10th International Symposium on

Visualization in Transportation

NOVEMBER 3–4, 2022
Washington, D.C.

Convened by
Transportation Research Board

NATIONAL ACADEMIES
Sciences
Engineering
Medicine

TRB TRANSPORTATION RESEARCH BOARD

TRR

JOURNAL OF THE TRANSPORTATION RESEARCH BOARD

TRANSPORTATION RESEARCH RECORD

WELCOME FROM PATRICIA HU AND CHARLES R. LATTIMER
CONFERENCE PLANNING COMMITTEE

Welcome to the 10th International Symposium on Visualization in Transportation! After several years of global challenges and adversity, we are excited to gather in person once again to exchange solutions and ideas for improving transportation outcomes through better visualization approaches.

The concept of visualization is broad, touching all phases of the transportation life cycle including design, construction, operations, and maintenance. At its core, visualization is about improving communication. To some, that means improving how they describe data and operational system performance. For others, that means improving how elements of design—and their impact on the physical environment—are utilized by engineers, construction crews, and communicated to the public at large.

This year's theme is "Innovative Visualization Frontiers." We will explore how visualization can dramatically influence communication, improve problem solving and decision making, and help us discover new insights into the world around us. We will also discuss finding better ways to leverage digital practices and data to deliver and manage transportation systems. Take the time to explore our demonstration area. Try on a VR/AR headset. Engage with the interactive poster sessions and play around with the latest visual analytics tools and technologies. Learn from the expert on how to apply color theory to digital media during our mini workshop. We encourage you to explore our diverse program, including sessions on cross-cutting topics, and seek out sessions and topics that might challenge and expand your personal notion of what visualization is and how it can improve our industry.
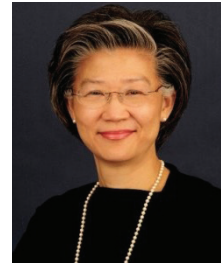
Patricia Hu

Charles R. Lattimer

Patricia Hu
Director
Bureau of Transportation Statistics
U.S. Department of Transportation

Charles R. Lattimer
Outreach Manager
Center for Advanced Transportation Technology Laboratory
(CATT Lab)

2022 PLANNING COMMITTEE

This conference would not have been possible without the combined efforts of many individuals and organizations.

Pat Hu, Bureau of Transportation Statistics, Co-Chair
Charles Lattimer, CATT Laboratory, Co-Chair
Matt Haubrich, Iowa Department of Transportation
Ilir Bejleri, University of Florida
Frank Broen, Metro Analytics
Zenobia Fields
Kevin Gilson, WSP
Jari Kaupplia, International Transport Forum OECD
Anne-Marie McDonnell, Connecticut Department of Transportation, Retired
Inya Nlenanya, Iowa State University
David Unkefer, Federal Highway Administration

TRB STAFF

Thomas Palmerlee, Assistant Division Director
Scott Babcock, Senior Program Officer
Rhonda Levinowsky, Associate Program Officer
Megan Kaufman, CMP, Senior Conference Manager
Joanne Doherty, Meetings Assistant

PLANNING COMMITTEE MEETING (INVITATION ONLY)

Wednesday, November 2, 2022
1:00 PM–5:00 PM (Time Subject To Be Updated)
Location: NAS 120 and NAS 125

As the Federal Transportation Performance Management framework completes its first full 4-year cycle, this session will showcase tools available to visualize highway performance at both the Federal and State levels.

The Transportation Research Board is one of seven major programs of the National Academies of Sciences, Engineering, and Medicine. The mission of the Transportation Research Board is to increase the benefits that transportation contributes to society by providing leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board's varied committees, task forces, and panels annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.
www.TRB.org

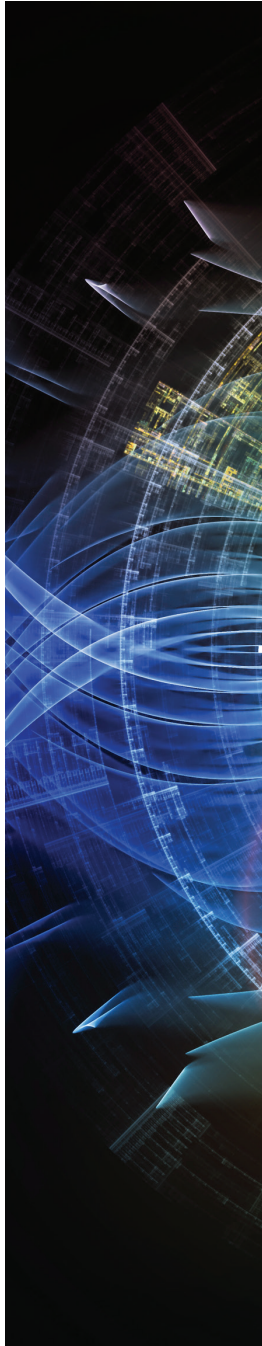Photo credits – Cover, pages 3 and 15: shutterstock.com

