2019 Annual Meeting
September 26 and 27

“Midwest Connections: Travel Smart”
DoubleTree Suites and Conference Center
Downers Grove, Illinois
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Welcome to the Intelligent Transportation Society of the Midwest 2019 Annual Meeting! We are excited to showcase the progress that has been made and continues to grow in the application of technologies to improve transportation systems and services. ITS has grown from a fledgling industry to a major factor in the future of transportation in the United States and around the world. ITS Midwest and our members can take pride in the contributions being made through technology to achieving safer, more informed, and more efficient travel.

Yet much remains to be accomplished. Our Annual Meeting theme this year, “Midwest Connections: Travel Smart,” is focused on the actions, research, development, and deployment needed to continue the advancement of ITS and transportation technologies to benefit all users of our transportation system. It also reflects the emerging emphasis on connectivity across vehicles and with infrastructure towards the ultimate goal of automated vehicles. Research has shown that such a future will reduce crashes, injuries, and deaths on our roads and highways. ITS Midwest is committed to participate in and support this goal.

We are pleased to be hosting the ITS Midwest 2019 Annual Meeting at the DoubleTree Suites and Conference Center in Downers Grove, Illinois. I hope you will be active participants in the event, taking advantage of the technical sessions and panel discussions, visiting the many vendor exhibits, enjoying social event Thursday evening at Pinstripes,
those that pre-registered, taking part in our behind-the-scenes technical
tour of O'Hare International Airport on Friday.

We have assembled a terrific program with over thirty technical
presentations and thirty exhibitors. In addition to connected and automated
vehicles, there are presentations on Smart Cities, new transportation
technologies, data-driven operations, and transportation management and
operations. Many of the presentations will highlight ITS activities in each of
our four member States: Illinois, Indiana, Kentucky, and Ohio. And capping
off the conference is a panel with key executives from our member states.
In between these informative sessions, be sure to take some time to visit
the exhibitors during the breaks as well.

In addition to our annual election and business meeting, we will also be
announcing the winner of the prestigious 2019 ITS Midwest Project of the
Year award for the most outstanding ITS Project and the very first recipient
of the Gordon Paesani Scholarship.

It has been a busy few of decades for transportation technology and for ITS
Midwest. From our inception in 1995, ITS Midwest has been an active
leader and participant in the mainstreaming of intelligent transport
technology in the region. Most importantly, ITS Midwest has helped foster
and nurture the personal relationships essential to interagency cooperation
and public-private partnerships. Our 2019 Annual Meeting will continue this
tradition.

Of course, the Annual Meeting would not be possible without the support of
our sponsor organizations. Be sure to talk with representatives of our event
sponsors and thank them as well. I would also like to thank each of our
member volunteers who have worked to make this conference happen, in
particular conference co-chairs Justin Potts and Brian Plum, as well as
David Zavattero and Michel Lavigne on our Program Committee and ITS
Midwest Treasurer Bini William. Their efforts combined with a dedicated
team of our member volunteers is much appreciated. Thank you all!

With each Annual Meeting, we will continue to pursue ITS Midwest’s
mission and to contribute to the amazing intelligent transportation systems
that lie ahead. Finally, I want to commend you, the participants, for joining
us on this incredible journey. Enjoy the conference!
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<td>7:00am</td>
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| 8:00am| **Welcome, ITS Midwest President**  
Matthew Letourneau  
Keynote Speaker  
Shailen Bhatt, President and CEO  
Intelligent Transportation Society of America | Grand Ballroom |
| 8:45am| EXHIBIT HALL OPENS     | Forum C            |
| 9:00am| **Session# 1A Signal Operations 1**  
Moderator - Jason Yeager, ITSMW VP - Kentucky  
Christos Achillides, Iteris  
Signal Optimization Through Data: Using Signal Performance Measures to Run a Better Intersection  
Josh Fink, EconoLite  
New Technologies Lead to Breakthroughs in Optimized Signal Timing and Real Time Adaptive Signal Control | Forum A        |
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| 9:00am   | **Session# 1B: Data and Analytics 1**  
Moderator - Ed Williams, ITSMW VP - Ohio  
John Cecala, Google  
Harness Your Data with Intelligent Transportation Analytics  
Daniel Rossiter, Southwest Research Institute  
Finding Actionable Data in the Era of “Big Data” | Forum B |
| 10:00am  | Break – EXHIBITOR OPEN HOUSE                                                          | Forum C |
| 10:30am  | **Session# 2A: Public Private Partnerships**  
Moderator - Ken Glassman, ITSMW Immediate Past President  
John Dillenburg, University of Illinois Chicago  
Incorporating Private Sector Data into TravelMidwest.com  
Jonathan Riehl, University of Wisconsin  
Reporting on Travel Times Provided by State Agencies vs. National Performance Measures Research Data Set  
Jeff Hochmuth, CDM Smith  
Preliminary Results of the Potential for Third-party Data for Traffic Operations Analysis | Forum A |
| 10:30am  | **Session# 2B: Data and Analytics 2**  
Moderator – Kevin Price, ITSMW Past Board Member  
Brian Fuller, Sensys Networks  
An IoT Based Vehicle Detection Platform  
Charlie McCarthy, TranSmart and Abraham Emmanuel, Chicago Department of Transportation  
Working Toward a Travel Time Scorecard in Chicago  
Elyse Morgan, Illinois Tollway  
Big Data Integration and Advanced TSMO | Forum B |
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| 11:30am  | **ITS Midwest Business Meeting**  
Matthew Letourneau, ITS Midwest President  
Election of Officers  
Scott Lee, Secretary-President Elect  
Chapter Financial Report - Bini William, Treasurer  
Committees – Call for Volunteers | Grand Ballroom |
| 12:00pm  | **LUNCHEON**  
*2019 Project of the Year*  
*and Gordon Paesani Scholarship* Announcements  
Matthew Letourneau, President, ITS Midwest | Grand Ballroom |
|          | Luncheon Speaker  
Introduction - Matthew Letourneau, ITS Midwest President  
Jerry Quandt, Executive Director  
Illinois Autonomous Vehicles Association | Grand Ballroom |
| 1:30pm   | **Session# 3A: Signal Operations 2**  
Moderator - Scott Lee, ITSMW Secretary/President Elect  
Rick Schuman, INRIX  
Arterial and Signal Analytics: Innovations from the US and Around the World  
Brent Padilla, Wavetronix  
Continuous Tracking Vehicle Detection for Dilemma Zone Protection of All Vehicles  
Jon Ringler, Econolite  
The New Signal Priority System Requirement for the Connected Vehicle Future | Forum A    |
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<td>1:30pm</td>
<td><strong>Session# 3B: Connected &amp; Autonomous Vehicles 1</strong>&lt;br&gt;Moderator – Chuck Sikaras, ITSMW Past Board Member&lt;br&gt;Preeti Choudhary, John Gray, AECOM and Nick Hegemier, Drive Ohio&lt;br&gt;Ohio Statewide Framework for CV/AV Deployments&lt;br&gt;Aimee Lee and Amarpal Matharu, Illinois Tollway&lt;br&gt;Illinois Tollway CV Pilot Study</td>
<td>Forum B</td>
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<td>2:30pm</td>
<td><strong>VENDOR SHOWCASE</strong>&lt;br&gt;Moderator – John Gray, ITSMW Past President</td>
<td>Forum B</td>
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<td>3:00pm</td>
<td><strong>Break – EXHIBITOR OPEN HOUSE</strong></td>
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<td>3:30pm</td>
<td><strong>Session# 4A: Smart Cities 1</strong>&lt;br&gt;Moderator – Nick Hegemier, ITSMW Board Member&lt;br&gt;Lexus Hughes, Miovision&lt;br&gt;Empowering Cities with Data and AI to Make Smart Decisions&lt;br&gt;Mark Fayta, Econolite&lt;br&gt;Detection Essentials for the Smart Evolving City: SPM Data and CV Applications</td>
<td>Forum A</td>
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<td>3:30pm</td>
<td><strong>Session# 4B: Connected &amp; Autonomous Vehicles 2</strong>&lt;br&gt;Moderator – Jeff Hochmuth, ITSMW Past President&lt;br&gt;Steve Sprouffske, Kapsch&lt;br&gt;Rethinking CV Deployment Planning to Keep Up with Rapidly Changing Technology&lt;br&gt;Joshua Fink, Econolite&lt;br&gt;Why the Future of Traffic Management? Depends on IoT-ITS Integration</td>
<td>Forum B</td>
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| 4:30pm   | **Private Sector Executive Panel**  
Moderator – David Zavattero, ITSMW Past President  
David Leopold, Director, City Tech Collaborative  
Douglas Pancoast, Head of R&D, Urban Mobility Solutions, Bosch  
Finn Swingley, Senior Solution Architect, HERE  
Jerry Quandt, Executive Director, Illinois Autonomous Vehicles Association | Grand Ballroom    |
| 5:30pm   | **Introducing the State Vice Presidents**  
Illinois VP - Justin Potts  
Indiana VP - Dan Shamo, represented by Rick Fedder, Director  
Kentucky VP – Jason Yeager  
Ohio VP – Ed Williams | Grand Ballroom    |
| 5:45pm   | **Gather and depart for Social Event**  
(Shuttle bus available) | Main Entrance     |
| 6:00pm   | **SOCIAL EVENT** (Additional Fee, Limited Seating)  
Reception, Buffet Dinner and Games  
Location: Pinstripes  
Address:  
7 Oakbrook Center, Oak Brook, IL 60523 |                  |
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<td>8:00am</td>
<td>Registration&lt;br&gt;Continental Breakfast</td>
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<td>8:30am</td>
<td><strong>Session# 5A: Advanced Traffic Management Systems</strong>&lt;br&gt;Moderator – Abraham Emmanuel, ITSMW Board Member&lt;br&gt;Ryan Legare, Lake County, IL Department of Transportation&lt;br&gt;Lake County PASSAGE: System Updates and Enhancements&lt;br&gt;Brent Becker, Southwest Research Institute&lt;br&gt;ICMS as an Integration of Systems&lt;br&gt;Wayne Kairdolf, Deep South Communications, LLC&lt;br&gt;Advanced Wireless Wide Area Networking for ITS</td>
<td>Forum A</td>
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<td>8:30am</td>
<td><strong>Session# 5B: Smart Cities 2</strong>&lt;br&gt;Moderator – David Henkel, ITSMW Past Board Member&lt;br&gt;Marissa Ramon and Jesus Martinez&lt;br&gt;Southwest Research Institute&lt;br&gt;Cybersecurity Guidance Tool for Managing Risk of TMS Equipment&lt;br&gt;James Gilbert, GBASI&lt;br&gt;Transportation Technology and Smart Communities&lt;br&gt;Preston Judkins, Parsons&lt;br&gt;Intersection Insights: Integrating Intersection Data for Traffic Operations and Planning</td>
<td>Forum B</td>
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<td>9:30am</td>
<td>Break – EXHIBITOR OPEN HOUSE</td>
<td>Forum C</td>
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<td>10:00am</td>
<td><strong>Session# 6A: Work Zones</strong>&lt;br&gt;Moderator – Bini William, ITSMW Treasurer&lt;br&gt;Scott Carlson, Iteris&lt;br&gt;Real-Time Third - Party Data for Maintenance of Traffic During Construction&lt;br&gt;Todd Foster, Ver-Mac&lt;br&gt;Deploying Smart Work Zones in Just a Few Minutes</td>
<td>Forum A</td>
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| **10:00am**| **Session# 6B: Safety and Security**  
Moderator – Sara Senger, ITSMW Board Member  
Tom Der, IRD Inc.  
Tire Safety Screenings at Commercial Vehicle Inspection Stations  
Mike Scarmon, KL Engineering and Ahmet Demirbilek, WisDOT  
WisDOT LED Retrofit Experience  
Robert Harmon, Citel  
Surge Protection for Intelligent Infrastructure | Forum B       |
| **11:00am**| **Public Sector Executive Panel Session**  
Moderator - David Zavattero, ITSMW Past President  
Illinois – Omer Osman, Secretary  
Illinois Department of Transportation  
Indiana - Rick Fedder, Chief Operating Officer  
Indiana Toll Road Concession Company  
Kentucky - Joe Crabtree, Director of the Kentucky Transportation Center at the University of Kentucky  
Ohio - Lloyd MacAdam, Chief Engineer and Assistant Director for Transportation Policy  
Ohio Department of Transportation | Grand Ballroom |
| **12:00pm**| **Annual Meeting Closing Remarks**  
Brian Plum & Justin Potts, Conference Co-Chairs | Grand Ballroom |
<p>| <strong>12:05pm</strong>| Lunch on your own                                                                    |               |
| <strong>12:45pm</strong>| Gather and Depart for Technical Tour                                                  |               |</p>
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<td>1:30pm</td>
<td><strong>TECHNICAL TOUR</strong>&lt;br&gt;O’Hare Airport Behind the Scenes Tour&lt;br&gt;O’Hare International Airport&lt;br&gt;Note – Preregistration REQUIRED by August 23 for the O’Hare Behind-the-Scenes Technical Tour is now CLOSED</td>
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<td>Thank you for your participation.&lt;br&gt;Safe travel home.</td>
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<td>NEXT YEAR: 2020 ANNUAL MEETING in KENTUCKY</td>
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Abstracts and Speaker Biographies
Keynote Speaker

