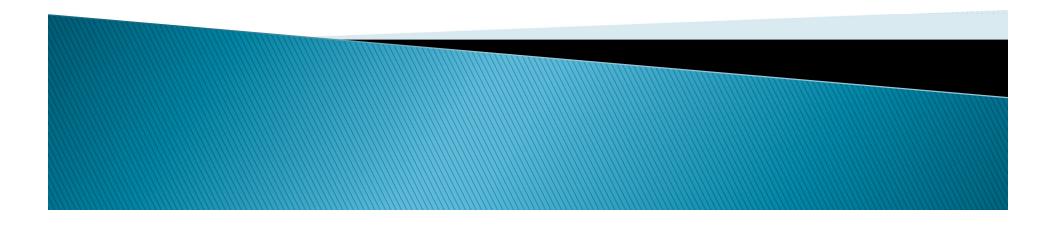
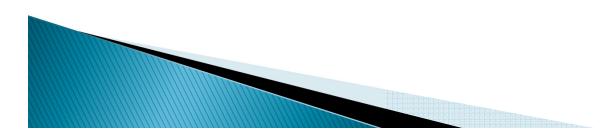
Idaho's Winter Operations Systems

Dennis Jensen Idaho Winter Operations Coordinator



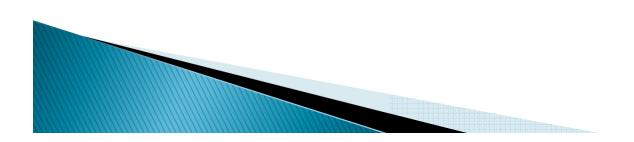
Overview

- Systems
- Data Collection
- Operations Analysis
- Performance Measures

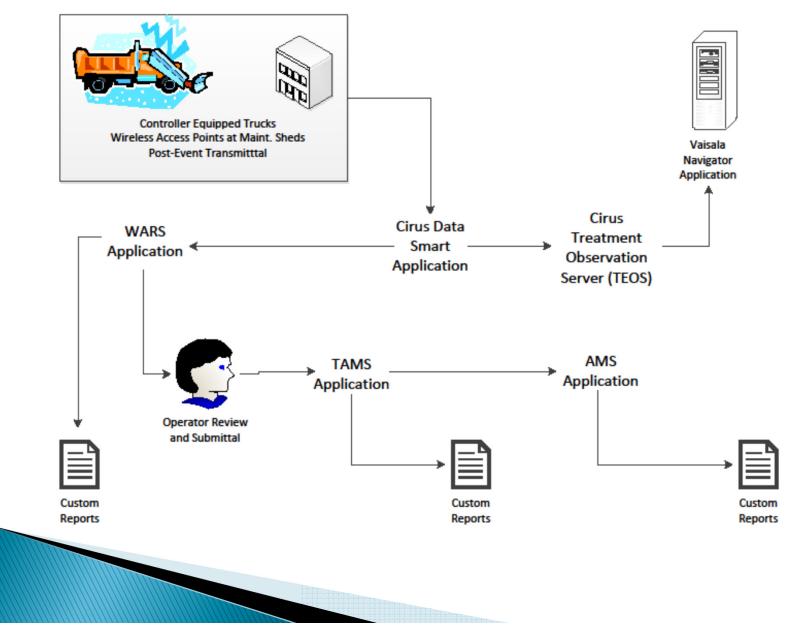


Winter Operations Systems

- Vaisala Navigator/RWIS
- Snowplow Mobile Data Collection (MDC)
 - Cirus Data Smart
 - Winter Automated Reporting System (WARS)
- Agile Assets Transportation Asset Management System (TAMS) – Fleet Module

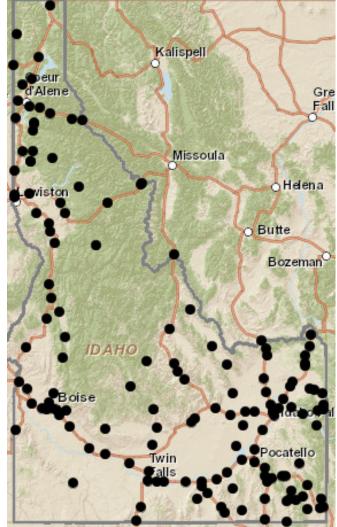


Winter Operations System Integration



Road Weather Information System (RWIS) Data Collection

- 128 RWIS sites Statewide
 - Non-invasive pavement sensors
 - Atmospheric & roadway data
- Data polled every 15 minutes
- Data and images are displayed on the Vaisala Navigator

