

TMM 2.0

ENABLING VEHICLE INTERACTION WITH
TRAFFIC MANAGEMENT



About TM 2.0

The TM 2.0 ERTICO Platform originated in 2011 by TomTom and Swarco-Mizar and was formally established on 17 June 2014 during the ITS Europe Congress in Helsinki. It now comprises more than 25 members from all ITS sectors focusing on new solutions for advanced active traffic management.

It aims to agree on common interfaces, principles and business models which can facilitate the exchange of data and information from the road vehicles and the Traffic Management and Control Centres (TMC), and back, improving the total value chain for consistent traffic management and mobility services as well as avoiding conflicting guidance information on the road and in the vehicles.



What our members see as being the value of TM 2.0

“TM 2.0 builds trust among different responsible stakeholder groups in Traffic Management. So it supports the creation of new business models and efficient services based on the common use of existing data and information.”

Martin Russ, AustriaTech

austriatech

“TM 2.0 will enable the provision of innovative services and may improve human and goods mobility in ways beyond today's imagination, taking into account all new trends including automation and green mobility.”

Angelos Amditis, ICCS



“TM 2.0 puts together traffic managers and services providers to improve mobility for road users”

Maxime Flament, ERTICO - ITS Europe



“We believe TM 2.0 platform facilitates the needed cooperation between all public and private stakeholders actively delivering state of the art services and providing value within the traffic management domain.”

Klaas Rozema, Imtech Traffic & Infra



“Interaction between vehicles and traffic control is the basis for the new mobility: traffic congestions will be prevented while ensuring response to the needs of individual travelers. TM2.0 focuses on required cooperation among stakeholders.”

Gino Franco, SWARCO



“No one player can do it all. Traffic management schemes are evolving towards a more connected and cooperative business model that balances into a win-win for both providers and users.”

Johanna Tzaniadaki, TomTom



TM 2.0 Objectives

- 🔗 Provide a discussion forum around the topic of TM 2.0 for relevant stakeholders along the entire value chain from vehicles to traffic management control centres and back.
- 🔗 Define win-win deployment scenarios for all relevant stakeholders (work on viable business models, identify barriers and enablers as well as deployment steps)
- 🔗 Define a cooperation concept which can balance different actor's priorities, roles, responsibilities and liabilities and agree on the principles applying to the relevant data.
- 🔗 Contribute with guidelines and recommendations towards the actors in traffic management and policy/decision makers
- 🔗 Establish synergies with existing activities and initiate new ones

TM 2.0 Mission

The future of Traffic Management is to build upon deployment of connected vehicles and travellers in order to:

- 🔗 achieve convergence of mobility services and traffic management.
- 🔗 create synergies between actions of the individual travellers with the collective mobility objectives.
- 🔗 bridge the innovative developments in the vehicle and in the traffic management while giving value to the legacy and creating new business opportunities.

TM 2.0 Members

Public Authorities	Public Authorities	Traffic & Transport
NPRA	CERTH	Cubic
TfL	CTAG	Kapsch
AustriaTech	ICCS	Imtech Traffic & Infra
FEDRO	TNO	Swarco-Mizar
FTA	Service providers	Vialis
RWS	ATOS Spain	Vehicle Manufacturer
SLOMIN	HERE Global	BMW Group
STA	Technolution	Associations
Users	TomTom	ERTICO - ITS Europe
RACC	Supplier	ITS CZ
	Continental	

Task Force on Viability analysis and recommendations (Sept. 2014 - June 2015)

The development and deployment of TM 2.0 services involves the cooperation of several actors and stakeholders from both “road side traffic management” and “in-vehicle” perspective, but also spread throughout the public and private sector. This task force collected the experiences and lessons learned from recent European initiatives and projects in the domain of innovative traffic management.

The different driving forces and expectations identified from public and private sector stakeholders confirmed the need for a simplified concept for depicting the organisational aspects associated to TM 2.0. Together with an initial set of traffic management related services and use cases, this information formed the basis for a further organisational architecture practical research.

