ITS Innovation and Application – Integrating the Pieces
Welcome to the 18th ITS Maryland Annual Conference! This year’s annual meeting concludes another banner year for ITS Maryland where we have continued to experience membership growth, continued to bring value to our membership, and where we have received national recognition. This conference could not have been possible without sponsors, exhibitors, speakers, volunteers and most importantly, you the attendees, who each year, help make this such a success. I hope you take this opportunity to network with colleagues, visit our many exhibitors, attend the many interesting sessions, and perhaps earn some PDHs in the process.

This year’s theme “ITS Innovation and Application – Integrating the Pieces” speaks to the diversity of topics in our program from multimodal and freight ITS applications, to programming and financing challenges, and cross-cutting technologies. We have an action packed day with great topics, speakers and keynote addresses. Be sure to visit our many vendor exhibits and stay for the network social concluding today’s events where we will raffle copies of a recently released book from our lunch time speaker. See the program details for more information.

I encourage all who are not currently members of ITS Maryland, to consider joining now. As a member of ITS Maryland, the State Chapter of the Intelligent Transportation Society of America, and a non-profit organization promoting the use of technology to improve the safety, efficiency, reliability, and operations of our surface transportation systems, you will have numerous opportunities to network with associates in academia, industry, and the public sector to help integrate all of the pieces of our future transportation network. Please be sure to read the newsletter, which summarizes the year’s highlights, included in the program.

I’d like to personally thank all those who have been involved in all of the planning and hard work to make this conference such a success. As of this writing we have over 150 registered attendees and 18 exhibitors including 5 public agency exhibits. I would like to invite and encourage each one of you to become actively involved in the coming year and help carry the torch into the future. I would also like to thank the current officers and board members for all of their hard work in furthering our agenda and making this one of the most successful state chapters. Most of all I want to thank all of you for attending today and helping make this such a successful conference. Please provide us with your suggestions and feedback on the enclosed evaluation form so that we can continue to make improvements.

Thank you for your participation and enjoy the conference!

Best Regards,
Diederick VanDillen
President, ITS Maryland

A special thanks to our Annual Meeting Planning Committee:

Keith Riniker, Sabra, Wang & Associates, Inc. - Annual Meeting Chair / ITS MD Vice President
Diederick VanDillen, Jacobs Engineering - Technical & Lunch Program / ITS MD President
Eileen Singleton, Baltimore Metropolitan Council - Technical Program & Meeting Registration
Dr. Robert Winick, Motion Maps, LLC - Keynote Speakers
Kevin Lee, Kittelson & Associates, Inc. - Annual Meeting Planning Committee / ITS MD Treasurer
Helen Honeywell, Sabra, Wang & Associates, Inc. - Graphics Design
Asma Ali, T3 Design, P.C. - Annual Meeting Planning Committee
Tanya King, Daniel Consultants - Annual Meeting Planning Committee
Richard Easley, E-Squared Engineering - Annual Meeting Planning Committee
Eric Metheny, URS - Annual Meeting Planning Committee
Ruihua Tao, Maryland State Highway Administration, Annual Meeting Planning Committee
Neil Robinson, Century Engineering, Annual Meeting Planning Committee
Roger Boothe, CH2M Hill, Inc - Golf Tournament Chair
Steve Kimble, Sensys Networks, Inc. - Golf Tournament
Tony Clarke, Jacobs Engineering - Golf Tournament
# TABLE OF CONTENTS

MESSAGE FROM THE PRESIDENT .......................................................................................... 2
SPECIAL THANKS .................................................................................................................. 2
PROGRAM ...................................................................................................................................... 4
SESSION DESCRIPTIONS ........................................................................................................ 5-8
SPONSORS .................................................................................................................................... 9
CONFERENCE CENTER MAP ................................................................................................. 9
NEWSLETTER .......................................................................................................................... 10-11
EXHIBITORS ............................................................................................................................ 12

---

Providing transportation infrastructure services in the Mid-Atlantic Region for more than 50 years, Jacobs is committed to providing safe, efficient, and sustainable transportation solutions for the traveling public.

