Session 57
Room: B130
Virtual and Augmented Reality Real World Applications
Organizer: Rachel Lewis
Moderator: Steven Main

Emerging Uses for Augmented and Virtual Reality
Adam Horn, HNTB, Kansas City, MO
Jeff Siegel, HNTB, Chicago, IL
The industry is leaning on emerging technologies such as virtual reality to support enhanced visualization and design understanding of capital projects. We are also finding new and exciting use cases that help support better communications between project stakeholders - including agency executives as well as impacted land owners. This presentation will highlight a few project case studies form significant transportation projects leveraging mixed reality for many benefits.

Seeing the Future with Virtual Reality
Brandon Williams, Ohio DOT, Columbus, OH
John Drseck, Ohio DOT, Columbus, OH
Don Lee, Bentley Systems Inc., Austin, TX
Early design has trouble portraying its message to the public. With VR the public will be able to take a step into the future and see what the design would look like once the project is built. This added layer of communication can become very important and informing during multiple steps of the project with problems that may arise. With VR and seeing into the future engineers can increase communication on a project along with seeing issues on a project before they arise in construction. (Lecture and Demonstration)

Session 58
Room: A216
E-Construction Session 1
Organizer: Halle Jones Capers
Moderator: Halle Jones Capers

Using Today’s Technology for Enhanced Inspection Tools & Results
Michael Jenkins, Terracon, Round Rock, TX
Justin Reynolds, Terracon, Lexana, KS
Tracy Grover, Consultant, Austin, TX
The technical workflows known as Targetid (Terracon Acquisition & Reporting of Geospatial Engineering, Testing & Inspection Data), provides a unique blend of traditional and web GIS tools to support real time sharing and tracking of data. Through the use of hand-held devices inspectors in the field are capable of performing numerous tasks. This includes knowing where they are in relation to the project; as they see themselves standing on the project site plans.

e-Construction - How Technology Can Increase Productivity and Reduce Risk
Tony Albert, TranSystems, Schaumberg, IL
TranSystems will explain how project owners and managers can augment or replace their current inspection documentation workflow to help them increase efficiency and productivity. We will demonstrate best practices using two recent high-profile case study projects: • The East Kellogg Improvements in Wichita, Kansas • The Jane Byrne Interchange in Chicago, Illinois
Transforming Transportation into a Aesthetically Pleasing Showcase for a Community

Mike Avellano, Woolpert, Columbus, OH
Matt Parrill, ODOT, Sidney, OH

While addressing safety and reconstruction concerns for the Arlington Road bridge project, the project team designed and implemented an attractive and well-lit entrance to the City of Brookville. This alternative approach transformed what would otherwise be a very ordinary transportation feature.

Noise Wall Overhang Design

Ben Sperry, Ohio University, Athens, OH

This ODOT-funded research project examines the feasibility of adding a roadside "overhang" component along the top of noise walls, which also involved a cost analysis. Deployment of overhang design was determined to not be cost-effective except in specific situations.


Noel Alcala, Ohio DOT, Columbus, OH

New noise initiatives and issues have recently developed for ODOT, including future noise wall projects, aesthetic design, research, and training. This presentation will discuss these items and more.
Session 60
Room: B240-242
Protecting Cultural and Historical Resources
Organizer: Ryan Winston
Moderator: Erica Schneider

Steel, Stone, and Concrete: ODOT’s Historic Bridges and Culverts; Guidelines for Rehabilitating Historic Covered Bridges
Thomas Barrett, Ohio DOT, Columbus, OH
Christopher Marston, National Park Service, Washington DC, DC

ODOT has recently updated their historic bridge and culvert inventories, along with an inventory and assessment of stone culverts in the state system. This inventory provided a detailed historic context, description and condition, along with eligibility to allow ODOT to identify projects with historic culverts early in the PDP. The National Park Service will also speak about recently published Guidelines for Rehabilitating Historic Covered Bridges.

