



Traffic management: how does it work?

Modern traffic management relies on four basic functions: «information», «network management», «trunk management» and «node management». This fact sheet explains these functions and illustrates them from the example of a road closure.

The main task of traffic management is to regulate traffic flows in a systematic and coordinated manner. To this end, four basic functions are available: «information», «network management», «trunk management», and «node management». The functions are distinguished essentially in terms of location, the nature of the influence exerted and the means deployed.

■ «Information»

The population must be informed as soon as possible of any unusual traffic situations. With the help of traffic information, road-users are able to adapt their behaviour to the current situation, whether by postponing their trip, avoiding the traffic jam, or reacting appropriately to dangerous situations.

Information is disseminated by radio and television broadcasting (including the Radio Data System [RDS] and the Traffic Message Channel [TMC]), the Internet, or variable text displays on the road. In addition, there are further services such as «www.truckinfo.ch» for heavy goods traffic.

■ «Network management»

«Network management» is the term used for providing road-users with alternative routes around traffic jams or blocked stretches of road. This may be done, for example, by means of deviations or by recommending alternative routes. The information is communicated by traffic reports and, where available, by variable message signs and variable direction signs. The reports provide information on the nature of the incident and on the alternative route.

■ «Trunk management»

«Trunk management» measures serve to regulate traffic flows on particular stretches of road. Among other things, they include variable speed limits and danger signs. Early reduction of the authorised speed limit serves to regulate the flow of traffic, to delay the emergence of traffic jams and to reduce their undesirable effects. For driving in town, the best known control measure is the coordination of traffic lights (the so-called «green wave»). On the national roads, «trunk management» measures make a significant contribution to road safety, for example by reducing the risk of multi-vehicle pile-ups. In addition, they can be used to control traffic build-ups on certain stretches

of road at specific times (e.g. morning and evening rush hours), by freeing the hard shoulder for use by vehicles or by closing or reassigning certain lanes.

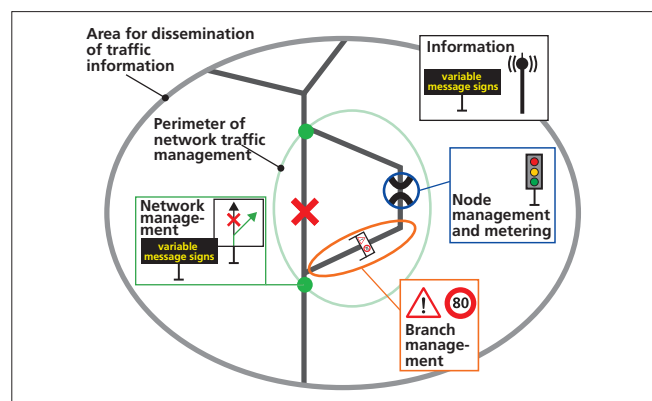
■ «Node management»

The term «node management» covers all of the measures that may be taken by the competent authorities at a particular place or structure. For example, they could take the form of traffic lights at a crossing, a motorway junction, or a tunnel entrance.

The traffic can be controlled through a systematic lengthening or shortening of the green light intervals. On motorways, management measures include regulating the flow of traffic onto already congested sections of motorway or the discharge of traffic onto the subsidiary road network. Another form of control is the closure of tunnels following technical problems or accidents.

■ Example

«Traffic management measures for a road closure»



In the case illustrated, the police need to close a stretch of the main road in one direction due to a serious accident (marked by the red cross). To bypass the scene of the accident, the competent authorities order a large-scale diversion (→network management). Variable text displays and alternative route recommendations on the radio inform road-users of the diversion and the likely duration of the closure (→Information). To control the additional traffic and ensure road safety, the competent authorities order a reduction of the speed limit on the deviation (→trunk management). As the tunnel on the deviation route can take only a limited number of vehicles for safety reasons, the order is given to limit the number of vehicles entering the tunnel (→node management).

■ The 12 principles for action of the VM-CH

The question of whether and how the competent authorities should introduce network, trunk and node management measures, as well as providing information, is often a matter of judgement. To help clarify what needs to be done in such cases, FEDRO has drawn up the following 12 principles for action.