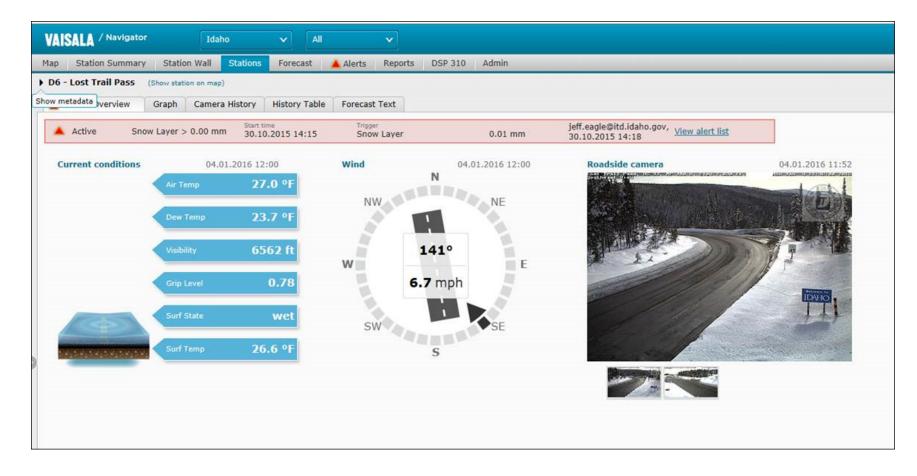


Vaisala / Navigator

- Direct observation of roadway by operators
- Weather trends
- Establish schedules
- Improves operations
- Continuous evaluation of winter operation Best Management Practices (BMPs)

