European ITS Platform+

Sub-Activity 3.2

Harmonisation Proposal:
Single Point of Access for Real-Time Traffic Information

Version: 1.0

Date: 25 February 2016

www.easyway-its.eu

Document Information

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Distribution

Date	Version	Dissemination
30 September 2015	0.1	DRAFT – Internal EIP+ 3.2
10 November 2015	0.2	DRAFT – Internal EIP+ 3.2
11 December 2015	0.3	DRAFT – Internal EIP+ 3.2
17 December 2015	0.4	DRAFT – Internal EIP+ 3.2
22 January 2016	0.5	DRAFT – Internal EIP+ 3.2
24 February 2016	0.6	DRAFT – Internal EIP+ 3.2
25 February 2016	1.0	EIP+ project management

Preface

This final report is a deliverable and milestone of the EIP+ Activity 3.2 *Harmonised concept of Single Point of Access for Real-Time Traffic Information.*

The Delegated Regulation for priority action (b) establishes the specifications necessary to ensure the accessibility, exchange, reuse and update of road and traffic data for the provision of real-time traffic information services in the EU.

Real-time traffic information services are essential to road users across Europe; timely and accurate road related information keeps goods and people moving safely and efficiently. In recent years there have been significant developments in the methods of collection, storage, use and parties involved in the real-time traffic information service chain. In order to maximise the potential of the data available and enhance market innovation (by both the private and public sector) there must be the means to access and obtain the details of the available data easily in a single national location.

The intended audience of this document are road authorities, Transport Ministries and stakeholders tasked with implementing and operating a Single Point of Access for real-time traffic information. It provides practical information and recommendations for harmonised and efficient deployment in accordance with the Delegated Regulation.

Executive Summary

Scope and objectives

This EIP+ 3.2 *Harmonised concept of Single Point of Access for Real-Time Traffic Information* final report provides practical information and recommendations to road authorities and Ministries of Transport on how to implement a Single Point of Access (SPA) on real-time traffic information in a harmonised and efficient way.

Following from the European Commission ITS Action Plan and ITS Directive 2010/40/EU, delegated regulations for minimum safety related traffic information, priority action (c), and safe and secure truck parking, priority action (e), were published in 2013, coming into force in 2015. The most recent Delegated Regulation, for real-time traffic information services - priority action (b), was published in December 2014 and will come into force in July 2017. EIP harmonisation proposals were made for priority actions (c) and (e) and this EIP+ 3.2 deliverable provides a continuation of previous proposals. The Delegated Regulation for priority action (b) establishes the specifications necessary to ensure the accessibility, exchange, reuse and update of road and traffic data for the provision of real-time traffic information services in the EU.

As with priority actions (c) and (e), priority action (b) requires Member States to set up a national access point for access to road and traffic data; two key differences between the priority actions that should be noted are:

- metadata is specified in priority action (b) to facilitate discovery;
- priority action (b) does not oblige any service provider[1] to share their data with other service providers.

In order to gain understanding on Member State implementation objectives, expectations and perspectives relating to the Single Point of Access for real-time traffic information, information was gathered via an online questionnaire, one-to-one interviews, workshops and national implementations requests.

Findings

Member States who provided feedback were well informed on the ITS Directives and their obligations under the priority actions, although there are limited SPA implementations currently. The majority of Member States were planning to publically host the SPA and combine action (b) with priority actions (c) and (e). Many Member States had begun to consider how to approach the metadata and data exchange aspects of priority action (b); utilising the SPA – Coordinated Metadata Catalogue.

Lack of resources, unknown costs, lack of standardised formats and data exchange mechanisms, working with private data providers, management of compliance assessment and legislative issues were highlighted as areas of concern.

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[1] Unless the service provider is also a road authority or road operator.

Understanding of the impacts and responsibilities of priority action (b) from the private sector stakeholders interviewed was lower.

Proposals

In order to implement priority action (b) Member States it is recommended Member States create an *implementation plan*, based in existing national SPA examples and strategies this should include:

- *Roles and responsibilities* – all key stakeholders need to be identified with a suitable organisation taking overall responsibility, an appropriate body to undertake assessment of compliance should be appointment early in the process.

- *Implementation options* – there are several implementation options: a data store / database, a metadata registry providing links, combined SPA with other priority actions or utilising an existing Open Data Portal. Member States should review and consider the most appropriate option.

- *Communication plan* – to inform key stakeholders on the interpretation, scope, purpose, obligations and benefits of the SPA.

- *Assessment of compliance* – decide on the extent of and process for assessment of compliance that fits best with existing administrative processes and frameworks.

- *Legal issues* – identification of any legislative procedures or contractual modifications required to include relevant information in the SPA.

- *Scope costs* – the costs for setting up, maintaining, compliance and quality control should be scoped. The costs / effort required by data providers should be made clear and minimised.

Considering *harmonisation,* three areas have been identified where benefits in data exchange, reuse, discovery services and assessment of compliance can be achieved:

- *Assessment of compliance* – the assessment form should include - key information relating to the priority action: regulations, national compliance assessment procedures; headings to describe the data, format, geographic scope, quality information, completeness, availability and terms of use.

- *Metadata* – refer to, use and provide feedback on the *SPA – Coordinated Metadata Catalogue* created by the metadata initiative of Austria, the Netherlands and Germany.

- *DATEX II* – profiles or recommendations for priority action (b) were too complex to be completed in the EIP+ project. Elements of the EasyWay 2012 TIS Deployment Guidelines have been identified as the same as data types included in priority action (b); these were found in EW-TIS-DG03_05 *Traffic Condition and Travel Time Information* and EW-TIS-DG02 *Forecast and Real-Time Event Information.* These profiles are a good basis for further enhancement.

For static data the INSPIRE Directive (2007/2/EC) has drafted detailed technical documentation of transport network specification which includes many of the static data elements in priority action (b). Further development in this is required to link the work of INSPIRE to priority action (b).

Future work

The following future tasks have been approved to progress efficient and harmonised SPA implementation:

- Metadata – implementation, evaluation and updating of the SPA – Coordinated Metadata Catalogue.

- DATEX II – definition of DATEX II profiles for priority action (b) RTTI.

- EC EIP 4.6 SPA monitoring - implementation monitoring, sharing best practice, comparing approaches, and progressing compliance assessment harmonisation.

- EC EIP 4.7 Provision of updates of ITS spatial road data - support to Member States and ITS map providers in the implementation of priority action (b) for elements related to static road data.

T A B L E   O F   C O N T E N T S

1. Introduction

1.1. Scope & purpose

The key purpose of this document is to provide practical information and advice to the implementers of national access points, based on current best practice, commonalities highlighted by Member States and relevant activities in metadata and DATEX II. Recommendations are made only where it is practical, economical and logical.

Real-time traffic information (RTTI) services for the purpose of the document are static road data, dynamic road status data and traffic data (as described in the Delegated Regulation). This Delegated Regulation applies only to existing data in machine readable formats, there is no obligation to start collecting new data or digitising data.

1.2. Methodology

This report builds on previous work delivered by EIP 3.1 *Harmonised concept of Single Point of access for Truck Parking & Safety Related Traffic Information,* and the following:

- EIP+ 3.2 Questionnaire, interviews and workshop - To gain understanding on the implementation objectives, expectations, best practice, and perspectives of Member States relating to Single Point of Access

- Metadata Initiative of Germany, Austria and the Netherlands - In order to facilitate data exchange, compatibility and interoperability the responsible partners of Austria, the Netherlands and Germany started a working group to develop a common minimum metadata set to describe all data covered by the EU directive and the respective specifications

- EIP+ 4.4 DATEX II: Maintenance and Development – composed of the Strategic Group, directing the work programme of the DATEX II stakeholder organisations, and the Technical Group experts, dealing with the day-to-day management of the DATEX II specifications; advising on DATEX recommendations and profiles.

1.3. Document structure

This document provides information in the following sections:

- § 2 - ITS Directive & priority action areas, with specific focus on priority action (b)
- § 3 - Overview of relevant EIP and EIP+ activities
- § 4 - EIP+ Information gathering activities (questionnaire, interviews, workshops)
- § 5 - EIP+ Organisational aspects of SPA implementation with national examples
- § 6 - EIP+ Harmonisation proposals (assessment of compliance, metadata, DATEX II)
- § 7 - Issues highlighted during Activity 3.2 requiring additional consideration and to be progressed in the future.

2. ITS Directive & priority action areas

2.1. The ITS Directive

The European Commission (EC) understands and supports the deployment of Intelligent Transport Systems (ITS). ITS can significantly contribute to a cleaner, safer and more efficient transport system.

In 2008 the EC adopted the ITS Action Plan which proposed a number of targeted measures, including the proposal of an ITS Directive. The ITS Directive (2010/40/EU) is a legal framework aimed at accelerating the deployment of innovative ITS technologies across Europe, focused on the establishment of interoperable and seamless ITS services. Adopted on 7 July 2010, the ITS Directive sets out four priority areas for the development and use of specifications and standards:

I.   Optimal use of road, traffic and travel data,

II.   Continuity of traffic and freight management ITS services,

III.   ITS road safety and security applications,

IV.   Linking the vehicle with the transport infrastructure.

Within the priority areas noted above, six priority actions were identified for development and use of specifications and standards, these are listed below with their current status, Table 1:

Priority actions under Directive 2010/40/EU	Status
(a) the provision of EU-wide multimodal travel information services;	Consultation period 2/09/2015 – 24/11/2015
(b) the provision of EU-wide real-time traffic information services;	Delegated act published Dec 2014 Apply from July 2017
(c) data and procedures for the provision, where possible, of road safety related minimum universal traffic information free of charge to users;	Delegated act published 2013 Apply from Oct 2015
(d) the harmonised provision for an interoperable EU-wide eCall;	Delegated act published Nov 2012 Apply from April 2014
(e) the provision of information services for safe and secure parking places for trucks and commercial vehicles;	Delegated act published May 2013 Apply from Oct 2015
(f) the provision of reservation services for safe and secure parking places for trucks and commercial vehicles.	Not currently being progressed

Table 1: Status of ITS Directive priority actions

Under the ITS Directive the European Commission has seven years to adopt specifications (i.e. functional, technical, organisational or services provisions) to address the compatibility, interoperability and continuity of ITS solutions across the EU. The first

priorities were traffic and travel information, the eCall emergency system and intelligent truck parking.

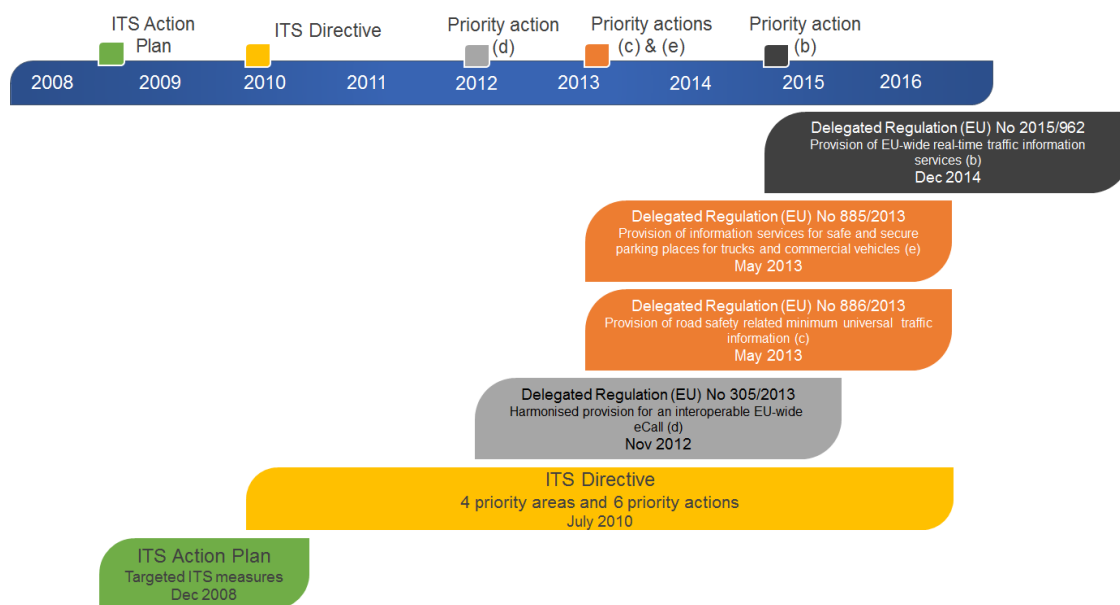The timeline to date for ITS legislation and delegated regulations is shown in Figure 1:

Figure 1: Timeline showing relevant EC ITS legislation and delegated regulations

The three most recent delegated regulations are linked, all concerning the provision of information services through access points, therefore it is practical to build on the existing developments of the 2013 regulations for truck parking and safety related traffic information (SRTI).

2.2. Priority action (b)

2.2.1. DELEGATED REGULATIONS 2015/962 CONCERNING RTTI

On 18 December 2014 the Delegated Regulation 2015/962 concerning priority action (b) set out in Article 3 of Directive 2010/40/EU (ITS Directive) was adopted. It establishes the specifications necessary to ensure the accessibility, exchange, re-use and update of static and dynamic road data and traffic data for the provision of real-time traffic information services in Europe.

The Delegated Regulation is intended to provide appropriate framework conditions enabling the co-operation of all relevant stakeholders (road authorities, road operators and real-time traffic information service providers) involved in the traffic information value chain, and to support the interoperability, compatibility, and continuity of real-time traffic information services across Europe.

Important information on the Delegated Regulation concerning priority action (b) includes:

- The Delegated Regulation will apply from **13 July 2017.**

- It applies to the provision of all real-time traffic information services, this includes: **static road data, dynamic road status data** and **traffic data.**

- It applies to the **comprehensive trans-European road network** and motorways not included in this network, as well as to **priority zones** identified by the national authorities where they consider this to be relevant.

- Data collected by **road authorities**, **road operators** and **service providers** is applicable to the Delegated Regulation.

- Each Member State has to set up a **national access point**, this will be a single point of access for users of the road and traffic data, including data updates. If a Member State has already established an access point for other Delegated Regulations and it is considered appropriate, this can also be used for RTTI.

- To allow users to effectively search the datasets in the national access point an appropriate **discovery service** that uses **metadata** needs to be put in place.

- **No new data** needs to be collected or digitised, the requirements only apply to data actually collected and available in a machine readable format.

- **Static road data** collected and updated should be provided in a **standardised format**, or in any other **machine readable format.**

- **Dynamic road status data** and **traffic data** collected and updated should be provided in **DATEX II** (CEN/TS 16157 and subsequently upgraded versions) format or any **machine-readable format** fully compatible and interoperable with DATEX II.

- **Commercial agreements**, use and re-use terms and conditions can be specified and established between users / service providers / road authorities for the re-use of relevant data.

- **Member States need to assess** whether the requirements of the Delegated Regulation are being met, this can be achieved by: **requesting data** and **quality descriptions**, **evidence-based declarations of compliance** submitted by providers, **random checks.**

2.2.2. COMPARISON OF NATIONAL ACCESS POINT DELEGATED REGULATIONS

Many countries are in the process of implementing Single Points of Access for SRTI (c) and Safe and Secure Truck Parking (e) as these regulations came into force in October 2015. In order to best implement all three delegated regulations it is important to highlight the similarities and differences between the delegated regulations for priority actions (b), (c) and (e).

The delegated regulations define the relevant parties involved, it is important in the interpretation of the delegated regulations that these definitions are understood:

- **end-user** - any road user, a natural or legal person, who has access to real-time traffic information services;

- **road authority** - any public authority responsible for the planning, control or management of roads falling within its territorial competence;

- **road operator** - any public or private entity that is responsible for the maintenance and management of the road;

- **service provider** - any public or private provider of a real-time traffic information service, excluding a mere conveyer of information, to users and end-users;

- **user** - any road authorities, road operators, service providers, and digital map producers.

Table 2 below, examines twelve aspects of each delegated regulation, to show where these differences and commonalities exist.

Key differences to note include:

- the **geographic scope** of all three delegated regulations is the trans-European road network, but for priority actions (b) and (e) the scope can be extended to include nationally identified 'priority zones', which is likely to increase the number of potential service providers,

- **metadata** is specified in priority action (b) to facilitate discovery and data use, but not (c) or (e); although using metadata for all three delegated regulations is likely to be beneficial,

- priority action (b) does not oblige any service provider[2] to share their data with other service providers, only metadata. Commercial agreements can be made relating to the **cost** and conditions of re-use, for priority action (c) safety related traffic data should be provided free to end users where possible;

- a national **nominated body** is not specified in priority action (b) as it is in priority actions (c) and (e) although if a Member State has designated this role it could be logical to use this for compliance checking for priority action (b) also.

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[2] Unless the service provider is also a road authority or road operator.

