

Centrico AWARD

Using ITS to manage Europe's busiest roads



Jérôme Ferré (SAPN)

BEST END USER INFORMATION SERVICE PROJECT

AWARD WINNER

Long Distance Travel Times on SAPN network

"The Travel Time system provides a very important service to ensure more security and comfort for European road drivers. The SAPN has started to work on this issue at the beginning of the MIP (2001) and today, at the end of 2006, the processing and the diffusion of travel times is completely operational on more than 220 km, which is quite an achievement!"

J.Ferré, Project Manager

PROJECT DESCRIPTION

The SAPN (Société des Autoroutes Paris-Normandie) manages 380 km of motorways that connect Paris with the cities of Rouen, Le Havre and the Normandy coast. Provision of travel time information is a priority for SAPN, particularly on the congested A13 motorway, given its high traffic volumes and high density of HGVs, but also on less busy motorways.

The travel time system provides information to end users through various media:

- SAPN's traffic radio service on 107.7 FM;
- Variable Message Signs;
- Internet;
- WAP;
- Interactive Voice Services (Foninfo);
- Traffic News on Television.



Travel time on VMS

SAPN's SSA (Motorway Supervision System) controls the automatic dissemination of travel time information to drivers.

THE IDEA

The SAPN studied several travel time processing approaches and concluded that accurate travel times could be estimated from **spot speed measurements and historical data**, thus enabling the company to take advantage of previous traffic monitoring investments. Recognising the need to install additional detectors to achieve **sufficient detector density (4 to 5 km spacing)**, SAPN reviewed several detector technologies in terms of performance, cost and ease of maintenance. For the A13 application, the SAPN selected **Infrared Radar (IR)** as the preferred solution (low cost, autonomous communications and energy supply, high performance).



Traffic data collection with new IR counting station



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Using data from the new IR radar detectors and from existing inductance loops, the SAPN system estimates travel times using a **multiple linear regression model, incorporating flow, speed and occupancy data**. The system produces **graphic displays of traffic conditions and travel time estimates** between major junctions on a 6-minute cycle. Thanks to these innovations, **travel time accuracy is above 90% during critical congestion periods**. The automation of the travel time processing chain is also a very important innovation as it enables the **diffusion of a large quantity of travel time information on numerous routes and different medias**. In addition, the SAPN can calculate **journey times for routes that extend beyond the SAPN network** by integrating travel time data, provided by other road operators, such as the Parisian region operators.

EUROPEAN ADDED VALUE

SAPN's provision of **long distance travel times to drivers improves the mobility** of an important part of the TERN (drivers can avoid congested areas) and its safety (reduced driver stress, improved comfort, knowledge of delays to allow drivers to better plan rest stops...).

"It is a great honour, and a true privilege for the SAPN to receive this CENTRICO Award. It represents the recognition by European ITS experts of six years of work in this field."

J.Ferré, Project Manager

Through its significant technical advances in terms of travel time generation from spot speed detectors, the project further serves as an example of how travel times could be provided at a more generalised level across the TERN in a cost effective and timely manner. The interagency cooperation that underpins SAPN's ability to provide travel times to destinations beyond its own network is an example to others of how to deploy user oriented services that traverse institutional/jurisdictional boundaries.

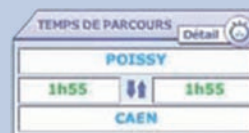
EFFICIENCY

The project has an efficient cost/benefit ratio due to the ability to generate travel times from relatively sparsely spaced measurement points. Where infill was required,

this was usually done using low cost infrared radar technology. The use of existing media to disseminate information also helped to keep investments costs low.

EVALUATION

The SAPN conducted a satisfaction survey amongst frequent travellers of its motorway network. It showed that travel time information is well perceived (>80%) and found very reliable (93%). Some very interesting results were also found concerning the acceptance of long distance travel times displayed on VMS. Following this very positive feedback from drivers, the SAPN is progressively extending the travel time system to incorporate additional motorway sections and to refine the estimation techniques.



