

2024 MCDITE Traffic Bowl & Technical Meeting

Detailed Technical Program

College Park, MD | April 16, 2024

Track 1: Standards in Practice - *Conference Room, 2nd Floor*

MUTCD Updates - FHWA Division Office

The MUTCD is the national standard for traffic control devices—the signs, signals, and markings that guide us every day in our travels throughout the U.S. A new edition of the MUTCD, containing more than 650 changes, was published December 18, 2023. This session will provide a high level overview of options for states to adopt MUTCD by the due date of two years after the official Final Rulemaking.

***Serena Liu, PE, PTOE**, is a Transportation Specialist at the Federal Highway Administration (FHWA)—Maryland Division with over 19 years of experience in the transportation/traffic field. At the FHWA Maryland Division, she leverages her expertise to provide stewardship and oversight for Federally-funded projects. She also serves as the division lead for several programs, such as the National Electric Vehicle Initiative. Due to her background in both the public (local municipality and state government) and private sectors, Serena provides support/assistance to FHWA partners on various traffic operations and safety areas.*

Accessible Floating Bus Stop Design: Key Takeaways from a Montgomery County Pilot Demonstration

This presentation will cover key takeaways from an accessible floating bus stop pilot in downtown Silver Spring, MD. The purpose of the pilot was to test novel strategies for improving the accessibility of floating bus stops to people with vision disabilities, including integration with a signalized intersection, accessible signage, audible messaging, tactile surfaces and edge treatments, and other strategies. The presenter will discuss why floating bus stops can be challenging for people with vision disabilities, the design of the Silver Spring pilot, the engagement process, key takeaways, areas where further research is needed, and the value of pilots for developing accessible designs.

***Jameson Keeton** is a project engineer with a broad range of experience in civil and structural engineering and design. He is Professional Engineer with a background in transportation design, bridge design, and construction inspection who has worked on*

projects that vary from large-scale bridge projects in the US and Canada to intersection design details. Jameson has a sharp eye for detail in both design and drafting and enjoys working as part of dynamic teams to solve complex problems. He is an enthusiastic advocate for active transportation and public transit, and he is dedicated to Toole Design's mission of expanding multimodal transportation for all.

Pennsylvania Vulnerable Road User (VRU) Safety Assessment

The presentation will cover the federal Highway Safety Improvement Program (HSIP) Vulnerable Road user (VRU) requirement briefly. It will then cover Pennsylvania's assessment method, the state's VRU crash data findings, and the state's current actions and future plans for VRU HSIP safety projects.

***Jason Hershock** is a graduate of Penn State University Harrisburg with a bachelor's degree in structural design and construction engineering technology. Jason currently manages the Safety Engineering and Risk Management Unit in PennDOT's Highway Safety & Traffic Operations Division (HSTOD). He manages Pennsylvania's Highway Safety Improvement Program (HSIP), Low Cost Safety Improvement Program, safety research projects, highway safety training subcommittee, and the risk management and tort liability programs.*

Horizontal Curves - Evaluations and Recommendations

As part of the Delaware Department of Transportation's Strategic Highway Safety Plan to work toward eliminating fatal and serious injury crashes, the Department evaluates horizontal curves to ensure compliance with the DEMUTCD. We review curves based on both a systemic approach and concerns from the public. We complete field evaluations, data collection, data analysis, and implement curve warning sign recommendations throughout the entire state.

***Jacob Kulhanek**, is an Engineering/Planning/Surveying Technician IV in the Traffic Safety Engineering Section at the Delaware Department of Transportation managing the Horizontal Curve and School Zone Compliance Programs. Jacob has worked for DelDOT over the past 9 years. Jacob is currently working on advancing his career by becoming a Traffic Engineer. In his spare time, Jacob enjoys the great outdoors and volunteers with the Camden Wyoming Rotary Club and is an adult leader for a local Scout Troop.*

Track 2: Maryland Connected and Automated Vehicle Working Group - Hangar Room, 1st Floor

Maryland's vision for connected and automated vehicles (CAVs) is to uphold and enhance a safe, efficient, and equitable transportation future. The state is embracing CAV innovation through

continuing collaboration with partners. The CAV Working Group was established in 2015 as the central point of coordination for the development and deployment of emerging CAV technologies in Maryland.

