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National Access Points: Challenges for Success

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Abstract

Over the past years, the European Commission has published several Delegated Regulations with the aim to speed up the development of EU-wide interoperable travel and traffic services to end users, based on mainly existing digital data. As a consequence of these delegated regulations Member States have to set up National Access Points (NAP) that function as nodal points for (access to) data. This paper describes the current status of implementation of the NAPs across Europe, based on a survey carried out within the European ITS Platform project (EU EIP). In relation to these NAPs three other relevant aspects are described in more detail, i.e. the Level of Service of NAPs, metadata and the assessment of compliance with respect to the delegated regulation. This paper concludes with a number of challenges that can be observed, and which hamper the success of the National Access Points to date.

Keywords:

Open data, access point, metadata, ITS Directive, interoperability

Delegated Regulations and National Access Points

Following from the ITS Action Plan [1] in 2008, the ITS Directive [2] was adopted on 7 July 2010. The ITS Directive provides the framework to accelerate and coordinate the deployment of ITS for road transport and interfaces with other modes. Specifically, it is intended to improve system interoperability, ensure seamless mobility, foster continuity of services and set up an efficient cooperation mechanism between all ITS stakeholders. Since 2010 five Delegated Regulations have been adopted, listed below (with the publication date in brackets):

- harmonised provision for an interoperable EU-wide eCall (2012) [3]
- provision of information services for safe and secure parking places for trucks and commercial vehicles (2013) [4]
- data and procedures for the provision, where possible, of road safety-related minimum universal traffic information free of charge to users (2013) [5]
- provision of EU-wide real-time traffic information services (2015) [6]
- provision of EU-wide multimodal travel information services (2017) [7]

Regarding travel and traffic services to end users, Delegated Regulations key themes are compatibility, interoperability and continuity. The development of National Access Points (NAPs) is an important tool to advance these themes; by improving accessibility, more widespread sharing and exchange of data, and encouraging greater reuse of existing datasets.

The benefit of such a tool is best shown in the following figure, explaining how data exchange between different parties can be eased with a NAP. This way, a NAP can be seen as an intermediary in the data ecosystem.

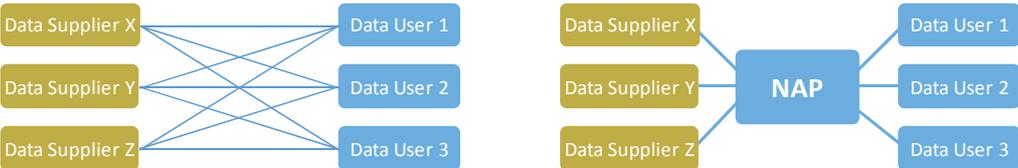


Figure 1: Concepts of data exchange without a NAP (left) and with a NAP (right)

The latter Delegated Regulations also state the importance of discovery services to allow dataset searching, and metadata to properly describe the content and structure of the data. Further, Member States are responsible for the assessment of compliance with the requirements, with organizations responsible for relevant datasets required to complete a declaration of compliance, providing details of their datasets, including quality aspects, to demonstrate they are fulfilling their obligations.

EU EIP Sub-activity 4.6

The “EU ITS Platform” (EU EIP) is the place where National Ministries, Road Authorities, Road Operators and partners from the private and public sectors of almost all EU Member States and neighbouring countries, cooperate in order to foster, accelerate and optimise current and future ITS deployments in Europe in a harmonised way.

The “EU ITS Platform” brings together the majority of the European key players, cooperating to establish an open "forum", aiming at providing valid contribution for the future strategy and policy recommendation for better development and deployment of ITS service along European road Corridors. By monitoring, processing, evaluating and disseminating results delivered by the ITS Road Corridor projects (the Works projects that are co-funded by EC within the CEF MAP ITS Calls), the EU ITS Platform can be considered as the technical European ITS "Knowledge Management Centre", contributing significantly to the most effective use of ITS standards and specifications.