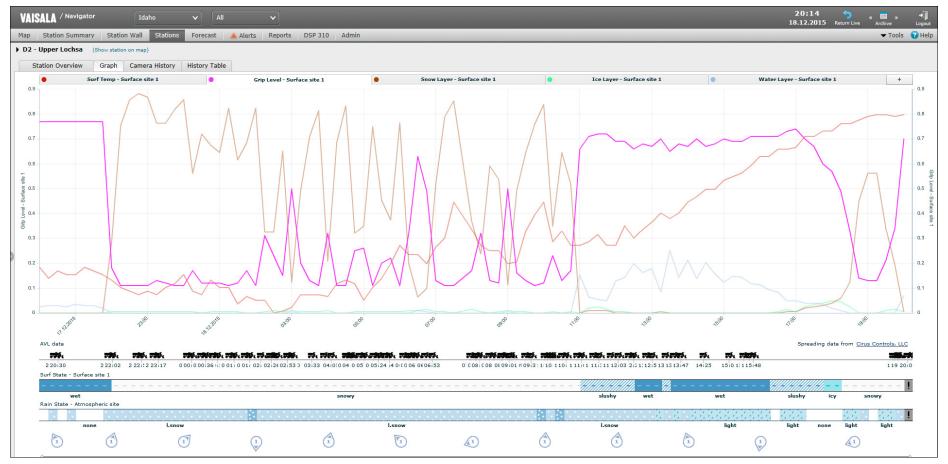


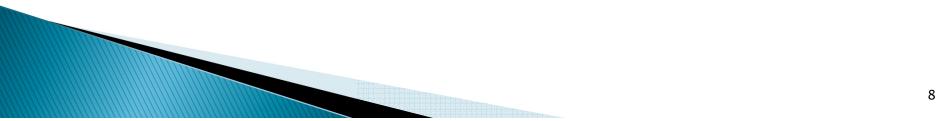
Navigator Site Overview



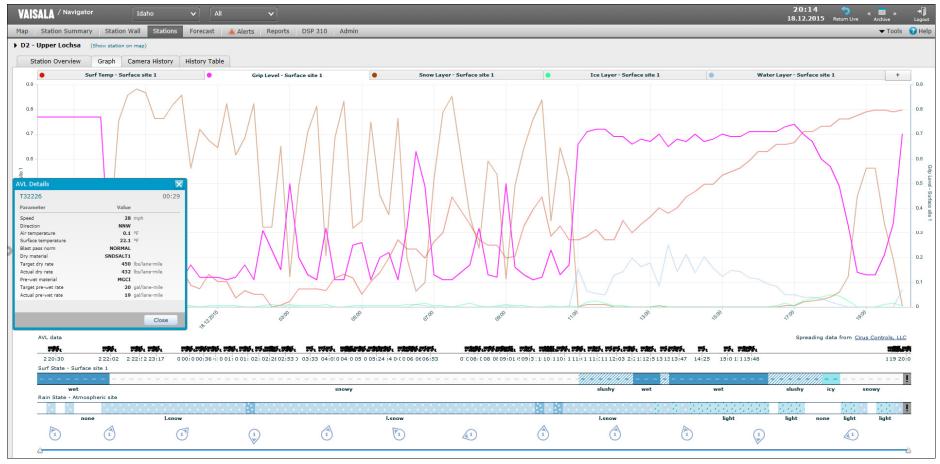


Vaisala Navigator/Cirus Display





Vaisala Navigator/Cirus Display

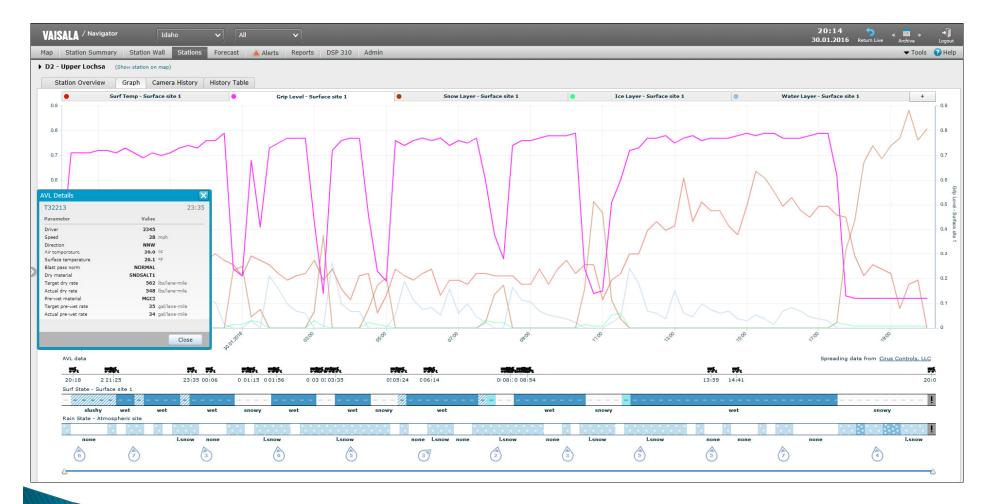




Vaisala Navigator/Cirus Display

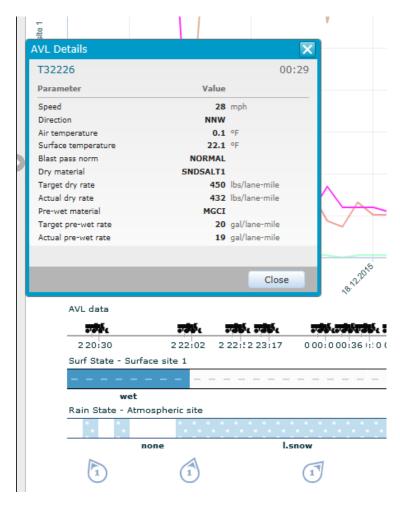
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Progress from Data Analysts



11

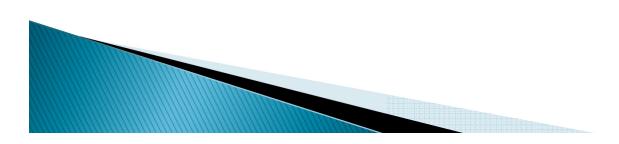
Continuous process improvement through critiques



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Target pr	re-wet rate			35	gal/lane-mile		
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Performance Measures

- Winter Mobility Index (*Ice/Snow Prevention*)
 Percent of time road condition is safe to drive on
- Winter Performance Index (*Ice/Snow Reduction*)
 - How well treatment was at restoring the hazardous road condition to safe condition



Vaisala Navigator

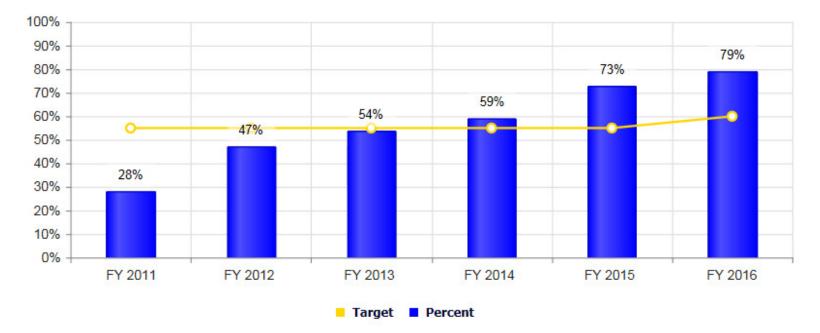
- Provides individual storm details
- Identifies the Mobility and Performance Index levels
- Tracks State Wide progress