Thursday, November 3

7:30 AM–5:00 PM	Registration, Great Hall
7:30 AM–8:30 AM	Continental Breakfast
8:30 AM–10:00 AM	Opening Session
10:00 AM–10:30 AM	Break
10:30 AM–Noon	Breakouts
Noon–1:30 PM	Lunch
1:30 PM–3:00 PM	Breakouts
3:00 PM–3:30 PM	Break
3:30 PM–5:00 PM	Breakouts
5:00 PM–7:00 PM	Reception / Interactive Posters

Friday, November 4

7:30 AM–2:00 PM	Registration, Great Hall
7:30 AM–8:30 AM	Continental Breakfast
8:30 AM–10:00 AM	Color Theory
10:00 AM–10:30 AM	Break
10:30 AM–Noon	Breakouts
Noon–1:00 PM	Lunch
1:00 PM–2:30 PM	Breakouts
3:00 PM–3:30 PM	Closing Session

PROFESSIONAL DEVELOPMENT HOURS

NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD

Professional Development Hours Credit Statement for Attendee's Records
Visualization Symposium Conference, November 3–4, NAS Building, Washington, DC

Many licensure and certification agencies recognize Professional Development Hour (PDH) units toward demonstration of continuing professional competency. It is recommended that you check with your own state licensure/certification agency about their specific requirements for PDHs.

This form is for your use in maintaining a record of any PDH units you earn at the above-mentioned conference. Complete this form and retain it for your records. **Do not return it to TRB.** It is recommended that you save the full program of each lectern session or workshop you attend, in case the licensure or certification agency requests detailed information. Reporting is done on an honor basis, and individuals are responsible for maintaining their own records.

I have earned continuing-education PDHs by attending the following lectern sessions and workshops, during the above-mentioned conference. *(Note: Poster sessions do not qualify for PDH credits.)*

Date	Start Time – End Time	Title	Hours
11/3/2022	10:30 AM–Noon	BIM 1:4D Visualization to Coordinate Two Projects in North Texas	0.5
11/3/2022	10:30 AM–Noon	BIM 1: 3D Model Based Design Reviews: Utilizing Technology Communicate Design Intent	0.5
11/3/2022	10:30 AM–Noon	BIM 1: Geotechnical Vis of Highly Var Soils Using 3D Geostatistics in Trans Projects	0.5
11/3/2022	10:30 AM–Noon	CC 1: Highway Externalities Inequity identification Tool	0.5
11/3/2022	10:30 AM–Noon	CC 1: Visualizing Transportation Funding	0.5
11/3/2022	10:30 AM–Noon	CC 1: Visualization in Transportation Planning—From Visioning to Performance Measures	0.5
11/3/2022	10:30 AM–Noon	PM 1: Exploring and Vis Human Mobility Patterns Using Location-Based Social Media Data	0.5
11/3/2022	10:30 AM–Noon	PM 1: GIS-Based Vis to Support the Dev of an 8,000 Mile Bicycle Network	0.5
11/3/2022	10:30 AM–Noon	PM 1: Bus Lane Prioritization: Visualized Qualification and Performance	0.5
11/3/2022	10:30 AM–Noon	PS 1: Immersive VR vs interactive 360-panorama assessing people's perception of Urban…	0.5
11/3/2022	10:30 AM–Noon	PS 1: Enhancing Engagement through Interactive 360 degree Media	0.5
11/3/2022	10:30 AM–Noon	PS 1: Using Photo-Realistic Immersive Virtual Reality Digital Twin and Vis to Support	0.5
11/3/2022	1:30 PM–3:00 PM	BIM 2: GIS and Digital twins: Taking Transportation Vis to the Next Level	0.5
11/3/2022	1:30 PM–3:00 PM	BIM 2: Back on track: How Digital Asset Mngt, BIM and Digital Twin support Rail….	0.5
11/3/2022	1:30 PM–3:00 PM	BIM 2: Structural Health Bridge Digital Twin: Vis and Methods for Optimized Maint	0.5
11/3/2022	1:30 PM–3:00 PM	CC 2: Using Real-Time Citywide Datasets to Generate AI Solutions. A City of Henderson.	0.5
11/3/2022	1:30 PM–3:00 PM	CC 2: High Fidelity Anonymized GPS and LBS Data to Better Understand Trip and Travel…	0.5
11/3/2022	1:30 PM–3:00 PM	CC 2: Visualizing Ports Impacted by 2021 Atlantic Hurricane Season	0.5
11/3/2022	1:30 PM–3:00 PM	PM 2: Texas Freight Fluidity Tool	0.5
11/3/2022	1:30 PM–3:00 PM	PM 2: Truck Parking Demand Vis to Support State DOT Decision-Making & Stakeholder	0.5
11/3/2022	1:30 PM–3:00 PM	PS 2: Visualizing Design to Preserve Treasured Viewsheds	0.5
11/3/2022	1:30 PM–3:00 PM	PS 2: Driving through a complex weaving sect w/an immersive Driver's Level Video w/	0.5
11/3/2022	1:30 PM–3:00 PM	PS 2: Using 3D Modeling Understand the Perception impact increased Density on Local	0.5
11/3/2022	1:30 PM–3:00 PM	PS 2: Let the Pictures do the Talking: Using Comparative Illustrations to Comm the MTA…	0.5
11/3/2022	3:30 PM–5:00 PM	PM 3: Using Probe Based Connected Vehicle Data to Det Perform Measures or Sig inter	0.5

