



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4 List of gaps and used standards

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Abstract

The document provides insights on NAP interoperability regarding the use of data standards across NAPs. It specifically analyses the data standards according to the data categories established in the Delegated Regulations. After a deep analysis of the standards, several gaps were identified. Moreover, the use of standards for each NAP and data category was also addressed. Based on that, recommendations for further development of NAPs and data standards towards interoperability and harmonisation were elaborated.



Abbreviations

Abbreviation	Meaning
AIDM	Airline Industry Data Model
EC	European Commission
EU	European Union
CEN	Comité Européen de Normalisation
DR	Delegated Regulation
GBFS	General Bikeshare Feed Specification
GTFS	General Transit Feed Specification
GTFS-RT	General Transit Feed Specification – Realtime
IATA	International Air Transport Association
ITS	Intelligent Transport Systems
MMTIS	Multimodal Travel Information Services
MS	Member States
NABSA	North American Bikeshare Association
NAP	National Access Point
NAPCORE	National Access Point Coordination Organisation for Europe
NeTEx	Network Timetable Exchange
OJP	Open Journey Planner
RTTI	Real-Time Traffic Information
SIRI	Standard Interface for Real-time Information
SRTI	Safety Related Traffic Information
SSTP	Safe and Secure Truck Parking
TAP TSI	Telematic Applications for Passenger
WG	Working Group





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1. Introduction

Working Group 2 (WG2), Interoperability and level of service of National Access Points (NAPs), aims to enhance the compatibility of Member States' (MS) NAP data and features as well as the harmonisation of levels of service. To achieve greater interoperability, it is imperative to analyse the current state of NAP implementation in all MS concerning data standards, reference profiles and metadata, as well as to identify the related gaps. This work is carried out as part of Task 2.2, Definition of requirements concerning data standards, reference profiles and metadata and support tools, and more specifically of work item 2.2.1, Identification of gaps and list of requirements. Analysis of data standards, inventory of shortcomings and recommendations concerning data standards are documented in this report. In the next version of this report, the analysis will be extended to include more data standards, as well as reference profiles and metadata. A list of concrete requirements for WG4 will be part of that version.

1.1. Objectives and scope

This report summarises the recommendations concerning the use of data standards in NAPs, to achieve improved levels of service and interoperability.

The data categories which are considered in this report are extracted from the European Commission (EC) Delegated Regulations (DR) supplementing the ITS Directive 2010/40/EU, listed below. It should be noted here that some MS implement multiple NAPs to cover these DRs, whereas some MS implement a single NAP, covering all.

- **DR EU No. 885/2013** – Safe and Secure Truck Parking (SSTP)
- **DR EU No. 886/2013** – Safety Related Traffic Information (SRTI)
- **DR EU No 2015/962** – Real-Time Traffic Information (RTTI) ¹
- **DR EU 2017/1926** – Multimodal Traffic Information Service (MMTIS)

The data standards mentioned in the DRs and NAPCORE WG4, Data Exchange Standards, which are used for the analysis carried out in this report, are introduced below. Furthermore, open data standards such as GTFS and family, along with rail and air data models are also included and listed below with a brief introduction.

- **INSPIRE** – aims to create a European Union (EU) spatial data infrastructure to share this data among public sector organisations, facilitate public access across Europe and assist in policy-making across boundaries.
- **DATEx II** – electronic language and set of standards used in Europe to distribute traffic information and traffic management information in a language-agnostic and presentation format-independent manner.
- **TN-ITS** – a European technical specification for the exchange of static road changes related data to keep the maps up-to-date.
- **Transmodel** – a family of standards which facilitates interoperability between the information processing systems of the transport operators and agencies.

¹ This report was elaborated in the first semester of 2022. The next Milestone (M2.7) will take into account the RTTI 2022/670.



- **NeTEx** – a CEN Technical Standard (TS 16614) for exchanging data about passenger information such as stops, routes timetables and fares, among different computer systems, together with related operational data.
- **SIRI** – a CEN Technical Standard (TS 15531) for the exchange of information about the planned, current, or projected performance of real-time public transport operations.
- **GTFS & GTFS-RT** – defines a common format to exchange static information of the public transport networks and schedules to support online transit trip planners. GTFS-RT is the real-time data extension for GTFS.
- **OJP** – allows a system to engineer a single interface instead of separate APIs to support all distributed journey planning systems.
- **IATA** – is developing the Airline Industry Data Model (AIDM) to generate interoperable, faster, and easier messaging standards related to passenger services from scheduling and distribution to passenger experience and airport operations.
- **TAP TSI** – allows the harmonisation of procedures, data and message exchange between the railway companies, the infrastructure managers, and the ticket vendors to provide reliable information to passengers and to issue tickets for a journey on the EU railway network.

A standard, in the context of this document, is a specification for the exchange of mobility-related data. A standard can be officially recognised, as is the case with NeTEx, or it can be a *de facto* standard, due to its commonplace use, such as GTFS.

A standard's specification may define a data model and/or data formats, for both the storage and the exchange of said data. Data models, in the context of ITS data exchange standards, are usually abstract content models, which define the entities relevant to the standard, as well as their attributes and relationships. A data format specifies how the data is structured, syntax-wise (and may also require a specific file extension).

Many MS use several different formats and standards specific to their local needs/requirements, as highlighted by the NAP Data Availability Monitoring survey, conducted by WG3. GeoJSON, for instance, is used by some MS for SRTI, RTTI, MMTIS. Similarly, WMS/WFS, ALERT-C, SHP, DDR, XML, NVDB, Elveg and ROSATTE (predecessor of TN-ITS) are also used for RTTI. Moreover, regarding MMTIS, some NAPs use OSM, NRP, JDF and HTML. To limit the scope of this report and harmonise the use of data standards, this report focuses on the core standards, namely: INSPIRE, DATEX II, TN-ITS, Transmodel, NeTEx, SIRI, GTFS, GTFS-RT, OJP, IATA, and TAP TSI. Furthermore, some MS are in process of updating their NAPs or their functional components to streamline them with the data standards recommendations as proposed in the DRs. As previously mentioned, more standards, such as GBFS, will be analysed in the subsequent version of this report.

1.2. Methodology & Structure

The adopted methodological approach for this report is based on a combination of targeted desktop research and extensive analysis of data collected by the other WGs of NAPCORE, supplemented by internal WG discussions and expert review by some project partners.

Targeted desktop research was conducted to analyse the four DRs supplementing Directive 2010/40/EU and reference documents for the elaboration of this report (check Chapter 6 - References). In such analysis, a survey was conducted to verify whether the NAPs from each MS were able to support the description of each data category established in the Directive. When answering the survey, the MS were not only attesting whether their NAPs could support the data category, but also



describing which standards were used to do so. It should be noted that the data provided was part of the existing NAPs and not of the planned or under-implementation features.

The data collection phase was followed by a statistical analysis phase. The analysis focused on the use of the referred data standards per category and per MS. This analysis aimed to better understand the current status of NAP implementation, which in turn will contribute towards the development of strategies to improve data interoperability.

During the analysis phase, it was noticed that certain standards present gaps related to the coverage of some data categories within their scope, as documented in this report. Given the identified gaps and the analysis regarding the current scenario of interoperability between NAPs, recommendations were elaborated for both standards and NAPs. In the subsequent version of this report, requirements will be documented based on the recommendations mentioned in this report, coupled with extended analysis and discussion with relevant stakeholders and domain experts. Analysis of commonly used data standards per data category, as mentioned in DRs, is documented in Chapter 2 in terms of gaps. Intending to establish a baseline status of data standards used in existing NAP implementation, an analysis regarding the use of standards is documented in Chapter 3. Recommendations for further development of data standards and NAPs are listed in Chapter 4 and the report is concluded in Chapter 5.

2. Gaps in the Standards

To identify the gaps in commonly used data standards and the data categories as mentioned in the Commission DRs supplementing Directive 2010/40/EU, extensive analysis was conducted based on several references, such as:

- Commission Delegated Regulations supplementing Directive 2010/40/EU: **references 1, 2, 3, and 4.**
- EU EIP - Annual NAP Report 2020 (INSPIRE, OJP, Transmodel, NeTEx, SIRI, GTFS, GTFS-RT, DATEX II, TAP TSI): **reference 7**
- INSPIRE-MMTIS: Overlap in standards (INSPIRE, Transmodel, NeTEx, SIRI, DATEX II, TAP TSI, IATA): **reference 18**
- INSPIRE-MMTIS: Overlaps in standards - Appendix 1 (INSPIRE, Transmodel, NeTEx, SIRI, DATEX II, TAP TSI, IATA): **reference 19**
- INSPIRE-MMTIS: Support to ELISE (INSPIRE, Transmodel, NeTEx, SIRI, DATEX II, TAP TSI, IATA): **references 17**
- INSPIRE Addresses Mapping (Transmodel, NeTEx, SIRI, DATEX II, TAP TSI): **reference 22**
- INSPIRE Topographic Places Mapping (Transmodel, NeTEx, SIRI, DATEX II): **reference 23**
- IATA – NeTEx Access Nodes Mapping (Transmodel, NeTEx, SIRI, IATA): **reference 24**
- IATA – Transmodel Network Topology Mapping (Transmodel, NeTEx, SIRI, IATA): **reference 25**
- ERA – NeTEx Mapping (Transmodel, NeTEx, SIRI, TAP TSI): **reference 26**

The first step was to identify all the relevant data standards. Due to time and resource constraints, a subset of the most relevant and commonly used data standards was considered. The next phase was to analyse the data standards reference documents regarding the support of data categories. The analysis was documented as an extensive Excel file, presented in the Appendix “Analysis of Standards per Data category”.

It should be noted that additional documentation, such as data models and reference profiles for the data standards, will be analysed in Milestone 2.7.

2.1. INSPIRE

The INSPIRE Directive aims to create an EU spatial data infrastructure for the purposes of EU environmental policies and policies or activities which may have an impact on the environment. It enables the sharing of environmental spatial information among public sector organisations, facilitates public access to spatial information across Europe and assists in policy-making across boundaries.

The analysis of INSPIRE’s coverage of the data categories was limited to those which are within its scope. Therefore, some data categories which could be described using INSPIRE have not been analysed (such as SRTI).

Some further observations on INSPIRE’s coverage of the data categories are provided in Table 2.1.



Table 2.1 – Gaps identified in INSPIRE.

Data category and type				Observations	
MMTIS	Static	Level of service 1	Location search (origin/destination)	Points of interest (related to transport information) to which people may wish to travel	Not fully supported. The following are supported: protected sites, buildings, utilities and governmental services.
			Trip plan computation – road transport (for personal modes)	Cycle network (segregated cycle lanes, on-road shared with vehicles, on-path shared with pedestrians)	Only segregated cycle lanes are supported.
				Pedestrian network and accessibility facilities	Only the pedestrian network is supported.
RTTI	Static data	Road network links and their physical attributes		The following are supported: geometry, road width, number of lanes, and junctions. Gradients can be derived from elevation and elevation change data.	
		Identification of tolled roads, applicable fixed road user charges and available payment methods		Payment methods are not supported.	
		Location of public transport stops and interchange points		Although the network nodes can be described and the interchange points can be derived from the overlapping of nodes of different transport modes, public transport stops cannot be described as such.	

2.2. DATEX II

DATEX II is a set of standards with a common electronic language for the exchange of traffic and traffic management information, in a manner that is independent of any specific language or format.

The analysis of DATEX II's coverage of the data categories was limited to those which are within its scope; this means data categories such as the road network and its attributes, although they can be described to an extent using DATEX II, have not been considered in the analysis.



The provision of information on the type of update (addition/update/deletion) is supported by DATEX II, but it requires implementation of the exchange publication. This information can otherwise be derived from the version number, provided a sequential object versioning system is used.

A description of an update is not supported, but some logic can be derived from the data itself (e.g., a speed limit change is evident, based on the previous and current speed limit values). A description of quality is not supported.

Some further observations on DATEX II’s coverage of the data categories are provided in Table 2.2.

Table 2.2 – Gaps identified in DATEX II.

Data category and type					Observations
MMTIS	Static data	Level of service 1	Location search (origin/destination)	Points of interest (related to transport information) to which people may wish to travel	Only parking is supported.
		Level of service 2	Location search (demand-responsive modes)	Bike sharing stations	This can be described as a type of parking, although that isn’t the original intention.
		Level of service 3	Information service (all modes)	How to pay tolls (incl. retail channels, fulfilment methods, payment methods)	Not fully supported; only as part of the parking publication. This will be fully supported after the traffic regulation update.
			Trip plan computation	Estimated travel times by day type and time-band by transport mode/combination of transport modes	Supported for road transport modes.
	Dynamic data	Level of service 2	Passing times, trip plans and auxiliary information (all modes)	Cycling network closures/diversions	Although this is supported, location referencing is difficult because the description of the cycling network isn’t standardised yet.
	RTTI	Static data	Traffic circulation plans		
Location of delivery areas			Depending on the interpretation of		



Data category and type			Observations	
	Dynamic data	Direction of travel on reversible lanes		This can be described by closing or making available a direction of traffic. Since this isn't an explicit description of the direction of travel on reversible lanes, some sort of explanation is required for the data consumer to understand the data.
		Availability of delivery areas		Supported only as part of the parking publication.
	Traffic data	All data types	The type of traffic data and, where appropriate, a short description of it	A human-readable description is not supported; however, that seems inconsequential in real-time data.
		Waiting time at border crossings to non-EU Member States		Waiting time at a generic border crossing is supported; waiting time at a border crossing to a non-EU Member State is not explicitly supported, but the meaning can be derived from the location of the border.
	SRTI	Driving behaviour advice, where appropriate		Driving behaviour advice can be provided as an additional situation record.

2.3. TN-ITS

TN-ITS specifies a way to exchange information related to changes in static road attributes, aiming to supply accurate and fresh data to digital map makers, to keep maps up-to-date with the changes in, for example, speed limits.

To limit the scope of the analysis, only static RTTI was analysed. It is possible to convey the description of the physical attributes of the road network using TN-ITS. However, the goal of TN-ITS is not to fully describe the physical road network and its attributes, and some standards are better suited for this



purpose. For that reason, the analysis regarding TN-ITS's coverage of the data categories is not included in this report.

The analysis of TN-ITS is presented in Appendix 1. No further observations are made, given that the analysis is unambiguous.

2.4. Transmodel

The European standard, Public Transport Reference Data Model (EN 12896), Transmodel, improves several features of public transport information and service management. In particular, the standard facilitates interoperability between the information processing systems of the transport operators and agencies by using matching definitions, structures and meanings for their data for the component systems. Transmodel is the basis for defining exchange standards that enable the sharing and provision of accurate and interoperable public transport information across organisation and system boundaries, like NeTEx and SIRI.

The analysis of Transmodel was focused on all MMTIS static and dynamic data. In the next version of this report, RTTI's and SSTEP's parking-related static and dynamic data will be included in this analysis.

Some observations on Transmodel's coverage of the data categories are provided in Table 2.3.



Table 2.3 – Gaps identified in Transmodel.

Data category and type					Observations
MMTIS	Static data	Level of service 1	Trip plan computation – road transport (for personal modes)	Road network	Describes the service view of the network, i.e., elements related to the (public) transport operation - not the physical network, as it is described by INSPIRE.
				Cycle network (segregated cycle lanes, on-road shared with vehicles, on-path shared with pedestrians)	Provides elements related to the cycling network (e.g., cycle parking place, not the cycling linear physical network).
				Pedestrian network and accessibility facilities	Provides several service-related elements & facilities, such as accesses to sites, public transport stops, vehicle meeting places, navigation paths (incl. pedestrian) between stops and inside stop places and sites – does not model the physical pedestrian network.
		Level of service 3	Detailed trip plans	Parameters needed to calculate an environmental factor such as carbon per vehicle type or passenger mile or per distance walked	Provides elements which allow deriving several environmental factors, in particular from historical data.
				Parameters such as fuel consumption needed to calculate the cost	Provides elements which allow deriving fuel consumption.
		Dynamic data	Level of service 2	Passing times, trip plans and auxiliary information (all modes)	Cycling network closures/diversions
	Availability check			Car parking spaces available (on and off-street), parking tariffs, road toll tariffs	Tariffs: planned information.