The task force worked on the initial identification and structuring of the roles and responsibilities associated with the actors involved in different European local scenarios, projected for different TM 2.0 services. An organisational model architecture has been developed, accommodating different combinations of role and task allocation between public and private sectors.

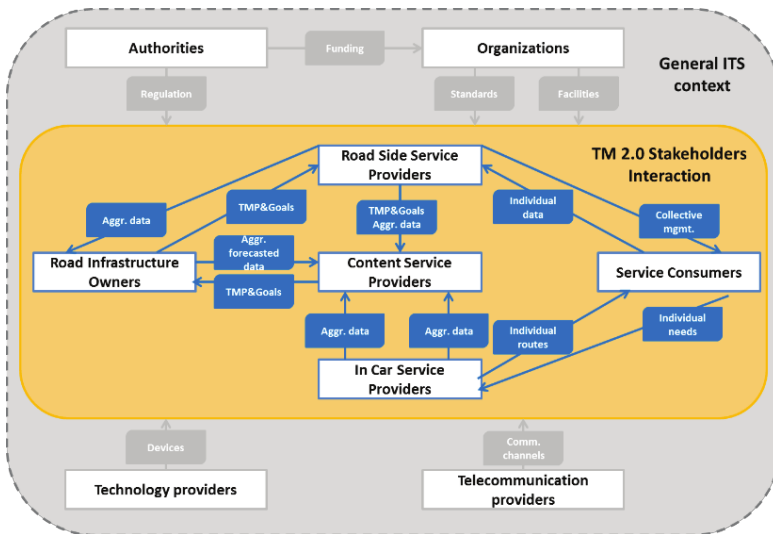


Figure: TM 2.0 organisational reference architecture

The application of the reference architecture to future TM 2.0 pilot deployment locations will support the focus work of the TM 2.0 platform on identifying win-win business solutions for all the stakeholders involved and reinforce the cooperation with a view to enhancing the effectiveness and success of the services envisaged. Finding out where values lie within the different organisational schemes, helps us identify where values can be further enhanced or created.

Task Force on Barriers and enablers (Sept. 2014 - March 2015)

This task force surveyed the latest developments and trends which may facilitate the development of innovative traffic management services and the areas where more work is needed and specific actions should be undertaken so as to facilitate the provision of such services by Traffic Management Centres and service providers. It is expected that the provision of such services will be greatly facilitated by the high penetration of navigation devices in vehicles and nomadic devices and by the increase in availability of reliable traffic information provided by connected mobile users as well as by the progress already made in Europe as regards cooperative ITS data. In addition, the consensus in the development of appropriate standards will play a crucial role in this direction. Probe data should possibly be open and there should be a commonly accepted methodology ensuring the reliability of processed data. Probe data as well as the interface for data transfer between navigation systems and Traffic Management plans could be standardised and secured by a security infrastructure. This is even more true for intermodal traffic information. Users' privacy concerns should be respected. Also, an agreement among service providers as regards the exchange of information presented on maps would greatly facilitate such services. To collect reliable data and to provide reliable mobility services a sufficient penetration should be reached and the mobile networks should be set up according to the expected data traffic resulting from the development of such services.

Moreover, the existing infrastructure of TMCs could be upgraded to become interoperable with vehicles of several manufacturers and several service providers. The relevant return of investment required for this upgrade should become evident to decision makers, although it should not be based only on monetary profits. Finally, relevant policies should be put in place and actions to increase awareness should be undertaken.