PROFESSIONAL DEVELOPMENT HOURS

Date	Start Time – End Time	Title	Hours
11/3/2022	3:30 PM–5:00 PM	PM 3: Automating Data for Operations, Decision Making, & Perf Measures	0.5
11/3/2022	3:30 PM–5:00 PM	PM 3: Visualizing trans Planning Data through Inter web Applications	0.5
11/3/2022	3:30 PM–5:00 PM	CC 3: Railroad information Sharing Environment	0.5
11/3/2022	3:30 PM–5:00 PM	CC 3: Data Analytics and Decision Support Tools in Freight Trans: A Case Study in TN	0.5
11/3/2022	3:30 PM–5:00 PM	CC 3: Mult Res trans NW Rep in the Integ Modeling of Act Based Travel Demand Model	0.5
11/3/2022	3:30 PM–5:00 PM	PS 3: Supplementing Steel Bridge Fab with immersive Augmented Reality	0.5
11/3/2022	3:30 PM–5:00 PM	PS 3: Virtual Bridge Inspection Application	0.5
11/3/2022	3:30 PM–5:00 PM	PS 3: Real-Time Object Det & Traffic Sim for a Gated Approach to AV	0.5
11/3/2022	3:30 PM–5:00 PM	PS 3: Leveraging Virtual Reality Quantifying Usability of wearable and Augmented Reality	0.5
11/3/2022	3:30 PM–5:00 PM	PS 3: Learn Together: Collab Virtual Reality Training of Human Flaggers in Work Zones	0.5
11/3/2022	3:30 PM–5:00 PM	PS 3: Util Realtime Vis Tools to Engage w/Public from a Per Parcel and Entire Corridor…	0.5
11/4/2022	8:30 AM–10:00 AM	Color Theory workshop	0.5
11/4/2022	10:30 AM–Noon	BIM (4): BIM for Structures Pooled fund & the Move to Open BIM	0.5
11/4/2022	10:30 AM–Noon	BIM (4): Making the Invisible Visible w/BIM	0.5
11/4/2022	10:30 AM–Noon	BIM (4): Apply BIM/Digital Twin Pract on a Heavy Civil/Trans Project, an Owner's Perspec	0.5
11/4/2022	10:30 AM–Noon	CC (4): BTS Trans Profiles: A tool for vis trans statistics each US county congress district	0.5
11/4/2022	10:30 AM–Noon	CC (4): Texas Active Transportation Plan Inventory	0.5
11/4/2022	10:30 AM–Noon	CC (4): Visualizing Bus Speeds to Support California Transit Agencies and Riders	0.5
11/4/2022	10:30 AM–Noon	PM (4): Maryland Roadway Performance Tool	0.5
11/4/2022	10:30 AM–Noon	PM (4): Maryland Real-time Multi-modal Common Operational Picture Dashboard	0.5
11/4/2022	10:30 AM– Noon	PM (4): Identifying and Quantifying the Causes of Congestion	0.5
11/4/2022	10:30 AM–Noon	Planning (4): Mileage Based User Free Pilot – "Help Explore the Future"	0.5
11/4/2022	10:30 AM–Noon	Planning (4): Local LISTENing Tour and EXPO	0.5
11/4/2022	10:30 AM–Noon	Planning (4): We are in this "Together North Jersey!"	0.5
11/4/2022	1:00 PM–2:30 PM	BIM (5): A Big Data Platform to Visualize Infrastructure Assets by Geolocation	0.5
11/4/2022	1:00 PM–2:30 PM	BIM (5): Capturing Culverts – Using Mobile GIS tech to capture & track drainage assets	0.5
11/4/2022	1:00 PM–2:30 PM	BIM (5): Challenges, Benefits, & Current Practices of Smart Tech in Trans Projects Vis	0.5
11/4/2022	1:00 PM–2:30 PM	PM (5): NCHRP 52-16 Synthesis Visualization for Highway Performance Measures	0.5
11/4/2022	1:00 PM–2:30 PM	PM (5): How FHWA tells the Transportation Performance Management Story	0.5
11/4/2022	1:00 PM–2:30 PM	PM (5): Transportation Performance Management: The AASHTO Perspective	0.5
11/4/2022	1:00 PM–2:30 PM	PM (5):Utilizing Off the Shelf Data Visualization for Crash Analysis Tool	0.5
11/4/2022	1:00 PM–2:30 PM	PM (5): Heavy Vehicle Safety at RR Crossings: An Analysis of Naturalistic Driving Data…	0.5
11/4/2022	1:00 PM–2:30 PM	PM (5): A Visual Analysis of Freight Safety: A Perspective of Truck Traffic Along Highways	0.5
11/4/2022	1:00 PM–2:30 PM	GEO (5): WSDOT Geotechnical Office Current Practices for Communicating & Vis Geo…	0.5
11/4/2022	1:00 PM–2:30 PM	GEO (5): A Dynamic 3D Model & Augmented Reality Vis, Linked w/Field Instr Updates…	0.5
11/4/2022	1:00 PM–2:30 PM	GEO (5): Geotechnical Vis of Highly Variable Soils Using 3D Geostatistics in Trans Projects	0.5
11/4/2022	1:00 PM–2:30 PM	GEO (5): Immersive Vis of Natural & Anthropogenic Ground Surface Movement & Change	0.5
		TOTAL HOURS	

