



President's Message

John Benda

This is the first ITS Midwest Newsletter since the expansion of ITS Midwest to a Four-State Chapter, and it is produced by the Communications Committee. While we rely on our website as a primary means of communication to our members and others, we feel it is important to produce a newsletter for our members and to enable outreach to new members and the legislative community. Our newsletter will also be available on our website – www.itsmidwest.org.

Our plan is to publish the newsletter three times per year and highlight ITS related activities in Illinois, Indiana, Ohio and Kentucky, as well as highlight Chapter activities on the upcoming calendar and publish informative articles regarding intelligent transportation systems.

We do encourage members and others to submit articles to be published in future newsletters. These will be submitted directly to the Newsletter Editor: Dr. Heng Wei, University of Cincinnati, (513)556-3781, heng.wei@uc.edu

Our next major activity for ITS Midwest is our Annual Meeting that will be held in Columbus, Ohio on October 30-31, 2008. Ohio Department of Transportation (DOT) has graciously offered to host our meeting at their headquarters in Columbus. This meeting will be the first full Annual Meeting of ITS Midwest since the expansion to a four-State Chapter.

ITS Midwest Actively Involved in ITS World Congress and ITS Annual Meeting

ITS Midwest congratulates officials from our member organizations that are going to participate in the various sessions of the Conference Program at the 15th World Congress on ITS and the ITS

America Annual Meeting. ITS member officials are involved in the following roles:

- Moderator for World Congress Plenary Sessions that will focus on ITS policies, initiatives, and trends and the latest challenges and opportunities facing ITS, along with the policy and strategic implications for ITS deployment.
- Moderator and Speaker for World Congress Executive Sessions that will provide for interactive discussion on policy and vision for key topics in ITS and solutions to transport challenges.
- Organizer/Moderator for World Congress Special Sessions that will present timely information and valuable insight on international best practices and also address the application of technology, integration of systems and networks, progress and results of key programs, benefits of ITS services and systems, development, and training needs, etc..
- Author for papers that will be presented in World Congress Technical Sessions that will provide technical details on the latest transportation technologies, as well as progress and results of various research programs, field tests, and other initiatives worldwide.
- Author for World Congress poster

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presentations where delegates may speak directly one-on-one with our presenters to explore in depth the latest achievements in technology research, program development, and program assessment.

- Moderator for ITS America Annual Meeting educational sessions that will focus on the public and private sector ITS activities and accomplishments in the United States.
- Facilitator for ITS America Annual Meeting forum showcases that will highlight activities over the past year, identify objectives for the year to come, and tackle topics that are central to the interest of Forum members.

[Article courtesy of Shawna Ulicne]

Illinois Tollway Uses ITS to Keep Traffic Moving During \$6.3 Billion Capital Program

The Illinois Tollway is in the midst of its most ambitious construction project ever – a \$6.3 billion program to rebuild and modernize a 50-year-old Tollway system to reduce congestion and improve service for customers. In the fourth year of the Congestion-Relief Program – *Open Roads for A Faster Future* – the Illinois Tollway:

- Is rebuilding/restoring most of the Tollway system,
- Is widening many lanes of existing roadway, and
- Has converted all 20 mainline barrier-style toll plazas to Open Road Tolling in less than 2 years,
- Has Extended the Veterans Memorial Tollway (I-355) 12.5 miles south from I-55 to I-80.



While the Tollway has deployed a wide variety of ITS technologies, one of the most significant components of the Tollway's ITS infrastructure is Open Road Tolling (ORT). One of the earliest benefits of the Congestion-Relief Program, ORT

now provides I-PASS electronic toll collection users with non-stop tolling at highway speeds to help eliminate traffic back-ups, improve safety and allow customers to reach their destinations quickly and conveniently. The system also accommodates cash-paying customers by providing traditional toll booth plazas adjacent to the mainline, however more than 80 percent of drivers are using I-PASS for daily travel.

