ITS Maryland




Spring News—To Go 2013

ITS MD - working to unite, support and promote Intelligent Transportation in Maryland.

President's Message

By Diederick VanDillen

JACOBS

ITS Maryland continues to make great strides in fulfilling its mission to support and promote the deployment of safe, efficient, integrated, and inter-modal intelligent transportation systems in the Maryland and Delaware region. The many project focused articles in this newsletter certainly attest to the ongoing success of ITS in the region and the involvement of ITS Maryland members in the process. As an organization, ITS Maryland concluded this past year with a highly successful annual meeting where we were able to attract over 200 participants with a great majority of those being public agency attendees. We were able to use the success of the annual meeting and the year's events to increase our membership by about 8%. ITS Maryland is extremely proud to be recognized by ITS America as a finalist for the State Chapters Award at this year's annual meeting.

We began this year with another successful legislative technology fair at the Maryland state house (see enclosed newsletter article) where we experienced another record attendance by local delegates, senators and staff. This is a great opportunity each year to educate those making legislative and budgetary decisions on the cost effectiveness of ITS technologies. Each year we receive numerous comments on the benefit of the event to provide a behind the scenes look at how the transportation network is managed. Looking ahead we are continuing to hold our board meetings at member locations on a rotating basis as an opportunity for networking and learning more about the ITS projects and capabilities in the area. We also have planned several Lunch and Learn (L&L) events throughout the year as well as a half day training seminar planned for late May. Our annual meeting scheduled for early October will once again be held at the Maritime Institute outside of Baltimore, MD. For the first time we are able to offer professional development hours for all of our L&L, seminars and the annual meeting events. We also have several social outings scheduled including our ever popular annual Orioles baseball cookout which continues to provide a comfortable setting for good times and camaraderie.

If you haven't been around ITS Maryland lately please check us out. We continue to seek out energetic volunteers to help the organization realize its full potential and continue to seek out opportunities to offer increasing levels of value to its membership. There are lots of opportunities to get involved from hosting L&L events, offering technical content and articles for our newsletters, assisting on one of various subcommittees, participating in board meetings and attending social outings. I thank you on behalf of the board and the rest of the ITS Maryland membership.

ITS Maryland would like to thank it's sponsors for their support:

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In This Issue...

Video/Data-Sharing between First Responders in Maryland

CHART

By Glenn McLaughlin

The Maryland State Highway Administration Coordinated Highways Action Response Team (CHART) program is currently working to modify the CHART transportation management system to facilitate video and data connectivity between it and third parties via network to network connections through firewalls rather than directly extending the existing Maryland Department of Transportation (MDOT) network. This effort allows for an easier, cheaper, and more secure connection to CHART and is in compliance with the Maryland governor's inter-agency video-sharing initiative. Through CCTV camera "transcoder" technology, Maryland is able to bridge and network disparate systems and video formats and deliver live feeds to multiple traffic and emergency response centers and personnel. Currently, there are more than 600 cameras from several regional agencies available in the CHART system.

The statewide camera-sharing system uses common off-the-shelf hardware (Skyline Network Engineering TS-1000 Video Transcoder) to translate received video between user formats (currently MPEG2, MPEG4, H.264 and NTSC) in real time. The video is passed through approved rules in agency firewalls across the Statewide Governmental Intranet (SwGI), and the replication of the video occurs on the main agency network or on the SwGI network. Any authorized first responder can access these common-formatted videos at no cost using their own system as the Baltimore Police, Maryland Emergency Management Agency, University of Maryland, and others do. CHART also provides a very simple map-based video wall at no cost that allows any PC or Mac to view the video if an agency does not have a spe-

cialized operating system. This same video wall also operates on iPhones, iPads, and most Android and Blackberry phones.