Aspect \ Delegated regulation	Real-Time Traffic Information – action (b)	Safety Related Traffic Information – action (c)	Safe and Secure Truck Parking Information – action (e)
Date delegated regulation applies (including transitional period)	13 July 2017	01 Oct 2015	01 Oct 2015
Motivation	Establishes the specifications necessary to ensure the accessibility, exchange, reuse and update of road and traffic data for the provision of real-time traffic information services	Establishes the specifications necessary to ensure compatibility, interoperability and continuity for the deployment and operational use of data and procedures for the provision, where possible, of road safety-related minimum universal traffic information free of charge to users	Establishes the specifications necessary to ensure compatibility, interoperability and continuity for the deployment and operational use of information services for safe and secure parking places for trucks and commercial vehicles
Geographic scope	Comprehensive trans-European road network, incl. motorways not included on this network & nationally identified priority zones	Trans-European road network, MS designated sections of the trans-European road network	Trans-European road network, MS designate areas requiring such a service. MS to define priority zones where dynamic information to be provided
Parties mentioned	Road authorities, road operators, digital map producers & real-time traffic information service providers	Public / private road operators & service providers & broadcasters dedicated to traffic information	Public / private parking operators & service provider
Quality	Information on quality to be available from data providers	Minimum level of quality	Truck parking facility operators required to ensure reliability and availability of information
Obligatory (or not)	Access point must be implemented but specifications do not oblige road authorities / road operators / service providers to start collecting new data, digitising new data, implementing new TMPs	Applies to all public and private road operators and service providers that detect, collect and/or distribute Safety Related Traffic Information	Access point must be implemented for those areas designated by the MS where traffic and security conditions require the service be implemented. Access point includes static and dynamic data where relevant (i.e. dynamic information to be provided in priority areas defined by MS)
Obligation for private parties	Applies to road authorities, road operators, digital map producers and service providers; e.g. service providers shall comply with specific requirements when re-using data such as circulation plans and temporary traffic management measures	Applies to all public and private road operators and service providers that detect, collect and/or distribute Safety Related Traffic Information	Applies to all public or private parking operators and service providers

Harmonisation Proposal: Single Point of Access for RTTI

Website, metadata, data	Access point (repository, registry, web portal), must contain metadata (including information on quality)	Access point (repository, registry, web portal) regrouping individual access points	Access point (referencing all individual single points of access)
Nominated Body: Yes/No	No - MS to assess whether the requirements are complied with by the road authorities, road operators, digital map producers & service providers MS can request data & quality descriptions from data providers and an evidence based declaration of compliance	Yes - MS required to designate an impartial and independent national body	Yes - MS required to designate an impartial and independent national body
Free, reasonable cost, commercial	Service providers are free to arrange commercial agreements for the re-use of relevant data	Where possible, free of charge for all end users	Reasonable as referred to in the Directive on the re-use of public sector information
Data definition	Standardised formats, if available, or any other machine readable format for static road data (incl. dynamic location referencing). DATEX II (CEN/TS 16157 and subsequently upgraded versions) format or any machine-readable format fully compatible and interoperable with DATEX II for dynamic status road data and traffic data	DATEX II (CEN/TS 16157) format or any fully compatible and interoperable with DATEX II machine readable format	DATEX II (CEN/TS 16157) format or any internationally compatible and interoperable with DATEX II machine readable format
National vs. European SPA	National or two or more MS can set up a common access point	National	National or international EC is establishing a EU access point for truck parking (static data)

Table 2: Commonalities and differences between the regulations for priority actions (b), (c) and (e)

Harmonisation Proposal: Single Point of Access for RTTI

3. European ITS Platform activities

Within the framework of a Global Project fostering the development of integrated ITS services along transport corridors, the European ITS Platform (EIP), and subsequently EIP+, of road authorities and operators focuses on enhancing the deployment of harmonised ITS services and the coordinated management of road transport in Europe.

3.1. European ITS Platform (EIP) - November 2013 to February 2015

The main objective of the technical EIP activities was to provide concrete contributions to improved and harmonised European ITS deployments. To support the implementation of the Delegated Regulations for the provision of road safety related minimum universal traffic information (c), provision of information services for safe and secure parking places for trucks (e) and provision of EU-wide real-time traffic information services (b), EIP Activity 3 was established, with three sub-activities as shown below, Table 3:

Sub-Activity	Output
3.1: Harmonised concept of Single Point of Access for priority actions c (safety related traffic information) **& e** (truck parking) of the ITS directive	**EIP Report 3.1**: Harmonised concept of Single Point of Access for Truck Parking & Safety Related Traffic Information (April 2015)
3.2: Data and service quality requirements for (real-time) traffic information incl. road safety related traffic information (priority actions b & c of the ITS directive)	**EIP Report 3.2**: Framework Guidelines for Data and Service Quality Requirements (March 2015)
3.3: Quality assessment for (real-time) traffic information incl. road safety related traffic information (priority actions b & c of the ITS directive)	**EIP Report 3.3**: Proposal for quality assessment of ITS services on the TERN (March 2015)

Table 3: EIP Activity 3 sub-activities and outputs

In relation to the traffic information service value chain (TISA, 2012) the work of the two quality related activities focused on the *Content detection* and *Content processing* phases, these phases end with the provision of the traffic information content at the *Content access point*. This *Content access point* can also be the national SPA. In Figure 2 below the position of the SPA is shown in between the *Content processing* and the *Service provision* phases of the TISA value chain:
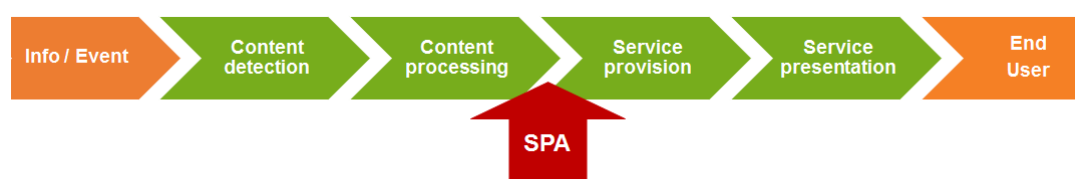

Figure 2: Position of Single Point of Access in the value chain for traffic information in its most basic, 4-segment representation [TISA, 2012]

Harmonisation Proposal: Single Point of Access for RTTI

EIP Report 3.1, *Harmonised concept of Single Point of Access for Truck Parking & Safety Related Traffic Information*, reviewed the status of deployment and implementation of Single Point of Access for Safety Related Traffic Information (c) and Safe and Secure Truck Parking Information (e), drafted a minimum set of relevant metadata, provided costing information and initial classification scheme for Single Point of Access.

Aligned with the work of Activity 3.2 the DATEX group produced a Guide for Road-Safety Related Traffic Content in DATEX II and provided two DATEX II publications extensions for truck parking.

3.2. EIP+ 2015 – January 2015 to December 2015

European ITS Platform+ (EIP+) is a follow up to the EIP project. The EIP+ project continues the existing cooperation, improving cross-border coordination, the exchange of knowledge and sharing of best practices and the harmonised deployment of ITS services across EU.

EIP+ Activity 3.2 focuses on priority action (b) of the ITS Directive with the key aim to deliver a proposal for a harmonised concept for "Single Point of Access for Real-Time Traffic Information" (SPA for RTTI). National access points for traffic related information are existing or under development in several EU countries. They aim to provide better and more cost-effective access to the information for service providers and other users of traffic related information. In this way accelerating the deployment of information services to end-users.

Different countries might however develop different solutions, delaying good and cost-effective EU-wide services. Harmonisation of "single point of access" over Europe is therefore desirable. Harmonisation includes organisational, functional and technical issues.

Activity 3.2 has taken the first steps in this harmonisation process, collecting and analysing best practices and identifying areas that can or should be harmonised, providing recommendations on how harmonisation could be achieved at a multi-national scale.

4. SPA for RTTI information gathering

In order to gain understanding on the implementation objectives, expectations and perspectives relating to Single Point of Access an online questionnaire was developed and circulated to Member States. One-to-one interviews, based on the questionnaire topics, were also carried out with key stakeholders. A workshop was also held to present the preliminary results of EIP+ 3.2 and to gather feedback and support activity deliverables.

4.1. Questionnaire results

The questionnaire contained 38 multiple choice questions and 21 opportunities to provide additional free text to elaborate the multiple-choice questions. EIP+ 3.2 has analysed the results of the questionnaire with the goal to achieving insight into the results. This section provides an overview of the findings from the questionnaire exercise and one-to-one interviews. The full questionnaire can be found in Annex 1.

The online questionnaire was designed to be completed by Member State representatives; one response per Member State was requested. The questionnaire could be completed and submitted online or downloaded as an excel sheet and emailed to questionnaire task lead. The questionnaire was launched on 12 June and closed on 14 August 2015. The results of the questionnaire represent a cross-section of Member State opinion from this time period.

The questionnaire was structured to cover:

- EU Directive and Regulations;
- Data availability and SPA deployment;
- Technical issues: DATEX II and Metadata;
- Legislative issues; and
- Best practice and experience.

There was a high level of participation with the 15 Member States below providing a response to the questionnaire:

• Austria	• Finland	• Netherlands	• Spain
• Belgium/Flanders	• Germany	• Romania	• Sweden
	• Ireland	• Slovakia	• United Kingdom
• Croatia			
• Denmark	• Italy	• Slovenia	

The map, Figure 3, shows the geographic coverage of questionnaire responses and interviews.

The majority of respondents (12 of the 15) were public authorities, of these there was an equal split of Public Administrations and road authorities / road operators. Responses were also received from TTS Italia and AustriaTech.
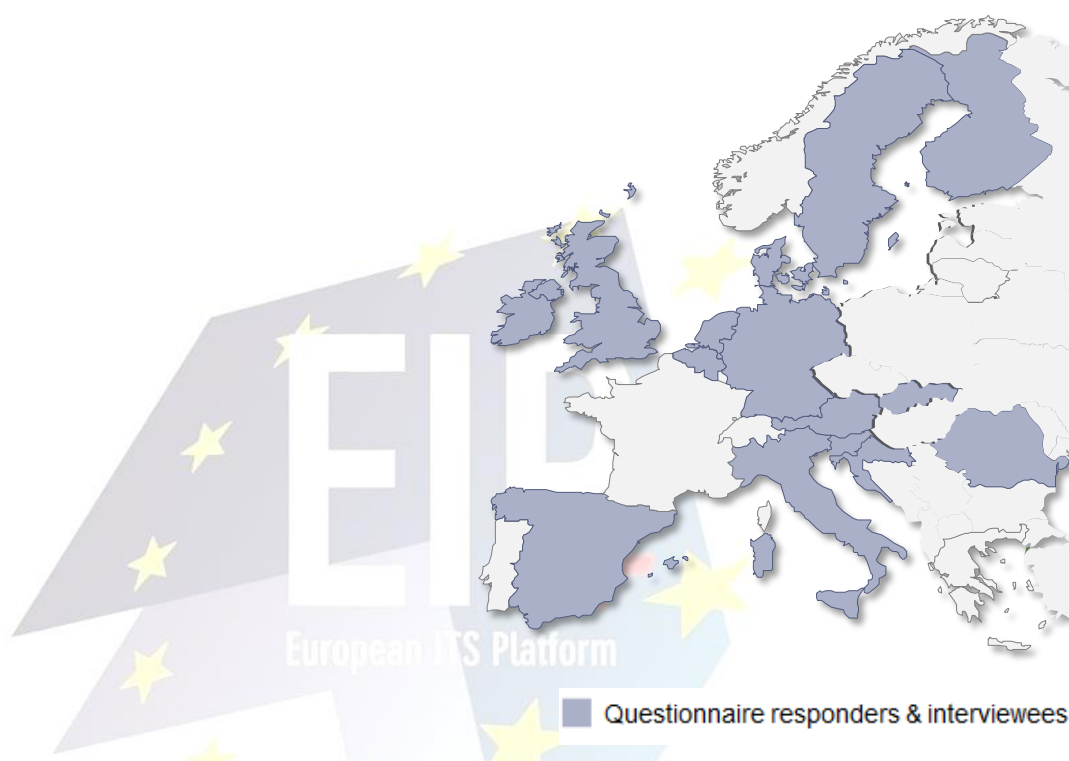

Questionnaire responders & interviewees

Figure 3: Map highlighting the countries of questionnaire respondents and interviewees

4.1.1. EU DIRECTIVE AND REGULATIONS

Overall across the respondents that completed the questionnaire there was a high level of knowledge of the ITS Directive, delegated regulations for road safety-related traffic information and real-time traffic information services; and there was overall agreement that it was important to ensure the provision of EU-wide RTTI services.

4.1.2. DATA AVAILABILITY AND SPA DEPLOYMENT

The questionnaire examined the three types of data referred to in priority action (b) – **static**, **dynamic** and **traffic.** Considering the three data types, static data was the most widely available, 11 out of 15 rated this as very easy or easy, with dynamic and traffic data was considered less available. Five respondents rated dynamic data as difficult or very difficult, similarly five respondents rated traffic data as difficult or very difficult, Figure 4.
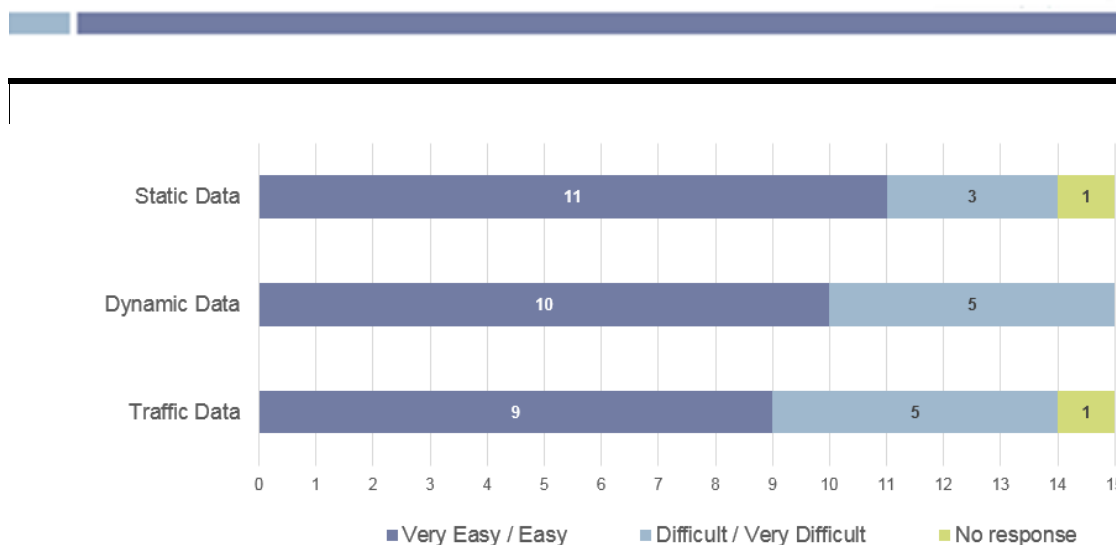
Examining the specific **static road data types**: junctions, number of lanes, road widths, speed limits and road classifications were generally considered more easily available, with data on gradients, traffic circulation plans, natural gas station plan public transport interchange points considered most difficult or not available, Figure 5.
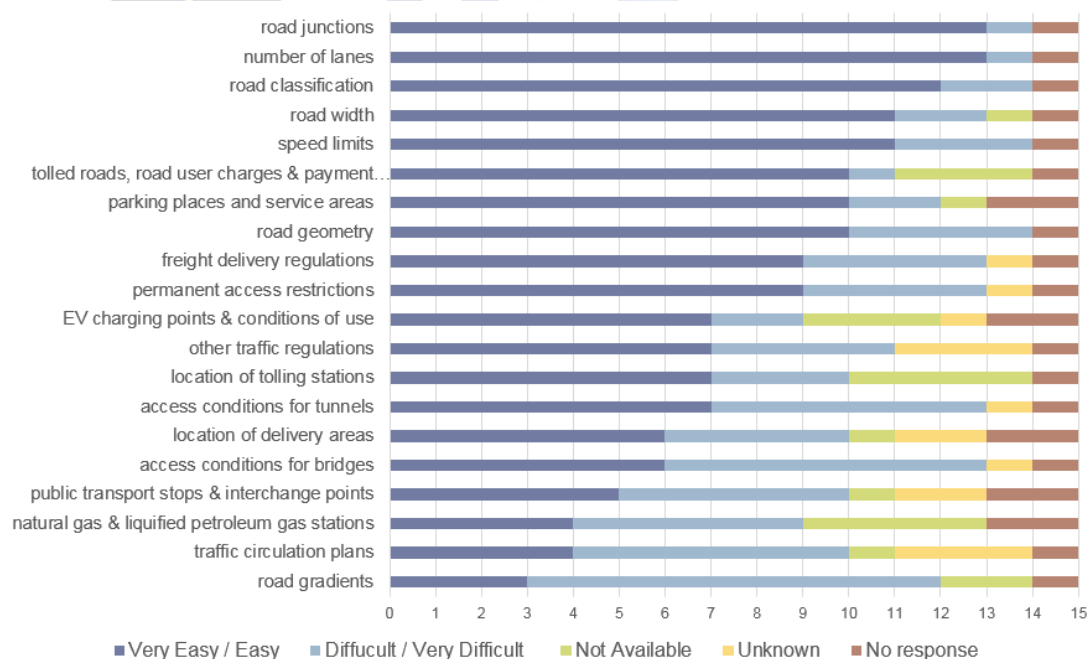

