









Summary of TRB 2016 International Winter Maintenance and Surface Transportation Weather Conference

Held April 25 – 27, 2016 in Fort Collins, CO, followed by SIRWEC April 27-29

The meeting format was new this year. In order to facilitate more interaction and information-gathering, the research papers were pre-recorded for online, on-demand viewing, while the majority of the meeting time was devoted to discussion and breakout sessions:

- Tools to aid travel planning
- Best management practices
- Equipment and materials
- Big Data for winter maintenance
- Decision support for maintenance operations
- Resilience and climate change

Session 4: THE APPLICATION OF INNOVATIVE TECHNOLOGIES IN DECISION SUPPORT FOR WINTER OPERATIONS Richard Nelson, Presiding Officer		
	Automated Vehicle Decision Support System (AVDSS) for Incident Weather Watch the Presentation Read the Summary View a PDF of the PowerPoint Presentation Ask a Question to the Presiding Officer	
	Paving the Streets of Pittsburgh: A Dynamic Route Planning Approach Watch the Presentation Read the Summary View a PDF of the PowerPoint Presentation Ask a Question to the Presiding Officer	
	Drivers' Decision-Making Supported by the Snow Visibility Information System Watch the Presentation Read the Summary View a PDF of the PowerPoint Presentation Ask a Question to the Presiding Officer	
	Adaptive Snow Plow Routing Using Genetic Algorithm Artificial Intelligence Watch the Presentation Read the Summary View a PDF of the PowerPoint Presentation Ask a Question to the Presiding Officer	

Handwritten notes on a sticky note:

- INTEGRATION OF FIXED AND MOBILE DATA
 - FILLING GAPS
 - WHICH IS Ground TRUTH?
 - Will it be Emulgated?
 - Local news vs. Wide Spread
- Difficulty of Getting Data
 - Call into changes
 - What's most valuable
 - Imagery
 - Background for changing data with time
 - Density of Vehicles
 - Fieldwork's technical
- QUALITY CONTROL
 - Detecting Bias w/ Fixed Network
 - Inconsistent formats
 - Nuts vs. Zero
 - Loss of time in QC

Additional notes on the right side of the sticky note:

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The goal was to identify gaps in research and barriers to implementation within these topics, and help identify ways that these deficiencies may be addressed, or if they have already been addressed in successful cases, how to move that knowledge into the mainstream.

There were a number of topics that had considerable discussion, and in some cases were discussed in various ways in multiple sessions.

Training Details

- How do we know if our training is effective? One suggestion is to tie your training to key performance indicators (KPIs). For example if you have problems with wing plows, then the KPI might be how many hours over the season your wing plows were not operational. If you did training on wing plows, the desired result is a reduction in the non-operational hours – a measureable KPI improvement.

Simulation

- Use a detailed model of operations (What If tool) to be able to predict the results if level of service is changed or if we have to lose 15% of our employees. How will our costs change? How will mobility and safety be impacted? Working examples are out there but additional work is needed to bring simulation to maturity and mainstream use.

Is Fixed RWIS a Dinosaur?

- Costs and maintenance for fixed sites can be very high compared to mobile sensors. With all those mobile sensors out there why would we need the fixed sites? On the other hand, during the worst storm situations, everyone sensible is staying home, so no mobile data. But fixed sites will be there. Fixed sites can also provide a ground truth process for your mobile sensors.

Privatization of Weather Information – Weather/Travel Info from Companies Instead of DOTs

- Are people willing to pay for road condition and travel weather information and how far can the process go? What might be put at risk by privatization and what might we gain by it?

Big Data Issues

- How do we ensure the quality of mobile data and address FOIA and privacy concerns if the data is from general public? How will we access the data at vehicle level – the CAN bus, aftermarket system, or some other method? How do we handle the volume of data that might be created with connected vehicles?
- How long should images be stored?

Climate and Resilience

- We expect to be dealing with more extreme and intense events – and we are not prepared for them. Can we use emergency management protocols in novel ways to address this gap? How can we change infrastructure proactively? Right now it seems inadequate infrastructure is only replaced when it fails, which is not perhaps the best solution when we know change is eminent.
- How do we deal when mitigation strategies are also at risk, e.g., flooding from intense rain is managed by pumps, but the lightning strikes take out the power?

Decision Support Systems

- How valuable is the very detailed data that we could get by using mobile sensors on our fleet? What is the value and how do we make the most effective use of these new sensor systems?
- Increasingly seeing sensors being used directly for performance measures (e.g. Idaho) – how can we model the benefits of this so that any agency can consider such approaches and determine whether they will help the agency?

Sponsors:

- Aurora Pooled Fund Group
- Vaisala
- MH Corbin
- FHWA
- Snow Lion
- Clear Roads Pooled Fund Group
- TRB Committees Winter Maintenance AHD65 and Surface Transportation Weather AH010
- Planning support from TRB Equipment Maintenance Committee and Colorado DOT