CHART also uses this technology to feed the highway cameras to the public Internet. During a recent closing of the Chesapeake Bay Bridge, the cameras on and around the bridge were translated from their normal high bandwidth operating format (MPEG2 at up to 2 mbps) to a low bandwidth Internet format (H.264 at 192 kbps) and passed through MDOT's firewall to the Internet. At the height of the event, there were well over 2,300 individuals watching the live video streams. This is the type of secure, easy to implement, widespread viewing of video needed for true interoperability.

The agencies then pass the translated video through their firewalls through multiple Skyline SFS-1000 Video Streaming Servers to provide the translated video to multiple "security zones." CHART has SFS that serve the video to the Internet as well as SFS to serve the video to SwGI. That way, blocking sensitive video to the public does not block it to other first responders. CHART also uses this architecture to capture mobile video at the source and helicopter video at the downlink point for wider sharing than the originally installed stovepipe system.

Once CHART was able to use the commercial off-the-shelf equipment to translate CHART video to a smaller, common format and pass that video through approved rules in agency firewalls for sharing with other first responders, it was relatively easy to put cameras in the SHA vehicles and encode them in that same small common format stream and pass the video into the MDOT network using the same approved firewall rules. The current Automatic Vehicle Location (AVL)/ video-equipped vehicles belonging to SHA and other Maryland agencies ride a secured portion of the AT&T 3G cellular network and pass their video and location data into the MDOT network at the Internet firewall at the Glen Burnie Maryland Motor Vehicle Administration location. Once on the MDOT network, the video and location data is available for any authorized user of the CHART Advanced Traffic Management System. By utilizing 50 dash-mount in-vehicle cameras and 17 portable trailer-mounted cameras, CHART not only improves its ability to monitor roadway conditions but offsets the cost required to build and deploy permanent cameras.

Contact : Mr. Richard Dye
Systems Administrator, CHART
rdye@sha.state.md.us
Webpage: www.traffic.md.gov

University of Maryland CATT Laboratory

Virtual Weigh Station (VWS) Analytics Enhance Safety of MD Roadways

By Nikola Ivanov

The CATT Lab has designed a series of mobile and desktop applications for the State Highway Administration, Motor Carrier Division, to help them monitor, visualize, and analyze their six newly deployed virtual weigh station (VWS) sites. Android and iOS apps provide SHA and all law enforcement agencies associated with Commercial Motor Vehicle Enforcement with the ability to manage and enforce commercial vehicle safety requirements in real-time, and a browser-based analytics application allows for better targeting of enforcement activities by managers and decision makers. Additional reports available for highway information systems provide real-time analytics for traffic volumes, speeds, and class related data to understand traffic trends that assist in future highway and congestion planning.

The VWS applications report on a number of violation metrics and alert the user as vehicles passing over the weigh station exhibit these violations:

- Over weight (where weights are given by axle)
- Speed violations
- Length violations
- Wrong direction of travel
- Unbalanced loads
- Axle spacing
- Over height

The VWS data and tools are available directly through the CATT Laboratory's RITIS platform as well as in mobile optimized websites and applications. Images, color coded axle diagrams, and other stats for each class three vehicle or above violating the weigh station requirements are taken and transmitted to the apps, allowing a police officer sitting downstream of an weigh station to recognize and pull over offenders for further inspection and ticketing.

An analytics package also developed by the CATT Lab allows for the search and analysis of all archived violations to be displayed and mined using several innovative and informative data visualization techniques.

Upcoming Chapter Activities

* Lunch & Learn - May 3rd, Accutech Presentation, Hanover
* Spring Event - May 23rd, Televent Presentation followed by ITSMD Annual Bowling Event, TBD
* MD TMC Tour & Board Meeting - June 14th, Montgomery County TMC
* Orioles Baseball Game - July 12th, Baltimore
* Lunch & Learn - July 19th, Active Traffic Management, CH2M Hill, Silver Spring