2.5. NeTEx

NeTEx is a CEN Technical Standard (TS 16614) for exchanging public transport schedules and related data. It is divided into several parts, each covering a functional subset of CEN’s Transmodel for public transport information. NeTEx provides means to exchange data for passenger information, such as stops, routes, timetables, and fares, among different computer systems, together with related operational data. It can be used to collect and integrate data from many different stakeholders, and to reintegrate it as it evolves through successive versions. The analysis of NeTEx is focused on MMTIS’s static data and further observations on its coverage of the data categories are provided in Table 2.4.

Table 2.4 – Gaps identified in NeTEx.

Data category and type					Observations
MMTIS	Static data	Level of service 1	Trip plan computation — road transport (for personal modes)	Road network	Describes the service view of the network, i.e., elements related to the (public) transport operation – not the physical network described by INSPIRE.
				Cycle network (segregated cycle lanes, on-road shared with vehicles, on-path shared with pedestrians)	Qualifies an existing network, but does not describe it.
				Pedestrian network and accessibility facilities	
		Level of service 3	Detailed trip plans	Detailed cycle network attributes (surface quality, side-by-side cycling, shared surface, on/off-road, scenic route, ‘walk only’, turn or access restrictions (e.g., against traffic flow))	Qualifies an existing network, but does not describe it.
				Parameters needed to calculate an environmental factor such as carbon per vehicle type or passenger mile or per distance walked	
				Parameters such as fuel consumption needed to calculate the cost	

2.6. SIRI

SIRI is a CEN technical standard (TS 15531) based on Transmodel for the exchange of real-time information about the planned, current, or projected performance of public transport operations. The analysis of SIRI was focused on MMTIS's dynamic data and RTTI's parking-related dynamic data, which are both within the scope of this data standard.

The observations made about Transmodel on dynamic MMTIS data are valid for SIRI as well. There were no additional gaps identified during the current phase. The analysis will be revisited and reviewed for the next version of this report.

2.7. GTFS & GTFS-RT

General Transit Feed Specification (GTFS) and GTFS-RT are data specifications, used by public agencies and service providers for online transit trip planners using open public datasets. GTFS provides the static information for the public transport network, such as transit data, network, stops and schedules, etc., while GTFS-RT presents real-time route updates: delays, cancellations and modified routes, service alerts – displaced stops and unplanned events affecting a station, a route, or the whole network – and vehicle position – information about vehicles, including their location and traffic density.

Today, on the NAPs, GTFS and GTFS-RT are popular standards for public transport networks, because of several parameters, such as effective marketing, the early establishment of support services, the simplicity of the development and update processes, a lack of expertise in EU CEN standards, etc. GTFS-RT is the most published format in open data and the most reused format today.

One way of facilitating the data producers' compliance with regulatory obligations is to convert GTFS and GTFS-RT datasets to NeTEx datasets with the use of automatic conversion tools.

GTFS and GTFS-RT are analysed in the same Table 2.5 below for MMTIS static and dynamic data.

Table 2.5 – Gaps identified in GTFS & GTFS-RT.

Data category and type					Observations
MMTIS	Static data	Level of service 1	Trip plan computation – road transport (for personal modes)	Road network	Not realised by GTFS; a specific tool is needed, like https://transport.data.gouv.fr/datasets/route-500/ .
				Cycle network (segregated cycle lanes, on-road shared with vehicles, on-path shared with pedestrians)	A specific tool is needed, like https://transport.data.gouv.fr/datasets/amenagements-cyclables-france-metropolitaine/ .
				Pedestrian network and accessibility facilities	
				Park & Ride stops	Bike-sharing stations and car-sharing are available only in GTFS. Park and ride stops need an external source, such as https://transport.data.gouv.fr
				Bike sharing stations	
				Car-sharing stations	

Data category and type				Observations	
	Level of service 3	Detailed trip plans	Detailed cycle network attributes (surface quality, side-by-side cycling, shared surface, on/off-road, scenic route, 'walk only', turn or access restrictions (e.g. against traffic flow))	/datasets?type=private-parking . Not included; an external source is needed, such as https://transport.data.gouv.fr/datasets?type=bike-way or https://bilans-ges.ademe.fr/ .	
			Parameters needed to calculate an environmental factor such as carbon per vehicle type or passenger mile or per distance walked		
			Parameters such as fuel consumption needed to calculate cost		
		Trip plan computation	Estimated travel times by day type and time-band by transport mode/combination of transport modes		Supported by GTFS-RT.
	Dynamic data	Level of service 1	Passing times, trip plans and auxiliary information	Disruptions (all modes)	Not supported only with GTFS-RT.
				Real-time status information — delays, cancellations, guaranteed connections monitoring (all modes)	GTFS-RT.
				Status of access node features (including dynamic platform information, operational lifts/escalators, closed entrances and exit locations — all scheduled modes)	Partially supported by GTFS. More specifically, it is only possible to mention the wheelchair-accessible node with GTFS. Other features (such as operational lifts) are not mentioned.
		Level of service 2	Passing times, trip plans and auxiliary information	Estimated departure and arrival times of services	With GTFS-RT or SIRI.
				Current road link travel times	Only GTFS.
				Cycling network closures/diversions	

Data category and type				Observations
			on (all modes)	
			Information service	Availability of publicly accessible charging stations for electric vehicles and refuelling points for CNG/LNG, hydrogen, petrol and diesel-powered vehicles
			Availability check	Car-sharing availability, bike-sharing availability
				Carparking spaces available (on and off-street), parking tariffs, road toll tariffs
		Level of service 3	Trip plans	Future predicted road link travel times

2.8. OJP

The analysis presented in this section is based on “*Public transport — Open API for distributed journey planning*”, which is a technical specification document, established and approved by CEN. OJP initiative has a vision of exchanging real-time information to support cross-border or intermodal journey planning, by implementing an Open Journey Planning API.

Hence, the OJP mainly covers MMTIS static and dynamic data categories. However, there are some data elements, falling under specific MMTIS data categories, for which OJP is not applied. The information given below relates only to public transport modes and not to other types of modes. Regarding the RTTI, SRTI and SSTP standards, no information is given within the OJP document.

Table 2.6 – Gaps identified in OJP.

Data category and type				Observations
MMTIS	Static data	Level of service 1	Trip plan computation — scheduled modes of transport (interchanges, routes/lines, transport operators, timetables, stop facilities access nodes, vehicles, accessibility)	Planned interchanges between guaranteed scheduled services
				Hours of operation



Data category and type					Observations
		Level of service 2	Information service	Where and how to buy tickets for scheduled modes, demand-responsive modes and car parking (all scheduled modes and demand-responsive incl. retail channels, fulfilment methods, payment methods)	The data category is partially covered, given that the API provides the URL to buy the fare products online, but the information itself is not provided.
		Level of service 3	Detailed common standard and special fare query (all scheduled modes)	Basic commercial conditions such as refunding/ replacing/ exchanging/ transferring and basic booking conditions such as purchase windows, validity periods, routing restrictions zonal sequence fares, and minimum stay.	Even though there is information regarding the validity periods and routing restrictions for zonal sequence fares, there is no information for the rest of the elements.
			Information service (all modes)	How to book car sharing, taxis, cycle hire etc. (incl. retail channels, fulfilment methods, payment methods)	Partially covered because only the URL of the information page and the URL of online booking services are given.
			Trip plan computation	Estimated travel times by day type and time band by transport mode/combination of transport modes	Partially covered because estimated travel times can be calculated only via arrival and departure times.
	Dyna mic data	Level of service 1	Passing times, trip plans and auxiliary information (all modes)	Real-time status information — delays, cancellations, guaranteed connections monitoring (all modes)	This data element was addressed as partially covered given the fact that the only information that is given is whether a journey is cancelled as well as planned cancellations.

Even though it is easier to comprehend when a data category/type is fully supported or not supported at all, the tricky part is to clarify the reason why certain data categories are partially covered by the OJP standard. Therefore, the only information elements that are included in Table 2.6 are the ones that are partially supported. The whole analysis of OJP standards can be found in Appendix 1.

In general, it seems that the OJP standard can cover static data categories to a greater extent than dynamic data categories. Moreover, it appears that OJP can support most information elements falling



into the first level of service which is defined in the MMTIS Delegated Regulation. Instead, the level of service 2 is not supported since demand-responsive modes are out of the scope of current standards. However, the data category corresponding with auxiliary information (including basic common standard fares) is well covered. Finally, the level of service 3 consists of data categories/types that are fully supported such as common standard and special fare queries, but at the same time also consists of data categories/types that are not well covered such as information services and detailed trip plans. It is noteworthy that the descriptions of data categories/types mentioned in Table 2.6 are partially supported by the OJP standard. For this exact reason, these data categories are further analysed within the table.

Concerning the dynamic data categories, OJP appears to have some interfaces with SIRI for the provision of dynamic data. Nevertheless, it seems that the information about estimated departure/arrival times of services is well supported. Regarding the real-time status information element, it is noted that this information element is partially covered due to insufficient information given. The rest information elements are not supported at all.

2.9. IATA

The scope of the IATA model is to standardise the information exchanged within the ecosystem of air transportation. Therefore, the analysis provided in this section relates only to MMTIS's static and dynamic data categories considering that air transportation is out of the scope of RTTI, SRTI and SSTP data categories.

The analysis of the IATA standard is based on the schema description of the Airline Industry Data Model IATA, (2020). The whole analysis can be found in Appendix 1. As can be observed in general, the IATA standard covers static data categories/types much better than dynamic data categories/types. However, it can be considered that IATA's mission is to represent, lead, and serve the airline. For that reason, many data categories mentioned in MMTIS Delegated Regulation are out of IATA's scope. The most challenging part is when a data category/type is partially covered either because there is not enough information, or because the information given relates only to specific elements. These information elements, which are not adequately covered are described in Table 2.7.

Table 2.7 – Gaps identified in IATA.

Data category and type				Observations	
MMTIS	Static data	Level of service 1	Location search (origin/destination)	Address identifiers (building number, street name, postcode) <ul style="list-style-type: none"> •Origin Station, IATA Location Code •Destination Station, IATA Location Code •A departure and/or arrival building for aircraft 	
				Topographic places (city, town, village, suburb, administrative unit)	Not all information is supported. Supported information includes the following: <ul style="list-style-type: none"> •Airport/city
			Trip plan computation — scheduled modes of transport (interchanges, routes/lines, transport operators, timetables, stop facilities access nodes, vehicles, accessibility)	Stop facilities access nodes (including platform information, help desks/information points, ticket booths, lifts/stairs, entrances and exit locations)	The data category is partially covered because IATA provides information only for specific information elements such as help desks, information about the exit/entry from an airport building to an aircraft and information about the facility regarding baggage handling.

2.10. TAP TSI

A technical specification for interoperability (TSI) for telematics applications for passenger services (TAP) of the trans-European rail system has been defined by Regulation 454/2011. These specifications are maintained by ERA, the European Union Agency for Railways.

This agency is also responsible for the TAF-TSI which applies to freight transport by rail. TAP TSI allows the harmonisation/standardisation of procedures, data, and messages to be exchanged between the computer systems of railway companies, infrastructure managers, and ticket vendors, to provide reliable information to passengers and issue tickets for a journey on the European Union railway network, according to the Regulation n°1371/2007 on rail passengers rights and obligations. TAP – TSI can also be used in the context of urban rail systems.

The Technical Specification for Interoperability on “Telematics Applications for Passengers” (TAP – TSI) prescribes protocols for the data exchange of:

- timetables
- fares/tariffs
- reservations
- information to passengers in the station and vehicle area
- train running information, etc.



This way, the TAP TSI covers some of the static MMTIS data. While TAP TSI covers information and ticketing for train travel very well, shows that gaps are mainly identified at the border of its responsibility, e.g. the change to other modes.

Table 2.8 – Gaps identified in TAP TSI.

Data category and type					Observations
MMTIS	Static data	Level of service 1	Location search (origin/destination)	Topographic places (city, town, village, suburb, administrative unit)	A static list with names of stations, stops and halts, is available. Whether this list covers all possibly wished origins and destinations is not clear.
			Location search (access nodes)	Identified access nodes (all scheduled modes)	Whether this is covered completely has remained unclear after the analysis.
			Trip plan computation — scheduled modes of transport (interchanges, routes/lines, transport operators, timetables, stop facilities access nodes, vehicles, accessibility)	Connection links where interchanges may be made, default transfer times between modes at interchanges	Possibility to indicate interchange opportunities to other modes. No transfer times.
		Planned interchanges between guaranteed scheduled services		The analysis did not reveal whether this is covered.	
		Level of service 2	Information service	Where and how to buy tickets for scheduled modes, demand-responsive modes and car parking (all scheduled modes and demand-responsive incl. retail channels, fulfilment methods, payment methods)	Possibility to indicate the availability of service points, etc. Retail channels, fulfilment methods and payment methods may not be covered.
		Level of service 3	Trip plan computation	Estimated travel times by day type and time band by transport mode/combination of transport modes	Partially covered because estimated travel times can be calculated only via arrival and departure times.

3. Standards used in NAPs

This section is based on the survey conducted in Task 3.1, Milestone 3.2, which addressed the use of data standards in each NAP, divided by the data categories mentioned in the DRs (references 1, 2, 3, and 4). Such data was reviewed and completed by active members from Task 2.2, as described in the Appendix “Analysis of Standards implementation in each NAP”.

Some of the standards that were analysed in Chapter 2, such as TN-ITS, IATA, OJP, and TAP TSI, were not part of that survey. For that reason, this section analyses only a share of the use of standards in NAPs, namely: DATEX II, INSPIRE, NeTeX, SIRI, GTFS, and GBFS.

3.1. Data categories

The data categories analysis is shown through the figures (Figure 3.1 to Figure 3.7). They describe the use of each standard in each data category as well as the data category adoption by at least one data standard.

The use of data standards in each data category (which is the data needed for the analysis carried out in this report) had only been filled by 19 out of 30 MS. Four other MS which are active members from task 2.2 provided the necessary data to carry out the data category analysis. Therefore, the following analysis includes data provided by 23 out of 30 MS.

The percentage addressed in the tables refers to the number of NAPs that are currently maintaining the respective data category assessed, among the ones that provided the data needed for this analysis. For example, in Figure 3.1 (related to SSTOP), in the data category “Contact information of the parking operator”, 44% of the NAPs use DATEX, while 22% use other standards. Nevertheless, some NAPs use both DATEX and other standards. For that reason, the column “Data category adoption” was added, which provides data on the percentage of NAPs that maintain a certain data category, regardless if there is more than one data standard supporting the same category. Using the same example, the adoption of the data category “Contact information of the parking operator” is 61% – which means that the remaining 39% of NAPs do not yet support such data category with a specific standard. The data standards classified as “Other formats” are those that do not belong to the ones listed in the bullet points addressed in section 1.1 (Objectives and scopes), e.g., WMS/WFS, XML, JSON and ROSSATTE.

Figure 3.1 focuses on SSTOP NAP, which is the one with fewer data categories. For this NAP, there are only DATEX II and “Other formats” as data standards. The use of DATEX II varies from 33% to 67% of the MS that have an SSTOP NAP and provided data for this analysis. Meanwhile, the percentage of “Others” is concentrated in a range of 17% to 28%.

Type of Data	Data Category	DATEX II	Other formats, data standards...	Data category adoption	
Type of NAP SSTOP	Dynamic data on av...	33%	28%	61%	
	Information on safety and equipment of the parking area	44%	22%	61%	
	Information on specific equipment or services for specific goods vehicle...	Description of security, safety and service equipment of the parking inc...	56%	28%	78%
		Information on specific equipment or services for specific goods vehicle...	50%	28%	72%
	Static data related to the parking areas, including (where applicable)	Number of parking places for refrigerated goods vehicles (numerical 4..	50%	22%	67%
		Identification information of parking area (name and address of the tru...	67%	28%	89%
		If needed, the indication of the Exit to be taken (limited to 100 characte...	33%	22%	50%
		Location information of the entry point in the parking area (latitude/lon...	61%	22%	78%
		Price and currency of parking places (300 characters)	33%	17%	50%
		Primary road identifier1/direction (20 characters/20 characters), and P...	56%	22%	72%
Total number of free parking places for trucks (integer 3)	50%	28%	72%		



Figure 3.1 - Use of data standards in each data category in the NAP – SSTP

SRTI NAP is the one addressed in Figure 3.2. It also contains only DATEX II and “Other formats” as data standards. The percentage of DATEX II grows considerably when compared to SSTP, varying from 57% to 83% of the 23 MS. Meanwhile, the percentage of “Others” almost does not vary, as it is concentrated in a range of 13% to 17%.

