



Moving Toward Deployment: New Knowledge for ITS Practitioners

The summer meeting of the Intelligent Transportation Society of Michigan (ITS-Michigan) was co-hosted by the MIOH UTC on the campus of the University of Detroit Mercy. Members, practitioners, university researchers, and research students began the day hearing recent results from three projects funded through the UTC. (See box page 2)

Following these presentations the audience self-selected into break-out discussion groups addressing the following concept: "To focus, enable and accelerate the creation and implementation of new Intelli-Drive technologies leading to benefits to the people and the economy of Michigan." Three break-out action areas were identified: A.) Technologies Push; B.) Market and Community Pull; and C.) Barriers to Seamless Collaboration.

A. The Technologies Push discussion flowed from questions such as: What Intelli-Drive technologies are ready for proof of concept or prototyping by building and testing functional systems? What technologies are in need of further research before functional systems would be possible?

The group defined this concept as technologies vs. applications where applications are market driven. They believe that a lot of proprietary information is likely available. The common foresight is that the market is not going to be driven by technologies but by applications; technology will be in the background as an enabler for the applications.

The group raised five key points:

- ∞ Collect information at road side and then get that information to owners of infrastructure, both private and agencies, as well as users.
- ∞ The communication process, with its protocols and technology, is not fully resolved relative to vehicle-to-vehicle and vehicle-to-infrastructure communication.
- ∞ Implementation is anticipated to be more on the vehicle side than on the infrastructure side. Once data is seen as a commodity, it is expected that costs will be driven down so users can implement technology.
- ∞ Priority of "traveler information" vs. "safety emphasis". It is perceived that drivers would prefer traveler information while FHWA would emphasize safety. The potential detrimental effect of driver information overload was also raised.
- ∞ Business models such as aftermarket providers are the most likely paths to successful implementations in light of current auto company fiscal challenges.

B. The Market and Community Pull discussion group addressed the questions: What needs or functions that could be satisfied by Intelli-Drive technologies are the most critical to the transportation needs of Michigan residents? ...have the

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MIOH UTC

a University Transportation Center funded by: the U.S. Dept. of Transportation, the Michigan Dept. of Transportation and partner Universities and Corporations

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During the Intelligent Transportation Society of Michigan summer meeting the attendees split into Break-out Sessions to explore transportation issues.



MIOH Technology Transfer

As the MIOH UTC partners completed their third year of R&D projects, yielding valuable and deployable results, the center "geared up" its technology transfer activities. This year two major tech transfer events were created through MIOH's partnership with two highly regarded transportation technology organizations, NextEnergy and the Intelligent Transportation Society of Michigan. Each event brought together forty to fifty leaders from academia, industry, and government to explore results and discuss future processes for collaboration. (See related articles.)

MIOH R&D and curriculum development projects are described on the MIOH website <http://mih-utc.udmercy.edu> which also has reports and papers that provide results in greater detail. One project on hydraulic hybrid education also provides educational modules that are available to faculty from across the nation for their free use.

In the coming months and years MIOH will post and host more results and tech transfer events . . . all highlighted on our website.

Dr. Leo E. Hanifin
Director

MIOH University Transportation Center

Deployment:

New Knowledge

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greatest demand/market from today's drivers, transportation systems providers/managers, ...?

These professionals summarized four priority areas:

- ∞ Getting better information to travelers, both private and commercial. What can intelligent transportation technology provide, establishing the quality of data so customers trust it, and managing driver information overload.
- ∞ Safety/ prioritization of alerts. What can technology do to improve safety of passengers as well as pedestrians?
- ∞ Value to agencies. How can agencies benefit? Provide data to help agencies prioritize needs such as construction projects or pothole repair.
- ∞ Information can facilitate better

multi-model transfer, connections, etc between the different modes of transportation.

C. The third group addressed the area "Barriers to Seamless Collaboration" looking at issues such as: What keeps research from focusing on the greatest needs from practitioners? What keeps practitioners from exploiting research results? What are the barriers to information flow?

The re-occurring theme this group identified was "communications". Do the universities know what practitioners are interested in? Do practitioners know what universities have accomplished? The group addressed this under four headings:

- ∞ Planning that targets the research question of practitioners' needs and lets researchers think about what they might be able to provide.
- ∞ Data availability. Practitioners, particularly those in the government

sector, have abundant data but not the time to manipulate it. University researchers and their students have expertise to move data around into useable form.