What may be most remarkable about the Illinois Tollway's accomplishments to date is that they have been achieved while keeping traffic flowing along its 286-mile system for 1.4 million daily drivers. The Tollway is committed to maintaining the same number of lanes during construction as before work began, by shifting traffic, reducing lane widths and using counterflow configurations. The Tollway employs a performance-based lane closure system to ensure ramp and lane closures are allowed when they will impact system performance the least, thereby minimizing congestion to motorists.



Among the challenges the Tollway faced in rolling out ORT, as well as launching reconstruction and widening projects throughout the core of the Tollway's system, has been providing effective and accurate communication to customers on the road. This communication includes advising customers whether they need to divert from the mainline to pay cash, or inform them that access to local exits during construction is prohibited from work zone counterflow lanes. The answer has been to leverage ITS technologies.

This has been possible due to numerous efforts that challenged conventional construction- and project-management practices, not the least of which has been a proactive communication plan. Information is provided to motorists through roadway signage and extensive use of portable changeable message signs (PCMS) has greatly assisted this effort. To further enhance this

communication method, the Tollway has developed the capability to manage and message on both Tollway and Contractor PCMS's from the Tollway's Traffic Operations Center. This network of more than 150 PCMS's has proved invaluable in providing customers accurate and timely information.

In addition, closed-circuit video cameras, for example, are being used to monitor driver behavior and gauge the responses of customers to maintenance of traffic. Through video surveillance, engineers and roadway operations staff evaluate traffic patterns and recommend changes, often within hours - not days - as would have conventionally been the case.

Going forward, the Tollway will continue to leverage the functionality of ITS technologies to improve safety, better manage incidents that cause delays and improve communication with customers and local transportation agencies. For example, two wireless video networks are in the works on opposite ends of the Tri-State Tollway (I-94/I-294/I-80), which will give the Tollway the flexibility to deploy cameras where needed most and on emergency response vehicles. Additionally, ramp queue-detection systems will be installed at several locations to alert drivers to backups onto mainline roads.

[Article courtesy of Joelle McGinnis, Press Secretary, Illinois Tollway]



The INDOT Traffic Management Business Unit (TMBU) has been quite busy lately. ITS is housed in this business unit and the unit is comprised of four separate divisions. The divisions are Traffic Control Systems, Technology Deployment, Traffic Management Centers, and the Division of Public Safety Operations.

The Traffic Control Systems Division has been assisting INDOT Districts with the optimization of signal systems throughout the state. From January through June in 2008, INDOT Districts, with support from the Division of Traffic Control

Systems, have retimed 252 signals. As a result, the public has saved over \$550,000 in fuel and over 186,000 hours of time.

The Technology Deployment Division has been overseeing a contract to increase the amount of ITS devices in central Indiana. Phases 3 and 4 of a 5-phase Advanced Traffic Management System deployment are under construction, and Phase 5 is currently in the design stage. Once Phase 5 is complete in 2010, the Indianapolis metropolitan area will have approximately 125 cameras, and vehicle detection every ½ to 1 mile. Furthermore, after the completion of a statewide upgrade of 23 older Dynamic Message Signs (DMS) and deployment of 13 new DMSs in 2009, the Indianapolis area will have 31 DMS. The Technology Deployment Division is also overseeing a contract to deploy fiber optics and upgrade the ITS devices in Northwest Indiana, as well as upgrade the technology within the Gary Traffic Management Center. Another contract this Division is overseeing is the installation of panel signs with flashing lights on the Highway Advisory Radio signs throughout the state. The flashing beacons will flash when there is a roadway restriction informing motorists to tune to a specified AM radio station to hear information about the roadway restriction. The Technology Deployment Division is working closely with Purdue University to evaluate the data quality of roadway detector stations. Purdue has developed a set of algorithms that will calculate if a roadway detector is reporting credible data or if the detector station needs some kind of calibration. Once the Technology Deployment Division is satisfied with the detector data quality, travel times will be reported on DMS in Northwest and Central Indiana.