■ Shailen Bhatt, President and CEO, Intelligent Transportation Society of America
Email: sbhatt@itsa.org

As its chief executive, Bhatt promotes policies that advance the development and deployment of intelligent transportation technologies throughout the United States. He has testified before Congress about the positive safety impact of intelligent transportation technologies, including connected and automated vehicles. Bhatt is a leading voice in transportation on technology’s ability to save lives and reduce crashes on U.S. roadways. He speaks extensively about the importance of vehicles to communicate with each other and all roadway users as one of the best ways to improve safety and reduce congestion. He is also passionate about reducing transportation’s carbon footprint and the need to provide seamless mobility and transportation choices to people no matter where they live.

Bhatt was appointed as a transportation leader by three governors. While serving as Executive Director for the Colorado Department of Transportation (CDOT), the agency launched the Road X program, which is focused on deploying innovative technology solutions such as connected vehicles and teaming with the private sector to shape the future of transportation. Prior to CDOT, Bhatt was Cabinet Secretary for the Delaware Department of Transportation. He was also a presidential appointee at the U.S. Department of Transportation.

Bhatt has served as Chair of the Board of Directors for the National Operations Center of Excellence (NOCoe) and the Executive Committee of the I-95 Corridor Coalition; he was a member of the World Economic Forum’s (WEF) Global Agenda Council on the Future of Automotive and Personal Transport.

Bhatt graduated summa cum laude with a Bachelor of Arts in Economics from Western Kentucky University. He lives with his wife and two young daughters in Washington, DC.
Signal Optimization Through Data: Using Signal Performance Measures to Run a Better Intersection

Christos Achillides, Iteris
Email: CAchillides@iteris.com

Abstract:
How is your Agency using data to better manage your traffic signals? Signal Performance Measures (SPM) provide the opportunity to take a targeted approach to both the operation and maintenance of traffic signals. The benefits of an effective SPM tool include increased safety, proactive maintenance, and improved operations.

Prior to SPM, the primary measurement of signal performance was feedback and/or, more often, complaints from a dissatisfied public. If signal timing was adjusted, it was done so through a costly signal-timing project conducted on a three- to five-year cycle. These projects often included ad-hoc comparisons of limited data, in-depth manual data collection efforts, and a heavy dependence on software modeling.

Advanced traffic controllers provide the ability to collect both signal and detection data at a much higher resolution and, in the process, paved the way for the creation of an SPM tool that can aggregate, analyze, and visualize this data. This tool provides a variety of reports relating to different signal performance measures and can, in some cases, be set to provide proactive operation and maintenance alerts.

This presentation will focus on the history of SPM as well as the many benefits of implementing it into a traffic signal system. There will be specific case studies reviewed from agencies across the country that have successfully implemented the Iteris SPM tool and, in the process, developed a more proactive approach to signal operations and maintenance.

Speaker Bio:
Mr. Achillides serves as a Senior Engineer for Iteris' Transportation Systems division and has been with the firm since June 2018. He has over 15 years of experience working in the field of Signal Coordination and Timing (SCAT) studies. Mr. Achillides experience includes re-timing and
optimization of over 1,000 traffic signals, traffic impact studies, traffic signal warrant studies, roadway capacity, Level-of-Service (LOS) and queue analysis, parking analysis, trip generation/distribution analysis and data collection. Mr. Achillides has proficient experience with Synchro/ SimTraffic, Highway Capacity Software, Petra-Pro and PC-Travel software. His controller software experience includes Econolite and Eagle Controllers, Centracs, Aries, Zone

■ New Technologies Lead to Breakthroughs in Optimized Signal Timing and Real Time Adaptive Signal Control
Joshua Fink, Econolite
Email: jfink@econolite.com

Abstract:
Traffic signal optimization is universally recognized as one of the most cost-effective means to improve traffic mobility and safety. "Optimization" is influenced by widely dynamic factors, including changes in population, regional growth relative to infrastructure upgrades, etc. Under the fourth round of the Every Day Counts (EDC-4) program, the FHWA encourages the implementation of automated traffic signal performance measures capabilities as a way to intelligently improve the traffic signal optimization process and as means to provide performance monitoring on a continual basis.

Fortunately, these dynamics, and EDC-4 have helped foster the development of new technologies and their applications that are providing new realms of intelligent traffic management capabilities and strategies - particularly in the areas of cloud-based computing, collection of high-resolution traffic data, and big data analytics applications.

This presentation will detail how new cloud-based computing technologies can be used to drive new potentials in analytics to transform high-resolution traffic data and performance measures into actionable and automated traffic management decisions based on real time traffic conditions. The presentation will show how a cloud-based technology platform can provide new capabilities for signal timing optimization based on the innovative algorithms developed by Purdue University. In addition, this presentation will feature how this new technology is providing breakthrough real-time adaptive signal control.
Speaker Bio:
Joshua Fink joined Econolite in Spring of 2018 as Channel Partner Manager. Located in the Midwest, his chief responsibilities include working with Econolite's distributors in MI, OH, KY, PA, WV. Josh previously spent four years with AECOM in southeast Michigan, where he worked extensively with the Macomb County Department of Roads Traffic Operations Center. Josh brings his engineering skills and expertise to Econolite, receiving a Bachelor's and Master's in Civil Engineering from Michigan State University and Western Michigan University. Josh is passionate about the traffic industry, and always strives to find data-driven, localized solutions for local challenges.
Harness Your Data with Intelligent Transportation Analytics
John Cecala, Google
Email: johncecala@google.com

Abstract:
The number of vehicles on our roads are increasing faster than people. Obviously, the answer isn't to build more roads, rather, harness data available to you to make the roads safer. The data you need exists. Critical data you could really use [Zonar, INRIX, GIS, Amber Alert, TrafficCast] is all over the place. The not so great news is that it's in different places and often disconnected, leaving you with a fragmented view (at best) of what's happening.

What if you could bring all your data together, streaming and batch, to let your data become the driver of traffic management?

Enhance situational awareness: Leverage current and historical traffic, weather and situational data to respond to traffic incidents the moment they occur.

Coordinate response with law enforcement based on where a crash is being reporting by the community.
Assess road needs based on data points like traffic frequency, community reports, and weather events to predict when repairs are needed.

The Google Cloud platform will ingest traffic data, including existing systems (e.g. traffic sensors, IoT streams, data warehouse) and third-party data (e.g. Waze, INRIX, NOAA) into one place. Now ITS Executives can begin asking questions and running analyses to understand their traffic operations; implement predictive analytics leveraging Machine Learning; geo-visualize their data; share their data and insights across other ITS systems and with trusted partners and the public. Users can take action on their insights by overlaying their Intelligent Transportation data onto their Traffic Management System.
Speaker Bio:
John Cecala is Google's Midwest Public Sector State & Local Government Lead for Google Cloud. John's mission is helping smart government agencies innovate & improve constituent service with the ways the highly secure & powerful Google Cloud maps to their strategic priorities.

- Finding Actionable Data in the Era of “Big Data”
  Daniel Rossiter, Southwest Research Institute
  Email: dan.rossiter@swri.org

Abstract:
Sensor deployments across roadways worldwide have grown exponentially over the past decade, leading in many cases to data overload, where actionable data ends up buried in a sea of other less immediately useful data. Transportation agencies have three possible responses to this overload: 1) hire more staff to sift through this growing volume of data, 2) accept that actionable data will be missed and continue with standard operating procedures, or 3) apply technology to find the actionable data for them, empowering these agencies to focus their efforts on responding to actionable data rather than searching for it.

Traffic cameras are an ideal target for this kind of technology-driven search for actionable data due to their sheer volume and the amount of data collected from any given camera. Applying machine vision techniques, these cameras can be turned into ad-hoc sensors, detecting changes such as weather conditions, traffic patterns, wrong way drivers, and collisions. By delegating observation of these traffic cameras to computers, agencies can focus their attention on responding to detected incidents, thereby increasing public safety and decreasing incident response times. By retrofitting these machine vision capabilities onto existing traffic cameras no added deployment costs are incurred to upgrade existing infrastructure and lower cost traffic cameras may be used in place of top of the line cameras which may have some sensing capabilities onboard.
Speaker Bio:
Dan Rossiter is a Research Analyst with Southwest Research Institute. He is a systems architect with 6 years of experience in ITS software, hardware, and communications. Mr. Rossiter has provided systems and software design and implementation for the Texas Department of Transportation, Florida Department of Transportation, New Mexico Department of Transportation, California Department of Transportation, and others. In his work, Mr. Rossiter’s work emphasizes maximizing value of existing highway assets through innovative use of emerging technologies.
Incorporating Private Sector Data into TravelMidwest.com
John Dillenburg, University of Illinois Chicago
Email: dillenbu@uic.edu

Abstract:
IDOT recently procured private-sector probe based real-time speed data. The University of Illinois at Chicago Department of Computer Science was tasked with incorporating 63 gigabytes/day of this real-time data into the Gateway Traveler Information System (GTIS) including: displaying the real-time data as color coded congestion on TravelMidwest.com maps, providing speeds and travel times to email alert users, using the data for incident clearance detection, computing travel times for Metro East St. Louis and Lake County, and providing feedback on the effects of road work to IDOT engineers. This presentation will discuss these tools, the technical details of incorporating real-time data into the GTIS and validating the data against the National Performance Monitoring Research Data Set.

Speaker Bio:
Dr. Dillenburg is a Senior Research Scientist in the Department of Computer Science at the University of Illinois at Chicago. He is also the project manager for the IDOT sponsored Gateway Traveler Information System.

Reporting on Travel Times Provided by State Agencies vs. National Performance Measures Research Data Set (NPMRDS)
Jonathan Riehl, University of Wisconsin
Email: jonathan.riehl@wisc.edu

Abstract:
IDOT supports the Gateway Traveler Information System which displays travel times, incidents, and other data to the public, including Illinois, Wisconsin, Indiana, and Minnesota. These travel times are reported in a variety of ways by the various agencies in these states. This project compared travel times reported on the GTIS system to those provided by probe data through the NPMRDS (National Performance Management Research Data Set) program. The presentation will focus on the reporting
tools developed, how well travel times matched, and how the reporting tool
was used / can be used to make decisions on travel time reporting.

Two reporting tools were developed as part of this project. Report #1
graphically shows the percent difference between the NPMRDS data and
the agency data by time of day and day of week category (M-Th,F,Sa,Su).
Report #2 shows an overall accuracy score for each agency with
percentage changes from last month. Example reports as well as findings
from report analysis will be presented as part of this presentation.

This topic is relevant to any agency that is debating which travel time
technologies to use for reporting to the public as well as for internal
processes.

