THE ROLE OF THE NETWORK MANAGER IN THE SOCRATES$^{2.0}$ PROJECT

The Network Manager is an important new intermediary role in the Coordinated Approach cooperation Model. The Network Manager receives input from the Network Monitor, including current traffic state data (volumes, speed, active services, and more). The Network Manager also receives the strategic goals as input from the Strategy Table. These strategic goals have been translated into operational KPIs and used to determine the network problem state.

FROM DATA INPUT TO LEVEL OF SERVICE

The Network Manager receives data from another intermediary role, the Network Monitor. The Network Monitor provides the Network Manager with current traffic state data (volumes, speed, active services, and more) and (optional) predicted traffic state data. The predicted traffic state data is useful to have, but not crucial. The traffic states are compared to the KPIs derived from the Strategy Table goals. Now the Network Manager can determine, for example, a level of service (LoS) for each link on the network. The LoS could be 'A' to 'F', with 'A' being low-density traffic and free-flow speeds and 'F' being high-density, low-speed traffic or forced flow. A problem occurs on a link if the current state or predicted state falls below a certain level, causing a trigger reaction.

SOCRATES$^{2.0}$

FAST SAFE GREEN

SERVICES FROM TRAFFIC MANAGEMENT CENTRES AND SERVICE PROVIDERS

The Network Manager has a set of services made available by the traffic management centres (TMCs) and service providers. Road authorities generally strive to obtain an even spread of traffic over their network in order to optimise traffic flows and avoid congestion. They give general route advice, for example, on VMS panels, appealing to all road users who drive past these panels. Or they use websites, radio broadcasting and other means of mass communication to call on road users to avoid certain road sections and take recommended alternative roads instead.

In all cases, using these traditional means provides little to no differentiation between which and how many road users are addressed. In most situations, it is not required or even desirable that a large amount of traffic uses the alternative road. Often only a limited number of road users need to be moved to the alternative road to create an optimal network balance, especially in the event of minor incidents or a heavily used network. So the above means of communication that TMCs have at their disposal are not suitable for dosed diversions. On the other hand, service providers can use them to communicate directly with individual road users, and target a small number of road users with an alternative route option. They can also determine the most suitable road users to target, for example, based on their origin or destination

Interactive traffic management using the services from service providers to target road users enables a new way of dosed traffic management, resulting in a more optimal distribution of traffic over the network. Interactive traffic management using (navigation) services of service providers gives network managers new precision tools to operate in a more refined and efficient way.

SERVICE EXAMPLES:

- Starting a reroute service: route advice on a VMS
- Controlled access, using ramp metering (inflow reduction)
- More green time at a traffic light (increase outflow)
- Keeping traffic away from a link (‘avoid link’), by private service providers

WHAT DO TMCS DO?

TMCs aim for an even spread by monitoring the actual traffic state and detecting already congested road sections or, even better, road sections at risk of being overloaded. These could be road sections with temporary capacity constraints due to incidents or road works, or road sections where structural congestion is to be expected.

TMCs subsequently try to mitigate congestion for those road sections by diverting traffic to alternative routes. This is done by a general route advice e.g. on VMS panels, appealing to all road users who pass those panels. Or they use websites, radio broadcasting and other means of mass communication to call on road users to avoid certain road sections and use certain recommended alternative roads instead.

SERVICES SELECTED FOR ALLEVIATING THE PROBLEM STATE

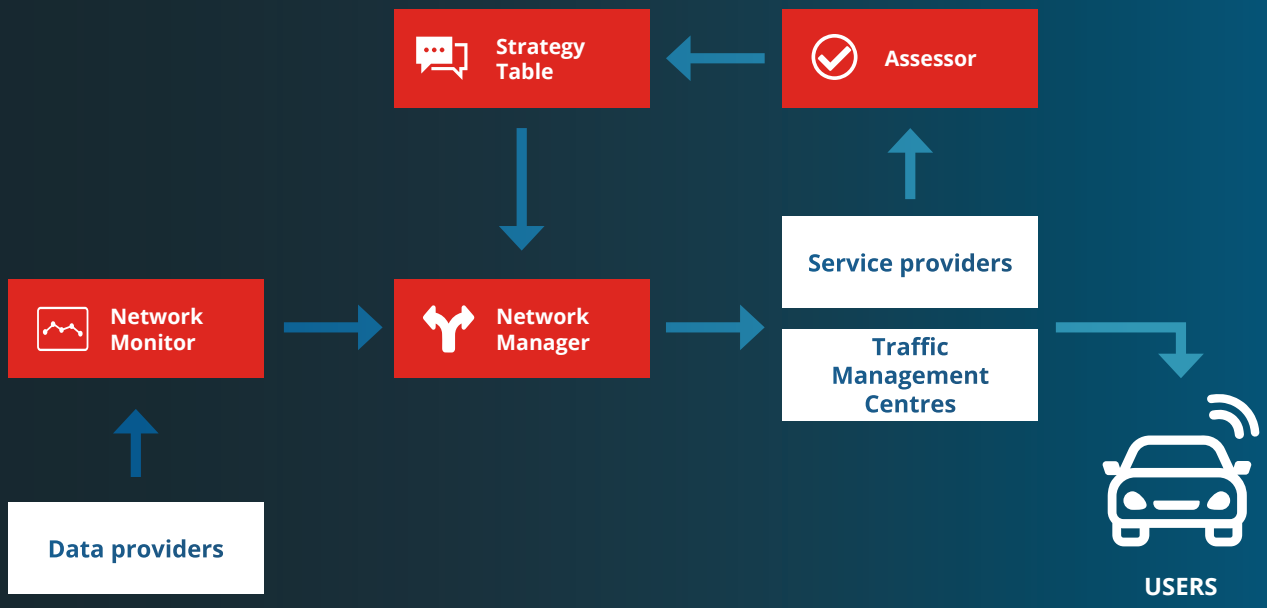
Services interact: they reinforce, support or clash with each other. For example, you can divert traffic as well as reduce the inflow to achieve the desired effect. When selecting services, the Network Manager takes all these choices and conflicts into account using a conflict resolution matrix where priority is given to certain service types. A result of this may be activating three services that support each other to alleviate the traffic problem on one link. The Network Manager does not have to differentiate between TMC services and private service providers when deciding which service needs to be activated, but looks at the impact a service can generate.

SERVICE REQUEST

The process of requesting another partner to conduct a particular service is called a ‘service request’ (SR).

- SRs to TMCs are sent in an agreed exchange format (e.g. DVM-exchange: this is a Dutch standard for SRs between TMCs).
- SRs to service providers are sent in DATEX II format; a European standard for traffic-related data exchange.
- In SOCRATES2.0most SRs were advisory messages. This is because it is important to allow space for some operational freedom.

Coordination Models + Intermediairies



DIFFERENCES BETWEEN SERVICES:

- **Public services:** increase outflow (e.g. adapting green traffic light times), reduce inflow (e.g. ramp metering) and reroute (e.g. VMS).
- **Private services:** typically, but not exclusively done through the routing algorithm of a navigation system. These services have the benefit of targeting individual road users.
- **Private service provider services:** the 'avoid' SR and 'reroute' SR. (Avoid SR means services should be activated to avoid a specific network link, while reroute SR means that services should be activated to rerouted traffic following a specific route (made up of several network links).

MANUAL TO BECOME AUTOMATIC

Once a service is requested by the Network Manager, the TMC is asked to deploy their service. In the future, the manual action needed to deploy the service in the TMC could become an automatic action. At the same time, the private service providers are requested to reroute their users based on the same principles as the public service providers and, in this way, to support the goals of the public service provider.

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