The Traffic Management Centers Division has many projects underway as well. An intermediate INDOT Traffic Management Strategic Deployment Plan has been completed and will be finalized by the end of 2008. The Traffic Management Centers Division is in the process of developing a statewide 511 traveler information system that is scheduled to go live in 2009. A contract is also underway that will help the TMBU define and measure performance measures. This project will highlight some of the benefits, including cost benefits, of the intelligent transportation systems throughout the State. An upgrade of INDOT's Automated Traveler Information System (ATIS) was recently

completed. This upgrade merged two existing ATIS systems into one statewide system. By merging the two systems, it will now be easier to share TMC data with outside parties.

The Public Safety Division plays a large role in safety and maintenance of traffic in larger construction projects throughout the State. A project called Super 70 was recently completed in Indiana, this project was a \$175 million reconstruction of a 6-mile stretch of I-70 on the east side of Indianapolis that occurred over a 9 - month period. Most of the on and off ramps of I-70 were closed during construction and semi-trucks were not permitted in the construction zone. In addition to these restrictions, other safety measures were instrumented that resulted in zero fatalities in the work zone, and crashes were actually reduced by approximately 30% when compared to the prior year for the same period when no construction was occurring. The Super 70 project has received multiple awards including the ASCE Indiana Civil Engineering Project of the Year, as well as the ITE 2008 Transportation Achievement Award for Safety. The Public Safety Division is taking lessons learned from the highly successful Super 70 project and applying them to multiple projects in Indiana.

[Article courtesy of Meggan Simpson, Division of Traffic Management Centers, Indiana Department of Transportation]



The PASSAGE program is a coordinated effort with the Lake County Division of Transportation, Illinois Department of Transportation (IDOT), Illinois State Toll Highway Authority (ISTHA), Federal Highway Administration (FHWA), Illinois Commerce Commission (ICC), the regional Emergency Telephone System Board (ETSB), and other local municipalities. The program successfully demonstrates the use of several new and innovative technical solutions and shows how local, regional and statewide agencies can work together to build a cost effective multi-jurisdictional transportation solution. The PASSAGE program goes far beyond traditional arterial or freeway management by encompassing a

complete interagency regional traffic management solution.

Interesting program features include:

Full two-way integration with local emergency response: The Lake County PASSAGE system provides a two-way interface with the County's ETSB. The ETSB consists of twelve member agencies including two county agencies, the Lake County Sheriff's Department and the Lake County Forest Preserve Police, and ten municipal agencies including the following police departments: Antioch, Island Lake, Hawthorn Woods, Kildeer, Lake Villa, Lake Zurich, Lindenhurst, Port Barrington, Tower Lakes, and Wauconda. Traffic related event and incident data flows in real time between the ETSB and the PASSAGE system and allows for operator messaging and event detail sharing for all entities.

Automated signal timing response for arterial or freeway incidents: The updated signal system master agreement set the stage for one of the nation's most advanced arterial event management systems. Although each agency maintains and supports their own signals in the field, the unified central control system allows for more efficient cross jurisdiction coordination for daily signal timing. In addition, pre-established signal timing response plans are built into the system to maximize the efficiency and routing of vehicles around areas impacted by incidents or signal malfunctions.

Truly integrated and automated corridor management: The PASSAGE Advanced Traffic Management System (ATMS) includes full two-way sharing of real time event details between IDOT, ISTHA, ETSB and the Illinois State Police assigned to the Tollway. In addition, the system provides intelligent automated responses to events on any jurisdictional roadway within the county. These responses include signal timing changes, Dynamic Message Sign deployments, Highway Advisory Radio (HAR), web page updates and coordination with the Gary-Chicago-Milwaukee (GCM) Gateway Traveler Information System. These responses are automatically generated by the system based on the event details, but the operator can fine tune them if needed prior to implementation.

