



2019 NJDOT TRB Annual Meeting Recap February 11, 2019

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Manager, NJDOT Bureau of Research

State of NJ TRB Rep



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Objectives for today

- 1. Introduction to TRB and the Annual Meeting
- 2. How to Attend /Get Involved with TRB
- 3. Recap (Transfer of Knowledge)
- 4. Questions & Open Discussion



NJDOTtechtransfer.net

- hover over "Tech Talks!"
 - scroll down, click "Events"



TRB's mission is to promote innovation and progress in transportation through research.

- Established in 1920.
- **Division of the National Research Council of the US** independent adviser to the POTUS, Congress, and federal agencies on scientific and technical questions of national importance.
- Jointly administered by the National Academies of Sciences, Engineering, and Medicine
- Annually engages more than 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 by participating on TRB committees, panels, and task forces.
- **Funded by state transportation departments**, federal agencies including the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

TRB Subcommittees & Benefits of Participating

- Over 200 committees, almost every transportation topic is represented
- Provide you with an opportunity to contribute to advancing the state of the art and the state of the practice in transportation.
- Visit <u>www.TRB.org/AboutTRB/Committees.aspx</u> for a list
- Contact the Chair to express interest and share your qualifications
- Become a "friend" of the committee. Membership requires a formal process, however participation in committee activities is not limited to members.
- Participate in committee meetings and conference calls
- Volunteer your time to review papers, work on committee projects, give presentations, etc.
- When a member space opens up, Chair looks at list of "friends"

TRB Annual Meeting

Held every January in Washington, D.C. January 12-16, 2020

Registration opens late August (program finalized mid Nov)

Save

the

Date!

One of the largest transportation conferences in the world,

• attracting almost 14,000 transportation professionals, featuring approximately 5,000 presentations in more than 800 conference sessions.

Virtually every aspect of transportation is covered at the conference.

Benefits of Attending the TRB Annual Meeting

Benefit to you, NJDOT, and the transportation community at large

- Networking with colleagues and establishing professional relationships
- Broaden knowledge and perspectives
- Receipt of valuable and timely information about current practices
- Gain early awareness of new research findings and emerging technologies
- Assist NJDOT in contributing to the broader transportation community







How do I attend the TRB Annual Meeting?

- Registration for NJDOT staff is FREE, but travel expenses are **NOT**.
- Registration opens in late August. To register, set up an account on www.mytrb.org
- Attendees must coordinate with their respective Managers and Directors to express interest in attending, and get permission.
- Travel expenses (transportation, lodging, per diem meals) must be planned for within each unit's own travel budget. **PLAN NOW**
- Stephanie Nock is NJDOT's TRB travel coordinator and manages the travel paperwork for all attendees.
- Emails and notifications about the event will start in late Summer
- Travel Packages are due to Stephanie early-mid October

Today's Representatives are from:

- Bureau of Research
- NJDOT Research Library
- Statewide Planning
- Transportation Systems, Operations & Support
- Transportation Mobility
- Environmental Resources
- Civil Rights & Affirmative Action
- Multimodal Services
- Local Aid & Economic Development
- Structural Engineering

Statewide Planning

Andy Swords, Director







TRB 2019 Recap for NJDOT



NJDOT Multipurpose Room



February 11, 2019

Andy Swords

Performance Management

- Federal TPM Structure
 - Foundation for ongoing evaluation
 - Next Long Range Plan, STIP include TPM
 - However: targets ≠ goals
 - Ongoing evaluation meaningful?
 - If not, how to supplement?

De-carbonizing transportation

- NJ: Transportation sector is largest source of GHG emissions
- 3 ways to reduce (CA example)
 - Vehicles (easiest automakers =>electrification)
 - Fuels (harder)
 - Mobility/Land Use (hardest)
- IPCC, National Climate Assessment: action needed now

Equity in Pedestrian Planning

- Design features can suppress pedestrian travel
- Pedestrian Bill of Rights
- Ethics for Drivers, Pedestrians, Bicyclists, Engineers, Planners, Designers, Law Enforcement
- A basis for further Complete Streets work?

Shared Mobility

- Modality style (behavioral predisposition)
 - Multimodal w/car (21%)
 - Multimodal w/o car (12%)
 - Driver (67%)
- Each group unique needs, challenges, behavior
- Need to plan for all

Thanks!

Andy Swords, AICP/PP

Director, Division of Statewide Planning New Jersey Department of Transportation

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Environmental Resources

Elkins Green, Director



New Jersey Department of Transportation Integrating Extreme Weather Resilience Into Transportation Asset Management







Excellence Delivered As Promised

January 16, 2019

FHWA Pilot Overview

New Jersey selected with five (5) other states, including Arizona, Kentucky, Massachusetts, Maryland, Texas to participate in a Pilot Program focused on extreme weather, climate risks, and asset management.



Aerial View of Study Area: I-80

New Jersey's Approach

- Focused on inland flooding as opposed to sea level rise & storm surges
- Considered precipitation as the extreme weather "stressor"
- Choose to focus on extreme weather "experiences" now (and in recent past) versus assessing impacts of long range projections



Passaic River fills street in Paterson, NJ – Hurricane Irene

New Jersey's Approach

- Original goal: determine how precipitation, could affect culverts as the "asset class" in Asset Management
- A focused study area was selected based on data that showed areas vulnerable to flooding – *Drainage Management System* (DMS)



I-80 Culvert (located at MP 57.35 on Westbound direction)

Case Study Area



Linking Extreme Weather and Asset Management

- Asset Management, Extreme
 Weather, and Proxy Indicators Pilot
 - The research refocused to identify root cause(s) of flooding in the targeted area to develop the most cost-effective risk management mitigation to be considered in lifecycle planning



Understanding The Problem

Top Project Findings - Results

- Understanding the root cause is key to developing cost-effective lifecycle management mitigation strategies and improve resilience:
 - Analysis showed low number of cleaning maintenance activities had a direct correlation with increased flooding occurrences. Increased maintenance activities can help to achieve a desired state of good repair/performance
- Important to address current problems/locations at risk while preparing for future conditions
 - Locations at risk under current scenarios may not be affected by climate change inundation projections (depending on the root causes). However, the frequency and severity of rain events now and in the immediate future will continue to put systems at risk unless appropriate mitigation strategies are implemented through asset management
- Isolating asset classes may not provide an accurate representation of problems

Transportation Systems Operations & Support

Asim Zaman



Artificial-Intelligence-Aided Automated Detection of Railroad Trespassing

Asim Frank Zaman

Senior Engineer, Transportation Operations Systems and Support

Grade Crossing Results: Vehicle



Grade Crossing Location 1 - Summary



Grade Crossing Location 1 - 24 Hour



Grade Crossing: 24 Hour Distribution

ROW 2 Results



Task Force on Transit Safety Meeting

Pedestrian Safety and Driver Yielding Near Public Transit Stops (Nichole Morris, Western Michigan University)

St. Paul, Minnesota – Vehicle x Pedestrian

Accident Prevention

- Problem: Pedestrian x Vehicle Accidents
- Solution: Countermeasure Analysis
 - Social Media Campaigns (Minor Effectiveness)
 - Police Warnings (Minor Effectiveness)
 - Police Ticketing (More Effective)
 - MUTCD Pedestrian Bollard (Very Effective)
- NJ = Good overall accident fatality record
- NJ = Poor Pedestrian x Vehicle Accident Record
- Once study published, NJDOT could take action based on the formal results





Transportation Systems Operations & Support

Parth Oza



Overview of Discussion Topics Parth Oza, Assistant Division Director, Operations, North Region

- Best Practices and Techniques for Clearing Various Interchange and Intersection Configurations
- Clear Roads Winter Maintenance Pooled Fund
- Impact of Utilizing CEI Consultants on Highway Construction Project Cost and Schedule Performance
- Other ideas

Best Practices and Techniques for Clearing Various Interchange and Intersection Configurations



Clear Roads Winter Maintenance Pooled Fund

PRACTICAL, READY-TO-IMPLEMENT RESEARCH

Plug-and-Play Initiative

Project 13-05 (in progress) and others

For several years, Clear Roads has led a collaborative effort to develop a universal communications protocol for in-cab electronics, allowing "plug and play" functionality regardless of the manufacturer or service provider.

This protocol will benefit both Clear Roads member states and their vendors by standardizing how critical operational data are shared on modern snow and ice vehicles, namely between compatible Automatic Vehicle Location (AVL) devices and anti-icing/deicing joystick and spreader controller systems.

> "We are watching closely the next steps in this effort as ODOT moves forward with automatic data collection and using spreader controllers to collect and send truck activity information."

> > -Patti Caswell, Oregon DOT



Graphic courtesy of SRF Consulting Group

Snowplow Supervisor and Operator Training

Project 12-04, completed April 2017

This project created a 22-module training program that states can customize to fit their needs. The modules cover equipment and materials, principles of weather and ice, safety, environmental concerns, and winter maintenance management.



Photo by David Gonzalez, Minnesota DOT

"Success! One county has proven less material use with just one training session for all drivers prior to last winter."

-Allan Johnson, Wisconsin DOT

75% of member states have implemented this project.

Far-Reaching Benefits

Clear Roads has received **nearly 100** requests for its Snowplow Operator and Supervisor Training materials from non-member agencies.

"We've implemented the modules into our new snowplow operator training. Benefits include time savings to trainers and educated staff."

-Melissa Longworth, Michigan DOT



Annual Survey of State Winter Maintenance Data

Project 15-S1 (ongoing)

Each year, Clear Roads compiles a range of winter operations data from state DOTs across the country. These metrics are displayed on an interactive map that lets states see how they compare to others in salt use, per-ton salt costs, number of plows, and more.

75% of member states have implemented this project.

"This project has saved us a significant amount of time. We use it routinely for internal and external communication, routine comparison for salt costs with other states as well as equipment type and quantity comparisons."