Type of Data	Data Category	DATEX II	Other formats, data standards...	Data category adoption	
Type of NAP SRTI	Animal, people, obstacles, debris on the road	Driving behaviour advice, where appropriate	83%	13%	83%
		Location of the event or the condition	83%	13%	83%
		The category of event or condition and, where appropriate, short descri..	83%	13%	83%
	Exceptional weather conditions	Driving behaviour advice, where appropriate	74%	13%	74%
		Location of the event or the condition	70%	13%	70%
		The category of event or condition and, where appropriate, short descri..	74%	13%	74%
	Reduced visibility	Driving behaviour advice, where appropriate	70%	13%	70%
		Location of the event or the condition	70%	13%	70%
		The category of event or condition and, where appropriate, short descri..	70%	13%	70%
	Short-term road works	Driving behaviour advice, where appropriate	78%	13%	78%
		Location of the event or the condition	78%	13%	78%
		The category of event or condition and, where appropriate, short descri..	78%	13%	78%
	Temporary slippery road	Driving behaviour advice, where appropriate	74%	13%	74%
		Location of the event or the condition	74%	13%	74%
		The category of event or condition and, where appropriate, short descri..	74%	13%	74%
	Unmanaged blockage of a road	Driving behaviour advice, where appropriate	70%	17%	74%
		Location of the event or the condition	70%	17%	74%
		The category of event or condition and, where appropriate, short descri..	70%	17%	74%
	Unprotected accident area	Driving behaviour advice, where appropriate	74%	17%	78%
		Location of the event or the condition	74%	17%	78%
		The category of event or condition and, where appropriate, short descri..	74%	17%	78%
	Wrong-way driver	Driving behaviour advice, where appropriate	57%	17%	61%
		Location of the event or the condition	57%	17%	61%
		The category of event or condition and, where appropriate, short descri..	57%	17%	61%

Figure 3.2 - Use of data standards in each data category in the NAP – SRTI

Figure 3.3, Figure 3.4, and Figure 3.5 address RTTI NAP, which contains many data categories. There are also only DATEX II and “Other formats” as data standards. Regarding the use of DATEX II, it is worth mentioning that two categories are not supported by any NAP: “The date and time when the change in a given condition is planned to occur” and “The description of the update”. Both are related to road classification and have an adoption rate of only 6%, which is granted by “Other formats”. Several other data categories are poorly supported, with minimum data category adoption around 26%. Nevertheless, many categories are maintained by more than 60% of the NAPs, while some of them present an adoption rate higher than 80%.

Type of Data	Data Category	DATEX II	Other formats, data standards...	Data category adoption
Accidents and incidents	The location of the event or condition concerned by the update	74%	26%	78%
	The period of occurrence of the event or condition concerned by the upd...	74%	26%	78%
	The quality of the data update	70%	22%	74%
	The type of dynamic road status data and, where appropriate, a short d...	74%	26%	78%
Availability of charging points for electric vehicles	The location of the event or condition concerned by the update	17%	26%	30%
	The period of occurrence of the event or condition concerned by the upd...	17%	26%	30%
	The quality of the data update	17%	26%	30%
	The type of dynamic road status data and, where appropriate, a short d...	17%	26%	30%
Availability of delivery areas	The location of the event or condition concerned by the update	13%	17%	26%
	The period of occurrence of the event or condition concerned by the upd...	13%	17%	26%
	The quality of the data update	13%	17%	26%
	The type of dynamic road status data and, where appropriate, a short d...	13%	17%	26%
Availability of parking places	The location of the event or condition concerned by the update	22%	26%	43%
	The period of occurrence of the event or condition concerned by the upd...	22%	22%	39%
	The quality of the data update	22%	17%	35%
	The type of dynamic road status data and, where appropriate, a short d...	22%	22%	39%
Bridge closures	The location of the event or condition concerned by the update	61%	17%	65%
	The period of occurrence of the event or condition concerned by the upd...	61%	17%	65%
	The quality of the data update	57%	13%	61%
	The type of dynamic road status data and, where appropriate, a short d...	61%	17%	65%
Cost of parking	The location of the event or condition concerned by the update	17%	17%	30%
	The period of occurrence of the event or condition concerned by the upd...	17%	17%	30%
	The quality of the data update	17%	17%	30%
	The type of dynamic road status data and, where appropriate, a short d...	17%	17%	30%
Direction of travel on reversible lanes	The location of the event or condition concerned by the update	30%	17%	43%
	The period of occurrence of the event or condition concerned by the upd...	30%	17%	43%
	The quality of the data update	30%	17%	43%
	The type of dynamic road status data and, where appropriate, a short d...	30%	17%	43%
Dynamic speed limits	The location of the event or condition concerned by the update	22%	17%	30%
	The period of occurrence of the event or condition concerned by the upd...	26%	17%	35%
	The quality of the data update	22%	17%	30%
	The type of dynamic road status data and, where appropriate, a short d...	26%	17%	35%
Lane closures	The location of the event or condition concerned by the update	70%	26%	78%
	The period of occurrence of the event or condition concerned by the upd...	70%	26%	78%
	The quality of the data update	65%	22%	74%
	The type of dynamic road status data and, where appropriate, a short d...	70%	26%	78%
Overtaking bans on heavy goods vehicles	The location of the event or condition concerned by the update	22%	13%	30%
	The period of occurrence of the event or condition concerned by the upd...	22%	17%	35%
	The quality of the data update	22%	17%	35%
	The type of dynamic road status data and, where appropriate, a short d...	22%	17%	35%
Poor road conditions	The location of the event or condition concerned by the update	70%	26%	78%
	The period of occurrence of the event or condition concerned by the upd...	70%	26%	78%
	The quality of the data update	65%	22%	74%
	The type of dynamic road status data and, where appropriate, a short d...	70%	26%	78%
Road closures	The location of the event or condition concerned by the update	74%	22%	78%
	The period of occurrence of the event or condition concerned by the upd...	74%	22%	78%
	The quality of the data update	70%	17%	74%
	The type of dynamic road status data and, where appropriate, a short d...	74%	22%	78%
Roadworks	The location of the event or condition concerned by the update	78%	26%	87%
	The period of occurrence of the event or condition concerned by the upd...	78%	26%	87%
	The quality of the data update	74%	17%	78%
	The type of dynamic road status data and, where appropriate, a short d...	78%	26%	87%
Temporary traffic management measures	The location of the event or condition concerned by the update	57%	22%	70%
	The period of occurrence of the event or condition concerned by the upd...	57%	22%	70%
	The quality of the data update	52%	13%	61%
	The type of dynamic road status data and, where appropriate, a short d...	57%	22%	70%
Road network links and their physical attributes, such as: - geometry - road width - number of lanes - gradients - junctions	The date and time when the change in a given condition has occurred or ...	17%	52%	65%
	The date on which the data has been updated	17%	57%	70%
	The description of the update	17%	57%	70%
	The location of the condition concerned by the update	17%	57%	70%
	The quality of the data update	17%	52%	65%
	The type of static road data	17%	57%	70%
The type of update (modification, insertion or deletion)	17%	52%	65%	

Figure 3.3 - Use of data standards in each data category in the NAP - RTTI, part 1



Type of Data	Data Category	DATEX II	Other formats, data standards...	Data category adoption	
RTTI - Dynamic Data	Variable road user charges and available payment methods	The location of the event or condition concerned by the update	17%	13%	26%
		The period of occurrence of the event or condition concerned by the update	17%	13%	26%
		The quality of the data update	17%	13%	26%
		The type of dynamic road status data and, where appropriate, a short description	17%	13%	26%
	Weather conditions affecting road surface and visibility	The location of the event or condition concerned by the update	57%	17%	61%
		The period of occurrence of the event or condition concerned by the update	57%	17%	61%
		The quality of the data update	52%	13%	57%
		The type of dynamic road status data and, where appropriate, a short description	57%	17%	61%
	Freight delivery regulations	The date and time when the change in a given condition has occurred or is expected to occur	9%	22%	30%
		The date on which the data has been updated	9%	22%	30%
		The description of the update	9%	22%	30%
		The location of the condition concerned by the update	9%	22%	30%
The quality of the data update		9%	22%	30%	
The type of static road data		9%	22%	30%	
The type of update (modification, insertion or deletion)		9%	22%	30%	
Identification of tolled roads, applicable fixed road user charges and available payment methods	The date and time when the change in a given condition has occurred or is expected to occur	9%	22%	30%	
	The date on which the data has been updated	9%	22%	30%	
	The description of the update	9%	22%	30%	
	The location of the condition concerned by the update	9%	22%	30%	
	The quality of the data update	9%	22%	30%	
	The type of static road data	9%	22%	30%	
	The type of update (modification, insertion or deletion)	9%	22%	30%	
Location of charging points for electric vehicles and the conditions for their use	The date and time when the change in a given condition has occurred or is expected to occur	22%	26%	43%	
	The date on which the data has been updated	22%	26%	43%	
	The description of the update	22%	26%	43%	
	The location of the condition concerned by the update	22%	26%	43%	
	The quality of the data update	22%	26%	43%	
	The type of static road data	22%	26%	43%	
	The type of update (modification, insertion or deletion)	22%	26%	43%	
Type of NAP RTTI - Static Data Location of compressed natural gas, liquefied natural gas, liquefied petroleum gas stations	The date and time when the change in a given condition has occurred or is expected to occur	13%	17%	30%	
	The date on which the data has been updated	13%	17%	30%	
	The description of the update	13%	17%	30%	
	The location of the condition concerned by the update	13%	17%	30%	
	The quality of the data update	13%	17%	30%	
	The type of static road data	13%	17%	30%	
	The type of update (modification, insertion or deletion)	13%	17%	30%	
RTTI - Static Data Location of delivery areas	The date and time when the change in a given condition has occurred or is expected to occur	9%	22%	30%	
	The date on which the data has been updated	9%	22%	30%	
	The description of the update	9%	22%	30%	
	The location of the condition concerned by the update	9%	22%	30%	
	The quality of the data update	9%	22%	30%	
	The type of static road data	9%	22%	30%	
	The type of update (modification, insertion or deletion)	9%	22%	30%	
RTTI - Static Data Location of parking places and service areas	The date and time when the change in a given condition has occurred or is expected to occur	30%	43%	57%	
	The date on which the data has been updated	30%	48%	61%	
	The description of the update	30%	43%	57%	
	The location of the condition concerned by the update	30%	48%	61%	
	The quality of the data update	30%	43%	57%	
	The type of static road data	30%	48%	61%	
	The type of update (modification, insertion or deletion)	30%	43%	57%	
RTTI - Static Data Location of public transport stops and interchange points	The date and time when the change in a given condition has occurred or is expected to occur	13%	30%	39%	
	The date on which the data has been updated	13%	30%	39%	
	The description of the update	13%	30%	39%	
	The location of the condition concerned by the update	13%	30%	39%	
	The quality of the data update	13%	30%	39%	
	The type of static road data	13%	30%	39%	
	The type of update (modification, insertion or deletion)	13%	30%	39%	
RTTI - Static Data Road network links and their physical attributes, such as: - geometry - road width - number of lanes - gradients - junctions	The date and time when the change in a given condition has occurred or is expected to occur	17%	52%	65%	
	The date on which the data has been updated	17%	57%	70%	
	The description of the update	17%	57%	70%	
	The location of the condition concerned by the update	17%	57%	70%	
	The quality of the data update	17%	52%	65%	
	The type of static road data	17%	57%	70%	
	The type of update (modification, insertion or deletion)	17%	52%	65%	

Figure 3.4 - Use of data standards in each data category in the NAP - RTTI, part 2

Type of Data	Data Category	DATEX II	Other formats, data standards...	Data category adoption
Location of tolling stations	The date and time when the change in a given condition has occurred or is planned to occur	17%	26%	43%
	The date on which the data has been updated	17%	26%	43%
	The description of the update	17%	26%	43%
	The location of the condition concerned by the update	17%	26%	43%
	The quality of the data update	17%	26%	43%
	The type of static road data	17%	26%	43%
	The type of update (modification, insertion or deletion)	17%	26%	43%
Road classification	The date and time when the change in a given condition has occurred or is planned to occur	0%	17%	17%
	The date on which the data has been updated	9%	48%	57%
	The description of the update	0%	17%	17%
	The location of the condition concerned by the update	9%	48%	57%
	The quality of the data update	9%	43%	52%
	The type of static road data	9%	48%	57%
Road network links and their physical attributes, such as: - geometry - road width - number of lanes - gradients - junctions	The date and time when the change in a given condition has occurred or is planned to occur	17%	52%	65%
	The date on which the data has been updated	17%	57%	70%
	The description of the update	17%	57%	70%
	The location of the condition concerned by the update	17%	57%	70%
	The quality of the data update	17%	52%	65%
	The type of static road data	17%	57%	70%
Speed limits	The date and time when the change in a given condition has occurred or is planned to occur	13%	43%	57%
	The date on which the data has been updated	13%	43%	57%
	The description of the update	13%	43%	57%
	The location of the condition concerned by the update	13%	43%	57%
	The quality of the data update	13%	43%	57%
	The type of static road data	13%	43%	57%
Traffic circulation plans	The date and time when the change in a given condition has occurred or is planned to occur	13%	22%	30%
	The date on which the data has been updated	13%	22%	30%
	The description of the update	13%	22%	30%
	The location of the condition concerned by the update	13%	22%	30%
	The quality of the data update	13%	22%	30%
	The type of static road data	13%	22%	30%
Traffic signs reflecting traffic regulations and identifying dangers, such as: - access conditions for tunnels - access conditions f..	The date and time when the change in a given condition has occurred or is planned to occur	26%	43%	65%
	The date on which the data has been updated	26%	43%	65%
	The description of the update	26%	43%	65%
	The location of the condition concerned by the update	26%	43%	65%
	The quality of the data update	26%	43%	65%
	The type of static road data	26%	43%	65%
Location and length of traffic queues	The location of the event or condition concerned by the update	39%	26%	52%
	The quality of the data update	39%	26%	52%
	The type of traffic data and, where appropriate, a short description of it	39%	26%	52%
	The location of the event or condition concerned by the update	22%	22%	35%
	The quality of the data update	22%	22%	35%
	The type of traffic data and, where appropriate, a short description of it	22%	22%	35%
Traffic volume	The location of the event or condition concerned by the update	39%	17%	48%
	The quality of the data update	39%	17%	48%
	The type of traffic data and, where appropriate, a short description of it	39%	17%	48%
Travel times	The location of the event or condition concerned by the update	26%	26%	43%
	The quality of the data update	26%	26%	43%
	The type of traffic data and, where appropriate, a short description of it	26%	26%	43%
Waiting time at border crossings to non-EU Member Sta..	The location of the event or condition concerned by the update	17%	9%	26%
	The quality of the data update	17%	9%	26%
	The type of traffic data and, where appropriate, a short description of it	17%	9%	26%

Figure 3.5 - Use of data standards in each data category in the NAP - RTTI, part 3

When comparing the data types (static, dynamic and traffic), it appears that, for static data, many data are stored in “Other formats”, while for dynamic and traffic data, Datex II is prevalent. The higher percentage of the use of Datex II is concentrated in the dynamic data categories – the maximum value is 78%.

Moreover, Figure 3.6 and Figure 3.7 are related to MMTIS NAP, which uses several of the data standards considered in this report (DATEX II, NeTeX, INSPIRE, SIRI, GBFS and “Other formats”). Except for “Other formats”, NeTeX is the most used standard as it supports most categories. For some of these categories, 35% of NAPs use this standard.



