Maintenance Decision Support System (MDSS) ASFiNAG / Austria - Experience of a Comprehensive Winter Maintenance Management System

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Introduction

- Increase of traffic volumes
- Growing mobility
- High level of winter road maintenance
- Complexity of meteorological, traffic and winter service processes
Introduction

Need of comprehensive Winter Maintenance Management System

- Maintenance Decision Support System (MDSS)
Established in 1982
Owned by the Austrian Federal Government
Plans, finances, maintains and tolls the entire motorway and highway network
Motorway and highway network in Austria:

Vienna

Toll Roads (Motorways and Expressways)
Version: February 2010
Total length of road network: approx. 2,170 km
Winter Service in Austria

ASFINAG Service GmbH (SG) and ASFINAG Alpenstraßen GmbH (ASG):

Responsible for ensuring the operation of the motorways and highways

Traffic Control Center and Tunnel Control Centers for Monitoring and Managing

1,500 staff on duty 24 hours a day
MDSS ASFiNAG - Overview

- **RWP**
  - Road Weather Measurement & Forecast

- **DSA**
  - Maintenance Decision Support & Alerting

- **IAI**
  - Intervention Data Acquisition & Information Processing

- **eSP**
  - Electronic Road Service Intervention Protocol

- **eAR**
  - Electronic Analysis & Reporting

- **iMD**
  - Infopoint @ Maintenance Depots
In recent years MDSS ASFiNAG has developed into a comprehensive IT service platform supporting our road service business in the core area of winter road maintenance.

Whether it’s about monitoring road weather, automated hazards detection, provision of information supporting in road service intervention planning and control or documentation and reporting – MDSS provides a comprehensive IT solution.
Maintenance Decision Support System

- 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

Information for educated decision making
Visualisation of RWIS – Data:
Integration Vehicle and RWIS - Data:

**K.21**
- LT: -0.7 °C FBT: -0.5 °C
- GT: -1.3 °C RLF: 98.0 %
- TPT: -0.9 °C

**JO204FR**
- FAFLA_009 68 KM 3 KM/H

**JO259EC**
- FAFLA_004 224 KM 5 KM/H

** JT325DR**
- FAFLA_008 882 KM 59 KM/H

**S209MV**
- FASAL_004 103 KM 62 KM/H

**5203RM**
- FACOL_009 56 KM 61 KM/H

**SAC92EC**
- FAFLA_009 225 KM 0 KM/H

**JA795RE**
- FAFLA_009 0 KM 0 KM/H

**K327EM**
- FZH_009 10 KM 0 KM/H

**KI346H**
- FZH_005 23 KM 0 KM/H

**NS44RE**
- FAFLA_03 0 KM 0 KM/H
Experience of MDSS in Austria

Development of MDSS in close cooperation with winter service professionals

Integration of all information / data into a single cockpit (road weather forecast, early warnings, point measurements, vehicle intervention data)

Role-specific cockpits
MDSS delivers predictions for Road Weather Segments with risk levels and early warnings for tactical and planning decisions (up to 72 hours)

Ongoing optimization of prediction model for all forecast areas (around 250) incl. review of data sources

System provides high degree of flexibility
Principle of Nowcasting / Forecasting of MDSS:

- **Point Measurement**
  - Weather forecast 3h
  - Precipitation Forecast 2h

- **Nowcasting**
  - Parameters specific to RWIS location

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

- **Forecasting**
  - Road segment forecast

Maintenance Decision Support System
MDSS situation map with risk levels:
Complex decision-making situations require reliable data, sophisticated and transparent information processing as well as smart, decision-oriented HMI’s

Differentiated knowledge is necessary

Geographically distributed organizational forms need to be supported

Different information channels and user groups need to be served

MDSS offers a comprehensive suite of IT services to monitor weather and road conditions and to control, manage and log operational maintenance deployments
Thank you for your attention!

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