-James Morin, Washington State DOT


Impact of Utilizing CEI Consultants on Highway Construction Project Cost and Schedule Performance

- Staff shortage was reason for outsourcing CEI (Construction Engineering Inspection) work
- Use of consultants → no significant impacts on cost overruns
- Use of consultants → resulted in longer project schedules
- Develop ideal staffing profiles based on project complexity



	No Consultant	Used Consultants
Avg. Schedule Overrun	-7.70%	20.20%
Avg. Cost Overrun	3.36%	3.34%

Other Ideas

- Uber has travel time trends through Uber Movement free data for research and analysts
- Innovation No Boundaries Pooled Fund
 - Sign Refurbishing 10% savings of annual operating budget for sign shop
 - MNDOT
 - Idea \rightarrow Submit \rightarrow Award \rightarrow Evaluation \rightarrow Final Assessment \rightarrow Implementation
- Six Minute Pitch Shark Tank

Sal Cowan Wasif Mirza Susan Catlett Jeff Rockower Gail Yazersky Ridwan Ahmed







Presenters

- Sal Cowan Senior Director
- Wasif Mirza Director
- Susan Catlett Project Manager
- Jeff Rockower Administrative Analyst 3, Information Systems
- Gail Yazersky Transportation Planner
- Ridwan Ahmed Assistant Engineer

Transportation Mobility	
"Improving Lives By Improving Mobility"	



TRB By The Numbers

Number of Sessions Attended - 52 (without Wasif #'s)

Number of Committee Meetings Attended – 4

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Examining the Disruptive Forces Facing DOTs: An Update of the Foresight Series

Stephanie Pollack – MassDOT Kyle Schneweis – Nebraska DOT Roger Millar – Washington State DOT Leslie Richards – PennDOT Carlos Braceras – Utah DOT



Examining the Disruptive Forces Facing DOTs: An Update of the Foresight Series



-\$16 billion investment - Multi year funding (11.9-cent gas tax increase) (3rd highest in the nation)



- Cooperative Automated Transportation Working Group
- Explains their efforts
- Pilots (weather, signals, work zone)

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Examining the Disruptive Forces Facing DOTs: An Update of the Foresight Series



- Traffic Incident Management
- Connected & Automated Vehicle
- Tolling, ITS and Traffic Signals
- Work Zones
- Commercial Vehicles
- Transit Vehicles



PennTIME



Examining the Disruptive Forces Facing DOTs: An Update of the Foresight Series



Massachusetts Department of Transportation

EO # 579: Establishing the Commission on the Future of Transportation in the Commonwealth (plan for 2020-2040)

Created Commission on the Future of Transportation in the Commonwealth (Climate and Resiliency, Electrification, CAV, MaaS, Land Use, Demo)



Examining the Disruptive Forces Facing DOTs: An Update of the Foresight Series



DEPARTMENT OF TRANSPORTATION



Biggest take away?





Examining the Disruptive Forces Facing DOTs: An Update of the Foresight Series

- Automation
- Electrification
- MaaS



Thank You

for Being Late

An optimist's guide to thriving
In the age of accelerations
THOMAS L
Inter of the world is flat



Expanding and Enhancing the Capabilities of Traffic Management System

Michigan DOT

- invest time requirements document (1500 in theirs)









Freeway to Freeway Signal

Managed Lanes



Today's Teen, Tomorrow's Transportation Professional: Adapting and Preparing for the Future of Work

What are we doing to educate people about our industry?

\$15,000 to train a new employee

Chief Learning (not Training) Officer (Utah)

Knowledge Management is critical (Washington State)

DOT's replace employees instead of expanding knowledge

Transportation Mobility "Improving Lives By Improving Mobility" Thank You for Being Late an optimist's guide to thriving the age of accelerations THOMAS L. FRIEDMAS



Wasif Mirza

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Sue Catlett

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Migrating to the next Generation of Traveler Information & Communication (aka 511)

Panel consisted of agencies and consultants representing agencies

- \checkmark Spikes in usage of system caused by weather and road events was noted
- ✓ VA added additional information such as truck parking and RWIS (Road Weather Information System)
- ✓ Creation of mobile apps for the phone instead of just desk computers
- ✓ One was branching out to having a kiosk display at shopping centers
- ✓ Most have streaming video of traffic cameras
- ✓ Strive to provide services to commuters such as Park N Ride lots, train information, etc.
- ✓ San Francisco Bay Area has 511 available through "Alexa" meeting the customer where he/she is
- Questions asked what does the future hold in store for when vehicles will communicate in some fashion
- ✓ DOTs remain best source of construction event information, winter road conditions and expected clearance times
- ✓ DOT can influence decisions but can't control motorists







A National Dialogue on Highway Automation: Advancing the Conversation (2 Sessions)

- Recap what happened in the 6 sessions (June –December 2
 - Kickoff
 - Policy & Planning
 - Digital Infrastructure and Data
 - Freight
 - Operations
 - Infrastructure Design & Planning



integration of automated vehicles onto the Nation's roads

- > The 2 panels had representation from state/FHWA/MPOs, industry and interested societies/organizations
- > High level review discussed some of the topics brought up at different sessions, such as updating MUTCD
- ➤ 4 Objectives of National Dialogue Series:
 - Listen: Gather detailed input from a diverse group of stakeholders regarding opportunities and challenges on highway automation, such as infrastructure readiness, traffic operations, policy, planning and other areas.
 - Engage: Facilitate information sharing among industry, public agencies, and others to understand the current state of automated vehicle technologies and inform FHWA actions.
 - ✓ Inform: Raise awareness of FHWA and USDOT initiatives in automation, serving as a resource for the transportation community.
 - Evolve: Update institutional structures for working with existing and new stakeholders to develop new partnerships and strengthen coordination channels.
- > Reports of each session will eventually be posted on website.
 - <u>https://ops.fhwa.dot.gov/automationdialogue/index.htm</u>



Automated Vehicles (AV) 3.0

- ➤ Was issued October 2018
- \succ Items mentioned in report:
- Safety 1st
- Technology Neutral (US DOT is not looking to specify a particular technology)
- Modernize Regulation (some regulations may need to be adjusted for technology)
- Prepare for Automation (what needs to happen so we are prepared for automation)
- Website: https://www.transportation.gov/av/3





Jeff Rockower

Transportation Mo	bility
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"Improving Lives By Improving Mobility"



- Connected & Autonomous Vehicles
- Traveler Information
- Traffic Signals
- Ramp Metering
- Express Lanes
- Storm Management
- Variable Speed Limits & Active Traffic Management

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- Demanded 3 ⊇ ≈ 51,000 USD
- 25 150 IT internal people
- Sever from other networks
- Business network and core were attacked
- Federal and Gubernatorial Support



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- Hacked Dynamic Message Signs
- Impact is low compared to an entire system
- Public Embarrassment
- Major Public Safety Risk
- Lowers credibility of State Agencies
- Threatens public's faith in more advanced technologies like CV/AV

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- Balance Competing Priorities
- OIT vs. DOT
- Governor Reports every 6 hours
- Prioritizing Business Functions







- Maintaining "Business as Usual"
- Combating Psychological Stress
- Working without Internet or computers
 - Paper versions of EVERYTHING
 - Time sheets, contracts, payroll, etc.

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- Impact of the Ransomware Attack
 - \$1.5 2.6 Million of State Funds
 - No Federal Reimbursement of Federal Funds

- Worldwide Impacts of Malware Attacks
 - \$11.5 Billion

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KNOWLEDGE MANAGEMENT

- Creating
- Sharing
- Using
- Managing
- Capturing the knowledge and information of an organization

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KNOWLEDGE MANAGEMENT

The purpose of KM in an organization

- Dependent on the particular organization's goals and needs
 - To mitigate the potential loss of knowledge due to retirements and the changing workforce;
 - To make knowledge and information findable;
 - To improve performance;
 - To support innovation.



KNOWLEDGE MANAGEMENT

- Capturing knowledge of employees who leave is paramount
- Over 12% of employees at TM in last 5 years
- Average time spent in TM is only 11 years
- Another 10% will retire in next 5 years.

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KNOWLEDGE MANAGEMENT

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Gail Yazersky AICP/NJ-PP

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Sessions and Committee Meetings Attended

- Transportation Demand Management Committee Meeting (incl presentations)
- Emerging and Innovative Public Transport and Technologies Committee Meeting (incl presentations)
- Using Managed Lanes and Congestion Pricing for Innovation in Mobility & Technology - poster session
- Shared Mobility, Ridehailing and Emerging Transportation Trends
- Research Access Management Subcommittee Meeting
- Recent Research on Pricing and Managed Lanes
- Shared Mobility and Changing Travel Behaviors
- Access Management Committee Meeting
- Advanced Automated Transit: Integration into Smart Cities
- Emergency Response: Why is Data a Roadblock
- Intelligent Transportation Systems Project Updates


AP020 Committee Meeting

Emerging and Innovative Public Transport and Technologies

- Considers new, emerging and innovative concepts of public transport systems and technologies
 - related to: public and private transport modes, equipment, facilities, information systems and communication technologies, propulsion systems, and transit technology integration with land use, smart parking, carsharing and bike sharing
 - MaaS, microtransit and MOD also components
 - 4 Presentations : TNCs, Microtransit, EU shared and connected mobility, MPO ride-hailing research (Boston)
 - Michigan DOT Mobility Challenge many good suggestions could be implemented in NJ and support recent initiatives in this area





Michigan DOT Mobility Challenge - Jean Ruestman, MI DOT/Committee Co-Chair

Governor Snyder announced \$8 Million Michigan Mobility Challenge grant initiative

Goal: Address core mobility gaps for seniors, persons with disabilities and veterans statewide