Travel time on internet

"This success has been made possible thanks to the European project environment and in particular to CENTRICO: First of all, by supporting the exchange of technical and organisational knowledge across Europe along with other road and motorway operators [...] In addition, the definition of precise and concrete objectives within the work plan has enabled a regular improvement, with shared goals amongst the SAPN Company. Finally, the provision of financial support has facilitated the investments necessary to the Travel Time project."

J.Ferré, Project Manager

For more information on this topic, please contact:

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For further information on other CENTRICO activities visit:

www.centrico.org

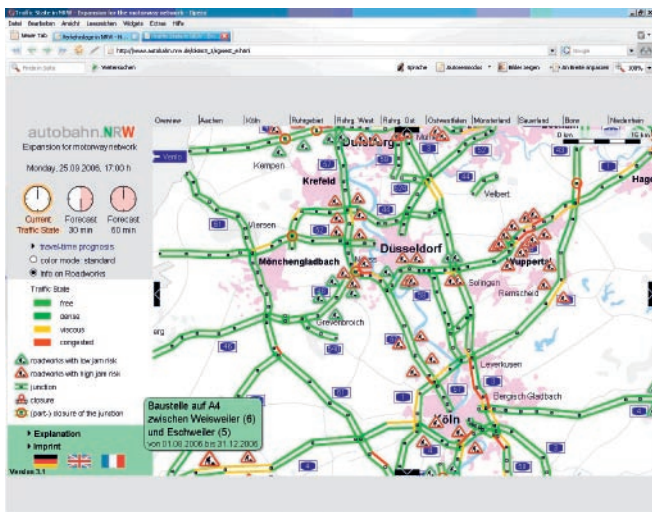


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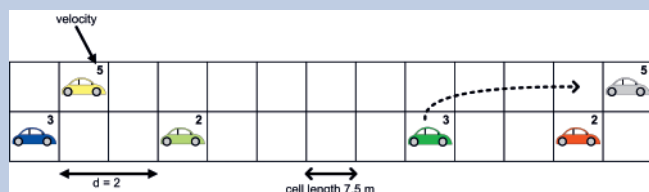
AWARD NOMINEE

www.autobahn.nrw.de

Efficient and reliable traffic information is very important to help travellers and daily commuters to calculate their travel times. The website www.autobahn.nrw.de is visited by more than 100,000 users each day, on days with special weather conditions like snow or storms by up to 300,000 users.

INTRODUCTION

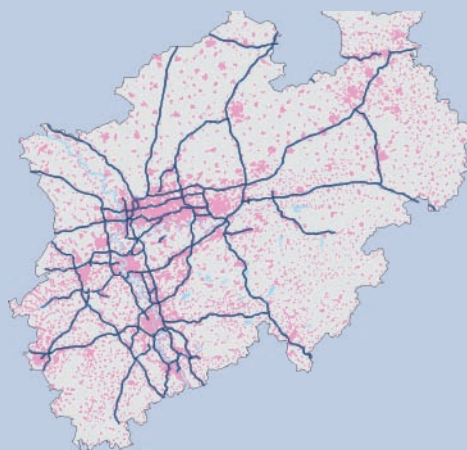
At the University of Duisburg-Essen the Simulation algorithm OLSIM (Online Simulation) has been developed in order to reproduce the current traffic situation and to forecast the future for whole motorway network. OLSIM is based on a cellular automaton model for freeway traffic and needs for its operation online and historical traffic data. The cellular automaton model is a quite simple approach and therefore very robust and reliable. The great advantage of OLSIM is that lengths of congestion and travel times can also be calculated for sections with poor or just partial data detection.



MOTIVATION

Information about current traffic conditions, traffic forecasts and travel time information are basics for an integrated traffic strategy and congestion management. To keep traffic flowing is besides traffic safety the main task of road operators. Providing reliable information for road users can help to improve traffic flow because drivers get the opportunity to choose an alternative motorway in case of congestion on their original

route. Therefore the system was enhanced by travel time prognosis: the road users get information about predicted travel times between relevant interchanges on different alternative routes. This “traffic management by information” might complement the system of VMS on the motorways in NRW.