Type of Data	Data Category	DATEX II	NeTeX	SIRI	GBFS	Other formats, data standards...	Data category adoption
Type of NAP MMTIS - Dynamic data	Availability check	4%				35%	35%
	Car parking spaces available (on and off-street), parking ta...					30%	39%
	Car-sharing availability, bike sharing availability				9%		
	Information se...	9%				30%	35%
	Availability of publicly accessible charging stations for ele...						
	Disruptions (all modes)	4%		4%		30%	35%
Type of NAP MMTIS - Static data	Real-time status information — delays, cancellations, guar...	4%		9%		35%	39%
	Status of access node features (including dynamic platfor...			4%		26%	39%
	Current road link travel times	4%				26%	30%
	Cycling network closures/diversions					22%	22%
	Estimated departure and arrival times of services			9%		35%	39%
	Basic commercial conditions such as refunding/replacing/e...		13%			30%	43%
Type of NAP MMTIS - Static data	Common fare products (access rights such as zone/point-t...		17%			26%	39%
	Passenger classes (classes of user such as adult, child, stu...		13%			30%	43%
	Special Fare Products: offers with additional special condit...		13%			26%	39%
	Detailed cycle network attributes (surface quality, side-by...		9%			30%	39%
	Parameters needed to calculate an environmental factor s...		4%			22%	26%
	Parameters such as fuel consumption needed to calculate ..					22%	22%
Information se...	Where and how to buy tickets for scheduled modes, deman...		9%			22%	30%

Figure 3.6 - Use of data standards in each data category in the NAP - MMTIS, part 1

Type of Data	Data Category	INSPIRE	DATEX II	NeTeX	GTFIS	GBFS	Other formats, data standards...	Data category adoption
Information service (all modes)	How to book car sharing, taxis, cycle hire etc. (incl. retail ...					4%	22%	26%
	How to pay tolls (incl. retail channels, fulfilment method...						17%	17%
	Where how to pay for car parking, public charging statio...						26%	26%
Location search (access nodes)	Geometry/map layout structure of access nodes (all sche...			13%			26%	35%
	Identified access nodes (all scheduled modes)			17%	9%		30%	43%
Location search (demand-responsive modes)	Bike sharing stations			9%			35%	43%
	Car-sharing stations			9%			30%	39%
	Park & Ride stops			9%			26%	35%
	Publicly accessible refuelling stations for petrol, diesel, ...		4%	4%			35%	43%
Location search (origin/destination)	Secure bike parking (such as locked bike garages)			9%			26%	35%
	Address identifiers (building number, street name, postc...	13%		4%			48%	57%
	Points of interest (related to transport information) to ...	4%		9%			43%	52%
Type of NAP MMTIS - Static data	Topographic places (city, town, village, suburb, administr...	13%		13%			48%	57%
	Estimated travel times by day type and time-band by tra...			9%			22%	30%
	Cycle network (segregated cycle lanes, on-road shared w...			9%			35%	43%
	Pedestrian network and accessibility facilities			9%			35%	43%
	Road network			9%			35%	39%
	Accessibility of access nodes, and paths within an interc...			9%			26%	30%
	Connection links where interchanges may be made, defa...			26%	4%		26%	52%
	Existence of assistance services (such as existence of on...			4%			26%	30%
	Hours of operation			30%			35%	52%
	Network topology and routes/lines (topology)			35%	17%		35%	61%
	Planned interchanges between guaranteed scheduled se...			26%			26%	43%
	Stop facilities access nodes (including platform informat...			17%			39%	52%
Timetables			35%	17%		39%	65%	
Transport operators			35%	17%		39%	65%	
Vehicles (low floor; wheelchair accessible.)			30%			26%	48%	
Basic common standard fares (all scheduled modes):...			13%			39%	43%	
Vehicle facilities such as classes of carriage, on-board WI...			17%			26%	39%	

Figure 3.7 - Use of data standard in each data category in the NAP - MMTIS, part 2

For MMTIS NAPs, when it comes to static data in particular, “Other formats” are the most used, especially for the data regarding routes and locations, while NeTeX is the second most prevalent, containing elements related to the operation, such as schedules and timetables.

3.2. The use of Standards

Survey results

The use of standards EU-wide can be visualized in Figure 3.8, Figure 3.9 and Figure 3.10. The use of a certain data standard grows along with the number of data categories that it can attend. Therefore, the figures use a range of colours to identify the number of data categories attended by each data standard, in the several MS that answered the survey. The range of colours begins with red (the lowest amount of data categories attended by the data standard) and finishes with green (the highest amount of data categories attended by the data standard).



Figure 3.8 is related to INSPIRE, DATEX II and NeTEx, while Figure 3.9 shows SIRI, GTFS and GBFS, and Figure 3.10 depicts the “Others”.

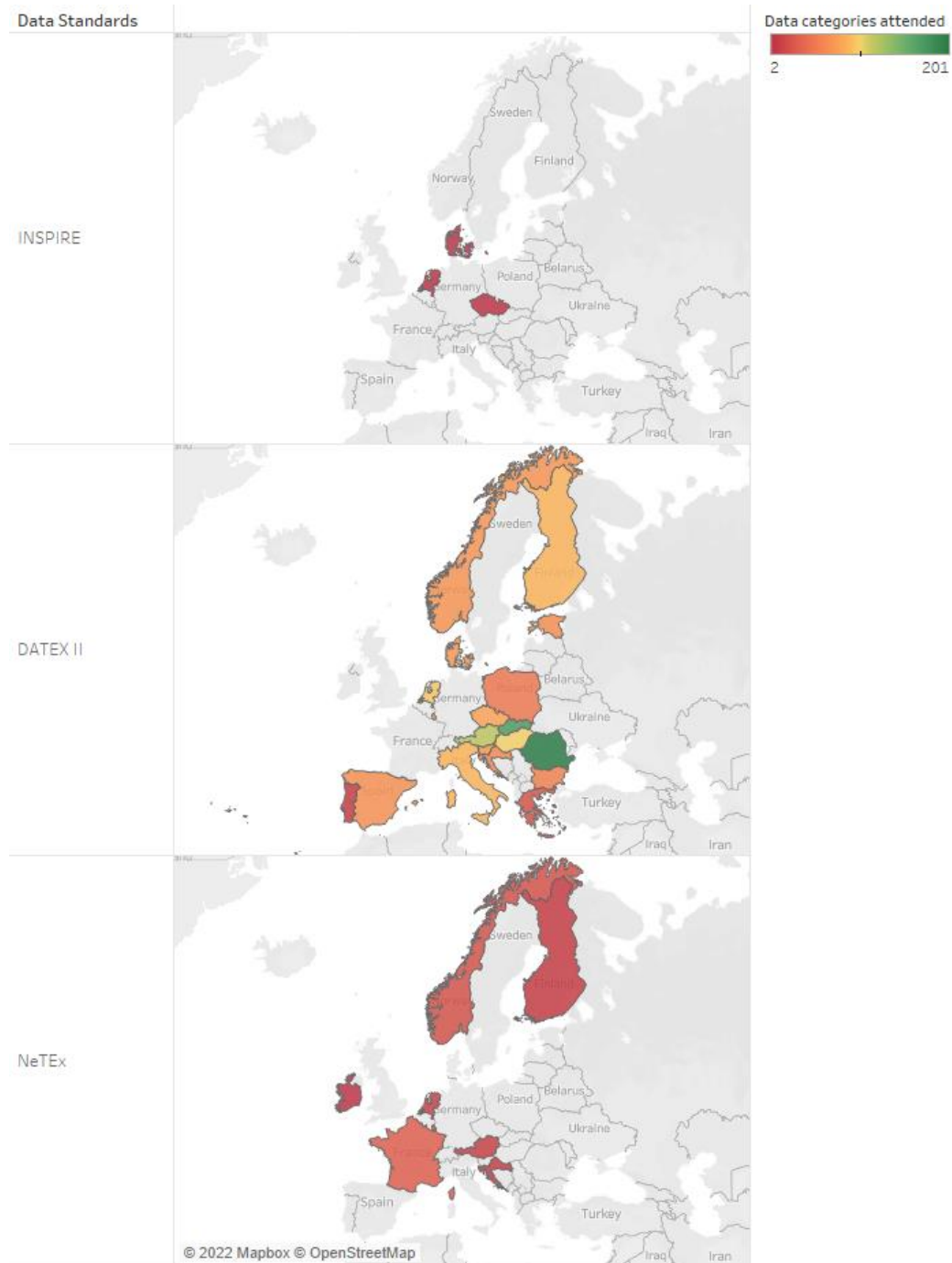


Figure 3.8 - INSPIRE, DATEX II and NeTEx use across Europe.

It can be observed that the use of DATEX II is considerably broad EU-wide, as such a standard is currently in use for all 4 DR (SSTP, SRTI, RTTI, and MMTIS). A significant number of MS also appear to work with NeTEx (especially for MMTIS, as presented in section 3.1). However, regarding INSPIRE, only a few MS seem to use it in their NAPs.

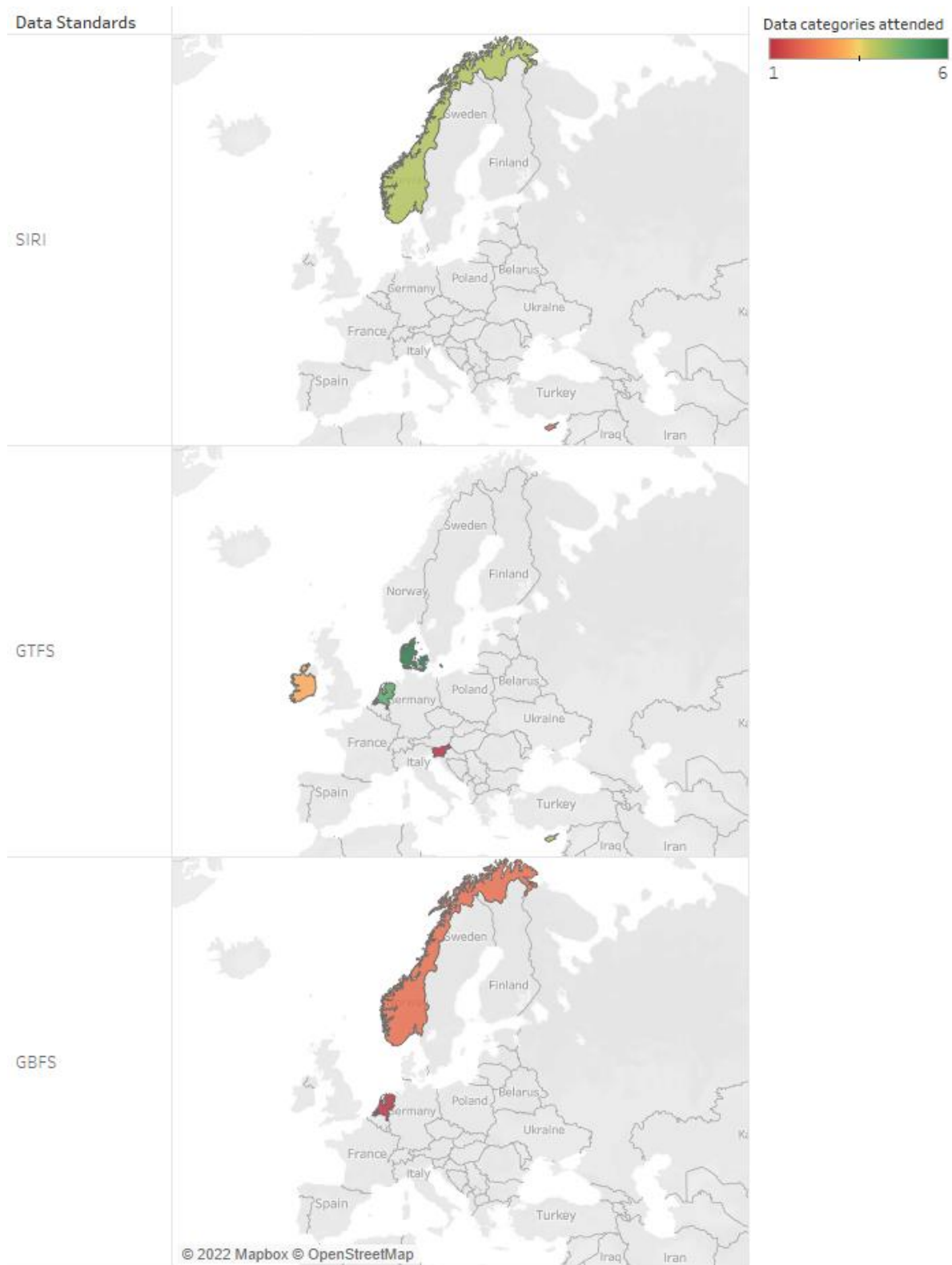


Figure 3.9 - SIRI, GTFS and GBFS use across Europe.

As well as INSPIRE and NeTeX, the three data standards addressed in Figure 3.9 are used only for MMTIS. That might be the reason why each of them is used by 2 MS at most, as can be seen in the figure.



Figure 3.10 – “Other formats and Standards” use across Europe.

These figures portray the variation in the use of data standards EU-wide. The standards considered as “Others” are still the most used.

Summary

This section combines the previous survey data with additional data provided by State Members. It contains a summary of the standards used by the MS in each NAP (see Table 3.1).

Table 3.1 – Summary of the use of Standards in every NAP.

	SSTP	SRTI	RTTI	MMTIS
Austria	DATEX II	DATEX II	DATEX II	NeTex & Other(s)
Belgium	DATEX II	DATEX II	DATEX II, TN-ITS (CEN TS 17268)	NeTex, GTFS & Others
Bulgaria	DATEX II	DATEX II	DATEX II	
Cyprus	Not Applicable	DATEX II	Other (s)	SIRI, GTFS, GTFS-RT & Other (s)
Croatia	Not Applicable	DATEX II	DATEX II	NeTex & Other(s)
Czech Republic	DATEX II	DATEX II & Others (DDR & XML)	Others (WMS/WFS, ALERT-C, GeoJSON, SHP, DDR & XML)	INSPIRE & Other (s)
Denmark	DATEX II	DATEX II	DATEX II & Others (WMS/WFS)	INSPIRE, GTFS & Other (s)
Estonia	DATEX II & other(s)	DATEX II & Other(s)	DATEX II & Others (WMS/WFS)	Other(s)
Finland	Other(s)	DATEX II & Other(s) (GeoJSON)	DATEX II & Others (WMS/WFS, ROSATTE, GeoJSON)	NeTex, Siri, GTFS (Flex, RT) & Others (GeoJSON)
France	DATEX II & other(s)	DATEX II & Other(s)	DATEX II, HTML	GTFS*, GTFS-RT*, Netex, Siri, Siri lite, geojson, csv, json, shp
Germany	DATEX II	DATEX II	DATEX II	NeTex & Other(s)
Greece	Other(s)	DATEX II	Other(s)	Other(s)



	SSTP	SRTI	RTTI	MMTIS
Hungary	DATEX II	DATEX II	DATEX II & Others (WMS/WFS)	
Ireland	Not Applicable		Other (s)	GTFS, NeTeX, Other (s)
Italy	DATEX II	Other(s)	Other(s)	GTFS
Latvia				
Lithuania	Not Applicable			
Luxemburg	DATEX II	DATEX II	DATEX II & others	NeTeX
Malta	Not Applicable			
Netherlands	DATEX II & others	DATEX II & others	DATEX II & others	NeTeX, DATEX II, GBFS, INSPIRE, SIRI & others
Norway	Not Applicable	DATEX II	DATEX II & Others (Elveg, NVDB)	NeTeX, DATEX II, SIRI, GBFS & Others (OSM, NVDB, NRP, Elveg, HTML)
Poland	Others	DATEX II & Others	DATEX II & Others	
Portugal	Not Applicable	DATEX II	DATEX II	
Romania	DATEX II	DATEX II	DATEX II	DATEX II & Other(s)
Slovakia	DATEX II	DATEX II	DATEX II & Other (s)	
Slovenia	DATEX II (upgrade to V3)	DATEX II (upgrade to V3)	DATEX II (upgrade to V3)	GTFS, Other (National integrated public passenger transport “standard”)
Spain		DATEX II	DATEX II & Other (s)	
Switzerland				
Sweden				
United Kingdom				

4. Recommendations for further development

After identifying gaps in the data standards and demonstrating the use of each standard EU-wide, several recommendations were elaborated. The recommendations on topic/session 4.1 aim to aid the standard developers (especially WG4, which is responsible for developing DATEX II and TN-ITS) in the process of improving these standards in terms of broadness and quality. Such recommendations are divided by standard. Moreover, topic/session 4.2 holds recommendations focused on assisting the NAP operators to enhance the NAPs concerning data categories and standards' use, with the view to fomenting interoperability and harmonization.

4.1. Standards

INSPIRE

- Include more points of interest in the model or, ideally, make it possible to describe additional points of interest with a generic point of interest model.
- Extend the model to allow for the description of the complete cycle network, including cycle lanes on the road or footpaths (shared with automotive vehicles and/or pedestrians).
- Support the description of accessibility in the pedestrian network, including accessibility facilities.

DATEX II

- Add a way to formally describe bike-sharing stations.
- Support a machine-readable description of reversible lanes, which currently seems to be supported only as part of the description of the access to an area, and their current/planned directions of travel.
- Support INSPIRE location referencing.
- Add better support for the description of waiting times at border crossings to non-EU Member States.
- Develop an approach for the support of data provision targeting different types of service provision.