Subgroups are an important avenue for stakeholders to openly discuss CAV efforts and elevate new ideas to help meet Maryland's CAV vision. Members act as liaisons to their respective organizations. The CAV Working Group can also assign tasks to its Subgroups to facilitate action. Those engaging in Subgroups can include agency personnel from the different MDOT modes; the Maryland State Police; other state agencies; subject matter experts; and other public, private, or academic stakeholders.

Moderator: Michele Gross

Michele Gross is in the Office of Innovation and Policy (OPI) at the Maryland Department of Transportation Motor Vehicle Administration (MDOT MVA). Among other areas, OPI coordinates Maryland's Connected and Automated Vehicle Working Group. Michele is also involved with MDOT MVA's Commercial Driver's Licensing Program.

Prior to joining MDOT MVA in 2019, Michele worked in Government Relations within the Maryland Department of Transportation at both the Maryland Transportation Authority and Maryland Port Administration.

Panelist: Van "Kevin" Stitche, CAV Emergency Responder Subgroup

Kevin Stitche is an Administrative Officer with the Automotive Safety Enforcement Division (ASED) of the Maryland State Police, overseeing the Maryland Vehicle Safety Inspection Program. Kevin is responsible for the continued development of the Maryland Safety Inspection System (MSIS), an online vehicle inspection program, and assists with training ASED personnel in vehicle regulations. In his capacity with ASED, Kevin has assisted in the rewriting portions of the Code of Maryland Regulations (COMAR) and the Vehicle Inspection Handbook. He helped convert the vehicle inspection program from a paper system to online reporting. Kevin Co-Chairs the Maryland CAV Working Group's Emergency Responder Subgroup, addressing concerns and training needs of emergency responders surrounding the testing and deployment of CAVs.

Panelist: Richard Bishop, CAV Freight Subgroup

Richard Bishop is the Principal of Bishop Consulting with over 30 years of experience in the intelligent, connected, and automated vehicles. He provides strategic consulting to automotive manufacturers, suppliers, and tech firms, as well as advising federal and state government agencies in the U.S. and abroad. Bishop Consulting publishes Automated Driving Industry Trends Reports covering automated driver assistance systems in passenger cars, fully automated robotaxis, and trucks. Prior to establishing Bishop Consulting in 1997, Richard was Program Manager for Vehicle-Highway Automation at FHWA.

Panelist: Ed Pavelka, CAV Policy Subgroup

Ed Pavelka is experienced as a test pilot, program manager, and engineer, with experience leading Marines and civilians in government and industry workforces. Ed has a Master of Science in Flight Dynamics from Cranfield University and a Bachelor of Science in Mechanical Engineering from the United States Naval Academy. Ed works for the Johns Hopkins University Institute for Assured Autonomy, leading development and testing of electric and autonomous vehicles.

Ed has recently been chosen to lead the CAV Working Group's Policy Sub-Group. In this role Ed helps shape policy efforts to facilitate safe and efficient incorporation of CAVs onto Maryland roadways.

Panelist: Warren Henry, CAV Technical Subgroup

Warren Henry is the Assistant Division Chief for Mobility Planning and Engineering at the Maryland State Highway Administration's (SHA) Office of Transportation Mobility & Operations (OTMO). He is the coordinator for the Maryland CAV Working Group's Technical Subgroup, focusing on CAV technology deployments to promote safety and mobility. Warren holds a Bachelor of Science in Civil Engineering from Howard University and has over 18 years of transportation engineering experience. Prior to joining SHA, he worked in private consulting firm on traffic engineering and Intelligent Transportation Systems projects. His state experience includes support to SHA's Coordinated Highway Action Response Team as the Planning & Development Section Chief for the Programming, Planning and Development Division on statewide TSMO/ITS Deployment, Regional ITS Architecture, Systems Engineering, and ITS coordination projects with agency stakeholders.