- CM / CEI
- Program Management
- Roadway/Interchange Design
- Structural & Bridge Design
- Tunnel Repair and Inspection
- ITS / Traffic Engineering
- Transit & Rail
- Toll
- Geotechnical
- Environmental

**Jacobs**

Baltimore, MD  
410.837.5840

West Chester, PA  
610.701.7000

Arlington, VA  
571.218.1000

---

Trusted by clients throughout the Mid-Atlantic and the world to deliver their most important projects.
# PROGRAM

**07:30 - 08:30**  
REGISTRATION AND CONTINENTAL BREAKFAST / EXHIBITS  
OPENING SESSION - Auditorium

Welcome - President ITSMD  
Opening Keynote - U.S. Representative John Delaney

**09:30 - 10:30**  
EXHIBITOR PRESENTATIONS - Auditorium  
BREAK - EXHIBITS

**11:00 - 12:00**  
1. Programs and Funding - A View From the Top  
   **Moderator:** Eileen Singleton  
   1. *Implementing MAP21* - Paul Feenstra, ITS America  
2. *Implementation of SHRP 2 Reliability Products in Maryland* - Breck Jeffers, FHWA Del/Mar Division  
3. *Leveraging Maryland’s Public Private Partnership Legislation for Investment in Transportation Technology* - Jodie Misiak, MDOT  
   2. Multimodal Technology  
   **Moderator:** René Lord-Attivor  
   1. *NCHRP 7-19 – Ped and Bike Volume Data Collection* - Kelly Laustsen, Kittelson & Associates  
   2. *Overview and Impacts of the Ellicott City Smart Parking System* - Steve Lafferty, Howard County  
   3. *Capital Bike Share / Alta, Using Bikeshare Data* - Michael Schade, Mobility Lab

**12:00 - 01:30**  
LUNCH - Cafeteria, Reserved Back Room  
Lunch Keynote - Smart Cities: Re-programming Urban Mobility, Dr. Anthony Townsend

**01:30 - 02:30**  
SESSION 2A - Auditorium  
SESSION 2B - Room A300  
Tolling and Revenue Collection  
**Moderator:** Roger Boothe  
1. *ICC Lessons Learned* - John O’Neill, MDTA  
2. *Mileage Based User Fees* - Lou Neudorff, CH2MHill  
   1. *Consolidation of On-Board Ancillary Equipment (COABE) for Metrobus* - Jonathan Walker, WMATA  
   2. *Leveraging the WMATA COABE Project Technology for Transit Signal Priority (TSP) Implementation* - Andre Young, Clever Devices  

**02:30 - 03:00**  
BREAK - EXHIBITS

**03:00 - 04:00**  
SESSION 3A - Auditorium  
SESSION 3B - Room A300  
Port and CVO Freight Technology  
**Moderator:** Richard Easley  
1. *CVISN, Virtual Weigh Station* - Dave Czorapinski & Manoj Pansare, MdSHA  
2. *Freight Technology - Louis Campion, Maryland Motor Truck Association*  
3. *An Ask for Innovative Solutions to Address Freight Issues* - Debbie Bowden, MDOT  
   1. *How Transportation Agencies Can Leverage the ICBN Regional Fiber Network* - Ira Levy, Torrential Systems  
   2. *The Maryland Statewide Interoperable Video Portal* - Rick Dye, MdSHA CHART  
   3. *Transportation Big Data and Performance Measures* - Nikola Ivanov, UMD CATT Lab

**04:00 - 05:00**  
CLOSING SESSION - Auditorium  
The Golden Age of Transportation - Richard Mudge, Mudge and Company  
Closing Keynote - MDOT Deputy Secretary Wilson Parran  
Closing Remarks - ITSMD President

**05:00 - 06:00**  
VENDOR SPONSORED NETWORKING / HAPPY HOUR / RAFFLE - Exhibitor Area
SESSION DESCRIPTIONS

SESSION 1A: PROGRAMS AND FUNDING - A VIEW FROM THE TOP

Moderator: Eileen Singleton

1. Implementing MAP21 - Paul Feenstra, ITS America

This presentation will cover the general implementation of MAP-21 as well as how this new law will impact ITS / operations projects.