TN-ITS

- No relevant recommendations have been identified.

Transmodel

- Consider supporting legacy data formats and other data formats, including a conversion tool.

NeTEx

- Supply more open-access tools and software modules to produce, check and validate NeTEx data streams.
- Harmonise the multiple existing profiles to support Europe-wide datasets.

SIRI

- Supply more open-access tools and software modules to produce, check and validate SIRI data streams.
- Harmonise the multiple existing profiles to support Europe-wide datasets.

GTFS

- No relevant recommendations have been identified.



GTFS-RT

- Allow for GTFS-RT datasets to be self-supporting and published without an existing GTFS dataset.
- The GTFS-RT must be accompanied by a theoretical file in GTFS format to be used. These data are not self-supporting.

OJP

- Support information regarding the position of interchanges and the routes that must be followed between different transport vehicles.
- Support the description of hours of operation in conjunction with days of operation, as public transport services may start and stop functioning at specific times, which may vary depending on the day.
- Allow for the description of public transport trip delays/reschedulings.

IATA

- No relevant recommendations have been identified.

TAP TSI

- No relevant recommendations have been identified.

4.2. NAPs

Data categories

- Given the value of data, it is necessary to ensure the collection of data and assure harmonisation in the data formats to enable the data access to the end-user and those who are interested in the information.
- Improve the description of data categories and provide examples of relevant datasets to facilitate data collection.
- Enhance data categorisation with a comprehensive metadata profile. NAPCORE SWG4.4 is dealing with the definition of a NAP metadata profile as an extension of the standard DCAT-AP.
- Elaborate further on the data categories with respect to what is stated in the regulations and what is good practice and common practice.

Standards use

- Since there are many different types of data standards, it is necessary to avoid “Others” format types, and progressively indicate to data providers the suggested Standards in each type of data (“Others” category includes GeoJSON, WMS/WFS, ALERT-C, SHP, DDR, XML, NVDB, Elveg, and ROSATTE).
- Using DATEX II as the data standard as a harmonised format for multimodal travel information services and hence avoiding data duplication.
- Define NeTeX and SIRI national profiles to foster the use of these standards, covering peculiarities of public transportation at a national level.

5. Conclusions

One of the main goals of the current report is to analyse data standards to improve data interoperability EU-wide. Moreover, this analysis is also crucial for providing recommendations to WG4 which is responsible for the enhancement of data standards and the alignment between different standard approaches. As such, in the context of WG2, an analysis of data standards has been executed. On the one hand, the analysis concentrates on the data standards that are used per NAP. On the other hand, it aims to capture the data categories/types that are either fully/partially supported or not supported at all by specific standards. The next version of this document will go beyond the standards and consider reference profiles and metadata, as well as expand on the standards' analysis.

Considering the outputs of the current analysis (see in Annex the corresponding Excel file), it can be considered that static data categories of MMTIS Delegated Regulation may be supported in a better way by Transmodel, which encompasses several of the analysed data standards. However, there are specific data categories/types that can be fully supported by certain standards since the rest of them cannot cover all the included data elements. For instance, the description of where a passenger must alight from one vehicle and board to another can be well covered by NeTEx, while OJP covers only the maximum number of planned interchanges. Therefore, it would make sense to incorporate the exact locations of the public transport stops and potentially also the route that must be taken on foot between the stops into the OJP. The same holds for the information service data category, which can be also supported by NeTEx. What can be also observed from the analysis is that trip planning computation is not fully supported by any data standard. This is a clear gap since associated data elements such as cycle and pedestrian networks are in the scope of MMTIS. Concerning dynamic data categories/types, most MMTIS data categories are supported by SIRI and DATEX II. On the other hand, it seems that dynamic data is out of the scope of OJP.

The harmonisation of the description of certain data categories/types stands out as a worthwhile effort. A common ontology, for instance, would allow for a convergence of the different interpretations and ways to describe real-world information. As an example, the cycle network is an area not well supported by current versions of the analysed standards; harmonising its description across the standards would increase interoperability between standards in the future and reduce ambiguity and confusion caused by divergent interpretations.

It has also been observed that GTFS and GTFS-RT are oftentimes chosen over EU standards to exchange MMTIS data, even if those other standards are more comprehensive and offer a better description of reality. Various factors have led to this, some of which are clearer than others, such as the relative ease of use of GTFS. What is clear is that imposing the replacement of GTFS with other standards would make it difficult for public transport operators to comply. Allowing for the continued use of GTFS, while offering support in the transition to EU standards – for example, by providing open-source converters – seems to be a more reasonable approach.



6. References

1. EC. (2013). DR EU No. 885/2013 – Safe and Secure Truck Parking (SSTP). Available at: http://data.europa.eu/eli/reg_del/2013/885/oj
2. EC. (2013). DR EU No. 886/2013 – Safety Related traffic Information (SRTI). Available at: http://data.europa.eu/eli/reg_del/2013/886/oj
3. EC. (2015). DR EU No 962/2015 – Real-Time Traffic Information (RTTI). Available at: http://data.europa.eu/eli/reg_del/2015/962/oj
4. EC. (2017). DR EU 2017/1926 – Multimodal Traffic Information Service (MMTIS). Available at: http://data.europa.eu/eli/reg_del/2017/1926/oj
5. IATA. (2020). Airline Industry Data Model. Retrieved from: https://airtechzone.iata.org/aidm_model/20.2/index.htm?goto=4:2:5:1:6655
6. NABSA. (2021). Data Good Practices for Municipalities: Understanding the General Bikeshare Feed Specification. Retrieved from: <https://nabsa.net/wp-content/uploads/2021/01/FINAL-Data-Good-Practices-for-Municipalities-Understanding-the-General-Bikeshare-Feed-Specification-GBFS-1.pdf>
7. European Its Platform. (2021). EU EIP - Annual NAP Report 2020. Retrieved from: <https://www.its-platform.eu/wp-content/uploads/ITS-Platform/AchievementsDocuments/NAP/EU%20EIP%20-%20National%20Access%20Points%20-%20annual%20report%202020.pdf>
8. Transmodel CEN Platform. (2022). Retrieved from: <https://www.transmodel-cen.eu/>
9. GTFS. (No date a). GTFS: Rendre les données du transport public universellement accessibles. Available at: <https://gtfs.org/fr/>, (Accessed: 05 August 2022)
10. Google Transit APIs. (2022). GTFS Static Overview: Static Transit. Available at: <https://developers.google.com/transit/gtfs>, (Accessed: 05 August 2022)
11. Google Groups. (2022). GTFS-realtime. Available at: <https://groups.google.com/g/gtfs-realtime>, (Accessed: 05 August 2022)
12. Google Transit APIs. (2022). GTFS Static Overview: Realtime Transit. Available at: <https://developers.google.com/transit/gtfs-realtime>, (Accessed: 05 August 2022)
13. Ministère De La Transition Écologique. (2020). Gtfs2NetexFr, un outil open source intégré au Point d'Accès National. Available at: <https://blog.transport.data.gouv.fr/billets/gtfs2netexfr-un-outil-open-source-int%C3%A9gr%C3%A9-au-point-dacc%C3%A8s-national/>, (Accessed: 05 August 2022)
14. Shared Micro Mobility. (2020). The evolution of GBFS. Available at: <https://shared-micromobility.com/the-evolution-of-gbfs/>, (Accessed: 05 August 2022)
15. INSPIRE. (2022). INSPIRE Consolidated UML Model. Available at: <https://inspire.ec.europa.eu/data-model/approved/r4618-ir/html/index.htm> (Accessed: 10 August 2022)
16. DATEX II Docs. (No date b). DATEX II v3.3 Downloads. Available at: <https://docs.datex2.eu/downloads/modelv33.html> (Accessed: 10 August 2022)
17. Joinup. (2019). Final workshop of the ELISE INSPIRE-MMTIS Study: support to Multi-Modal Travel Information Services EC Regulation. Available at: https://joinup.ec.europa.eu/sites/default/files/news/2019-05/INSP-MMTIS_March2019%20v3.2.pdf (Accessed: 10 August 2022)
18. JRC Publications Repository. (2019). INSPIRE-MMTIS: overlap in standards related to the Delegated Regulation (EU) 2017/1926. Available at: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC118744/inspire-mmtis_final_report_pubsy.pdf (Accessed: 10 August 2022)



19. JRC Publications Repository. (2019). INSPIRE-MMTIS: overlap in standards related to the Delegated Regulation (EU) 2017/1926 – Appendix 1.
20. ERA. (No date c). TAP. Available at: <https://www.era.europa.eu/content/tap>
21. EC. (No date d). Mobility and Transport. Available at: https://ec.europa.eu/transport/modes/rail/interoperability/interoperability/telematic_applications_en
22. INSPIRE Addresses Mapping.
23. INSPIRE Topographic Places Mapping.
24. IATA – NeTEx Access Nodes Mapping.
25. IATA – Transmodel Network Topology Mapping.
26. ERA – NeTEx Mapping.



Appendixes

1. Analysis of Standards per Data category

The following tables in the Excel document are filled in with the following values:

- “Y” if the standard supports the description of the data category/type
- “P” if the standard partially supports the description of the data category/type
- “N/A” if a concrete answer regarding the standard’s support of the data category/type cannot be reached, either because of a lack of available information or due to time constraints
- A blank cell if the standard does not support the description of the data category/type

Table A.1 – Analysis of Standards per Data category in SSTP

SSTP Data category		INSPIRE	DATEX II	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
Static data related to the parking areas, including (where applicable)	Identification information of parking area (name and address of the truck parking area (limited to 200 characters))		Y	Y	Y				N/A	N/A	
	Location information of the entry point in the parking area (latitude/longitude) (20 + 20 characters)		Y	Y	Y				N/A	N/A	
	Primary road identifier1/direction (20 characters/20 characters), and Primary road identifier2/direction (20 characters/20 characters) if same parking accessible from two different roads		Y	Y	Y				N/A	N/A	
	If needed, the indication of the Exit to be taken (limited to 100 characters)/Distance from primary road (integer 3) km or miles		Y	Y	Y				N/A	N/A	
	Total number of free parking places for trucks (integer 3)		Y	Y	Y				N/A	N/A	
	Price and currency of parking places (300 characters)		Y	Y	Y				N/A	N/A	
Information on safety and equipment of the parking area	Description of security, safety and service equipment of the parking including national classification if one is applied (500 characters)		Y	Y	Y				N/A	N/A	
	Number of parking places for refrigerated goods vehicles (numerical 4 digits)		Y	Y	Y				N/A	N/A	
	Information on specific equipment or services for specific goods vehicles and other (300 characters)		Y	Y	Y				N/A	N/A	
	Contact information of the parking operator: - Name and surname (up to 100 characters) - Telephone number (up to 20 characters) - E-mail address (up to 50 characters) - Consent of the operator to make his contact information public (Yes/No)		Y	Y	Y				N/A	N/A	
Dynamic data on availability of parking places including whether a parking is: full, closed or number of free places which are available			Y						N/A	N/A	



Table A.2 – Analysis of Standards per Data category in SRTI

SRTI Data category		INSPIRE	DATEX II	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
Temporary slippery road	Location of the event or the condition		Y						N/A	N/A	
	The category of event or condition and, where appropriate, short description of it		Y						N/A	N/A	
	Driving behaviour advice, where appropriate		Y						N/A	N/A	
Animal, people, obstacles, debris on the road	Location of the event or the condition		Y						N/A	N/A	
	The category of event or condition and, where appropriate, short description of it		Y						N/A	N/A	
	Driving behaviour advice, where appropriate		Y						N/A	N/A	
Unprotected accident area	Location of the event or the condition		Y						N/A	N/A	
	The category of event or condition and, where appropriate, short description of it		Y						N/A	N/A	
	Driving behaviour advice, where appropriate		Y						N/A	N/A	
Short-term road works	Location of the event or the condition		Y						N/A	N/A	
	The category of event or condition and, where appropriate, short description of it		Y						N/A	N/A	
	Driving behaviour advice, where appropriate		Y						N/A	N/A	
Reduced visibility	Location of the event or the condition		Y						N/A	N/A	
	The category of event or condition and, where appropriate, short description of it		Y						N/A	N/A	
	Driving behaviour advice, where appropriate		Y						N/A	N/A	
Wrong-way driver	Location of the event or the condition		Y						N/A	N/A	
	The category of event or condition and, where appropriate, short description of it		Y						N/A	N/A	
	Driving behaviour advice, where appropriate		Y						N/A	N/A	
Unmanaged blockage of a road	Location of the event or the condition		Y						N/A	N/A	
	The category of event or condition and, where appropriate, short description of it		Y						N/A	N/A	
	Driving behaviour advice, where appropriate		Y						N/A	N/A	
Exceptional weather conditions	Location of the event or the condition		Y						N/A	N/A	
	The category of event or condition and, where appropriate, short description of it		Y						N/A	N/A	
	Driving behaviour advice, where appropriate		Y						N/A	N/A	



Table A.3 – Analysis of Standards per Data category in Static RTTI

Static RTTI Data category		INSPIRE	DATEX II	TN-ITS	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
Road network links and their physical attributes, such as: - geometry - road width - number of lanes - gradients - junctions	The type of static road data	P								N/A	N/A	
	The location of the condition concerned by the update	Y								N/A	N/A	
	The type of update (modification, insertion or deletion)	Y								N/A	N/A	
	The description of the update	N/A								N/A	N/A	
	The date on which the data has been updated	Y								N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur	N/A								N/A	N/A	
	The quality of the data update	N/A								N/A	N/A	
Road classification	The type of static road data	Y		Y						N/A	N/A	
	The location of the condition concerned by the update	Y		Y						N/A	N/A	
	The type of update (modification, insertion or deletion)	Y		Y						N/A	N/A	
	The description of the update	N/A								N/A	N/A	
	The date on which the data has been updated	Y		Y						N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur	Y		Y						N/A	N/A	
	The quality of the data update	N/A								N/A	N/A	
Traffic signs reflecting traffic regulations and identifying dangers, such as: - access conditions for tunnels - access conditions for bridges - permanent access restrictions - other traffic regulations	The type of static road data		Y	Y						N/A	N/A	
	The location of the condition concerned by the update		Y	Y						N/A	N/A	
	The type of update (modification, insertion or deletion)		P	Y						N/A	N/A	
	The description of the update									N/A	N/A	
	The date on which the data has been updated		Y	Y						N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur		Y	Y						N/A	N/A	
	The quality of the data update									N/A	N/A	
Speed limits	The type of static road data	Y	Y	Y						N/A	N/A	
	The location of the condition concerned by the update	Y	Y	Y						N/A	N/A	
	The type of update (modification, insertion or deletion)	Y	P	Y						N/A	N/A	





Static RTTI Data category		INSPIRE	DATEX II	TN-ITS	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
	The description of the update	N/A								N/A	N/A	
	The date on which the data has been updated	Y	Y	Y						N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur	Y	Y	Y						N/A	N/A	
	The quality of the data update	N/A								N/A	N/A	
Traffic circulation plans	The type of static road data		P							N/A	N/A	
	The location of the condition concerned by the update		Y							N/A	N/A	
	The type of update (modification, insertion or deletion)		P							N/A	N/A	
	The description of the update									N/A	N/A	
	The date on which the data has been updated		Y							N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur		Y							N/A	N/A	
Freight delivery regulations	The type of static road data		Y							N/A	N/A	
	The location of the condition concerned by the update		Y							N/A	N/A	
	The type of update (modification, insertion or deletion)		P							N/A	N/A	
	The description of the update									N/A	N/A	
	The date on which the data has been updated		Y							N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur		Y							N/A	N/A	
Location of tolling stations	The type of static road data	Y	Y	Y						N/A	N/A	
	The location of the condition concerned by the update	Y	Y	Y						N/A	N/A	
	The type of update (modification, insertion or deletion)	Y	P	Y						N/A	N/A	
	The description of the update	N/A								N/A	N/A	
	The date on which the data has been updated	Y	Y	Y						N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur	Y	Y	Y						N/A	N/A	
Identification of tolled roads, applicable fixed road user charges and available payment methods	The type of static road data	P	Y	Y						N/A	N/A	
	The location of the condition concerned by the update	Y	Y	Y						N/A	N/A	
	The type of update (modification, insertion or deletion)	Y	P	Y						N/A	N/A	
	The description of the update	N/A								N/A	N/A	
	The date on which the data has been updated	Y	Y	Y						N/A	N/A	