Sub-activity 4.6 of the EU EIP project (SA 46) is intended to monitor the on-going implementation of NAPs, to learn from each other and to harmonise NAP services across Europe. This activity builds on the earlier work in EIP and EIP+ [8], [9], [10]. Currently NAPs are being implemented in various Member States, but they vary in approach, data availability (links, metadata, database), assessment of compliance, etc. The *objectives* of the sub-activity therefore are the following:

- Monitor development of NAPs across Europe, identify improvement needs, make

recommendations;

- Harmonise the approach towards NAPs in Europe, among others in the field of metadata, DATEX II, common approaches on quality assurance and assessment of compliance;
- Knowledge exchange between the various Member States in the field of NAPs.

Current status of implementation of NAPs

On an annual basis, EU EIP SA46 collects information from the Member States on the status of implementation of their National Access Points. This status as per December 2017 is shown in the table below.

Table 1 - Status of NAP implementation for

Country	NAP SSTP*	NAP SRTI*	NAP RTTI*	NAP MMTI*
AT	Operational	Operational	Operational	Planned (2017/2018)
BE	Operational	Planned		
CY	Not operational	Not operational or planned**	Operational	Planned (Q2 2018)
CZ	Not operational	Operational	Operational	
DE	Operational	Operational	Operational	
DK	Operational	Operational	Operational	Planned (2019)
ES	Operational	Operational	Operational	
FI	Not operational or planned**	Operational	Operational	Planned (Q1 2018)
FR	Operational	Operational	Operational	
GR	Planned (Q4 2018)	Planned (Q4 2018)	Planned (Q4 2018)	Planned (Q4 2018)
HR	Planned (Q4 2019)	Planned (Q4 2019)	Planned (Q4 2019)	
HU	Planned (Q4 2018)	Planned (Q4 2018)		
IE	Not operational	Operational	Operational	
NL	Operational	Operational	Operational	
NO	Not operational	Operational	Operational	Planned (Q4 2019)
PO	Planned (Q4 2018)	Operational		
PT	Planned (Q1 2018)	Operational	Planned (Q1 2018)	
RO	Planned (Q4 2018)	Planned (Q4 2018)	Planned (Q4 2018)	
SE	Operational	Operational	Operational	Pre-study ongoing
SL	Operational	Operational	Operational	Planned 2020
UK	Not operational	In progress	Operational	

* *Safe and Secure Truck Parking (SSTP), Safety Related Traffic Information (SRTI), Real Time Traffic Information (RTTI) and Multimodal Travel Information (MMTI).*

** *Member State indicated that specific NAP is not needed given specific circumstances*

Based on a comparison between 2016 and 2017 it can be concluded that the initial implementation of NAPs was rather slow, with first implementations in Northwest Europe. However, the table clearly shows that Southern and Central European countries are picking up now. A more in-depth analysis of the NAPs across Europe shows that these NAPs vary largely in their scope and set up. Some NAPs build on earlier experiences of Traffic Information Centres, whereas other NAPs are created completely from scratch. Also, some countries follow a ‘minimum’ approach, simply fulfilling the minimum requirements set out in the Delegated Regulations, whereas other countries invest in an extensive National Access Point infrastructure, adding data processing or IT security features. In all cases, however, there is the intention to open up the available traffic data in the hope that new services for the end-users will be developed by the market. A more detailed analysis of the status of implementation of the NAPs in Europe can be found in the NAP Annual Report 2017 [11].

NAP Common Features and Level of Service of NAPs

A task dedicated to NAP common features and Level of Service has been undertaken to support the development and utilisation of individual NAPs. A key deliverable of this task was the *NAP Common Features and Level of Service - Support Document*, published in March 2018 [12]. The document has been written for organisations responsible for NAPs, to support their work and to help ensure NAPs are practical and functional for all users, thus enabling future end-user services. It describes a set of features intended to support good practice, help make existing and future NAP services available to a wider audience, facilitate data sharing, and promote the discovery of datasets. The features can be applied to all NAP structures.