Speaker Bio:
Jon is a Transportation Systems Engineer in the Traffic Operations and
Safety Lab at the University of Wisconsin-Madison and manages the
Wisconsin Automated Vehicle Proving Grounds including the Park Street
Connected Corridor and the CapEast Connector automated shuttle
program. His work responsibilities include research in Transportation
Systems Management and Operations (TSM&O), connected and
automated vehicles, and geographic information systems (GIS), and
teaching. Jon holds a PhD in Civil Engineering from Michigan Tech and
has master’s degrees in electrical engineering, geography, and business.

- Preliminary Results of the Potential for Third-party Data for
  Traffic Operations Analysis
  Jeff Hochmuth, CDM Smith
  Email: hochmuthjj@cdmsmith.com

Abstract:
CDM Smith has provided recommendations on new traffic detection
strategies for the Illinois Tollway. This includes a departure from the "one
sensor does it all" approach of the past. To test some of the potential of the
new strategy, a test of third-party data was proposed for the central Tri-
State. The purpose of the test was to verify if real time traffic data from third
party sources can meet all of the needs of the Tollway.

Three vendors were selected based on market research. 12 months of real
time data for the 23-mile central Tri-State corridor were procured from each
based-on requirement that were developed specific to the Tollway's needs. Each of the data sources has been integrated into the Tollway's Traffic Incident Management System (TIMS).

Analysis is ongoing. The various sources are compared against traditional Tollway traffic data sources. Tests are focusing on availability and accuracy. Probe vehicle data is also being collected and congestion is being monitored weekly. Travel time comparisons are being analyzed as well as responsiveness to congestion.

This presentation will provide background details and a description of the test. This will include details of data collection and analysis to date.

Speaker Bio:
30 years’ experience. Work all over the world. All around great guy.
Session #2B – Data and Analytics 2
Moderator, Kevin Price, ITSMW Past Board Member

■ An IoT Based Vehicle Detection Platform
Brian Fuller, Sensys Networks
Email: brian@sensysnetworks.com

Abstract:
This presentation describes a complete IoT based system for connecting, managing and using large networks of distributed vehicle detection sensors. Starting with sensor types and data quality, to the uses of that data for control and planning purposes, to how the data flows through the system, to managing the network and devices, and finally storage, analytics and distribution of data and results to other systems. Topics also covered are interfacing legacy detection sensor data into the platform, and provisioning users and data feeds on the system.

Speaker Bio
Brian Fuller has over 25 years of product design and development experience in networking and transportation. Prior to joining Sensys Networks, Brian was Director of Engineering at GoDigital Networks, managing the extensive growth of the company’s xDSL technologies while designing patented systems for their broadband access products. Brian started his career with Lockheed Missiles and Space before going on to hold both technical and managerial responsibilities at a number of rapidly growing companies developing innovative technologies and products. Brian received a B.Sc. in Electrical Engineering from Penn State University.

■ Working Toward a Travel Time Scorecard in Chicago
Abraham Emmanuel, CDOT and Charlie McCarthy, TranSmart
Email: Abraham.Emmanuel@cityofchicago.org and CMcCarthy@transmartinc.com

Abstract:
Cities have long needed a way to accurately measure a baseline of traffic conditions, but also strive to consistently assess the changes. This initiative focuses on generating a measurable output showing how traffic conditions shift based on outside factors. To achieve this, the Chicago Department of Transportation (CDOT) has developed a monthly score card. This presentation will discuss the ongoing CDOT endeavor to create a
traffic scorecard that covers the entire city and is publicly accessible. The focus of this effort has been using speed data from various sources at a sub-segment level and aggregating the sources algorithmically into expected travel times.

The data sources include vehicle detection sensors, speed and red-light enforcement cameras, private vehicle probe data, and data from widely used websites and apps that provide travel time estimates. The local availability of each and confidence levels that accompany some data are used to aggregate and summarize this data into performance measures. As more scorecards become available, monthly variations are tracked and further integrated into the analysis. Percent change thresholds for performance measures are being evaluated and will soon lead to automated outlier notifications.

The travel time results are also used to evaluate performance of various transportation elements by considering correlation to vehicle speeds. For instance, the correlation between parking spot occupancy rates and adjacent travel times is now being assessed. The presentation will feature an introduction to the data being used, the performance measures included, the existing user interface and some initial results of the effort.

Speaker Bio:
Abraham Emmanuel is Deputy Commissioner for Traffic Safety at Chicago Department of Transportation (CDOT). He is responsible for Intelligent Transportation Systems, red-light and speed enforcement, traffic signals, and traffic crash records. Emmanuel holds an MS degree in Computer Science from the University of Chicago and an MBA from the Illinois Institute of Technology. He has Certifications in Mobile Application Development from Northwestern University and Database Administration from Oracle Corporation.

Charlie McCarthy, PE is a Transportation Systems Engineer with TranSmart Technologies / EJM Engineering. He received his BS and MS degrees in Civil Engineering from the University of Illinois in 2014. In his four years with TranSmart, he has specialized in traffic data analysis and ITS deployments. He has presented work in these areas at TRB and ITE conferences recently and is thrilled to be attending and presenting at ITSMW for the first time.
Big Data Integration and Advanced TSMO
Elyse Morgan, Illinois Tollway
Email: emorgan@getipass.com

Abstract:
The presentation focuses on Illinois Tollway TIMS system data integration and applications of Transportation Systems Management and Operations (TSMO).

Since July of 2018, the TIMS investments have focused on integration and assessment of external data, planning and optimization of data management strategies to support usability, and further optimization of decision support through metrics in support of TSMO. To fulfill these focus areas, the following program activities have been accomplished.

1. Major improvements to data source considerations and system report tools.
2. Highly improved data utilization and decision support.
3. Coordination and planning of long-term and short-term data collection strategies.

Results and Outcomes:
1. Waze integration is complete.
2. Three additional 3rd party data sources of crowd-source speeds and fully integrated: Here, Inrix, and Verizon.
3. Performance measure tools were substantially upgraded.
4. Timeline from requests for TIMS information to delivery to stakeholders has dropped substantially.
5. Availability of Operator specific metrics have been used to assessment I-90 Smart Road Operations and to support ATMS improvements, training needs, and considerations toward future advanced corridors.
7. Connected Vehicle data structures and pilot data collection are part of the ITS network and are actively being monitored.
As part of the process to integrate new data sources, coordinated efforts have been undertaken to integrate in a manner that utilizes the information efficiently.

Speaker Bio:
Elyse Morgan is the Illinois Tollway Traffic Operations Center (TOC) Manager. The TOC operates 24 x 7 x 365. Since 2011, she has been overseeing TIMS TOC and enhancements of TIMS system to include smart work zones, queue detection systems, active traffic management and various external data sources. In addition, she is the Tollway PM for the ITS design that is part of the Central Tri-state rebuilding and widening.
Luncheon Speaker
Moderator, Mathew Letourneau, ITSMW President

- Jerry Quandt, Executive Director,
  Illinois Autonomous Vehicle Association
  Email: j.quandt@ilavassoc.org

Speaker Bio:
Jerry Quandt is the Executive Director of the Illinois Autonomous Vehicles Association (ILAVA). The Association is a privately funded, not-for-profit organization dedicated to the advancement of autonomous vehicle technologies within the State of Illinois. The organization’s focus is to establish Illinois as the leader in the development, design, and application of the system-of-systems that will transform mobility as we know it. Jerry has worked most of his career in marketing and business transformation in a variety of verticals. Jerry’s passion is to continue to create consumer-centric solutions leveraging bleeding-edge technologies to increase people’s quality of life.

Mr. Quandt is a graduate of Holy Cross College and the DePaul University.
**Session #3A – Signal Operations 2**
Moderator, Scott Lee, ITSMW Secretary/President Elect

- **Arterial and Signal Analytics: Innovations from the US and Around the World**
  Rick Schuman, INRIX
  Email: rick@inrix.com

Abstract:
For nearly a decade, GPS-based probe vehicle data has enabled transportation system performance measurement at the regional, state and national levels. Initially, the focus was on characterizing freeway system congestion, trends and reliability. As both the underlying probe data and the analysis tools have improved, analyzing arterial network, corridors and signal operations is now possible. INRIX has been supplying probe data and, either directly or indirectly, the tools that agencies, consultants and university researchers are using to assess and track arterial performance. This effort spans across the US, and in many countries in Europe.

This presentation will share case studies from agencies around the US and the United Kingdom, ranging from track trends and changes over time along corridors, to assessing corridor and system reliability, and prioritizing corridors for re-timing resources. Additionally, the presentation will highlight emerging applied research and early implementation of approaches that leverage GPS-based individual trip (vehicle trajectory) data to facilitate both improved corridor assessment and, for the first time, analysis of individual signalized intersections.

These use cases and applications can be used anywhere in the US, thus has direct applicability to all ITS Midwest agencies with signal and arterial management responsibilities. These approaches offer both a cost-effective alternative and compliment to the infrastructure-based Advanced Traffic Signal Performance Measures (ATSPM) concepts.

**Speaker Bio:**
Rick Schuman is INRIX’s Vice President for Public Sector, Americas. Rick started INRIX’s Worldwide Public Sector business in 2006 and has served as the Project Manager for the INRIX’s I-95 Corridor Coalition’s Vehicle Probe Project from inception in 2008. Rick also serves as the project
manager for INRIX’s provision of the NPMRDS to FHWA that serves as the default speed archive for federal congestion reporting requirements. Rick has been deeply involved in ITS and transportation operations and planning issues for over 25 years and was an original staff member of ITS America from 1991-1999.

- **Continuous Tracking Vehicle Detection for Dilemma Zone Protection**
  Brent Padilla, Wavetronix
  Email: brent.padilla@wavetronix.com

Abstract:
13 Years ago, Wavetronix created an out of the ground radar detector to emulate advance loops that eliminated junction boxes, and long cable pulls but also reduced the amount of time workers need to be in the road. Shortly after we realized traffic engineering benefits of our radar as well. By extending green time dynamically instead of statically like a loop detection Wavetronix Radar can drastically minimize the number of red-light runners and accidents at high speed intersections. This presentation will focus on the technology that allows us to protect vehicles and trucks at high speed intersections. We’ll reference a few studies that collaborate a reduction in red light running.

Speaker Bio:
Brent Padilla loves helping traffic engineers and consultants find solutions to their traffic problems. He has worked in the industry for over 15 years and is passionate about improving safety and efficiency at intersections.

- **The New Signal Priority System Requirement for the Connected Vehicle Future**
  Jon Ringler, Econolite
  Email: JRingler@econolite.com

Abstract:
Current emergency vehicle preemption and transit priority systems are not able to provide the dynamic signal priority, nor network integration, needed for all emergency vehicles. To enhance safety, through reduced emergency vehicle response times, and efficient intersection control, a new approach to signal priority is needed. It will have to integrate with existing and future network systems, particularly the connected and automated vehicle (CAV)
networks, and it will have to prevent the traffic gridlock and congestion that is often left in the wake of current signal preemption events.

This presentation will detail a new approach to emergency vehicle preemption and transit signal priority that integrates CAV technologies, including GPS and CAD AVL systems, including an example of a new funding source. This presentation will demonstrate how a route-based priority solution can provide intersection ETA to controllers along an entire route. It will also show how this also offers a unique feature to flush standing queues of traffic in advance of arriving priority vehicles to further enhance safety and efficiencies.

Speaker Bio:
Jon Ringler is Econolite's Vice President, Systems Integration, responsible for leading the Company's Transportation Systems Integration Group. He has served on the ITS Georgia Board and ITS Midwest Board of Directors. He is a Past President of ITE Illinois and a former ITE District IV Vice Chairman. He is a registered Professional Engineer in Georgia and received his Baccalaureate of Science Civil Engineering, Purdue University 1984. After spending a tour of duty with the USAF, Jon joined the Industry as an Assistant Traffic Engineer in Anaheim, California. Ringler joined Econolite in 2011 and is based in Atlanta, Georgia.
Session #3B – Connected and Autonomous Vehicles 1
Moderator, Chuck Sikaras, ITSMW Past Board Member

- Ohio Statewide Framework for CV/AV Deployments
  Preeti Choudhary, John Gray, AECOM and Nick Hegemier, Drive Ohio
  Email: preeti.choudhary@aecom.com

Abstract:
DriveOhio initiated a Systems Engineering Analysis (SEA) to create a statewide framework to guide Connected Vehicle and Automated Vehicle (CV/AV) technology deployments across the state. This framework will promote consistency and interoperability among CV/AV technologies and supporting systems as they are implemented through ongoing, planned, and future projects by a wide range of stakeholders.