Static RTTI Data category		INSPIRE	DATEX II	TN-ITS	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
	The date and time when the change in a given condition has occurred or is planned to occur	Y	Y	Y						N/A	N/A	
	The quality of the data update	N/A								N/A	N/A	
Location of parking places and service areas	The type of static road data	Y	Y	Y	Y	Y				N/A	N/A	
	The location of the condition concerned by the update	Y	Y	Y	Y	Y				N/A	N/A	
	The type of update (modification, insertion or deletion)	Y	P	Y	Y	Y				N/A	N/A	
	The description of the update	N/A			Y	Y				N/A	N/A	
	The date on which the data has been updated	Y	Y	Y	Y	Y				N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur	Y	Y	Y	Y	Y				N/A	N/A	
	The quality of the data update	N/A			Y	Y				N/A	N/A	
Location of charging points for electric vehicles and the conditions for their use	The type of static road data		Y	Y	Y	Y				N/A	N/A	
	The location of the condition concerned by the update		Y	Y	Y	Y				N/A	N/A	
	The type of update (modification, insertion or deletion)		P	Y	Y	Y				N/A	N/A	
	The description of the update				Y	Y				N/A	N/A	
	The date on which the data has been updated		Y	Y	Y	Y				N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur		Y	Y	Y	Y				N/A	N/A	
	The quality of the data update				Y	Y				N/A	N/A	
Location of compressed natural gas, liquefied natural gas, liquefied petroleum gas stations	The type of static road data		Y	Y	Y	Y				N/A	N/A	
	The location of the condition concerned by the update		Y	Y	Y	Y				N/A	N/A	
	The type of update (modification, insertion or deletion)		P	Y	Y	Y				N/A	N/A	
	The description of the update				Y	Y				N/A	N/A	
	The date on which the data has been updated		Y	Y	Y	Y				N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur		Y	Y	Y	Y				N/A	N/A	
	The quality of the data update				Y	Y				N/A	N/A	
Location of public transport stops and interchange points	The type of static road data	Y		Y	Y	Y		Y		P	N/A	
	The location of the condition concerned by the update	Y		Y	Y	Y		Y		N/A	N/A	
	The type of update (modification, insertion or deletion)	Y		Y	Y	Y		Y		N/A	N/A	
	The description of the update	N/A			Y	Y		Y		N/A	N/A	
	The date on which the data has been updated	Y		Y	Y	Y		Y		N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur	Y		Y	Y	Y		Y		N/A	N/A	





Static RTTI Data category		INSPIRE	DATEX II	TN-ITS	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
	The quality of the data update	N/A			Y	Y		Y		N/A	N/A	
Location of delivery areas	The type of static road data		P							N/A	N/A	
	The location of the condition concerned by the update		Y							N/A	N/A	
	The type of update (modification, insertion or deletion)		P							N/A	N/A	
	The description of the update									N/A	N/A	
	The date on which the data has been updated		Y							N/A	N/A	
	The date and time when the change in a given condition has occurred or is planned to occur		Y							N/A	N/A	
	The quality of the data update									N/A	N/A	

Table A.4 – Analysis of Standards per Data category in Dynamic RTTI

Dynamic RTTI Data category		INSPIRE	DATEX II	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
Road closures	The type of dynamic road status data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Lane closures	The type of dynamic road status data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Bridge closures	The type of dynamic road status data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Overtaking bans on heavy goods vehicles	The type of dynamic road status data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Roadworks	The type of dynamic road status data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	



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Dynamic RTTI Data category		INSPIRE	DATEX II	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
Accidents and incidents	The type of dynamic road status data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Dynamic speed limits	The type of dynamic road status data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Direction of travel on reversible lanes	The type of dynamic road status data and, where appropriate, a short description of it		P						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Poor road conditions	The type of dynamic road status data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Temporary traffic management measures	The type of dynamic road status data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Variable road user charges and available payment methods	The type of dynamic road status data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Availability of parking places	The type of dynamic road status data and, where appropriate, a short description of it		Y	Y					N/A	N/A	
	The location of the event or condition concerned by the update		Y	Y					N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y	Y					N/A	N/A	
	The quality of the data update			Y					N/A	N/A	
Availability of delivery areas	The type of dynamic road status data and, where appropriate, a short description of it		P						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Cost of parking	The type of dynamic road status data and, where appropriate, a short description of it		Y	Y	Y				N/A	N/A	
	The location of the event or condition concerned by the update		Y	Y	Y				N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y	Y	Y				N/A	N/A	



Dynamic RTTI Data category		INSPIRE	DATEX II	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
	The quality of the data update			Y	Y				N/A	N/A	
Availability of charging points for electric vehicles	The type of dynamic road status data and, where appropriate, a short description of it		Y	Y					N/A	N/A	
	The location of the event or condition concerned by the update		Y	Y					N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y	Y					N/A	N/A	
	The quality of the data update			Y					N/A	N/A	
Weather conditions affecting road surface and visibility	The type of dynamic road status data and, where appropriate, a short description of it		Y	Y					N/A	N/A	
	The location of the event or condition concerned by the update		Y	Y					N/A	N/A	
	The period of occurrence of the event or condition concerned by the update		Y	Y					N/A	N/A	
	The quality of the data update			Y					N/A	N/A	

Table A.5 – Analysis of Standards per Data category in Traffic RTTI

Traffic RTTI Data category		INSPIRE	DATEX II	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
Traffic volume	The type of traffic data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Speed	The type of traffic data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Location and length of traffic queues	The type of traffic data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Travel times	The type of traffic data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	
Waiting time at border crossings to non-EU Member States	The type of traffic data and, where appropriate, a short description of it		Y						N/A	N/A	
	The location of the event or condition concerned by the update		Y						N/A	N/A	
	The quality of the data update								N/A	N/A	





Table A.6 – Analysis of Standards per Data category in Static MMTIS

Static MMTIS data category		INSPIRE	DATEX II	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
Location search (origin/destination)	Address identifiers (building number, street name, postcode)	Y		Y	Y				Y	P	
	Topographic places (city, town, village, suburb, administrative unit)	Y		Y	Y				Y	P	P
	Points of interest (related to transport information) to which people may wish to travel	P	P	Y	Y				Y		
Trip plans	Operational Calendar, mapping day types to calendar dates			Y	Y		Y		Y	Y	
Location search (access nodes)	Identified access nodes (all scheduled modes)	Y		Y	Y		Y		Y	Y	P
	Geometry/map layout structure of access nodes (all scheduled modes)	Y		Y	Y		Y		Y	N/A	
Trip plan computation – scheduled modes transport (interchanges, routes/lines, transport operators, timetables, stop facilities access nodes, stop facilities access nodes, vehicles, accessibility)	Connection links where interchanges may be made, default transfer times between modes at interchanges	Y		Y	Y		Y		Y	N/A	P
	Network topology and routes/lines (topology)	Y		Y	Y		Y		N/A		Y
	Transport operators			Y	Y		Y		Y	Y	Y
	Timetables	Y		Y	Y		Y		Y	Y	Y
	Planned interchanges between guaranteed scheduled services	N/A		Y	Y		Y		P	Y	?
	Hours of operation	N/A		Y	Y		Y		P	N/A	Y
	Stop facilities access nodes (including platform information, help desks/information points, ticket booths, lifts/stairs, entrances and exit locations)			Y	Y		N/A			P	
	Vehicles (low floor; wheelchair accessible.)			Y	Y		Y		Y		
Trip plan computation – road transport (for personal modes)	Accessibility of access nodes, and paths within an interchange (such as existence of lifts, escalators)			Y	Y		Y		Y		Y
	Existence of assistance services (such as existence of on-site assistance)			Y	Y		N/A		Y		Y
	Road network	Y		P	P		N/A				
Location search (demand-responsive modes)	Cycle network (segregated cycle lanes, on-road shared with vehicles, on-path shared with pedestrians)	P		P	P		N/A				
	Pedestrian network and accessibility facilities	P		P	P		N/A				
Location search (demand-responsive modes)	Park & Ride stops		Y	Y	Y		N/A				
	Bike sharing stations		P	Y	Y		Y				
	Car-sharing stations		Y	Y	Y		Y				
	Publicly accessible refuelling stations for petrol, diesel, CNG/LNG, hydrogen powered vehicles, charging stations for electric vehicles		Y	Y	Y						
	Secure bike parking (such as locked bike garages)			Y	Y		N/A				
Information service	Where and how to buy tickets for scheduled modes, demand responsive modes and car parking (all scheduled modes and demand-responsive incl. retail channels, fulfilment methods, payment methods)			Y	Y		Y		p	Y	P



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Static MMTIS data category		INSPIRE	DATEX II	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
Trip plans, auxiliary information, availability check	Basic common standard fares (all scheduled modes): — Fare network data (fare zones/stops and fare stages) — Standard fare structures (point to point including daily and weekly fares, zonal fares, flat fares)			Y	Y		Y		Y		Y
	Vehicle facilities such as classes of carriage, on-board Wi-Fi.			Y	Y		N/A		Y		Y
Detailed common standard and special fare query (all scheduled modes)	Passenger classes (classes of user such as adult, child, student, veteran, impaired access and qualifying conditions and classes of travel such as 1st, 2nd.)			Y	Y		N/A		Y	N/A	Y
	Common fare products (access rights such as zone/point-to-point including daily and weekly tickets/single/return, eligibility of access, basic usage conditions such as validity period/operator/time of travel/interchanging, standard point to point fares prices for different point to point pairs including daily and weekly fares/zonal fare prices/flat fare prices)			Y	Y		Y		Y		Y
	Special Fare Products: offers with additional special conditions such as promotional fares, group fares, season passes, aggregated products combining different products and add on products such as parking and travel, minimum stay			Y	Y		N/A		Y		Y
	Basic commercial conditions such as refunding/replacing/exchanging/transferring and basic booking conditions such as purchase windows, validity periods, routing restrictions zonal sequence fares, minimum stay.			Y	Y		N/A		p		Y
Information service (all modes)	How to pay tolls (incl. retail channels, fulfilment methods, payment methods)		P	Y	Y				N/A		
	How to book car sharing, taxis, cycle hire etc. (incl. retail channels, fulfilment methods, payment methods)			Y	Y				P		
	Where how to pay for car parking, public charging stations for electric vehicles and refuelling points for CNG/LNG, hydrogen, petrol and diesel powered vehicles (incl. retail channels, fulfilment methods, payment methods)		Y	Y	Y						
Detailed trip plans	Detailed cycle network attributes (surface quality, side-by-side cycling, shared surface, on/off road, scenic route, 'walk only', turn or access restrictions (e.g. against flow of traffic)				P						
	Parameters needed to calculate an environmental factor such as carbon per vehicle type or passenger mile or per distance walked			P	P						
	Parameters such as fuel consumption needed to calculate cost			P	P						
Trip plan computation	Estimated travel times by day type and time-band by transport mode/combination of transport modes	N/A	P	Y	Y			Y	P		P



Table A.7 – Analysis of Standards per Data category in Dynamic MMTIS

Dynamic MMTIS data category		INSPIRE	DATEX II	Transmodel	NeTEx	SIRI	GTFS	GTFS-RT	OJP	IATA	TAP TSI
Passing times, trip plans and auxiliary information	Disruptions (all modes)			Y		Y		Y			
	Real-time status information — delays, cancellations, guaranteed connections monitoring (all modes)			Y		Y		Y	P	N/A	
	Status of access node features (including dynamic platform information, operational lifts/escalators, closed entrances and exit locations — all scheduled modes)			Y		Y	P				
Passing times, trip plans and auxiliary information (all modes)	Estimated departure and arrival times of services			Y		Y		Y	Y	Y	
	Current road link travel times		Y	Y		Y	Y				
	Cycling network closures/diversions		Y	P		P					
Information service	Availability of publicly accessible charging stations for electric vehicles and refuelling points for CNG/LNG, hydrogen, petrol and diesel powered vehicles		Y	Y		Y					
Availability check	Car-sharing availability, bike sharing availability			Y		Y	Y				
	Car parking spaces available (on and off-street), parking tariffs, road toll tariffs		Y	P		P					
Trip plans	Future predicted road link travel times	N/A	Y	Y		Y					



2. Analysis of Standards implementation in each NAP

Table A.8 – Analysis of Standards implementation in each NAP-SSTP

Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
SSTP	Dynamic data on availability of parking places including whether a parking is: full, closed or number of free places which are available	Dynamic data on availability of parking places including whether a parking is: full, closed or number of free places which are available	Datex II				Others		Datex II	Others	Others		Others	Datex II			Datex II	Datex II				Datex II	Others		
	Information on safety and equipment of the parking area	Contact information of the parking operator: - Name and surname (up to 100 characters) - Telephone number (up to 20 characters) - E-mail address (up to 50 characters) - Consent of the operator to make his contact information public (Yes/No)			Datex II			Datex II		Datex II, Others	Others		Others	Datex II			Datex II	Datex II				Datex II	Others	Datex II	
		Description of security, safety and service equipment of the parking including national classification if one is applied (500 characters)	Datex II		Datex II			Datex II		Others	Others		Others	Datex II		Datex II, Others	Datex II	Datex II		Others		Datex II	Datex II	Datex II	
		Information on specific equipment or services for specific goods vehicles and other (300 characters)	Datex II		Datex II			Datex II		Others	Others		Others	Datex II		Datex II, Others	Datex II	Datex II		Others		Datex II	Datex II		
		Number of parking places for refrigerated goods vehicles (numerical 4 digits)	Datex II		Datex II			Datex II		Others	Others		Others	Datex II		Datex II, Others	Datex II	Datex II				Datex II	Datex II		
	Static data related to the parking areas, including (where applicable)	Identification information of parking area (name and address of the truck parking area (limited to 200 characters))	Datex II		Datex II		Others	Datex II	Datex II	Datex II	Datex II	Others	Others	Datex II		Datex II, Others	Datex II	Datex II		Others		Datex II	Datex II	Datex II	



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Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain			
		If needed, the indication of the Exit to be taken (limited to 100 characters)/Distance from primary road (integer 3) km or miles	Datex II					Datex II		Others	Others		Others	Datex II		Datex II, Others	Datex II	Datex II				Datex II						
		Location information of the entry point in the parking area (latitude/longitude) (20 + 20 characters)	Datex II						Datex II	Datex II	Datex II	Others		Others	Datex II		Datex II, Others	Datex II	Datex II		Others		Datex II	Datex II	Datex II			
		Price and currency of parking places (300 characters)			Datex II						Others	Others		Others	Datex II			Datex II	Datex II				Datex II	Datex II				
		Primary road identifier1/direction (20 characters/20 characters), and Primary road identifier2/direction (20 characters/20 characters) if same parking accessible from two different roads	Datex II		Datex II					Datex II	Datex II	Datex II	Others		Others	Datex II		Datex II, Others	Datex II	Datex II		Others		Datex II	Datex II			
		Total number of free parking places for trucks (integer 3)	Datex II		Datex II				Datex II	Datex II	Others	Others		Others	Datex II		Datex II, Others	Datex II	Datex II		Others		Datex II					

Table A.9 – Analysis of Standards implementation in each NAP-SRTI

Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
SRTI	Animal, people, obstacles, debris on the road	Driving behaviour advice, where appropriate	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others	Datex II	Datex II	Datex II	Datex II	Datex II



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
		Location of the event or the condition	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others	Datex II	Datex II	Datex II	Datex II	Datex II	
		The category of event or condition and, where appropriate, short description of it	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II	Datex II, Others	Datex II	Datex II	Datex II	Datex II	Datex II
	Exceptional weather conditions	Driving behaviour advice, where appropriate	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II	Datex II
		Location of the event or the condition	Datex II			Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Datex II	Datex II		Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II	Datex II
		The category of event or condition and, where appropriate, short description of it	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II	Datex II
	Reduced visibility	Driving behaviour advice, where appropriate	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II				Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
		Location of the event or the condition	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II				Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
		The category of event or condition and, where appropriate, short description of it	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II				Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
	Short-term road works	Driving behaviour advice, where appropriate	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
		Location of the event or the condition	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
		The category of event or condition and, where appropriate, short description of it	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
	Temporary slippery road	Driving behaviour advice, where appropriate	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
		Location of the event or the condition	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
		The category of event or condition and, where appropriate, short description of it	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
	Unmanaged blockage of a road	Driving behaviour advice, where appropriate	Datex II			Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Datex II	Datex II		Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
		Location of the event or the condition	Datex II			Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Datex II	Datex II		Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
		The category of event or condition and, where appropriate, short description of it	Datex II			Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Datex II	Datex II		Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
	Unprotected accident area	Driving behaviour advice, where appropriate	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
		Location of the event or the condition	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
		The category of event or condition and, where appropriate, short description of it	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Datex II	Datex II		Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	Datex II
	Wrong-way driver	Driving behaviour advice, where appropriate	Datex II			Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Datex II			Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	
		Location of the event or the condition	Datex II			Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Datex II			Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	
		The category of event or condition and, where appropriate, short description of it	Datex II			Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Datex II			Datex II		Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II	