Figure 5: Availability of static road data types

For the specific **dynamic road status data types**: road works, lane and bridge closures, accidents/incidents were mostly rated as very easy or easy, with availability of delivery areas, parking places and parking costs more commonly rated by respondents as difficult, very difficult or not available, Figure 6.
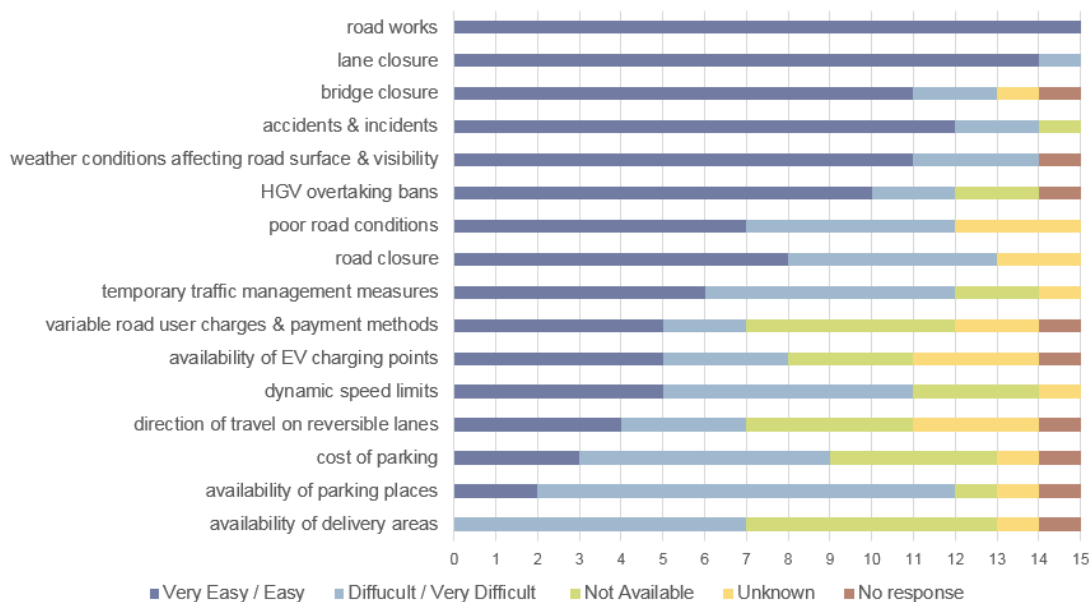
Figure 6: Availability of dynamic road status data types

For the specific **traffic data types**: weather related data and short-term roadworks were considered most easily available with wrong-way driver and border waiting times considered most difficult to obtain or unavailable, Figure 7.
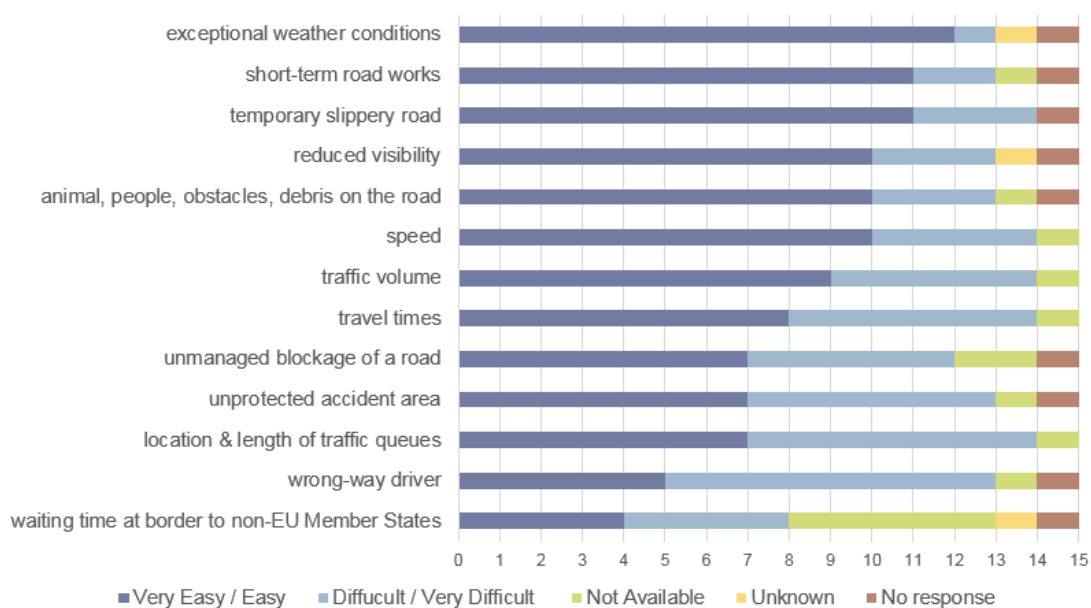

Figure 7: Availability of traffic data types

The results relating to data type availability highlight that there are very few data types where there was the same response across all respondents, with the exception of roadworks where all responders said the availability was either very easy or easy. This outlines the diverseness of data availability across Europe, with the same data types considered easy to obtain in some countries, but considered not available at all in others.

The questionnaire asked for information on existing SPA deployments, six respondents had already established a SPA for safety related traffic information (c): Croatia, Denmark, Finland, Italy, the Netherlands and Spain. One had established a SPA for safe and secure truck parking (e): the Netherlands; and two had established a SPA for real-time traffic information (b): Finland and Italy, as shown in Figure 8.
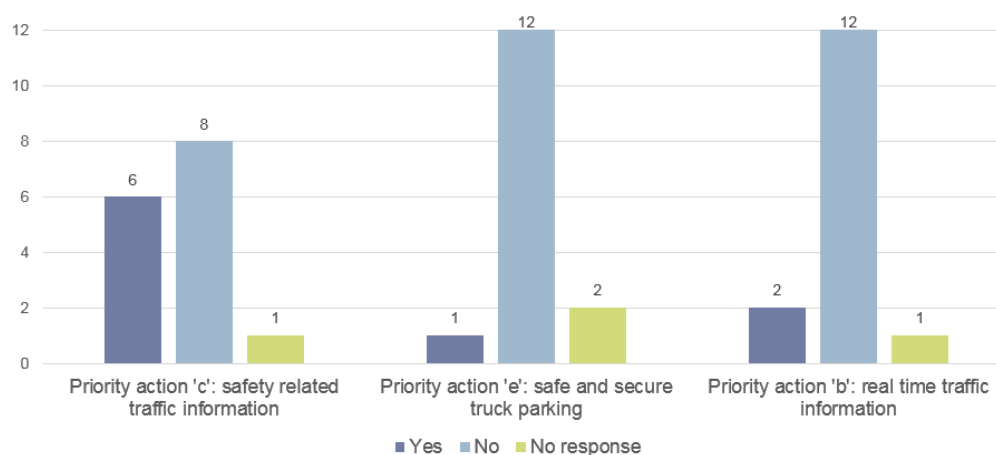
Figure 8: Existing SPA deployments

The respondents who had not yet implemented any SPA were asked what the implementation schedule was. The planned implementation schedules for each priority action area are shown in Figure 9. As there are already a number of existing SPA for safety information, and the regulation came into force in 2015, most respondents are planning to implement in the next 12 months. For truck parking the schedules stated were slightly longer with five respondents yet to set a definite implementation period, and for RTTI, ten respondents are proposing to implement in the next 12 – 24 months, with only three still to set their implementation period.

Figure 9: Schedule for SPA implementation

On the type of SPA for RTTI, priority action (b), 7 of the 15 respondents were planning to implement a SPA based on web links and database with metadata. Combining the SPA for RTTI with the other SPA services (c) and / or (e) was proposed by 12 of the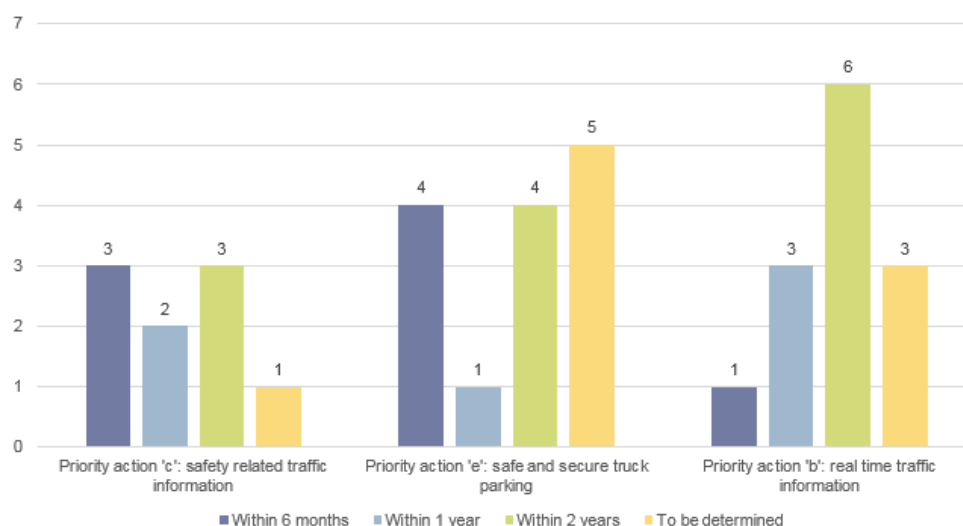 15 respondents, with the SPA for RTTI provided by a public organisation preferred by 14 of the 15. On hosting the SPA for RTTI the most common response was this would be a public administration or road operator (12 of the 15); one specified an independent third party.

On assigning priority zones no respondents had definitely decided to do this, five responded stated they would not, with ten undecided.

4.1.3. TECHNICAL ISSUES: DATEX II & METADATA

There was a very positive response on the use of DATEX II profiles in the SPA for RTTI with 12 of the 15 planning to use or using them, emphasising the importance of DATEX - one respondent was undecided and there were two no responses to this question.

Similarly, the respondents indicated metadata has a key role, two respondents have a RTTI metadata set already defined. Seven of the 15 respondents were aware of the metadata initiative and Coordinated Metadata Catalogue and were considering using it.

4.1.4. LEGISLATIVE ISSUES

On the questions relating to legislative issues there was a mixed response, the legislative extent of SPA for RTTI varies considerably in European countries. Five respondents consider it possible to force concessionaires to provide relevant data to the SPA, Figure 10; the mechanisms respondents are going to do this are through the use of national laws, government regulations and agreements with concessionaires. Three respondents are planning to adapt their national law.
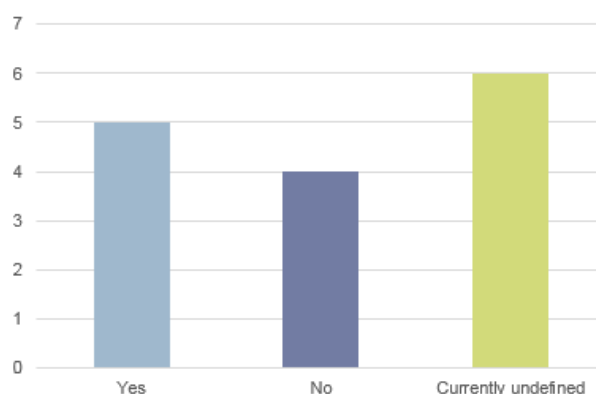
Harmonisation Proposal: Single Point of Access for RTTI

Figure 10: Forced inclusion of concessionaires' data in the SPA

4.1.5. POTENTIAL ISSUES & EXPERIENCE

This section of the questionnaire covered respondents' views on potential issues, costs, areas benefiting from harmonisation and existing plans and studies.

Issues anticipated by respondents in implementing a SPA for RTTI included:

- Limited availability of real-time data, particularly in large urban areas;

- Complexities of the inclusion of private sector data;

- Lack of national resources to set-up and operating the SPA;

- Potential complexity of the SPA; and

- Cooperation between many regions to provide a single solution.

On the costs of setting up and operating the SPA for RTTI most respondents did not have clear views, three respondents provided estimates, these were:

- Set up cost – less than 100€k and 200€k;

- Annual operating cost – no extra cost, 40€k and 100€k.

Respondents provided the following recommendations for harmonisation to facilitate the implementation of Delegated Regulation for RTTI:

- Common assessment of compliance and quality methodology for Member States;

- Establishment of common rules and common architecture for the SPA service;

- Harmonisation of metadata descriptions - essential for future Europe-wide services (easy access to data).

On existing national plans and studies on the implementation of priority action (b) four countries responded that these existed and were willing to share these with the EIP+ 3.2 group: Austria, Denmark, the Netherlands and Sweden.

4.2. Interview findings

In addition to the online questionnaire, one-to-one interviews were carried out in a number of countries with key experts. Experts were from both the public and private organisations relevant to RTTI national access points.

Elements from the interviews that echoed the questionnaire findings included:

- The need for standardised formats such as DATEX II, these should be more consistent and binding;

- The need for consistent metadata descriptions;

- Having appropriate resources (personnel and funding) to implement and operate the SPA and assess data.

Additional issues raised during the interviews were:

- There are different views of the Delegated Regulation by the private sector; for some private data providers and data users their responsibilities, the implications of the regulation, costs, and benefits are currently unclear;

- There is a fragmented data situation, numerous data sources in some countries, many different organisations holding relevant data; this will require cooperation between multiple partners which could be complex and costly;

- For ITS applications there is no standardised exchange format for static road data, there are potential licensing issues for mapping data;

- For interviewees in was unclear how the control of compliance will be organised and applied;

- For both public and private interviewees there was concern relating to the costs for providing metadata, data quality information and completing declarations of compliance;

- The Delegated Regulation is open to different interpretations and implementations.

Recommendations made by the interviewees included:

- There is a need for more consistent quality criteria;

- Harmonisation or additional guidance for compliance checklist and declarations of compliance would be beneficial;

- Agreement on definitions of the data types; there are no European agreed definitions of the data types included in the Delegated Regulation;

- All recommendation should be simple, cost effective, not onerous on the data providers or SPA providers; implementers need to work with data providers, understand their data to make sure it fits correctly into the SPA.

4.3. 2015 Workshop – Bucharest

The SPA Workshop was hosted by University Politehnica of Bucharest on 24 September 2015. In total there were 34 participants, originating from 12 Member States. This workshop stressed the important of the Delegated Regulation on RTTI, the associated metadata and the use of DATEX II.

Initial findings of the questionnaire exercise were presented and an overview on UK developments was given. Recommendations from the Coordinated Metadata Catalogue of Germany, Austria and the Netherlands were presented and discussed, as this work has focused on these three nations wider review and input was welcomed. On DATEX, the progress of the group with respect to RTTI and the Delegated Regulation were presented. The CROCODILE middleware specification was presented allowing transfer of messages between operators even when they do not both use the same DATEX II profiles.

Demonstrations of the Dutch SPA for safety related traffic information and truck parking were given during the breaks.

The workshop provided a valuable learning and information exchange platform, leading to a lively discussion, which leads to the following conclusions:

- There are different interpretations of what a SPA is;

- The legal implications of the Delegated Regulation are not always clear, e.g. can concessionaries be forced to provide data? Does national law need to be adapted?

- Quality of the data will be checked beforehand in some countries, whereas in other countries quality will be randomly checked or in case of complaints of users;

- In relation to the quality of data also the need arises for a harmonisation of the self-assessment form, especially in case of data providers active in more than one country;

- During the presentation of the Coordinated Metadata Catalogue participants noticed a tension between on the one hand 'machine readable' and on the other hand 'free text' to allow freedom. The question is raised whether DATEX elements can be used to limit the free text and improve machine readability.

All presentations from the workshop can be found here.

During the Bucharest workshop it was agreed that a follow-up workshop would be organised focusing on the metadata initiative. This workshop was held on 23 October 2015 at Schiphol (Amsterdam). In total 13 people participated from Austria, Germany, Sweden, the Netherlands and UK. During this workshop changes were made in the various metadata elements, and from that moment on the Coordinated Metadata Catalogue was 'frozen'. This final metadata set will be tested both in Austria and the Netherlands (and possibly also Germany) and the initiators have asked other countries to test the Coordinated Metadata Catalogue in 2016.

5. Organisational aspects

The planning, implementation and management of a SPA involves many stakeholders and can be achieved in different ways. This section examines the organisational aspects of the SPA, building on existing European SPA deployments and proposals.

5.1. National implementations

Several European countries have existing and planned implementations for priority actions (b), (c) and (e). This section outlines the key SPA features from information gathered from Member States, including current status, stakeholders, data providers, and implementation options.

5.1.1. FINLAND

In Finland the Finnish Transport Agency has chosen an existing data platform, an Open Data Portal, opendata.fi to be the Single Point of Access for safety-related and real-time traffic information. Opendata.fi is a collection of all open data produced by various public sector and community level organisations. It is funded by the Ministry of Finance. Avoindata.fi service can be used by any natural person free of charge. Unregistered users can only read the data contents of the service.

