



----- MEMBER IN THE SPOTLIGHT 1 - JULY 2007 -----

## DYNAMIC TRAFFIC MANAGEMENT IN NOORD BRABANT

In the Dutch province of Noord Brabant, the provincial authority has been piloting different dynamic traffic management solutions to keep this region of 2.4 million inhabitants accessible and to improve road safety. The three internationally most recognised projects are the the Informative Road (dynamic roadside traffic information), Magic Green (longer green light for lorry traffic) and Mobile Traffic Services (actual traffic information via following travelling mobile phones). Together these projects are helping to deliver reliable door-to-door travelling times, safer road traffic and sustainable mobility in order to meet the province's strategic goals of accessibility, road safety and liveability.

### The Noord Brabant vision

The deployment of these solutions are encapsulated in the provincial dynamic traffic management (DTM) policy, which in turn is guided by the Mobility Memorandum, the national policy document for traffic and transport. Essentially, the deployment of dynamic traffic management is being rolled out in three stages. The first concerns the instrumentalisation of the roads falling under the province's responsibility (ie, all roads excluding national and local roads) and this will be completed by 2010. The second step, called Network Management, will involve the setting up of a joint operational traffic management system by 2013 covering all roads within Noord Brabant, including local and national roads. The final step will consist of the delivery of real-time, inter-modal travel advice to individuals through different interfaces, including Internet, PDA, on-board units and at public transport points. This should be achieved by 2015.

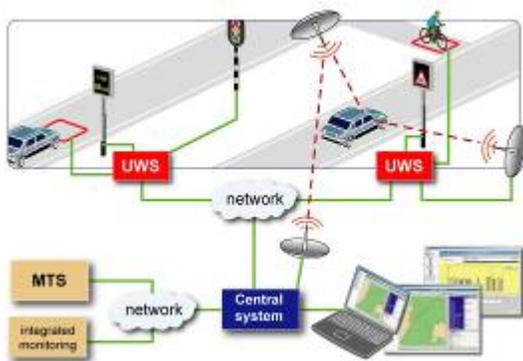
### ITS Project - The Informative Road

The Informative Road project was launched in 2006 in order to inform road users about traffic-related matters. With this information, road users can anticipate the expected traffic situation at an early stage and respond adequately to changes that occur. Information is delivered through dynamic roadside systems that show various recommendations:

- Local: speed, time between vehicles, speed advice at traffic lights and extended green lights for lorry traffic. Drawing attention to cyclists crossing the road, excessive vehicle weight and malfunctioning traffic lights.
- Route: signals for approaching emergency service vehicles, for indicating the course of the road, for facilitating crossing of the road and for showing regional travelling times.
- Central: manual information from the road maintenance authority.

The dynamic roadside information is being tested on a provincial road (3.5 km) and delivered through a total of 17 signal emitters, which are triggered by means of detection loops.

An evaluation of this pilot will be carried out during the course of 2007 from both a traffic engineering and behavioural perspective. The behavioural component will focus on motorised traffic and cyclists and use will be made of written questionnaires, research panels, interviews, video analysis and on-site observations. The traffic engineering assessment will draw on data collected by the detection loops which trigger the signal emitters, but also by the additional loops installed to determine the local effect of the signal emitters and the relation between the signal emitters over the whole section of the road. Data from the 3 sets of traffic lights along the test section will also be logged, eg, times, queues, etc.



The Informative Road – Technical concept

'Make way for emergency vehicle' message

### ITS Project - Magic Green

The Magic Green is both an ITS project in itself and also an important functionality of the Informative Road initiative. It essentially provides extended green light time at traffic signals to freight vehicles, whose drivers are informed about this through the specially designed roadside signs. The message displayed shows a truck and a green figure of a wave, suggesting that trucks will meet green light when continue driving. Non-compliance means the green light is not extended. The objective of Magic Green is three-fold: firstly to improve road safety, to improve traffic control and to facilitate freight driving by:

- discouraging dangerous overtaking
- encouraging lower travel speeds
- avoiding dilemma zones (indecisiveness about stopping or driving through changing traffic signals)
- reducing driver irritation (for all vehicles)
- ensuring better freight traffic flow
- providing better through-flow of other vehicles

Although Magic Green was deployed primarily for road safety and traffic management reasons, there are expected positive side effects in terms of noise levels and air pollution. This will be evaluated in the near future, when Magic Green is implemented at more locations.

### ITS Project - Mobile Traffic Services (MTS)

This project involves the use of GSM-based floating vehicle data (FVD) to gather traffic data on the roads in Noord Brabant. Prior to the launch of the MTS pilot in 2003, little traffic data was provided on secondary roads, in contrast to national roads, due to the high cost of installing monitoring equipment, especially loops. GSM-based FVD was therefore perceived as a cost-effective means of gathering traffic data, not least because mobile phones are far more prevalent than GPS for instance. The traffic data supports the dynamic management of the road network notably through the delivery of reliable door-to-door travel times to drivers, which is a high priority of Noord Brabant.