These projects represent a cross section of initiatives in urban, suburban, and rural communities. They include the deployment of replicable CV/AV applications that enhance vehicle-to-infrastructure (V2I) and vehicle-to-vehicle (V2V) safety and efficiency, the exchange of center-to-center (C2C) agency data, and ultimately the promotion of safety and mobility for all travelers. During this session, attendees will hear from the project team about how the project is proceeding, what has been a challenge so far and how those challenges are being overcome.

Speaker Bio:
Nick Hegemier, Managing Director of Infrastructure, DriveOhio. Nick is currently the Managing Director of Infrastructure for DriveOhio, a center formed within OhioDOT to focus on Smart Mobility and the ways that it can be utilized to address mobility challenges within the state. His current duties include development of standards for all infrastructure and vehicle components of connected and automated vehicles to be deployed in the state. His goals are to ensure interoperability among devices that reside inside and outside of the state. Nick also chairs a working group within DriveOhio focused in the area of First/Last Mile strategies. He received his degree in Electrical Engineering from The Ohio State University and has over 16 years of ITS experience.
John Gray, Associate Vice President, AECOM
John is an ITS practice leader and Associate VP at AECOM with 26 years of experience. He specializes in Traffic Operation Services, Managed Lane strategies, and Congestion Mitigation. He has had the opportunity to work on innovative projects Nationally and Internationally, in places such as Pakistan, Mexico City, Los Angeles HOT Lanes, and, of course, the Ohio Statewide CV/AV Framework project. He is passionate about congestion mitigation and providing information to assist all in a safer and more efficient travel environment.

Preeti Choudhary, Senior ITS Manager, AECOM
Preeti is a Senior ITS Manager with a diverse range of experience on ITS, transit, and traffic planning and engineering projects. She has worked with small and large transportation agencies across the country to plan for, deploy and promote innovative mobility options. Preeti is passionate about providing multimodal environments where everyone can move easily, safely and efficiently.

- Illinois Tollway CV Pilot Study
  Aimee Lee, Illinois Tollway and Amarpal Matharu
  Email: alee@getipass.com and amatharu@getipass.com

Abstract:
The Illinois Tollway began a pilot program on Connected Vehicles (CV) in 2018. The original concept was a simple, low cost test to determine what unique issues would be encountered in implementing a CV system. There are two primary goals to the CV Pilot: lessons learned on how to install and deploy Roadside Units (RSUs); and observe market penetration of connected vehicles on the Tollway system.

As of today, a system of eight RSUs have been installed and remain operational on a ten-mile section of I-90 between Arlington Heights Road and Bartlett Road. The Tollway has been collecting data from a HELP truck and random motorists since the fall of 2018.
This presentation will provide background details and a status update on the Tollway's Pilot Program - location and scale, and lessons learned to date. Lessons that will be addressed include: software approach, testing setup and strategies, device installation, Basic Safety Message exploration, and data analysis. This will include range and data quality.

Speaker Bio:
Aimee Lee is the Senior Manager of Strategic Planning and Programming at the Illinois Tollway. She is responsible for long-range planning and helping the agency better anticipate emerging industry trends. Aimee’s prior positions include Regional Planning Manager at the Northeastern Illinois Regional; Transportation Authority and Strategic Planning Manager at the Chicago Transit Authority. Aimee hold a MEng degree in Transportation and Highway Engineering from the University of California, Berkeley, and a BS in Civil Engineering from the University of Illinois at Urbana -Champaign.

Amarpal Matharu works with the Illinois Tollway as their Traffic Operations Manager. He oversees planning, design and implementation of ITS devices and Traffic Operations for the Illinois Tollway. Prior to the Illinois Tollway, Mr. Matharu worked with CH2M HILL, AMEC and Edwards and Kelcey in New York City. Mr. Matharu holds an M.S. in Civil Engineering from the University of North Carolina, an M.B.A. in Management Information Systems from the City University of New York. He is a Professional Engineer in Illinois and Wisconsin. Mr. Matharu has over 25 years of experience in roadway planning and design, ITS, traffic operations and safety. Mr. Matharu has interest in CV/ AV technologies. Mr. Matharu was the Past President for the Illinois Section of the Institute of Transportation Engineers in 2008.
Session #4A – Smart Cities 1
Moderator, Nick Hegemier, ITSMW Board Member

- Empowering Cities with Data and AI to Make Smart Decisions
  Lexus Hughes, Miovision
  Email: lhughes@miovision.com

Abstract:
To build a smart city from the ground up, healthy intersections are necessary in order to create a solid foundation. One way to look at the overall health of intersections lies in the proper use of Automated Traffic Signal Performance Measures or ATSPMs. Implementing high-resolution data collected at the intersection can help agencies assess traffic networks to increase mobility, reduce congestion, and create safer streets for citizens. With the Miovision TrafficLink platform, cities are able to communicate with their signals remotely in order to better manage maintenance and operations, as well as collect SPaT data, Travel Time, and 24/7 Turning Movement Counts. They are also able to use multimodal video detection from TrafficLink to actuate their traffic signals. Artificial Intelligence (AI) and deep learning algorithms are fundamentally changing the way video detection works. From better performance in difficult conditions, to improved operations, Miovision has changed the way video detection operates and is helping teams increase their capacity to solve traffic problems. Join Miovision as they share some real-world practical examples of how some cities have leveraged the highly rich data collected and AI detection from Miovision TrafficLink to improve the health of an intersection.

Speaker Bio
As Market Development Executive at Miovision, Lexus is passionate about implementing smarter, data-driven, and cost-effective traffic signal solutions for cities. She is responsible for helping develop, service, and grow relationships with Miovision's partner sales representatives. She collaborates efforts with cities, counties, states, and academia to understand their traffic operations, citizen safety, and mobility challenges.
Abstract:
Future traffic control strategies require new levels of real-time data aggregation and measures of effectiveness. This is because the traffic control will need to actively manage and communicate the comprehensive data required to enhance the efficiency of today’s roadways, and properly prepare for connected and automated vehicles.

This next generation of sensors will also need to support the data requirements for continuous traffic signal optimization and real-time adaptive systems that connected and automated vehicle systems will rely upon for safe and efficient travel.

This presentation will detail the critical capabilities and high-resolution data that next-generation sensors will have to provide to support the traffic management capabilities needed in the future. This includes the high-resolution traffic data (arrivals on green, flow rates, approach delay, volume, capacity, etc.) needed for programs, including Purdue University Coordination, signal performance measures, as well as cycle optimization, offset and splits that will enable real-time adaptive signal control.

Speaker Bio:
Mr. Mark Fayta serves as the Director, Northern Region for (23) States at Econolite. Mark earned his Bachelor’s Degree in Electronic Engineering in 1983. Since then he has over 35 years of professional experience with manufacturing, engineering, product design & development in the field of traffic and transportation systems. He has served as a product design engineer and product manager for detection systems of which include: inductive loop, weigh in motion, traffic counting/classification, video image sensing, radar-based detection, traffic signal control and central system software. Mark has held many different positions from sales to engineering to company owner.
Rethinking CV Deployment Planning to Keep Up with Rapidly Changing Technology
Steve Sprouffsak, Kapsch
Email: steve.sprouffske@kapsch.net

Abstract:
Transportation agencies are grappling with the changing transportation environment as the commercialization of Connected and Autonomous Vehicle Services rapidly advance. There is a growing disconnect between the methodical planning processes dictated by the use of public funding and the breakneck speed at which technology is moving. CV adoption by public agencies has been exceedingly slow due to decision making paralysis over technological, regulatory, and funding issues. The few agencies who have successfully deployed CV solutions are better equipped to address public needs, have well defined use cases which support these needs and provide sustainable and scalable services, and utilize repeatable, efficient deployment processes. This presentation explores the world of CV deployments and suggests best practices to expedite and accelerate the adoption of CV and provide scalable and sustainable services to support the emerging connected mobility ecosystem.

Speaker Bio:
Steve Sprouffske brings over 23 years of experience in a range of technical areas, including application and embedded software development, networking, and network security. Steve is responsible for the Kapsch TrafficCom North America Connected Vehicle business development, commercial strategy, solutions consulting, system design and integration, product requirements, and related standards development. His broad knowledge encompasses the entire Kapsch portfolio spectrum which includes 5.9 GHz DSRC, 915 MHz, Video and Sensor technologies. Steve participates in numerous industry and standards organizations. Presently he is the Convener of ISO TC204 WG16 and an Executive Board member of the Connected Vehicle Trade Alliance.
Why the Future of Traffic Management Depends on IoT-ITS Integration
Joshua Fink, Econolite
Email: dillenbu@uic.edu

Abstract:
The maturation of industries associated with Connected and Automated Vehicles (CAV), Digitization, Smart Cities, and the Internet of Things (IoT) is reaching a “Tipping Point”. All of these industries, concepts and technologies have been around for a decade or more with some early deployments, proof of value, and pilot projects already deployed. At the forefront of these challenges one primary area is the focus of this presentation: the global issues of increasing traffic congestion, lost productivity due to congestion, and traffic safety.

During the transition from analogue 3G networks to digital 4G/Wi-Fi networks, we have seen the proliferation of the connected mobile device and global economic value they have created. The next big digital wave in terms of sheer quantity (estimated between 1-2 Billion devices), that will be connected and integrated into the IoT and Smart Cities over the next five years including digital infrastructure and surface vehicles of all types.

This presentation will detail the importance of how high-resolution data from a network of sensors, detectors, controllers and software systems will be the backbone and anchor tenant for any larger smart ITS connected traffic management deployment, including how the IoT integration will enable new realms of traffic control capabilities. The focus will also feature the future technology and connectivity requirements of these systems to safely manage the very long transition period when the roadway operators will have to manage CAV and non-CAV vehicles.
Speaker Bio:
Joshua Fink joined Econolite in Spring of 2018 as Channel Partner Manager. Located in the Midwest, his chief responsibilities include working with Econolite's distributors in MI, OH, KY, PA, WV. Josh previously spent four years with AECOM in southeast Michigan, where he worked extensively with the Macomb County Department of Roads Traffic Operations Center. Josh brings his engineering skills and expertise to Econolite, receiving a Bachelor's and Master's in Civil Engineering from Michigan State University and Western Michigan University. Josh is passionate about the traffic industry, and always strives to find data-driven, localized solutions for local challenges.
Private Sector Executive Panel
Moderator, David Zavattero, ITSMW Past President

- **David Leopold, Director, City Tech Collaborative**
  Email: [David.Leopold@citytech.org](mailto:David.Leopold@citytech.org)

Speaker Bio:
David Leopold is the Director of City Solutions at City Tech Collaborative. In this role, he facilitates cross-sector collaboration among universities, government, and industry to drive innovative solutions to complex urban challenges. Prior to joining City Tech in 2015, David was Program Manager for the Chicago Department of Transportation Streetscape and Sustainable Design Program, where he directed nearly $100 million of policy, planning, and construction projects ranging from pocket parks and public markets to streetscapes and master plans. David has a bachelor’s degree in operations and strategic management from Boston College and a master’s in Urban and Regional Planning from the University of Michigan. He is a former lecturer at the University of Illinois, Chicago and currently serves on the board of Foresight Design, a nonprofit that provides education and community building for sustainable transformation in the Midwest.