It is a national strategy to collect and distribute all open data into one platform that is easily accessible for all developers and includes necessary search functionalities for data searches. Currently there are 1789 different datasets available in opendata.fi.

The goal is to present RTTI and SRTI datasets in the opendata.fi platform and include the metadata catalogue in the same location. In fact, the real-time traffic information, as well as the static network information, are already linked to opendata.fi. The actual data will be stored in separate services Digiroad, which began in 2005, and Digitraffic, which began in 2008. In Finland the opendata.fi will act as the SPA, which contains metadata and links to the actual databases.

The principals of the solution are explained in Figure 11 below:
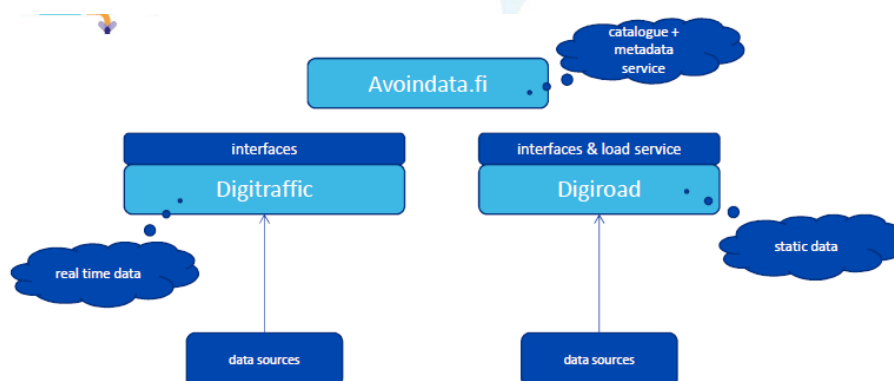

Figure 11: Finnish SPA structure

5.1.1.1. DATA PORTAL

Digitraffic is a data service platform built by the Finnish Transport Agency. All real-time data collected or produced in various processes are published in Digitraffic. In the screenshot from opendata.fi, Figure 12 below, the various real-time datasets are shown:
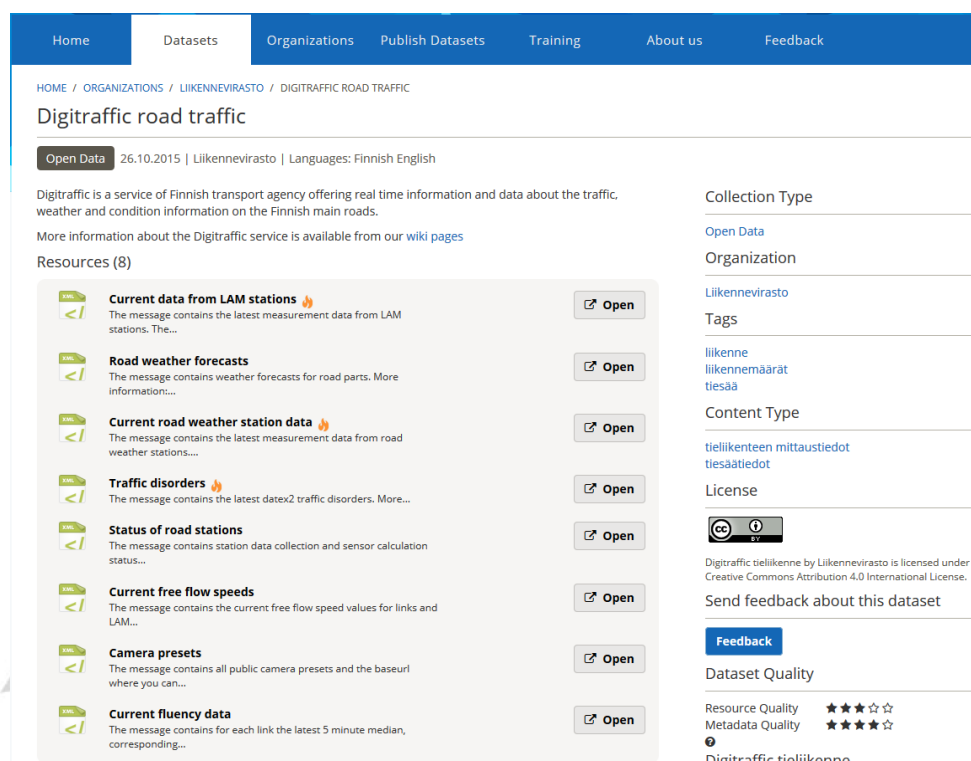
Figure 12: Digitraffic real-time datasets presented in opendata.fi

Currently traffic incidents and roadworks are provided in DATEX II standard format. The other data types are presented in simpler ad-hoc data models. The plan is to introduce more DATEX II standard interfaces as required by the ITS Directive, accompanied by more easy-to-use REST/JSON interfaces. The service can be found in https://github.com/finnishtransportagency/digitraffic/wiki

Currently Digitraffic interfaces are open for anyone without the need to register, and data is free of charge. The descriptions of the content and the XML-schemas can be found on the webpage.

According to a recent study, the users of the Digitraffic service range from small-scale "hobby" developers, research institutions, consultancies, IT-companies as well as global traffic information service providers such as Inrix, TomTom and Mediamobile.

Another necessary database is the national road database Digiroad, which is also maintained by the Finnish Transport Agency. Digiroad includes a description of all national roads and communal streets in a vector format, data including various technical parameters as well. More information can be found in digiroad.fi/en_GB/

Harmonisation Proposal: Single Point of Access for RTTI

5.1.1.2. *SPA FOR PRIORITY ACTIONS (B) AND (C)*

Both Digitraffic and Digiroad data are already available (linked) to opendata.fi. Addition of the necessary metadata descriptions will be made in 2016. Addition of the missing DATEX II interfaces will accomplish the set-up for the operation of the SPA according to the ITS Directive requirements.

SRTI information is already available in Digitraffic in the form of traffic incidents. The feed includes all safety related information received by FTA from its own systems, police or other cooperating parties in the field. SRTI events are not currently distinguished from RTTI events. For example, an accident is usually unprotected at first (SRTI), but becomes protected when the rescue and police forces arrive at the scene (RTTI). Both types are included in the feed as "incidents".

The Finnish Transport Agency is developing new data sources to improve the quality and event coverage of certain types of SRTI information. A study is ongoing with the Finnish Meteorological institute to produce events from weather related safety hazards. Also there is a pilot called Nordicway, in which Nokia HERE will test a new system to produce car-to-car warnings of safety-related events detected by in-vehicle systems or the drivers. All data becomes available for the TMC and eventually Digitraffic as well for wider utilisation.

The national body will be the Finnish Transport Safety Agency (TRAFI). They will carry out the random checks and required self-assessments.

5.1.2. THE NETHERLANDS

In the Netherlands, the National Data Warehouse for Traffic Information (NDW) is an organisation best known for the product that gives it its name: its enormous database of both real-time and historic traffic data. Yet NDW is more than its database. First and foremost, it is a unique alliance in which 19 public road authorities work together, learn from each other, and consolidate their data and other resources. Its goal is to apply the right data to obtain optimal traffic management and to provide road users with the best possible information resulting in less congestion, lower emissions of CO_2 and other pollutants, and improved safety.

NDW has 19 public authorities working together on collecting, storing and distributing traffic data. This data is used to provide traffic information, to ensure effective traffic management, and to conduct accurate traffic analyses. The objective of all this is better accessibility and traffic flow. The partners in NDW are: the central government, all the provinces, all the urban regions, and the municipalities of Amsterdam, Rotterdam, The Hague and Utrecht.

5.1.2.1. *DATABASE*

Various kinds of information from many different sources are sent to NDW. This data is assembled, stored and then distributed among the recipients. Data includes real-time traffic information, status information and historic information. A historical record of the real-time traffic data is accumulated over time. This historical data is for instance used to

generate traffic analyses or develop real-time traffic plans. NDW works with DATEX II data exchange format and plans to also use JSON and TPEG.

The road authorities themselves use the data to redirect traffic by means of ramp meters, route information panels and other traffic management instruments. Service providers use radio, TV, websites, apps and navigation systems to inform and advise travellers before and during their journey

5.1.2.2. *SPA FOR PRIORITY ACTIONS (C) AND (E)*
The Dutch Ministry of Transport has appointed NDW as the National Access Point for priority actions (c) and (e). NDW operates the National Access Point since July 2015. The Access Point can be accessed at www.nt.ndw.nu. The geo-scope for priority action (c) (and probably also (b)) was defined as 'all highways and motorways'. Priority action (e) applies to all parking facilities within a 5 km distance of 12 selected highway and motorway sections and one additional zone (port area Amsterdam), with at least 35 parking places.

The SPA for SRTI, priority action (c), is a registry containing:

- metadata: information about the data and the data owner (compliant to the Metadata catalogue DE/AT/NL)

- links to the actual data source

The SPA for truck parking, priority action (e), is a database with truck parking information, containing:

- static truck parking data (compliant to the regulation 885)

- metadata: information about the data and the owner (compliant to the regulation 885 and compliant to the Metadata catalogue DE/AT/NL)

- If available: links to real-time (dynamic) parking data

- a DATEX II export facility

For priority action (e) Rijkswaterstaat already entered the static data of most truck parking facilities they own. Next to that at this moment some private operators (± 10) also already entered their truck parking facilities into the database. The truck parking data stored in the access point can be easily exported in DATEX II format (Dutch Profile). This will also be done in order to upload the data at a regular basis to the European SPA for truck parking that only covers static truck parking data. For priority action (c) there are currently two data provider of SRTI included in the SPA, and this is gradually expanding.

The Dutch National Access Point is accessible via a webportal, containing:

- Publicly accessible part that contains all published (meta)data, overviews, discovery services and for priority action (e) also DATEX II download

- Closed part for registered data owners used for registration and changes in (meta)data and references

- Closed part for administration and maintenance of the software (NDW)

The source code of the SPA for the Netherlands is owned by the NDW. Other countries that are planning a similar implementation of a SPA in their country, are invited to 'copy' the approach the Netherlands has followed. In order to help these countries NDW offers the opportunity to use the same source code of the software. They can then translate it to their own language and adapt it to their own wishes.

5.1.2.3. *SPA FOR PRIORITY ACTION (B)*

NDW already has carried out a Quick Scan with respect to RTTI, priority action (b), in which they have investigated to what extent NDW could possibly be the SPA for priority action (b). In the Quick Scan it was analysed which data is collected and distributed by NDW, which data categories are assessed on quality and which feedback loops exist. NDW currently mainly distributes dynamic road and traffic data. Static road data is provided by NWB (national road database). A number of categories are not yet applicable in The Netherlands (such as tolls) and a number of data categories are not yet delivered to Service Providers. The geographic coverage varies per data category and is not yet known in all cases. At this moment there is not yet sufficient information to make a decision about assigning priority zones for which the regulation (b) will be applicable in the Netherlands other than the TENT-network.

5.1.2.4. *ASSESSMENT OF COMPLIANCE*

The Dutch Vehicle Authority (RDW), not to be confused with the NDW, has been appointed as National Body for priority actions (c) and (e). The RDW is authorised "to judge if the requirements are being complied to" by public and private parties resorting under the regulations. This assessment will be done based on the self-declaration of compliance provided by data owners and service providers. The RDW provides a portal for reports and complaints as a service for users of the data and as extra input for assessment. If needed, the RDW has the possibility of penalising organisations when they fail to comply with the regulation.

5.1.3. UNITED KINGDOM

The Department for Transport (DfT) is responsible for setting up the UK National Access Point (NAP). The DfT is planning to use the existing UK Government metadata search and discover facility that is part of data.gov.uk and which is already used in a similar manner for discovery, view and download of relevant data sets in the INSPIRE directive that covers spatial data.

Key SPA stakeholders include:

- Department for Transport (DfT)

- Highways England – maintains, operates and improves England's motorways and major A roads

- Transport Scotland - maintains, operates and improves the trunk road network in Scotland

- The Welsh Government – responsible for maintenance and improvement of motorway and trunk roads in Wales

- Transport Northern Ireland - responsible for maintenance and improvement of all roads in Northern Ireland

- ITS (UK) - the UK association for the promotion of ITS, a not-for-profit public/private sector association financed by members' subscriptions, and provides a forum for all organisations concerned with ITS.

- Vehicle Certification Agency (VCA) - the designated UK Vehicle Type Approval authority which supports industry by providing internationally recognised testing and certification for vehicles, their systems and components.

- Service providers using public data (e.g. TomTom, INRIX, Trafficmaster, BBC, Google maps, AA Mapping services, NAVTEQ, STV, Elgin)

The NAP will not be a data repository; it will be an easy-to-use, accurate, and accessible catalogue of what data is held and whom to contact in order to gain access to it. In the case of commercial organisations, they will almost certainly charge for data and information services; this is allowed under the Directive, understood by DfT, and can be identified as part of the metadata description at data.gov.uk. Whilst data can be hosted by the DfT, it is more likely that the data will be hosted by the data providers and the DfT NAP will provide a URL link on data.gov.uk. The majority of data types related to priority actions (c) and (b) are collected and stored by:

- Highways England

- Transport Scotland

- The Welsh Government

- Transport Northern Ireland

Data from these agencies is already available in DATEX II format, with Highways England traffic datasets already accessible through data.gov.uk.

5.1.3.1.   *DATA PORTAL*

The Open Data Portal, data.gov.uk, is a metadata repository, which references transport related data being hosted at local directories with comprehensive search and discover capabilities. The existing national access point is administered by the UK Cabinet Office and is available to the whole UK public sector as well as to private organisations that wish to register their metadata for access by third parties. Transport datasets already form a major sector of metadata and transport datasets are one of the most popularly viewed

metadata records. The access point will be a single window for the UK, however this could also link to data repositories for the devolved Governments and other transport related bodies in the UK should that be the desired architecture.

5.1.3.2. *SPA FOR PRIORITY ACTIONS (B) AND (C)*

The Open Data Portal (data.gov.uk) has been chosen as the NAP for priority actions (b) and (c). ITS (UK) has been appointed as data aggregator and the Vehicle Certification Agency (VCA) as impartial independent national body/assessment of compliance.

5.1.3.3. *ASSESSMENT OF COMPLIANCE*

The DfT has appointed Vehicle Certification Agency (VCA) to undertake assessment of compliance. VCA is an Executive Agency of the United Kingdom Department for Transport and the United Kingdom's national approval authority for new road vehicles, agricultural tractors and off-road vehicles.

The DfT has also appointed ITS (UK) to assist with creating a comprehensive catalogue of who in the UK collects, processes, publishes and adds value to the data listed in the relevant delegated regulations. The DfT will be working closely with ITS (UK) to identify organisations in the public/private sector which hold relevant data/information on service level requirements outlined in the delegated regulations. ITS (UK) will develop a catalogue of the services available including list of service providers in the value chain, data types, location maps, channels/URLS of DATEX II, etc. This information will be used by the VCA to carry out independent assessment of compliance against the service provider's self-declaration of conformity and quality criteria. The validated technical compliance file will be sent to DfT directly or via ITS (UK) to upload to the national access point information directory/gateway. ITS (UK) will be required to maintain a suitable database comprising record of accredited stakeholders. The UK assessment of compliance process is shown below in Figure 13:
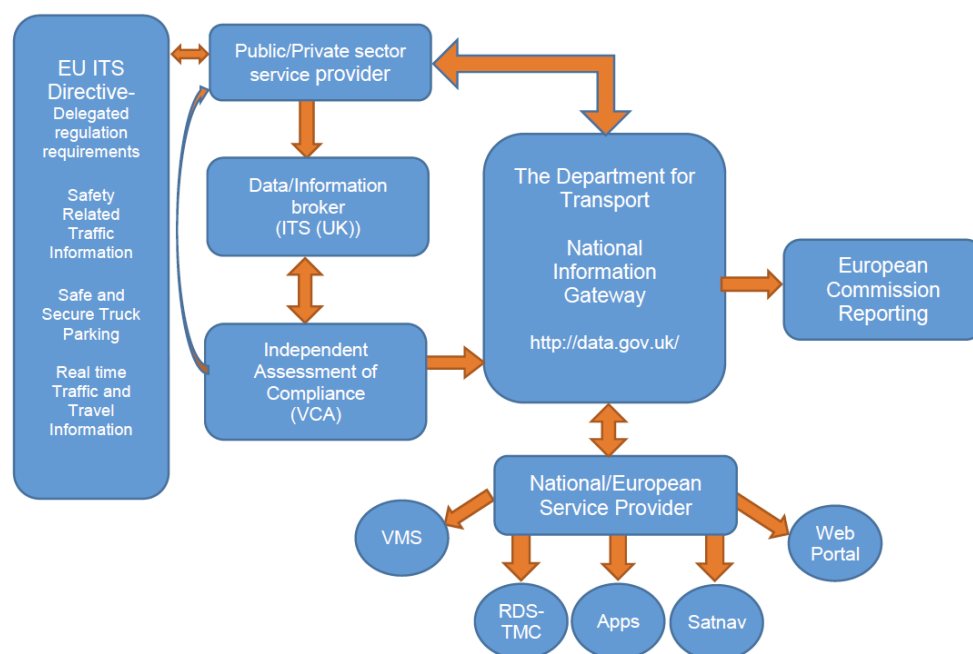
Figure 13: UK assessment of compliance

5.1.4. IRELAND

In Ireland, the Department of Transport Tourism And Sport is responsible for meeting the delegated regulations. The key stakeholders are:

- Department of Transport Tourism And Sport (DTTAS) are the Member State representative

- Transport Infrastructure Ireland (TII) have been designated by DTTAS to carry out the prime role of setting up the Single Access Point and are the primary data provider to the access point for data relating to the Delegated Regulation

- The National Transport Authority (NTA) are also seen as a provider of some data, as well as various local authorities who have instrumentation on the TERN

- It is being proposed that the National Standards Authority of Ireland (NSAI) be designated the Data Quality and Competence Assessment Body for Ireland

- DPER (Department of Public Expenditure and Reform) have set up an open data portal (see below) which will in effect become the Single Access Point.