- Collaborative effort between multiple state agencies:
 - Michigan Department of Transportation (MDOT), PlanetM/Michigan Economic Development Corporation, Michigan Dept. of Health and Human Services, Michigan Veterans Affairs Agency, Bureau of Services for Blind Persons, and Michigan Department of Civil Rights
- Opportunity to create and deploy innovative transportation solutions
- Secondary goal = further position the state as a leader in testing/deployment
- Process: hold workshop, form partnerships and work in teams to develop grant opportunities for demonstration pilots
- Outcome: received 43 proposals from organizations and partnerships formed through workshop valued at \$27 million – 8 selected in first round







Sample Pilots - first round awardees (from website):

- Piloting autonomous wheelchair securements within 25 seconds
 - Improve independence for people with wheelchairs, reduce boarding time, improve ontime performance, and create a better customer experience
- Test delivery of food and pharmaceuticals with autonomous delivery vehicle
 - Unique application of integration of its software and hardware into an AV uniquely designed to operate both indoors and on open roads
 - Big part of the mobility future is its intersection with healthcare
- Technology solutions to assist with the "last 50 feet" problem of locating bus stops and final destinations
- Develop specialized mobile app: on-demand, personalized transport geared to this population
- Wayfinding for Veterans including the Visually Impaired



Shared Mobility, Ride hailing and Emerging Transportation Trends (5 presentations)

A. Rider to Rider Discriminatory Attitudes and Ridesharing Behavior

- Identified discrimination with ride pooling for Lyft and Uber customers
- These are barriers to pool type efforts of these TNCs and lowers use
- Most riders male and female preferred sharing rides with women

B. Impacts Of Travel Demand Information Diffusion On Reducing Empty Vehicle Miles Traveled By Ridesourcing Vehicles

- Opportunities to reduce TNC VMT as ridership shifts from more efficient modes like transit
- Examined induced demand and VMT increases from TNC vehicles cruising for next customer; many ride empty or utilize curb space making unavailable for other uses
- Researchers developed TOD machine learning model using heuristic algorithm
- Data from 2 different TNCs: RideAustin (TX) and Didi (China)- largest TNC anywhere-over 25 million daily trips
- Conclusions showed demand information diffusion can lead to <u>substantial</u> deadheading distance reductions
 - Mileage reduction between 67% to 82% was observed by varying drivers waiting time for RideAustin.
 - DiDi sample data application showed 56-59% reduction of deadheading miles for an average trip.

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- Future Research suggestions could go far in maximizing TNC usage while minimizing impacts to VMT
- As TNC use increases significant potential to help roadway agencies keep upper hand in congestion battle while supporting this demandresponsive mode to serve NJ travelers.





Intelligent Transportation System Project Updates-International, Part 1- Canada

International Updates and Perspectives – Highlights in a NJ Minute

- Transport Canada Innovation Centre
 - 2030 Strategic Vision: Traveler-centric, Safer, Green and Innovative, Waterways, Coasts and The North, Trade Corridors to Global Markets
 - 4 key areas: Strategic Vision, Innovation Centre, Trends and governance, & Activities in C/AV
 - Cooperative Truck Platooning System-electronic coupling/fuel savings
 - No Truck Test track in US all testing done in Canada





Intelligent Transportation System Project Updates-International, Part 2- EU

- ITS Vision towards 2030-ERTICO / 120 partners/vision zero, reregulate market, bring new services, MaaS Alliance
- Created MOD Alliance with ITS America
- Sharing rides, vehicles, infrastructure, data sharing, standards development
- ERTICO encourages startups to bring innovation









Intelligent Transportation System Project Updates-International, Part 3 - Japan

- Looking at first and last mile needs
- Evaluating transitional phases between now and Level 5 AV
- Truck driver shortage projected over 40% older than age 50
- Studying speed differential between regular and automated vehicles
- Roadside maintenance improvement needed
- What to do when GPS signal is lost
- Various business models being tested
- Many tech and business impacts







Ridwan Ahmed

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Sessions Attended :

- Innovative Traffic Monitoring Technologies and Platforms #1099
- Automated Transportation and Shared Mobility #1174
- Safety and Reliability of Work Zone Safety Measures #1267
- Speed Limits 2019: Current Perceptions, Technologies, and the Future #1339
- Connected Vehicles Pilots: Lessons Learned #1380
- Visibility of Signs and Roadway Markings #1415
- State DOT Innovation Programs: Identifying New Technologies and Practices from the Front Lines #1471
- Eye in the Sky: Transportation Infrastructure Monitoring Using Unmanned Aerial Technologies #1527

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Visibility of Signs and Roadway Markings LiDAR-based Assessment of Highway Traffic Sign Visibility University of Alberta, Edmonton, AB, Canada

- Key Findings
- Current procedures that assess the visibility of traffic signs carried out in the field are dangerous, laborintensive, and time-consuming.
- Light Detection and Ranging (LiDAR) technology can be use for assessing traffic sign visibility.
- LiDAR-based visibility assessment ensure traffic sign infrastructure meets the needs of current and future driving populations.
- Cost effective compare to manual assessment
- Limitation
- Although the assessment procedure was automated, traffic sign classification was done manually.
- This procedure was tested on rural highways but can also be used on urban roads.



Figure: Assessment of an Enhanced Traffic Sign Detection Method Using LiDAR



Speed Limits 2019: Current Perceptions, Technologies, and the Future Quantifying the Impact of Speed-Feedback Signs on Arterial Operations

Presented By: University of Arizona.

- Key Finding
- Speed-feedback signs (SFS), also known as dynamic speed display signs (DSDS), are roadside signs used to show drivers how fast they are moving.
- SFS can be safely installed on arterials as a speed treatment without impacting operations.
- This study finds that, there was no significant difference in mean or variance for any performance measure before and after disabling the SFS.
- Also, SFS does not have a statistically significant impact the travel time for a segment.
- Appropriateness
- Speed feedback signs are not appropriate on Arterial Operations



Figure: Speed Feedback Sign



State DOT Innovation Programs: Identifying New Technologies and Practices from the Front Lines

- Presented By: MnDOT
- In the winter of 2017-18, there were 84 collisions involving motorists and Minnesota Department of Transportation snowplows
- To overcome this problem, MnDOT' s Safety Innovation Team came up with the idea for a lighted plow marker
- Flexible markers that glow orange are very bright, and drivers can see them from up to a half-mile away, even in poor visibility
- The markers also help plow operators see the edge of the blade. That helps them avoid toppling mailboxes, signs or other roadside obstacles as they clear the snow.
- Each plow marker costs about \$30 to make
- They are being tested on about 20 vehicles in the metro area.





Transportation Mobility Figure: The MnD OT is testing new lighted tubes marking the "Improving Lives By Improving Mobility" Figure: The MnD OT is testing new lighted tubes marking the



Connected Vehicles Pilots: Lessons Learned

- Presented By: WYDOT, NYCDOT, Tampa-Hillsborough Expressway Authority (THEA)
- Wyoming DOT
 - ✓ Reduce the number and severity of adverse weatherrelated incidents in the I-80 Corridor in order to improve safety and reduce incident-related delays.
 - ✓ Focused on the needs of commercial vehicle operators in the State of Wyoming.
- Deployment Status
 - ➢ 60 RSUs of 77 total on the road.
 - > 25 vehicles equipped of 400.
 - Forward Collision Warning, Distress Notification, Event Logging, and Traveler Information Messages are complete.
 - TMC Systems in Production
- Key Issues in Measuring Success
 - Limited number of vehicles
 - Privacy concerns limit the type of data that can be collected.
 - Limited OBU capacity
 - > No home base for most of vehicles



Figure : Pilot Location



New York City DOT

- ✓ Improve safety and mobility of travelers in New York City through connected vehicle technologies.
- ✓ V2V technology installed in up to 8,000 vehicles in Midtown Manhattan, and V2I technology installed along high-accident rate arterials in Manhattan and Central Brooklyn.
- Deployment Status
 - > 20 Prototypes and 30 Production RSU units have been installed
 - > 50 Prototype ASD(Aftermarket Safety Device)installed in city vehicles
 - Working through technical and install issues with prototype units
 - Finalizing the software development and testing
 - Focus is now on back-office data collection and analysis
- Key Issues in Measuring Success
 - Data Collection
 - Storage
 - Processing
 - Backhaul communications
 - Combination with other sources
 - Data Ownership







Figure : Locations- Manhattan and Brooklyn



- Tampa (THEA)
 - Alleviate congestion and improve safety during morning commuting hours.
 - ✓ Deploy a variety of connected vehicle technologies on and in the vicinity of reversible express lanes and three major arterials in downtown Tampa to solve the transportation challenges.
- Deployment Status
 - > 1,200 Privately Owned Installs
 - 8 TECO Line Streetcar Trolleys
 - > 10 Hillsborough Area Regional Transit (HART) buses
 - ➢ 44 Roadside Units
 - Safety warnings integrated into the rear-view mirror
- Key Issues in Measuring Success
 - Understanding of "Available RSU and OBU Hardware
 - Understanding of Vendors' Depth and Resources
 - Integration Testing Before Private Vehicle Installs Begin
 - Sourcing of Suppliers



Figure : Focused Deployment Area



Bureau Statewide Strategies

Bassey Onyile





The 98th Annual TRB Meeting Recap



Focus Areas of Interest

Asset Management

- Making Asset Management the New Normal: Moving from Implementation to Integration
- Transportation Asset Management Committee
- Emerging Asset Management Tools, Techniques, and Performance Measures

Resilience

- Operations Resilience: How to Keep Operating When the Sh*t Hits the Fan
- Integrating Extreme Weather Resilience into Transportation Asset Management

Knowledge Management

- Knowledge Management Task Force
- Visualization in Transportation Committee

Making Asset Management the New Normal: Moving from Implementation to Integration



Operations Resilience: How to Keep Operating When the Sh*t Hits the Fan

-earned

-essons

Key Takeaways

Impact scale vs. impact frequency

Break down communication silos Preparedness & prevention Understand and document your core business functions Resiliency working group

potentia

mplementation





Knowledge Management Task Force



Key Takeaways

- People
- Process
- Technology

Lessons Learned

- Knowledge Creation vs. Knowledge Retention
- Link the past with the present to the future
- Relevant information should be findable quickly

Implementation potential

• Establish a knowledge management system



Thank You

Division of Statewide Planning Bureau of Statewide Strategies E:<u>bassey.Onyile@dot.nj.gov</u> |P: 609.963.2226

Bureau Statewide Strategies

Tom Houck







<u>98th Annual TRB Annual Meeting</u>

NJDOT Roundtable Recap

Monday, February 11, 2019

1:00 - 3:00 PM

DIVISION OF STATEWIDE PLANNING BUREAU OF STATEWIDE STRATEGIES



CONNECTED AND AUTONOMOUS VEHICLES

Reducing the uncertainty of evolving transportation technology, how it will influence the built environment, inclusive of the transportation system will allow the Department to make better and informed decisions guiding our policies formation and funding allocations.