Track 3: Transportation & Technology - *Conference Room, 2nd Floor*

Artificial Intelligence-based Integrated Transportation Management System (AI-ITMS) and Beyond

Between 2019 to 2023, DelDOT deployed the AI-based Transportation Operations and Management System (AI-TOMS) to enhance the DelDOT Transportation Management Center (TMC)'s ability to monitor the transportation system. This advancement aids in predicting traffic flows, identifying anomalies and inefficiencies, and generating, evaluating, and executing response strategies for current and forecasted traffic congestion.

Recent enhancements include increasing data collection to 63 intersections and leveraging this data for advanced analytics, signal timing transition detection, and real-time traffic operations.

Additionally, DelDOT has equipped four Bosch machine vision cameras for turning movement counts over 24 hours, aiming to utilize machine vision for signal actuation and queue detection.

The program has recently been awarded two additional federal grants: a \$2 million SMART Grants Program for deploying cloud-based vehicle-to-everything technology (CbV2X) and optimizing signal timing along statewide roadways, and a \$5 million ATTAIN program grant to enhance safety during flood events.

Ziyi Ma, EIT, is a Senior Transportation Engineer/Project Manager at BlueHalo, focusing on implementing Advanced Traffic Management System (ATMS) for Delaware Department of Transportation. He earned his Master of Science degree in Transportation Planning and Engineering and a Bachelor of Science degree in Civil Engineering from New York University. Before joining BlueHalo, Mr. Ma interned at Mitsubishi Electric Research Laboratories, focusing on developing methods for learning and optimizing Advanced Driver Assistance Systems (ADAS) through data sharing between connected vehicles and infrastructure. He has also contributed to various transportation projects, traffic impact studies, and ITS engineering projects during his internships at Philip Habib and Associates, Jacobs, and AKRF. Chief for the Programming, Planning and Development Division on statewide TSMO/ITS Deployment, Regional ITS Architecture, Systems Engineering, and ITS coordination projects with agency stakeholders.

Assuring Future of Autonomous Transportation

The Johns Hopkins University Institute for Assured Autonomy (IAA) has 3 pillars: Technology, Ethics & Governance, and Ecosystem. The presentation will include a summary of IAA's research vehicles and touch on a few research topics: data sharing architecture for sensors, human-machine interface and developing a shared mental model between the autonomy and its operators and passengers, and the need to fully understand the design and operations of vehicles. Ethics and governance discussion will focus on accessibility, workforce development, and training. Ecosystem discussion will highlight partners and ongoing efforts, which will lead into discussion of the JHU S4 Lab (Safe, Secure, Smart, Scalable Communications Infrastructure for V2X Networks), focusing on the V2X landscape along with data, security, and network research topics.

Ed Pavelka is experienced as a test pilot, program manager, and engineer, with experience leading Marines and civilians in government and industry workforces. Ed has a Master of Science in Flight Dynamics from Cranfield University and a Bachelor of Science in Mechanical Engineering from the United States Naval Academy. Ed works for the Johns Hopkins University Institute for Assured Autonomy, leading development and testing of electric and autonomous vehicles.

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Using AI to Improve Transit Safety, Accessibility, and On-Time Performance

Illegal parking in bus stop zones is a widespread problem that creates serious dangers for passengers boarding and exiting a bus, especially for people with disabilities and senior citizens. A blocked bus stop can mean the difference between a rider reaching their destination on time or late – or in some cases, not reaching it at all. In addition, we know that dedicated bus lanes significantly improve travel times and reliability for transit riders — but only if these lanes are free of illegally parked vehicles.

Some cities, states, and transit agencies are taking action by installing new AI-powered technology on buses to accurately identify parking and moving violators and automate the delivery of evidence to local law enforcement for violation processing. This session will highlight SEPTA's experience in piloting AI-powered camera systems on its buses and upcoming implementation plans to use this technology to improve transit speeds, reliability, safety and accessibility.