- **Douglas Pancoast, Head of R&D, Urban Mobility Solutions, Bosch**
  Email: [Douglas.Pancoast@us.bosch.com](mailto:Douglas.Pancoast@us.bosch.com)

Speaker Bio:
Douglas is a graduate of the University of Kansas School of Architecture and Urban Design (BArch 1991) and Cranbrook Academy of Art (MFA Arch 1995). He has worked for firms including Richard Meier and Partners, 1100 Architect, BlackBox Studio at SOM, and agency.com. Douglas heads the research and development for the Urban Mobility Solutions unit at Bosch.
Finn Swigley, Senior Solution Architect, HERE
Email: finn.swingley@here.com

Speaker Bio:
Mr. Swingley is a Customer Solution Specialist in Transportation and Logistics at HERE. Finn has developed and shares deep knowledge of HERE products and solutions that serve the transportation and logistics sector. He provides technical pre-sales support to account executives serving the transportation and logistics sector. In addition, Finn details product requirements for development teams and works with those teams to make sure products and features are delivered. This includes defining and scoping solution opportunities to grow business in the sector and assessing market needs to influence product development improving the reach and value of HERE products within the transportation and logistics sector.

Jerry Quandt, Executive Director, Illinois Autonomous Vehicle Association
Email: j.quandt@ilavassoc.org

Speaker Bio:
Jerry Quandt is the Executive Director of the Illinois Autonomous Vehicles Association (ILAVA). The Association is a privately funded, not-for-profit organization dedicated to the advancement of autonomous vehicle technologies within the State of Illinois. The organization’s focus is to establish Illinois as the leader in the development, design, and application of the system-of-systems that will transform mobility as we know it. Jerry has worked most of his career in marketing and business transformation in a variety of verticals. Jerry’s passion is to continue to create consumer-centric solutions leveraging bleeding-edge technologies to increase people’s quality of life.

Mr. Quandt is a graduate of Holy Cross College and the DePaul University.
Abstract:
Since Lake County PASSAGE opened nearly 15 years ago, Lake County DOT (LCDOT) continually worked to stay on the leading edge of new technologies. Over the past year, LCDOT made some significant updates to the PASSAGE system, which includes new updates to our website, smartphone apps, and integration with Waze.

The smartphone applications hadn't been updated since 2011, making them outdated compared to modern apps. Due to cost savings and in-house expertise, LCDOT was able to update the apps, which gave us the unique ability to structure them for enhancements and updates needed in the future. Over the past few months, LCDOT has released updates to enhance some existing features, including better ways of receiving incident/roadwork information and intersection camera snapshots.

The newest feature update to our website and smartphone apps includes the ability to track and get real-time information about LCDOT plows. Users can see the location of the snowplows, as well as status information during snow removal operation. Furthermore, we will be taking snapshots looking through the front windshield of each plow and posting that to the website and apps, giving users the ability to see real-time conditions.

Lake County has also recently executed a partnership to integrate Waze into the PASSAGE system. This integration will allow TMC Operators to get real-time incident notification from Waze users, and in return, PASSAGE is sending our incident and roadwork information back to Waze. The partnership has the added benefit of using Waze travel time data to help manage traffic.
Speaker Bio:
Ryan Legare, Lake County DOT has been with the Lake County Division of Transportation for over 10 years, with the most recent 4 years as the TMC manager. His experience includes maintaining all the core ITS equipment, creating various programs for processing traffic counts and archiving Waze travel times, and redesigning the PASSAGE smartphone apps. Ryan received a BA in History from Northeastern Illinois University.

ICMS as Integrations of Systems
Brent Becker, Southwest Research Institute
Email: brent.becker@swri.org

Abstract:
An Integrated Corridor Management System (ICMS) is typically an integration of several different systems. The systems integrator brings together the systems and expertise from a number of disciplines to produce an ICM. Southwest Research is currently working as the systems integrator on such a project in Florida. While the Florida Department of Transportation (FDOT) is the client, the Regional-ICMS (R-ICMS) integrates data and systems from multiple agencies and regional entities. We will discuss the role of the systems that comprise a comprehensive ICM and address the ICM aspects of each of their roles especially traffic modelers, traffic modeling / simulation software vendors, traffic signal system managers (stakeholder management), diversion route planners, decision support system creators and the systems integrator.

Speaker Bio:
Mr. Brent Becker has 14 years of experience in the Intelligent Transportation Systems (ITS) field which includes over 12 years of experience supporting Advanced Traffic Management System (ATMS) software development and deployments by leading and performing support roles on large ITS projects. He has been involved in the installation, integration, and testing of ATMS software for multiple clients at the State, County, and City levels. He is currently an R&D Manager overseeing multiple teams and projects involved in ITS software development and support, including the ICMS project for FDOT District 5 where SwRI is the systems integrator.
Abstract:
Wireless technology has become increasingly popular in the ITS industry. When used properly it can be the most effective tool for advancing transportation. The more cost-effective communication systems become and the more bandwidth that is made available for use in the ITS space, the safer and more successful the transportation industry can be implementing connectivity products. The increased bandwidth of newer protocols opens the door for more cameras, DCMS, adaptive signals, and advanced products in general. However again this all hinges on high speed reliable connectivity and seasoned integrators to avoid the many pitfalls.

Seasoned integrators have formulated recipes to mitigate all of the issues that plague wireless networks. Smarter integrators have made grounding design and surge arrester technology a top priority. It is important to customize wireless products to the precise needs of the ITS market rather than buying off of the shelf foreign cookie cutter devices. The vast majority of unlicensed radios have a primary purpose of residential internet applications.

Performing in depth line of site surveys and network feasibility assessments from the very beginning is crucial for a project’s success. Some of the best added features in custom radios greatly reduce the amount of inference by using intelligent options such as dynamic frequency selection, inference mitigation, and synchronization for frequency reuse. In summary it is vital to formulate a method that is well tailored around the custom needs of the industry and the particular geography where the systems are expected to perform.
Speaker Bio:
Almost 2 decades of experience in Data and RF System Design. Effectively led cross-functional teams to successfully deliver state-of-the-art systems. Demonstrated success driving growth in targeted markets through implementation of key projects. Solid leadership skills. Adept at communicating with management, vendors, and internal departments to coordinate overall efforts. Experience in all levels of networking, data communications, and wireless internet service provisioning. Highly skilled implementation of large-scale WAN project deployment where cross platform integration has become integral. Proficiencies in all aspects of site planning, analysis, acquisition, surveys, construction, and tower erection.
Abstract:
There are more than 300,000 traffic signal systems across the United States with 2,550 added each year and all containing varying levels of network access and embedded security. Traffic managers and government stakeholders may be unaware of cyber risks to these systems and connected devices relaying data. Southwest Research Institute (SwRI) is researching cybersecurity weakness in Transportation Management Systems (TMSs) as part of program with the Transportation Research Board (TRB) to help state and local agencies address cyber-attack risks on transportation systems and those posed by connected vehicles.

As part of this research, a Web Guidance Tool (WGT) has been developed to help transportation agencies assess their risks as part of the NIST’s Risk Management process and gain an understanding of their TMSs current cyber-security standing. The WGT accomplishes this through gathering information regarding the TMSs current field deployment of devices, calculating risk associated with devices and how they are deployed, and provides recommendations for areas to improve their security practices while displaying this to the end user in an easily understood format. With these recommendations, an agency can then better understand potential flaws in their field deployment and seek to improve their security posture. This presentation highlights the program background, the WGT developed as part of this program, and the cryptographic methods implemented in the WGT.

Speaker Bio:
Ms. Ramon is a Senior Research Engineer with hardware and software development and cybersecurity experience at SwRI for cyber physical systems related to risk management, automated technologies, data analysis, and penetration testing. She has managed several security
assessment and risk modeling projects utilizing established standards and best practices across several domains, such as Automotive (Connected and Automated Vehicles), Critical Energy, Smart Grid, and Intelligent Transportation Systems (ITS) over the last 8 years at SwRI.

Jesus Martinez is a Principal Engineer with Southwest Research Institute (SwRI). At SwRI he is responsible for managing Intelligent Transportation System (ITS) projects and promoting SwRI capabilities to potential clients. Jesus received an Associate of Arts in Electrical Engineering from Miami Dade College, his Bachelors of Electrical/Computer Engineering from the University of Miami and an MBA from Florida International University. He is a registered engineer in Florida, Texas and Arkansas. He is also certified as Project Management Professional (PMP) and a Past President of ITS Florida.

- **Transportation Technology and smart Communities**
  James Gilbert, GBASI
  Email: JGILBERT@GBASI.COM

Abstract:
The presentation will focus on Transportation Technologies as Smart Communities, Active Mobility, and other data intensive systems integrate into every aspect of our lives.

We will discuss how C/AV and Smart Communities will have a high dependence on existing and envisioned transportation communication networks for critical data sharing, for the distribution of information both to and from vehicles, drivers, and other roadway users, and for other intelligent systems linkages and expansion. We will also outline how to create partnerships and processes to build, manage and operate these new multi-agency, multi-tasked communication systems and networks.

Target audience would be any government official or engineer that designs, maintains, or operates any intelligent transportation related infrastructure or system, especially if these assets currently are or could be connected to a regional network for data and information sharing. We will discuss the early steps necessary to create a management team to make the big decisions concerning the operation of a shared network, including potential funding options and Standard Operating Procedures. We will identify some major areas of concern and highlight possible steps to manage the
challenges of collaboration between diverse parties that each have different missions and needs but can support each other when the right balance is achieved. Focused on Smart Community implications of Connected and Autonomous Vehicle needs of public systems including What’s next?

Speaker Bio:
As a practicing transportation engineer for over 30 years, and as an active member of both ITS Heartland and ITS America, Jamie has seen significant changes in the transportation industry over the past 20 years. Jamie is an Adjunct Professor for the University of Kansas in Traffic Operations. He also presents at numerous professional conferences annually, discussing how connected vehicles, autonomous vehicles, ride sharing companies, and the availability of Big Data will be driving how all existing and new transportation systems are expected to be managed and operated.

- Intersection Insights: Integrating Intersection Data for Traffic Operations and Planning
  Preston Judkins, Parsons
  Email: preston.judkins@parsons.com

Abstract
In urban environments intersections have a huge impact on mobility and safety. Proper Management of intersections can help improve throughput and reduce crashes. Traditional analysis of intersection operations focuses on one- or two-dimensional data at a time. The City of Chicago is taking a multi-dimensional approach in integrating and presenting disparate data points on intersection events. Geographical blending of dissimilar data helps the Traffic Engineer to answer questions like what the 311 non-emergency service requests were available prior to a traffic crash, or the impact of signal offset and coordination on safety and throughput. Following data points are made available for signalized and non-signalized intersections, where applicable, for the area up to the mile radius around the intersection.
  - Crash data and original police report with drawings for up to 15 years
  - 911 calls for the area
  - Open and historical 311 requests
  - Construction Permits issued for the area around the intersection
  - Intersections maintenance work orders - Signals and stop signs
  - Real time signal operations data and remote control of the signal
. Video feeds
. Signal Timing plans
. Historical and Current Turning Movement Counts
. ATSPM

Data is integrated in citywide Advance Traffic Management Systems to get a 360° view into Intersection performance.

Speaker Bio:
Preston Judkins manages ITS and ATMS deployments across the Midwest. He specializes in system integration and data analysis.
Real-Time Third-Party Data for Maintenance of Traffic During Construction
Scott Carlson, Iteris
Email: sec@iteris.com

Abstract:
Iteris is using an innovative approach for maintenance of traffic by leveraging third party data to gather network wide traffic speeds on freeways and arterials to visualize traffic data, measure performance in real-time, and effectively summarize bottleneck/contour reports. For the $1.9B I-405 Improvement Project within Orange County, California, the Project's Transportation Management Plan required minimizing traffic impacts during construction by keeping delays on freeway segments and arterials under 30 minutes, over the time it normally takes to traverse that same segment during standard times. On both freeway and arterials, the team is required to monitor and mitigate traffic delays causing significant public disruptions and provide immediate reports to the agency’s public relations staff.