Figure 1: An interactive visualization of violations by hour-of-day and day-of-week for the first nine days of March, 2013. Clicking on an individual hour brings up individual images and stats of all violations occurring during that hour.
The next phase of the Maryland Virtual Weigh Station project will be to integrate license plate recognition (LPR) into each of the stations to enable enforcement officials to better identify and contact heavy repeat offenders.
For additional information, please contact Michael L. Pack at PackML@umd.edu or Manoj Pansare at MPansare@sha.state.md.us
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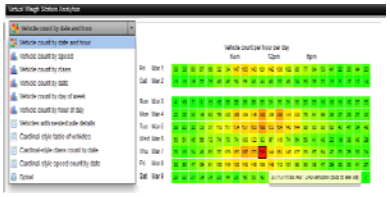

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There's an App for That… Mobile Traveler Information in Delaware

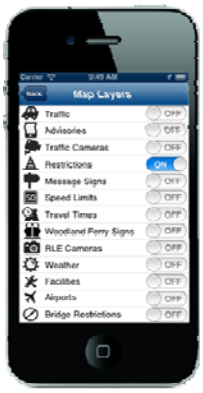
By Holly Rybinski

The Scene

In Fall 2012, DelDOT released free Apps for Apple and Android smartphones and Tablets. Just search for "DelDOT" and download the App that shows DelDOT's logo.

When you interface with the App, you'll see five options:

1. News – traffic alerts and press releases issued by DelDOT.
2. Events – a calendar interface showing events (such as public meetings) – at-a-glance.
3. WTMC – live streaming audio from DelDOT's statewide AM radio station – listen to the state's real-time traffic conditions, county-by-county.
4. Social – Facebook, Twitter, Flickr, You Tube.
5. Traffic Map –the most complex part of the App – 13 layers of traffic information available through a map interface.



Up to three layers can be selected at one time, for example "Traffic, Advisories, Restrictions." Another useful layer shows the state's hundreds of traffic cameras – click on the camera(s) of interest to see live streaming video. Yet another layer provides real-time travel times in a "virtual" sign format. Future enhancements will include voice-command options (e.g. "Hey DelDOT, how's my trip home looking today???").

Behind the Scene

While the mobile Apps are exciting – and very visible – accomplishments for DelDOT, the ability to access vast information about travel conditions in Delaware is not new. The same data is available at www.deldot.gov. Moreover, all of the traveler information available to the public is used by DelDOT every day to plan, design and operate Delaware's transportation system. DelDOT has been implementing this integrated transportation management system since 1999.

There are hundreds of colored dots on the map, corresponding to real devices in the field. The color code reflects traffic conditions (red is bad, green is good!). Due to its integrated, open software architecture, DelDOT is able to blend data from traffic signal system loops, permanent count stations, weigh-in-motion stations, nonintrusive radar detectors, Bluetooth detectors, weather stations, etc. The user can focus on the information (e.g. travel times or traffic volumes) and need not worry about the device itself… the integration is done behind the scene.

Contact: Gene Donaldson
TMC Operations Manager
Gene.Donaldson@state.de.us

2013 ITS MD Officers

President
Diederick VanDillen
Jacobs Engineering Group Inc
diederick.vandillen@jacobs.com

Vice President
Keith Riniker
Sabra, Wang, & Associates, Inc.
kriniker@sabra-wang.com

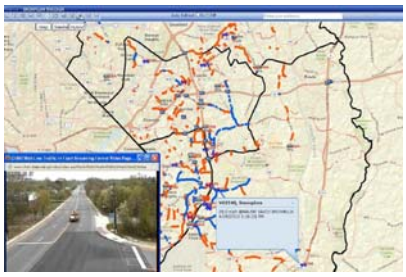
Treasurer
Kevin Lee
Kittleson & Associates, Inc.
klee@kittleson.com

Secretary
James Witherspoon
Telvent USA Corporation
james.witherspoon@telvent.com

