Case Study

Winter Maintenance Management System Bavaria

The Customer
The Zentralstelle für den Straßenbetriebsdienst (Central Office for Road Service) is part of the Landesbaudirektion Bayern (Bavarian State Construction Directorate) and supports the State Construction Offices in their performance of operational service tasks.

https://www.lbd.bayern.de/

Landesbaudirektion Bayern

Picture: Björn Wylezich / Fotolia

The Challenge
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. 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.

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The Solution

The pilot phase of the new Bavarian Winter Maintenance Management System (WDMS-BY) commenced in 2015/2016. It was initially used 16 road and 5 motorway maintenance services, as well as the Metropolitan Region of Nuremberg. Since the winter road maintenance season 2016/2017, the WDMS-BY has gone into productive operation and is available to all road maintenance authorities that look after federal and state roads.

The heart of the WDMS-BY is its web-based geoinformation system, which was developed under the lead management of the Zentralstelle für den Straßenbetriebsdienst 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, precipitation and forecast data from the German Weather Service, measurement data from around 500 road weather stations in Bavaria and the position and activity data of winter service vehicles in near real time are incorporated for this purpose. Additionally, images from the webcams are provided by the Bayerninfo system. This enables the emergency services to coordinate the operations of the clearing and gritting vehicles more effectively than before and to ensure safe road conditions.

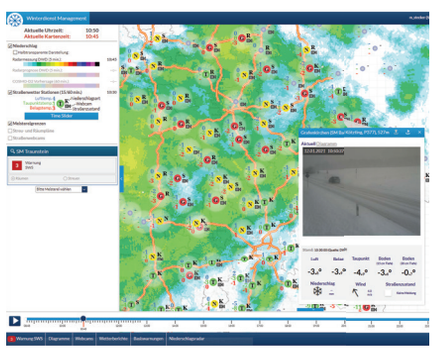
The Technology

- ArcGIS Enterprise – provision of map services and GIS functions, real-time data processing with GeoEvent Server.
- FME Server and FME Desktop – ETL processes for ongoing processing of raw and source data (including DWD weather data, scatter and clearing plans)
- map.apps – creating, organising and operating geo-apps
- security.manager – securing services and rights & roles management
- GDI/INSPIRE Services

Customer's Opinion

„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 Officer and Head of Division,
Landesbaudirektion Bayern



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 (Long-term forecast up to 7 days) 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.

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