Support signal controllers from two vendors: The system integrates the operation of traffic signals from two controller vendors utilizing

NTCIP-based communications. PASSAGE integrates signal timing, intersection status and signal timing response plans across controller platforms for multiple agencies through coordinated response plan strategies.

The project successfully implemented several national ITS firsts including:

- First use of a full two way integration with regional computer aided dispatch to support arterial traffic management activities.
- First use of a mesh Gigabit Ethernet to support integrated arterial and freeway management across multiple jurisdictions.
- Nation's most advanced automated arterial event response including DMS, HAR, Web, arterial traffic signals and operator actions.
- First use of advanced text to speech conversions to support arterial traffic management through HAR.

- First use of system integrated CCTV virtual switching on arterial traffic management.



The PASSAGE program has taken arterial and corridor management far beyond traditional strategies to include a fully coordinated, integrated, automated, and multi-jurisdictional traffic management solution.

[Article courtesy of Anthony N. Khawaja, P.E., Lake County Traffic Engineer, Lake County Division of Transportation]



The Commonwealth of Kentucky Has A Long History with ITS Programs

One of the initial programs managed by Kentucky was the *Advantage I-75* program in the early 1990s that initially covered the entire length of I-75 from Florida to Michigan and into Canada on Highway 401 and was designed to reduce congestion due to truck traffic at weigh stations along these heavily travelled routes. The system allows qualified commercial vehicles to travel the corridors without stopping at the participating weigh stations. Each trucker who registers his/her vehicle to participate receives a small transponder to mount on the windshield (or if the trucker already has a compatible transponder, he/she may enroll it at no cost). As the truck approaches a weigh station, a roadside reader detects the transponder and a computer in the scale house checks the credentials. Some stations are also equipped with weigh-in-motion equipment. If a problem is detected with the truck, the transponder returns a red signal, indicating that the driver must pull in. The system also samples randomly so any participating trucker can expect to receive an occasional red light. Several states have a different clearance system

installed today, but Kentucky continues with an upgraded version of the original.

Kentucky then followed this effort with the Advanced Regional Traffic Interactive Management & Information System (ARTIMIS). ARTIMIS provides incident, congestion, and freeway management for the Greater Cincinnati-Northern Kentucky Region. Through a bi-state agreement, the Kentucky Transportation Cabinet (KYTC) and ODOT jointly fund and operate the program. ODOT currently operates and maintains the system from the Traffic Operation Center (TOC) in Downtown Cincinnati. ARTIMIS has won numerous awards and can claim several firsts including: the first traffic management system to operate seamlessly across state lines, the first to make wide-spread use of reference markers to expedite emergency response, and the first to use the national 511 phone number for traveler information.

Under a joint agreement with the Indiana Department of Transportation (INDOT), KYTC developed the Traffic Response and Incident

Management Assisting the River Cities (TRIMARC) program. The award-winning TRIMARC program is very similar to ARTIMIS and provides incident, congestion, and freeway management for the Louisville-Southern Indiana region. In 2007, the bi-state agreement was dissolved and INDOT is working to incorporate the components in Indiana into their Statewide ITS architecture. Northrop Grumman IT currently provides management and operations of TRIMARC under contract to KYTC from the TOC in Downtown Louisville.

Other current ITS programs and projects in Kentucky include the following.

SAFE (Safety Assistance for Freeway Emergencies) Patrol: The SAFE patrol is the first in the nation to provide border-to-border freeway service patrols on all interstates and parkways. Using specially modified trucks, SAFE patrol drivers patrol the roadways looking for motorists in need. The drivers go through an extended training process.

Traffic Signal System Communications Software: Software has been developed to provide centralized data storage, automatic monitoring and expanded remote communications to traffic signals. POTS (Plain Old Telephone Service) communications is being replaced with 3G and EDGE wireless technology.