- ∞ "Communications" means being able to tell people what the research means. There is a gap between research and deployment. A barrier to exploiting research results can be the need to transform the research models developed into a form that an agency can use, as well as, extract data from the research papers and presentations.
- ∞ Liability risk of using new research that has been developed and putting it out on the road. Among possible solutions is for experienced engineers to develop structured, careful ways to implement new ideas in the field.

One additional idea was forthcoming from this group. There should be more sessions/ meetings/ gatherings/ information sharing opportunities like this meeting.

Next time the invitation list will be expanded!

Dr. Utpal Dutta, UDM, presented **"What SCATS means to Safety and Travel Time"** building on a project measuring the impact of the system as implemented on M-59 in Oakland County. Current research is evaluating shifts in severity of crashes, change in crash rates, and signal cost comparison.

"How ITS/VII can Improve Supply Chain Efficiencies" was the theme of Dr. Ratna Babu Chinnam's talk. These researchers at WSU and UDM have extended their earlier results and developed new models and algorithms

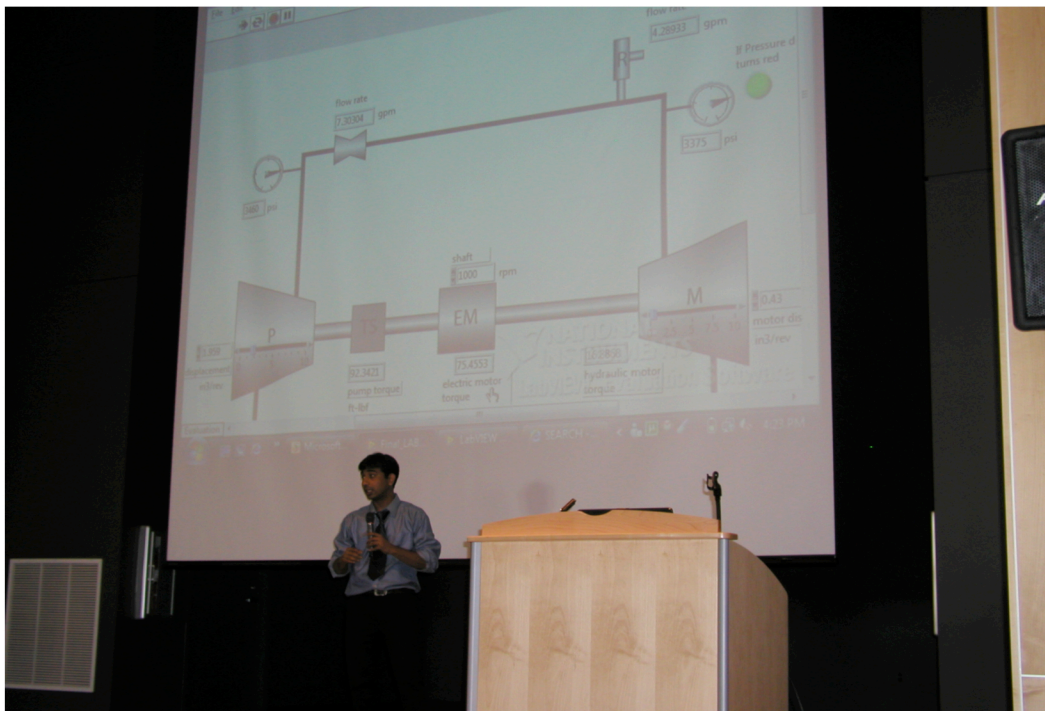
for "milk-run" deliveries which are critical to some of the logistics companies and their partners such as Ford MP&L. This achievement exploits real-time traffic information during multi-leg vehicle routing and identifies the most robust customer/supplier stop sequence.

Continuing the theme of reducing congestion, Dr. Charlie Standridge presented **"Practical Ideas for Congestion Mitigation through ITS"**. Researchers from GVSU and WSU attempt to describe, explain and predict the flow of traffic in a corridor with respect to time

and space; also to apply these results in the routing of voluminous traffic.



Dr. Peter Savolainen, WSU presents "VII for the Non-Technical Audience".



