Road Weather Technology
Minnesota Department of Transportation

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Presented by:

Joe Huneke
MnDOT’s Road Weather Technology Section (RWT) provides four core products:

- **Road Weather Information System (RWIS)**
  - Atmospheric and road condition data from 99 MnDOT sites
  - Information from 99 additional aviation sites (AWOS/ASOS)

- **Maintenance Decision Support System (MDSS)**
  - Unique forecasts for all 810 MnDOT plow routes with pavement condition prediction and treatment recommendations

- **Automated Vehicle Location (AVL)**
  - 600+ units now installed and reporting
  - GPS mapping of fleet activities
  - 2 way communication platform with Vehicles and Equipment
  - Data collection, storage and transfer

- **Salt Solutions Program**
  - Training to minimize environmental effects of road maintenance
RWT Vision and Mission

• To improve efficiency (cost), effectiveness (results), and accountability (measurement) of MnDOT Operations.

• Provide accurate road condition information and guidance so people, goods, and services are safely connected to destinations and marketplaces.
MDSS/AVL in Minnesota

• MnDOT has become 1st agency to fully deploy & integrate MDSS with Mobile Data Technology
  – Operate and manage both systems internally
    • Pooled Fund MDSS – State divided into 810 plow sections
      – Science based treatment recommendations
      – Fully integrated with mobile data collection/display
    • AVL & Mobile Data Computers (600+ Snowplows)
      – Includes touch screen display, image collection, video functions, data collection from truck, sander, sensors, and operator input
  – Cameras installed in 240 plows
    • Images will be used internally and sent to 511 for public info
Minnesota IMO System Framework

Applications for Operations

Motorist Advisory and Warning

Android/iOS App
Forecasts/Recommendations
Management Reports

Pavement Model
Road Weather Forecasts

MnDOT MDSS/AVL Servers

Users of Data
NCAR
WxDE
MADIS

511 Dash Cams
App for Voice Alerts
AVL activated DMS

Data Inputs

Cellular Connection
Developing DSRC

AVL equipped
Snow Plows

Airport Wx Stations
RWIS
AVL DATA
Radar
Forecasts

Source: Minnesota DOT
Allows Supervisors & Maintenance Managers to monitor progress during events.
Helps Supervisors and Operators plan cleanup after events.
Records results of maintenance activities.
Building Support in your Organization

• Learn what your agency’s current focus is
  – Show them how your project can help them achieve those goals
  – Focus on end result, not journey
  – Don’t promise items that you can’t deliver yourself

• Spread the message to all
  – Sell the idea at every level in organization
  – Taylor presentations to individual groups
    • Focus on meeting their needs
    • As you get buy-in let other groups know

• Be persistent- Ideas need to be discussed to become reality
Road Weather Technology Section ORG

• Steve Lund, Office Director
  – Sue Lodahl, Manager
    • Joe Huneke, Section Supervisor
      – Section organization, planning and budgeting
      – FHWA/EDC4/IMO Project Champion (MnDOT)
        » Jeff Jansen, Team Leader
          • Team organization
          • Regional coordination Backup when needed
          • Project administration

        » Jakin Koll, Regional coordination D3 & Metro
          • MDSS, training development and special projects

        » Doug Bakker, Regional coordination D4 & D8
          • AVL and special projects (CAN BUS) Work with District Shops

        » Jay Pierzina, Regional coordination D2 & D1
          • Backup RWIS systems administration

        » Tracy Olson, Regional coordination D6 & D7
          • Assist with development of training materials, Salt Solutions related activities

        » Jon Bjorkquist, RWIS Coordinator
          • RWIS maintenance, operations and planning
Roadblocks to Success

• Effecting change is a slow and difficult process, expect adversity and deal with it constructively
  – Keep your feet on the ground and eyes focused on the prize
    • Some will say it can’t be done
    • Some will say it shouldn’t be done
    • Some will tell you it needs to be done by them or their way
  – What should you do?
    • Always keep management apprised of the situation
    • Seek advice and support from others
    • Use every resource available to you
Lessons Learned

• Support from Leadership is critical
  • Show them upfront what the finished product can do for your Agency – especially in areas of improved management and accountability

• Double the time you think you need to plan

• Don’t try to implement piecemeal, start by fully deploying an area, expand from there.

• Make sure everyone hears the same message – this is the future and failure is not an option
What’s next for MnDOT?

• Use Mobile Data to improve Operations
  – Safety improvements & chemical savings from MDSS
  – Automate manual reporting processes
  – Produce quick, effective Management Reports
    • Measure actions/results
    • Identify opportunities
    • Improve and demonstrate efficiency and effectiveness
  – Expand the use of cameras in Snowplows
Thanks for the Invitation to share our experience with you

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