Technical barriers

- Lack of compatibility with legacy systems
- Lack of interface standardisation for route/traffic management plan data
- Lack of common standards for vehicle probe data
- Need for a mechanism for open location data
- Long transition period to reach sufficient penetration
- Need for correct mobile network dimensioning

Organisational barriers

- Lack of Security Infrastructure for Cooperative Vehicle Data
- Need for common data formats for intermodal traffic information

Business-related barriers

- No clear return of investment for involved actors
- Users' Privacy concerns

Legal barriers

- Liability problems in case of wrong data provision
- Unspecified ownership of data

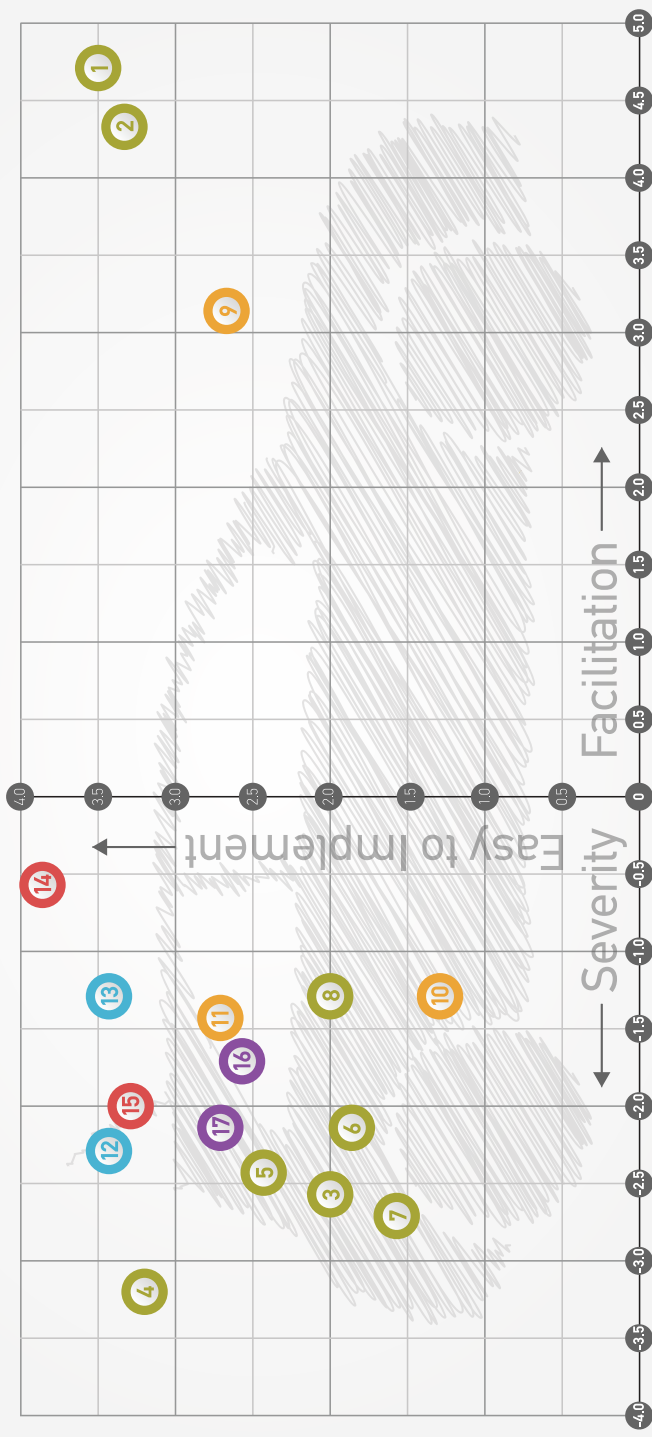
Conceptual barriers

- Concerns about the reliability of exchanged data
- Political acceptability

1. High penetration of Navigation Devices
2. Increase in penetration of reliable traffic information
3. Lack of compatibility with legacy systems
4. Lack of interface standardization for route/traffic management plan data between vehicles and service providers
5. Lack of common standards for vehicle probe data and slow progress in standardization
6. Need for a mechanism for open location data
7. Long transition period to reach sufficient penetration of vehicles and compatible TMC's
8. Need for correct mobile network dimensioning

9. Progress of Cooperative ITS data policy in Europe
10. Lack of Security Infrastructure for Cooperative Vehicle Data
11. Need for common data formats for intermodal traffic information
12. No clear return of investment for involved actors
13. Users' Privacy concerns
14. Liability problems in case of wrong data provision
15. Unspecified ownership of data
16. Concerns about the reliability of exchanged data
17. Political acceptability

- technical
- organizational
- business
- legal
- conceptual






For example issue 10 "Lack of Security Infrastructure for Cooperative Vehicle Data" is a slightly severe organisational barrier (-1.3) which is rather difficult to overcome (1.3).

