BORRMA-web

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MDSS Stakeholder Meeting 2008
Goals

⇒ Traffic Safety
⇒ Environmental Protection
⇒ Economy

⇒ Need of a comprehensive Winter Maintenance Management System
Information for educated decision making

- Centralised database
- Visualised information
- Appropriate prognoses

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Concept

Weather office

Road weather forecast

Traffic Management Systems

Weather / Traffic related data

Maintenance vehicles

Vehicle data

RWIS

Measured road condition and atmospheric data

Fixed Automated Spray Technology (FAST)

Measured road condition and atmospheric data

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Man-Machine-Interface

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Forecasting tools

Point Measurement

Weather forecast 3h
Precipitation Forecast 2h
Nowcasting
Parameters specific to RWIS location

Point forecast
Weather forecast 72h
Thermal mapping
Forecasting
Decision tree (parameters)

Road segment forecast
Reminder:

• Nowcasting is computed out of the RWIS data and the short-term weather forecast.
• Forecasting is essentially based on long-term weather forecast. However, the module integrates also the results of the Nowcasting (if available) as an enhancement for the short term.
Case study:

- Analysis of two Road Weather Segments (RWS):
  - RWS « Wien-Süd », the reference RWIS is « Inzersdorf »
  - RWS « Parndorf », the reference RWIS is « Neusiedl »

**Note:** There is no Nowcasting function installed on the RWIS « Inzersdorf » (Wien-Süd)
Step 1: October 14, 2007, 5:00 PM:
• Both Road Weather Segments show a warning level 1 (road danger forecasted in the next 12 – 6 hours)
  – « Wien-Süd »: pavement temperature temporarily below 0°C
  – « Parndorf »: hoarfrost
Step 2:
5:00 PM: forecasting curves for both Road Weather Segments show the danger in a time window between 1:00 and 2:00 AM
• Remark:
  The curve of the « Parndorf » Road Weather Segment shows a different slope between 5:00 and 7:00 PM:
  This is the influence of the Nowcasting (calculation is made for the next two hours), which enhances the weather forecast.
Value of Nowcasting

• « Wien-Süd »

• « Parndorf »

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Step 3: October 15, 2007, 0:00 AM

- « Wien-Süd »: The level of warning has constantly increased to reach level 4 (road danger within one hour of occurrence). It will even reach the « A » level (Alarm - danger is already existing) at 0:10 AM.

- « Parndorf »: The level of the warning is still at level 2 (road danger within the next 6 - 2 hours): the nowcasting (based on RWIS measured values) keeps « pushing » the forecasted danger back.
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• Step 4: Comparision with measured values from both reference RWIS-sites shows the influence of the Nowcasting in enhancing the quality of Weather Forecast.
Pavement temp. measured by the RWIS

Forecasted pavement temp. (without Nowcasting) at 0:00 AM
Pavement temp. measured by the RWIS

Forecasted pavement temp. (with Nowcasting) at 0:00 AM
Maintenance vehicles

- Data acquisition and transmission (real-time)
  - Current status of tools
  - Colored trail showing used tools
  - Current position of vehicles (GPS-based)
    ➔ Dynamic management of operations
    ➔ Knowledge base for further recommendations

- Measurement of operations (off-line)
  - Operation reports, statistics, etc.

Source: BORRMA-web Lucerne (Switzerland)
Centralization of vehicle data

- List of events in one operation
- List of operations in a period of time
- Detailed breakdown of carried-out services per road category, road name, area
- Export capability for further data treatment
Thank you for your attention!

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Surface Condition Management

Surface Condition Assessment
- RWIS - GFS 3000
- FAST
- BORRMA web MDSS inside

Surface Treatment Devices
- Fixed
- Mobile
- Surface Data Management
- On-board-sensors
- Vehicles
- Vpad

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