With third party data, users gather the picture of the entire network to identify problem areas in an efficient and effective method; such as determining what is causing and how to manage congestion. Users map detour routes and monitor real-time travel time during freeway closures to ensure no delay exceeded the mandated 30-minute threshold; observe short- and long-term effects of roadway closures and construction staging on the transportation network; and measure corridor performance during and post construction activities such as lane reductions and mitigation implementations.

Iteris utilizes ClearGuide(tm), a performance measure software, to visualize data, run analytics, and increase stakeholder communication between Contractors, Caltrans and the public, to compare construction traffic conditions to typical conditions, demonstrate past performance measurements for planning future closures, and quickly identify congestion hotspots and verify mitigation effectiveness all at once.
Speaker Bio:
Scott Carlson serves as Vice President and Assistant General Manager for Iteris’ Transportation Systems division (Western Region) and has been with the firm since October 2000. He has over 26 years of experience in providing clients with innovative solutions to improve mobility and safety. Scott manages Iteris’ Western Region of Systems that includes 80 transportation planners and traffic engineers in offices throughout the west half of the United States, including Iteris’ St. Charles IL office. He also serves as Iteris’ National Practice Leader for solution service areas of ITS Design Build, Smart Communities and Transportation Infrastructure-as-a-Service.

He is a graduate of the University of Wisconsin Madison and lives in Austin Texas.

- **Deploying Smart Work zones in Just a Few Minutes**  
  Todd Foster, Ver-Mac  
  Email: todd.foster@ver-mac.com

Abstract
Smart Work Zones (SWZ) are now becoming common place throughout America. What if you could now deploy simple SWZ applications with non-technical personnel within just a few minutes? This could allow the improved safety and mobility offered by SWZ’s to be used for maintenance operations, nightly lane closures, special events, and even moving operations.

Now simple Queue Warning Systems and even Zipper Merge systems can be deployed in less than 10-15 minutes, monitoring and warning drivers up to 3 miles in advance of critical areas and allowing more time for other important activities. Learn more about this easy to deploy safety systems that can make your next work zone safer (by 15-45%) at a very affordable cost.
Speaker Bio:
Todd Foster is the Vice President of ITS Engineering for Ver-Mac, Inc. Todd designs and manages portable ITS systems. With over 30 years of broad experience in traffic and transportation planning and engineering, Todd has developed and managed many types of traffic studies, designed roadways and traffic signal systems. Todd is an active member of ITS America and often presents on Work Zones ITS at conferences across America. Prior to joining Ver-Mac, Todd worked at the City of Bloomington, MN and at the civil consulting firm of Bonestroo & Assoc (now owned by Stantec).
Tire Safety Screenings at Commercial Vehicle Inspection Stations
Tom Der, IRD, Inc.
Email: tom.der@irdinc.com

Abstract:
Transportation agencies, enforcement agencies, toll road operators, and commercial carriers all wish to adopt new technology that improves highway safety. Commercial vehicles operating with flat, missing or mismatched diameter tires present a safety risk as load distribution and handling are negatively affected. These tire anomalies reduce braking performance, reduce tire life, and increase the risk of catastrophic tire failure. They can also accelerate damage to pavement due to increased loads from adjacent tires on single axles or in axle groups.

Physical inspection of all tires on a vehicle is time consuming and impractical without the efficiency provided by an automated screening technology. International Road Dynamics (IRD) has developed an in-road sensor technology that provides the ability to screen vehicles for tire anomalies in real time and at highway speeds. Data from the in-road sensors is processed by the roadside electronics and passed to the inspection station software, providing inspectors with graphic representations of the suspect tires associated with each vehicle.

Together, the in-road tire sensors, roadside electronics, and operator software create a tire anomaly and classification system (TACS) that has the potential to ensure commercial vehicles are moving freight efficiently but also not posing a risk to other road users due to unsafe tire conditions. This paper describes TACS features, installation and implementation for pre-screening commercial vehicles in Illinois.

Speaker Bio:
Mr. Der is the Vice President of ITS Solutions and Engineering for International Road Dynamics (IRD) where he has worked for 24 years. In his current role, he is responsible for developing transportation solutions for the public and private sectors to improve traffic efficiency and safety, specifically in the areas of commercial vehicle screening, traffic data
collection, and bridge monitoring systems. He was also a Traffic Management Engineer with the City of Saskatoon (Saskatchewan, Canada) managing transportation plans, sign infrastructure, lane markings and traffic closures. He holds a Bachelor of Science in Civil Engineering and is a registered Professional Engineer.

**WisDOT LED Retrofit Experience**

Mike Scarmon, KL Engineering and Ahmet Demirbilek, WisDOT  
Email: MScarmon@KLEngineering.com

Abstract:  
The presentation will focus on statewide LED retrofit projects at WisDOT's Bureau of Traffic Operations (BTO), aimed at modernizing and upgrading the State's roadway lighting systems. The Department is on track toward a goal of upgrading to 75% of the DOT's 21,000 (approximately) roadway lights to a modern LED standard. Upgrading the State's roadway lighting to LED will result in significant reductions in energy use, less required maintenance, and lower cost infrastructure requirements.  

Other ongoing BTO projects include: evaluating the benefits/costs of lighting control systems, statewide Focus on Energy rebate program, establishing new luminaire equipment specifications, and reviewing the impacts of a 4K color temperature standard. The presentation will provide more examples of how BTO is keeping pace with rapidly emerging technology of LED roadway lighting.

Speaker Bio:  
Mike Scarmon is a graduate of the South Dakota State University and has 18 years of experience in the field of transportation engineering. Mike leads Traffic Engineering Services for KL Engineering and has extensive experience in identifying solutions that provide acceptable operations for vehicle and multi-modal users. He has specific expertise in traffic modeling, signals and lighting, corridor studies, alternative intersection design, and advanced transportation solutions. Mike is recognized by the Wisconsin Department of Transportation as a Level 2 Qualified Roundabout Designer. He also specializes in traffic and safety studies, intersection design, and pedestrian-bicycle friendly design.
WisDOT LED Retrofit Experience
Ahmet Demirbilek
Email: ahmet.demirbilek@dot.wi.gov

Speaker Bio:
Ahmet started his transportation engineering career in Istanbul-Turkey as a railroad electrical engineer. After completing his Ph.D in transportation engineering he was invited as a port doctoral fellow at Tokyo, Japan Kogakuin University and later on at Marquette University at Transportation Research Center. After university experience Ahmet led various WisDOT projects at DAAR Engineering and Buveck Consultant. Since April 2008, he has been leading multiple WisDOT mega projects including Marquette Interchange and Mitchell Interchange Construction as an electrical team leader. Ahmet joined the Bureau of Traffic of Operations in 2012 as the State Electrical and Lighting Systems Engineer. He is currently responsible for the development of Electrical Engineering Policy and Illumination Standards for the design, operation, and maintenance of all WisDOT electrical installations. Ahmet has over 20 years of experience serving as an electrical engineer, ITS Wisconsin past President, and Vice Chair of AASHTO Roadway Lighting Subcommittee. Ahmet holds PhD, MS and BS in Electrical Engineering and MBA with an emphasis in transportation.

Surge Protection for Intelligent Infrastructure
Robert Harmon, Citel
Email: rharmon@citel.us

Abstract:
ITS equipment is becoming increasingly sensitive and is simultaneously being deployed in more high risk and adverse environments. The infrastructure is highly susceptible to transients and disturbances caused by lightning, switching, and other power quality events. These events can cause detrimental consequences on all networks (AC, DC, Telecom, Data, Coaxial) leading to network disturbances, downtime, loss of data, and even the destruction of sensitive equipment.

Surge Protective Devices (SPDs) make it possible to easily protect ITS equipment. By conducting a risk analysis on specific ITS systems, the level of protection needed in order to maintain optimal, safe functionality, and to prevent costly repairs or equipment replacement is easily determined. It’s
a small step that can have a big impact on the overall effectiveness of ITS systems.

A simple protection technique called the “Box Concept” is a useful tool in developing a surge mitigation solution that will keep today’s intelligent infrastructure up and running tomorrow.

Speaker Bio:
Robert has more than 20 years of Sales and Application experience working in the Distributive Power, Process Control, Industrial Automation, Lightning Protection, Surge Protection, and Grounding Industry. Robert worked for companies such as, Emerson Network Power, Lightning Eliminators & Consultants, Emerson Process Management, Micro Motion, Rosemount, and Citel Surge Protection. Robert earned a Master’s of Science in Organizational Leadership from Regis University in Denver Colorado. Areas of focus were: Organizational leadership, Project Management.
Public Sector Executive Panel
Moderator, David Zavattero, ITSMW Past President

- **Omer Osman, Secretary, Illinois Department of Transportation**

Speaker Bio:
Omer Osman was appointed Transportation Secretary by Gov. JB Pritzker in 2019. His role as secretary reflects three decades of experience at the Illinois Department of Transportation in engineering and management.

Moving through the IDOT ranks gives him unique insight into department operations and scope, funding challenges and opportunities, as well as the need for strategic maintenance and infrastructure growth to support economic development and travel for Illinois residents.

Under his leadership, IDOT continues to champion diversity. He remains an advocate for eliminating barriers and increasing access to IDOT partnerships with Disadvantaged Business Enterprises and minority- and female-owned businesses.

His vast experience in transportation includes the management and advancement of complex projects and the assessment of current resources to inform funding and programmatic needs to create a multimodal system for the 21st century.

A native of the Sudan, Osman came to the United States to study civil engineering at Southern University and A & M College in Baton Rouge, Louisiana. He also earned a master's in civil engineering with an emphasis in construction management at Bradley University in Peoria.

- **Rick Fedder, Chief Operating Officer, Indiana Toll Road**

Speaker Bio:
Rick holds a Bachelor's Degree in Business Administration with a concentration in Management from St. Joseph's College, Indiana. Prior to becoming Chief Operations Officer, Rick was the Human Resource Director for the Indiana Toll Road Concession Company from 2006 to 2014.
Joe Crabtree, Director of the Kentucky Transportation Center at the University of Kentucky

Speaker Bio:
Joe Crabtree is Director of the Kentucky Transportation Center at the University of Kentucky. Dr. Crabtree has 31 years’ experience in transportation research. Prior to becoming Director of the Center (in March of 2010), he spent 18 years managing the Center’s research activities in the area of Intelligent Transportation Systems, with an emphasis on advanced technologies for commercial vehicle monitoring and enforcement. From 1983 to 1987, he served as a nuclear propulsion officer in the United States Navy. He also spent 4-1/2 years in Illinois, working for Mobil Chemical Company. He is a native of Lexington, Kentucky, and a graduate of the University of Kentucky. He and his wife Lisa have been married for 40 years. They have two adult children and two grandsons.

Lloyd MacAdam, Chief Engineer, Ohio Department of Transportation

Speaker Bio:
Lloyd MacAdam is a 21-year veteran with ODOT’s management team. Prior to his appointment as ODOT’s Chief Engineer/Assistant Director of Transportation Policy in February 2018, he served the department as a District Deputy Director for D-11, Regional Projects Manager for ODOT's Northeast Ohio's Real Estate Office in Akron. He also served as Production Administrator for District 11 for over 5 years. Prior to his career in ODOT, Lloyd worked for the City of Akron Bureau of Engineering, the Summit County Engineer's office, 4 different Engineering Design firms and was a full-time professor at the Kent State University Tuscarawas Campus in the Engineering Technology Department. MacAdam graduated from the University of Akron in 1985 with a Bachelor’s of Science in Civil Engineering. In addition to being a professional engineer, MacAdam also has his professional surveyor's license and was a 2008 graduate of Ohio's Certified Public Manager Program. He and his wife, Carol, reside in New Philadelphia, Ohio and have raised four sons and are the proud grandparents of 5 wonderful grandchildren.
2019 Project of the Year Nominee: Lake County Passage & AVL Upgrades

Agency: Lake County, IL Department of Transportation

Nominator: Ryan Legare, TMC Manager
Lake County Division of Transportation
rlegare@lakecountyil.gov
847-377-7477

Contact Person: Ryan Legare, TMC Manager

Time frame of project: Fall 2018 into late-summer 2019

Problem/s this project solves: The Lake County PASSAGE (Program for Arterial Signal Synchronization and TrAvel GuidancE) program updated the mobile applications and added a snowplow tracking system. Traffic signal and other roadway data is collected using various networks that connect over 600 of the 740 state, county, and locally owned traffic signals in Lake County. Over the past 9 months, we have updated and added the following advancements in technology:

- Updated the PASSAGE mobile applications (apps), which haven't been updated since 2011.
- Added a customized Snowplow Automatic Vehicle Location (AVL) system to our website/apps. This includes: vehicle location, status about the snowplows, speed, heading, plow status (up/down), salt spreader status, etc. Finally, snapshots from the plows are taken at regular intervals and posted on the PASSAGE website along with AVL information important to the public.