5.1.4.1. DATA PORTAL

The SPA is a data portal and will be hosted at data.gov.ie/; Ireland's Open Data Portal, Figure 14. There are 14 main categories of data, Transport is one. Users can search datasets by category or keyword and refine by publisher, format and license type. TII publishes its data at data.gov.ie/publisher/transport-infrastructure-ireland.
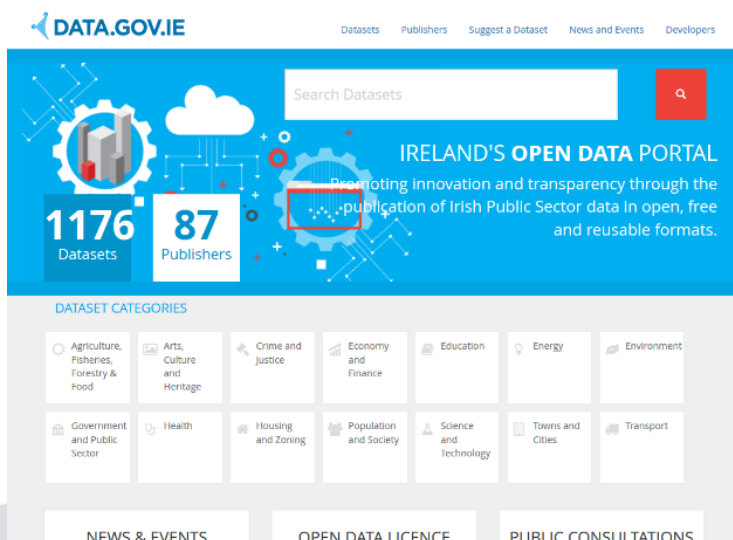
Figure 14: Homepage of Ireland's Open Data Portal

Open Data is recognised as a key element of the Public Service Reform agenda and improved data management is an important element of a wide variety of key policy documents and action plans. Ireland has also committed to meeting the challenges set under the G8 Open Data Charter. A key priority under the Open Data Initiative is the development and expansion of the National Open Data Portal, data.gov.ie. The objective of the Open Data Portal is to publish government data in a way that will make it more discoverable, accessible, interoperable and reusable. As part of the Open Data Initiative a Technical Framework comprising five key components: licensing, data formats, metadata, standard and unique resource identifiers had been produced.

5.1.4.2.   *SPA FOR PRIORITY ACTIONS (B) AND (C)*

In line with the Open Data Initiative the Open Data Portal will be the SPA for priority actions (b) and (c). Priority actions (b) and (c) are in progress, and are being treated fundamentally as the same. TII have data in both these areas, and are already publishing, or are intending to publish, Figure 15.
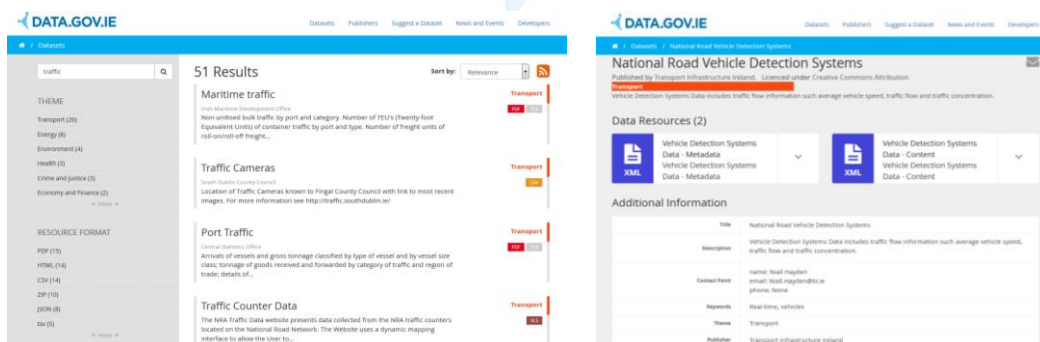
Figure 15: Traffic and road detection search results

It is proposed that the NSAI will undertake independent national body/assessment of compliance role. The NSAI are the national certification authority for CE Marking and provide a certification service to enable business demonstrate that Irish goods and services conform to applicable standards. The NSAI have not been officially appointed to this position but have agreed in principle; plans are currently underway to establish how they will operate.

5.2. Implementation plan

In order to implement and fulfil the Delegated Regulation for priority action (b), Member States are recommended to set up an implementation plan in order to be ready on 13 July 2017. This section describes the main elements of such an implementation plan.

> **KEY MESSAGE:**
> *An **implementation plan** is recommended, this should include information on:*
> - ***Roles and responsibilities***
> - ***Implementation options –** e.g. combined SPA, existing Open Data Portal*
> - ***Communication plan***
> - ***Assessment of compliance***
> - ***Legal issues***
> - ***Scope costs***

5.2.1. TECHNICAL AND ORGANISATIONAL IMPLEMENTATION

Firstly it has to be clear how the National Access Point will be implemented. In many cases this means that Member States will have to carry out a study on the implementation of the SPA in their country. This study should clarify the following aspects:

- Which (existing or new) organisation will become the National Access Point, and which (existing or new) organisation will become responsible for the assessment of compliance of the stakeholders? Will the National Access Point for RTTI be combined with the National Access Points for SRTI and truck parking?

- What type of National Access Point will be established? Will it be a website with links, a register with metadata or will it be a database with actual data? Examples of types of National Access Point in various EU countries have been presented in Section 5.1

- How will the assessment of compliance be organised? Will it check on a regular basis, randomly or only in cases of complaints? Will there be a process for (end)users to file complaints about service providers? See also Section 5.2.6.

- Will there be a legal basis for the enforcement of the Delegated Regulation? Are there legal means to force stakeholders to comply with the Delegated Regulation?

- Geographic scope, i.e. the comprehensive trans-European road network, as well as selected motorways not included in this network, and priority zones identified by national authorities where they consider this to be relevant.

- Who are the main data providers and what relevant data is held? An inventory of existing relevant data; e.g. owners, data types, data formats, data standards, location, accessibility, data quality.

5.2.2. ROLES & RESPONSIBILITIES

To fulfil the Delegated Regulation efficiently it is important to identify the relevant stakeholders and have clearly defined roles and responsibilities, and a clear understanding of stakeholders' expectations. Priority action (b) involves various stakeholders related in the traffic information chain to support the interoperability, compatibility and continuity of real-time traffic services across Europe. These are listed below, with a brief explanation of roles and responsibilities:

- **Member States** are responsible for:
  - o setting up the access point
  - o assessment of compliance: assessing the requirements of the Delegated Regulation are being complied with; by data providers, service providers and digital map producers
  - o random checking of the correctness of an evidence based declaration of compliance
  - o reporting: by 13 July 2017 report on the measures undertaken (if any) to set up a SPA; and by 13 July 2018 (and then every 2 years) a progress report
- **Data providers**: are all relevant stakeholders providing road and traffic data, including static data. Data providers are defined as road authorities, road operators and service providers. There are obligations for owners of the data to make their road and traffic data accessible via the national access point. The obligations are different for road authorities and other road operators and for service providers.

- **Road authorities and road operators** are responsible for:
  - o Making the data they collect, that is relevant to the specification (static, dynamic road status, traffic), available in a non-discriminatory basis through the access point
  - o Providing this data in the format stated (i.e. standardised format / DATEX II / machine readable) with relevant metadata (in cooperation with service providers and digital map providers where applicable)
  - o Providing timely updates of all data to users (where possible this should be in advance)
  - o Making timely corrections to inaccuracies that they are made aware of by users and end-users

- **Service providers,** when using data from road authorities / road operators, are responsible for:
  - o Taking traffic circulation plans and temporary traffic management plans into account when using static and dynamic status data respectively
  - o Relaying data updates (static, dynamic road status, or traffic) they receive in a timely manner to end–users
  - o Making timely corrections to inaccuracies that they are made aware of by users and end-users

- o Being free to conclude commercial agreements between themselves for the re-use of relevant data.

  Note: There is no general obligation established for service providers to make their (traffic) data accessible on a non-discriminatory basis; this would go against the principle of fair competition. Service providers are only obliged to provide, if and when requested by road authorities and road operators, via the national access point, the traffic data needed for the purpose of optimising traffic management activities.

- **Digital map providers**, when using static data from road authorities / road operators, are responsible for:
  - o Providing timely updates to end–users
  - o Collaborating in order to ensure any inaccuracies they identify in the data are signalled to the authority where the data originates
  - o Making timely corrections to inaccuracies that they are made aware of by users and end-users

5.2.3. COMMUNICATION PLAN

Once all relevant stakeholder groups have been identified, Member States have to find out who the actual parties are under each group. For example: who are the road authorities, which concessionaires are active, which are the service providers, etc. In this way all parties need to be identified that will be affected by the Delegated Regulation.

Once these stakeholders are identified a clear communication process with these stakeholders has to be started, to inform them about the SPA and what this will mean for them. From the beginning it has to be clear how the new Delegated Regulation will be interpreted and how it will be implemented in the specific Member State. Interviews with private stakeholders have revealed that they are especially concerned about:

- The administrative burden of the assessment of compliance (self-declaration)

- The ownership of data and related to that whether they are obliged to provide their data for free.

- The fact that they have to provide metadata, whereas some parties do not have experience with that.

- The added value of a National Access Point for their organisation.

Good communication aimed at the stakeholders is expected to lessen these concerns to a large extent.

5.2.4. THE SPA MODEL

As already briefly mentioned in 5.2.1, it is important to decide on the type of National Access Point to be established. Will it be a website with links, a register with metadata or will it be a database with actual data? It should be noted that for priority action (b), in contrast to (c) and (e), an appropriate discovery service that uses metadata needs to be put in place to allow users to effectively search the datasets in the national access point.

The access to road and traffic data via the national access point, combined with the requirement that these data are provided in standardised formats, would improve data interoperability and tackle the fragmentation in the current offer of services. On the other hand it will of course also increase the costs of setting up and operating the access point (see Section 5.2.5 below).

Examples of types of National Access Points in various EU countries have been presented in Section 5.1.

Open Data Portals are one SPA implementation option for Member States. Open Data Portals facilitate access to and re-use of public sector information, helping to identify what type of information exists and by which public authority it is held. A number of countries, regions and municipalities have therefore created portal websites on public data.

The Directive on the re-use of public sector information (Directive 2003/98/EC, known as the 'PSI Directive') entered into force on 31 December 2003. It was revised by Directive 2013/37/EU which entered into force on 17 July 2013. It focuses on the economic aspects of re-use of information rather than on the access of citizens to information. It encourages the Member States to make as much information available for re-use as possible. It addresses material held by public sector bodies in the Member States, at national, regional and local levels, such as ministries, state agencies, municipalities, as well as organisations funded for the most part by or under the control of public authorities (e.g. meteorological institutes).

5.2.5. SPA COSTS

Calculating the exact costs associated with the SPA is complex and will differ in each Member State depending on the method of set-up and operation. Identified cost that Member States should be aware include:

- Administrative costs of setting up a discovery service and a national access point.

- Running and administrative costs of providing the services for all stakeholders / users.

- Assessment of compliance and quality control.

- Costs of sharing information between all stakeholders / users (except for those who distribute data for a fee to cover the costs).

- Timely map updates of information might also bear a cost for those Member States and road operators that do not provide such updates yet.

Where a Member State combines the SPA for RTTI with truck parking and / SRTI, or uses and existing access point there are obvious potential cost savings in reduced duplication.

5.2.6. ASSESSING COMPLIANCE

Member States are required to assess the compliance of the stakeholders involved in the provision of real-time traffic information services (road authorities, road operators, service providers, digital map producers) with the provisions of the specifications. To do so Member States may request descriptive documents and evidence-based declarations of compliance from the abovementioned stakeholders. Member States would also need to conduct random checks to control the correctness of these declarations. The extent of the assessment and control as well as the organisational means to run these tasks are left to the discretion of each Member States to best fit with their administrative processes and framework in place if any. Such an assessment is important to settle a sound ecosystem for the implementation of well-functioning real-time traffic information services, to safeguard the achievement of the objectives (e.g. policy objectives, quality of service) associated with the provision of real-time traffic information services, meanwhile ensuring lower cost of developments and fairness of competition, including notably access to the market for SMEs.
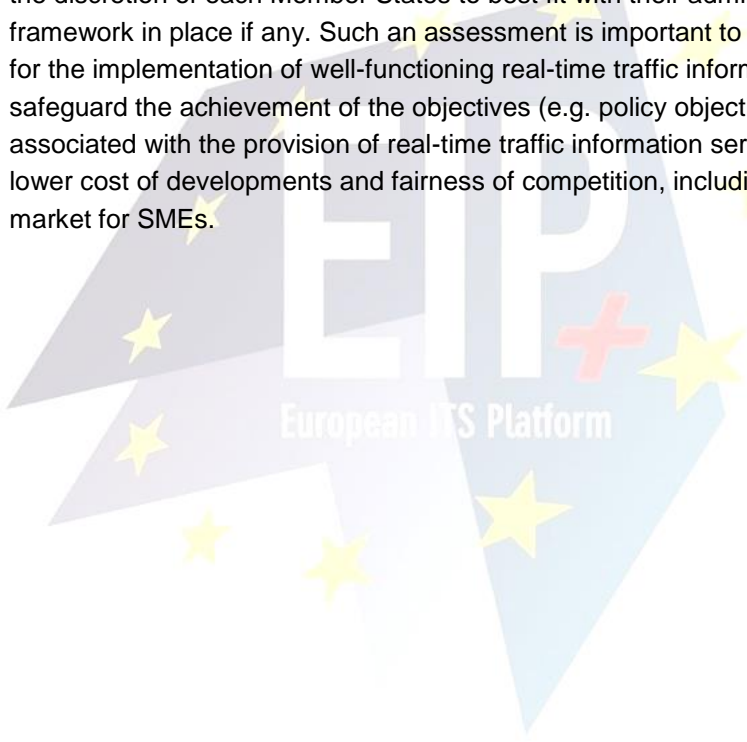
6. Harmonisation proposals for access point implementers

This section provides harmonisation recommendations for SPA RTTI covering assessment of compliance, metadata and DATEX II.

6.1. Assessment of compliance

Member States are required to assess whether the requirements of priority action (b) are being complied with (Article 11).

> **KEY MESSAGE:**
>
> ***Assessment of compliance self-declaration harmonisation:***
> - *Include key information relating to the priority action: legal basis / regulation, national compliance assessment procedures,*
> - *Include common headings to describe the data, format, geographic scope, quality information, completeness, availability and terms of use.*

In contrast to (c) and (e), for (b) no nominated National Body is required. Member States have to assess whether the requirements are complied with by the road authorities, road operators, digital map producers and service providers. First of all the Member State has to carry out an initial verification of registration at the National Access Point and of the provision of (meta)data and self-declaration. Member States can request data and quality descriptions from data providers and an evidence based declaration of compliance. To reduce duplication of efforts in compiling separate declarations of compliance for providers with data covering more than one country, a harmonised self-declaration should be developed, which can be used by all Member States to assess compliance. This self-assessment form can be closely linked to metadata and should include at least the following:

- Description of the events and data
- Description of detection and collection
- Geographic coverage
- Format of the data
- Means of distribution
- Quality of information
- Availability, exchange and terms for re-use of the data.

Furthermore it should include statements on:

- Knowledge of the regulations, complying to assessment and sanctions
- Completeness and up-to-dateness of the statements.

The harmonisation of the self-assessment form will be one of the issues to be taken up by Sub-Activity 4.6 of the EU EIP project that will effectively start in January 2016.

Whether a data provider is performing (or not) according to the self-declared quality, can be checked through random inspections or dedicated inspections following complaints. Ultimately penalties can be applied.

It should be noted that differences exist between countries on how to deal with the quality of data. In some countries the National Access Points want to check the quality of data before it is made available through the Access Point, whereas in other countries the quality of data is considered to be a market issue, whereby high quality datasets will automatically be preferred to low quality datasets.