Consulting with Federally Recognized Tribes: Yes, ODOT does that
Jason Watkins, Ohio DOT, Columbus, OH
Diane Hunter, Miami Tribe of Oklahoma, Miami, OK

FHWA and ODOT are required to conduct tribal consultation, which can be a component of roadway planning and construction. This presentation will address the consultation process from ODOT Environmental staff as well as tribal representatives. The Miami Tribe of Oklahoma will speak on the importance of communication between Ohio DOT and Native American tribes, sharing why such working relationships are important to the tribes that once lived in what is now Ohio.

How Engaging an Amish Community Reinforces Fundamentals of Public Involvement during Project Development
Nicole Clune, Clune Consulting Services, LLC, Minster, OH

This case study describes the public involvement process on an alternatives analysis involving an intersection, roadway realignment, and historic bridge through the heart of an Amish community in Geauga County, Ohio.
The Power of Employee Engagement
Kristin Studabaker, Carpenter Marty Transportation, Columbus, OH
Gina Balsamo, Carpenter Marty Transportation, Columbus, OH
Rachel Macedonia, CT Consultants, Columbus, OH

Today's buzz word in business culture is employee engagement. What does this mean and how does it translate into implementable, action items for your firm? Carpenter Marty Transportation and CT Consultants are addressing this task head-on. We are excited to present how our firms are encouraging staff members to take charge of their career path and increase engagement and commitment to their firm, its culture, and their own personal development. One of the biggest issues with professional organizations over the past decade is an increasing amount of employee turnover due to unhappiness and disengagement. Poor management is consistently the top cause for this occurrence. This can result from promotion of employees based on their excellence in technical skills rather than management skills and leadership abilities. Join us as we discuss our firms' strategies and lessons learned while trying to create office environments that enable all employees to give their best efforts, maintain company goals and values, contribute to organizational success, and enhance each employee's sense of community within the firm. Discover how Carpenter Marty Transportation's "Committee for Change" is bridging the gap between owners and staff to create new policies and provide opportunities to increase firm loyalty. Learn how CT Consultant's "Vision for Transformation" is focusing on the unique talents of the individual employee to promote growth and alter career paths that encourage staff to follow their passions and boost their natural abilities.

An Innovative Approach to Career Development: Starting a Young Professionals Group in your Workplace
Micah Hindy, Wade Trim, Taylor, MI

Accommodating, nurturing and leveraging the opportunities that the ongoing generational shift in the workforce presents is a significant challenge all organizations must address. Competition for talented staff is intense and the workforce is becoming increasingly more diverse. Considering that reality, companies must strive to establish a workplace culture that appeals to top talent, provides unity and cohesion to a geographically separated workforce and facilitates the professional development of its future leaders. I will discuss the ways Wade Trim met these challenges through the development of a Young Professionals Group (YPG). Establishing a Wade Trim YPG was mainly intended to provide networking opportunities to younger staff. However, once it was established, other benefits were realized, including leadership opportunities for younger staff by planning and coordinating events within their respective offices and networking across regions and business lines. Further, the YPG leaders benefited from increased access to senior professionals which fostered two-way dialogue on multiple topics, including professional development, mentoring, and applications of emerging technologies. The process of conceiving and implementing the YPG leveraged the diversity already present in the staff and created a two-way learning opportunity. Young leaders were encouraged and empowered to share their experience with YPG’s throughout the company. This allowed the younger leadership to not only lead, but also play the part of mentor. I will provide insight into our experiences while establishing the YPG. I'll provide a recap of its development from the beginning, to the later stages in which the continual expansion and evolution of the YPG began to take place, as well as what’s in store for the future. I will also share lessons learned in the process of establishing the YPG, such as overcoming geographical distances between offices across the country to make a unified YPG.