ACCESS MANAGEMENT

Keeping up to date on the management of vehicle access point to adjacent land parcels promotes the safe and efficient use of the transportation network. Access Management provides an important proactive means of maintaining mobility thereby preserving the functional integrity and overall operational viability of the statewide roadway networks.



TAKEAWAYS

GLOBAL CAV PROGRESS

<u>Commonalities Among</u> <u>Participants</u>

- Public Agency Leadership
- Private Market Cooperation
- Integrated in all Modes



2010

Shared Broad Goals

2040

- Shared Mobility
- Electric Vehicles
- Social Acceptance





Dedicated Short Range Communication (DSRC)

Roadside Units

40 **Roadside Units**

<u>USDOT CV Pilots – Lessons Learned</u>

WYDOT

NYCDOT





NATIONAL CV PROGRESS



Pilot Lessons Learned:

- Keep Stakeholders and Public Informed
- Work with Local Agencies
- Promote Interoperability
- Incentivize Community Use
- Provide Open Source CV Applications
- Share Data & Collaborate

Practical Lessons:

- Outsource the Management of OBUs
- Solidify Standards Early
- Understand Available Application Maturity
- Complete Integration of Testing Prior to Vehicle Installation
- DON'T TRUST EVERYTING YOUR VENDER SAYS!!!!



LIFE MOVES PRETTY FAST IF YOU DON'T STOP AND LOOK AROUND ONCE IN A WHILE, YOU COULD MISS IT.









TAKEAWAYS FOR NJDOT



CAV TRENDS

- Electrification
- Shared Mobility
- Autonomous Acceptance
- Connected Vehicles & Infrastructure
- IOOs Pilot Deployment Success Stories
- AV Remains Market Driven



FUTURE CHALLENGES

- AV Deployment Pressure
- Diminishing Traditional Funding
- Mobility Equity
- Infrastructure
 Requirements
 - Development of Standards



THANK YOU



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SESSION SUMMARIES




PRICING IN AN EVOLVING MOBILITY ECOSYSTEM

6 6 0

ESTIMATING THE EQUITY OF ADDING ADDITIONAL PARAMETER TO MILEAGE-BASED ROAD USAGE CHARGE FOR SEVEN STATES

Kyle Schroeckenthaler

The feasibility and sensitivity of a mileage-based road usage charge (RUC) as an alternative to the gas tax was explored with the specific purpose of evaluating factors that could be considered when setting a charge to account for the complex makeup of statewide motor fleets, and to consider the diversity of household driving behaviors and experiences. The researchers considered a range of potential parameters before choosing to focus on fuel type and fuel efficiency. If based on annually adjusted efficiency quantiles, a parameterized RUC could prevent revenue erosion over time. Formulas based on these parameters were compared to the current fuel excise tax and a flat RUC. Distributional effects of parameters were assessed for urban, mixed, and rural household categories and for vehicles of different fuel types. Results show that households in urban tracts tend to pay slightly more under all formulations, and households in mixed and rural tracts pay less compared to an excise-based gas tax. In addition to changes across regions of a state, the method allows examination of the groups within these categories. Research found that adjusting for fuel efficiency reduced the change in incidence between urban, mixed, and rural census tracts, and between fuel types, that results from moving to a flat RUC. Fuel type parameters resulted in only small differences from the flat rate RUC because of low alternative fuel penetration in most states. This may change over time depending on the rate of integration of alternative fuels into the passenger car fleet.

THE DEVELOPMENT OF TRAFFIC-BASED CONGESTIONS PRICING AND ITS APPLICATION TO AUTONOMOUS VEHICLES

Jooyong Lee



Proper management techniques are needed to reduce congestion on the road network. In this paper, a reactive congestion pricing is suggested to reduce the congestion with varying tolls over time. Revenues for congestion levels can be earned through pricing to improve the travel status of other routes in the network. In addition, the development of automated vehicles shed light on improving traffic conditions with advanced driving performance of these vehicles. Therefore, congestion pricing techniques and the adoption of automated vehicles are applied to analyze changes in traffic conditions. The analysis shows that drivers with higher value of travel time (VOTT) are more likely to use tolled road than the drivers of lower VOTT. 23% of total drivers using the tolled road were higher VOTT drivers, while lower VOTT drivers were only 15% of them. The tolled road will experience improved travel conditions, but the other roads without tolls will experience more congestion. The travel speed of tolled road would increase to 4%, while that of non-tolled alternative roads would experience a 15% decrease of travel speed. However, because the positive surplus is larger than the negative impact of the pricing strategy, the overall travel condition of the network improves. More than \$600 per hour in benefits can be generated from the tolling strategy applied to a virtual network for simulation. In all scenarios, automated vehicle implementation results in improved traffic conditions, which is beneficial to the network.

BENEFITS AND COSTS OF RIDESHARING IN SHARED AUTONOMOUS VEHICLES ACROSS AUSTIN, TEXAS: OPPORTUNITIES FOR CONGESTION PRICING

Krishna Murthy Gurumurthy



A self-driving, fully automated, or "autonomous" vehicle (AV) revolution is imminent, with the potential to eliminate driver costs and driver error, while ushering in an era of shared mobility. Dynamic ride-sharing (or DRS, which refers to sharing rides with strangers en route) is growing, with top transportation network companies (TNCs) providing such services. This work uses an agent-based simulation tool called MATSim to simulate travel patterns in Austin, Texas in the presence of personal AVs, and shared AVs (SAVs), with DRS and advanced pricing policies in place. Fleet size, pricing, and fare level impacts are analyzed in depth to provide insight into how SAVs ought to be introduced in a city. Results indicate that the cost-effectiveness of traveling with strangers overcomes inconvenience and privacy issues at moderate-to-low fare levels, with high fares being more detrimental than the base case. A moderately-sized Austin, Texas fleet (1 SAV serving 25 people) serves nearly 30% of all trips made during the day. The average vehicle occupancy (AVO) of this fleet was around 1.48 (after including the 12.7% of SAV vehicle-miles traveled [VMT] that is empty/without passengers), with a 4.5% increase in VMT. This same fleet performs better when advanced pricing is enforced in the peak periods (4 hours a day), moderating VMT by 2%, increasing SAV demand and in turn fleet-manager revenue. SAVs are able to earn around \$100 per SAV per day even after paying tolls, but only at low-fare levels.

CONGESTION PRICING IN A WORLD OF SELF-DRIVING VEHICLES: AN ANALYSIS OF DIFFERENT STRATEGIES IN ALTERNATIVE FUTURE SCENARIOS

Michele Simoni The introduction of autonomous (self-driving) and shared autonomous vehicles (AVs and SAVs) will affect travel destinations and distances, mode choice, and congestion. This work develops multiple CP and tolling strategies in alternative future scenarios, and investigates their effects on the Austin, Texas network conditions and traveler welfare, using the agent-based simulation model MATSim. Results suggest that, while all pricing strategies reduce congestion, their social welfare impacts differ in meaningful ways.



INNOVATIVE METHODS TOWARD BUILDINGS AND EVALUATING CONGESTION CHARGING SCENARIOS: THE CASE FOR METRO VANCOUVER

Fearghal King



Cities and urban regions around the world are facing challenges associated with growing traffic congestion. Congestion pricing, or mobility pricing, has been shown to be an effective part of a package to reduce the negative impacts of congestion. However, there are challenges associated with pricing, not least regarding public acceptability and fairness. In June 2017 an independent commission was formed in order to understand how mobility pricing could form part of a comprehensive approach to managing congestion in Metro Vancouver, Canada. The Commission's recommendations were guided by three objectives: reduce congestion, promote fairness, and support transportation investment. The paper presented shares a number of innovative approaches that were taken to complete this work and help guide the Commission's recommendations. Two policy tools were explored - congestion point charges and distance-based charges – from which a number of pricing scenarios were developed. Base-level charge rates were constructed by applying the theory of marginal social cost pricing, while a method to develop an estimate for travel time reliability was constructed from modelled output of congestion. The regional transportation model was connected to household data from a trip diary survey to enable an understanding of the impacts of various pricing scenarios on households. Computation of the costs for offsetting inequity was used as part of the evaluation process, while the scenarios were also evaluated against various pricing principles.



BEST PAPERS FROM THE 2018 ACCESS MANAGEMENT CONFERENCE

6

INSTALLATION OF MEDIANS TO REPLACE TWO-WAY LEFT TURN LANES: ECONOMIC IMPACTS

Christopher Cunningham

reduce collisions and increase capacity along strategic highway corridors across the state. Efforts have led to the implementation of many different access management techniques along corridors, such as installing medians versus two-way left turn lanes, using leftovers, closing median openings, and installing superstreets. The Department has continued to receive comments from businesses along these corridors indicating their concern that these new designs will have a negative economic impact because of the lack of direct access to their properties. This study employs a perception based survey technique with the use of comparison sites to create a pseudo before-after study. Owners of businesses along treatment corridors viewed access management techniques in a more positive light than the perceptions of those on comparison sites. Their similar performance in terms of business revenues indicates that there is no direct evidence of negative economic impacts due to access management installations.