With the input of current NAP implementers, ITS experts and related initiatives such as W3C, the document describes a set of 18 features grouped into five subsets:

1. *Access*: there are five features; including gaining access to the NAP, navigation, language, NAP security and data publisher registration.
2. *Communication*: there are four features; including user help facilities, informing users of terms and conditions, raising awareness and promoting the NAP.
3. *Finding datasets*: there are three features; covering discovery services and metadata to help data consumers find datasets.
4. *Update and maintenance*: there are three features; covering maintenance of the NAP service (e.g. IT, hardware, software), updating NAP metadata, and NAP monitoring and evaluation.
5. *Dataset information*: there are three features; including adding dataset descriptions, documentation and using standard/controlled vocabularies.

The features are described as either required or nice to have. The required features are considered to have higher priority to current NAP development. Each feature has a description, reasons for being included, examples, and benefits, an example shown in figure 2. The document also contains an implementer ‘check list’ to record the features currently included in NAP implementations.

The document has been made publically available and is now being promoted to NAP implementers, both where services have been established and are still in the planning phases; for testing,

usability feedback and comment on the practical applicability of the features.

2.1.3. NAP IS PROVIDED IN THE NATIONAL LANGUAGE AND COMMONLY USED LANGUAGE(S) OF THE MEMBER STATE

Description

Text in the NAP is provided in national language and commonly used language(s) of the Member State. Providing NAP text in additional languages will further increase accessibility.

This feature is considered **required**.

Reason

The NAP will be easily understood and accessible by, at minimum, native speaking data consumers and data publishers.

By providing the dataset information and descriptions in multiple languages, the NAP is more accessible to the whole of Europe.

Example

Austrian NAP (<http://www.mobilitaetsdaten.gv.at/>) provides information in German and English.



Benefits

A Access

C Comprehension

D Discoverability

Figure 2: Example NAP Common Feature and Level of Service

Harmonised metadata

Another dedicated task of EU EIP SA 46 is to give recommendations for harmonisation of NAP approaches with respect to metadata. Metadata describe the administration, organisation, and content of a data set and of a data service. Metadata are therefore crucial elements to make NAPs accessible and searchable. The most visible metadata representation are the dataset descriptions in NAP portals, see the example from the Mobility Data Marketplace (MDM, German NAP) in figure 3 below.

As a background, various Delegated Regulations of the ITS Directive require to establish harmonised metadata descriptions and structures for the following reasons:

- to help to make data available and searchable for pan-European service providers,
- to ensure metadata to be machine-readable in a later stage, and
- to ensure a common understanding of the listed data content.



Figure 3: Metadata as part of the data set description in a NAP portal

Based on previous analyses of NAP practice so far, it is found that the individual approaches in establishing metadata structures vary to a certain extent. The metadata approaches seem to depend particularly on the individual NAP environments, e.g. on the underlying IT systems. Therefore, some balance has to be found between the harmonisation needs on the one hand, and the consideration of the individual NAP environments in the other hand.

In this context, EU EIP sub-activity 4.6 has elaborated a strategic guidance for NAP operators in form of a *Metadata Guideline*, published in March 2018 [13]. This guideline depicts and discusses alternative metadata approaches for individual NAP environments, taking into account higher-level considerations for NAP implementations. In particular, the following issues are discussed:

- Summary of existing metadata standards relevant for NAPs
- Review of current practice of metadata implementation in individual NAPs
- Discussion of considerations of individual NAP environments in form of a “NAP Checklist” with regard to metadata
- Recommendations to help NAP operators find the right choice on a Metadata approach.

As a basic recommendation, integration between different NAPs with regards to metadata is needed, even if NAPs have different Metadata approaches. This may be realised by metadata import or mapping functions. This way, an interoperable and cross-border usage of European NAPs can be enabled in the future, e.g. by allowing simultaneous data searching across multiple NAPs.