THE “AUTOBAHN.NRW“ ROADMAP

The system is still running as a prototype. OLSIM will be integrated in the new TCC of the Landesbetrieb Straßenbau in 2008. Then OLSIM will include incidents and their impacts on motorway traffic and the influence of roadwork and changing weather conditions on capacity and traffic flow of the motorway.

More information: Georg Stüben, georg.stueben@mbv.nrw.de

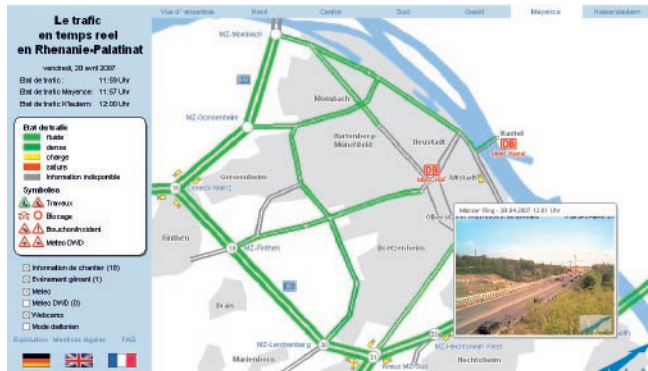


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AWARD NOMINEE

Traffic situation Rheinland-Pfalz

Traffic situation RP is a website, devised to serve the needs of road users on a regional scale. It covers motorway as well as urban information and is run by the road authority of Rheinland-Pfalz in cooperation with city councils. Innovations include map-based links to dynamic public transport information, multi-language interface and parallel publication of data in DATEX II format.

INTRODUCTION

The major cities in Rheinland-Pfalz are mid-size (100-200.000 inhabitants) yet most of them are part of cross-border conurbation regions and face considerable congestion problems on their road networks.

Therefore the road authority in Rheinland-Pfalz, the Landesbetrieb Mobilität and the Ministry for transport developed a traffic information website on the internet (www.verkehrslage.rlp.de), offering traffic messages, level-of-service and constructions site information for approx. 800 kilometres of motorways. This service was well received by the public and institutional partners like the police and broadcasters. The level-of-service-calculation as technical "heart" of the systems is based on a microscopic simulation model that processes all data available from more than 1200 loops on motorways.

TECHNICAL APPROACH

In 2005 it was decided to extend the system's coverage to urban road networks and public transport. Therefore a pilot cooperation between the state of Rheinland-Pfalz and two cities was established. Dynamic data from loops and sensors on city-roads is bundled and transferred to the motorway-traffic centre in Koblenz. There it is merged with motorway data and processed within a common model in order to produce an integrated view on all relevant roads. Dynamic departure tables for stations from rail (Deutsche Bahn) are linked through map-icons and allow a quick view on modal alternatives. Wherever possible data is also offered in DATEX II format and has been shown on several DATEX II demonstrations.

INNOVATION/IDEA

The main innovation lies in the way how urban traffic data, coming from traffic signalling and a variety of sensors on urban roads is used for a seamless picture of traffic situation and related information. In this common-model approach costs can be shared and a maximum range for both interurban and urban traffic information services can be achieved. Public transport is included in a simple yet effective way.

EUROPEAN ADDED VALUE

Data-feeds from „Verkehrslage Rheinland-Pfalz“ have been among the first to be available in DATEX II format. As all data is fully location-referenced use of data in cross-border or international services is encouraged and simple.

This has been demonstrated by the inclusion of the data into a three-party traffic-management pilot, where a complete overview of a 200-Kilometer scale traffic corridor is required.

OUTLOOK

Rheinland-Pfalz is continuously improving this service. Since November 2006, new features (weather information, webcams) have been added and the sensor coverage has been improved.

In the next future the main focus areas will be to join the traffic information with neighbouring regions to extend the system to all relevant urban regions and to enhance the scope of information on public transport.

Rheinland-Pfalz will continue to publish and exchange all information in DATEX II and will follow and support the implementation of the DATEX II network over Europe.

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