The North Carolina Department of Transportation has made significant strides to



INSTALLATION OF MEDIANS TO REPLACE TWO-WAY LEFT TURN LANES: ENGAGING THE BUSINESS COMMUNITY

Kristine Williams



Kristine Williams of the Center for Urban Transportation Research at the University of South Florida presented her paper on the installation of medians to replace two-way left turn lanes: engaging the business community as a practitioner's guide. In an aged of socially connected citizens, it is ever more difficult to sway public opinion of transportation solutions with data alone. Transportation officials cannot overlook the importance of involving the business community early in a transportation project's development. By being prepared for this engagement, officials can influence public opinion and produce positive results. Encourage a plan be developed for public engagement for all median projects that communicates the project clearly, satisfies the process values, is inclusive, allows for stakeholder input that is heard, and is most importantly truthful. Opposition arises for a variety of reasons. However, when officials violate the public trust in presenting a process that is unfair, or results that are not indicative of the process, the create the arena for this opposition. Ms. Williams concluded with sharing some basic resources; FHWA's Safe Access is Good For Business, and FDOT's Access Management Brochure.

INFLUENCE OF FRONTAGE ROADS ACCESS POINTS RELATIVE T X-RAMPS VERSUS TRADITIONAL RAMPS AND THEIR ENTRY AND EXIT GORES

Karen Dixon



Texas A&M Transportation Institute has been attempting to provide guidance to improve motorist safety and highway efficiency by utilizing X ramps in lieu of diamond interchanges. By utilizing X ramps the conflict point and opposing entrance \exit or weave\merge movement friction can be moved from the high speed highway to the lower speed frontage roads. This relocation of movements does present access issues for motorists attempting to access adjoining properties in the weave\merger area or gore region. Texas A&M Transportation Institute has pursued a safety investigation to determine the outcomes of this effort. In this study 93 randomly selected sites, 63 included X ramps and 31 included traditional diamond interchanges that met the study objectives, included sufficient boundaries for study, and had sufficient crash, Rhino and GoogleEarth data. Central to the study is the identification of key driveways in the gore region. The study has produced key findings to permit an assessment of safety effects for both X ramps and diamond interchanges, the development of a self calculating spreadsheet for assessment, and the demonstration of site characteristic sensitivity.

DESIGN AND ACCESS MANAGEMENT FOR TRUCKS

NCHRP 15-62

Ingrid Potts





ADVANCING COMMUNITY VITALITY WITH 21ST-CENTURY MOBILITY

THE SUBSTITUTION OF RIDE-HAILING SERVICES FOR MORE SUSTAINABLE TRAVEL OPTIONS IN THE GREATER BOSTON AREA

Steve Gehrke



The recent and dramatic growth in ride-hailing activity is a bellwether of a coming transportation revolution driven by on-demand services. The impacts of ride-hailing services on the transportation system have been immediate and major. Yet, public agencies are only beginning to understand their magnitude because the private ride-hailing industry has provided limited amounts of meaningful data. Consequently, public agencies responsible for managing congestion and providing transit services are unable to clearly determine who uses ride-hailing services and how their adoption influences established travel modes, or forecast the potential growth of this emergent mode in the future. To address these pressing questions, an intercept survey of ride-hailing passengers was conducted in the Boston metropolitan region in fall 2017. Ten ride-hailing drivers, recruited and trained by the authors, asked passengers to complete surveys during their ride-hailing trip. The tabletbased survey instrument recorded nearly 1,000 passenger responses regarding socioeconomic background, mobility options, and trip context. These responses, which enabled a robust description of ride-hailing passengers for the region, were used to analyze how new on-demand mobility services such as Uber and Lyft may be substituting travel by other modes. Our study substantiates previous findings and advances knowledge of who is utilizing this new mobility option and what factors influence its adoption over public and active transportation modes. Our results are intended to inform public policies ensuring that shared mobility technologies will complement existing multimodal landscapes and not worsen existing environmental concerns or equity gaps related to individual mobility.

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY (SFCTA)

Tilly Chang



New technologies are rapidly enabling innovations in transportation modes and services. These technologies include ride hailing services such as Lyft and Uber; microtransit services such as Chariot; courier network services such as Postmates; and autonomous vehicle technologies. In some cases, these new services complement San Francisco's policies and goals; in other cases, they conflict. In July 2018, SFCTA published a report that takes the first comprehensive look at the rapidly evolving emerging mobility sector in San Francisco. This report's recommended policies, pilots and research will enable San Francisco to partner actively with emerging mobility providers toward jointly improving the region's transportation system. This report establishes an inventory of services operating in San Francisco, a set of Guiding Principles for emerging mobility services and technologies, and evaluates how these services and technologies align with the city's long-range transportation goals in relation to a healthy environment, livability, economic competitiveness, and worldclass infrastructure, and through transportation lenses such as equity and affordability. This report provides a framework allowing the city to strike a balance between the emerging mobility sector and the city's Guiding Principles. Numerous recommended policies, pilots and research contained in this report will enable San Francisco to partner actively with emerging mobility providers toward jointly improving the region's transportation system. The results of this report provide a roadmap for guiding future Transportation Authority policies and initiatives in the emerging mobility sector, including the SFMTA Emerging Mobility Strategy Report. In addition, the report will inform ConnectSF (the city's longrange transportation plan) and the San Francisco Transportation Plan (SFTP) update.

PREPARING THE SEATTLE REGION FOR A CHANGING TRANSPORTATION PARADIGM

Kelly McGourty



Puget Sound Regional Council is helping its member jurisdictions to plan and prepare for the changing transportation spectrum – including technologies such as autonomous and electric vehicles but also the shifting paradigm of transportation to include shared mobility models such as ride-hailing, bike-sharing and other formats. Many new mobility options are already operating in the region; we expect they are here to stay, and more will emerge. As with other issues, it will be important to plan ahead – and to plan together – to fully realize the benefits of these shifts and to minimize their negative impacts. In addition, our region is experiencing tremendous growth. As we prepare our 2050 plan, we are considering potential new considerations for local jurisdictions and businesses making land use and development decisions in order to prepare for, and in some cases, advance these mobility technologies. We are researching questions such as "what are the impacts from these technologies on local land use decisions?"

PSRC's role is to help its members prepare for new mobility options by identifying issues and needs, providing assistance and preparing best practices and guidance, as appropriate. The PSRC Regional Transportation Plan includes a recommended action to bring together a diverse stakeholder group for discussions about the issues and needs associated with changing transportation paradigms. Rather than leap to conclusions about what will happen in the future (e.g., no one will drive a car, all vehicles will be autonomous, deliveries will be made by air drones) we want to make sure that we understand all of the questions and the issues that should be addressed, and to help the region develop plans that equip them to design whatever does come in ways that support its goals and policies.

MOBILITY AS A SERVICE: THE END OF CAR OWNERSHIP

Jonna Pollanen

Whim

Mobility as a Service (MaaS), which provides aggregated, single account, on-demand multimodal transportation services in a seamless and convenient way, is quickly gaining momentum. MaaS works out the best option for every journey – whether by taxi, public transport, a car service or a bike share. From office commutes to weekend getaways, MaaS manages daily travel in the smartest way possible. For extra convenience, MaaS can include value added services like deliveries for groceries or restaurant meals. It allows people to go places and live their lives with more ease than ever before. ABI Research forecasts that global MaaS revenues will exceed \$1 trillion by 2030. The anticipated disruptive impacts of MaaS on the use of traditional transportation modes such as personally owned cars, buses, trains, aviation, taxis, and rental cars is stirring up not just the automotive industry, but the entire realm of public and private transportation service providers.

MaaS Global LTD is a Finland-based, fast-growing company enthusiastically building the future of mobility. Its award-winning Whim app was launched in Helsinki in 2016, and is growing in cities such as Birmingham, England, Amsterdam, and Antwerp. Drawing upon the firm's experience as the world's first-ever MaaS operator, a MaaS Global representative will discuss the biggest change in transport since affordable cars came to market by the introduction of alternatives to car ownership that are not just equally good, but much better.



INTERNATIONAL PROGRAMS ON ROAD VEHICLE AUTOMATION

SIP-ADUS PROJECT, NATIONAL RESEARCH AND DEVELOPMENT INITIATIVE ON AUTOMATED DRIVING IN JAPAN: OUTCOMES AND NEXT ACTIONS

Yasuyuki Koga Yasuyuki Koga of ITS Japan discussed the Strategic Innovation Program (SIP-adus) for road vehicle automation. The project presentation focused on the four (4) phases of the A-SIP-adus timeline. In Society 5.0, Japan aspires to utilize technology to eliminate the gaps of today's society transforming transportation from being human centered to being mobility centered producing plans for smoother and optimal outputs. In Phase I, A-SIPadus sought to automate driving for universal use. Much of phase I elements were presented at the 97th Annual TRB Conference. This included the visioning and development of goals for automated driving (AD). The project is currently in Phase II designed to produce a fully automated driving society utilizing both private ownership and mobility service tracts to produce results. The last phase is the A-SIP-adus workshop phase to share project outcomes that can be replicated as standards globally.



THE UNITED KINGDOM'S CONNECTED AND AUTONOMOUS ROAD VEHICLE PROGRAMME; PAST, PRESENT, AND FUTURE

Phil Blythe



Phil Blythe presented the United Kingdom's (UK) findings from the Automated Vehicle Symposium in 2017 highlighting the three (3) pronged approach that has been taken as part of the national Industrial Strategy. As has been evident in the recent news reporting, technology has been leading with regulation attempting to keep up and producing a lagging acceptance of technology. The example Mr. Blythe gave was of a semi-autonomous vehicle crash with no one in the driver seat. Insurance and traffic laws for self-driving vehicles were not on the books at the time. In response to this incident, UK was likely the first in the world to pass legislation and regulations for self driving vehicles.

