

ITS DEPLOYMENT GUIDELINES

FACT SHEET - UPDATE 2015

Dynamic Lane Management

The fundamental concept behind Dynamic lane management (DLM) is to provide a service that enables a temporally modifiable allocation of lanes by means of traffic guidance panels, permanent light signals, multiple-faced signs, LED road markers and closing and directing installations.

Applications of this service are related to tidal flow systems, lane allocation at intersections, lane allocation at tunnels and hard shoulder running.

The overall objective of the dynamic lane management (DLM) service is to allocate traffic flows and therefore obtaining a higher capacity through better usage of the available cross-section and also to achieve a temporary closing of lanes in case of accidents, incidents, maintenance work and construction measures (safeguarding of lanes).

From the European dimension perspective, DLM is a tool aiming to enhance traffic fluidity on the European network and following, as a key issue, the harmonisation of safety requirements and the dissemination of unambiguous and consistent instructions to manage road users' behaviour.

Functional Requirements

To achieve the vehicles flow optimization of existing roads by assigning the number of lanes that are open with DLM service as a traffic management measure, the implementation should or must follow some functional requirements and processes:

- First step is to carry out an advisability study to prepare DLM and then, in a real time iterative process, to collect and analyse data from monitoring systems and keep monitoring. In subsequent phases the implementation strategy to apply should be decided together with traffic guidance to road users in order to track the decision for assessment use. Finally and back to an off line context an evaluation and assessment process should measure the impact of DLM in order to provide recommendation and improvement (if possible).
- Two fundamental recommended requirements relate to the detailed analysis of traffic flows before implementation and in physical layout. The first is to define whether DLM is needed or not and the latter takes into consideration the acceleration and deceleration ramps because they should be long enough

to let vehicles have the time to check the carriageway before entering without causing queues. Yet, available lay-bys are important to allow vehicles to stop in case of emergency, when lanes are allocated (see also hard shoulder running).

- The TMS DG 01 provides also a set of 6 Data Collection and Analysis sub function requirements that aim to indicate traffic monitoring and road clearance control but not the methodologies for traffic data collection. Being traffic data collection not covered by this deployment guideline the implementation on DLM is left to the operator to select.
- An important and absolute requirements refers to the Traffic Guidance to users obtained with variable message signs and other suitable information means that must be used when implementing a DLM.

Particular attention, although truly optional, should be given to Public Information Campaign involving media to explain users the benefits of DLM and also how to behave when the service is activated.

Organisational Requirements

Dynamic lane management usually involves a large range of different partners such as road authorities, road operators (public or private), the police, the fire brigade, ambulance services, recovery services and the media.

The performance of the DLM relies on an overall cooperation.

This cooperation should be initiated some time before the operation of the DLM service to ensure service continuity and quality display of the DLM service.

The TMS-DG01 provides a list of two organisational requirements and an organisational architecture.

The organisational requirements have an absolute relevance and indicate that the structure of the service and the role of each organisation/body and its tasks must be defined together with appropriate procedures for the activation and deactivation of the dynamic management of lanes.

These measures should be integrated to the traffic control system.

ITS DEPLOYMENT GUIDELINES

FACT SHEET - UPDATE 2015

Technical Requirements

The deployment of the dynamic lane management (DLM) requires a minimum infrastructure with technical requirements (TR) and advices.

The first set of TR have an absolute meaning and must be fulfilled apart insurmountable reasons. Those TR indicate that variable message signs (VMS) for the closure or release of lanes must be installed and also some vehicle detectors:

- Double Inductive Loops
- Infrared sensors
- Microwave sensors
- Video or Radar sensors

These sensors, disposed along the main carriageway, providing information on current traffic conditions, are a key factor for DLM, because in some cases they are needed to decide whether to activate the DLM process and are the basis for incident warning, and consequently for its management. The kind of sensors to be used or implemented is left to the operator to select, according to what is reported on DG.

Common Look & Feel Requirements

Common Look and Feel Requirements (CLF) focus mainly on the harmonisation of VMS especially when dealing with cross-border or cross-regional DLM. Variable Message Signs display should be as harmonised as possible so as to be more comprehensible to users. End-user acceptance of the system can be improved by deploying VMS which provide users with detailed information of how to behave on the section affected by DLM.

Level of service criteria

The "level of service" criteria (LoS) indicates briefly the quality levels of the service offered to users or provided from road operators from their observation point. The tool to associate LoS to the surrounding environment in an agreed manner is the Operating Environments (OE), which is a set of pre-defined road environments combining physical layout of the road and network typology with traffic characteristic.

The service level process analyses the display of traffic information and support (i.e. VMS), the manual or semi-automatic or automatic monitoring, the safeguarding, the activation or deactivation and the availability of DLM.

Technical advices are principally related to:

- Data connection for video surveillance and control
- Communication facilities between Sensors, VMS and control stations/ sub-centres / traffic control centres
- Surrounding data collection technology such as sensors for rain, snow, ice-smoothing and visibility
- Moveable turning bars, retractable beacons or cones for closing and directing installations horizontally
- Local control stations equipment with data input/output devices, connection to energy and data supply
- Inductive loops, magnetic sensors, microwave radars, laser radars, passive infrared, ultrasonic sensors, instruments based on acoustic and video image processing

Standards are essential and the EN 12966-1/2/3 :2005 that rules VMS is an important requirement together with the specification for interoperable machine to machine communication CEN/TS 16157 « DATEX II », both fundamental for DLM.

The TMS-DG01 provides a list of Common look & feel requirements related to IT measures and the 1968 Convention for road signs.

Furthermore, there are FLS advices and figures that give the reader clear examples on how to manage lanes.



Further Information

dg.its-platform.eu

Questions and help

dg.its-platform.eu/user-support



www.its-platform.eu

EIP+ is supported by the European Commission's Directorate Mobility and Transport