Pavement Sensor Information and AVL

By Edward Jones

Prince George County Department of Public Works and Transportation's (DPW&T) is using a new pavement sensor information system together with its snow plow Automated Vehicle Location system (AVL) to provide increased levels of service and responsiveness to the local driving public. These and other operations are managed out of the county Traffic Response and Information Partnership (TRIP) Center. The TRIP center video web wall is the operational focal point for information sharing and worker collaboration. Information services and a webpage are provided to local transportation departments and public safety agencies throughout the Washington Capital Region to provide true regional inter-agency transportation coordination. The pavement sensor application collects and publishes roadway pavement temperature data from pavement sensors installed at strategic locations throughout the county. Information is displayed real-time on the video wall using a GIS map and can also be accessed via a browser on any web-enabled device. Information is used by DPW&T staff members to monitor roadway temperature conditions before and during inclement weather, determine freezing roads, bridges and cold spot locations, and make real-time response decisions regarding snow and ice control operations. The application has the ability to provide county staff advanced warning notifications via email as to the status of roadway temperature at any given time. Staff is then able to verify conditions using CCTV camera feeds of nearby points of interest like schools, government buildings, signalized intersections and other public areas with significant trip generation. The county uses its eRoadTrack Automated Vehicle Location system (AVL) to manage its snowplow fleet during snow and ice control operations. The system supports real-time tracking and user-defined reports of vehicle location using the latest Global Positioning Systems (GPS) technology combined with wireless communications and software to deliver real-time status of vehicle activity. A browser based interface allows county staff to monitor fleet status from the county TRIP center and any one of five District offices. A ruggedized in-vehicle unit in the snowplow trucks detects plow up/down and spreader on/off directly from the vehicle control panel. The vehicle location and treatments are tracked in real-time with the map roadway color changing indicating status (i.e. salting, plowing or both). The in-vehicle display also supports two way communications between the driver and the dispatcher to direct resources as necessary. The system has proven extremely useful in managing limited resources more efficiently while providing higher levels of service to the driving public. Centralized roadway condition information is also being used by TRIP center staff to answer public inquiries. DPW&T plans to make the information captured by the AVL available to the public and regional stakeholders via the TRIP Center public facing website in the near future as a more efficient means of publishing and sharing the progress of snow clearing operations.



Contact : Mr. Ed Jones
TRIP Center Manager
edjones@co.pg.md.us

2013 Transportation Technology Fair at the Legislature

By Robert Winick

ITS Maryland was once again honored to host our 12thLegislative Technology Fair on January 23 in the Miller Senate Building, Annapolis with the theme of, "Technology Solutions for Cost-Effective Performance Management". A total of about 160 people attended including about 120 guests consisting mainly of Senators, Delegates and their staffs. This legislative outreach and educational event is an annual opportunity to promote the use of ITS technology and showcase its application and benefits around the state. Special thanks needs to be given to the twelve exhibitor groups, which included six ITS Maryland member public agencies, two academic groups, and four vendors and consultants for showcasing their solutions that are providing a broad variety of cost-effective results to the citizens of Maryland.

As in prior years we mostly organized the exhibits around project teams and regions of the State. That helped us to efficiently guide the visitors to those projects likely to be of most interest to them. That better focused their attention to what is happening in ITS solutions their area and facilitated us to tell the ITS story showing tangible citizen and traveler benefits. The photo on the left shows Ed Jones of the Prince George's County TRIP Center on the left talking with Delegate Alonzo T. Washington of District 22, while the photo on the right shows Senator Katherine A. Klausmeir of District 8 after having talked with Ed Stylc and Terry Freeland of the Baltimore Metropolitan Council staff.

Looking back over the attendee list for the past four Transportation Technology Fairs we have been very pleased to find that we have had nearly half of the 47 senators and nearly a quarter of the 141 delegates personally attend at least once – with many several times. When we include attendance by their staff we have had over three-quarters of the senatorial districts represented and covered over one-half of the delegates to the General Assembly. We feel that this awareness-raising of the benefits of ITS solutions has been one of the factors resulting in the Legislature this year finally enacting new revenues for the overall transportation program.