The three (3) pronged approach the UK has adopted is (1) to define a clear pathway for regulation utilizing trialing, vehicles safety approaches, and producing regulations on use; (2) to develop a joint investment in research and development (R&D) utilizing sequentially dependent programs in waves building upon previous successes to produce full autonomous vehicles; and (3) to produce an integrated test bed ecosystem where all locations are capable of communicating with all modes and all models producing a safer, cleaner and greener UK.

AUTOMATED PILOTS; A PROGRESS REPORT FROM SWEDEN

Jan Hellaker

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Drive Sweden is a new approach to mobility acknowledging a radical shift in the way people utilize the transportation systems to achieve their mobility needs. This outlook has been developed to show what is desired jointly for Sweden. In order to reach the vision for a connected, autonomous and shared mobility future, a number of intermediate steps are necessary. Mobility as a Service (MaaS) or Mobility on Demand (MOD) system research will need to be pursued in an integrated manner to guarantee Sweden's mobility of the future will be sustainable, safe, efficient, while also attractive in use.

Drive Sweden is a 12 year strategic innovation program built on a collaborative platform. The program began with MaaS apps deployed in Goteborg and Stockholm as part of a subscription model that included public transportation, shared vehicles (cars, bikes) and taxi services. The program also includes utilizing and informing the public of the use of self-driving vehicles, tools for assessing the societal and environmental effects of AVs, the development of planning tools for facilitating the transition from private car dependency to shared sustainable transport, adaptive regulations for AV, their sharing and procurement, ultimately producing a commercial MaaS service available everywhere in Sweden.

PEGASUS PROJEKT

Adrian Zlocki



PEGASUS delivers the standards for the automation of the future. With the PEGASUS joint project, promoted by the Federal Ministry for Economic Affairs and Energy (BMWi), key gaps in the field of testing of highly-automated driving functions will be concluded by the middle of 2019 via four (4) subprojects utilizing a six layered model (road geometry, physical barriers, temporary barriers, dynamic traffic participation, environment, and data and communication). Subproject 1 is the scenario analysis and quality measurement through the development of methods and tools for highly automated driving functions, demonstrating methods and tools, and deriving functional requirements that can be transferred to subprojects 2 and 3. Subproject 2 is the implementation process that analyzes existent processes, which have already been established in the automotive industry, regarding the safeguarding theme and prepares the actual testing in the form of modified deployment processes leading to a newly extended process methodology. Subproject 3, Testing prepares methods and tools for carrying out tests in the laboratory, at the testing sites, as well as in real traffic situations and then demonstrates these in practical manner. And in subproject 4, result reflection and embedding, results and procedures are verified to be transferred to further applications and higher automation levels, and the tools and processes developed within PEGASUS can be integrated into the company.

THE EUROPEAN UNION PROJECT INTERACT; DESIGNING COOPERATIVE INTERACTION OF AUTONOMOUS VEHICLES

Angelos Amditis

INTERAC

Furopean Unior



Automated Vehicles (AVs) are expected to start being deployed in mixed traffic and for this they will need to interact safely and efficiently with other (non equipped) users, including drivers of manually driven vehicles, cyclists and pedestrians. Currently, these vehicles cannot communicate their intentions to other road users and this limitation reduces the intuitive and cooperative interaction between the Automated Vehicles (AVs) and others, and the smooth flow of all traffic. Moreover other transport network users are currently unfamiliar with the presence of AVs and need to incrementally adapt to this new reality in an efficient and effective way that will ensure safety, especially in the transition period to full automation.

interACT will tackle the above-mentioned challenges, as it will study and substantially improve this communication and cooperation strategy between Automated Vehicles (AVs) and other transport stakeholders. interACT will provide an overview of current human machine interactions in mixed traffic, and increase chances of safe deployment of AVs by developing novel software and HMI hardware components for reliable and usercentric communication between an Automated Vehicle (AV) with its users.



CONNECTED VEHICLE PILOTS: LESSONS LEARNED

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WYDOT PILOT PERFORMANCE MEASUREMENT

Deepak Gopalakrishma



In 2015 the USDOT selected Wyoming's Interstate 80 (I-80) as one of three pilot locations to test and deploy advanced dedicated short-range communications (DSRC technology to improve mobility and safety. This roadway runs 402 miles along Wyoming's southern border carrying an average of more than 32 million tons of freight deliveries each year. Wyoming's extreme weather—including blowing snow in winter and fog and high winds in summer—create dangerous conditions for drivers on I-80. In the Connected Vehicle Pilot (CVP), WYDOT will use vehicle-to-vehicle (V2V), vehicle-toinfrastructure (V2I), and infrastructure-to-vehicle (I2V) connectivity to improve monitoring and reporting of road conditions to vehicles on I-80 through the use of 75 roadside units, 400 instrumented fleet vehicles, and the WYDOT traveler information application. The V2V, V2I, and I2V applications support forward collision warning, I2V situation awareness, work zone warnings, spot weather impact warnings, and distress notifications. Core principles WYDOT has gained from the Pilot include, learn early and often, make immediate adjustments, minimize the disruptions to drivers and fleets, and be open with data. Daily challenges WDOT has resolved have been identifying efficient ways to log event data, provide for constant monitoring of equipment, developing optimal data flows and analysis, and the application of available modeling and analysis tools.

THEA PILOT PERFORMANCE MEASUREMENT

Robert Frey



The Tampa Hillsborough Expressway Authority (THEA) and its partners are bringing innovative connected vehicle technology to Tampa's downtown. A car or truck equipped with connected vehicle technology "talks" wirelessly to other vehicles, traffic signals, crosswalks and more. This wireless communication can help prevent crashes, keep traffic moving and even improve fuel efficiency. THEA is equipping 10 buses, 10 streetcars and the cars of 1,600 individual volunteers with this exciting new technology to make downtown Tampa a safer, smarter place to walk, ride and drive. The THEA connected vehicle pilot is a 4-year, three phase effort that began in September 2015 with the implementing of the proposal. Phase 2 included design, testing and deployment. And phase 3 included the full-scale operations of the connected vehicle technology the deployment area. THEA's V2V and V2I communicating technology advises of traffic congestion and incidents, detect and advise of wrong-way entries, monitor and advise of pedestrians in crosswalks, provide transit signal priority, monitor connected vehicles to reduce the risk of collision, and communicate with traffic signals to improve real time traffic flows by utilizing roadside units that communicate with connected vehicles and with the city's Transportation Management Center via dedicated short range communications, or DSRC and systems integration of onboard units that display safety messages on an enhanced rearview mirror, as the primary interface between drivers and the connected vehicle environment.

NEW YORK CITY DOT PILOT PERFORMANCE MEASUREMENT

The New York City Connected Vehicle Pilot aims to improve the safety of travelers and pedestrians in the city through the deployment of connected vehicle technologies. This objective directly aligns with the city's Vision Zero initiative, which began in 2014 to reduce the number of fatalities and injuries resulting from traffic crashes. Led by the New York City Department of Transportation (NYCDOT), the pilot aims to reduce crash frequency and severity, manage vehicle speeds (to the regulatory limit), and evaluate the benefits of deploying connected vehicle technology in a dense urban environment with frequent interactions among the up to 8,00 participating fleet vehicles. The NYCDOT Pilot seeks to deploy connected vehicle technology in large fleets that operate in the same area, provide system capabilities to manage the large fleets and their safety applications, measure the system's performance while preserving privacy for fleet owners' and participants' personally identifiable information, focus on the stability and robustness of the 353 roadside unit (RSU) and onboard unit (OBU) "platforms" to support Over-the-Air (OTA) software updates and data collection, and require that the operation of the applications can be adjusted and "tuned" for the characteristics of the dense urban environment and variety of driving conditions within New York City. V2V applications include forward crash warning, emergency electronic brake lights, blind spot warning, lane change warning, intersection movement assist and vehicle turning right in front of bus warning. V2I applications include speed compliance, curve speed compliance, speed compliance in work zone, red light violation warning, oversize vehicle compliance, and emergency communications and evacuation information.

Keir Opie



Local Aid & Economic Development

Veronica Murphy



Facilitating Equitable Outcomes: The Intersection Between Public Engagement & Equity in Transportation

Community Impact Assessment



FACT SHEET			
Transportation Plannin	g Equity Assessment		
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ENTRAL D TEXAS

rticipation

Strategies to Enhance Public Involvement



Virtual Public Involvement

Virtual public involvement supports agencies' efforts to engage the public more effectively by supplementing face-to-face information sharing with technology.

Innovative virtual public involvement techniques provide State departments of transportation (DOTs). transit agencies, metropolitan planning organizations (MPOs), and rural transportation planning organizations (RTPOs) with a platform to inform the public and receive feedback. These strategies create efficiencies in how information is disseminated and how input is collected and considered, which can potentially accelerate planning and project development processes.

ENCOURAGING PUBLIC ENGAGEMENT

Public Involvement is a critical component in the transportation decision-making process, allowing for meaningful consideration and input from interested individuals. As daily users of the transportation system, the public has useful opinions, insights, and observations to share with their State DOT, MPOs. and local agencies on the performance and needs of the transportation system or on specific projects. Timely and strong public engagement has the potential to accelerate project delivery by helping identify and address public concerns early in the planning process, thereby reducing delays from previously unknown interests late in the project delivery process.



A heat map illustrates responses from cilizens when they were asked where future subways should be built.



Videol public involvement tools include online surveys. visualization, and telephone fawn halts

Nearly all State DOTs and most MPOs and local agencies use websites to post information about their activities. With the increased use of social media tools and mobile applications. the public can access user-friendly features such as online videos, podcasts, crowdsourced maps, and other interactive forums to receive information and provide input.