6.2. Metadata

Within EIP+, the partners have made a considerable step forward to a structured and consolidated minimum set of metadata applicable not only to the priority action b but also to priority actions (c) and (e). The metadata task has based on the results of EIP and has taken into account experiences of access points in operation respectively ongoing activities in developing a SPA especially in Austria, the Netherlands and Germany.

Metadata is data about data. A structured set of metadata for data provided at a SPA should describe all relevant aspects of the respective traffic information and its communication in a structured way, including:

- Content information,

- Temporal information,

- Geographic or network coverage,

- Contact information,

- Conditions for use,

- Access information and

- Quality information.

Furthermore it is necessary to describe when, how and by whom the metadata have been provided (metadata information) to enable users to identify the usefulness and actuality of the accessed metadata.

The relevant metadata is not related to the underlying system, e.g. how the Single Point of Access is set up (it can be a simple registry or a comprehensive data warehouse). Metadata is the basis for a search function (discovery service) on the SPA.

> **KEY MESSAGE:**
> Use metadata set as described in *SPA – Coordinated Metadata Catalogue*

In order to allow potential data users (e.g. road authorities, road operators or service providers) to successfully and cost-efficiently discover and use the relevant data, it is necessary to properly describe the content using appropriate metadata. Discovery services allow users and computer programs to search for datasets based on their metadata records. By using a harmonised set of metadata discovery services can be implemented in a consistent and compatible way across all Member States.

To facilitate data exchange, compatibility and interoperability the partners responsible for setting up the SPA in Austria, the Netherlands and Germany formed a metadata initiative. The purpose of the group was to develop a common minimum set of metadata applicable to data covered by the EU Directive and the respective specifications concerning priority action (b), (c) and (e). This minimum metadata set describes the most important metadata elements, gives technical details for each element and contains necessary information in order to be able to fulfil the duties of a SPA and a national body. The group developed the paper *SPA – Coordinated Metadata Catalogue*. Discussion results with other EIP+ partners, especially Sweden and the UK, have been taken into account when finalising this paper.

The following information is an extract and summary of key information; for complete information on the metadata catalogue please refer to the paper.

The key objectives of the catalogue were to:

- Define the necessary metadata elements needed to describe a dataset in a focused but adequate way;
- Define wordings and semantics in accordance to existing standards and specifications;
- Define predefined categorisations; and
- Define metadata value types.

The definition of metadata elements, wordings and predefined categorisations form the core element for data exchange and interoperability. In addition, technical parts of a database like field name, value type and length have been covered as well. This may assist actors when implementing the metadata elements into a database.

For each element of the minimum set of metadata, references are given to the INSPIRE regulation and to the DCAT - AP (Data Catalogue vocabulary – Application profile for data portals in Europe) specification. This indicates parallels and differences to the existing specifications. Every national implementation is free to add more metadata elements than described in the catalogue, however they should adhere to the minimum metadata set as specified.

6.2.1. MINIMUM SET OF METADATA

The common minimum set of metadata covers the following metadata elements, organised into eight sub-groups:

Metadata information

1. **Metadata Date** – indicates the date and time when the current version of the metadata set was created or last modified. It enables to identify actuality of the metadata.

2. **Metadata language** – indicates the language in which the metadata is described. At a national access point international operators may use their own language for descriptions. When exchanging metadata information between SPAs, indication of language used for free text description is even more important.

3. **Contact point for metadata** – describes an organisation, if applicable a person, responsible for creation and maintenance of the metadata. This enables direct contact for the SPA operator and data searching users.

Content information

4. **Name of dataset** – describes the dataset in a generic term or with a few words in a meaningful way.

5. **Description of dataset** – shall be used to give more information about the provided content.

6. **Dataset type category** – is the main classification of the provided content. A meaningful classification can assist the search function of a SPA. For that reason a list of categories has been defined for further evaluation. (The list of dataset type categories is contained in Annex 2.)

7. **Dataset detailed type** – indicates information types according to the EU-Regulations concerning priority actions (b), (c) and (e). The type is needed for validation purposes by the national body. (The list of dataset detailed types is contained in Annex 2.)

8. **Dataset language** – indicates the language used for textual information in the dataset. This is effected by the data source, e.g. internationally acting data provider.

Temporal information

9. **Start date of publication** – indicates from which date on datasets will be delivered.

10. **End date of publication** – indicates the date when data delivery terminates.

Geographic coverage

11. **Area covered by publication** – describes the geographic area that is covered by the datasets of the publication (based on NUTS codes).

12. **Network coverage** – describes the part of the transport network that is covered by datasets of

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the publication. To be searchable and compatible following categorisation is proposed: motorways / arterial road network (in the meaning of state roads or federal roads) / regional roads / urban and local roads / other.

13. **Network coverage description** – describes details of the covered transport network on a national basis. This shall clarify the specific meaning of terms (categories).

Responsibilities / contact information

14. **Publisher** – describes the entity (organisation, responsible person if applicable) that publishes datasets of a publication. The publisher is responsible for concluding a contract if necessary.

15. **Data owner** – describes the entity (organisation, responsible person if applicable) that owns the datasets of a publication. Data owner is responsible for content and quality of datasets.

Condition for use

16. **Contract or license** – indicates the condition of use. This can be for free and unrestricted, but otherwise it can be necessary to conclude a contract or to agree on a licence.

17. **Condition for use** – includes clarifications of a contract or license. Here a sample contract or the terms of use shall be provided, in order to allow potential data consumers to check and prove terms and conditions before getting in touch with the publisher.

Access information

18. **Structure of publication** – describes the technical format of the dataset (based on a predefined list including "other").

19. **Publication structure description** – gives a definition of the technical format of the dataset if it is not mentioned in the predefined list according to structure of publication.

20. **Access interface** – describes the IT protocol of the data interface that will be used to transfer data (based on a predefined list including "other").

21. **Communication method** – describes the transmitting procedure to the data recipient (push or pull).

22. **Access URL** – provides a link for access to the current dataset of a publication. (Note: If datasets are provided in push mode only, an access URL for the data source is not applicable.)

Quality information

23. **Update frequency** – describes the update rate of the dataset. This can be a specific time interval or on occurrence (predefined list).

24. **Quality indicator** – describes means and results of a quality assessment. This information shall assist data consumers in determining the value of data for their own services.

Furthermore, it can be helpful for the validation process by a national body, where necessary.

25. **National Body assessment date** – indicates the date of the last crosscheck of a self-declaration by a national body. If the dataset has not been crosschecked before no entry shall be made.

The minimum set of metadata and technical details for each metadata element are contained in Annex 2.

6.2.2. FUTURE DEVELOPMENTS

The current metadata catalogue has been reached a final version and will be frozen for one year of evaluation. Austria and the Netherlands have decided to implement the minimum set of metadata in their SPA with start of operation. Based on results of the evaluation phase, Germany will follow with modifications of the metadata repository and search functions of the existing MDM. Sweden and the UK have expressed their willingness to consider the metadata catalogue when setting up a SPA and to provide experiences afterwards.

To help test and refine the metadata catalogue all Member States are encouraged to apply it and provide feedback to the working group.

Based on a harmonised set of metadata it will be possible to communicate requests and search results from one SPA to another in the future. For this purpose it is necessary to develop an interface that allows machine to machine communication of metadata as a next step.

6.3. DATEX II

Within Activity 3.2 of the EIP+ project, "Task 5: DATEX II profiles" dealt with analysing the possibility to define a commonly agreed DATEX II profile for the exchange of Real-Time Traffic Information, namely the dynamic road status data and traffic data as presented in the Commission Delegated Regulation on the provision of EU-wide RTTI.

> **KEY MESSAGE:**
> Elements of the EasyWay 2012 TIS Deployment Guidelines have been identified as the same as data types included in priority action (b); these were found in:
> - *EW-TIS-DG03_05 Traffic Condition and Travel Time Information* and
> - *EW-TIS-DG02 Forecast and Real Time Event Information.*
> These profiles are a good basis for further enhancement.

DATEX II was developed as a standardised solution to communicate and exchange traffic information among traffic centres, service providers and information broadcasting companies.

DATEX II is based on a concept of three levels of interoperability:

- Level A is for users that only want to use the full, rich data model that has been agreed and harmonised amongst all European stakeholders. It is fully specified and it was designed to be as strict and as unambiguous as possible in the difficult context of European harmonisation. Applications that have no content requirements beyond what this substantial model already has to offer do not need to consider interoperability problems.

- Level B provides a mechanism to extend Level A in an interoperable way, i.e. users that are in principle happy with Level A but think there are only a few details missing in the model can amend the model by adding the missing bits for local applications. DATEX II ensures that extensions following the rules and using the DATEX tools will be interoperable in the sense that any Level B extended supplier/client will still be backward compatible with all Level A standard supplier/client systems, and will also be interoperable – on Level A – with all other Level B extended systems.

- Level C comes in where the Level B rules are too constrained to allow a proper model being created for new, innovative content.

Most content providers will be more than happy to use only a limited subset of the optional elements provided by Level A model, and they even can add missing elements using the Level B extension mechanism. The solution for this is the profiling mechanism of DATEX II. Prior to creating the XML schema definition used for exchanging data – the content provider can deselect all those optional elements of the Level A model that the service does not support. The content provider can therefore create a schema that is fully tailored to his particular service – by deselecting unused Level A data elements and by adding missing data elements as a Level B extension. On the other hand, the DATEX II methodology ensures that all instances that validate against this service specific schema also validate against the full standard schema, thus ensuring full system level interoperability.

The usage of DATEX II for data exchange is mentioned also in Delegated Regulations for priority actions (e) and (c). Profiles or recommendations are already available as follows:

- priority action (e) – Delegated Regulation EU 885/2013 – Safe and Secure Truck Parking
    - DATEX Profiles are available - Parking Publications are part of DATEX 2.3

- priority action (c) – Delegated Regulation EU 886/2013 – Safety Related Information
    - Recommendations are available - DATEX II Guide for Road-Safety Related Traffic Content in DATEX II

The initial objective of Task 5 was to look at the current DATEX II standard and to define and recommend a profile for exchanging RTTI that is agreed and accepted by all beneficiaries involved in EIP+. If those Members States would use the profile when implementing their SPA, than the compatibility between the systems would be ensured.

Analysing the three data types specified in the Delegated Regulation for RTTI:

- static road data

- dynamic road status information

- dynamic traffic data

It became clear that DATEX II can only be used for dynamic road status and traffic data. The static road data is too complex and much more different from the structure of DATEX therefore it is not possible or feasible to use it as a communication protocol.

The activities of Task 5 were carried out in close cooperation with the EIP+ 4.4 DATEX II Group. At the DATEX II Technical Group meeting in Bucharest on 19-21 May 2015, the experts were asked about their foreseen involvement in defining DATEX II profile for RTTI. They stated that the issue is too complex; it will involve considerable effort and could not be done before the end of the EIP+ project.

In this context, Task 5 shifted focus on relevant EW Deployment Guidelines (DG) on Traffic Condition and Travel Time Information which include proposals on DATEX II profiles. This were analysed to see if it can be used to define a complete profile for the dynamic road status and traffic data mentioned in the RTTI Regulation.

More specifically the analysis of the DGs was split into the following areas:

- EW-TIS-DG03_05 Traffic Condition and Travel Time Information

- EW-TIS-DG02 Forecast and Real-Time Event Information

- EW-TIS-DG06 Weather Information

Concerning the first and second DGs, profiles for some elements mentioned in the Delegated Regulation were identified. These profiles are a good basis for further enhancement. However there are also elements for which there are no profiles, so they need to be created. This is also the case for the third category, where no profiles could be identified.

The figures below, Figure 16 and Figure 17, show examples of profiles for traffic flow and traffic speed:
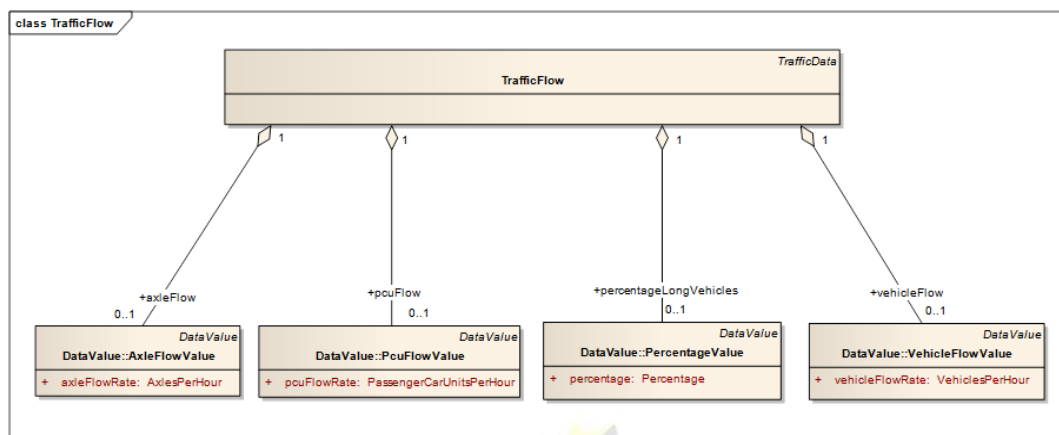
Figure 16: Example of profile for traffic flow
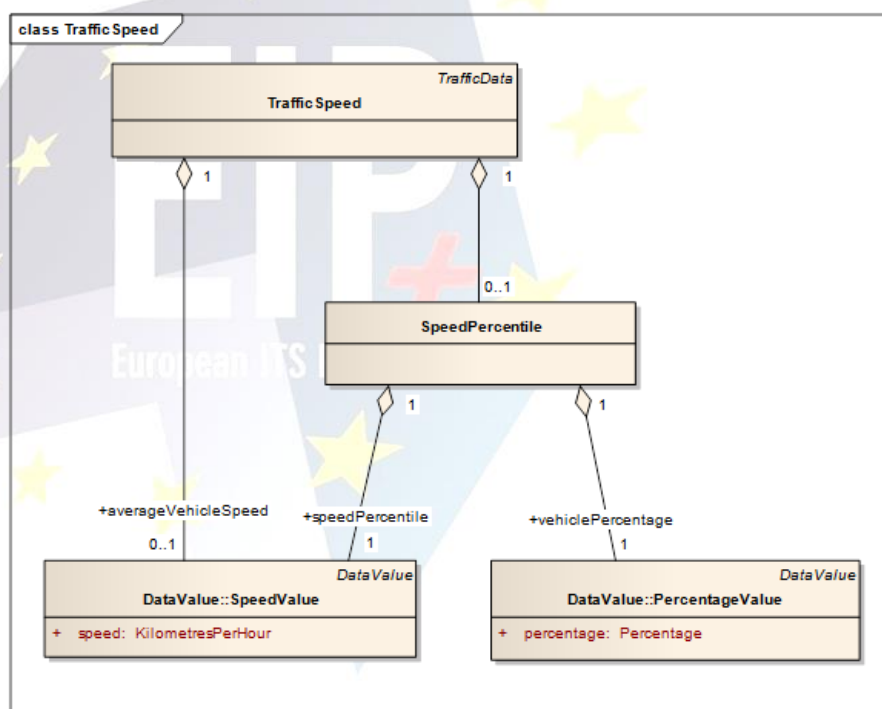
Figure 17: Example of profile for traffic speed

Further work on defining harmonised DATEX II profiles for RTTI will be carried out as part of the activities of the newly funded project by the 2015 CEF DATEX call. The project involves the DATEX II EG of the EIP+ and during its lifetime from 2016 to 2020 it will focus on the following DATEX issues:

- User support

- Developments to meet new requirements

- Maintenance of current specifications

6.4. Static Data

For the majority of real-time ITS applications (traffic management and traveller information service providers and users) there are no commonly used or agreed formats for static data.

Several European projects have defined common specifications for the provision and exchange of static road data. The most recent and relevant initiative is the INSPIRE Directive (2007/2/EC). Many road transport application schemas included in INSPIRE are based on the work of the EuroRoadS project (www.euroroads.org), 2004-2006.

6.4.1. INSPIRE DIRECTIVE 2007/2/EC

INSPIRE (Infrastructure for Spatial Information in the European Community) is a European spatial information infrastructure that delivers to the users integrated spatial information services. These services will allow the users to identify and access spatial or geographical information from a wide range of sources, from the local level to the global level, in an interoperable way for a variety of uses. The outputs of INSPIRE are based on consensus building process involving data users and providers together with representatives of industry, research, and government.

To ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and transboundary context, the Directive requires that common Implementing Rules are adopted in a number of specific areas (Metadata, Data Specifications, Network Services, Data and Service Sharing and Monitoring and Reporting). INSPIRE does not require collection of new data. However, after the period specified in the Directive[3] Member States have to make their data available according to the Implementing Rules.

There are 34 INSPIRE spatial data themes, the theme most closely linked to the ITS Directive priority action areas is the Transport Network Theme. Based on the data specification development framework, Thematic Working Groups have created the INSPIRE data specification for each theme. The data specifications follow the structure of "ISO 19131 Geographic information - Data product specifications" standard. The Transport Network theme includes road, rail, air and water transport networks together with related infrastructure and links between different networks, ensuring multi-modal nodes.