***Matthew Zapson, AICP**, is a Planning Project Manager of Transit Priority at the Southeastern Pennsylvania Transportation Authority (SEPTA). In his five years at SEPTA, Matt has worked closely with internal stakeholders and community partners to advance projects and policies that make surface transit faster, more reliable, safer, and more accessible for the region's riders and operators. In 2023, Matt oversaw a proof-of-concept pilot equipping SEPTA buses with artificial-intelligence-powered camera systems that could detect parking violations in bus lanes and bus stops. Prior to joining SEPTA, Matt worked at the urban planning and design firm Group Melvin Design. Matt holds a Master of City Planning degree from the University of Pennsylvania, a BA in Architectural Studies from Boston University, and is a certified city planner with the American Institute of Certified Planners.*

Track 4: Active Transportation - Hangar Room, 1st Floor

Starting from a Low on the Enola Low-Grade Trail

The Enola Low Grade Trail is a recreational trail that stretches across southern Lancaster County, Pennsylvania. The trail spans eight municipalities on land owned/managed by seven local governments.

The presentation will focus on how local partnerships, built on a mutual goal of looking to the future together rather than the past, can overcome perceived insurmountable barriers. This is a success story that engineers, planners, advocates, local government officials, and state government officials can all learn from. It may not be a trail crossing the next time, but there are always oppositional emotions and doubts, regardless of the project type, when working with public infrastructure.

Scott Seibel, PE has six years of experience at Michael Baker International in Harrisburg, PA, and has contributed to a diverse range of traffic engineering safety studies and design projects across Pennsylvania. He is passionate about enhancing safety measures and implementing new technology and solutions to create safer and better-connected communities. Scott holds a B.S. in Civil Engineering from Penn State University (2018) and currently serves as the ITE Penn State Student Chapter Liaison.

Loudoun County Sidewalk and Trails Program Equity Analysis

Loudoun County (VA), with consultant support, developed an innovative framework and approach to perform equity analysis when planning and prioritizing future sidewalk and trail projects. To incorporate equity considerations into the prioritized list, an innovative equity lens framework was developed using available public health indexes and the average percent of sidewalk and trail network completed within a census tract. This framework establishes a set of objective standards, analyzes missing sidewalk and trail links in the County against those standards, and implements an outcome-based corrective action plan to modify the program's priority list of segments, which in turn adjusts future project priorities. The outcome-based corrective action plan allows for variable equity weighting as part of a multi-criteria prioritization effort. These items support grant funding applications, and the identified sidewalk and trail projects are proposed for inclusion in the CIP in ascending priority order.

Laura Ghosh serves on the Traffic Engineering team at Loudoun County's Department of Transportation and Capital Infrastructure, focusing on multimodal safety, accessibility and mobility. She has developed pilot programs and countywide assessments. Laura's 12 years of transportation engineering experience range from traffic engineering consulting to risk management and congestion modelling research, to transportation engineering project management. Her diverse work experience has honed efficient analytical skills and an aptitude for exercising sound judgement in the development of practical engineering solutions. Her education includes a Bachelor of Engineering from Carleton University in Ottawa, Canada and an MS in Civil Engineering from the University of Illinois.

Vision Zero: Salisbury's Multimodal Mindset

From the basics of Vision Zero to the implementation of countermeasures in real time, this presentation outlines the City of Salisbury's success in reducing traffic fatalities and severe injuries from 2018 to present. Data-driven planning and targeted corridor application are key factors in the success of Salisbury's Vision Zero program, both in multimodal design and public perception.

Amanda Rodriguez is the City Planner for the City of Salisbury, MD. With a commitment to creating equitable, livable communities, Amanda specializes in securing and utilizing grant funding to plan, design and implement innovative solutions that cater to the diverse needs of complex communities while promoting environmental and fiscal sustainability.