These new opportunities for information sharing and public involvement in the transportation planning, programming, and project development process include, but are not limited to, telephone fown halls, online meetings, pop-up outreach, social meetings/ meeting-in-a box kits, story maps, quick videos. crowdsourcing, survey tools, real-time polling tools. sacial media following, visualization, and working with bloggers

BENEFITS

- Efficiency and Low Cost, Virtual tools and platforms can efficiently be made accessible to communities, many at a lower cost than traditional public engagement methods.
- Accelerated Project Delivery, Robust public engagement helps identify issues early in the project planning process, which reduces the need to revisit decisions



PUBLIC INVOLVEMENT EFFECTIVENESS MEASUREMENT TOOLKIT NCHRP Report 905

Valid and "Do-able" Surveys and Scoring Tools

Bruce Brown, Ph.D.; Kate Gunby, Ph.D. candidate; Jamie Strausz-Clark, M.P.P.; Anne Frugé, Ph.D.; Shaun Glaze, Ph.D. candidate; Mackenzie Findlay, B.A.; Jordan Tuia, B.A.; Ian Hainosz, B.S.

WHY IS MEASURING EFFECTIVENESS NEEDED?

- ·Consultation with the public is not only required, but fundamental to the development of transportation plans and projects.
- •This outreach is also crucial for securing adequate funding for transportation infrastructure and building public support for transportation projects.
- While there are widespread resources for conducting public outreach and a growing body of literature and
- experience on how to engage the public, there are few practical methods to measure the effectiveness of public involvement.

WHAT ARE THE BENEFITS?

- Target areas for improvement
- Track improvement over time
- Improve relationships with affected communities
- Demonstrate seriousness of public involvement efforts

CAN BE USED FOR WHAT TYPES OF PROJECTS?

- New construction
- Infrastructure repair
- Tolling
- Long range plans
- •Etc.



HOW WAS THE TOOLKIT DEVELOPED?

WHAT ARE THE TOOLKIT CONTENTS?

Survey for use by the agency to score itself

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PRR

Guidelines for using the surveys and scoring tool



NCHRP Report 905 -- Measuring the Effectiveness of Public Involvement in Transportation Planning and Project Delivery (forthcoming) For more information, please contact Bruce Brown at bbrown@prrbiz.com.

Transportation & Public Health



NCHRP 25-25/Task 105 Connecting Transportation and Health: A Guide to Communication and Collaborations

Civil Rights & Affirmative Action

Kwincy Brown







January 13–17, 2019 > Washington, D.C.

Civil Rights

Kwincy Brown Shivani D. Patel



- State DOTs' successful DBEs are small share of all DBEs
 - National DBE Directory contained about 41,000 DBEs in July 2018
 - 749 successful DBEs certified as of summer 2018 (data for 45 states)
 - Successful DBEs (that are certified) are about 2% of total certified DBEs
 - In highway construction NAICS code, successful DBEs are 3% of all DBEs



"Graduation" temporary for some companies

- One-third of DBEs identified as "graduated" appeared in DBE directories as of summer 2018
- Some DBEs appear to return because of lower revenue once graduated and some return because restructured business
- State DOTs reported that some firms appealed decertification
- Some successful DBEs say they worry about their future if they graduate from the program

About one-half of successful DBEs owned by white women



African American-owned DBEs half as likely as other DBEs to be identified as successful


More Information

- When asked how things would be different if never been DBE certified ...
 - 66% say annual revenue would be lower
 - 42% say profit margins would be lower
 - 32% say would not be competitive in their field; 42% say they still would be competitive
 - 23% say would have failed
 - 10% say would work more as prime and less as a sub
 - 19% say would do more work on non-goals contracts and less on contracts with goals
 - 14% say would specialize in a different field

Commercial Useful Function

- If the C.U.F is not being done correctly make sure that the Inspectors in the field are trained and know what the red flags are.
- A lot of DBE Program fraud is seen in the regular dealer/supplier work classification, nationwide.
- Noticing a strong correlation between high DBE goals and failure in C.U.F reviews

"Goal set is just a cover for the racial barrier in the market until we can figure out a way to fix discrimination. Don't be reactive but find a way to be proactive."

Civil Rights & Affirmative Action

Shivani Patel



TRB Annual Meeting Shivani Patel

Safety and Health in Environmental Justice Communities

- Identification of common issues in EJ communities
- -Example issue: wide roads with fast moving traffic near residential areas where car ownership rates are low (areas where people are more likely to walk)
- -Recommendation: consider systematic safety measures to slow traffic in communities of concern. Not all solutions (bump outs, crossings, etc.) work best for all communities
- *Engage the public to understand their needs (importance of public involvement in all phases of the decision-making process)
- Who's at risk? (Older adults, lower-income, women, minority race)
- Why? (intersection with poverty; delayed care and missed care; geographic proximity; mental health impacts)

Study: Documenting Transportation Inequities

- Custom-designed an app, MyAmble, to measure transportation disadvantage among populations whose transportation needs historically have been neglected in transportation planning
- Based on concept of social exclusion
- MyAmble features: daily trip planner, travel buddy, travel story, challenge logger
- -User would log on and plan a trip.
- -Document where, when, how, importance and impact on life
- -At the end of the day, document whether trip was completed or cancelled

Study: Documenting Transportation Inequities cont.

- Study setting: Tarrant County, TX (high density suburbs; avg. commute time is 27 minutes; contains largest municipality in the country lacking a public transit system)
- Sample demographics: older adults and female survivors of intimate partner violence
- Health data: older adults reported lower self-reported physical health and higher prevalence of health conditions compared to survivors of IPV (pain and arthritis).
- Transportation data summary: groups logged similar total number of trips. Survivors of IPV travel more frequently.
- Implications
- -Rideshare
- -On-demand, door-to-door service is preferred
- -Myth of personal vehicle still strong

National Environmental Policy Act Documentation Effects of Current Presidential Executive Orders

NEPA and Climate Change

Obama-CEQ guidance on addressing climate change under NEPA

Trump-CEQ guidance rescinded

Floodplain Risk Management

Obama-Issued EO 13690 on flood-risk standards for fed projects

Trump-EO 13690 revoked; implementation of guidelines halted

USFWS Mitigation Policies

Obama-memo directing revision of USDOI mitigation policies

Trump-mitigation policies withdrawn; reinstates prior mitigation policies issued in 1981

NEPA Updates

Executive Orders

EO 13766 (Jan. 24, 2017)

-Calls for expediting environmental reviews of designated "high priority" infrastructure projects

EO 13807 (Aug. 15, 2017)

-Creates "One Federal Decision" policy for infrastructure projects that require an EIS

-No exception made for USDOT projects; must comply with 23 USC 139 and EO 13807

The Equity Equation: Meaningful and Innovative Strategies That Define and Address Unmet Needs in Underserved Communities

- Elder and low-income populations unlikely to adopt new technologies such as autonomous vehicles
- Fleet transportation such as Uber and Lyft not accessible to certain neighborhoods
- Multiple factors contribute to their inability to use services that may be beneficial
- -Cellphone access/literacy
- Study on SFMTA/Muni (Muni Service Equity Strategy)

-Promotes transit equity

-Discount program for youth, low and moderate income individuals, seniors and people with disabilities

- The use of policy leverage to ensure services are provided to areas of concern
- Equity requires the guiding principles of transparency, accountability, trust and social inclusive
- Citizen engagement is key

Sub-committee on Environmental Justice

EJ Analysis focus areas

- -Providing opportunities for meaningful public involvement (building relationships; tailoring public involvement; measuring effectiveness)
- -Identifying EJ populations (high concentrations of EJ residents; dot-density mapping; understanding demographic change; customized approaches)
- -Understanding EJ needs and concerns (informing needs assessment with EJ input; regional scale needs; mapping transit access and gaps; neighborhood scale needs)
- -Assessing benefits and burdens of plans and programs (assessing investment distribution; differentiating by project type, per capita and usage)
- -Assessing whether adverse effects are disproportionately high (qualitative approaches)
- -Deploying strategies to address disproportionately high and adverse effects (technical assistance, partnerships, specific goals and measures)

Bureau of Structural Engineering

Hannah Cheng



TRB 98th Annual Meeting, January 13-16, 2010, Washington, DC

NJDOT Annual TRB Roundtable Meeting - Bridges and Structures

Xiaohua "Hannah" Cheng, Ph.D., P.E.

Bureau of Structural Engineering, Division of Bridge Engineering and Infrastructure Management, NJDOT





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Workshops Attended

- Workshop 1080 "Resillience, Safety, and Security of Bridges and Tunnels: US and International Topics"
 - "4R" Robustness, Redundancy, Rescillience, Rapidity of Response;
 - National Security Blue Ribbon Panel;
 - FHWA new Bridge Security Manual (2017); FHWA R&D and funding;
 - TRB Event: RIME Summit, Webinar;
 - Takeaway: *FHWA Bridge Security Manual* -> update NJDOT Bridge Design Manual "Bridge Security" Section
- Workshop 1069 "Latest Innovations in Accelerated Bridge Construction (ABC)"
 - QC/QA, UHPC, Visualization/3D Modeling, etc.