Name_____ **Date**_____

CONFERENCE PROGRAM

To view the full program online, scan the QR code.

Session Track Abbreviations

CC: Cross-Cutting Topics
PM: Performance Measures
BIM: Building Information Modeling for Infrastructure
PS: Participatory Simulation
GEO: Geotechnical / Subsurface Visualization

THURSDAY, NOVEMBER 3, 2022

7:30 AM–5:00 PM
Registration
Location: Great Hall

7:30 AM–8:30 AM
Continental Breakfast
Location: Great Hall

8:30 AM–10:00 AM
Opening Session
Location: Fred Kavli Auditorium (food and drinks not allowed)

Welcome: Pat Hu, Director, Bureau of Transportation Statistics;
Charles Lattimer, CATT Laboratory, University of Maryland
Visualization Conference Planning Committee Co-Chairs

Keynote Speaker: Craig Thor, Chief Scientist, Turner-Fairbank Highway
Research Center

Keynote Speaker: Chiqui Esteban, Graphics Director, The Washington Post

10:00 AM–10:30 AM
Break

Concurrent Technical Session 1
10:30 AM–NOON

BIM 1: Go Digital! For Enhanced Project Delivery
Location: NAS 120

Moderator: Morgan Kessler, FHWA

BIM applications leverage digital solutions that make for better project delivery. This session's presentations will cover how BIM enables collaborative processes for managing schedules, conveying design intent and avoiding construction problems, and evaluating geotechnical variability.

- **4D Visualization to Coordinate Two Projects in North Texas**
  Juan Loayza, Center for Transportation Research, The University of Texas at Austin

- **3D Model Based Design Reviews: Utilizing Technology to Communicate Design Intent**
  Jennifer Steen, HDR

CC 1: Planning and Programming Tools
Location: Fred Kavli Auditorium

Moderator: Frank Broen, Metro Analytics

How do you visualize the planning and program process—from data collection to performance monitoring? This session will showcase how a variety of vision tools have been used to identify inequities in project selection, for funding programs and general transportation planning.

- **Highway Externalities: Inequity Identification Tool**
  Thor Dodson, FHWA

- **Yellow to Green: Optimizing School Bus Routes to Reduce the Carbon Footprint of Local High Schools**
  Grace Yan

- **Visualization in Transportation Planning—From Visioning to Performance Measures**
  David Hutchinson, Sarasota/Manatee Metropolitan Planning Organization

PM 1: Visualizing Multimodal Transportation
Location: Lecture Room

Moderator: Nelson Hoffman, FHWA

Nearly all trips are multi-modal. This session will explore innovative visualizations that can help tell the story of transportation, regardless of mode.

- **GIS-based Visualizations to Support the Development of an 8,000 Mile Bicycle Network**
  Brittany Gernhard, High Street Consulting

PS 1: Innovative Uses of Virtual Reality
Location: NAS 125

Moderator: Ilir Bejleri, University of Florida

Immersive interactive tools are being used more often to allow stakeholders to evaluate urban design options. These sessions will showcase techniques using VR to represent streetscape environments.