Specific work involved:
- The new PASSAGE apps offer the same functionality as the old PASSAGE website and include the following enhancements:
  - Complete redesign of the app's user interface updated in house and to the latest API version
  - Real-time incident and roadwork events are listed in greater detail and include snapshots
  - Snapshot icons have full screen and zoom controls and group at different zoom levels
  - Introduced an End User feature enabling incident type and user's location reporting
  - Quick shortcuts to call or email the Transportation Management Center (TMC)
2019 Project of the Year Nominee: Lake County Passage & AVL Upgrades (continued)

- Added an alert and informational scroller plus icons for Signal Flash and Signal Out incidents
- iPads are now supported
- Snowplows/AVL support along with an HAR Audio Player were added
- An after-hours report check for internal quality control use was added
- Enabled In-app messaging that sends info to users about major incidents, Amber alerts, etc.

- For the past 5 years, the LCDOT snowplows have been tracked with AVL systems, but this information was never presented to the public. LCDOT worked with Location Technologies to get their data, and Parsons Corporation who added the data to our PASSAGE ATMS, website and API.
- A camera and modem were installed in each of the 26 plows enabling our central system to receive snapshots every 3-5 minutes.

Benefits of the project:

- In regard to the mobile apps, we were able to reduce the cost of the project from approximately $100,000 (cost of utilizing a specialized company) to under $14,000 by developing them in-house. Most importantly, this gave us more control and flexibility over features in the apps, making updates to the apps easier and more frequent. The PASSAGE apps bring the strongest elements of the PASSAGE system to the public in a way that keeps up with emerging technologies and keeps the driving public of Lake County efficient and safe.
- Since the mobile apps were updated, we saw the following increase in downloads:

<table>
<thead>
<tr>
<th>Application</th>
<th>Increase in Number of Downloads</th>
<th>Percentage Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPhone</td>
<td>450 (2 months)</td>
<td>2.3%</td>
</tr>
<tr>
<td>Android</td>
<td>1,864 (9 months)</td>
<td>20.5%</td>
</tr>
</tbody>
</table>

Both download comparisons are an improvement from the 6 months leading up to each of the mobile app changes where we saw an increase of iPhone app downloads of 1.8% and a decrease of Android app downloads of 0.22%.
2019 Project of the Year Nominee: Lake County Passage & AVL Upgrades (continued)

- In regard to the AVL system integration, motorists will have the greatest benefit during the winter months as it creates transparency between Lake County and the public because they can see the progress of the snow removal operation. The snapshots give the added benefit of seeing the roadway conditions through the windshield of the snowplow driver and allow motorists to make informed decisions about their commute, like leaving early during heavy snowfall periods or delaying their trip until conditions have noticeably improved. This is a benefit to the public that is less quantifiable but is expected to be a big success in Lake County.

Challenges:
- The biggest challenge for the mobile apps was learning the programming languages and mobile operating system standards to build and implement some of the features that are included.
- The biggest challenge with the AVL system was getting it operational by the winter season, including all testing.

Unusual aspects of this project:
- The most unusual aspect for the mobile apps was the philosophy of starting from scratch. Typically, mobile apps are updated from time to time, but we felt the mobile apps needed a complete overhaul to make them easier to update in the future.
- The most unusual aspect of the AVL system was full integration into multiple platforms at the same time, which hasn’t been done before in Lake County. We are integrating the AVL information and camera snapshots to both the website and mobile apps via the PASSAGE ATMS.
2019 Project of the Year Nominee: DriveOhio Framework for CVAV Deployments

Agency: Ohio Department of Transportation

Nominator: Preeti Choudhary, Senior ITS Manager, AECOM - preeti.choudhary@aecom.com - 614-600-5826

Contact Person: Nick Hegemier, Managing Director of Infrastructure
DriveOhio
nick.hegemier@drive.ohio.gov
614-387-4099

Time frame of project: Fall 2018 – Fall 2019

Problem/s this project solves: Interoperability and consistency across CV/AV projects throughout the state; Supports deployment in places that don’t have CV/AV expertise

Specific work involved:
DriveOhio initiated a Systems Engineering Analysis (SEA) to create a statewide framework to guide Connected and Automated Vehicle (CV/AV) technology deployments across the state. The framework includes: a project architecture that integrates into ODOT’s existing Statewide ITS Architecture, a Concept of Operations that describes the target CV/AV environment and operation, system requirements that define functionality for CV/AV applications and the support environment, construction drawings for various components of CV/AV infrastructure, and verification plans to validate each application. Agencies and planning organizations around the state will use the tools provided in this framework as a resource for planning and deploying interoperable CV/AV projects across urban, suburban, and rural communities.

Benefits of the project:
This framework will promote consistency and interoperability among CV/AV technologies and supporting systems as they are implemented through ongoing, planned, and future projects by a wide range of stakeholders. The tools provided in the framework will enable deployers throughout the state to plan for and implement CV/AV projects without having to complete individual SE analyses.

Challenges:
• The project required use of the systems engineering (SE) process but lacks a definitive outcome or implementation. The typical SE process was modified to, instead, output a framework, including planning, deployment and monitoring tools, that supports a wide range of deployment types, scales and locations.
2019 Project of the Year Nominee: DriveOhio Framework for CVAV Deployments (continued)

- There is currently little to no federal standardization for CV/AV projects to provide overall guidance for the project.
- The project also required coordination with numerous stakeholders throughout the state.

Unusual aspects of this project:
The project is unique for many reasons. It is the first of its kind in providing statewide tools for CV/AV deployments. Furthermore, the project output is a framework, or playbook consisting of planning, deployment and monitoring tools, rather than an actual deployment.
2019 Project of the Year Nominee: Traffic Operations and Management – Big Data Integration and Utilization

Agency: Illinois State Toll Highway Authority

Nominator: Illinois State Toll Highway Authority

Contact Person: Elyse Morgan, Traffic Operations Center Manager  
emorgan@getipass.com  
331-238-1703

Time frame of project: July 2018 to Present

Problem/s this project solves: Leveraging analytics to optimize operations, support planning and evaluation of investments in technology. Since July 2018, the TIMS investments have focused on integration and assessment of third-party and connected vehicle data, planning and optimization of data management strategies to support usability and further optimization of decision support through metrics (often referred to as Traffic Systems Management and Operations (TSMO)).

Specific work involved:
To fulfill these focus areas, the following program activities have been accomplished:

- Major improvements to data source considerations and system report tools.
  - Collection and evaluation of operator/technician metrics
  - Multi-source comparison tools and reports including heat maps and advanced data filtering
  - Validation of third-party and connected vehicle systems and datasets
- Highly improved data utilization and decision support
  - Improved event type reporting and filtering for construction events and event-specific analysis such as wrong way driver events
  - Improved application of user and system metrics to support future decision-making for Central Tri-State Tollway (I-294) and the potential operation of more centerline mileage

- Coordination and planning of long-term and short-term data collection strategies
  - Database structure updates
  - IT coordination and planning
  - Assessment of third-party and connected vehicle systems and datasets

Benefits of the project:
- Waze integration is complete and properly integrated with primary incidents from Illinois State Police Dispatch.
2019 Project of the Year Nominee: Traffic Operations and Management – Big Data Integration and Utilization (continued)

- Three additional third-party data sources of crowd-source speeds are fully integrated in support of I-294 data evaluation: HERE, INRIX and Verizon.
- Performance measure tools were substantially upgraded for speed and ease of use.
- Timeline from requests for TIMS information to delivery of information to stakeholders has dropped substantially.
- Availability of operator-specific metrics have been used to assess the I-90 SmartRoad operations and to support ATMS improvements, training needs and considerations toward future advanced corridors.
- TIMS database migration scheduled for completion in August 2019. The migration prepares the TOC for the I-294 reconstruction project, which includes active traffic management similar to I-90, as well as preparedness for broader scale deployments of connected and autonomous vehicles.
- Connected vehicle data structures and pilot data collection are part of the ITS network and are actively being monitored.
- Information access to assess operational specifics such as wrong way drivers, ramp queueing and I-90 SmartRoad performance.
- Improved operator performance metrics.

Challenges:
- Development and coordination of storage approaches and timelines.
- Development of performance measures and visualizations that appropriately support decision making and application choices where multiple data sources are available.
- Balancing updates to database structures with the development of new reports and visualizations.

Unusual aspects of this project:
- All efforts and activities associated with software builds and data storage are directly coordinated between ITS and IT staff.
- The project includes an on-going effort to prepare for future data sources and provide supporting features to both evaluate and properly integrate those new sources.
2019 Project of the Year Nominee: TravelMidwest.com Mobile Website

Agency: Illinois Department of Transportation

Nominator: Dr. John Dillenburg
University of Illinois at Chicago - dillenbu@uic.edu - 312-996-5598

Contact Person: Terrence Heffron
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Terrence.Heffron@Illinois.gov
847-705-4800

Time frame of project: July 1, 2018 to June 30, 2019

Problem/s this project solves:
Traveler information for mobile devices

Specific work involved:
The TravelMidwest.com website was revamped to support mobile devices and the TravelMidwest mobile app was discontinued. The website is now "mobile responsive" meaning that one code base is capable of rendering the website on desktop web browsers, tablets, and mobile phones. The following specific changes were made:

- A “Use my location” feature was added to the maps and my travel preferences pages. On map pages, the feature allows the user to center the map on a device’s current position.
- Several changes were made to the Trip Map pages to allow them to work on mobile devices. The trip information dialog can be shown or hidden by the user. The mile marker, congestion, average speed, incident severity, and construction severity columns are hidden on mobile devices. They are shown when the user taps on a row in the trip report table with a mobile device.
- Announcement pages (High Priority, Construction, News Items, Transit and Weather) layout were improved for mobile devices.
- Several Reports were modified to work on mobile devices: Ease of use features were implemented for the Travel Time, Incident, Detector, Special Events, and Weather Station Reports.
- The construction report was modified for enhanced usability on mobile devices. The mile marker, severity, source, and description columns are hidden on small screens.
- The truckers report was modified for enhanced usability on mobile devices. The congestion, average travel time, and length columns of the Travel Time Watch Zones are hidden on mobile devices but can be viewed by tapping on a table row.
Benefits of the project:
Increases the ability of online website users to access traveler information from a large variety of devices.

Challenges:
There are hundreds of different types of mobile devices, each of which implement web standards in slightly different ways. Extensive testing was necessary to insure both existing website users and mobile app users were able to use the new mobile web site.