Committee/Subcommittee Meetings Attended

- AFF10 "General Structures" Committee (Scan tour; software; truck platooning; MASH; Damper)
- AFF10(1) "Traffic Structures" Subcommittee
- AFF20 "Steel Bridges" Committee
- AFF50 "Seismic Design and Performance of Bridges"
- AFF00(2) "Accelerated Bridge Construction" Committee
- AFF00 / AASHTO COBS / FHWA Structures Collaboration
 - FHWA Bridge Office updates (NBI; platoon trucks; drones; MASH);
 - FHWA R&D updates;
 - NCHRP project updates;
 - AASHTO vs TRB matching committees

Lectern Sessions Attended

- #1287 Transportation Secretary Elaine L. Chao Addresses
 "Our Transportation Future"
 - **Drones** (safety, security, privacy);
 - Automated Vehicles;
 - Commercial Space; -> update policy
- #1472 "FHWA Long-Term Bridge Performance Program" (LTBP) NBIS data implementing; LTBP data collection/analysis; LTBP InfoBridgeTM)
- #1329 "Advances in Structural Engineering: Bridges and Ancillary Structures"
- #1257 "Advances in Seismic Bridge Analasys and Design"

TRB Turns 100 Years in 2020

Bureau of Research

Pragna Shah





TRB Sessions Attended by Pragna Shah

- The Innovation Culture: Building New Bridges Between Research and Practice
- Asphalt Concrete Cracking: Testing, Modeling, and Field Studies
- U.S. DOTs Safety Data Initiative: Visualizing and Using Data for Safety
- State DOT Innovation Programs: Identifying New Technologies and Practices from the Front Lines
- Visibility of Signs and Roadway Markings
- Exhibits: Provide free training
- Beyond Research: From Innovation to Economic Growth



No Boundaries Roadway Maintenance Practices



- Truck Mounted Flagger
 - Automated Flagger Assistance Device
 - Three color variable message boards
 - Automated stop/slow paddle
 - Flashing red/yellow signal
 - Benefits
 - Safety: Eliminates the need for a flagger on the ground
 - Time Savings: In setting up and moving between work zones
 - Cost Savings: Increases productivity in poor weather



Key Takeaways:

- Success of safety projects relies on the input and experience of front-line employees
- With consistent implementation of innovation, we can make better infrastructure and safer environment
- Training is available from FHWA grants
- New technologies are out there
- Critical role for data
- States need to communicate with each other and with national agencies Peers learn best from peers.

Bureau of Research

Giri Venkiteela, PhD





TRB 2019

Giri Venkiteela Bureau of Research



TRB STANDING

COMMITTEES

Standing Committee on Polymer Concretes, Adhesives, and Sealers (AHD40)-Member

Standing Committee on Concrete Bridges (AFF30)-Member

Standing Committee on Corrosion (AHD45)- Member and Research Coordinator

PRESENTATIONS



NJDOT research projects presentations

1. Lectern Session 1194-Corrosion Protection of Metallic Structures and Marine

Presentation 19-00490 - Giri Venkiteela, NJDOT

A New Protocol for Evaluating the Durability of Coatings Used for Reducing Corrosion of Steel Structures

2. Lectern Session 1462 - Evaluation of Transportation Structures Using Non-Destructive Testing Methods

Presentation 19-00490 – Behnoush Golchinfar, Stevens University

Steel Material Degradation Assessment via Vibro-Acoustic Modulation Technique

Other presentations attended

- 1. Novel Techniques for Reinforcing Cementitious Materials
- 2. Pothole Repairs and Patch Performance
- 3. Sustainability in Construction and Infrastructure
- 4. Visibility of Signs and Roadway Markings
- 5. Poster Sessions





Nano-Silica Coatings to Improve the Tensile Bond Strength of Cementitious Grouts

Interfaces

- High bond strength to achieve monolithic behavior.
- Use of nano-silica coatings as <u>nano-porous thin films (NPTF)</u> at interface.
- Promotion of nucleation and growth of C-S-H at interface. Would improve bond strength and durability.
 Location of interest (i.e., interface)



Development of UHPC Structural Design Guidance-FHWA

Maximum Possible Bridge Span





- Corrosion committee- A systematic approach is needed for better quantify the corrosion in infrastructures
- Other DOTs are very interested to work with NJDOT on corrosion paint testing
- Concrete bridge committee- Hot Topics: ABC, UHPC, Composite Materials, etc. FHWA looking for partnership in implementing Development of UHPC Structural Design Guidance
- Pothole repair is a major issue that require extensive research. TRB 2019 presentations showed various tools and materials for better repair of potholes
- Pooledfund study platform can bring States together to solve various common issues.



NJDOT Research Library

Carol Paszamant



TRB 98th Annual Meeting January 2019

Sessions attended

Carol Paszamant NJDOT Research Library

TRB Roundtable – February 11, 2019

Workshop 1016: Developing a Roadmap for Ecologically Sustainable Transportation

- Jeralee Anderson, President/CEO Greenroads
 International "Greenroads" globally recognized nonprofit
 - Gives credits for ecological connectivity.
 - Rating system software always being updated, at least every 5 years.
 - Must consider stormwater on your project.
 - Stormwater Management and Construction Compliance;
 - How to determine what's above and beyond standard mitigation?
 - Incentives for projects with the lowest possible social and environmental impact.
 - Looking for help to improve the tool.

Workshop 1016: Developing a Roadmap for Ecologically Sustainable Transportation

- Daniel Smith, University of Central Florida "Achieving Ecological Sustainability for Wildlife"
 - Wildlife habitat fragmentation issues due to roads.
 - **Problems/mechanics**: Road curvature, up and down, and slopes (i.e., *visibility*):
 - Greenways network set up, but roads competing;
 - Conducted multiple projects all began with baseline average of impacts of highways on wildlife – studies of > 100 species.
 - Key aspects: Political Will and Financial Investment!
 - Collaborative Public-Private Partnerships (P3);
 - FDOT policy to develop option to avoid and minimize impacts or include mitigation measures.

Workshop 1016: Developing a Roadmap for Ecologically Sustainable Transportation

- Kris Gada, Arizona DOT "Novel Roadside Ecosystems"
 - Roads as Landscape Corridors beneficial for plants AND connectivity
 - Multiple uses of roadside landscape functional: erosion, water quality, aesthetics, and habitat:
 - Roadside design process vegetation management zones create edge habitats;
 - Nitrogen deposition on roadsides due to auto emissions, actually good for plants!
 - Seed dispersal due to traffic and wind currents;
 - Integrated vegetation management use of native plants to reduce need for mowing and pesticides – good for pollinators; timing of mowing and pesticide use is important.
 - Partnerships to provide types of habitat wanted.
 - Maintain zones near roads in early successional state.
 - Design and maintain with multiple objectives in mind.

Transportation Research Thesaurus (TRT) Subcommittee B0002(1) Meeting

- Multiple participants from TRB, National Transportation Library (NTL), Transportation Libraries (including some DOTs), Consultants.
 - Outreach:
 - Website: trt.trb.org "The Transportation Research Thesaurus (TRT) is a tool to improve the indexing and retrieval of transportation information. The thesaurus covers all modes and aspects of transportation. The TRT's purpose is to provide a common and consistent language between producers and users of transportation information."
 - Janet Daly (TRB) produced new print brochure;
 - Video on TRT website: "Why Use the TRT?"
 - Article in *TR News* (Issue 305, 2016, pp 36-39).
 - New software: "PoolParty" (<u>https://www.poolparty.biz/</u>) ISOcompliant, can handle multiple vocabularies and link them. (We want to align with National Information Standards Organization (NISO standard, slightly different.)

Transportation Research Thesaurus (TRT) Subcommittee B0002(1) Meeting (continued)

- The National Academies is using TRT as a pilot project.
- Washington State DOT and L.A. Metro are each working on their own versions of the TRT:
 - WSDOT using text analytics with "SmartLogic" starting from scratch, from bottom up.
 - LAMTA also using "SmartLogic" tool to create thesaurus for their different archive collections.
- Discussed issues and tasks identified in NCHRP Report 874, The Transportation Research Thesaurus: Capabilities and Enhancements.
- Subcommittee considers new terms for inclusion anyone can propose new terms.
- Looking for new members Subject Matter Experts welcome.
- An updated list is sent out quarterly via newsletter.

TRB Information Services Committee B0002 Meeting

- Serves as a sounding board and feedback mechanism to ensure the quality of the Transportation Research Information Services (TRIS) and TRB library services.
- Attendees : TRB staff and a host of others, mainly librarians.
- Outreach:
 - Website updated;
 - New TRID videos posted in 2018;
 - New TRID webinar to be given by Mary Moulton on 3/21/2019 re: the 4 included databases;
 - Launched a new FAQ.
- Quite a few new journals being indexed in TRID send any other journal title suggestions to Bill McLeod (<u>wmcleod@nas.edu</u>).
TRB Information Services Committee B0002 Meeting (continued)

- Annual Meeting papers publication delayed due to changes in data entry system - still need to have registered for the Annual Meeting.
- I asked about marked record sets in TRID downloading in reverse publication date order – It's a known problem, and nothing can be done at this time.
- Continuing digitization of pre-2004 TRB publications. Progress posted on TRB website: http://www.trb.org/informationservices/informationservices.aspx
- Website features "SNAP" searches, e.g., workforce, innovation, electric vehicles, etc.
- TRB Centennial upcoming Alexandra Briseno (abriseno@nas.edu) is collecting photos for a Centennial book – 15 chapters, will be available at 2020 Annual Meeting!

Other Sessions Attended:

- Workshop 1054: The Long Engagement: From Writing Data Management Plans to Actually Managing Data.
- Poster Session 1432: Current Issues in Ecology and Transportation.
- Event 1455: Developing Climate Adaptation Strategies That Address Ecological Concerns Associated with Transportation Facilities.
- Poster Session 1552: Making Transportation Research Smart, Sustainable, and Equitable Through Libraries, Information, and Data.
- Workshop 1577: Knowledge Management 101: Strategies for Discovering the Best Fit for Your Organizational Needs.
- Committee Meeting: Library and Information Science for Transportation (LIST) Committee.

Thank you for this opportunity to attend -

Division of Multimodal Services

Nicole Minutoli, Director





Multimodal







Nicole Minutoli



Eye In The Sky – Use of Unmanned Aerial Technology

➢ Focused on the application of Unmanned Aircraft System use for monitoring transportation infrastructure.

> What is photogrammetry and how do we use it?







Corridors and Freight Performance Measurements

- > Positive trends in freight planning practices.
- > What is freight fluidity?
- > Texas freight fluidity study.







- NJDOT needs to better understand the supply chains on a corridor basis because supply chains function across multiple jurisdictions.
- Incorporating economic element to freight planning may help identify freight corridors that are most important to NJ freight industry.
- When it comes to utilizing UAS technology for monitoring and inspecting transportation infrastructure, NJDOT is on pace if not ahead of other states.



Thank you!