- **Immersive VR Versus Interactive 360-panorama in Assessing People's Perception of Urban Street Design**
  Kanglin Chen, University of Florida

- **Enhancing Engagement through Interactive 360° Media**
  Andrew Poszich, RS&H

- **Using Photo-Realistic Immersive Virtual Reality Digital Twin and Visualization to Support Road Safety Training**
  Haowen Xu, Oak Ridge National Laboratory

Noon–1:30 PM
Lunch

Concurrent Technical Session 2
1:30 PM–3:00 PM

BIM 2: Cloning Your Transportation System – The Digital Twin!
Location: Fred Kavli Auditorium

Moderator: Jag Mallela, WSP

What would be possible if your agency had a 'digital twin' of your transportation system with all lifecycle asset information necessary for better business decisions? This session will describe how digital twins are disrupting transportation system management with enhanced visualization and communication, in use with rail infrastructure, and when used for structural health monitoring.

- **BIM, GIS and Digital Twins: Taking Transportation Visualization to the Next Level**
  Terry Bills, Esri

- **Back on Track: How Digital Asset Management, BIM and Digital Twin Support the Rail Infrastructure**
  Bruce Aquila, Hexagon Corporation

- **Structural Health Bridge Digital Twin: Visualization and Methods for Optimized Maintenance**
  Aaron Costin, University of Florida

CC 2: Visuals for Understanding Analytics
Location: Lecture Room

Moderator: Jari Kauppila, ITF

Sometimes you need to see it in real-time to understand the patterns and impacts to plan

for the future. This session presents a range of ideas from generating artificial intelligent solutions for city planning, to modeling trip generation patterns, and to visualizing hurricane impacts on ports.

- **Using Real-Time Citywide Datasets to Generate Artificial Intelligent Solutions: A City of Henderson, Nevada Case Study**
  Linda Lim, Ludian

- **High Fidelity Anonymized GPS and LBS Data to Better Understand Trip and Travel Patterns**
  Michael Pack, CATT Lab

PM 2: Keep on Truckin'! Freight Visualization
Location: NAS 120

Moderator: Michael Schade, CATT Lab

This session will showcase the frontiers of freight data visualization, focusing on practical solutions that give insights to keep freight flowing safely and efficiently.

- **Texas Freight Fluidity Tool**
  Nicole Katsikides, Texas A&M Transportation Institute

- **Truck Parking Demand Visualization to Support State DOT Decision-Making and Stakeholder Engagement**
  Nicole Katsikides, Texas A&M Transportation Institute

PS 2: Seeing the Big Picture: Visualizing Transportation Design
Location: NAS 125

Moderator: Mark Yedlin, GPI

"The View from the Road" - *these presentations will highlight how VR tools can be used to evaluate visual impacts and design alternatives for projects in roadway environments.*

- **Visualizing Design to Preserve Treasured Viewsheds**
  Jane Traffalis, FHWA (Western Federal Lands) & Jacobs;
  Co-Presenters: Ben Vincent & Chelsea Adkisson, FHWA & Jacobs

- **Driving Through A Complex Weaving Section With an Immersive Driver's Level Video with VISSIM Traffic**
  Cameron Schmeits, Center for Transportation Research, The University of Texas at Austin

- **Using 3D Modeling to Understand the Perception of the Impact of Increased Density on Local Traffic**
  Jamie Bufkin, University of Florida

- **Let the Pictures do the Talking: Using Comparative Illustrations to Communicate the MTA Interborough Express Feasibility Study**
  Marc Szarkowski, Foursquare Integrated Transportation Planning

3:00 PM-3:30 PM
Break

Concurrent Technical Session 3
3:30 PM–5:00 PM

PM 3: Innovative Uses of Visualization in Operations and Planning
Location: Fred Kavli Auditorium

Moderator: Matt Haubrich, Iowa Department of Transportation

Effective transportation system management requires good information. This session will showcase examples of using visualization to turn data into information.

- **Using Probe Based Connected Vehicle Data to Determine Performance Measures for Signalized Intersections**
  Charles Lattimer, CATT Lab

- **Automating Data for Operations, Decision Making, and Performance Measures**
  Rikki Sonnen, Utah Department of Transportation

- **Visualizing Transportation Planning Data through Interactive Web Applications**
  William Hereth, Wasatch Front Regional Council

CC 3: Seeing is Believing–Decision Making Tools
Location: Lecture Room

Moderator: Patricia Hu, BTS

Regardless of our discipline, we use various data analytics and other tools to inform our decision. This session shows a sample of those analytical tools used to tell a story including the topics of railroad, freight and integrated travel demand modeling.

- **Railroad Information Sharing Environment**
  Mark Franz, CATT Lab

- **Data Analytics and Decision Support Tools in Freight Transportation: A Case Study in the State of Tennessee**
  Mitra Salehi Esfandarani, University of Memphis

- **Multi Resolution Transport Network Representation in the Integrated Modeling of Activity Based Travel Demand Modeling and Dynamic Traffic Assignment**
  Mohammad Abbasi, Arizona State University

PS 3 (A): Bridges to the Future
Location: NAS 120

Moderator: Kevin Gilson, WSP

Real-time interactive tools support a wide variety of transportation needs. This session will show tools that support bridge inspection, construction planning, and traffic simulation.

