

TRB Traffic Signal Systems Summer Meeting
July 22 – 24, 2007

Tentative Schedule

Location: TBD

Sunday, July 22

1:00 – 3:00 PM Traffic Signal Timing Manual Subcommittee

Break

3:30 – 4:30 PM Simulation Subcommittee

4:30 – 5:30 PM Architecture Subcommittee

Monday, July 23

8:30 AM – 5:30 PM VII/CICIA Workshop

7:00 PM – 10 PM Signal Transition Logic Workshop

Tuesday, July 24

8:00 – 11:00 AM Business Meeting

(This includes 45 minute Research Subcommittee meeting)

11:00 AM – 2:00 PM VII/CICAS Tour



Special Session on

A demonstration Implementation of the Signal Transition Logic of NCHRP 3-66: Using the Train Preemption Portion of the Logic

(Everyone is invited to listen and provide feedback)

Organized by David Gibson, FHWA

Review by Advanced Technologies, Inc

Using open source UML tools, ATI has developed a configurable and modifiable dual-redundant (Ada95 / C++) demonstration of a portion of the NCHRP which was first implemented under Linux and then ported to windows. The demonstration was the Phase I of a Small Business Innovative Research project. Phase II will be to implement additional portions of the logic. The UML modeling and programming work was done by Mark Gardiner and Donna Romanavich.

Philosophical and Logical foundation input were provided at the beginning of Phase I by Darcy Bullock, Larry Head and Tom Urbanink. All UML development and programming was done using open source Linux tools. Demonstration of the software and open source tools will be provided. The software shall have an open source license such that commercial vendors could adapt it for use with their proprietary traffic signal control packages while allowing universities, cities and States to continue researching it. The feedback from this workshop will be used to shape how ATI develops their Phase II work and coordinates with the NCHRP activities to develop an implementable demonstration of portions of the NCHRP research.

Schedule:

7:00 PM – 10:00 PM on Monday, July 23, 2007

Explanation and demonstration of project (one hour) – Intro by David Gibson, Presentation by Mark Gardiner and Donna Romanowich

Explanation and demonstration of open source tools (a half hour) Presentation by Mark Gardiner and Donna Romanowich

Questions and answers about project (a half hour)

Discussion of approach and goals for Phase II and how to coordinate it with new NCHRP work one hour (one approach might be Panel with Mark, Darcy, Larry, & Tom leading discussion)

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**TRB Mid-Year Workshop on
Vehicle Infrastructure Integration (VII) and Collaborative Intersection Collision
Avoidance System (CICAS)**

Organizing TRB Committee:
Traffic Signal Systems Committee

Sponsoring Committees:
Intelligent Transportation Systems Committee
Vehicle Highway Automation Committee

Organizers:
Brian Park, Chair
Larry Head
Gary Piotrowicz
Vijay Kovalli
Daiheng Ni
Edward Fok
Gene McHale
Steven E. Shladover
Tim Golden

Monday, July 23, 2007 in Palo Alto, CA
Tour on Tuesday, July 24, 2007

Purpose:

The mid-year workshop on Vehicle Infrastructure Integration (VII) and Cooperative Intersection Collision Avoidance System (CICAS) will bring national leaders in VII and CICAS programs from government, industries, and academia and provide participants with current status including roadmap to deployment, potential issues faced and to be faced with the proposed deployment, up to date research activities that are closely related to traffic signal systems. In addition, the workshop will identify data needs and future research topics under VII/CICAS especially for traffic signal control system through break-out sessions.

Format:

Invited presentations
Laboratory demonstrations
Field demo – depends on the location of workshop place
Brainstorming on research needs related to traffic signal control

DRAFT*DRAFT Tentative Schedule

Monday, July 23, 2007

8:30 am Welcome
8:40 am Jim Wright
9:00 am Mike Schagrin
9:20 am Greg Larson
9:40 am Jim Misener

Break

10:20 am Michael Maile
10:50 am Gary Piotrowicz
11:20 am Brian Park

Lunch

1:00 pm Larry Head
1:30 pm Daiheng Ni
2:00 pm Rick Denny
2:30 pm Meenakshy Vasudevan

Break

3:30 pm Breakout session(s)
4:15 pm Discussion
5:15 pm Adjourn

Tuesday, July 24, 2007

After 11am – 2:30pm VII/CIAS Tour/Demo (Tentative)

Organized by [PATH/Caltrans](#) & DaimlerChrysler
Jim Misener & Michael Maile

Participants will visit the VII California testbed, including operational roadside equipment in both freeway (U.S. 101) and arterial (El Camino Real) environments. The roadside equipment will use DSRC to communicate with the passing vehicles, demonstrating the following VII use cases:

- real-time freeway traffic condition from the Bay Area's 511 system
- real-time arterial traffic condition from VII probe vehicles
- transit signal priority
- CICAS - signal violation warning.

Participants will also be able to inspect the arterial cabinet installations, where VII capabilities have been implemented with 170 and 2070 controllers at different locations, and will receive a demonstration of a transit bus collision warning system (using sensors rather than VII technology).

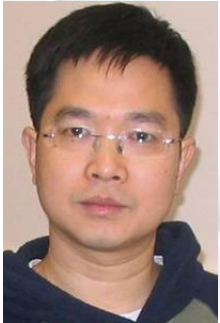
VII & CICAS Workshop Speakers



Jim Wright
511 & VII Program Director, AASHTO

AASHTO's Role in the VII Program

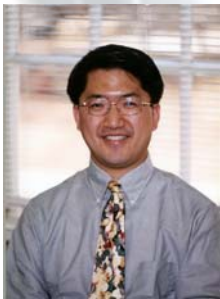
Presentation will cover policy committee issues, outreach and education to the AASHTO community and the latest VII policy positions from AASHTO.



