



Autobahndirektion
Nordbayern



Winter Maintenance Management System Bavaria

The customer

The Autobahndirektion Nordbayern (North Bavarian Motorways Directorate), to which the Landesbaudirektion (State Building Directorate) is also attached, is a central state authority of the Free State of Bavaria.

The central office of the road maintenance service in the Motorways Directorate supports motorway and road maintenance units in Bavaria in their winter maintenance activities.

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The task

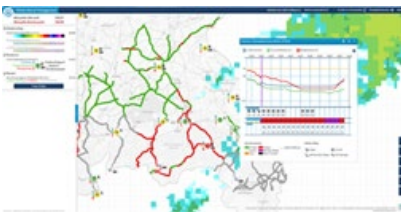
The extreme seasonal weather conditions in the winter months in Bavaria represent a serious challenge to road maintenance services in the region. Maintaining the flow of traffic throughout the road network requires a winter maintenance service that operates effectively and with foresight. One of its main tasks is to coordinate the 600 public and 700 private service vehicles deployed to keep traffic moving along Bavaria's 22,000 kilometres of roads.

The Bayerische Straßenbauverwaltung (Bavarian Road Construction Administration) does all it can to optimise winter maintenance activities, maximise road safety and secure the ongoing flow of traffic. Consequently, its requirements as regards the new digital winter maintenance management system were correspondingly high. Its purpose was first of all to bring together all of the many relevant datasets from various sources, as well as analysing and displaying data. It also needed a forecast module, so that maintenance services would know – as precisely and as far in advance as possible – which road sections could expect icy conditions. Moreover, the system had to incorporate a rights and roles policy, and its components had to be easy to use, not only for the operational control centre but also in the service vehicles' on-board computers.

The solution

The pilot phase of the new Bavarian Winter Maintenance Management System (WDMS-BY) commenced in 2015/2016. It will be used initially by 16 road and 5 motorway maintenance services, as well as the Metropolitan Region of Nuremberg. The heart of the WDMS-BY is its web-based geoinformation system, which was developed under the lead management of the Autobahndirektion Nordbayern in collaboration with con terra. The system merges the constantly incoming data, analyses it, and structures it into an overall real-time picture. Among other things, the system incorporates precipitation and forecast data from the German Weather Service as well as data from currently 250 ice warning stations in Bavaria. It also displays images from webcams, transmitted from the ice warning stations at ten minute intervals.

Winterdienstmanagementsystem Bayern



However, the system's special feature is its alarm and forecast module, which gives warnings of icy road surfaces on individual routes over the coming eighteen hours. This enables control centres to coordinate clearing and gritting operations far more effectively than before, thus ensuring safe road conditions.

The solution is based on:

- **ArcGIS for Server** provision of map services and GIS functions
- **FME Server und FME Desktop** ETL processes for continuous processing of complex real-time data
- **map.apps** creating, organising and operating geo-apps
- **security.manager** securing services and rights & roles management
- **GDI/INSPIRE Services**

Summary

With the WDMS-BY, it has been possible to create a solution based on a variety of data in conjunction with appropriate equipment, which, despite the complexity of the assignment, is not only easy to use but gives precise assistance to winter road maintenance services. The components of the service-based architecture perform securely and efficiently thanks to the powerful geotechnology that operates in the background. Standardised interfaces ensure maximum reusability. The web apps have a modular structure and are optimised to suit the technical requirements. Indeed, they constitute an essential key to the project's success. The ability to extend the forecast period to eighteen hours has given a considerable boost to optimising personnel and material deployment. The WDMS-BY supports the forward-looking coordination of maintenance services and not only helps to limit their effect on the environment through more effective salt use but also keep the roads safe in winter.

Customer comment

„By employing a modern GIS based on technology developed by Esri and con terra, winter road maintenance controllers now have all the decision-relevant data they need, displayed ready for use on a single screen.“

Harald Claußen
Senior building director and
section head
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