Technical Tours – Technology’s Edge

M-TRAIL

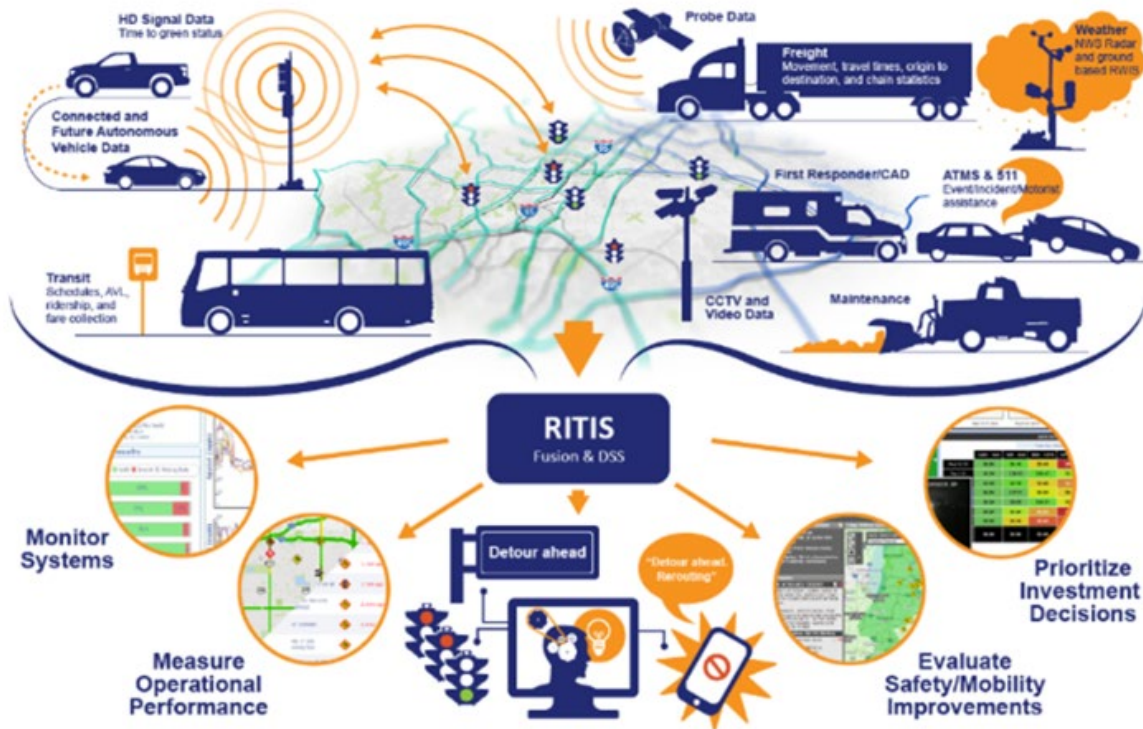
The Maryland Transportation Research and Artificial Intelligence Laboratory (M-TRAIL), affiliated with the Maryland Transportation Institute, has extensive experience in Automated Vehicle (AV) technology development. M-TRAIL boasts an in-house autonomous vehicle equipped with an array of sensors, including lidar, radar, cameras, and GPS, as well as drive-by-wire control platforms, on-board units, and high-reliability industry-grade computers. These components are integrated through sophisticated software platforms to enable autonomous driving capabilities. Additionally, the vehicle serves as a testbed for various applications, not limited to autonomous driving research, advanced driver-assistance systems (ADAS) development, and cooperative driving autonomy. The M-TRAIL group has also contributed to the development of FHWA CARMA speed harmonization algorithms.

Dr. Xianfeng Terry Yang is an Assistant Professor (Transportation Engineering) in the Department of Civil and Environmental Engineering at the University of Maryland. Before joining Maryland, he was an Assistant Professor at the University of Utah. Dr. Yang's current research areas include transportation asset monitoring and management, evacuation planning, traffic operations, traffic safety, transportation equity, and transportation planning. He has been the PI or Co-PI of over 30 projects that are sponsored by multiple agencies such as the National Science Foundation (NSF), the US Department of Transportation (USDOT), the Federal Highway Administration (FHWA), Department of Energy (DOE), Maryland Department of Transportation State Highway Administration (MDOT-SHA), and the Utah Department of Transportation (UDOT). He has published over 140 peer-reviewed research articles in journals and conferences. Dr. Yang founded the Maryland Transportation & Artificial Intelligence Laboratory (M-TRAIL). He is a leading expert in integrating machine learning into transportation and he is the recipient of the prestigious NSF CAREER Award in 2021. He is currently the Associate Editor of the ASCE Journal of Urban Planning and Development and IEEE OJ- Intelligent Transportation Systems, and the Handling Editor of TRB Transportation Research Record. He is also the Vice-Chair of the INFORMS JST ITS committee and the Secretary of the ASCE Artificial Intelligence committee.