Task Force on Principles for data (Sept. 2014 - June 2015)

The focus of this task force was to provide the basis for data exchange between traffic management plans and procedures and in-car service providers, which should enable TM 2.0 services. This includes identifying the necessary data sets, determining quality requirements for these data sets, and defining requirements concerning privacy and security.

The task force engaged in carrying out the following tasks: collection of data sets that are necessary to close the loop between traffic management and in-car service providers; characterisation of the identified data sets; identification of the most important TM 2.0 services; visualisation of interrelations between services and data sets; definition of the use case – Traffic measures and individual routing information based on PVD; graphical representation of potential data exchange links; identification of the data sets that are most important to be exchanged; and identification of critical issues.

The task force identified the most important TM 2.0 services which were categorised under the following three clusters:

-  Advanced navigation services
-  Adaptive and dynamic traffic control
-  Traffic status and event detection

The conclusion of the task force is that the information concerning data is available on a general level and is very often complementary on each side of the data chain. However, for a more efficient understanding of the traffic and better navigation services, detailed data sharing would be necessary including agreed metadata.

The task force has raised important clarifications related to the data sets, the exchange of data and possible options for scalable implementation.

The work has led to the creation of additional task forces on the clear definition of traffic management plans and other measures and on the evaluation of the benefits of the TM 2.0 concept.

The following two illustrations show the exchange of data elements between traffic management centres and in-car service providers. The first diagram depicts the data exchange towards traffic management centres while the second diagram provides data exchange in the other direction towards mobility service providers. Nevertheless access and exchange procedures as well as options for contracts and agreements have to be discussed (considering possibilities for a bilateral approach, common fusion engine or TMC2.0 traffic management engines).

