

Making roads safer and saving money for councils

**Royal
Geographical
Society**
with IBG

Advancing geography
and geographical learning



Summary

The XRWIS technology uses Geographical Information Systems (GIS) to combine environmental and weather data with GPS mapping, allowing road managers in local authorities and the Highways Agency to more effectively identify and treat sections of road, reducing cost and improving safety.

Challenge

Local councils make decisions every winter about where and when to salt roads. As road temperatures can vary according to a variety of factors, including altitude and exposure to sunlight, there can be great variations within small geographical areas. Effective prediction of local weather conditions could help target responses more effectively, and reduce weather-related accidents and problems on roads.

Solution

Professor John Thornes (University of Birmingham) led a research team to develop a new technology (neXt generation Road Weather Information System, XRWIS) to improve local forecasting of when and where to salt roads.

XRWIS combines environmental parameters,

meteorological scenarios and thermal data within a Geographical Information System and uses GPS mapping to provide a detailed forecast for every 20m of road.

Benefits

Boosting productivity and building capability

Road managers at local authorities and the Highways Agency are able to make considerable savings and improve road safety by identifying and treating sections of road that may pose a genuine danger to motorists.

The system has been implemented in Devon, Neath, Port Talbot, South Gloucester and Hampshire. Devon County Council found that it could make potential savings of up to £175,000 in 2008, by reducing or removing salt from roads that did not need it.

XWRIS has also provided wider human economic and environmental benefits by reducing traffic delays and accidents. PricewaterhouseCoopers estimates that the technology saved £12 for every £1 spent when used to determine the most effective stretches of road to salt, compared with £8 saved for every £1 spent salting without the system.

Managing risk

The technology was further developed into ENTICE Technology, a start-up business subsequently sold to Weather Services International, who markets the technology for various applications worldwide.

It has been developed for use by railways to predict which rail routes might suffer temperatures extreme enough to compromise track safety, and with airports around the world to assess runway safety in hot and cold weather. Weather Services International is now The Weather Company, an IBM subsidiary.

This case study was originally published by the Society in 2011 and updated in 2019