- **Supplementing Steel Bridge Fabrication with Immersive Augmented Reality**
  Hannah Blum, University of Wisconsin-Madison

- **Virtual Bridge Inspection**
  Nicolas Sosa, Greenman-Pedersen, Inc.

- **Real-Time Object Detection and Traffic Simulation for a Gated Approach to Autonomous Vehicle Deployment**
  Shivani Shukla, University of San Francisco

PS 3 (B): Virtual Reality for Work Zones
Location: NAS 125

Moderator: Jason Williams, Textron Systems

This session will show examples of how VR tools are used to improve safety in work zones, and to display complex urban layouts to the public

- **Leveraging Virtual Reality for Quantifying Usability of Wearable and Augmented Reality Technologies in Highway Work Zones**
  Sepehr Sabeti, UNC Charlotte

- **Learn Together: Collaborative Virtual Reality Training of Human Flaggers in Work Zones**
  Praveen Edara, University of Missouri

- **Utilizing Realtime Visualization Tools to Engage with the Public from a Per Parcel and Entire Corridor Review**
  Jeff Christiansen, WSB

5:00 PM–7:00 PM
Reception & Interactive Poster Sessions
Location: West Court

Poster Sessions

- **Visualizing Transportation Funding,** Julia Edmonds

- **Using Real-Time Citywide Datasets to Generate Artificial Intelligent (AI) Solutions: A City of Henderson, Nevada Case Study,** Linda Lim

- **Visualization Dashboard for Extracting Insights from Pavement Performance Data,** Nima Karah-Ostadi

- **Visualizing OEMs and After-Market OBUs via the THEA CV Pilot Evaluation Performance Evaluation Dashboard,** Omar Dokur

- **Quantifying the Impact of Transportation on Climate – Energy Analytics Dashboard,** Mark Fraz

- **Visualizing Performance Metrics of Truck Parking Information Management System,** Yilun Yang

- **Integrating Rule-based Visualization and Street Sustainability Evaluation,** Cenqi Zhu

- **Building a Shared Understanding of Air Pollution: A GIS-based StoryMAPs Tool of Community-scale Emission Inventories for Engaged and Empowered Decision-Making,** Abhishek Dhiman

- **Visualizing Ports Impacted by 2021 Atlantic Hurricane Season,** Matthew Chambers

FRIDAY, NOVEMBER 4, 2022

7:30 AM–2:00 PM
Registration
Location: Great Hall

7:30 AM–8:30 AM
Continental Breakfast
Location: Great Hall

8:30 AM–10:00 AM
Color Theory Workshop
Location: Fred Kavli Auditorium

Keynote: Thresa-Marie Rhyne

10:00 AM–10:30 AM
Break

Concurrent Technical Session 4
10:30 AM–NOON

BIM 4: Emerging Trends with BIM: From Open Data Standards to Structures to International Initiatives
Location: Fred Kavli Auditorium

Moderator: David Unkefer, FHWA

There are several key initiatives closing the gap on openBIM where data can be exchanged more seamlessly using open standards and we can measure the benefits. This session will highlight work by buildingSMART to deploy open standards, work by AASHTO to enhance structural project delivery and consider how to measure the effectiveness of BIM.

- **BIM for Structures Pooled fund and the Move to openBIM**
  Jennifer Steen, HDR
- **Making the Invisible Visible with BIM**
  Jag Mallela, WSP
- **Applying BIM/Digital Twin Practices on a Heavy Civil/Transportation Project, an Owner's Perspective**
  Phil Bell, Progression Dynamics and Chuck Hixon, Digital Construction Works

CC4: Using GIS for Data Sharing
Location: NAS 120

Moderator: Brittany Gernhard, High Street Consulting

Where do we need to focus? Geographic Information Systems (GIS) depict the location of different areas of interest. The areas of interest included in this session transportation statistics, active transportation facilities and bus speeds.

- **BTS Transportation Profiles: A Tool For Visualizing Transportation Statistics In Each County, Congressional District**
  Kyle Titlow, Bureau of Transportation Statistics

- **Texas Active Transportation Plan Inventory**
  Mackenzie Bartek, High Street Consulting Group

- **Visualizing Bus Speeds to Support California Transit Agencies and Riders**
  Eric Dasmalchi, Caltrans

PM 4: Going with the Flow: Visualization of Transportation Operations
Location: NAS 125

Moderator: Skylar Knickerbocker, Institute for Transportation, Iowa State University

Transportation agencies are increasingly seeking to understand factors that influence the performance of our networks. This session will examine tools and techniques to improve the flow on our systems.

