting, the designated chairs of four technical committees shared their initial thoughts on the proposed activities for the year 2 research program.

3. *Attended IntelliDrive deployment scenarios workshop on June 22nd – 23rd*

- Lastly, a member of the pooled fund study management team participated in the workshop on the IntelliDrive deployment scenarios supported by RITA ITS JPO.

IntelliDriveSM Traffic Signal Algorithms

1. Algorithm coding in VISSIM network

- The platoon-based algorithm has merged with the network optimization algorithm into an algorithm that most closely resembles an actuated signal system utilizing cluster analysis to identify platoons of vehicles issuing calls for the signal. The project team continued coding and refining the cluster algorithm in C# using VISSIM COM.
- A new algorithm was developed utilizing the “rolling horizon” scheme of traffic control, where the next phase is determined by predicting vehicle delay a short time into the future (e.g. 20 seconds). Whereas rolling horizon traffic control in the past used macroscopic modeling to predict future delay, the project team’s algorithm uses microscopic simulation with each equipped vehicle’s speed and heading as a starting point. The project team is coding the algorithm in C# using VISSIM COM.
- The project team is establishing a base-case timing plan against which to compare the network optimization and rolling horizon algorithms.

2. Evaluation Details

- The project team continued preparation of the conference paper based on the algorithm.
- A detailed set of experiments were designed to perform sensitivity analyses. The factors considered included – threshold values for both the ECG and LSG parts of the oversaturated algorithm, market penetration, surrogate queue condition estimation, and estimation of market penetration from field conditions.
- Five specific strategies/scenarios, along with the base case, have been identified for evaluation.
- The following five metrics were selected for evaluating the oversaturation algorithm, based on literature review: Throughput, average vehicle delay, average number of stops per vehicle, average stopped delay and average queue length. In addition, detailed analyses include evaluation of throughput on individual links, along with the analyses of corresponding green times.
- Based on analyses of preliminary results, the code and the VISSIM input files were refined, to eliminate inconsistencies.

3. SAE J2735 Standard Review

- The project team continues to track development of the SAE J2735 standard, the primary standard governing IntelliDrive Message Set Dictionary.
- Members of the project team attended the IntelliDrive Deployment Scenarios Workshop in Dulles, VA on June 22-23.

Project Status

The project is on schedule. A conference call is planned on July 15th to gather an initial list of activities recommended by the four technical committees for the year 2 research program. Further algorithm development, refinement, coding, and simulation continue in July.

Invoice Notes

None