Unusual aspects of this project:
- Device simulators were used during development, but actual devices were used during testing
- The mobile website has more features than the customized mobile apps had with support for more platforms (Microsoft, iPhone, and Android instead of just Android and iPhone). Eliminating the mobile app provided for more overall efficiency of development work efforts and less ongoing maintenance impact.
**2019 Project of the Year Nominee: 670 SmartLane**

**Agency:** Ohio Department of Transportation

**Nominator:** Emilie Worley, PE, PTOE, Traffic Engineer
Burgess & Niple - emilie.worley@burgessniple.com - 614-459-2050

**Contact Person:** Toni Turowski, PE, Planning Engineer
Ohio Department of Transportation
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Delaware, OH 43015
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740-833-8186

**Time frame of project:** Summer of 2018 to Spring of 2020 (Hard Shoulder Lane opening in October 2019)

**Problem/s this project solves:** Highway Capacity

**Specific work involved:**
Construction of Hard Shoulder Lanes - the project area includes seven miles of I-670 connecting downtown Columbus to the I-270 outer belt, which serves as the major artery connecting to the Columbus airport. The left (median) shoulder on this section of I-670 is being converted to a travel lane for the PM peak traffic periods. It will remain open during this fixed period of operation each day and will revert to its normal shoulder function outside of these hours. Intelligent Transportation System (ITS) technology, including 11 DMS and 46 closed-circuit TVs, will be used to communicate with the Traffic Management Center (TMC). TMC personnel will monitor the SmartLane system to inform motorists of changes in lane usage and variable speed limits which will help harmonize the flow and improve safety. Interchange modifications were designed to fully realize the capacity benefits from the SmartLane project, to fix an existing bottleneck at I-270 and I-670. This included a ramp braid and widening through the interchange. Along with the interchange improvement, the project included two miles of widening along I-270 north of the interchange.

**Benefits of the project:**
Increases capacity and improves traffic flow and safety during afternoon peak hours.

**Challenges:**
Constrained budget, compressed schedule, extensive FHWA coordination, stakeholder communications, nine consultant team, nine miles of widening, and nine massive overhead gantries

**Unusual aspects of this project:**
- Approximately $10 million in budget cuts plus additional funding sources had to be identified.
2019 Project of the Year Nominee: 670 SmartLane (continued)

- Rolling submittals, over-the-shoulder reviews and concurrent design approvals were used to adhere to the tight schedule.
- System Engineering, and Interchange Modification Analysis, 14 Design Exceptions and in-depth safety analysis were needed.
- Targeted outreach meetings with stakeholders, public meetings and the development of public education materials were required to introduce HSR to the public.
ITS Midwest established the Gordon Paesani ITS Midwest Scholarship in 2019 to honor the memory of our colleague Gordon Paesani.

Gordon Paesani was not only a great mentor to many young engineers during his contribution to our industry, but he was also a committed innovator in ITS. Gordon established and implemented a variety of traffic and transportation technology concepts long before the term Intelligent Transportation Systems (or ‘ITS’) was coined. He was a pioneer in freeway operations with focus on Advanced Traffic Management Systems (ATMS) and their components including incident response plans and adaptive ramp metering algorithms.

ITS Midwest is pleased to provide an aspiring engineer or planner with a scholarship award to assist him or her as they continue their education. We look forward to their contributions to the ITS industry and the use of transportation technology to make travel safer and more efficient.
The 2019 ITS Midwest Annual Meeting Golf Outing is September 25\textsuperscript{th}. The shotgun start is 1:30 pm at Ruffled Feathers Golf Club in Lemont. Ruffled Feathers is the only Pete Dye design in the Chicagoland Area. Go to https://www.ruffledfeathersgc.com/ to see more about the course.

The **cost is $75** per player to be paid at the golf course. This includes:
- Bag drop
- Driving range
- Greens fees
- Cart
- 20\% off in the pro shop.

The tournament format will be based on the number of players.
“Pinstripes” Social Event  
Thursday September 26

Join us for an evening of fun and food at the ITS Midwest 2019 reception and social event.

Dinner, Bowling & Bocce Ball at Pinstripes, 6 to 8pm on Thursday, September 26th. Pinstripes is just over 10 minutes from the conference hotel, at 7 Oakbrook Center, Oak Brook, IL.

Go to [https://pinstripes.com/oak-brook-illinois/](https://pinstripes.com/oak-brook-illinois/) to take a sneak preview of the social event location, activities, and buffet.
The “Behind the Scenes” tour includes a bus tour around the O'Hare grounds, with stops showing behind the scenes logistics. Depending on how busy the day is, there may be a stop in the control tower. The tour starts at 1:30pm for pre-registered tour participants.

Limited parking will be provided. Participants will be on their own for transportation from Downers Grove to O'Hare, sharing rides is suggested.

For security purposes, the Chicago Department of Aviation (CDA) set a strict deadline to register for the tour. Only those who have registered by Friday, August 23 and been cleared by airport authorities are eligible for the tour.
Traffic Control Corporation (TCC) was founded in 1946 as a distributor of traffic signal equipment and is firmly established as the local expert on traffic control and ITS technology throughout the Midwest. Today, Traffic Control Corporation has a territory that includes eleven states throughout the Midwest. We are one of the largest distributors in the United States offering products from over 40 different manufacturers. Always staying ahead of the curve on advancing technology and changing traffic management needs has allowed Traffic Control Corporation to serve the region over the last 73 years. The success of Traffic Control Corporation is predicated on our service, knowledge, experience and, most of all, attentiveness to our markets and our clients.
Leading the transformation of communities through technology

AECOM continues to support the planning for and deployment of connected and automated vehicles. What was only possible in science fiction movies can be a reality. At AECOM, our experts are doing just that—not only are we imagining it and delivering, we are advancing the transformation of our communities—through technology.

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  Transportation Performance Analytics

For more information, contact

Michael Ruelle
312.281.7005
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- Traction
  Transportation Performance Analytics

For more information, contact
Michael Ruelle
312.281.7005
michael.ruelle@kimley-horn.com

www.kimley-horn.com
### ITS Midwest 2019 Annual Meeting Exhibitors

<table>
<thead>
<tr>
<th>Alpha</th>
<th>AXIS Communications</th>
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<tbody>
<tr>
<td>an EnerSys company</td>
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<tr>
<td>Bosch</td>
<td>Citel</td>
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<tr>
<td>Invented for life</td>
<td>Reliability in Surge Protection</td>
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<tr>
<td>Cohu HD</td>
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<td>Costar</td>
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<td>Cubic / Trafficware</td>
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# ITS Midwest 2019 Annual Meeting Exhibitors (continued)

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<thead>
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<td>EtherWAN</td>
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*Intelligent Transportation Society of the Midwest, Illinois, Indiana, Kentucky, and Ohio*
<table>
<thead>
<tr>
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<th>mobotrex</th>
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<tbody>
<tr>
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ITS Midwest 2019 Annual Meeting Exhibitors (continued)
## ITS Midwest 2019 Annual Meeting Exhibitors (continued)

<table>
<thead>
<tr>
<th>Southern Manufacturing</th>
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<tr>
<td><strong>Safe travels.</strong></td>
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<tr>
<td><strong>Traffic Control Products</strong></td>
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<td>VER-MAC</td>
<td>VERSILIS INC</td>
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<tr>
<td><a href="http://www.gotowti.com">www.gotowti.com</a></td>
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<td>Location</td>
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<td>CITEL</td>
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<td>36.</td>
<td>McCain</td>
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<td>37.</td>
<td>Ver-Mac</td>
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<td>38.</td>
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Professional Development Hour Summary

"Midwest Connections: Travel Smart"

2019 Annual Meeting of ITS Midwest
DoubleTree Suites and Conference Center, Downers Grove, IL

<table>
<thead>
<tr>
<th>Time</th>
<th>Thursday, September 26</th>
<th>PDH</th>
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<tbody>
<tr>
<td>8:00 – 8:45 am</td>
<td>Keynote Speaker</td>
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<tr>
<td>9:00 – 10:00 am</td>
<td>Session #1A  Signal Operations 1</td>
<td></td>
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<tr>
<td>9:00 – 10:00 am</td>
<td>Session #1B  Data and Analytics 1</td>
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<tr>
<td>10:30 – 11:30 am</td>
<td>Session #2A  Public Private Partnerships</td>
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<tr>
<td>10:30 – 11:30 am</td>
<td>Session #2B  Data and Analytics 2</td>
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<tr>
<td>1:00 – 1:30 pm</td>
<td>Luncheon Speaker</td>
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<tr>
<td>1:30 – 2:30 pm</td>
<td>Session #3A  Signal Operations 2</td>
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<tr>
<td>1:30 – 2:30 pm</td>
<td>Session #3B  Connected and Autonomous Vehicles 1</td>
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<tr>
<td>3:30 – 4:30 pm</td>
<td>Session #4A  Smart Cities 1</td>
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<tr>
<td>3:30 – 4:30 pm</td>
<td>Session #4B  Connected and Autonomous Vehicles 2</td>
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<td>4:30 – 5:30 pm</td>
<td>Private Sector Executive Panel</td>
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<table>
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<tr>
<td>8:30 – 9:30 am</td>
<td>Session #5A  Advanced Transportation Management Systems</td>
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<tr>
<td>8:30 – 9:30 am</td>
<td>Session #5B  Smart Cities 2</td>
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<tr>
<td>10:00 – 11:00 am</td>
<td>Session #6A  Work Zones</td>
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<tr>
<td>10:00 – 11:00 am</td>
<td>Session #6B  Safety and Security</td>
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<tr>
<td>11:00 am – 12:00pm</td>
<td>Public Sector Executive Panel</td>
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<tr>
<td>1:30 - 3:00 pm</td>
<td>TECHNICAL TOUR</td>
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Total

Name: ______________________________  Date: _______________

Signature: ______________________________

Confirmed Hours: __________________________  Co-Chair Program Committee
## Local Attractions

<table>
<thead>
<tr>
<th>Attraction</th>
<th>From Hotel</th>
<th>Dir</th>
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<tbody>
<tr>
<td>Aurora Outlet Mall</td>
<td>8.0 MI</td>
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<tr>
<td>Brookfield Zoo</td>
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<tr>
<td>CHICAGOS NAVY PIER</td>
<td>22.0 MI</td>
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<tr>
<td>Chicagoland Speedway</td>
<td>16.0 MI</td>
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<tr>
<td>Chicago City Center/Loop</td>
<td>21.0 MI</td>
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<tr>
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<tr>
<td>Morton Arboretum</td>
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<tr>
<td>Navy Pier</td>
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<td>Oak Brook Shopping Center</td>
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</tr>
<tr>
<td>Village Links PGA Golf Course</td>
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<td>E</td>
</tr>
<tr>
<td>YorkTown Shopping Center</td>
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</tbody>
</table>

Also visit the Chicago Visitors Bureau, Top Ten Things to Do in Chicago at [https://www.getyourguide.com/](https://www.getyourguide.com/) /
Thank you for participating in the ITS Midwest 2019 Annual Meeting. We are pleased that Illinois was host to our conference “Midwest Connections: Travel Smart” in Downers Grove and the Chicago area this year. As a major innovator and deployer of transportation technologies, the Chicago region provided the ideal venue for the conference.

On behalf of the 2019 ITS Annual Meeting Organizing Committee we would like to thank you for helping make the conference successful. We hope you found the venue to be enjoyable, the technical sessions to be informative, and the social event to be fun. Above all we hope you found the Annual Meeting gave you an opportunity to meet new colleagues and that the conference exceeded your expectations.

We would like to thank the many volunteers who worked to make the Annual Meeting a success:

Jeff Cunningham  Todd Hood  Helen Nie
Adam Danczyk  Preston Judkins  Mike Ruelle
Ahmet Demirbilek  Jennifer LaPorte  Anne Rahall
Abraham Emanuel  Michel Lavigne  Sara Senger
Rick Fedder  Scott Lee  Dan Shamo
Ken Glassman  Matt Letourneau  Cathy Thrailkill
Claudia Goddio  Amarpal Matharu  Bini William
Terry Heffron  William McLemore  Ed Williams
Nick Hegemier  Muhammad Miah  Jason Yeager
               Steve Muchow  David Zavattero

We look forward to seeing you at our 2020 Annual Meeting in Kentucky as we continue to develop, design and deploy transportation technologies in the Region and to build and strengthen ITS Midwest.

Justin Potts and Brian Plum,
Co-Chairs, 2019 ITS Midwest Annual Meeting Organizing Committee
See you next year in Kentucky!

Go to: www.itsmidwest.org for information and events.

ITS Midwest
Intelligent Transportation Society of the Midwest
Illinois, Indiana, Kentucky, and Ohio