

5 ENCOURAGING COOPERATIVE AND INNOVATIVE TRAFFIC MANAGEMENT

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The new generation road is becoming automatic in order to optimise traffic flow capacity in complete synergy with communicating vehicles.

For innovative traffic management

Today's "dynamic traffic control" measures give the road a degree of flexibility in terms of traffic, safety and "modal transfer". They allow the allocation of traffic lanes to be varied at different times and from place to place, as well as according to the different categories of road user. The road thus adapts automatically to provide the best possible traffic flow at any given time. Measures that are already implemented include use of the emergency lane, reversible lanes, the creation of exclusive lanes, dynamic overtaking bans for HGVs and ramp metering. However, traffic management is part of a more comprehensive system. To maximise the efficiency of the road in terms of energy consumption and traffic safety, innovative approaches include pedestrians and public transports in order to encourage intermodality. Sharing of

the road system, coordinating priorities given to public transport vehicles, disseminating traffic information in the right place and at the right time by the infrastructure are all currently under development. Besides, parking management, in real-time and in function of the car park occupancy is proving to be a major benefit, especially for HGVs on motorways and major roads.

Innovative ways of tackling congestion involve locally implemented micro-control.

These new forms of operation will generate new needs for sensors and signing equipment. They are part of a multi-criteria approach that takes account of the level of service provided to users, acceptability and sustainable development.

Towards cooperative traffic management

Road traffic information for drivers can be disseminated not only by road signs but also by cooperative systems. Such systems are already in use and allow vehicles to connect themselves to the "cybernetic road". The data generated, obtained provided by mobility management centres, vehicles and roadside units (RUs), open up the possibility for the development of new services.

These communicating vehicles have the novel potential to host applications for communities

of road users. The users expect the road to provide them information that is personalised, multimodal and contextualised. These data networks are quite useful for road managers to improve the level of service of their road.

The concept of the automated road takes on its full meaning when on-board intelligence in the vehicles and roadside intelligence in roadside units (RUs) are able to take action in the driver's stead.

For example, the automation of traffic facilitates the sharing of driving by controlling, in particular, vehicle gaps. In this case, vehicles could be guided by a traffic control centre which either gives or withholds permission to drive in automatic mode and in collaboration with the infrastructure. Calculations have shown that the automation of traffic could help to double lane capacity with no reduction in safety.

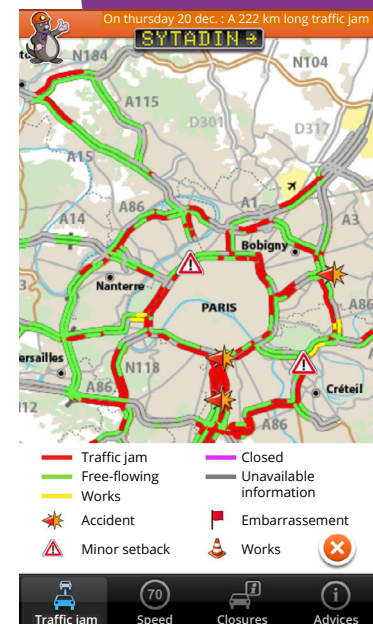
Towards environmentally friendly intelligent traffic management

Intelligent traffic management can urge drivers to reduce their fuel consumption, as well as predict emissions and the distribution and levels of the public's exposure to pollutants. In order to promote eco-driving, cooperative systems could transmit each vehicle's instantaneous consumption to infrastructure managers to enable them to evaluate their impacts on air quality.

Another possibility is to build sensors and weather stations into the network in order to inform the road manager about possible hazards or incidents such as snow-covered motorway access roads which pose problems for heavy vehicles.

Sensors fitted to vehicles that communicate with the infrastructure could enhance this meteorological data (temperature, visibility, skid resistance, wind, etc.). The communicating infrastructure would then be able to collect this data and process it so that the road provides an optimum service to users.

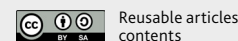
1. *Cerema*: Centre for studies and expertise on risks, environment, mobility, and urban and country planning



▲ The road network informs users of its state of occupancy in real time (the SYTADIN platform)



▲ The road communicates dynamically with the user through signage: the central contraflow lane on the St Nazaire – St Brévin bridge.



Credit: left, Cerema;
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