TM2.0 Data exchange towards traffic management

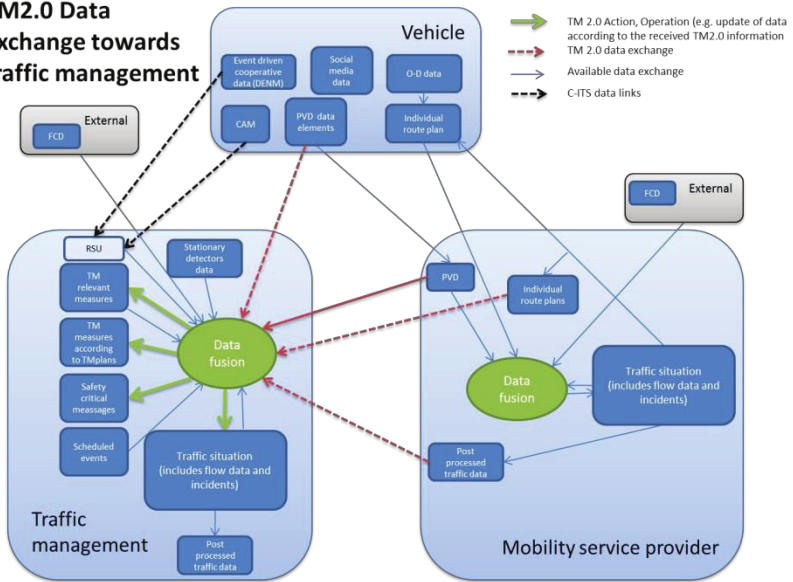


Figure: TM 2.0 data exchange towards TMC

TM2.0 Data exchange towards mobility service providers

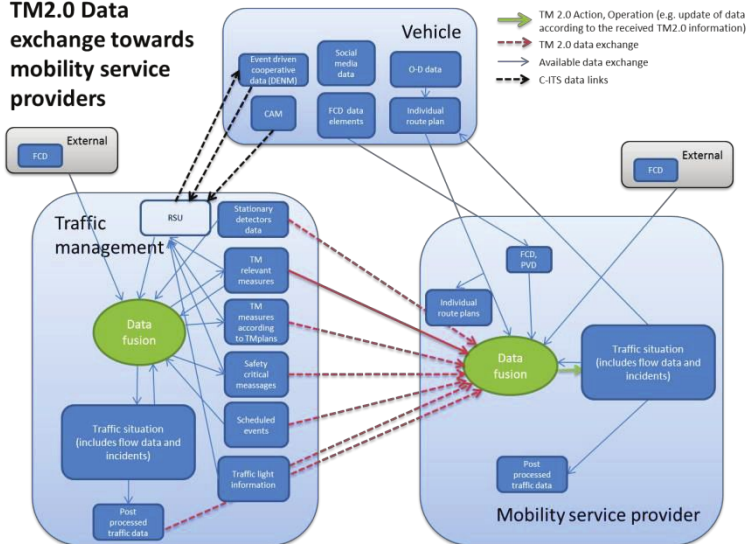


Figure: TM 2.0 data exchange towards in-car service providers

Task Force on Deployment steps (June 2015 - ongoing)

This task force supports the steps that need to be taken towards the concrete deployment of the TM 2.0 concept in selected geographical areas. The TM 2.0 platform does not engage itself in the deployment tasks but supports the TM 2.0 members and candidate areas by providing an agreed plan and approach from selection phase to study of the benefits. During 2014 the task force defined the key criteria required for the selection of a TM 2.0 deployment area in cooperation with the mobility service actors and road operators. During 2015, the task force has been investigating the kind of cities or regions that are already deploying services relevant for TM 2.0 and has focused on describing the selection criteria and decision factors to be reported in “Criteria for TM 2.0 Deployment”.

This task force is currently working on better identifying what are the factors that are essential to trigger an interest from regions, corridors, and urban agglomerations. The task force members will be interacting with the different local and regional actors to understand the steps that will be needed to convince the decision makers to engage in cooperation between Traffic Management and Mobility Services. A short list of candidates will be established by the end of 2015. This task force aims to describe, in a generic way, the terms of the collaboration between the parties engaged in TM 2.0 in selected geographical areas in order to achieve a win-win situation. In 2016, the task force will further work with potential candidates and finalise possible terms of collaboration. The conclusions of this task force will be reported in “TM 2.0 Deployment Plans” at the end of 2016.

The task force is currently in discussion with several potential candidate cities and regions regarding cooperation in the implementation of the TM 2.0 concept including Rome, Verona, Salzburg, Trondheim, Barcelona, Vigo, Thessaloniki, London, Garmisch, Berlin and the Rotterdam-Eindhoven-Venlo Corridor.



European cities and regions identified for possible deployment of TM 2.0



Upcoming Task Forces

Task Force on “Value Proposition”:

- Assessing the added value that TM 2.0 brings to efficient traffic management
- Showcasing the benefits of the cross-sectorial collaboration (on a strategic and operational level)
- Expected report beginning of 2016

Task Force on “Exchange of Traffic Management plans”:

- Elaborate a common reference with the help of identifying relevant publications and regulations and classifying the various traffic management plans
- Create and understanding the current situation compiling existing formats and best practices for exchange of traffic management plans
- Assessing the needs of road operators and service providers
- Expected report beginning of 2016

Task Force on “Role of Automation in Traffic Management”:

- Identify current status in Road Automation and issues relevant to TM aspects
- Analyse the specific requirements of all stakeholders, so that the automated system is functional
- Expected report beginning of 2016

Task Force on “TM 2.0 Quantification of Benefits”:

- Quantify the benefits in the technical and business levels of implementing the TM 2.0 concept in cities that lack public funding but have the technically capable ITS infrastructure
- Use Verona and Rome as case studies
- Provide tangible set (numbers and measurements of results) of value adding arguments
- Expected report beginning of 2016

For further information and membership enquiry please contact us

www.tm20.org info@tm20.org



ERTICO
PARTNERSHIP ACTIVITIES