Transportation Operations Center (TOC): The TOC, located in Frankfort, supports the Highway Districts that have ITS capabilities, and controls the DMS and cameras located in those areas. The affected Districts also have control capabilities for ITS facilities located within their respective Districts. The TOC supports Division of Maintenance personnel during snow and ice events. The TOC also controls and dispatches the SAFE Patrol, which supports incident management efforts, including the provision of motorist assistance.

Cumberland Gap Tunnel (CGT): The CGT is a 4-lane twin-bore mountain tunnel that is 4,600 feet long, and it carries US-25E under Cumberland Gap between Tennessee and Kentucky. It was completed in October 1996. Jointly funded by the Tennessee DOT (TNDOT) and KYTC, it is managed and operated by the Cumberland Gap Tunnel Authority under contract to University of Kentucky Transportation Center (KTC) and TNDOT.

CARS and CARS-511: KYTC has implemented the Condition Acquisition and Reporting System (CARS) and associated 511 systems (this allows data entered into the CARS database to be translated into a text-to-voice system with Interactive Voice Recognition to provide automated, up-to-date traffic and road information by dialing the three digit telephone number 511). KYTC has accomplished this in an efficient and cost-effective manner as a member of the CARS-511 multi-state consortium. This system provides the ability to gather and share with the traveling public the road and weather conditions along National Highway System routes. The CARS data is also used to populate the kiosks described below. The partnership with the Cabinet's District Offices, the Transportation Operations Center in Frankfort, Division of Traffic Operations, and the Kentucky State Police ensures the highest level of information provided to the traveling public through the use of the common software. KYTC is in the process of converting the 511 support files to allow an upgrade to the next generation CARS.

511 Tourism Program: As an enhancement to its 511 service, the KYTC also provides a 511 transfer for live 511 tourism information in Southern and Eastern Kentucky. This program promotes tourism and economic development within a 47-county area of the subject region.

RWIS - Road Weather Information System: RWIS is a network of 39 weather stations that measure pavement temperatures and atmospheric conditions. It is used during winter weather to assist managers in dispatching snow and ice removal equipment. A migration from POTS to persistent wireless IP connections is planned.

Kiosks: This project involved the design, construction, and installation of interactive kiosks which have been placed within the welcome centers, rest areas, and a small number of other selected locations in order to provide traveler information services. The kiosks provide current travel and road conditions (utilizing CARS data feeds), current and forecast weather conditions (utilizing a feed from a commercial service), tourism information (provided by the Department of Tourism), and local emergency service information like police, fire, and medical services.

Currently operating ITS Transportation Management System projects: These include the

Highway District 7 project on I-64 and I-75 in the Lexington area, as well as the Highway District 4 project on I-65 in the Elizabethtown area. These include DMS, cameras, and sensors in D-4. The devices can be controlled both at the respective District Offices and by the TOC. Additionally, the KYTC has installed cameras for both roadway and security purposes around the Clays Ferry Bridge on I-75 in a partnership with the Lexington-Fayette Urban County Government.

Final Construction phases ITS Projects: These include the Highway District 1 project on I-24 around the Paducah area, and the Highway District 3 project on and near I-65 in the Bowling Green area, including DMS and cameras controlled both at the respective District Offices and by the TOC.

Initial Construction Phase ITS project: The TRIMARC expansion project has just begun the construction phase. It includes the addition of

DMS and cameras on I-71 and I-264 in the Louisville Metro area.

Design phase ITS Project: This project is scheduled for a Fall 2008 bid letting, and is designed to improve traffic flow and reduce congestion around the Ft. Campbell Military Post area. It will include DMS and cameras on I-24, US 41-A, and KY 911. Ft. Campbell is actually located along the Kentucky – Tennessee border, and in a unique partnership with the Military Post and with the Clarksville, TN TMC, that TMC will have primary control of the devices on US 41-A and KY 911, in order to support the Military Post, with additional control also available from the KYTC TOC. The TOC will have primary control of the devices on I-24.