		VAISALA / Naviga	^{itor} Idaho							15	:39	« 🔤 » Archive
		Map Station Summ	ary Station Wall S	Stations Fo	recast 🔰 🔺 Alerts	Reports [OSP 310 Admi	n				▼ Tools
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D2 - Upper Loth 25.01 29.01 29.01 30.01 30.01 30.01 30.01 30.01 30.01 30.01 31.01	hsa 1.2016 1	15.03 - 15.16 15.16 - 17.30 17.30 - 20.15 20.15 - 00.45 06.45 - 06.15 06.35 - 06.80 08.30 - 10.30 10.30 - 11.30 11.30 - 17.30 17.45 - 20.30 20.30 - 04.00 04.00 - 04.45 06.45 - 06.45 06.45 - 06.45 06.45 - 06.45 06.45 - 06.45 17.30 - 16.15 16.15 - 17.30 17.30 - 18.00 18.15 - 20.00 20.00 - 23.15	DATA MISSING TREATED GRIP-C6 TREATED GRIP-C6 TREATED GRIP-C6 TREATED GRIP-C6 TREATED GRIP-C6 TREATED GRIP-C6 TREATED FREATED TREATED TREATED TREATED TREATED TREATED	(hours) 96.22 2.22 2.77 4.55 4.55 2.00 1.00 6.00 2.77 2.07 2.00 1.00 6.07 2.77 2.07 2.07 2.07 1.07 2.07 2.07 2.07 1.07 2.07 2.07 2.07 1.07 2.	Speed (mph) 5 6 6 6 6 7 <td< td=""><td>(mm) 0.04 0.11 0.04 0.03 0.02 0.02 0.02 0.02 0.02 0.02 0.02</td><td>Layer (mm) 0.000 0.65 0.31 0.50 0.21 0.68 0.055 0.07 0.00 0.000 0.58 0.000</td><td>0.00 0.20 0.21 0.40 0.41 0.69 0.70 - Layer (mm) 0.70 - 0.70 - 0.7</td><td>Significantly a Some success Very little success United maintu Observation d Min Surface Temp (*F) 29 48 27 68 25 70 23 54 24 26 25 70 23 54 24 26 24 26 24 26 24 26 24 26 25 27 22 28 20 24 22 28 20 24 20 25 20 26 20 26 20 20 20 20 20 20 20 20 20 20 20 20 20</td><td>ccelerated at grip recess at deic: ess at deic recess at deice recess at deice reces at deice recess at deice recess at deice recess at</td><td>very ing deleter success teter missing or Performance Index</td><td>Mobility Inde</td></td<>	(mm) 0.04 0.11 0.04 0.03 0.02 0.02 0.02 0.02 0.02 0.02 0.02	Layer (mm) 0.000 0.65 0.31 0.50 0.21 0.68 0.055 0.07 0.00 0.000 0.58 0.000	0.00 0.20 0.21 0.40 0.41 0.69 0.70 - Layer (mm) 0.70 - 0.70 - 0.7	Significantly a Some success Very little success United maintu Observation d Min Surface Temp (*F) 29 48 27 68 25 70 23 54 24 26 25 70 23 54 24 26 24 26 24 26 24 26 24 26 25 27 22 28 20 24 22 28 20 24 20 25 20 26 20 26 20 20 20 20 20 20 20 20 20 20 20 20 20	ccelerated at grip recess at deic: ess at deic recess at deice recess at deice reces at deice recess at deice recess at deice recess at	very ing deleter success teter missing or Performance Index	Mobility Inde
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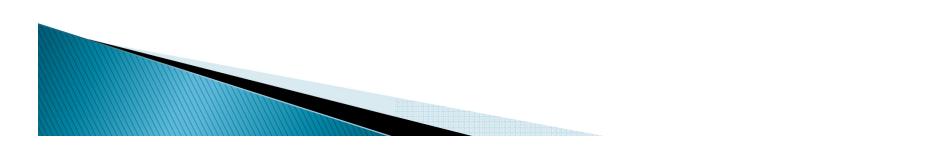
Percent of Time Mobility Not Significantly Impeded During Winter Storms

Target: Maintain at least 60% unimpeded mobility during winter storms.