2. Implementation of SHRP 2 Reliability Products in Maryland - Breck Jeffers, FHWA Delaware/Maryland Division

Mr. Jeffers will provide an overview of the SHRP2 Solutions, with a focus on Organizing for Reliability Tools. This presentation will also discuss Maryland's role and upcoming activities as a lead adopter for SHRP 2.

3. Leveraging Maryland's Public Private Partnership Legislation for Investment in Transportation Technology - Jodie Misiak, MDOT

In 2013, the Maryland General Assembly passed HB 560, known as the Public-Private Partnership Law. This law clarified the definition of a P3, created a more predictable and transparent process for oversight of P3s, and allows the private sector to submit unsolicited proposals for P3 concepts to help address Maryland's infrastructure needs. This presentation will provide an overview of the new law and MDOT's associated regulations, including a discussion of MDOT's unsolicited proposal process.

SESSION 1B: MULTIMODAL TECHNOLOGY

Moderator: René Lord-Attivor

1. Methods and Technologies for Pedestrian and Bicycle Volume Data Collection - Kelly Lausten, Kittelson & Associates

The lack of pedestrian and bicycle volume data hinders transportation agencies’ efforts to create efficient and safe facilities for pedestrians and bicyclists. While there are well-established procedures for collecting vehicle traffic data, such is typically not the case for pedestrian and bicycle data. Therefore, the National Cooperative Highway Research Program (NCHRP) Project 7-19 is focused on assessing technologies and methods for pedestrian and bicycle volume data collection. This presentation will discuss the status of the research project to date, providing an overview of the purpose of the project, technologies being tested, and initial findings.

2. Overview and Impacts of the Ellicott City Smart Parking System - Steve Lafferty, Howard County

There has long been a perception that Ellicott City has a “parking problem”. Parking studies over the past twenty years agreed - there is a need for better parking management. Parking lots are not always visible and, until recently, Main Street was full of vehicles owned by residents, business owners and employees. This prevented visitors from having the most accessible spots.

Starting in late 2011, the County Executive initiated a program to change parking operations. This includes the use of Streetline’s Parker as a guidance tool, new meters for Main Street and a new ability to gather and analyze parking data. Operational since February 2013, the system has already brought significant improvements.

3. Visualizing Capital Bikeshare: Patterns and Possibilities - Michael Schade, Mobility Lab

Capital Bikeshare is a multi-jurisdictional bike-sharing system in Washington, DC and surrounding counties. It is one of the few such systems to share not just real-time station information, but to also regularly publish trip history data. How can we use this open data to discover usage patterns, and to guide decisions on how to manage and grow the system? This presentation looks at tools developed to visualize the data generated by Capital Bikeshare.
SESSION 2A: TOLLING AND REVENUE COLLECTION

Moderator: Roger Bothe

1. ICC Lessons Learned - John O’Neill, MDTA

Mr. O’Neill will be presenting on the recently completed Intercounty Connector, including the many efforts involved.

2. Mileage Based User Fees - Lou Neudorff, CH2M Hill

Much of the revenue required to preserve, maintain, manage, and operate the nation’s transportation system comes from state and federal fuel taxes, which are typically paid at the time of purchase based on the amount of fuel consumed by motorists. The pay-at-the-pump fuel taxes were reliable sources of transportation revenue for decades. Over the past decade, however, total fuel tax receipts have not kept up with the transportation funding needs, even though the population and number of vehicle miles traveled (VMT) has increased. This overall funding gap can only be expected to grow as the average fuel economy of the American vehicle fleet improves and as the emerging fleet of electric vehicles (EV) and plug-in hybrid electric vehicles (PHEVs) become more ubiquitous along the roadways. A majority of policymakers and industry analysts across the nation now agree that the fuel tax can no longer be relied upon to provide sustainable revenues for improving, operating and maintaining the nation’s roadway infrastructure.