[Article courtesy of R. Scott Evans, Program Manager, Northrop Grumman Information Technology]

Preliminary Freeway Management System (FMS) Coming to Dayton



Managing traffic through and around major construction sites continues to be a challenge for Ohio Department of Transportation (ODOT) planners, engineers, and construction personnel. In response to this challenge, ODOT will be constructing the Dayton Early Deployment Projects (EDP) as part of the I-75 reconstruction through Downtown Dayton. The Dayton EDP is a maintenance-of-traffic project that will serve as a preliminary roll-out of the more extensive Dayton/Springfield Freeway Management System (FMS) currently under design and scheduled for construction in 2011. The Dayton EDP will help to minimize travel delay and increase safety for both construction personnel and the general public.

The Dayton EDP project is an acceleration of three FMS subsystems, consisting of 5 Dynamic

Message Signs (DMS), 13 Closed-Circuit Television Cameras (CCTV), and 4 Highway Advisory Radios (HAR), along with associated infrastructure to enable remote communications through a Traffic Management Center (TMC). As planned, the EDP will cover I-70, I-75, I-675, and US-35, and be operated 24/7 via ARTIMIS in Cincinnati. Communications will be handled through wireless radio, T-1 telephone, and wireless broadband services and funneled to ARTIMIS using the ODOT servers in Columbus. A local TMC was considered, but ultimately left off the final plans due to the closing of the District 7 Jobs and Progress office in Vandalia.

To aid in construction, the EDP will employ both permanent and semi-permanent elements to accommodate as needed changes in traffic patterns and work zones. Three methods – CCTV cameras, reports from the ODOT District 7 Freeway Service Patrols, and a relatively new method of collecting speed data via Doppler radar sensors – will be used to generate traffic conditions and incident information for the traveling public. To date, this will be the first widespread use in Ohio of Doppler radar sensors to measure speed and travel time.

This project was designed internally by ODOT District and Central Office staff and makes use of many new devices and operational features which will be seen on all future FMS projects in Ohio.

Overall, the EDP serves as a unique opportunity to test-run many of the subsystems and communication paths that will be used as part of the full-build FMS system. With implementation currently underway, ODOT hopes to limit congestion through the construction zone by

providing accurate and timely information to the travelling public. For more information on the Dayton EDP, log-on to www.dot.state.oh.us.

[Article courtesy of George Saylor, Office of Traffic Engineering, Ohio Department of Transportation]



The ITS Midwest Annual Meeting, the first one since the expansion to a four-State ITS Midwest Chapter, will be held in Columbus, OH on October 30-31, 2008 at the Ohio DOT Auditorium in Columbus, OH. It will be held in conjunction with the Ohio Transportation Engineering Conference (OTEC) (www.otecohio.org) on Oct. 28 – 29, 2008.

The ITS Midwest program will provide technical sessions, vendor exhibits, tours, and the opportunity to network with colleagues and fellow professionals from Illinois, Indiana, Kentucky, Ohio, and elsewhere. A "Get Acquainted" networking reception is also planned for the evening of October 30. Keynote speaker will be Ms. Jolene Molitoris, ODOT Assistant Director. Please visit <http://www.itsmidwest.org/events/2008> for more information about the meeting agenda, registration, location, hotel and transportation.

About ITS Midwest

ITS Midwest is one of the more established state chapters of ITS America. ITS Midwest has expanded to a four-State Chapter by adding Ohio and Kentucky to two of the founding members (Indiana and Illinois). The expansion of ITS Midwest represents an opportunity to strengthen ITS awareness in each member state and over the entire Midwest region.

Our mission is to promote the development and deployment of ITS in our region and beyond. Our members have been in the ITS business for up to 40 years and are involved in all facets of ITS planning, development, deployment and research. ITS Midwest is today a more strategically-focused organization, fully committed to bringing about the full realization of the benefits of ITS to improve the safety, efficiency, and security of our transportation systems. It also plays a key role of outreach, education and support for ITS technical and planning activities.

ITS Midwest Organization

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