CATT Lab

The CATT Laboratory was originally established in 2002 as an academic applied research and development laboratory. The mission of the lab is to support national, state, and local efforts to provide safe and efficient transportation systems through improved operations and management by means of research and development, technology implementation, training, and education. CATT Lab supports national, state, and local efforts to solve important transportation, safety, and security problems. We accomplish our mission by deploying innovative technology and user-centered software and visualization systems. The CATT Lab tour will highlight the Regional Integrated Transportation Information System (RITIS) which fuses data from 40 state DOTs partners

and ~17,000 registered users. This tour will feature the RITIS real-time transportation map, probe data analytics, trajectory data analytics, and traffic signal analytics.



Mark Franz earned his BA in Physics and BS in Astronomy from the University of Florida, his MSCE from West Virginia University, and his Ph.D. in Civil and Environmental Engineering from the University of Maryland (UMD) with emphasis on transportation engineering. Currently, Mark is the Lead Transportation Analyst at the Center for Advanced Transportation Technology Laboratory (CATT Lab) at the University of Maryland where he is developing and improving online transportation analysis tools and visualizations for public and private sector clients.

TS&T

Traffic Systems & Technology (TS&T) will be showcasing the following solutions and systems:

Radar- See everything on the highway up to 1 mile. Counts, Classifications, AID, Hard Shoulder Monitoring, Stopped Vehicle Detection, Queue Detection, Wrong Way Drivers, Pedestrian. All weather systems, ideal for Bridge and Tunnel applications too.

Lidar- All weather systems for intersections and roads approaching intersections. Most reliable system to monitor all vehicles, pedestrians. Learn driving habits and walking habits. Counts, Classifications, Speeds, Conflicts between pedestrians and all vehicles types, Red Light running

history, pedestrians walking outside the intersection with videos clips, Green Allocation, Phase Interval, Split Trends, Arrival patterns.



ThruGreen Systems- Connecting legacy components to newer technologies. EVP and TSP systems to create time savings and safer and more consistent interactions with signals. Asset Management and work order tracking, Signal timing updates remotely. Live intersection view, place calls and test calls remotely. Connect all cabinets via current network or cell systems.



Roger Hale – I have been with TS&T since 2002. Prior to that my previous employment included IT, software, and payroll/HR sales for almost 20 years. I currently oversee all the sales for TS&T and I'm also the lead for the state of Maryland. Since joining TS&T, I have seen TS&T evolve from mainly a pole company to a more solutions-based provider for ITS, lighting and traffic applications. Our knowledge and customer support are paramount in this business as it provides our customers with the tools and confidence, they need to secure jobs and deliver quality materials on time.

I love sports, especially soccer, golf, and football. Occasionally you can find me playing on the poker tables in MD. My wife and I have two amazing boys and our two dogs.

JMT Driving Simulator

JMT Technology Group developed a themed driving simulation for use at a transportation conference. The simulation allowed the user to virtually drive a themed character through a model of Baltimore City while collecting coins to achieve the goal of the game. The fastest times are displayed on a leaderboard to encourage booth visitation and increase engagement.

The simulation immerses you in an experience driving through a digital twin reality mesh of Baltimore using a steering wheel & pedals for the simulator to be as authentic as possible. It uses a reality capture of Baltimore to drive from the Maryland Transit Administration building to the MdQI conference at the Baltimore Convention Center. You drive on real streets within the city of Baltimore.



This driving simulator takes reality capture data (such as LiDAR, point clouds, or photogrammetry) and creates interactive visualizations. The simulations aren't just limited to steering wheel controls, they can be JMT Technology Group's virtual spaces platform to help create interactive experiences, simulations, and virtual tours that stakeholders can access via the web with keyboard controls or their mobile devices.

***Maria Martin** is a communications and branding specialist with over 20 years of experience. She has strategically managed all aspects of marketing including writing for technical and non-technical audiences, launching, and supporting websites, strategic print campaigns, public outreach, supporting multiple channels of social media, and managing paid campaigns through Google Ads and social media. She has developed communication strategies for many brands including Whole Foods Market, Hilton, Marriott, Holiday Inn, and the Foundation Fighting Blindness, a national non-profit.*