- **Maryland Roadway Performance Tool BTS Transportation Profiles: A Tool For Visualizing Transportation Statistics Each Us County, Congressional District**
  Nicole Katsikides, Texas A&M Transportation Institute

- **Maryland Real-time Multi-modal Common Operational Picture Dashboard**
  Michael Pack, CATT Lab

- **Identifying and Quantifying the Causes of Congestion**
  Mark Franz, CATT Lab

Planning 4: "Show and Tell" - Engagement and Visualization
Location: Lecture Room

Moderator: Zenobia Fields

What you say and what you hear matters. Whether you are trying to entice the public to participate in a pilot program for an alternative approach to fund the transportation system or tell local towns and counties about funding and technical assistance opportunities or gather input on a sustainable future, people have to see a reason to pay attention. The session focuses on 'show and tell' as well as how you demonstrate you listened to their reaction.

- **Mileage Based User Fee Pilot - "Help Explore the Future"**
  Patricia Hendren, Executive Director, The Eastern Transportation Coalition

- **Local LISTENing Tour and EXPO**
  Veronica Murphy, NJDOT Local Aid Resource Center (invited)

- **We Are In This "Together North Jersey!"**
  Miriam Salerno, Voorhees Transportation Center, Rutgers University

NOON–1:00 PM
Lunch

Concurrent Technical Session 5
1:00 PM–2:30 PM

BIM 5: BIM for Maintenance and Lifecycle Asset Management
Location: NAS 120

Moderator: Ed Strocko, BTS

BIM applications empower an agency to better visualize and geolocate its digital asset information (aka digital twin). This offers enhanced capabilities for inventory and lifecycle management for all assets. This session will look at BIM solutions that are available, as well as an overview of the current practices, benefits, and challenges of BIM and Digital Twins through a survey of executives from the U.S. infrastructure industry.

- **A Big Data Platform to Visualize Infrastructure Assets by Geolocation**
  Todd Fagen, uGRIDD

- **Capturing Culverts – Using Mobile GIS Technology To Capture And Track Drainage Assets**
  Austin Holliman, Tennessee Department of Transportation

- **Challenges, Benefits, and Current Practices of Smart Technologies in Transportation Projects Visualization**
  Natallia Mendes, Louisiana State University

PM 5 (A): Perspectives on Transportation Performance Management
Location: Fred Kavli Auditorium

Moderator: Michael Pack, CATT Lab

As the Federal Transportation Performance Management framework completes its first full 4-year cycle, this session will showcase tools available to visualize highway performance at both the Federal and State levels

- **NCHRP 52-16 Synthesis Visualization for Highway Performance Measures**
  Frank Broen, Metro Analytics

- **How FHWA tells the Transportation Performance Management Story**
  Nelson Hoffman, FHWA

- **Transportation Performance Management: The AASHTO Perspective**
  Matt Hardy, AASHTO

PM 5 (B): Safety First! Visualization to Improve Safety Analyses
Location: NAS 125

Moderator: Inya Nlenanya, Iowa State University

Transportation professionals never stop looking for ways to improve safety. This session will showcase some innovative approaches to visualizing safety data to help support a safer system for all users.

- **Utilizing Off the Shelf Data Visualization for Crash Analysis Tool**
  Skylar Knickerbocker, Institute for Transportation, Iowa State University

- **Heavy Vehicle Safety at Railroad Crossings: An Analysis of Naturalistic Driving Data and Crash Report Data using Data Visualization Techniques**
  Aditi Manke, Drexel University

- **A Visual Analysis of Freight Safety: A Perspective of Truck Traffic Along Highways**
  Andy Berres, Oak Ridge National Laboratory

GEO 5: Geotechnical Visualization
Location: Lecture Room

Moderator: Derrick Dasenbrock, FHWA

This session focuses on the acquisition, data exchange, and visualization of earth science data for transportation projects. Presentations will explore current practices at a DOT, the data providers and consumers, and emerging techniques and trends in visualization of the subsurface.

- **WSDOT Geotechnical Office Current Practices for Communicating and Visualizing Geotechnical and Geological Information for Transportation Projects**
  Gabe Taylor, WSDOT Geotechnical Office

- **A Dynamic 3D Model and Augmented Reality Visualization, Linked with Field Instrumentation Updates of the US 231 Landslide in Alabama**
  Mark Vessely, BGC Engineering

- **Geotechnical Visualization of Highly Variable Soils Using 3D Geostatistics in Transportation Projects**
  Santiago R. Caballero, AECOM

