

IntelliDriveSM Pooled Fund Study

Program to Support the Development and Deployment of Infrastructure IntelliDriveSM Applications

University of Virginia Center for Transportation Studies

Progress Report
July 2010

Project Activities/Progress

Project Management

1. *A conference call held on July 15th*

- A conference call was held on July 15th. At this call, the chairs of the four technical committees presented their recommended activities for the year 2 program of the pooled fund study as follows:
 - Policy/Strategic planning committee (Chair: Greg Larson)
 - Transition Handbook for Executives
 - Outreach Package for Local/Regional Transportation Agencies
 - Retrofit/After-Market IntelliDrive Equipment for Light-Duty Vehicles
 - Software Licensing for IntelliDrive Infrastructure Components
 - Data Access/Privacy Protection for Public Agencies
 - Infrastructure committee (Chair: Richard McDonough)
 - IntelliDrive Financial Transactions and Processing
 - Standards Compliance and Interoperability Certification for IntelliDrive Hardware and Software
 - Development of a Multi-Configurable (cell, satellite) 5.9GHz OBE
 - Signalized Intersection – Traffic Data Collection Application
 - Highway/Arterial Performance Metrics
 - Safety committee (Chair: Alex Power)
 - Intersection safety
 - Lane convergence
 - Traveler information
 - Mobility committee (Chair: Elizabeth Birriel)
 - Pending submission

2. *Deliverables from the year 1 applications received and distributed*

- Auburn University (working on Investigation of Pavement Maintenance Support Applications of IntelliDrive) and the California PATH (working on Investigating the

Potential Benefits of Broadcasted Signal Phase and Timing Data under IntelliDrive) have submitted their first interim reports.

- The pooled fund study management team reviewed these deliverables and sent them out to the pooled fund study members for comments.

IntelliDriveSM Traffic Signal Algorithms

1. *Algorithm coding in VISSIM network*

- The project team completed coding of the vehicle clustering algorithm (formerly the network optimization and platoon-based algorithms). The algorithm is being refined further based on observing vehicle runs and attempting to eliminate illogical and counter-productive traffic control behavior.
- The project team continued to establish a base-case timing plan against which to compare the network optimization and rolling horizon algorithms.

2. *Preliminary Results*

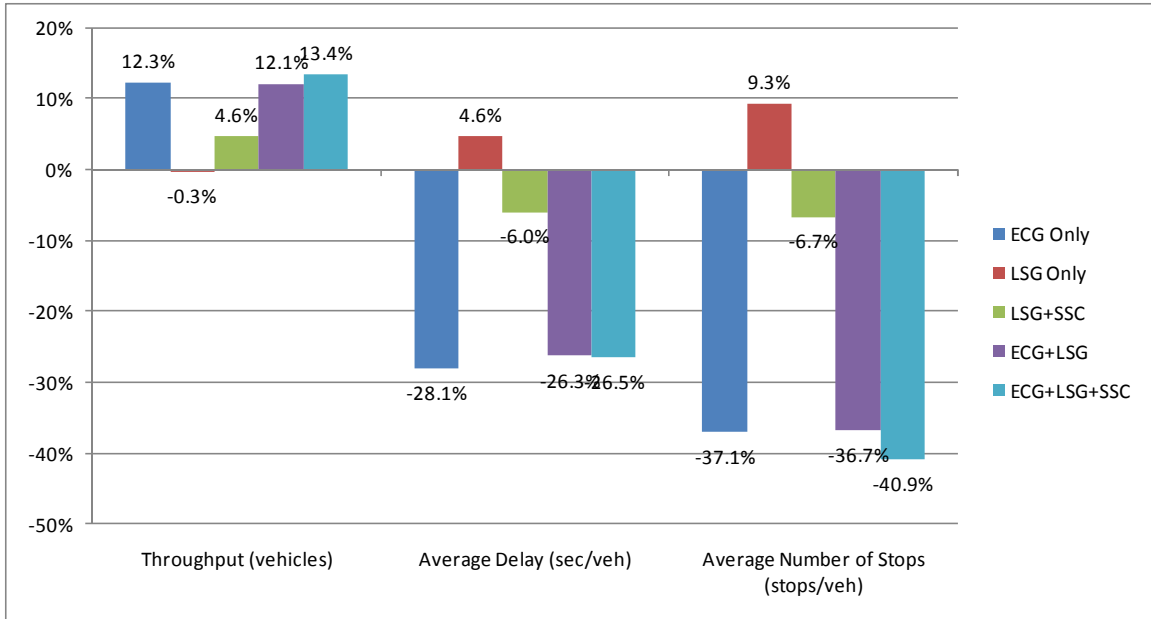
- The rolling horizon algorithm was tested and refined on an isolated 8-phase intersection. The algorithm was compared to a base case of an optimized fully-actuated traffic control scheme. Preliminary results are shown in Table 1.

Table 1: Results of Preliminary Testing of the Rolling Horizon Algorithm

Percentage of Vehicles Equipped with Communications	Preliminary Percent Improvement in Delay over Optimized Actuated System
100%	26%
75%	21%
50%	10%
25%	3%

The project team will apply the algorithm to the four-intersection Route 50 network for more thorough testing.

- For the oversaturation algorithm, final refinements to the code and the VISSIM input files were completed. Detailed analyses were performed to understand the various factors explained in the previous monthly report.
 - For ECG algorithm, the threshold value of 50ft was selected, based on results.
 - For LSG algorithm, the threshold value of 150ft was selected.
- Detailed results at the 100% market penetration are as follows:



The ECG part has turned out to be the most promising algorithm. Further analyses at lower market penetrations are currently underway.

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.
- The project team will review the proceedings from the IntelliDrive Safety Workshop held July 20-22 in Chicago, IL.

Project Status

The project is on schedule. The next conference call will be held on August 4th to finally select the projects for the year 2 program and allocate funding to those selected projects. Further algorithm development, refinement, coding, and simulation continue in August.

Invoice Notes

None