Daiheng Ni, Ph.D.
Assistant Professor, University of Massachusetts Amherst

Development of a Prototype Intersection Collision Avoidance System under VII

This paper presents the design of a prototype intersection collision avoidance system based on Vehicle Infrastructure Integration (VII). Underlying the system are wireless communications, positioning technology, and information technology that ensure accurate and timely safety information.



Byungkyu (Brian) Park, Ph.D.
Assistant Professor, University of Virginia

VII/CICAS Evaluation Test-bed Using HILS and SILS

This talk presents a HILS and SILS-based system evaluating potential benefits of VII/CICAS in traffic signal control system. The proposed system architecture and application programs including dynamic gap-out, dilemma zone detection, and advisory guidance to drivers will be presented. Some preliminary results will be also discussed.

Michael Maile (30 min – can do in 20)
Research Principal, DaimlerChrysler Research, Engineering and Design North America

Cooperative Systems for Intersection Crash Prevention

Crashes at or near intersections are a serious traffic safety problem and account for more than 9000 deaths and more than 1.5 million injuries annually in the US. The USDOT has sponsored research toward cooperative systems (CICAS) that use DSRC wireless communications between the intersection and the vehicle to alert the driver of a vehicle to an impending violation of a traffic signal or stop sign. . This presentation will give an overview over the CICAS system, the current status of the project and the future development activities.



James A. Misener (30 minutes)
Transportation Safety Research Program Leader, California PATH

VII California and Intersections: Past, Present and Future

In the talk, the application of low latency, high availability, safety critical messaging between RSEs and OBEs for cooperative intersection safety will be described. The background -- which focuses on signal violation, dilemma zone warning (to address the onset of yellow signal phase) and reducing left-turn crashes -- will be given. Then the current set of information requirements

will be discussed; this will include the need for high data rate, as wireless map updates may constitute a significant component of the communicated message.



Larry Head

Research Professor and Interim Department Head, The University of Arizona

Traffic Control Systems in a VII Environment

Traffic control in a VII environment changes the paradigm from one of reacting to detector calls for service and extension to one where priority for class of vehicles can be considered, where actual vehicle performance can be monitored and reported, and where safety can be enhanced through signal control decisions and real-time distribution of signal state information.

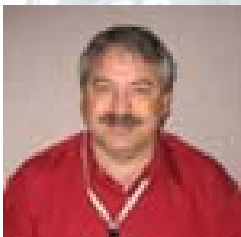
This talk will discuss some of the issues related to the realization of traffic control systems in the new VII environment.

Richard W. Denney, Jr., P.E. (30 min.)

Associate Vice President, Iteris

The Signal Optimization Application for VII

Much work has been done in thinking about the signal timing optimizations opportunities presented by VII. For example, can VII produce the input data for traditional traffic signal timing software? But the more important question is: Can VII help us bypass the traditional volume-based modeling on which current signal timing optimizations are based, allowing us to characterize the traffic stream in a way that relates directly to our objective? Before we can answer that question, we must take the step of characterizing how practitioners define their objectives in a VII context. The presentation will review what work has been done to-date to develop the signal timing optimization application of VII, and will propose two areas where involvement from practitioners and researchers will be most important.



Greg Larson (20 minutes)

Chief, Office of Traffic Operations Research, Division of Research and Innovation, California Department of Transportation

VII and CICAS Testbeds in California

Caltrans and MTC, in partnership with four local auto industry research labs, are building a VII/CICAS Testbed along 60 miles of Caltrans-owned right-of-way in the Palo Alto area. The VII California Testbed will consist of

40 Roadside Equipment locations (DSRC Radios, local intelligence, and backhaul) along three parallel routes: US 101, State Route 82 (El Camino Real), and Interstate 280. The VII California Testbed has both intersection and freeway sites, and is used by Caltrans, MTC, and the auto companies to develop, test, and evaluate various VII safety and mobility applications, such as intersection collision avoidance, curve speed warning, in-vehicle signage of traveler information, and electronic toll collection.



Gary Piotrowicz (30 minutes)

Signal Systems Engineer, Road Commission for Oakland County, MI.

VII: the Michigan Experience

This presentation will include information regarding most of the VII projects underway in Michigan. This includes CICAS, test beds, the VII Proof of Concept, and DUAP. The status will be given on each of these projects and will include lessons learned from early implementation.



Meenakshy Vasudevan, Ph.D.
Noblis, Washington, DC.

VII Data Characteristics for Arterial Applications

This presentation will discuss an analytical effort to emulate the VII probe message process, using simulated data from VISSIM, and characterize the capability of VII probe data to estimate key measures of interest (e.g., travel times, queue lengths, turn percentages, etc.) for arterial applications. Results from a case study conducted for the Van Ness Boulevard in San Francisco will be presented.



Email list of Speakers (in alphabetical order):

Richard W. Denney, Jr., ITERIS rwd@iteris.com

Larry Head, University of Arizona, larry@sie.arizona.edu

Daiheng Ni, University of Massachusetts Amherst, ni@ecs.umass.edu

Greg Larson at CalTrans, greg.larson@dot.ca.gov

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Mike Schagrin, USDOT ITS JPO CICAS Program Manager, Mike.Schagrin@dot.gov

Meenakshy Vasudevan, Noblis, meenakshy.vasudevan@noblis.org

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