1 Road safety

Warning of actual or impending danger must be given as soon as possible. If safety on a particular stretch of the national roads is regularly threatened or appears to be at future risk, advance warning must be given and the traffic flows on the section concerned must be homogenised or stabilised.

2 Reliability

If reliability on a stretch of road is regularly impaired, traffic management measures must be taken to alert road-users to the traffic situation and the expected delays. As well as providing recommendations on alternative routes and journey times, alternative modes of transport should also be proposed.

3 Dealing with delays

Regular isolated jams resulting in short delays are considered to be tolerable. Nevertheless, it is still necessary to ensure road safety in such situations through traffic management measures. Such measures are a priority in areas where delays occur regularly and have significant adverse macroeconomic effects. Jams that occur seldom, perhaps through peak hour traffic, are a low priority.

4 Traffic quality

The flow of traffic on the basic carriageways of high-speed roads must be maintained in the first place in the interests of attractiveness, safety, and overall capacity. The traffic functions (ensure transit, connect, relieve, serve) should receive basically equal treatment, though with first priority going to «transit». If the flow of traffic on the free stretch becomes unstable, traffic management measures may be taken to optimise it. If the traffic flow on the national roads is frequently or regularly on the point of breakdown, the traffic moving onto and off the road must be controlled in such a way that as steady a flow as possible is maintained on the national road.

5 Setting priorities

If the network of high-speed roads and main roads of a region is regularly saturated, the traffic on the national road network and on the network significant for traffic management must be the object of network, trunk and node management measures, as well as metering, to ensure that the flow does not become too heavy on critical stretches of the high-speed roads. In such cases, traffic management plans must be prepared. In the event of disruption or interruption on the national road or the parallel subsidiary road network in regions with heavy traffic, the existing capacities must be managed as efficiently as possible through appropriate traffic management measures.

6 Managing the hard shoulder

In principle, the hard shoulder should retain its original function. However, on stretches of road with considerable deficits in terms of road safety and traffic flow, it may make sense, from the point of view of overall safety, to permit the hard shoulder to be used as regular traffic lanes on a temporary or permanent basis. Nevertheless, before any such change is made, it is first necessary to check that the framework conditions and requirements comply with the directives in force and the state of technology and that it can be shown that a gain in safety and an overall benefit will result thereby.

7 Traffic jams

Despite traffic management measures, saturation is virtually unavoidable in many places. To make the best possible use of existing capacity in the event of bottlenecks, appropriate measures will be needed on the national roads and on the parallel subsidiary road network. Traffic metering and the closure of entry and exit points are extraordinary measures and must be governed by traffic management plans.

8 Traffic management in the event of roadworks

Maintenance planning and the traffic management measures for roadworks must be designed to achieve the smallest possible reduction in traffic capacity. The road capacities in the area of the works and on the parallel deviation routes must be harmonised as far as possible with traffic demand by means of traffic management measures and transfers of traffic to other areas or other modes of transport.

9 Priority for public transport

Public transport on the road network must be given a higher priority than private transport in order to ensure connections with the rest of the public transport network. Similarly, preference must be given to public transport in routing traffic flows going to and coming from the high-speed roads.

10 Heavy goods traffic

In the event of reduced capacities on the north-south transit axis, heavy goods traffic may be restricted in favour of other traffic. To this end, special retention areas must be created and managed with traffic management measures such as harmonised traffic management plans. At the same time, HGVs must be informed of the possibilities of transfer to other modes of transport. The object of these measures must be to ensure the overall economic efficiency of traffic on the existing road network.

11 Traffic management at border crossings

Customs clearance does not form part of VM-CH. It is conducted on demand-based principles and depends on the local infrastructure. The national road accesses to customs crossings and the holding areas in advance of them must be managed in accordance with the present principles of action, while the existing traffic management measures must be examined. Even in the event of traffic being backed up to the customs, the traffic flow must be maintained on the high-speed roads upstream of them.

12 Support for the police

The information needed for intervention by the police (traffic conditions, traffic reports, live video observation, incident detection, breakdown identification, etc) will be made available to the police and the emergency services as soon as it is received. Appropriate technical systems will be made available for the purposes of enforcement in the interest of road safety and emission control.

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