Harmonized declaration of compliance

The Delegated Regulations describe the obligation of Member States to carry out an assessment of compliance with these Delegated Regulations. It is not described how this should be done. Without a harmonised approach, however, some administrative burden may be created for relevant parties, such as road authorities, road operators, data providers, digital map producers and service providers. If

operating in more than one country, these parties would have to submit a declaration of compliance in different formats, different languages, under a variety of different rules. Similarly, the organisations responsible for carrying out the assessment of compliance could possibly be facing discussions with a whole range of road authorities, road operators, data providers, digital map producers and service providers that operate within their territory that might submit their own declarations of compliance in different languages and in a variety of formats.

Through a joint effort of TISA and EU EIP SA46, a Uniform Declaration of Compliance Form has been developed for the Delegated Regulations 886/2013 (safety related traffic information) and 2015/962 (real time traffic information). This Uniform Declaration of Compliance Form is based on the Declaration of Compliance Form for Safety Related Traffic Information (886/2013), which was agreed upon in February 2017. The Uniform Declaration of Compliance Forms were then discussed with the stakeholders (public and private). First of all, it was ensured that the Declaration of Compliance Form would be in line with the (minimum) requirements set out in the Delegated Regulations. Secondly, the forms were developed in such a way that the administrative burden for all parties involved will be minimized, but nevertheless providing sufficient information for a solid assessment of compliance. This has resulted in one Declaration of Compliance with respect to Delegated Regulation 886/2013 and two different Declarations of Compliance with respect to the Delegated Regulation 2015/962:

- One Declaration of Compliance for road authorities and road operators;
- One Declaration of Compliance for digital map producers and service providers.

Last, but not least, two Explanatory Notes were drafted, providing more insight in those aspects of the Delegated Regulations that -following the discussion with the stakeholders- were deemed to be in need of additional explanation.

The Uniform Declaration of Compliance Forms and the Explanatory Notes can be found in the NAP Annual Reports 2016 [14] and NAP Annual Report 2017 [11] and downloaded at www.its-platform.eu.

Main challenges

A number of challenges have been identified that hamper to fully reap the potential benefits of the delegated regulations and their associated National Access Points.

Use of metadata

To achieve interoperability across different NAPs, a common understanding of metadata usage among NAP operators and users is required. This refers to the description of metadata (i.e. the applied standard) and the way how metadata is implemented into a system. Ideally, a harmonized metadata approach would ease searching for and accessing data sets, either by human users or machine interfaces, even across multiple NAPs.

Analysing the NAP practice so far, the metadata approaches in individual NAPs are quite different (see chapter above). To deal with this situation, a strategic *Metadata Guideline* has been elaborated [13],

however with the focus on "conventional" data types such as SRTI and RTTI. It is expected, that the situation will be more challenging once data types for the Delegated Regulation for Action A come into place. As a big variety of data from different businesses and domains come together (public transport, car sharing etc.), there is also a big variety of possible metadata approaches. In this context, EU EIP SA46 is further working with stakeholders to find appropriate solutions for metadata harmonisation.

Quality

Data quality is an important aspect of the information services Delegated Regulations, with data providers required to document the quality of their data and make this information available to NAP users. Within the EU EIP group the question – *Do you allow only data of specific quality, or set quality criteria to be met before data is accepted in the NAP?* – has been raised. So far, no consensus has been reached and current NAP deployments tackle the issue independently. This is mainly due to the challenge to commonly agree on quality criteria and requirements across all relevant stakeholders, as each stakeholder may have a different perspective on data quality.

Another EU EIP sub-activity (4.1 - Determining the Quality of European ITS Services) is dealing with this issue, working on frameworks and guidelines relating to ITS data quality. A suite of documents on the quality of various data types covered by the Delegated Regulations has been produced and is being discussed with relevant stakeholders.

Level of Service/Common Features of NAP

Through the development, elaboration and user feedback the aim is to finalise a set of features to support practical and functional aspects of the NAP implementations. By including the features in NAP implementations a basic level of service can be reached and measured. Data consumers and data publishers will be given the tools, information and support to successfully interact with the NAP and ultimately this will contribute to new information services to end users.