6.4.2. INSPIRE ROAD TRANSPORT NETWORKS

The Road Transport Networks application schema (*Roads Schema*) employs a link and node structure to represent a road system used for the transportation of vehicles in the form of a linear network. The Roads Schema inherits classes from the Common Transport Schema and also creates its own classes to describe properties of the road network such

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[3] For Annex I data: within two years of the adoption of the corresponding Implementing Rules for newly collected and extensively restructured data and within 7 years for other data in electronic format still in use.

as Ownership and traffic direction that can apply to whole sections of the network element or subsections that can be described using linear referencing.

The primary aspects modelled for road network elements are:

- **Spatial**. Geometric (point, line and area (topographic)) representation of various elements that are parts of a network. Typically, the network is handled as a network of connected linear elements (links) with points (nodes) at the ends of the lines (at junctions, road ends etc.). Also real objects with a function in a network may be represented in the dataset. Network connectivity within the roads network is essential but between elements in the other networks is an optional spatial aspect.

- **Temporal**. All elements in a network may have a temporal validity (i.e. description of when the network element exists in the real world) and also optional information on when data was entered, modified or deleted in the dataset.

- **Thematic**. The road schema can be thematically displayed via several of the attributes defined within the specification such as ownerAuthority or speedLimits.

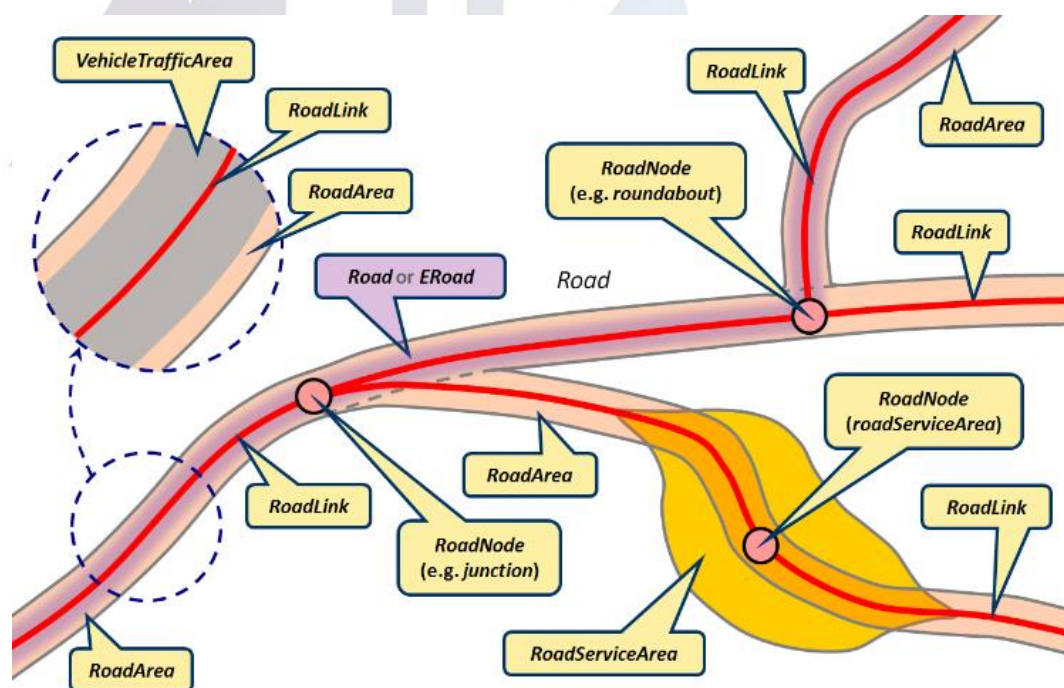An overview of the main INSPIRE Road Transport Networks objects is shown in Figure 18.

Figure 18: Example of use elements forming the INPSIRE Road Transport Network (INSPIRE)

The document *D2.8.I.7 INSPIRE Data Specification on Transport Networks – Guidelines* contains detailed technical documentation of the data specification highlighting the mandatory and recommended elements related to the implementation of INSPIRE, the

document is aimed at organisations that are / will be responsible for implementing INSPIRE in the field of Transport Networks.

An initial review has highlighted that many static data types defined in priority action (b) are included in INSPIRE, Table 4, although some are not exact matches and there are multiple options in some cases. Further research in this is required to link the work of INSPIRE to priority action (b).

Static data types - priority action (b)	Types defined in the INSPIRE feature catalogue
Geometry	RoadLink
Road width	RoadWidth
Number of lanes	NumberOfLanes
Gradients	-
Junctions	RoadNode
Road classification	FunctionalRoadClass / FormOfWay
Access conditions for tunnels	AccessRestriction / RestrictionForVehicles
Access conditions for bridges	AccessRestriction / RestrictionForVehicles
Permanent access restrictions	AccessRestriction / RestrictionForVehicles
Other traffic regulations	AccessRestriction / RestrictionForVehicles
Speed limits	speedLimits
Traffic circulation plans	-
Freight delivery regulations	deliveryTruck
Location of tolling stations	RoadServiceArea / AccessRestriction / RoadServiceTypeValue
Identification of tolled roads and applicable static road user charges	RoadServiceType
Location of parking places and service areas	RoadServiceType / RoadServiceTypeValue
Location of charging points for electric vehicles and the conditions for their use	-
Location of compressed natural gas, liquefied natural gas, liquefied petroleum gas stations	-
Location of public transport stops and interchange points	ConnectionTypeValue / RoadServiceTypeValue / RailwayStationArea
Location of delivery areas	RoadServiceArea

Table 4: comparison between priority action (b) static data types and INSPIRE data types

7. Issues requiring consideration

Progress is being made on SPA implementation. As the delegated regulations for SRTI and truck parking came into force in October 2015, several Member States have already implemented national access points. This section outlines the issues highlighted as constraints to Member States implementation of priority action (b) during the course of the project and areas where progress in harmonised SPA implementation will be taken forward in in the future.

> **KEY MESSAGE:**
> - Current *constraints* identified relate to *resources, regulation, legislation, interpretation* and *data consistency & organisation*
> - Committed *future tasks* will progress: *assessing compliance, metadata harmonisation, definition of DATEX II profiles, ITS spatial road data* and *SPA monitoring*

7.1. Constraints

Through the information gathering exercises SPA stakeholders have provided feedback and commented on the practical implementation and potential limiting factors in providing a SPA for RTTI.

7.1.1. ORGANISATION AND IMPLEMENTATION

Constraints associated with SPA organisation and implementation relate to resources, regulation, legislation and interpretation.

Member States need adequate resources (personnel and funding) to plan, set-up and maintain a SPA. Data providers also need resources to deliver the required information to the SPA (e.g. metadata, data quality information, compliance assessment). As stated in Section 5.2.6 Member States are required to put in place process for assessment of compliance, this is likely to involve cooperation with another body / department, and will again require adequate time, planning and resources. These resources may be limited.

If the SPA is not planned and executed efficiently implementation and operation could become onerous with additional effort for the parties involved. There are also challenges in establishing effective processes to engage with all stakeholders and users of the data.

Where concessionaires are identified as relevant data providers it is unlikely there will be provision in existing contractual agreements to fully meet the requirements of priority action (b), therefore amendments to existing agreements may need to be made. Provision for the required data supply, updates and declarations will need to be included in future contracts. Where changes in national laws are required this can be a lengthy process.

Some authorities and organisation may be used to operating in risk adverse cultures where previously the majority of their data had restricted access, making this data

accessible and more widely available could be a source of concern, they fear this could lead to questions on internal processes or data quality for example.

Aspects of the Delegated Regulation can be interpreted differently by different Member States which could impact on the services to end users; for example a data user implementing a RTTI service across multiple Member States may not be aware of national quality control or assessment of compliance procedural differences affecting their ability to provide a seamless, consistent level of service.

7.1.2. DATA

Priority action (b) lists 41 types of data, for the majority of these there are no agreed European definitions or standardised formats. This is a particular issue for static road data types where the priority action states the data collected should be provided in a standardised format, or any other machine readable format - but no standardised format currently exists.

Data availability is also complicated on the TERN for many Member States, there are regional authorities collecting and holding road and traffic data in different databases, locations, formats, with different access restrictions; and private and public/private companies also having responsibility for collecting road and traffic data, again in various databases and locations. Including 'priority zones' in the scope of the SPA could increase the complexity of the data situation further. Significant coordination and willing partnerships are required to achieve the data accessibility, exchange and update requirements of a successful SPA.

7.2. Future work

It has not been possible during the course of the EIP+ 3.2 Activity to provide a full harmonisation proposal for SPA for RTTI. Several areas have been identified for future work and will be progressed from 2016 onwards; this work will focus on metadata harmonisation, DATEX II and SPA monitoring.

7.2.1. HARMONISATION

Metadata is a key aspect of priority action (b), therefore metadata harmonisation will be a key feature in the future of SPA implementation. As stated in section 6.2.2 the metadata catalogue will be frozen for one year of evaluation. The metadata working group will implement the catalogue and, following evaluation, modifying the metadata repository and search functions. Other Member States have already expressed interest in considering the catalogue in their SPA implementations, feeding back their experiences to the group. Ultimately, with a harmonised metadata set, it will be possible to communicate requests and search results from one SPA to another.

Many data providers and data users will be operating in several European countries, they could therefore potentially be required to complete 28 different declaration of compliance, metadata and quality documents. Section 6.1 provides initial key elements to be included

in the declaration of compliance, this will be developed and refined further in EU EIP to make this process as time and cost efficient as possible.

7.2.2. DATA EXCHANGE

As noted in Section 6.3 due to the complexity of the data categories in priority action (b) harmonised DATEX II profiles could not be developed.

Relevant EW Deployment Guidelines on Traffic Condition and Travel Time Information were analysed to see if it can be used to define a complete profile for the dynamic road status and traffic data mentioned in the RTTI Regulation.

More specifically the analysis of the DGs was split into the following areas:

- Traffic Condition and Travel Time Information

- Forecast and Real-Time Event Information

- Weather Information

Concerning the first and second areas, profiles for some elements mentioned in the Delegated Regulation were identified. These profiles are a good basis for further enhancement. However there are also elements for which there are no profiles, so they need to be created. This is also the case for the third category, where no profiles could be identified.

Investigation will also be carried out to map the links between the current metadata catalogue and DATEX II, to determine if it is possible DATEX elements can be used to limit free text and improve machine readability.

7.2.3. EU EIP SPA MONITORING

Looking towards 2016-2020 there will be continuation in SPA related activities through *Sub-Activity 4.6: Monitoring and Harmonisation of Single Point of Access*. This sub-activity is intended to monitor the ongoing implementation of SPAs, to learn from each other and to harmonise SPA services across Europe. Currently SPAs are being implemented in various Member States, but they vary in approach, data availability (links, metadata, and database), assessment of compliance, etc. Therefore Sub-Activity 4.6 of the EU EIP project aims at monitoring the developments of Single Points of Access, contribute to the harmonisation and act as a knowledge centre for Member States, SPA operators and Nominated Bodies with respect to Single Points of Access.

7.2.4. EU EIP PROVISION OF UPDATES OF ITS SPATIAL ROAD DATA

Sub-activity 4.7: Provision of updates of ITS spatial road data will support Member States and ITS map providers in the implementation of priority action (b) for the elements related to static road data.

The activity will implement a pilot TN-ITS service for the provision of updates of ITS spatial road data in five Member States, study the best approaches to extend the service, and to install solid procedures for instantaneous updating of the spatial data store.

7.2.5. OUT OF SCOPE

Topics for future work that have been identified as benefitting harmonised implementation of SPA for RTTI but are not currently in the scope of agreed future projects include:

- Agreed definitions of data types relevant to priority action (b), formulation of basic definitions and descriptions that could be agreed and applied in all Member States.

8. References

Action Plan for the Deployment of Intelligent Transport Systems in Europe COM(2008) 886 final
http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52008DC0886&from=EN

Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport
http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010L0040&from=EN

TISA - Terms and Definitions for the Traffic and Travel Information Value Chain
http://www.tisa.org/assets/Uploads/Public/EO12013TISADefinition-ITS-value-chain20121018.pdf.

COMMISSION DELEGATED REGULATION (EU) 2015/962 of 18 December 2014 supplementing - Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of EU-wide real-time traffic information services
http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2015.157.01.0021.01.ENG

COMMISSION STAFF WORKING DOCUMENT - The provision of EU-wide real-time traffic information services
Accompanying the document - Commission Delegated Regulation supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of EU-wide real-time traffic information services {C(2014) 9672 final}
http://ec.europa.eu/transport/themes/its/news/doc/2014-12-18-rtti/swd%282014%29356.pdf

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions
Open data - An engine for innovation, growth and transparent governance
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0882:FIN:EN:PDF

DIRECTIVE 2003/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the re-use of public sector information, November 2003
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:345:0090:0096:en:PDF

Sub-Activity 3.1 - Harmonized concept of Single Point of Access for Truck Parking and Safety Related Traffic Information, Version 1.0, 14 April 2015

SPA – Coordinated Metadata Catalogue: Cooperation AT, DE and NL

DATEX II Guide for Road-Safety Related Traffic Content in DATEX II
http://www.datex2.eu/content/datex-ii-guide-road-safety-related-traffic-content-datex-ii

D2.8.I.7 INSPIRE Data Specification on Transport Networks – Guidelines
http://inspire.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_TN_v3.0.pdf

Annex 1 – Online questionnaire

June 12th 2015: This questionnaire is intended to identify EU Member States' visions and expectations concerning the Single or National Point of Access (SPA) for Real Time Traffic Information, These so-called SPA's are expected to be implemented in the coming years as a result of the EC's Delegated Regulation on Real Time Traffic Information, following the EC's Directive 2010/40/EU (the "ITS Directive").

We appreciate that you will take the time to complete this questionnaire. Please respond before July 1st. If necessary, please contact your colleagues for specific areas of this questionnaire, for example in the field of DATEX or Metadata.

If you have any questions about the questionnaire, please contact Mr. Enrico Ferrante (enrico.ferrante@autovie.it).

For general questions about the EIP+ project and in particular the activity 3.2 on Single Point of Access please contact Mr. Louis Hendriks (Louis.hendriks@rws.nl).

Information about the participant

Please provide your Country
Name of your organisation
Please indicate the type of organisation

Private company	
Public authority	
Professional association	
Consumer organisation	
Private/Public	
Other	

Please categorise your organisation as most appropriate

Public administration	
Road authority	
Road operator	
Academic institution	

It is important to ensure the provision of EU-wide real-time traffic information services?

Strongly agree	
Agree	
Disagree	
Strongly disagree	
Undecided	

Knowledge on Directive 2010/40/EU (the "ITS Directive") and SPA related priority actions

Following the ITS Directive (2010/40/EU), a number of EC regulations refer to National or Single Points of Access (SPA). For example Delegated Regulations 885/2013 for Safe and Secure Truck Parking (spec 'e'), Delegated Regulation 886/2013 for Safety Related Traffic Information (spec 'c') and the new/expected Delegated Regulation on Real Time Traffic Information (spec 'b').

What is your level of knowledge of the ITS Directive?

good	
medium	
weak	
undefined	

COMMISSION DELEGATED REGULATION (EU) No 886/2013 with regard to data and procedures for the provision, where possible, of road safety-related minimum universal traffic information free of charge to users

What is your level of knowledge of the Delegated Regulation mentioned above?

Harmonisation Proposal: Single Point of Access for RTTI

good	
medium	
weak	
undefined	

The European Commission has proposed on Dec. 18th 2014 new rules which will help provide road users across the EU with more accurate, accessible and up-to-date traffic information related to their journeys (Real-Time Traffic Information). This regulation is likely to be adopted in June 2015. This can include static road data information about expected delays, estimated travel times, information about accidents, road works and road closures, warnings about weather conditions and any other relevant information

What is your level of knowledge of the document mentioned above?

good	
medium	
weak	
undefined	

Do You know what a Single Point of Access (SPA) is?

Yes	
No	
Undefined	

Data availability in relation to Real Time Traffic Information

The European Commission in the Delegated Regulation mentioned above establishes the specifications necessary to ensure the accessibility, exchange, re-use and update of road and traffic data for the provision of real-time traffic information services in the European Union. The Delegated Regulation on Real Time Traffic Information mentions 3 types of data, i.e. static road data, dynamic road data and traffic data. The Delegated Regulation will be applicable to the comprehensive trans-European road network with addition of other motorways and priority zones identified by national authorities. The Delegated Regulations states that only those data need to be made accessible through the SPA that are available.

To which degree will STATIC data (geometry, number of lanes, road classification, access conditions, speed limits, toll roads, locations of parkings, etc.) in general be available in your country to generate and provide real-time traffic information services to users and it will be accessible through the SPA? Select your choice

	Very easy	Easy	Difficult	Very difficulty	Not available at all	Don't know
Static data availability						

If possible please indicate specifically to which degree the various types of static data will be available for generating and providing real-time traffic information services to users?