Table A.10 – Analysis of Standards implementation in each NAP-RTTI

Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
RTTI - Dynamic Data	Accidents and incidents	The location of the event or condition concerned by the update	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II, Others	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The period of occurrence of the event or condition concerned by the update	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II, Others	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The quality of the data update	Datex II		Datex II	Datex II			Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II, Others	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The type of dynamic road status data and, where appropriate, a short description of it	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II, Others	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
	Availability of charging points for electric vehicles	The location of the event or condition concerned by the update								Others	Datex II, Others		Others					Others		Datex II, Others		Datex II		Datex II, Others		
		The period of occurrence of the event or condition concerned by the update									Others	Datex II, Others		Others					Others		Datex II, Others		Datex II		Datex II, Others	
		The quality of the data update									Others	Datex II, Others		Others					Others		Datex II, Others		Datex II		Datex II, Others	
		The type of dynamic road status data and, where appropriate, a short description of it									Others	Datex II, Others		Others					Others		Datex II, Others		Datex II		Datex II, Others	
	Availability of delivery areas	The location of the event or condition concerned by the update									Others	Datex II, Others		Others				Datex II	Others				Datex II			
		The period of occurrence of the event or condition concerned by the update									Others	Datex II, Others		Others				Datex II	Others				Datex II			
		The quality of the data update									Others	Datex II, Others		Others				Datex II	Others				Datex II			



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain		
		The type of dynamic road status data and, where appropriate, a short description of it								Others	Datex II, Others		Others				Datex II	Others				Datex II					
	Availability of parking places	The location of the event or condition concerned by the update	Datex II				Others	Others		Others	Datex II, Others		Others	Datex II				Datex II	Others				Datex II				
		The period of occurrence of the event or condition concerned by the update	Datex II						Others		Others	Datex II, Others		Others	Datex II				Datex II	Others				Datex II			
		The quality of the data update	Datex II								Others	Datex II, Others		Others	Datex II				Datex II	Others				Datex II			
		The type of dynamic road status data and, where appropriate, a short description of it	Datex II						Others		Others	Datex II, Others		Others	Datex II				Datex II	Others				Datex II			
Bridge closures	The location of the event or condition concerned by the update	Datex II			Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Others				Datex II	Datex II	Datex II	Datex II			Datex II	Datex II	Datex II, Others	Datex II		



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
		The period of occurrence of the event or condition concerned by the update	Datex II			Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Others			Datex II	Datex II	Datex II	Datex II			Datex II	Datex II	Datex II, Others	Datex II	
		The quality of the data update	Datex II			Datex II			Datex II	Datex II	Datex II, Others		Others			Datex II	Datex II	Datex II	Datex II				Datex II	Datex II	Datex II, Others	Datex II
		The type of dynamic road status data and, where appropriate, a short description of it	Datex II			Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Others			Datex II	Datex II	Datex II	Datex II				Datex II	Datex II	Datex II, Others	Datex II
	Cost of parking	The location of the event or condition concerned by the update			Datex II						Others	Datex II, Others		Others				Datex II	Others				Datex II			
		The period of occurrence of the event or condition concerned by the update			Datex II						Others	Datex II, Others		Others				Datex II	Others				Datex II			
		The quality of the data update			Datex II						Others	Datex II, Others		Others				Datex II	Others				Datex II			
		The type of dynamic road status data and, where appropriate, a short description of it			Datex II						Others	Datex II, Others		Others				Datex II	Others				Datex II			



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
	Direction of travel on reversible lanes	The location of the event or condition concerned by the update	Datex II							Others	Datex II, Others		Others	Datex II		Datex II		Others				Datex II	Datex II		Datex II	
		The period of occurrence of the event or condition concerned by the update	Datex II								Others	Datex II, Others		Others	Datex II		Datex II		Others				Datex II	Datex II		Datex II
		The quality of the data update	Datex II								Others	Datex II, Others		Others	Datex II		Datex II		Others				Datex II	Datex II		Datex II
		The type of dynamic road status data and, where appropriate, a short description of it	Datex II								Others	Datex II, Others		Others	Datex II		Datex II		Others				Datex II	Datex II		Datex II
	Dynamic speed limits	The location of the event or condition concerned by the update	Datex II							Datex II	Others	Datex II, Others		Others	Datex II				Datex II, Others							
		The period of occurrence of the event or condition concerned by the update	Datex II						Datex II	Datex II	Others	Datex II, Others		Others	Datex II				Datex II, Others							
		The quality of the data update	Datex II							Datex II	Others	Datex II, Others		Others	Datex II				Datex II, Others							
		The type of dynamic road status data and, where appropriate, a short description of it	Datex II						Datex II	Datex II	Others	Datex II, Others		Others	Datex II				Datex II, Others							
	Lane closures	The location of the event or condition concerned by the update	Datex II		Datex II	Datex II			Datex II, Others	Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The period of occurrence of the event or condition concerned by the update	Datex II		Datex II	Datex II			Datex II, Others	Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The quality of the data update	Datex II		Datex II	Datex II				Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
Type of NAP		The type of dynamic road status data and, where appropriate, a short description of it	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II	
	Overtaking bans on heavy goods vehicles	The location of the event or condition concerned by the update									Others	Datex II, Others		Others						Datex II			Datex II	Datex II		Datex II
		The period of occurrence of the event or condition concerned by the update									Others	Datex II, Others		Others					Others	Datex II			Datex II	Datex II		Datex II
		The quality of the data update									Others	Datex II, Others		Others					Others	Datex II			Datex II	Datex II		Datex II
		The type of dynamic road status data and, where appropriate, a short description of it									Others	Datex II, Others		Others					Others	Datex II			Datex II	Datex II		Datex II
	Poor road conditions	The location of the event or condition concerned by the update		Datex II		Datex II	Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The period of occurrence of the event or condition concerned by the update		Datex II		Datex II	Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The quality of the data update		Datex II		Datex II	Datex II			Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The type of dynamic road status data and, where appropriate, a short description of it		Datex II		Datex II	Datex II		Datex II, Others	Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
	Road closures	The location of the event or condition concerned by the update	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II			Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of MAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
		The period of occurrence of the event or condition concerned by the update	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The quality of the data update	Datex II		Datex II	Datex II			Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The type of dynamic road status data and, where appropriate, a short description of it	Datex II		Datex II	Datex II		Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
	Roadworks	The location of the event or condition concerned by the update	Datex II		Datex II	Datex II	Others	Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The period of occurrence of the event or condition concerned by the update	Datex II		Datex II	Datex II	Others	Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The quality of the data update	Datex II		Datex II	Datex II			Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II
		The type of dynamic road status data and, where appropriate, a short description of it	Datex II		Datex II	Datex II	Others	Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II	Datex II, Others		Datex II	Datex II	Datex II, Others	Datex II



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
	Temporary traffic management measures	The location of the event or condition concerned by the update	Datex II		Datex II		Others	Datex II, Others	Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II			Datex II	Datex II		Datex II	
		The period of occurrence of the event or condition concerned by the update	Datex II		Datex II		Others	Datex II, Others	Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II				Datex II	Datex II		Datex II
		The quality of the data update	Datex II		Datex II				Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II				Datex II	Datex II		Datex II
		The type of dynamic road status data and, where appropriate, a short description of it	Datex II		Datex II		Others	Datex II, Others	Datex II	Others	Datex II, Others		Others	Datex II		Datex II	Datex II	Datex II	Datex II				Datex II	Datex II		Datex II
	Variable road user charges and available payment methods	The location of the event or condition concerned by the update								Others	Datex II, Others		Others						Datex II			Datex II	Datex II			
		The period of occurrence of the event or condition concerned by the update									Others	Datex II, Others		Others						Datex II			Datex II	Datex II		



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of MAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain		
Weather conditions affecting road surface and visibility	The quality of the data update									Others	Datex II, Others		Others						Datex II			Datex II	Datex II				
		The type of dynamic road status data and, where appropriate, a short description of it									Others	Datex II, Others		Others						Datex II			Datex II	Datex II			
	The location of the event or condition concerned by the update		Datex II		Datex II	Datex II			Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II		Datex II				Datex II		Datex II, Others	Datex II	
		The period of occurrence of the event or condition concerned by the update	Datex II		Datex II	Datex II			Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II		Datex II				Datex II		Datex II, Others	Datex II	
		The quality of the data update	Datex II		Datex II	Datex II				Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II		Datex II				Datex II		Datex II, Others	Datex II	
		The type of dynamic road status data and, where appropriate, a short description of it	Datex II		Datex II	Datex II			Datex II, Others	Datex II	Datex II	Datex II, Others		Others	Datex II		Datex II		Datex II				Datex II		Datex II, Others	Datex II	
	RTTI - Static Data	Freight delivery regulations	The date and time when the change in a given condition has occurred or is planned to occur								Others	Others		Others	Others									Datex II	Datex II		
			The date on which the data has been updated									Others	Others		Others	Others									Datex II	Datex II	
The description of the update											Others	Others		Others	Others									Datex II	Datex II		
The location of the condition concerned by the update											Others	Others		Others	Others									Datex II	Datex II		
The quality of the data update											Others	Others		Others	Others									Datex II	Datex II		
		The type of static road data								Others	Others		Others	Others									Datex II	Datex II			



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain		
Identification of tolled roads, applicable fixed road user charges and available payment methods		The type of update (modification, insertion or deletion)								Others	Others		Others	Others				Others					Datex II	Datex II			
		The date and time when the change in a given condition has occurred or is planned to occur									Others	Others		Others	Others					Others				Datex II	Datex II		
		The date on which the data has been updated									Others	Others		Others	Others					Others				Datex II	Datex II		
		The description of the update									Others	Others		Others	Others					Others				Datex II	Datex II		
		The location of the condition concerned by the update									Others	Others		Others	Others					Others				Datex II	Datex II		
		The quality of the data update									Others	Others		Others	Others					Others				Datex II	Datex II		
		The type of static road data									Others	Others		Others	Others					Others				Datex II	Datex II		
		The type of update (modification, insertion or deletion)									Others	Others		Others	Others					Others				Datex II	Datex II		
		Location of charging points for electric	The date and time when the change in a given condition has occurred or is planned to occur								Others	Others		Others	Datex II			Others	Datex II, Others		Others			Datex II	Datex II	Datex II	



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
vehicles and the conditions for their use		The date on which the data has been updated								Others	Others		Others	Datex II			Others	Datex II, Others		Others		Datex II	Datex II	Datex II		
		The description of the update								Others	Others		Others	Datex II			Others	Datex II, Others		Others		Datex II	Datex II	Datex II		
		The location of the condition concerned by the update									Others	Others		Others	Datex II			Others	Datex II, Others		Others		Datex II	Datex II	Datex II	
		The quality of the data update									Others	Others		Others	Datex II			Others	Datex II, Others		Others		Datex II	Datex II	Datex II	
		The type of static road data									Others	Others		Others	Datex II			Others	Datex II, Others		Others		Datex II	Datex II	Datex II	
		The type of update (modification, insertion or deletion)									Others	Others		Others	Datex II			Others	Datex II, Others		Others		Datex II	Datex II	Datex II	
	Location of compressed natural gas, liquefied natural gas, liquefied petroleum gas stations		The date and time when the change in a given condition has occurred or is planned to occur								Others	Others		Others	Datex II						Others		Datex II	Datex II		
		The date on which the data has been updated								Others	Others		Others	Datex II						Others		Datex II	Datex II			



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
		The description of the update								Others	Others		Others	Datex II						Others		Datex II	Datex II			
		The location of the condition concerned by the update									Others	Others		Others	Datex II						Others		Datex II	Datex II		
		The quality of the data update									Others	Others		Others	Datex II						Others		Datex II	Datex II		
		The type of static road data									Others	Others		Others	Datex II						Others		Datex II	Datex II		
		The type of update (modification, insertion or deletion)									Others	Others		Others	Datex II						Others		Datex II	Datex II		
	Location of delivery areas	The date and time when the change in a given condition has occurred or is planned to occur									Others	Others		Others	Others					Others			Datex II	Datex II		
		The date on which the data has been updated									Others	Others		Others	Others					Others			Datex II	Datex II		
		The description of the update									Others	Others		Others	Others					Others			Datex II	Datex II		
		The location of the condition concerned by the update									Others	Others		Others	Others					Others			Datex II	Datex II		
		The quality of the data update									Others	Others		Others	Others					Others			Datex II	Datex II		
	The type of static road data									Others	Others		Others	Others					Others			Datex II	Datex II			
	The type of update (modification, insertion or deletion)									Others	Others		Others	Others					Others			Datex II	Datex II			



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
Location of parking places and service areas	Location of parking places and service areas	The date and time when the change in a given condition has occurred or is planned to occur	Datex II						Others	Datex II, Others	Others		Others	Datex II, Others		Datex II, Others	Datex II, Others	Others	Others	Others		Datex II	Datex II			
		The date on which the data has been updated	Datex II					Others	Others	Datex II, Others	Others		Others	Others	Datex II, Others		Datex II, Others	Datex II, Others	Others	Others	Others		Datex II	Datex II		
		The description of the update	Datex II						Others	Datex II, Others	Others		Others	Others	Datex II, Others		Datex II, Others	Datex II, Others	Others	Others	Others		Datex II	Datex II		
		The location of the condition concerned by the update	Datex II					Others	Others	Datex II, Others	Others		Others	Others	Datex II, Others		Datex II, Others	Datex II, Others	Others	Others	Others		Datex II	Datex II		
		The quality of the data update	Datex II						Others	Datex II, Others	Others		Others	Others	Datex II, Others		Datex II, Others	Datex II, Others	Others	Others	Others		Datex II	Datex II		
		The type of static road data	Datex II					Others	Others	Datex II, Others	Others		Others	Others	Datex II, Others		Datex II, Others	Datex II, Others	Others	Others	Others		Datex II	Datex II		
		The type of update (modification, insertion or deletion)	Datex II						Others	Datex II, Others	Others		Others	Others	Datex II, Others		Datex II, Others	Datex II, Others	Others	Others	Others		Datex II	Datex II		
	Location of public transport stops and interchange points	Location of public transport stops and interchange points	The date and time when the change in a given condition has occurred or is planned to occur							Datex II, Others	Others		Others	Others	Others		Others	Others					Datex II	Datex II	Others	
			The date on which the data has been updated							Datex II, Others	Others		Others	Others	Others		Others	Others						Datex II	Datex II	Others



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of MAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
		The description of the update								Datex II, Others	Others		Others	Others	Others		Others					Datex II	Datex II	Others		
		The location of the condition concerned by the update									Datex II, Others	Others		Others	Others	Others		Others					Datex II	Datex II	Others	
		The quality of the data update									Datex II, Others	Others		Others	Others	Others		Others					Datex II	Datex II	Others	
		The type of static road data									Datex II, Others	Others		Others	Others	Others		Others					Datex II	Datex II	Others	
		The type of update (modification, insertion or deletion)										Datex II, Others	Others		Others	Others	Others		Others					Datex II	Datex II	Others
	Location of tolling stations	The date and time when the change in a given condition has occurred or is planned to occur		Datex II							Others	Others		Others	Others		Datex II			Others	Others		Datex II	Datex II		
		The date on which the data has been updated		Datex II							Others	Others		Others	Others		Datex II			Others	Others		Datex II	Datex II		
		The description of the update		Datex II							Others	Others		Others	Others		Datex II			Others	Others		Datex II	Datex II		
		The location of the condition concerned by the update		Datex II							Others	Others		Others	Others		Datex II			Others	Others		Datex II	Datex II		
		The quality of the data update		Datex II							Others	Others		Others	Others		Datex II			Others	Others		Datex II	Datex II		
		The type of static road data		Datex II							Others	Others		Others	Others		Datex II			Others	Others		Datex II	Datex II		
	Road classification	The type of update (modification, insertion or deletion)		Datex II							Others	Others		Others	Others		Datex II			Others	Others		Datex II	Datex II		
		The date and time when the change in a given condition has occurred or is planned to occur														Others	Others	Others	Others							
		The date on which the data has been updated							Others	Others	Others	Others		Others	Others	Others	Others	Others	Others	Others			Datex II	Datex II		