A validation study of the 2-year pilot (2003-4), called 'Better View on Brabant Roads', revealed that MTS provided high or good quality information about travel times on most roads but fell short on inner city roads, due to the prevalence of many other types of road users carrying mobile phones, eg, cyclists, pedestrians, PT, etc and problems with map-matching because of the density of alternative roads. Results were also poor on roads with very low traffic volumes, because of lack of data. These findings pointed to the need for a better filtering of GSM data on inner city roads and for the use of multiple telecom providers to increase the size of probe vehicles (the pilot sourced data from just one telecom provider), however, this latter option would result in higher costs. A great deal of research and development has been carried out to address these two shortcomings and a new test version of MTS was released at the end of 2005.

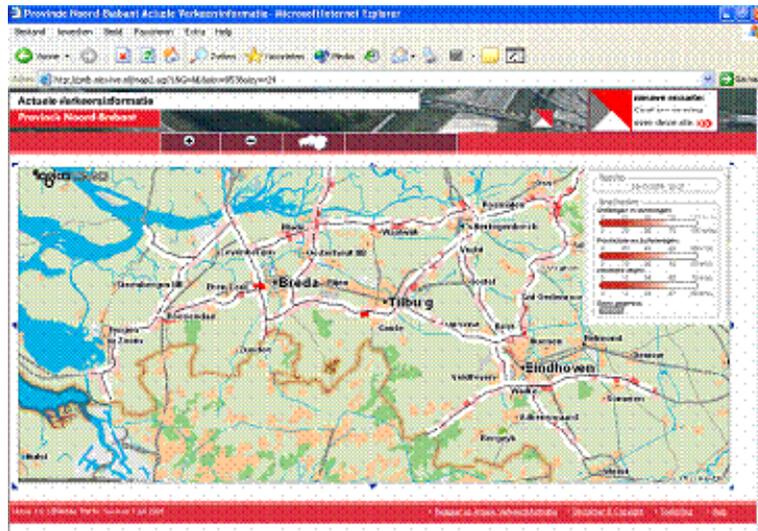
Additional validations were carried out. The first compared MTS data with number plate recognition data on two provincial roads. It showed that congestion is well recognised by MTS but travel times for a complete route are underestimated and that over 50% of travel times reported by MTS deviated by less than 15% from the travel times produced with number plate recognition. A cost-benefit analysis was also performed and this made positive recommendations due to the cost-effectiveness of MTS and the social benefits of providing travel times to drivers. The positive validation reports persuaded the Noord Brabant Provincial Executive to extend the MTS pilot for a further 2 years. Travel speeds and times are now collected on all roads (national, provincial and municipal).

An action plan for the application of MTS data has been devised, the majority of which started before or in 2006. In terms of operational applications, a real-time traffic map was launched in July 2005 (<http://actueleverkeersinformatie.brabant.nl>) and Variable Message Signs (called DRIPS) showing graphical and textual information are being rolled out on the provincial roads. These signs show travel times for two alternative routes to a common destination and the presence of congestion. An evaluation of the impact on driver behaviour of the information displayed on the signs is foreseen.

From a tactical perspective, the MTS project will support the analysis of traffic patterns, especially bottlenecks and is currently the basis of an evaluation on incident management. Finally in terms of strategic applications, MTS is being used to improve existing traffic models and in some cases, MTS has been shown to be more reliable than traffic models and so is being used instead.

The main conclusion from the MTS project shows that this system offers huge potential for the cost-effective collection and provision of travel times, although there is room for improvement, especially in terms of the amount of data collected, through GSM or through a hybrid form of GSM and GPS (the growth in navigation systems would facilitate this). The business model established has proved to work well (Noord Brabant purchases data from a business partner which is also free to sell this to other parties) and may serve as inspiration for other types of PPP.

Although the Noord Brabant pilot with MTS ends on 1 July 2007, the system will continue to deliver traffic information, as the navigation information provider, TomTom, has integrated this form of data collection into its product TomTom Mobility Solutions on a national scale.



#### Mobile Traffic Services

#### From local to Europe

The Noord Brabant province is keen on networking within Europe in order to share its own experiences and to learn about those of other local and regional transport authorities. To this end, Noord Brabant is a member of Polis, the European network of cities and regions promoting innovation in transport, and is active within its Traffic Efficiency & Mobility Working Group. The province is also supporting the research, development and demonstration of future traffic management systems, through its involvement in several EU co-funded projects, notably the CVIS and Safespots projects dealing with cooperative systems, in which it is acting as a test site for several infrastructure-vehicle solutions.

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