	Very easy	Easy	Difficult	Very difficulty	Not available at all	Don't know
geometry						
road width						
number of lanes						
gradients						
junctions						
road classification						
access conditions for tunnels						

Harmonisation Proposal: Single Point of Access for RTTI

access conditions for bridges						
permanent access restrictions						
other traffic regulations						
speed limits						
traffic circulation plans						
freight delivery regulations						
location of tolling stations						
identification of tolled roads, applicable fixed road user charges and available payment methods						
location of parking places and service areas						
location of charging points for electric vehicles and the conditions for their user						
location of compressed natural gas, liquefied natural gas, liquefied petroleum gas stations						
location of public transport stops and interchange points						
location of delivery areas						

To which degree will DYNAMIC data (road/lane closure, bans, roadworks, accidents and incidents, poor road conditions, etc.) in general be available in your country to generate and provide real-time traffic information services to users?

	Very easy	Easy	Difficult	Very difficulty	Not available at all	Don't know
Dynamic data availability						

If possible please indicate specifically to which degree the various types of dynamic data will be available to generate and provide real-time traffic information services to users?

	Very easy	Easy	Difficult	Very difficulty	Not available at all	Don't know
road closure						
lane closure						
bridge closure						
overtaking bans on heavy goods vehicles						
road works						
accidents and incidents						
dynamic speed limits						
direction of travel on reversible lanes						
poor road conditions						
temporary traffic management measures						
variable road user charges and available payment methods						
availability of parking places						
availability of delivery areas						
cost of parking						

availability of charging points for electric vehicles					
weather conditions affecting road surface and visibility					

To which degree will TRAFFIC data (traffic volume, speed, traffic queues, travel times, etc.) in general be available in your country to generate and provide real-time traffic information services to users?

	Very easy	Easy	Difficult	Very difficulty	Not available at all	Don't know
Traffic data availability						

If possible please indicate specifically to which degree the various types of traffic data will be available to generate and provide real-time traffic information services to users?

	Very easy	Easy	Difficult	Very difficulty	Not available at all	Don't know
traffic volume						
speed						
location and length of traffic queues						
travel times						
waiting time at border to non-EU Member States						

Which type of data would be available to generate and provide road safety-related traffic information also?

	Very easy	Easy	Difficult	Very difficulty	Not available at all	Don't know
temporary slippery road						
animal, people, obstacles, debris on the road						
unprotected accident area						
short-term road works						
reduced visibility						
wrong-way driver						
unmanaged blockage of a road						
exceptional weather conditions						

Single Point of Access (SPA)

Do you already have established a SPA in your country?

	yes	no
for priority action 'c': safety related traffic information		
for priority action 'e': safe and secure truck parking		
for priority action 'b': real time traffic information		

If you have not yet established a SPA in your country, do you plan to have one in operation?

Harmonisation Proposal: Single Point of Access for RTTI

	yes, within 6 months	yes, within 1 year	yes, within 2 years
for priority action 'c': safety related traffic information			
for priority action 'e': safe and secure truck parking			
for priority action 'b': real time traffic information			

What type of SPA do you plan for the Delegated Regulation on Real Time Traffic Information?

web-links and metadata	
web-links and database with metadata	
others	

If others, please specify
What kind of services are already available in your country?

Have you combined, or do you plan to combine, the SPA for priority 'b' (Real Time Traffic Information) with the SPA for priorities 'c' (Safety Related Traffic Information) and/or 'e' (Safe and Secure Truck Parking)?

Yes	
No	
Undefined	

Do you plan a public or private organisation of SPA for the Delegated Regulation on Real Time Traffic Information?

Public	
Private	
other	

Could you explain why Public or Private

Have you/do you plan to assign priority zones for which SPA will also be applicable (apart from the comprehensive network and motorways)?

The specifications and the services for RTTI should be applies to the comprehensive trans-European road network and motorways not included in this network as well as to priority zones identified by the national authorities where they consider this to be relevant

Yes	
No	
Undecided	

If yes, could you define the priority zones you have/plan to assign?

Which organisation will host the SPA

public road operator	
private road operator	
existing service provider	
independent third party	
other	

If other, please specify

DATEX II

Will you use DATEX II profiles in relation to data mentioned in the Delegated Regulation on Real Time Traffic Information mentioned above (priority 'b')?

Yes ☐
No ☐
Undecided ☐

What DATEX II profiles in relation to Real Time Traffic Information do you have in Your Country?

Are you willing to share these profiles?

Yes ☐
No ☐
Undefined ☐

If yes, is it available on the DATEX II web site?

Yes ☐
No ☐
Undefined ☐

For the SPA on Real Time Traffic Information it might be useful to develop additional DATEX II profiles. If we would like to discuss this with a DATEX expert in your country, whom can we contact?

Metadata

Will you use metadata in relation to data mentioned in the Delegated Regulation on Real Time Traffic Information mentioned above (priority 'b')?

Yes ☐
No ☐
Undefined ☐

Did you define a set of metadata relevant for Real Time Traffic Information in your country?

Yes ☐
No ☐
Undefined ☐

If yes, are you willing to share it?

Yes ☐
No ☐
Undefined ☐

Are you familiar with the concept list of metadata developed by the EIP project

Yes ☐
No ☐
Undefined ☐

Do you consider to use them

Yes ☐
No ☐
Undefined ☐

For the SPA on Real Time Traffic Information it might be useful to develop Metadata schemas. If we would like to discuss this with a Metadata expert in your country, whom can we contact?

Do you think that with the systems you have, you can provide the data required by the delegated act?

Yes ☐
No ☐
Undefined ☐

Legislation

Can or do you oblige concessionaires to deliver the data to SPA?

Yes ☐

Harmonisation Proposal: Single Point of Access for RTTI

No

Undefined

If Yes, how do you can oblige the concessionaires?

Do you need/intend to adapt your national law?

Yes

No

Undefined

if yes, please specify

Based on your current experience and systems, do you foresee any problems in implementing a SPA for priority action B?

Yes

No

Undefined

If Yes, could You list or describe it?

Do you consider an useful and effective way that set up a National Access Point, providing access to data collected and stored by road authorities, road operators, ITS service providers and digital map producers operating on their territory, and that it will facilitate access to real-time traffic data?

Strongly agree

Agree

Disagree

Strongly disagree

Undecided

Do you have a view on the costs of setting up a national access point?

Yes

No

If yes: cost of setting up SPA for priority action 'b'
Please input a value in Euro

Cost of setting up a SPA for priority action 'b'
Please comment

Do you have a view on the costs of operating a national access point?

Yes

No

If yes: Annual costs of operating a SPA for priority action 'b'
Please input a value in Euro

Annual costs of operating a SPA for priority action 'b'
Please comment

Would you agree that real-time traffic information generated by any service provider (public or private) should be made available to public road authorities under specific agreements as needed

Strongly agree

Agree

Harmonisation Proposal: Single Point of Access for RTTI

Disagree		
Strongly disagree		
Undecided		

Please rank the quality criteria you consider as the most important (1) to least important (5) for real time traffic information services

	1	2	3	4	5
Geographical accuracy					
Time accuracy / up-to-dateness					
Timeliness / speed of delivery					
Usefulness					
Completeness					
Consistency					

Do you have any questions with respect to the Delegated Regulation on Real Time Traffic Information?

Yes	
No	
Undefined	

If Yes, describe it

Do you have suggestions for harmonization with respect to the Delegated Regulation on Real Time Traffic Information

Yes	
No	
Undefined	

If Yes, describe it

Do you know any relevant national study or plan with respect to the implementation of the Delegated Regulation on Real Time Traffic Information that you can share (e.g. impact study, organisational plan)?

Yes	
No	

If yes, can you provide them to the EIP+ activity 3.2 leader: louis.hendriks@rws.nl?

If you already have established a SPA for 'c' or 'e', what lessons have you learnt that can also be used for the implementation of a SPA for real time traffic information ('b')?

Thank you for your cooperation. Your input will be used for a SPA workshop in Bucharest on September 23rd, 2015 and in our report on SPA harmonisation. We will also organize a SPA session at the EIP+ Forum in Rome on November 26th/27th, 2015. See announcement attached. If you are interested, please send an e-mail to Louis Hendriks, Leader of the EIP+ activity 3.2: louis.hendriks@rws.nl

EIP+ Activity 3.2 Working Group

The online version of this questionnaire can be found on the web following the link:

EIP+ Activity 3.2 - Single Point of Access for Real Time Traffic Information - Questionnaire on line

Annex 2 - Metadata Proposal according to the Metadata Initiative of Germany, Austria and the Netherlands

Minimum Set of Metadata as proposed by the Coordinated Metadata Catalogue: metadata elements and their characteristics (source: Coordinated Metadata Catalogue)

Name of Metadata element	Mandatory for Nation	Type of Value	Technical Description	Example
Metadata Date	True	DateTime	YYYY-MM-DD'T'hh:mm:ssTZD; NOT NULL	2015-10-23T09:00:00+01:00
Metadata language	True	Predefined Text	Predefined EU24 Language set ISO 639-2 conform; multiple choice; NOT NULL	ger; eng
Contact point for metadata (name)	False	Free text	Text; utf8; NULL	Hans Maier
Contact point for metadata (organisation name)	True	Free text	Text; utf8; NOT NULL	Data GmbH
Contact point for metadata (address)	False	Free text	Text; utf8; NULL	Data street 1, Vienna
Contact point for metadata (e-mail)	True	Free text	Text; utf8; NOT NULL	hans@data.at
Contact point for metadata (website)	False	Free text	Text; utf8; NULL	http://data.at
Contact point for metadata (telephone)	False	Free text	Text; utf8; NULL	+49 123 456 789
Name of dataset	True	Free text	Text; utf8; NOT NULL	Highway network Austria
Description of dataset	True	Free text	Text; utf8; NOT NULL	Contains static high priority network of Austria, Link information: Name, Lane number, Direction
Dataset type category	True	Predefined Text	Predefined 15 data categories; Lookup Table; multiple choice; NOT NULL	Real-time traffic data
Dataset detailed type	True for self declaration	Predefined Text	Predefined 50 data types; Lookup Table; multiple choice; NULL	Travel times
Dataset language	True	Predefined Text	Predefined EU24 Language set; single choice; NOT NULL	ger
Start date of publication	True	DateTime	YYYY-MM-DD'T'hh:mm:ssTZD;	2015-10-23T09:00:00+01:00

Harmonisation Proposal: Single Point of Access for RTTI

			NOT NULL	
End date of publication	False	DateTime	YYYY-MM-DD'T'hh:mm:ssTZD; NULL	2015-10-23T09:00:00+01:00
Area covered by publication	True	Predefined Text	Predefined NUTS 0 – 3 Codes; UTF8; multiple choice; NOT NULL	AUT11; AUT12; AUT13
Network coverage	True	Predefined Text	Predefined; UTF8; multiple choice; NOT NULL	Motorway
Network coverage description	False	Free text	Text; utf8; NULL	structural separated bidirectional lanes, 2 to 4 lanes, minimum speed 80
Publisher (name)	True	Free text	Text; utf8; NOT NULL	Hans Maier
Publisher (organisation name)	True	Free text	Text; utf8; NOT NULL	Data GmbH
Publisher (address)	True	Free text	Text; utf8; NOT NULL	Data street 1, Vienna
Publisher (e-mail)	True	Free text	Text; utf8; NOT NULL	hans@data.at
Publisher (website)	False	Free text	Text; utf8; NULL	http://data.at
Publisher (telephone)	True	Free text	Text; utf8; NOT NULL	+49 123 456 789
Data owner (name)	False	Free text	Text; utf8; NULL	Hans Maier
Data owner (organisation name)	True	Free text	Text; utf8; NOT NULL	Data GmbH
Data owner (address)	False	Free text	Text; utf8; NULL	Data street 1, Vienna
Data owner (e-mail)	True	Free text	Text; utf8; NOT NULL	hans@data.at
Data owner (website)	False	Free text	Text; utf8; NULL	http://data.at
Data owner (telephone)	True	Free text	Text; utf8; NOT NULL	+49 123 456 789
Contract or license	True	Predefined Text	Predefined; UTF8; single choice; NOT NULL	License
Condition for use	True if contract or licence is used	Free text	Text; utf8; NULL	http://data.at/terms.pdf
Structure of publication	True	Predefined Text	Predefined; single choice; utf8; NOT NULL	Datex II XML
Publication	True	Free text	Predefined; single	http://data.at/

structure description			choice; utf8; NOT NULL	tech_description.pdf
Access interface	True	Free text	Predefined; single choice; utf8; NOT NULL	SOAP
Communication method	True	Free text	Predefined; Multiple choice; utf8; NOT NULL	Push
Access URL	True	Free text	Text; utf8; NOT NULL	http://data.at/access.csv
Update frequency	True	Free text	Predefined; Single choice; utf8; NOT NULL	Up to 1min
Quality indicator	True	Free text	Text/URL; UTF8;Not NULL	According to the EIP+ quality measures
National Body assessment date	False	DateTime	YYYY-MM-DD'T'hh:mm:ssTZD; NULL	2015-10-23T09:00:00+01:00

Proposed Dataset Types (source: Coordinated Metadata Catalogue)

Dataset type (Category)	Detailed information (necessary for self-declaration)	Priority action
Static road network data	Geometry	Action B: RTTI
	Road width	
	Number of lanes	
	Gradients	
	Junctions	
	Road classification	
Traffic signs expressing traffic regulations and identifying dangers	Access conditions for tunnels	Action B: RTTI
	Access conditions for bridges	
	Speed limits	
	Permanent access restrictions and other traffic regulations	
	Other traffic regulations	
	Traffic circulation plans	
Toll information	Location of tolling stations	Action B: RTTI
	Identification of tolled roads and applicable static road user charges	
	Variable road user charges	
Parking information	Location of parking places and service areas	Action B: RTTI
	Availability of parking places	
	Cost of parking	
Filling and charging stations	Location of charging points for electric vehicles and the conditions for their use	Action B: RTTI
	Location of compressed natural gas, liquefied natural gas, liquefied petroleum gas stations	
	Availability of charging points for electric vehicles	
Freight logistics	Freight delivery regulations	Action B: RTTI
	Location of delivery areas	
	Availability of delivery areas	
Location of public transport stops and interchange points	Location of public transport stops and interchange points	Action B: RTTI
Dynamic access information	Road closures	Action B: RTTI
	Lane closures	
	Bridge opening hours	
Temporary traffic regulation	Direction of travel on reversible lanes	Action B: RTTI
	Dynamic overtaking bans on heavy goods vehicles	
Road Work information	Road works	Action B: RTTI

Harmonisation Proposal: Single Point of Access for RTTI

Unexpected events and conditions (not being safety related)	Accidents and incidents	Action B: RTTI
	Poor pavement conditions	
	Weather conditions affecting road surface and visibility	
Traffic management measures	Dynamic access conditions for tunnels	Action B: RTTI
	Dynamic access conditions for bridges	
	Dynamic Speed limits	
	Dynamic access restrictions and other traffic regulations	
	Temporary traffic management measures	
	Traffic management plans	
Real-time traffic data	Traffic volume	Action B: RTTI
	Speed	
	Travel times	
	Locations of queues	
	Traffic data at border crossings to third countries	
	Estimated travel times	
	Waiting time at border crossings to non-EU Member States	
	Expected delays	
Safety Related Traffic Information	Temporary slippery road	Action C: SRTI
	Animal, people, obstacle, debris on the road	
	Unprotected accident area	
	Short term road works	
	Reduced visibility	
	Wrong-way driver	
	Unmanaged blockage of a road	
	Exceptional weather conditions	
Truck parking information	Static Truck parking information	Action E: ITP
	Dynamic Truck parking information	

Annex 3 – List of abbreviations

AA	Automobile Association
CE	Conformité Européene
CEN / TS	European Committee for Standardization / Technical Specification
DCAT - AP	Data Catalog Vocabulary - Application Profile
DfT	Department for Transport, UK
DG	Deployment Guideline
DPER	Department of Public Expenditure and Reform, Ireland
DTTAS	Department of Transport Tourism And Sport, Ireland
EC	European Commission
EIP	European ITS Platform
EU	European Union
INSPIRE	Infrastructure for Spatial Information in the European Community
IT	Information Technology
ITS	Intelligent Transport Systems
JSON	JavaScript Object Notation
MDM	Mobility Data Marketplace, Germany
MS	Member State
NAP	National Access Point
NDW	National Data Warehouse for Traffic Information, the Netherlands
NSAI	National Standards Authority of Ireland
NTA	National Transport Authority, Ireland
NUTS	Nomenclature of Units for Territorial Statistics
NWB	National Roads Database, the Netherlands
RDW	Dutch Vehicle Authority
REST	REpresentational State Transfer
RTTI	Real-Time Traffic Information
SME	Small and medium-sized enterprises
SPA	Single Point of Access
SRTI	Safety Related Traffic Information
TERN	trans-European road network
TII	Transport Infrastructure Ireland
TISA	Traveller Information Services Association
TRAFI	Finnish Transport Safety Agency
TTS	Telematica Trasporti e Sicurezza, Italy
URL	Uniform Resource Identifier
VCA	Vehicle Certification Agency, UK
XML	Extensible Markup Language