Oregon has been examining different ways to supplement and/or replace the fuel tax for several years, focusing on the “user pays” principle – that all users of the roadway should pay their fair share based on the use of the transportation network. One approach in this regard is a mileage-based road usage charge which has been the subject of several pilot projects, including one that was just completed earlier in 2013. That Road Usage Charge Pilot Program (RUCPP) is the subject of this presentation, including an overview of what’s next for Oregon and other states in this regard.


The emerging application of express lanes provides an unique opportunity to further integrate and standardize ITS and Tolling applications, and to provide mobility through user fees. This presentation will demonstrate the successful convergence of Tolling and ITS in the last several years. This presentation will also highlight some of the challenges and opportunities that remain within the tolling and ITS industry’s to further standardize mobility through user fees.
SESSION 2B: TRANSIT TECHNOLOGY

Moderator: Kevin Lee

1. CONSOLIDATION OF ON-BOARD ANCILLARY EQUIPMENT - (COABE) FOR METROBUS - JONATHAN WALKER, WMATA

By 2010, the WMATA bus fleet had several pieces of on-board equipment by different vendors; however, they were purchased from and/or managed by different vendors over the past ten (10) years. In 2011, the goal was to select one vendor that provided a full and robust solution of ancillary bus equipment on-board the Metrobus and fixed end equipment surrounding Bus Operations Control Center (BOCC). Therefore, an RFP was issued for the Consolidation of On-board Ancillary Bus Equipment (CoABE) and Fixed-end System (FeS) under one vendor, one warranty plan, and one maintenance contract.

2. LEVERAGING THE WMATA COABE PROJECT TECHNOLOGY FOR TSP IMPLEMENTATION - ANDRE YOUNG, CLEVER DEVICES

In 2010 Clever Devices was awarded a project by WMATA to consolidate on-board technology and implement a CAD/AVL system for the 1500 bus fleet (Project Name – Consolidated On Board and Ancillary Bus Equipment - COABE). The goal was to put a technology foundation in place for the current implementation that could also be leveraged for future technology needs. One of the first future technology solutions under study is an efficient method of implementing Traffic Signal Priority on the WMATA bus fleet without adding additional hardware to buses. This presentation will cover an efficient design that meets the goal of leveraging the current COABE technology.

3. MULTIMODAL APPROACH TO THE PLANNING AND IMPLEMENTATION OF TRANSIT SIGNAL PRIORITIZATION (TSP) WITHIN MONTGOMERY COUNTY MARYLAND - JIM BUNCH, SABRA, WANG & ASSOCIATES

Sabra Wang has worked with Montgomery County and Maryland SHA to develop a hierarchical multimodal approach for identifying where and how to implement TSP within Montgomery County Maryland. This first focused on developing a concept of operations and guidelines for considering TSP throughout the County given current operations. This included:

- Developing criteria and warrants for TSP
- Prioritizing and Selecting corridors within Montgomery County for TSP consideration.
- Within the selected corridors and routes applying the warrants to identify specific intersections and transit routes for TSP deployment.
- Identify the operational criteria for granting TSP when conditions warrant during daily transit operations

For the future, the Corridor Cities Transitway (CCT) BRT and the Purple Light Transit Line have been approved for implementation and the regional Rapid Transit System (RTS) with over 70 miles of transit priority routes/corridors is now before the County Council for approval. This changes the benefits and operational tradeoffs for implementing TSP in these corridors. We are now assisting the County to extend the above policies and guidelines to incorporate the CCT and RTS systems and account for the different types of guideway, transit service (RTS versus local), and new priorities.