Project Inspector Intern Program
George Hall, ODOT, Lebanon, OH
Richard Shelley, WSP, USA, Cincinnati, OH
A new workforce development approach is being utilized on ODOT consultant inspection contracts preparing Ohioans to fill in-demand transportation positions. The new approach is called the Project Inspector Intern Program. The Project Inspector Intern program provides an opportunity for new individuals in the field of transportation to gain technical and field experience needed to meet the prequalification requirements for a Project Inspector. The program has been initiated on several consulting contracts producing new project inspectors with the prequalification required. Program requirements, options, challenges and program successes will be discussed.

Session 62
Room: A226
Mobility as a Service 2 - Emerging Mobility Alternatives
Organizer: Mark McCord
Moderator: Chuck Dyer

The Paradox of Transit and the Coming Land Use Revolution in the Age of Autonomy
Jason Sudy, HDR, Columbus, OH
Justin Robbins, HDR Engineering, Inc., Columbus, OH

A paradox lies in the link between transit and autonomous technology. As mobility evolves to rely on autonomous vehicles, some predict inevitable doom for transit. But is it equally possible that opportunities for dense auto-free development will come hand-in-hand with a new era of transportation, in which transit plays a central role? This session will outline the hyper-related near-future scenarios for transit, retail, employment, and residential, based on emerging shifts in mobility. Attendees will gain insights on the following: • Deepen understanding of the less obvious, but deeply influential, impacts of evolving technology on transit through research related to land use, retail, employment and residential. • Explore a set of real-world tools to guide changing transit strategies in the context of land use.

Transforming Mobility through Technology in America's Smart City
Mandy Bishop, City of Columbus, Columbus, OH
Andrew Wolpert, City of Columbus, Columbus, OH

The city of Columbus team is advancing a modern transportation system that includes using technology to solve challenges faced by our residents. The city of Columbus and its partners are laying the foundation for Mobility as a Service (Maas) with the deployment of its multimodal trip planning application, advancing transit accessibility through our Mobility Assistance for Cognitive Disabilities project and performing research to help establish a set of operational and testing standards for self-driving shuttles. Ultimately, the city and its partners are using data to drive the future of mobility in Central Ohio. This session will share learning from live deployments as well as upcoming deployments and how these learnings may Fuel Transportation Transformation.

The MPO's Role in MaaS Planning and Regional Support
Lexi Petrella, MORPC, Columbus, OH
Nathaniel Vogt, MORPC, Columbus, OH

MORPC is focused on improving the lives of our residents and making Central Ohio stand out on the world stage through planning for the future of the region. We have been noticing a changing regional landscape that includes, to name a few characteristics, more people, new transportation modes (like MaaS), and additional data. In this session, MORPC team members will share how this changing landscape is impacting our long-range and short-range planning, as well as how it is expected to affect implementation.
Wednesday, October 30, 2019 10:00 - 11:30 a.m. CPDs = 1.5

Session 63
Room: A220-222
Pavement Testing
Organizer: Aric Morse
Moderator: Dave Miller

FHWA NDT Pavement Program Overview
Monica Jurado, Office of Technical Services, FHWA, Baltimore, MD

This presentation is an overview of the Non-Destructive Technologies available through the FHWA concrete mobile trailer and their use for pavements. This presentation includes background on the Rolling Density Meter and other NDT technologies such as MIRA, MIT Scan, GPR Mini XT, and PSPA.

ODOT’s Early Results with the Rolling Density Meter
Craig Landefeld, Ohio DOT, Columbus, OH

The Office of Pavement Engineering has been collecting data on a handful of paving projects using RDM and in some cases Pave IR data. This presentation will cover the results of OPE’s evaluation.

Session 64
Room: B243-245
Planning the Future of Walking and Biking in Ohio
Organizer: Andrew Shepler
Moderator: Jordan Whisler

Walk.Bike.Ohio, Ohio’s First Statewide Bicycle and Pedestrian Plan
Jennifer Baldwin, Alta Planning + Design, Durham, NC

ODOT has kicked off development of Ohio’s first statewide bicycle and pedestrian plan. Known as Walk.Bike.Ohio, the plan will guide, inform, and support ODOT’s active transportation policies and investment strategies. Walk.Bike.Ohio will include a review of existing and future conditions, research into the benefits of bicycling and walking, an audit of existing data, and a review of how new mobility will impact biking and walking. The plan will result in policy recommendations and a detailed implementation plan of how to make those recommendations a reality. This presentation will discuss the plan development process and tasks accomplished to date.