Sujay Bodke, UDM graduate student, presents validation of a laboratory exercise for teaching hydraulic hybrid vehicle technologies available on the MIOH UTC website at <http://mioh-utc.udmercy.edu/education/af-1/material/index.htm>

2009 Alternative Energy Forum Research and Results

The 2009 Alternative Energy Technology Transfer Forum presented ongoing research and early results from projects at three universities and two corporations. The Michigan Ohio University Transportation Center (MIOH UTC) and NextEnergy sponsored the forum.

Among others presenters included:

- ∞ Dr. Haiying Tang, *Research Asst. Professor, Dept. of Chemical Engineering, WSU* **"Improved Oxidative Stability of Biodiesel Fuels: Antioxidant Research and Development"**
- ∞ Dr. Ashok Kumar, *Professor and Chairman, Dept. of Civil Engineering, The University of Toledo* **"Characterization of Emissions from Public Transport Buses using Bio-diesel"**

- ∞ Dr. Shuli Yan and Dr. Manhoe Kim, *Research Associates, Dept. of Chemical Engineering, WSU* **"Heterogeneous Catalysts for Continuous Transesterification of Vegetable Oils"**
- ∞ Oliver F. Baer, *President and Cofounder, Clean Emission Fluids, Inc.* **"Biofuels & Clean Diesels: Enabling Clean Transportation and the Commercialization of Alternative Energy"**
- ∞ James A. O'Brien, II, (Jim), *Founder, Chairman of the Board, Chief Technology Officer, Hybra-Drive Systems, LLC* **"Development and Acceptance of a Hydraulic Hybrid Vehicles"**
- ∞ Dr. Mark Schumack, *Professor, Dept. of Mechanical Engineering, University of Detroit Mercy with Sujay Bodke, Engineering masters student, UDM* **"Multipurpose Educational Modules to Teach Hydraulic Hybrid Vehicle Technologies"** available on the MIOH UTC website (address under picture above).

MIOH UTC Research Students Present Posters at the 2009 ITS-Michigan Annual Meeting

Sabyasachee Mishra, a doctoral candidate at Wayne State University was selected to present a poster session entitled "Incident Management Strategies for Urban Freeways and Arterials". In 2008 Mishra won the 2nd prize for the Institute of Transportation Engineers (ITE) Great Lakes District Student Award for his paper "A Micro Simulation Model Application for Incident Management Strategies". Mishra is completing his Ph.D. under the direction of Dr. Snehmay Khasnabis.

Luana Gergescu, a masters student at Grand Valley State University, School of Engineering, pursuing research under the direction of Drs. David Zeitler and Charles Standridge, was selected to present a poster session entitled "Descriptive Modeling of ITS Traffic Flow Data".

Khalidoun Albarazi, a graduate Electrical Engineering student at the University of Detroit Mercy, presented a poster session entitled "Next Generation Traffic Light System". **Baraa Alyusuf**, a graduate Electrical Engineering student at the University of Detroit Mercy, presented a poster entitled "Performance Evaluation of IEEE802.11 Family Protocols. Both graduate students are currently involved in research with Dr. Nizar Al-Holou.



Alternate energy and system mobility to stimulate economic development.

The MIOH UTC wishes to congratulate **Tim Hoeffner** who has been appointed to lead a newly created High Speed Rail Office for the Michigan Department of Transportation. We wish to THANK Tim for his service representing MDOT on the MIOH UTC Operating Committee.



2009 TRANSIT Campers had the opportunity to talk "one on one" about opportunities and realities with working transportation professional when members of the Intelligent Transportation Society of Michigan came to meet these "future transportation professionals".

Contact NOW for TRANSIT Camp

For more information or to request a brochure/application, please contact Director of Pre-College Programs

Dan Maggio at maggiodd@udmercy.edu.

Camp Dates: July 2010 tba

For: 9th-11th grades in 2009-10

Registration deadline: June 1.

TRANSIT CAMP

is a one-week commuter program exploring the world of transportation. It is open to any high school student currently in the 9th through 11th graders. A Minimum 2.75 GPA is required. Enrollment is limited to 20. TRANSIT will run Monday through Friday for one week, 9:00 a.m. to 3:30 p.m. daily. Please inquire about scholarships.

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