A challenge in this context may be the realisation of the defined common features across all European NAPs, as some NAP solutions depend on existing (legacy) systems or follow alternative, national rules for IT systems. EU EIP SA46 aims to motivate NAP implementers to consider and ideally realize the set of common features. This is done by campaigns at NAP workshops and establishing best-practice exchange among NAP operators.

DATEX II requested for data exchange

Data provision via the DATEX II data model is required for most data types according to the Delegated Regulations. This data model is recognized and widely-used by the professional community of traffic data and traffic information, such as traffic management centers (as data suppliers) and service providers (as data users). According to current NAP practice, all implementations use DATEX II to exchange truck parking information, safety related and dynamic/real time traffic information. However, the following challenges have been identified regarding the applicability and further roll-out

of DATEX II:

- For data providers using DATEX II, a common understanding of the correct usage of the syntax and the semantics within DATA II needs to be assured. For example, each party providing data on road works needs to fill in detailed information about road works in a compatible manner, so consistent information reaches the traveller along his entire journey. The DATEX II organization is working on harmonized profiles to specify the syntax and semantics for individual use cases, e.g. for roadwork information [15]. In some cases, further harmonized profiles and specific assistance to DATEX II users (e.g. by training) is seen as necessary.
- The complexity of DATEX II may be an obstacle when there is a desire to make the data accessible to a wider audience, such as app developers and start-ups. Here, other data standards such as JSON are preferred. In this case, it has to be considered if interfaces or conversion tools should be implemented within a NAP, resulting in some additional technical challenges for NAP operators.
- In context to the Delegated Regulation for Multi Modal Travel Information (priority action A), other data formats such as NeTex CEN/TS 16614 and SIRI CEN/TS 15531 are also applicable. As stated for the metadata, there is a challenge when bringing many data types together, especially if there is an ambition to combine all data from all Delegated Regulations into one NAP. In this case, existing other data sources may have to be implemented, some of them using other data formats. Eventually, NAP operators may have to reconsider the NAP infrastructure (technically and organizationally), when implementing data from such a variety of sources and domains.

Assessment of compliance

Only few countries so far have established procedures for assessment of compliance. This means that there is also little pressure from the respective national authorities responsible for the assessment of compliance towards e.g. data providers, digital map producers and service providers to deliver data to the NAPs. As a consequence, the main providers of data to the NAPs are the national road authorities, road operators and road concessionaries. Only in exceptional cases datasets originate from the private sector. EU EIP has created the Uniform Declaration of Compliance to assist national bodies to implement procedures for assessment of compliance with a minimum administrative burden.

Convince parties to publish data

Related to the above, private data and service providers don't seem to see the 'added value' of the National Access Points for their business. Apparently, the NAPs don't succeed to 'market' their data and thus to create extra business. A specific group of private data and service providers consists of Google, the car manufacturers, telco's, etc. These companies generate enormous amounts of traffic data, but this data is not made available via the NAPs. One explanation for this is the common misunderstanding that '*you have to share valuable data, thus undermining your business model*'. This

is a wrong perception of the NAPs! In most cases the NAPs only require to give ‘data about the data’, not the data itself. In addition, data does not have to be given for free. A NAP is not the same as Open Data. Therefore, the authorities responsible for the NAPs should start working on better communication of the benefits of the NAPs for the data/service providers, together with the NAPs

Conclusions

The EU EIP project has made a thorough inventory of the current status of implementation of National Access Points in Europe, following the Delegated Regulations on information services for (road) transport. The project has identified some key challenges for the successful implementation of NAPs, as well as for successfully reaping the potential benefits of the NAPs. Harmonisation in the field of metadata, level of service and assessment of compliance are some of the means to tackle the issues. Better communication on the potential benefits of NAPs towards the private sector and a stricter assessment of compliance are other possibilities.

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