Countywide Active Transportation Planning
Cait Harley, Ohio DOT, Columbus, OH
Michael Blau, Toole Design Group, Columbus, OH

Learn about recent planning approaches for developing countywide Active Transportation Plans, specifically piloted in rural counties in Ohio. Additionally, learn about lessons learned, opportunities, and materials and resources available to inform the development of regional Active Transportation Plans.
Session 65
Room: A120-122
Roadway Departure Crashes

Organizer: Derek Troyer
Moderator: Joseph Bolzenius

Reducing Roadway Departure Crashes
Mike Fitch, Ohio DOT, Columbus, OH

A roadway departure crash is defined as a non-intersection crash in which a vehicle crosses an edge line, a centerline, or otherwise leaves the traveled way. Approximately 52% of the annual fatal crashes in the U.S. relate to roadway departures. This presentation will highlight some of the strategies that are being used to help reduce the frequency and severity of roadway departure crashes.

Curve Warning Signs Upgrades in District 6
Anthony Turowski, Ohio DOT, Delaware, OH

Part of statewide initiative - D6 worked with Central Office Traffic Operations to implement District wide curve warning signs upgrades in response to FHWA standards. This change affected over 1000 locations across the district. This session will cover the planning and implementation of these sign upgrades. It will also discuss why this change was necessary on a safety aspect and how this project was implemented. This would be a good sub-session with another traffic control subject.

Case Studies
Michael McNeill, Ohio DOT, Columbus, OH

Describe efforts to reduce roadway departure crashes around the state.

Session 66
Room: A110-112
Structures MASH-up

Organizer: Michael Brokaw
Moderator: Joe Rikk

Complex Load Ratings with the Finite Element Method and Excel
Brett Mattas, Michael Baker International, Columbus, OH
Joe Kauzlarich, Michael Baker International, Chicago, IL

Bridge owners are responsible for the challenging task of load rating thousands of structures and reporting the results to the Federal Highway Administration as well as evaluating these structures for heavy permit vehicles. While the majority of bridges can be load rated using AASHTOWare Bridge Rating or other commercially available software that allows for standardization and consistency across a state's inventory, this software has its limitations. Structure types such as tied-arches, segmental concrete box girders, and suspension bridges must be load rated using alternative methods due to their structural complexity. This talk will cover both solutions and challenges associated with load rating these atypical designs.

Design and Testing of Side-Mounted Bridge Railing for MASH
Sean Meddles, Ohio DOT, Columbus, OH
Ron Faller, University of Nebraska-Lincoln, Lincoln, NE

This presentation will provide an overview of the analysis, design and crash testing of a new side-mounted bridge railing for compliance with the Manual for Assessing Safety Hardware (MASH).
Session 67
Room: A123-125
Truck Platooning
Organizer: Nikhil Khedekar
Moderator: Nikhil Khedekar

Autonomous Convoying: Path to Full Autonomy
Cetin Mericli, Locomation, Inc., Pittsburgh, PA
Locomation’s pioneering Autonomous Relay Convoying (ARC) product finds a very fertile middle ground between today’s manual truck driving and the future fully autonomous driving by bundling two trucks together in a convoy form, keeping the driver in the front truck in full control while making the follower truck fully autonomous (Level 4). The driver in the front truck perceives the world and makes decisions, and the responsibility of the autonomous follower is limited to just following the lead truck reliably. ARC improves safety, multiplies the freight capacity, and reduces fuel consumption as well as CO2 emissions. In this talk, an overview of the challenges of autonomy, the brief description of the ARC system, the roadmap to full autonomy, and the regulatory landscape around autonomous convoying will be covered.