Updated 2/3/16



2,926 events recorded 2015-2016 Season



Statewide WPI annual results

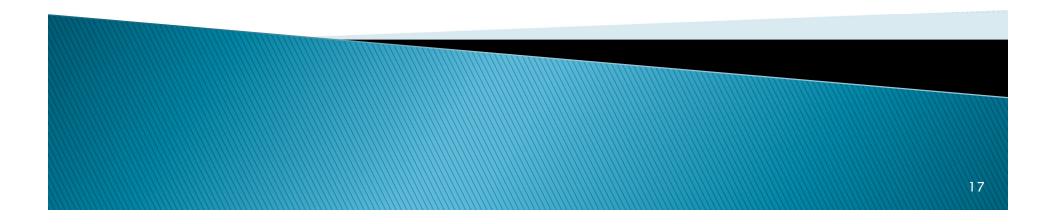
FY 2015 the WPI goals were based upon typologies. FY 2016 all sites will be aggregated by foreman area and the goal will be 0.20 or less.



Updated 2/3/16

2,925 events recorded

Snowplow Mobile Data Collection (MDC) Cirus/WARS TAMS



Snowplow MDC Objectives

- Automate the collection of vehicle data for accurate reporting of materials, labor, equipment and location to a more granular level
- Reduce operator time for reporting by integrating data information entry once
- Increase operator productivity and reduce winter operation costs through efficiency and effectiveness

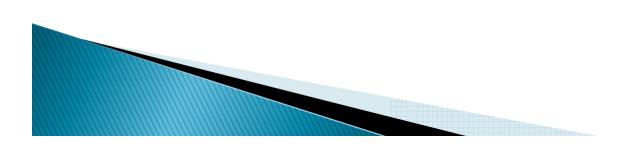
Snowplow MDC Systems

- Transportation Asset Management System (TAMS)
- Cirus Controls
 SpreadSmart RX[™]
 Spreader Controllers
- Cirus GPS DataSmart™ System
- Winter Automated Reporting System (WARS)



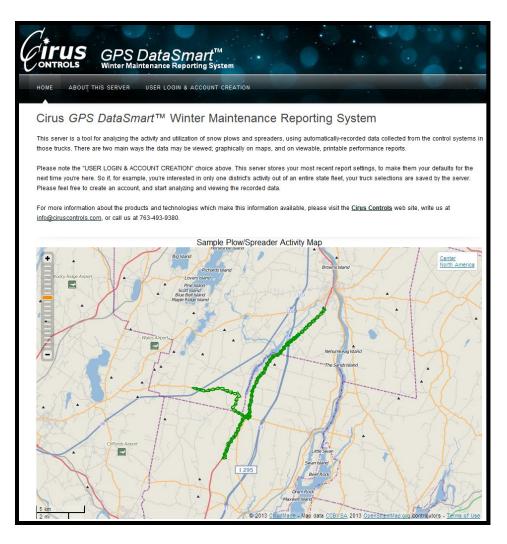
Transportation Asset Management System (TAMS), Road Maintenance Module

- Operational Data Warehouse
- Operations Cost Accounting System
- Provides Summary Reports of Winter
 Operations Efforts, (Can Only Report to the Quality of the Data Entered)
- Work Plans
- Asset Management Plans



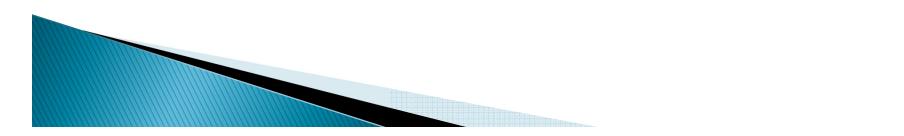
Cirus GPS DataSmart™

- Collects Snowplow
 Truck Data
- Creates Data Files for Display within DataSmart[™]
- Data Files transferred to Navigator & WARS





- Converts Truck Sensor Data to TAMS Activities
- Converts GPS Coordinates to ITD's Linear Referencing System
- Accurately Processes, Calculates and Displays Winter Operations Efforts
- Employee Interface to the Calculated Data (Daily Summary)
- Electronically Generated Material Reports





Reporting

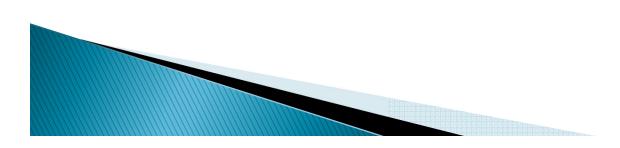
Storm Summary Report

- Summary of Pass Miles by Route
- Summary of Plow Down Time by Route & Employee
- Average Application Rate by Route
- Total Applied by Route
- Lap Time Analysis
- Exception Reporting

Future of our work force

Staffing reduction moving from shifts to swarm the storm

- FY2015 ITD had 562 Transportation Tech Operators
- FY2016 ITD down sized to 498 TTO (attrition)
 ITD was allowed to keep the salary savings
- Savings used to build career paths based upon improved value of the employee to the department
- TOTL program for supervisors implemented FY2017



Questions?