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain		
		The description of the update													Others	Others	Others	Others									
		The location of the condition concerned by the update						Others	Others	Others	Others			Others	Others	Others	Others	Others	Others	Others			Datex II	Datex II			
		The quality of the data update								Others	Others	Others			Others	Others	Others	Others	Others	Others				Datex II	Datex II		
		The type of static road data							Others	Others	Others	Others			Others	Others	Others	Others	Others	Others				Datex II	Datex II		
		The type of update (modification, insertion or deletion)								Others	Others	Others			Others	Others	Others	Others	Others	Others	Others				Datex II	Datex II	
	Road network links and their physical attributes, such as: - geometry - road width - number of lanes - gradients - junctions	The date and time when the change in a given condition has occurred or is planned to occur	Datex II							Others	Others	Others			Others	Datex II, Others	Others	Others	Others	Others	Others	Others		Datex II	Datex II	Others	
		The date on which the data has been updated	Datex II						Others	Others	Others	Others			Others	Datex II, Others	Others	Others	Others	Others	Others	Others		Datex II	Datex II	Others	
		The description of the update	Datex II						Others	Others	Others	Others			Others	Datex II, Others	Others	Others	Others	Others	Others	Others		Datex II	Datex II	Others	
		The location of the condition concerned by the update	Datex II						Others	Others	Others	Others			Others	Datex II, Others	Others	Others	Others	Others	Others	Others		Datex II	Datex II	Others	
		The quality of the data update	Datex II							Others	Others	Others			Others	Datex II, Others	Others	Others	Others	Others	Others	Others		Datex II	Datex II	Others	
		The type of static road data	Datex II						Others	Others	Others	Others			Others	Datex II, Others	Others	Others	Others	Others	Others	Others		Datex II	Datex II	Others	



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain		
Speed limits		The type of update (modification, insertion or deletion)	Datex II						Others	Others	Others		Others	Datex II, Others	Others	Others	Others	Others	Others	Others		Datex II	Datex II	Others			
		The date and time when the change in a given condition has occurred or is planned to occur	Datex II						Others	Others	Others		Others	Others				Others	Others	Others			Datex II	Datex II	Others	Others	
		The date on which the data has been updated	Datex II							Others	Others	Others		Others	Others				Others	Others	Others			Datex II	Datex II	Others	Others
		The description of the update	Datex II							Others	Others	Others		Others	Others				Others	Others	Others			Datex II	Datex II	Others	Others
		The location of the condition concerned by the update	Datex II							Others	Others	Others		Others	Others				Others	Others	Others			Datex II	Datex II	Others	Others
		The quality of the data update	Datex II							Others	Others	Others		Others	Others				Others	Others	Others			Datex II	Datex II	Others	Others
		The type of static road data	Datex II							Others	Others	Others		Others	Others				Others	Others	Others			Datex II	Datex II	Others	Others
		The type of update (modification, insertion or deletion)	Datex II							Others	Others	Others		Others	Others				Others	Others	Others			Datex II	Datex II	Others	Others
	Traffic circulation plans		The date and time when the change in a given condition has occurred or is planned to occur								Others	Others		Others					Others	Datex II, Others				Datex II	Datex II		
			The date on which the data has been updated								Others	Others		Others					Others	Datex II, Others				Datex II	Datex II		
			The description of the update								Others	Others		Others					Others	Datex II, Others				Datex II	Datex II		
			The location of the condition concerned by the update								Others	Others		Others					Others	Datex II, Others				Datex II	Datex II		
			The quality of the data update								Others	Others		Others					Others	Datex II, Others				Datex II	Datex II		
			The type of static road data								Others	Others		Others					Others	Datex II, Others				Datex II	Datex II		
		The type of update (modification, insertion or deletion)								Others	Others		Others					Others	Datex II, Others				Datex II	Datex II			



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
RTTI - Traffic Data	Traffic signs reflecting traffic regulations and identifying dangers, such as: - access conditions for tunnels - access conditions for bridges - permanent access restrictions - other traffic regulations	The date and time when the change in a given condition has occurred or is planned to occur	Datex II					Datex II	Datex II	Datex II, Others	Others		Others	Others	Others	Others	Others	Others	Others			Datex II	Datex II	Others		
		The date on which the data has been updated	Datex II						Datex II	Datex II	Datex II, Others	Others		Others	Others	Others	Others	Others	Others	Others			Datex II	Datex II	Others	
		The description of the update	Datex II						Datex II	Datex II	Datex II, Others	Others		Others	Others	Others	Others	Others	Others	Others			Datex II	Datex II	Others	
		The location of the condition concerned by the update	Datex II						Datex II	Datex II	Datex II, Others	Others		Others	Others	Others	Others	Others	Others	Others			Datex II	Datex II	Others	
		The quality of the data update	Datex II						Datex II	Datex II	Datex II, Others	Others		Others	Others	Others	Others	Others	Others	Others			Datex II	Datex II	Others	
		The type of static road data	Datex II						Datex II	Datex II	Datex II, Others	Others		Others	Others	Others	Others	Others	Others	Others			Datex II	Datex II	Others	
		The type of update (modification, insertion or deletion)	Datex II						Datex II	Datex II	Datex II, Others	Others		Others	Others	Others	Others	Others	Others	Others			Datex II	Datex II	Others	
RTTI - Traffic Data	Location and length of traffic queues	The location of the event or condition concerned by the update	Datex II			Datex II		Datex II, Others		Others	Others		Others	Datex II		Datex II		Datex II, Others				Datex II	Datex II	Datex II, Others		



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
		The quality of the data update	Datex II			Datex II		Datex II, Others		Others	Others		Others	Datex II		Datex II		Datex II, Others				Datex II	Datex II	Datex II, Others		
		The type of traffic data and, where appropriate, a short description of it	Datex II			Datex II		Datex II, Others		Others	Others		Others	Datex II		Datex II		Datex II, Others					Datex II	Datex II	Datex II, Others	
	Speed	The location of the event or condition concerned by the update				Datex II		Datex II, Others		Others	Others		Others						Datex II, Others				Datex II			Datex II
		The quality of the data update				Datex II		Datex II, Others		Others	Others		Others						Datex II, Others				Datex II			Datex II
		The type of traffic data and, where appropriate, a short description of it				Datex II		Datex II, Others		Others	Others		Others						Datex II, Others				Datex II			Datex II
	Traffic volume	The location of the event or condition concerned by the update				Datex II		Datex II, Others		Datex II	Others		Others						Datex II, Others	Datex II		Datex II	Datex II	Datex II		Datex II
		The quality of the data update				Datex II		Datex II, Others		Datex II	Others		Others						Datex II, Others	Datex II		Datex II	Datex II	Datex II		Datex II
		The type of traffic data and, where appropriate, a short description of it				Datex II		Datex II, Others		Datex II	Others		Others						Datex II, Others	Datex II		Datex II	Datex II	Datex II		Datex II
	Travel times	The location of the event or condition concerned by the update	Datex II					Datex II, Others		Others	Others		Others				Others		Datex II, Others	Datex II			Datex II	Datex II		



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
		The quality of the data update	Datex II					Datex II, Others		Others	Others		Others			Others		Datex II, Others	Datex II			Datex II	Datex II			
		The type of traffic data and, where appropriate, a short description of it	Datex II						Datex II, Others		Others	Others		Others			Others		Datex II, Others	Datex II			Datex II	Datex II		
	Waiting time at border crossings to non-EU Member States	The location of the event or condition concerned by the update									Datex II	Others		Others			Datex II						Datex II	Datex II		
		The quality of the data update									Datex II	Others		Others			Datex II						Datex II	Datex II		
		The type of traffic data and, where appropriate, a short description of it									Datex II	Others		Others			Datex II						Datex II	Datex II		

Table A.11 – Analysis of Standards implementation in each NAP-MMTIS

Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
MMTIS - Dynamic Data	Availability check	Car parking spaces available (on and off-street), parking tariffs, road toll tariffs					Others			Others	Others	Others	Others					Others	Others			Datex II, Others			
		Car-sharing availability, bike sharing availability		Others			Others			Others	Others	Others	Others						GBFS	GBFS			Others		
	Information service	Availability of publicly accessible charging stations for electric vehicles and refuelling points for CNG/LNG,		Others						Others	Others	Others	Others									Datex II, Others		Datex II	



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
MMTIS - Static data	Passing times, trip plans and auxiliary information	hydrogen, petrol and diesel powered vehicles																								
		Disruptions (all modes)		Others						Others	Others	Others	Others						Others	Datex II, SIRI			Others			
		Real-time status information – delays, cancellations, guaranteed connections monitoring (all modes)		Others				SIRI, Others			Others	Others	Others	Others					Others	Datex II, SIRI			Others			
		Status of access node features (including dynamic platform information, operational lifts/escalators, closed entrances and exit locations – all scheduled modes)		Others							Others	Others	Others	Others						SIRI			Others			
		Current road link travel times		Others							Others	Others	Others	Others						Datex II			Others			
		Cycling network closures/diversions									Others	Others	Others	Others									Others		Others	
		Estimated departure and arrival times of services		Others				SIRI, Others			Others	Others	Others	Others						Others	SIRI			Others		Others
	Trip plans	Future predicted road link travel times								Others	Others	Others	Others										Others		Others	
		Detailed common standard and special fare query (all scheduled modes)	Basic commercial conditions such as refunding/replacing/exchanging/transferring and basic booking conditions such as purchase windows, validity periods, routing restrictions zonal sequence fares, minimum stay.		Others						Others	Others	Netex	Others		Others		Netex	Others	Netex			Others			



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
		Common fare products (access rights such as zone/point-to-point including daily and weekly tickets/single/return, eligibility of access, basic usage conditions such as validity period/operator/time of travel/interchanging, standard point to point fares prices for different point to point pairs including daily and weekly fares/zonal fare prices/flat fare prices)		Others						Others	Netex, Others	Netex	Others		Others		Netex		Netex			Others			
		Passenger classes (classes of user such as adult, child, student, veteran, impaired access and qualifying conditions and classes of travel such as 1st, 2nd.)		Others				Others		Others	Others	Netex	Others		Others		Netex		Netex			Others			
		Special Fare Products: offers with additional special conditions such as promotional fares, group fares, season passes, aggregated products combining different products and add on products such as parking and travel, minimum stay		Others						Others	Others	Netex	Others		Others		Netex		Netex			Others			
	Detailed trip plans	Detailed cycle network attributes (surface quality, side-by-side cycling, shared surface, on/off road, scenic route, 'walk only', turn or access restrictions)		Others		Others				Others	Others	Netex	Others				Netex		Others			Others			



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of NAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
		(e.g. against flow of traffic)																							
		Parameters needed to calculate an environmental factor such as carbon per vehicle type or passenger mile or per distance walked		Others						Others	Others	Netex	Others									Others			
		Parameters such as fuel consumption needed to calculate cost		Others						Others	Others		Others									Others			
	Information service	Where and how to buy tickets for scheduled modes, demand responsive modes and car parking (all scheduled modes and demand-responsive incl. retail channels, fulfilment methods, payment methods)		Others						Others	Others	Netex	Others						Netex			Others			
	Information service (all modes)	How to book car sharing, taxis, cycle hire etc. (incl. retail channels, fulfilment methods, payment methods)		Others						Others	Others		Others						GBFS			Others			
		How to pay tolls (incl. retail channels, fulfilment methods, payment methods)								Others	Others		Others									Others			
		Where how to pay for car parking, public charging stations for electric vehicles and refuelling points for CNG/LNG, hydrogen, petrol and diesel powered vehicles (incl. retail		Others							Others	Others		Others					Others				Others		



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of INAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
Location search (access nodes)		channels, fulfilment methods, payment methods)																							
		Geometry/map layout structure of access nodes (all scheduled modes)	Netex, Others	Others						Others	Others	Netex	Others				Others		Netex						
		Identified access nodes (all scheduled modes)	Netex, Others					Others	GTF5	Others	Others	Netex	Others				Others	GTF5, Netex, Others	Netex						
		Bike sharing stations	Others	Others			Others			Others	Others	Netex	Others				Others		Netex			Others			
		Car-sharing stations	Others	Others						Others	Others	Netex	Others				Others		Netex			Others			
Location search (demand-responsive modes)		Park & Ride stops		Others						Others	Others	Netex	Others				Others		Netex			Others			
		Publicly accessible refuelling stations for petrol, diesel, CNG/LNG, hydrogen powered vehicles, charging stations for electric vehicles		Others						Others	Others	Netex	Others				Others	Others	Others			Others		Datex II	
		Secure bike parking (such as locked bike garages)		Others						Others	Others	Netex	Others				Others		Netex			Others			
Location search (origin/destination)		Address identifiers (building number, street name, postcode)		Others		Others		INSPIRE	INSPIRE	Others	Others	Others	Others				Others	Inspire, Others	Netex, Others			Others		Others	
		Points of interest (related to transport information) to which people may wish to travel		Others		Others			INSPIRE	Others	Others	Netex	Others				Others	Others	Netex, Others			Others		Others	
Trip plan computation		Topographic places (city, town, village, suburb, administrative unit)	Netex, Others	Others		Others		INSPIRE	INSPIRE	Others	Others	Others	Others				Others	Inspire, Netex, Others	Netex, Others			Others			
		Estimated travel times by day type and time-band by transport mode/combinatio n of transport modes		Others							Others	Others	Others				Netex		Netex			Others			



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of INAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	
Trip plan computation – road transport (for personal modes)		Cycle network (segregated cycle lanes, on-road shared with vehicles, on-path shared with pedestrians)		Others		Others				Others	Others	Netex	Others				Netex	Others	Others			Others				
		Pedestrian network and accessibility facilities		Others		Others				Others	Others	Netex	Others				Netex	Others	Others			Others				
		Road network		Others		Others				Others	Others		Others					Netex	Others	Others			Others			
		Accessibility of access nodes, and paths within an interchange (such as existence of lifts, escalators)	Netex, Others								Others	Others	Netex	Others						Others			Others			
		Connection links where interchanges may be made, default transfer times between modes at interchanges	Netex	Others			Netex			GTFS	Others	Netex, Others	Netex	Others				Netex	Netex	Others			Others			
		Existence of assistance services (such as existence of on-site assistance)									Others	Others	Netex	Others					Others	Others			Others			
		Hours of operation	Netex, Others	Others			Netex	Others			Others	Netex, Others	Netex	Others				Netex	Netex, Others	Netex			Others			
		Network topology and routes/lines (topology)	Netex, Others	Others			Netex	GTFS, Others		GTFS	Others	Netex, Others	Netex	Others			GTFS, Netex	Netex	GTFS, Netex, Others	Netex			Others			
		Planned interchanges between guaranteed scheduled services	Netex, Others							Others	Others	Netex, Others	Netex	Others				Netex	Netex	Netex			Others			
	Stop facilities access nodes (including platform information, help desks/information points, ticket booths, lifts/stairs, entrances and exit locations)	Others	Others			Netex		Others		Others	Netex, Others	Netex	Others				Netex	Others	Others			Others				



Work item 2.2.1: Identification of gaps and list of requirements – Milestone 2.4



Type of INAP	Type of data	Information	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain
Trip plans	Timetables		Netex, Others	Others		Netex	GTFS, Others	Others	GTFS	Others	Netex, Others	Netex	Others		GTFS, Netex		Netex	GTFS, Netex, Others	Netex			Others		GTFS, others	
	Transport operators		Netex, Others	Others		Netex	GTFS, Others	Others	GTFS	Others	Netex, Others	Netex	Others		GTFS, Netex		Netex	GTFS, Netex, Others	Netex			Others		GTFS, others	
	Vehicles (low floor; wheelchair accessible.)		Netex			Netex		Others			Others	Netex	Others				Netex	Netex	Netex, Others			Others			
	Operational Calendar, mapping day types to calendar dates		Netex	Others		Netex	GTFS, Others	Others	GTFS	Others	Netex, Others	Netex	Others				Netex	GTFS, Netex, Others						GTFS	
Trip plans, auxiliary information, availability check	Basic common standard fares (all scheduled modes): — Fare network data (fare zones/stops and fare stages) — Standard fare structures (point to point including daily and weekly fares, zonal fares, flat fares)		Others	Others			Others				Others	Others	Netex	Others				Netex, Others	Netex, Others			Others			
	Vehicle facilities such as classes of carriage, on-board Wi-Fi.			Others						Others	Others	Netex	Others					Netex, Others	Netex			Others			