This presentation will provide an overview of the TSP within Montgomery County, the hierarchical approach taken and its measures, criteria, and warrants used. It will summarize the results to date and how TSP is now being considered for the RTS system planning and CCT.
SESSION 3A: PORT AND CVO FREIGHT TECHNOLOGY

*MODERATOR: RICHARD EASLEY*

**CVISN, VIRTUAL WEIGH STATION - DAVE CZORAPINSKI & MANOJ PANSARE, MdSHA**

Maryland SHA, in partnership with the University of Maryland, will present an update on the Virtual Weigh Station program presented in 2012, with a brief explanation of the analytical capabilities of the tool and plans for FY 2014 - FY 2017 expansion in collaboration with the Maryland Transportation Authority.

**FREIGHT TECHNOLOGY - LOUIS CAMPION, MARYLAND MOTOR TRUCK ASSOCIATION**

It’s not just driving anymore. The trucking industry has evolved into a highly technological industry to achieve safety and efficiency gains. I’ll describe some of those enhancements and briefly identify some technologies that are on the horizon.

**AN ASK FOR INNOVATIVE SOLUTIONS TO ADDRESS FREIGHT ISSUES - DEBBIE BOWDEN, MDOT**

Multimodal freight transportation has the same considerations as all transportation: safety, mobility, and air quality. Technology plays an important role in freight transportation to help public agencies enhance efficiency, mitigate risk, and improve environmental concerns. This presentation will outline a few freight issues: truck parking identification, greenhouse gas emission measurement and reporting, and freight network routing. The audience is encouraged to offer creative and innovative solutions for these issues.

SESSION 3B: NEW TECHNOLOGIES SUPPORTING TRANSPORTATION OPERATIONS

*ROOM A300*

*MODERATOR: ED STYLC*

**HOW TRANSPORTATION AGENCIES CAN LEVERAGE THE ICBN REGIONAL FIBER NETWORK - IRA LEVY, TORRENTIAL SYSTEMS**

Over the last year, Maryland has been building out its statewide fiber network, made possible by a significant federal communications grant. In Central Maryland, the fiber network is called the Inter-County Broadband Network (ICBN). Now that the network is almost completely built, it is available to enhance communications capabilities throughout the region. Mr. Levy will provide an overview of the ICBN and discuss opportunities for transportation agencies to leverage this important new resource.

**THE MARYLAND STATEWIDE INTEROPERABLE VIDEO PORTAL - RICK DYE, MdSHA CHART**

The Maryland Statewide Interoperable Video portal initiative is to create a robust and interconnected closed-circuit television (CCTV) network for Maryland and surrounding regions to secure critical infrastructure (e.g., power and water treatment facilities) and to facilitate real-time monitoring of events via shared cameras from multiple organizations in one interface to assist with event monitoring, evacuation management, and incident response. Inter-agency camera image sharing is accomplished through translating video signals in real time (or transcoding) to a common format and securely sharing the video with 1st responders at operations centers, on agency personal computers or through handheld phones and tablets.

**TRANSPORTATION BIG DATA AND PERFORMANCE MEASURES - NIKOLA IVANOV, UMD CATT LAB**

As the Intelligent Transportation Systems evolve from static detection network to more dynamic probe vehicle and connected vehicle frameworks, the amount of ITS generated data continues to grow exponentially presenting new challenges in processing and analysis. This presentation will provide a glimpse at the state of the art methods for processing and making sense of this big data for the purposes of real-time monitoring and performance measures.
The conference will be located in Building 3.
The buffet lunch, business meeting, and lunchtime speaker will be held in Building 2.
President’s Message

By Diederick VanDillen

This was another very successful year for our organization, highlighted by our joint Annual Meeting with the Baltimore Metropolitan Council Traffic Signal Forum in November where we had over 200 people in attendance. We were both thrilled and challenged by this record turnout. In an effort to continue this trend and increase participation we offered scholarships for reduced or free registrations this year to many of our public sector members. As a result this year’s attendance looks like it will once again exceed expectations.