- **Immersive Visualization of Natural and Anthropogenic Ground Surface Movement and Change**
  Alex Ferrier, BGC Engineering; Matthew Lato, BGC Engineering; Scott Anderson, BGC Engineering
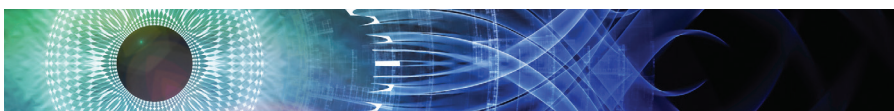
3:00 PM–3:30 PM
Closing Session
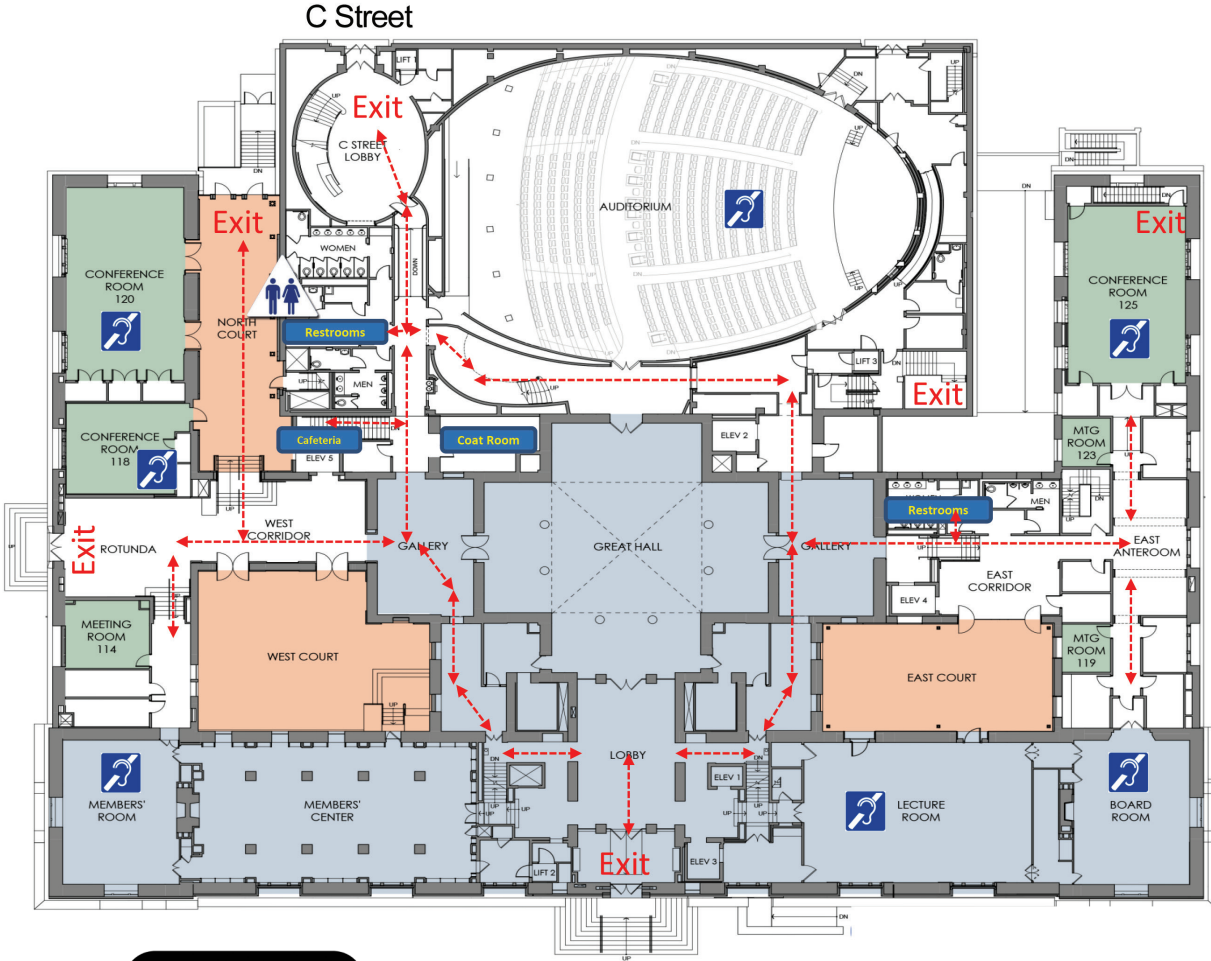Location: Fred Kavli Auditorium

Patricia Hu, Director
Bureau of Transportation Statistics, U.S. Department of Transportation

Charles R. Lattimer, Outreach Manager
Center for Advanced Transportation Technology Laboratory (CATT Lab)

Closing Remarks

NOTES

102nd Annual Meeting ▲ Washington, DC   **January 8–12, 2023**

Join us for the 2023 TRB Annual Meeting

The Transportation Research Board (TRB) 102nd Annual Meeting is being held January 8–12, 2023 in Washington, D.C.

Expected to attract thousands of transportation professionals from around the world, the meeting program covers all transportation modes, with sessions and workshops addressing topics of interest to policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions.

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