Platooning Impacts on Steel Bridges
Matthew Yarnold, Texas A&M University, College Station, TX
The presence of truck platoons on the nation’s highways is an inevitability. This research study explored the potential effects on existing and future bridge infrastructure. The historic design standard does not perform well overall. We provide recommendations to identify structures at risk, as well as the future research required to account for platooning in new design.

US DOT Truck Platooning Research
Gene McHale, FHWA, McLean, VA
The U.S. Department of Transportation (US DOT) is interested in the potential impacts of truck platooning on the safety and efficiency of our Nation’s highways and freight networks. Modal agencies within US DOT have been conducting research on truck platooning for several years and continue to pursue research in this area. The presentation will present a brief overview of previous US DOT research and highlight current research efforts in truck platooning.

Session 68
Room: A210-212
Ready Set Go! with Automated Vehicles
Organizer: Cynthia Jones
Moderator: Cynthia Jones

Ready Set Go! with Automated Vehicles
Kelley Coyner, Stantec, Arlington, VA
Corey Clothier, Consultant, Columbus, OH
Rod Schebesch, Stantec, Calgary, ab
Leading safety, development and deployment experts will provide a hands-on workshop to develop your AV Readiness Plan. By the end of the session every participant will leave with a practitioner’s guide and an action plan for setting up an AV pilot in your community.
AI/Machine Learning Applications for Transportation Management

Bob Edelstein, AECOM, Pompano Beach, FL

The purpose of this presentation is to explore the various applications of AI/ML for transportation management. The presentation will address systems having the potential to utilize big data to enable transportation agencies to manage their physical and digital infrastructures more efficiently and securely. Such applications include: • Signal System Optimization • Traffic Safety Systems Analysis • Congestion Management • Asset Management • Smart Work Zones • Special Event Traffic Management • Emergency/Evacuation Traffic Management • Road Weather Management • Decision Support Systems

Keeping Drivers Informed: Lessons Learned from Using Bluetooth Travel Time Delay Messaging in a Rural Freeway Environment

Cameron Berko, IBI Group, Toronto, ON

In a rural freeway environment, there are several challenges that drivers face when looking to obtain travel information in real time. While a variety of app-based sources are available to drivers, this information is not necessarily accessible to all drivers, and cell service is occasionally unavailable along a rural freeway. Consequently, drivers do not consider detour routes until they have reached the source of the delay, at which point they must wait for queues to dissipate. Concerns from the Ontario Provincial Police related to queue end collisions, as well as driver frustration due to extensive delays, have also been raised. In response to these challenges, the Ministry of Transportation of Ontario (MTO) has deployed variable message signs (VMS) along 400 km of an Ontario freeway, which sees an extended construction season with multiple construction zones and lane closures, and is a major freight route that sees a disproportionate number of tractor trailers in the traffic stream. These VMS are capable of displaying travel time delay estimates to drivers in real time, which are based on data collected using Bluetooth detectors deployed along the roadside.

Transforming Hartford: Using Technology to Streamline the I-84 Interstate Project

Nicholas Mandler, TranSystems, Meriden, CT

Interstate 84 in Hartford, Connecticut carries 175,000 vehicles per day. Constructed between 1959 and 1969, the bridges carrying this traffic are becoming increasingly costly to keep in a state of good repair, and the Connecticut Department of Transportation (CTDOT) has embarked on a project to completely rebuild two miles of I-84 at an estimated construction cost of $4.3 to $5.3 billion. In order to guide the design of the new freeway, its ramps, the surrounding street grid, and the adjacent multimodal station, CTDOT has employed several software suites, including TransCAD, TransModeler, Synchro, and Vissim. This presentation covers the development of the original travel demand and simulation models; the exceptional efforts needed to iteratively develop hundreds of alternatives; the use of complementary models to assess different aspects of traffic flow; the complex (and often counter-intuitive) interplay between traffic engineering, highway design, and urban design; and the inherent difficulties of forecasting travel patterns twenty-plus years in the future. The presentation includes recommendations for data collection, minimizing redundant work, and tracking down the elusive Preferred Alternative.