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Traffic management:

from motorway to city centre

The Dutch road network relies on traffic management. Increasing urbanisation and economic activity in the Netherlands mean that the pressure on an already heavily used road network continues to grow, which means there is no alternative to traffic demand management. The road network has grown in size and the number of traffic management measures has increased. The work of monitoring and directing all these measures is concentrated in traffic centres. Rijkswaterstaat (the Directorate-General for Public Works and Water Management) has five regional traffic management centres to cover its trunk road network and the major cities, and increasingly the provinces, have their own centres too.

Because traffic management measures on the roads continue to proliferate, coordinating them is becoming ever more important. The aim is to find synergies between them and promote traffic flow and traffic safety across the entire road network, instead of at one point or on one route. This is called network-wide traffic management. It means adding a management concept to the individual systems – a management concept that is able to transform policy aims with respect to traffic flow, traffic safety and environment into targeted coordination of the individual traffic management systems.

Network-wide traffic management

Coordinating systems requires an administrative and technical change. In administrative terms, the parties involved must want to and be able to work together in order to open the way for the coordination of systems. The systems will then need to be linked together, in order to actually coordinate them. This is a step-by-step process, starting with cooperation in defined fields such as parking, traffic regulation, motorways and incident management.

For municipalities, this means working together with those in charge of car parking and lifting bridges. Once this has been arranged, a parking guidance system can be set up that has up-to-date information on the availability of parking spaces, whether bridges are up or down and traffic volumes on the various available routes. In this way, the system can tell the user where the available parking spaces are and what the best route to take is.

A logical next step is to coordinate traffic management systems along each route. To support dynamic routing, the timing of traffic lights can be adjusted; semi-dynamic green waves can even be set up.

In a broader context, guaranteeing good traffic flow and safety at roundabouts and crossroads is very important to many municipalities and other road managers. Regionally, a good start on

administrative cooperation between road managers has been made with the 'Gebiedsgericht Benutten' ('Area-focused Use') approach. This involves road managers meshing their policy principles together and together translating them into a management strategy for the regional road network. The management strategy indicates for which part of the road network the current traffic situation needs to be adjusted, after which the relevant roadside systems are deployed in a coordinated manner with the help of a management scenario.

These are all first steps towards network-wide traffic management. Based on where we are now and what we have learned so far, work is now ongoing on a management concept that transcends and connects the different fields. Together with Rijkswaterstaat (the Directorate-General for Public Works and Water Management), Amsterdam municipality, TU Delft and traffic science advisers, Technolution has designed a management concept that can manage traffic autonomously over a greater part of the road network under normal conditions.

Road traffic manager indispensable

The road traffic manager is the indispensable link in the coordination of systems. He needs to choose the right regulation strategy at the strategic level, apply (and choose) the right regulation scenarios at the tactical level and take measures at the operational level. Examples are safely opening rush-hour lanes, closing lanes for road works, putting up or removing red crosses in case of incidents, or operating bridges.

Future

Technology is not standing still either. We are familiar with the digital traffic reports (RDS/TMC) that can be picked up by the car radio or navigation system. With the advent of mobile communication systems, there is a growing desire to be able to send messages direct to vehicles as the logical successor to signs

beside and above the road. Conversely, as vehicles drive around they can 'tell' us what the traffic situation is. This leads to so-called cooperative systems, in which vehicles and infrastructure communicate with each other (and eventually also vehicles with vehicles).

The first step towards cooperative systems has consisted mainly of exploring the technologies that will be tasked with projecting traffic management onto individual vehicles. Technolution was a partner in the European R&D project 'cooperative vehicle infrastructure systems' (CVIS). Now the R&D results need to be turned into products: Connected Cruise Control (CCC) is an example. Within CCC, a vehicle selects a target speed based on its own observations and an electronic horizon and it receives a target speed from the traffic centre. The vehicle converts these target speeds into a recommended speed for the driver.

MobiMaestro

MobiMaestro is the Technolution solution for network-wide and integrated traffic management. It consists of applications and products that have been developed according to a single philosophy and that all support part of the traffic management domain. A single philosophy means that there is uniformity between the associated software modules, so that together they form a single integrated traffic management system. This offers great benefits, both in process terms because operation and working methods are the same for users, and in technical terms due to the interchange-ability of modules, interfaces and data.

Examples of MobiMaestro applications are dynamic parking and route guidance in cities like Rotterdam, Utrecht, Breda and Houten, but also the TLC management expansion and linkage to in-car systems. In addition, there is a process manager which road traffic managers can use to design their own workplaces and Technolution's BOSS-Online system supports road traffic managers in making decisions.

