TRAFFIC LINE MANAGEMENT SYSTEM

- **Increasing of transport safety and flow**
- **Reducing of traffic congestions**
- **Reducing of carbon dioxide emissions**
- **Increasing of ride comfort**
- **Increasing of road capacity**
- **Timely informing the drivers about accidents or adverse climatic conditions**
- **Automatic control with the possibility of direct dispatcher action**

General Description
The increasing traffic volume causes more frequent occurrence of conflict situations resulting in many cases in road accidents. So as to prevent such situations, the modern telematic application is offered – system of traffic line management. This system can be successfully applied especially on motorways, on sections of joining or on the contrary branching of traffic flows, on roads with limited access, on access roads to towns or in front of tunnel portals.

The traffic line management system represents an automatically controlled system of telematic elements located on overland communication with the possibility of direct action of the operator. The system automatically and gradually reduces, according to the current state, the maximum speed or it changes the traffic organisation in traffic lanes. There are so no big speed changes between individual vehicles at a high traffic density and consequently no so-called Stop-and-Go waves will appear. The former unstable traffic with a potential source of road accidents has been replaced with a harmonic and stabile traffic flow.

At a lower traffic flow speed, there will occur increasing of a traffic-carrying capacity of the road due to shorter gaps between vehicles. Though the speed will reduce to the optimum value, the intensity of the traffic flow will increase to the maximum value. The road potential, given by the road geometry, will be fully used.

The application of the traffic line management system brings the proven increasing of traffic safety and flow (reducing of number of road accidents and their consequences), increasing of road capacity and reducing of traffic congestions. At the same time the system enables timely informing of the driver about the road accident or running times to destinations, or warning against contrary climatic conditions. The given benefits prove significantly in protection of health of road users, in psychological comfort of drivers, in reducing of environmental damages and also in saving of traffic costs.

Basic Technical Description
Characteristics of the traffic line management system consist in control of speed of vehicles by means of variable traffic signs giving orders

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or restrictions (PDZ). These signs are located on gantries above individual traffic lanes or on poles next to the road.

The system has been complemented with variable message signs (PIT). By means of them the drivers can be further informed about current situation on the particular road, about running times to destinations, roadway temperature etc.

In order to be able to control the traffic dynamically in the particular road profile, there are used the data received from traffic detectors and weather stations. The traffic data are detected in all traffic lanes of the road at each gantry. There are monitored the traffic density, its intensity, average speed, classification of the traffic flow, the air temperature and roadway temperature, state of roadway (wet × dry × frost), wind direction and speed, visibility etc.

Detected data are collected and automatically evaluated by means of pre-defined control algorithms in gantry servers located at single gantries. Gantry servers control their appropriate PDZ and PIT. The gantry server can so, for example on the basis of just forming congestion, reduce the speed limit in single traffic lanes by means of appropriate PDZ and inform the driver by means of PIT. The gantry server, except this direct intervention into setting of its assigned telematic elements, sends information to adjacent gantry servers and to the superior traffic management centre, which enables to coordinate the control of several successive sections, so the maximum allowed speed can be reduced gradually. The dispatcher from the traffic management centre can, on the basis of his own evaluation of the situation, send commands to individual gantry servers and enter directly into the traffic control on the road in extraordinary traffic situations. For this purpose, he uses information from visual monitoring of the traffic by means of installed camera system.

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