Legislative Technology Fair

We began this year with another successful Legislative Technology Fair on January 23rd at the Miller Senate Building in Annapolis where we experienced record turnout by local delegations, senators, and their 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. This year’s theme, “Technology Solutions for Cost-Effective Performance Management”, highlighted the important role that technology plays in the management and operation of our surface transportation network. We are truly fortunate to live in a region where ITS deployment is mature, its application is fully embraced, and its benefits are realized every day.

Lunch and Learn Seminars

ITS Maryland once again sponsored several lunch and learn events where our membership came together to network and learn about new technologies and applications. We started on March 22nd with Skyline Networks in Elkridge, MD where they discussed their video management and distribution solutions being used by MDOT, VDOT, and other agencies. Skyline also gave us a tour of their facilities and network operations center where they remotely monitor and manage networks for several agencies. On May 3rd Accutech in Hanover, MD hosted TKH Security Solutions, a member global supplier of advanced video surveillance solutions, including IP cameras, video servers/codecs, network video recorders, fiber transmission equipment, video management, and video analytics software. TKH presented information on various traffic monitoring video surveillance architectures and technologies. The series concluded on June 5th with SHA hosting a seminar on Traffic Detection Technologies and Applications where seven member distributors, vendors, and practitioners reviewed the more popular detection technologies being used around the region, technology advantages and limitations, example architectures and applications, lessons learned, and expected future developments. Over 35 people attended this lively, interactive, and informative session. Also, for the first time we were able to offer professional development hours (PDHs) for all of our lunch and learn seminars, and the annual meeting events.
On July 26th we held our annual Orioles baseball outing where we rooted the home team to victory against the Boston “Beantown” Red Sox. As always, the game was preceded by an all-you-can-eat cookout at the Babe Ruth Museum. Great weather, food, camaraderie, and a victory to boot made for a memorable evening.

Awards & Recognition

ITS Maryland received national recognition in April at the ITS America Annual Meeting in Nashville, TN for its achievements in 2012 where we received Outstanding State Chapter and Membership Growth awards. In the words of one of the judges, this chapter "gave themselves a facelift and really dove into what is important to the members, what makes them join, and stay engaged." Our growth award was based on an 8% increase in 2012. Our membership has once again grown by about 15% this year so look forward to another run at these awards in 2014.

Our own Michael Pack (University of Maryland CATT) was honored on May 8th at the White House as one of the twelve 2013 "Transportation Champions of Change" for his work with the RITIS program to dramatically change the way agencies think about information sharing and the importance of better visual communication and transparency.

On June 17th ITS America recognized the Maryland State Police Commercial Vehicle Enforcement Division for the organization’s leadership in helping modernize Maryland’s transportation infrastructure to improve safety and efficiency by deploying the Drivewyze™ commercial vehicle inspection pre-clearance program.

Finally, ITS Maryland is once again able to recognize the potential and future contributions of our student members by offering scholarships. Anam Ardeshiri a graduate student at Morgan State University, and Kelly Fearon, an undergraduate student at the University of Delaware were each awarded $1,000 to help defray the costs of completing their education.

Business Update

On the business front we continue to hold our Board of Directors meetings at member locations as an opportunity to network and learn more about the ITS projects and capabilities in the

In January ITS Maryland presented its State of the Chapter address at the ITS America board meeting in Washington, DC. This was a great opportunity to bring national visibility to our state chapter, review our successes, and also highlight areas where the national organization and state chapter can work more closely together. A revision to the chapter bylaws is currently in final draft and will be circulated to the membership for approval. A task group has also been formed to review and make recommendations for making updates to the chapter strategic plan.

Thanks! See you in 2014

ITS Maryland continues to make great strides in fulfilling its mission to support and promote the deployment of safe, efficient, integrated, and intermodal intelligent transportation systems in the Maryland and Delaware region. 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. Talk to any of the board members - bring your great ideas. We look forward to seeing each of you in the coming year. On behalf of the board and the rest of the membership, I thank you for another successful year.
Thank you for another successful year!

Don’t forget to stop by all our vendors: