



Deliverable D4.1

Definition of the pilot sites



Deliverable 4.1 - Definition of the pilot sites

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1 EXECUTIVE SUMMARY

The main objectives of DATA4PT project consist of technical and organisational activities to facilitate the development and deployment of the European public transport data standards Transmodel, NeTEx and SIRI for the provision of Union-wide multimodal travel information services which apply to the TEN-T network including urban nodes. The validation of the collected public transport data is pointed out as a key process to enable their widespread use for the multimodal mobility purposes. In this respect, DATA4PT aims to support this need by contributing to the development of validation tools of public transport data and by supporting their pilot implementation from transport authorities and operators in different EU countries.

In this framework, this report refers to the definition of the sites, selected by the Members States (MS), partners of project (Austria, Croatia, Czech Republic, Denmark, France, Italy, Portugal, Slovenia, Sweden), to perform the pilot implementation of the tools. Each MS will perform data validation under real conditions and in different cases, addressing their needs and objectives towards data harmonisation and qualification.

Pilot implementation will not only ensure the development of useful and well-performing validation tools, but it will also enhance the knowledge and familiarity of users with the EU public transport data standards and with the recommended specifications for data collection and validation processes.

Pilot implementation will also enable share of good practices between member states and will benefit to report return on experience to CEN standardisation bodies to propose standards' update and extension.

List of partners

Partner's name	Acronym	Country
Union internationale des transports publics	UITP	Belgium
Information technology for Public Transport,	ITXPT	Belgium
Bundesministerium für Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie	BMK	Austria
Ministry of the sea, transport and Infrastructure	MMPİ	Croatia
Centrum dopravního výzkumu, v. v. i.,	CDV	Czech Republic
Trafik-, Bygge- og Boligstyrelsen (Danish Transport, Construction and Housing Authority),	TBST	Denmark
Direction générale des infrastructures, des transports et de la mer	DGITM	France
Ministero delle Infrastrutture e dei Trasporti	MIT	Italy
Instituto da Mobilidade e dos Transportes, I.P.	IMT	Portugal
Republika Slovenija, Ministrstvo za Infrastrukturo	MZI	Slovenia
Trafikverket (Swedish Transport Administration	STA	Sweden

Abbreviations and Acronyms

EIP	European ITS Platform
EPIP	European Passenger Information Profile
KPIs	Key Performance Indicators
MMTIS	Multimodal Travel Information Services
MS	Members States
NAP	National Access Point
NeTEx	Network Timetable Exchange
PTA	Public Transport Authorities
PTO	Public Transport Operators

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INTRODUCTION

One of the main activities of DATA4PT project focuses on the operational use of the developed (in the framework of the project) data validation tools, appropriate to address current challenges regarding data provision harmonised to EU standards. In particular, the objective of the operational use is to test the technical outcomes from Work Package 2: “Development” with real data sets and under different context and to provide feedback to drive update and maintenance.

In this framework, this report refers to the definition of the sites, selected by the Members States (MS), partners of the project (Austria, Croatia, Czech Republic, Denmark, France, Italy, Portugal, Slovenia, Sweden), to perform the pilot implementation of the tools. Each MS will perform data validation under real conditions and in different use cases, addressing their needs and objectives towards data harmonisation and qualification.

ITxPT supported MS in identifying different aspects of their pilot implementation, through interactive activities, including a workshop (taken place in the framework of kick-off meeting) and a one-to-one call with MS representatives. Moreover, material has been also exchanged through a dedicated questionnaire and relevant forms.

To define pilot sites in an integrated way, MS replied to four (4) key questions:

- what is the provenance of data to be tested and under which context? This information aims to specify the area of implementation whether refers to a selected urban node or to a country-wise network focusing on National Access Points data. It also help defining the the enablers of the pilot and other entities involved (PTAs, PTOs, service providers).
- which is the current state in terms of data provision, validation and management. The description of current situation will help to better understand the selection of the pilot sites and define implementation conditions. It will also be considered in the analysis of the different feedback provided by the different MS and to set baseline for the future evaluation of operational use and project results.
- what type of data will be considered in terms of content and format. By specifying the type of data to be tested, the pilot description becomes more complete and helps technical support preparation.
- what are the pilot specific objectives to address MS particularities and priorities. The definition of specific objectives from each MS, enables to draw an effective strategy in order to reply to MS expectations while it supports the evaluation process of the operational use results by shaping project KPIs.

In the following section, the pilot sites of each MS are presented. Depending on MS readiness and implementation status of EU standards, some MS provide more details about the different aspects to consider. External factors as pandemic crisis have also affected their preparation. Therefore, this report is considered as a living document that can be updated during the following period.

2 PILOT SITES

Nine¹ different pilot sites are identified. The presentation of the pilots includes references to the key involved stakeholders, the ecosystem of implementation, the specific information regarding data testing and MS objectives.

Each pilot sites are directly connected to National Access Point which list is available in Annex. The list shows the state of the art deployment of the National Access Points across Europe, within the scope of the implementation of the delegated acts adopted under Directive 2010/40/EU.

2.1 AUSTRIA

Austria NAP is available here: <https://www.mobilitydata.gv.at/>

In Austria, DATA4PT tools will be used to validate data (format, profiles and processes) in relation to the Austrian National Access Point (NAP)². The Austrian NAP is hosted by AustriaTech (Federal Agency for technological measures Ltd.) which has the role of a neutral body.

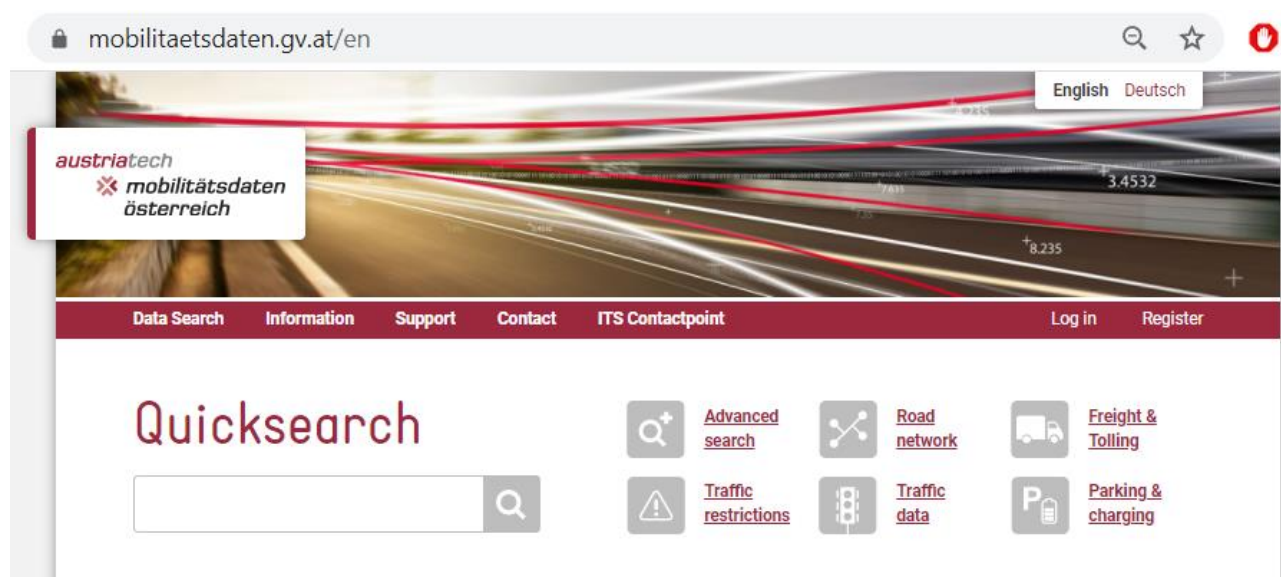


Figure 1. Austrian NAP website (<https://mobilitaetsdaten.gv.at/en>)

¹ Slovenia and Croatia) are still currently evaluating the main relevant pilot sites to be involved in DATA4PT.

² A National Access Point (NAP) is an intermediary digital platform and is part of the four EU Delegated Regulations following Priority Actions a, b, c and e of the EU ITS Directive 2010/40/EU [1].

The Austrian NAP represents a centralised one-stop-shop to simplify the connection between local and international data holders and data service providers. The PTOs represented at the NAP cover public transport networks in the country including both urban and intercity transportation. The validation tools will be tested by the nominated body (www.ivs-stelle.at, installed at the Austrian Conciliation Body, located at AustriaTech) for the verification of compliance according to DR 2017/1926 (Article 9 Assessment of compliance). Furthermore, the EPIP related stakeholders will also have the opportunity to use the developed validation tool.

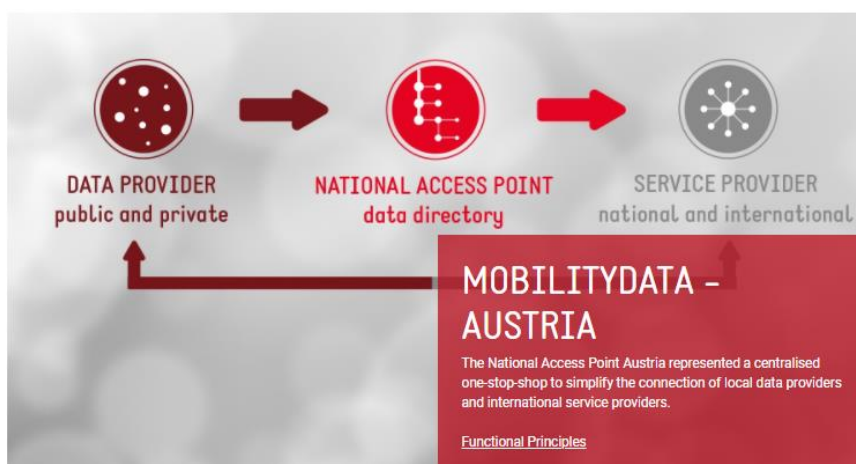


Figure 2. The role of Austrian NAP

2.1.1 CURRENT STATUS

Due to the implemented architecture, NAP is structured and used as data directory in accordance to the delegated regulation 2017/1926. Data providers can interlink their data platforms with the NAP. An online Metadata Catalogue is available, based on the Coordinated Meta Data Catalogue from EU EIP [1]. However, data exchange directly takes place between the data provider and the service provider. The format of data description, provider and of other parameters is standardized. Delegated regulations (a) (b),(c), (e) are implemented at the Austrian NAP.

Seven (7) data providers are using currently the NAP, while 24 data sets are listed so far. Currently the main data providers of Multimodal Travel Information Services (MMTIS) are Austrian Rail operator (ÖBB) and FlixBus DACH GmbH. The Working Group of all Austrian public transport associations (ARGE ÖVV) is working on providing data at country level. The provided country data will cover the whole Austrian area. Moreover, other entities provide road related data, such as road operator (ASFINAG), TomTom, ÖAMTC, Broadcasting (ORF/oe3) as well as data based on data models or data analysis provided by Team Datenanalyse und -modelle (AustriaTech).

2.1.2 TYPE OF DATA

In the framework of the operational use, public transport data available at NAP will potentially be tested. In terms of MMTIS, available open data and test data-sets include public transport time-tables, access nodes, operation calendar, network topology and routes/lines will be tested. Data files are accepted in several different formats like NeTEx, GTFS, GeoJSON, Shape, xlsx, JSON. Currently, static data are mandatory while dynamic data are optional and currently there is no planning for relevant national law adjustment.

2.1.3 PILOT SPECIFIC OBJECTIVES

The pilot aims to support Austria to successfully implement DR 2017/1926 (“Providing EU-wide multimodal travel information services”), and ensure the provision of MMTIS data via a validated interface format in-time by providing a single access point covering all required data categories of the related delegated regulations.

More specifically aims to:

- encourage PTAs and PTOs, especially the small ones, to use the tool for validating and testing their data/profiles in regard to the European Passenger Information Profile (EPIP) and the national NeTEx profile, when finalized.
- align national profiles and analysis procedure to NeTEx (and SIRI);
- contribute to the establishment of a common approach in creating and implementing minimum profiles (NeTEx including all service levels in alignment with the EPIP and further legal requirements, establishing a process for defining a national SIRI profile);
- cooperate with the cross border stakeholders to assure a European minimum profile definition and implementation;
- contribute to the development of compliance tests with regard to the minimum profile;
- enhance the national profiles based on the projects recommendations;
- comply with EU delegate regulations.

2.2 CROATIA

Croatia NAP will be available till the end of year on link: <https://promet-info.hr>

The urban area of Zagreb and the data gathered and provided by public transport companies ZET and HZPP (might) will be used for the pilot implementation in Croatia. Those companies provide integrated railway, tram and bus transport services over Zagreb urban node. Other pilot site could be also added during the project.

The Public Transport Authority ZET provide passenger services in the city of Zagreb and neighbouring suburbs and cities. In the centre of Zagreb services are based mostly on fleet that contain 277 trams and 438 buses. ZET started cooperating with Google transit in year 2014 and travel route planning is available through Google Maps.

The Public Transport Authority HZPP is main railway passenger transport provider in Croatia. Most of company activities are connected to Zagreb railway station. HZPP is cooperating with Google transit and travel route planning is available through Google Maps.

2.2.1 CURRENT STATUS

Currently all public transport data (access nodes and timetables of buses, trams and trains) are available in xlsx format. National registries of public transport operators and registries of time tables are available. These registries are obligatory, according to the national legislation, for licensing public transport providers and approving public services. Major municipalities are responsible to approve public services like taxi, urban buses. The registries are based on static data and they will be available through NAP till the end of 2020.

National body responsible for NAPs establishment and operation, according to the Directive 2010/40/EU, is road operator HRVATSKE CESTE d.o.o.

This registries are based on only static data. Availability of real time travel data through NAP is not yet defined.

2.2.2 TYPE OF DATA

Timetables and network data (access nodes) are the main categories of the data to be tested, in GTFS format. In future we expect that all public transport providers in country will provide real time data in GTFS, NeTEx.

2.2.3 PILOT SPECIFIC OBJECTIVES

The aim of the pilot implementation of the validation tools is:

- to prepare the transition from the current situation, where MMTIS data are available in GTFS format, to the provision of standardized data to the NAP
- to enable the adoption of profiles on EU level (rather than national ones).
- To explore best practise in EU to provide real time travel data.

2.3 CZECH REPUBLIC

Czech Republic NAP is available here: <https://data.gov.cz/datové-sady>

Pilot implementation will focus on data provided by the public transport operator City of Ostrava operating in the urban area of Ostrava, in Silesian region. The validation tool will be tested by Transport research centre with cooperation of PTO City of Ostrava. The negotiation with CHAPS company about possibilities to cooperate during pilot test is still ongoing.

Public transportation in the City of Ostrava is organised by the Integrated Transport System (ODIS). Within the city, there are seven hundred vehicles used in a dense tram, bus, and trolleybus network that transports 114 million passengers per year. Timetables of all the routes are listed at the stations, and are also available in printed versions and on the Internet www.dpo.cz.

The city is divided into four zones. Also, Ostrava XXL was created recently to include towns and cities in Ostrava's immediate vicinity. Two types of short-term tickets only with time limitation are valid in this zone. These are 15-minute and 60-minute tickets, whereas discounted tickets apply for children aged 6 to 15.

Credit single ticket can be bought at ticket machines. It is a plastic card with a certain amount of money. It works the same way as the bank card. The ticket machine accepts CZK and EURO bank notes.

Another option is to buy a ticket through text message. It costs 30 CZK and it is valid for 70 minutes. It is just enough to write the text "DPO70" (DPO = letters, 70 = numbers) and send it to the number 902 30 (as you can read on every timetable board of tram/bus stop). Send it two minutes BEFORE getting on a tram/bus so that you get a text message with details of your ticket - you should not board the tram/bus before you receive it!

Or just tap&ride with your bank card! You can use your contactless card to buy a ticket on board.

The Ostrava transport operator has been chosen for many reasons. One of them is that they are currently the most progressive public operator in the public intelligent transport system in Czech.



Figure 3. Map of ODIS

2.3.1 CURRENT STATUS

In the Czech Republic, the Ministry of Transport is responsible of the Czech National Information System of Timetables (hereinafter referred to as CIS JR) gathering and storing public transport data. According to the current legislation (Act No. 111/1994 Coll., on Road Transport, as amended, Act No. 266/1994 Coll., on Railways, as amended and Decree of the Ministry of Transport No. 122/2014 Coll., on Regular Public Transport Timetables), CIS JR contains approved timetables of national regular public transportation (including urban bus transportation), approved timetables of lines of international regular public transportation with a stop for loading or unloading of passengers in the territory of the Czech Republic, and approved timetables of public railway passenger transportation on nation-wide, regional, tram, trolleybus, special or cable railways operated in the Czech Republic.

Timetables are submitted to CIS JR by transit authorities of regional and municipal authorities/town councils (national regular public transportation), carriers (international regular public transportation), railway operators (public railway passenger transportation on nation-wide and regional railways) and railway administrative authorities (public railway passenger transport on tram, trolleybus, special and cable railways) in electronic form mostly in JDF format. An application called JDFkon is used to check data in JDF format for buses.

JDFkon is a console Win32 application that is used to check the accuracy of data in timetables in the JDF format version 1.9. The application searches for input files in the JDF format in the given directory. If an error is found in the input data, a file titled JDFkon.log will be generated in the directory, in which the error will be located and described. The error number, file title, number of the line with the error, and description of the error will be stated in the line.

Data4PT has received funding from the European Union's DG for Mobility and Transport under grant agreement No MOVE/B4/SUB/2019-104/CEF/PSA/SI2.821136

Since 26 October 2001, CHAPS spol. s r.o. has been authorized by the Ministry of Transport of the Czech National Information System of Timetables. The official outcome from the CIS JR is a publicly accessible FTP server on internet address <ftp://ftp.cisjr.cz/>. The system CIS JR serves as NAP for MMTI. The responsible body for implementing NAP is the Ministry of Transport Czech Rep. Solution for NAP (if it will be integrated into NAP for SRTI, RTTI) is not yet found, probable implementation is to use the infrastructure for RTTI / SRTI.

Transport research centre prepared standard for real time information in 2013. The standard was created on the basis of standardized interfaces and services defined in CEN/TC 278/WG 3 (CEN/TS 15531-1 to 5 (SIRI)) European standards and respects their terminology. Reasons for submission of the standard was a functional extension of the CIS timetable system that contains a set of necessary statistic data, indispensable for the real-time information function.

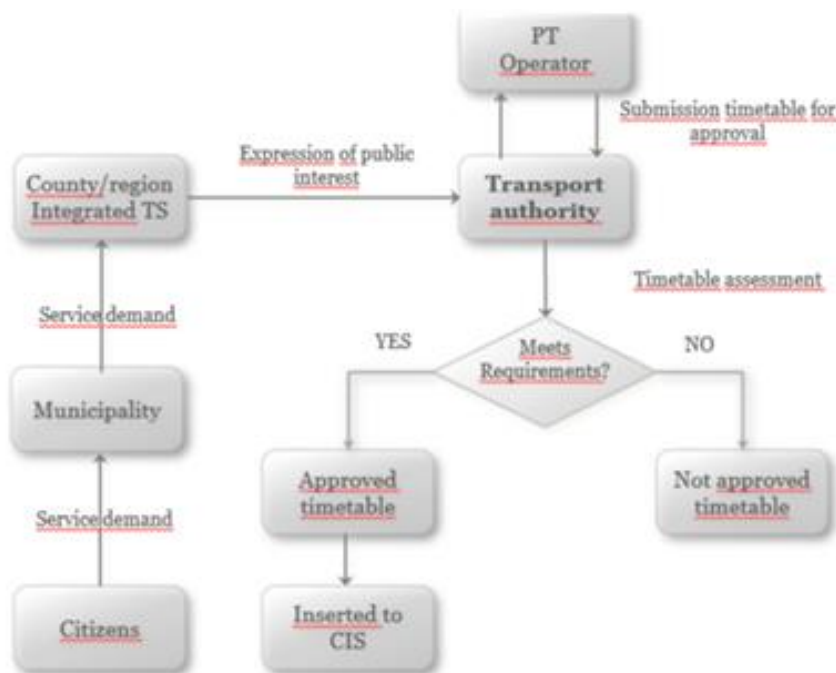


Figure 4. CIS a legislation-based procedure

National registry of traffic information ("registry") is an integral part of implementation of the National access point as required by European Commission Delegated Regulations Commission Regulation no. 886/2013 „provision of safety related traffic information“, Commission Regulation no. 885/2013 „provision of parking information for safe and secure truck parking“ and Commission Regulation no. 2015/962 „provision of real time traffic information of the "ITS Directive" 2010/40/EU.

National registry of traffic information ("registry") is an information source for local and foreign organisations interested in traffic data subscription. It contains mainly overview of traffic information sources and their providers including the technical description of the formats and protocols and information about subscription process.

The registry contains the following information for subscribers:

- List of sources of traffic information available for subscription, with all required information about the source.
- List of providers of traffic information.

- Instructions how to make a subscription (per source).
- Responsible for implementing the NAP is Ministry of Transport.
- Operational since 2015

NAP is implemented as a distributed system and consists of two types of services:

- The registry (since 2015): <http://registr.dopravniinfo.cz/en/> (with traffic information metadata)
- Distribution interfaces: the data distribution interfaces, provided by separate traffic information providers, for the NTIC it is <https://datex.rsd.cz/>

Metadata and discovery information for traffic sources available from different providers are published in the registry of traffic information data. Registry is a simple static web page including service metadata, allowing service discovery. In a sense it is the NAP of 2nd level. During 2020, registry (the NAP) is undergoing changes to cover all metadata required by Coordinated Metadata Catalogue (rev2019) and to allow for other providers to register. It maintains its specifics while enhancing the metadata compatibility.

Regarding distribution interfaces, services could be consumed through distribution interfaces of individual providers. The NTIC (national traffic information centre since 2005) is the sole biggest provider of all traffic information from the Czech Republic. Currently, the NTIC distribution interface is undergoing a major change to allow for seamless subscription to traffic information sources.

After the revision of the interface, a new address will be used, more suitable for the service. Distribution interface: At the NTIC, the SRTI content has been available, free of charge, since its start of operation in 2005 to the public in proprietary XML, since 2015 also in DATEX II.

Implementing Body of NAP is Road and Motorway Directorate of the Czech Republic

2.3.2 TYPE OF DATA

- Not yet described

2.3.3 PILOT SPECIFIC OBJECTIVES

Besides the contribution to the development of shared tools for checking compliance and consistency of data, the wider objectives of the operational use in Czech Republic are to:

- support verification procedure, organizational framework and software components,
- increase the level of implementation of NeTeX and SIRI profiles and update their NAP based on the new standards,
- support capacity building (training) of PTOs in terms of technical skills to better address these new technical requirements and eventually to improve their operations and services
- enlarge the type of data to be provided and specially to include passengers related data sets to the system

2.4 DENMARK

Denmark NAP is available here: <https://nap.vd.dk/>

The urban area of Copenhagen and the data gathered and provided by PTA Movia will be used for the pilot implementation in Denmark.

The Public Transport Agency Movia is Denmark’s largest mobility company responsible for the Copenhagen harbour buses, certain local railways and 1400 buses covering all of eastern Denmark,



Figure 4. PTA's in Denmark.

2.4.1 CURRENT STATUS

Currently all public transport data (access nodes for all scheduled and demand-responsive transport modes, timetables of scheduled modes, connection links with transfer times and real-time status of metro, bus and trains) are gathered by the national Danish Journey Planner.

The Danish Journey Planner provides travel suggestions for using public transport. It includes travel time, price estimate, map display and real-time prognosis.

The danish NAP gives access to GTFS-timetable data for scheduled modes through the Danish Journey Planner. Based on Danish data flow plan, the Journey Planner will feed in the future the NAP with data already translated into NeTEx. PTAs/PTOs can also feed data directly to the NAP.

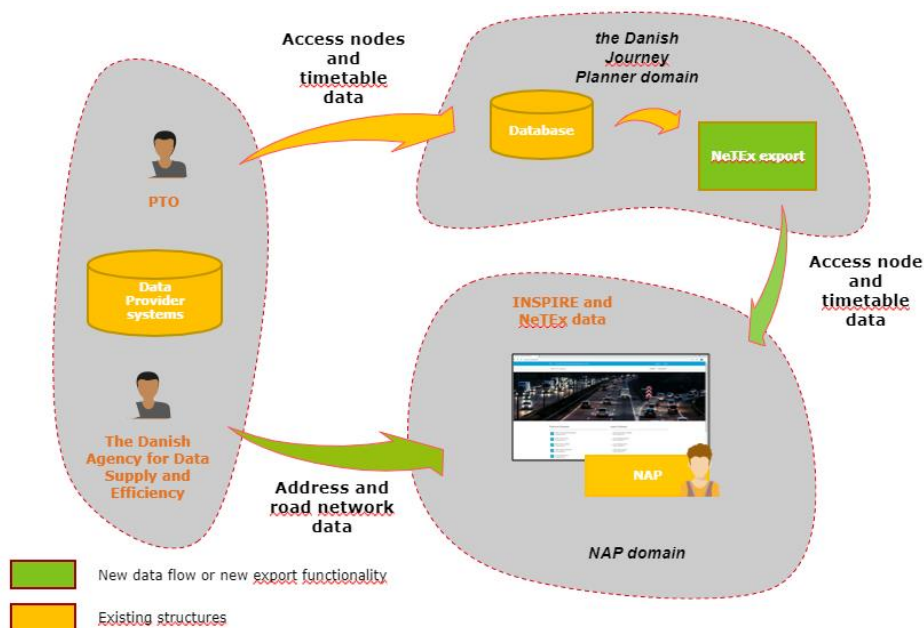


Figure 5. Data flow plan in Denmark.

2.4.2 TYPE OF DATA

All available data in the NAP from Movia will be used for this pilot.

2.4.3 PILOT SPECIFIC OBJECTIVES

The aim of the pilot implementation of the validation tools in Denmark is:

- to prepare the transition from the current situation, where MMTIS data are stored and used by Journey Planner, to the provision of standardized data to the Danish NAP (NeTEx).
- to enable the adoption of profiles on a Nordic or EU level (rather than national ones).

2.5 FRANCE

France NAP is available here: <https://transport.data.gouv.fr/>

Pilot site in the case of France will focus on Hauts-de-France region. Other pilot site could be also added during the project.

HdF Mobilités manages mobilities in Hauts-de-France region. It involves 16 urban authorities and the regional council.

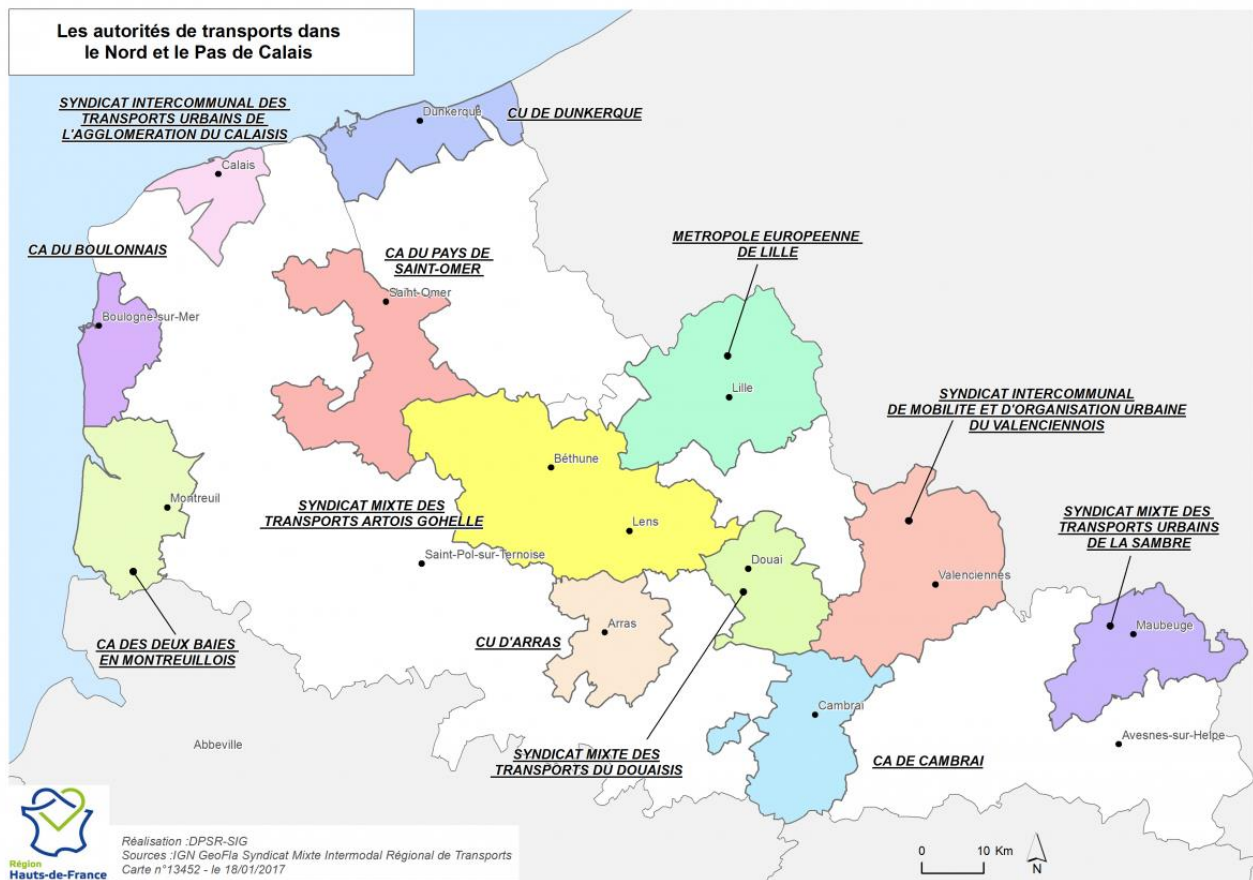


Figure 6. PTA from Hauts-de-France region

HdF Mobilités provides already a multimodal travel planner covering this scope of public transport networks. They have also started to discuss access of data from private operators (including long distance coach and car sharing). French LOM - Loi d'Orientation des Mobilités – voted in 2019 would open access to other data through French NAP.

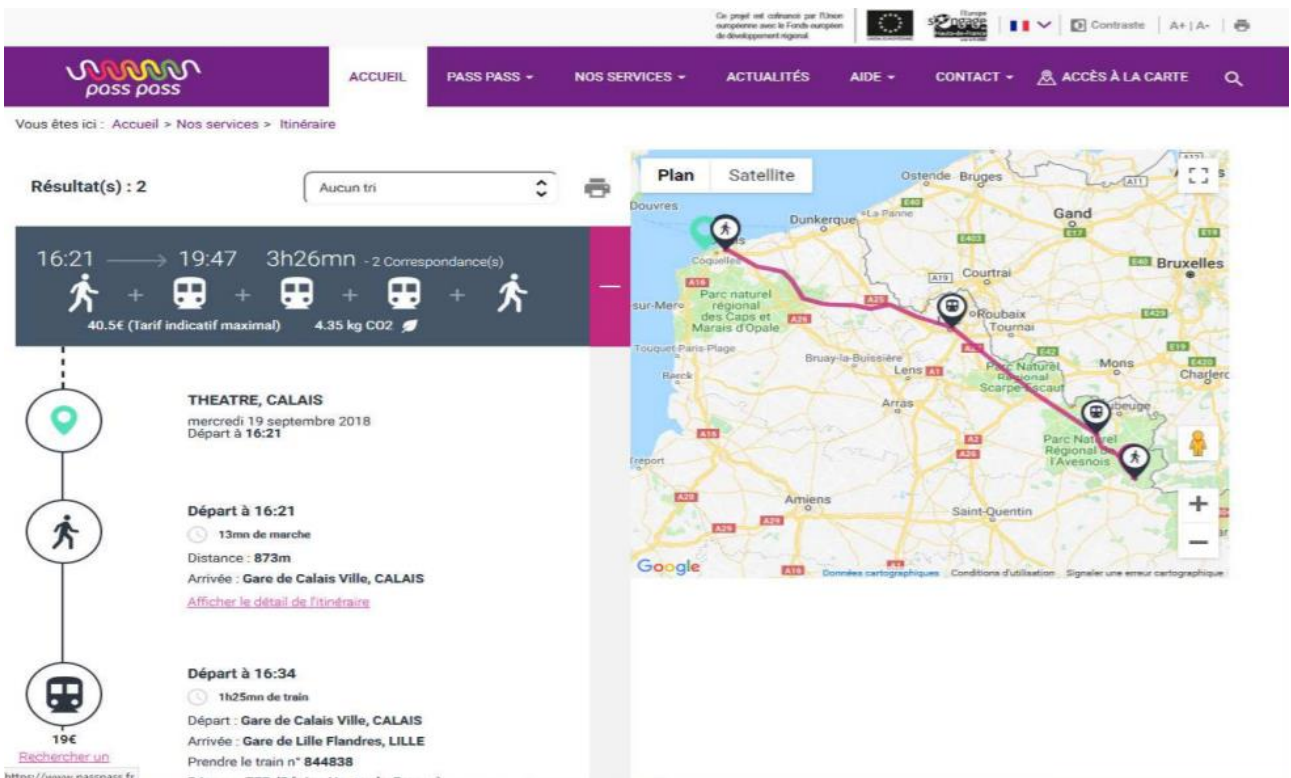


Figure 7. Travel planner from HdF Mobilités

2.5.1 CURRENT STATUS

In France, NAP is in operation and gives access mainly to « level 1 » static data for all transport modes except air transport. The 200 (out of 350) PTAs and railways operators are providing data, using in principle GTFS format, while some NeTEx data are also available. An open source conversion tool from GTFS to NeTEx - [gtfs2netexfr](https://github.com/CanalTP/transit_model/tree/master/gtfs2netexfr) - is available to feed the NAP here :

https://github.com/CanalTP/transit_model/tree/master/gtfs2netexfr

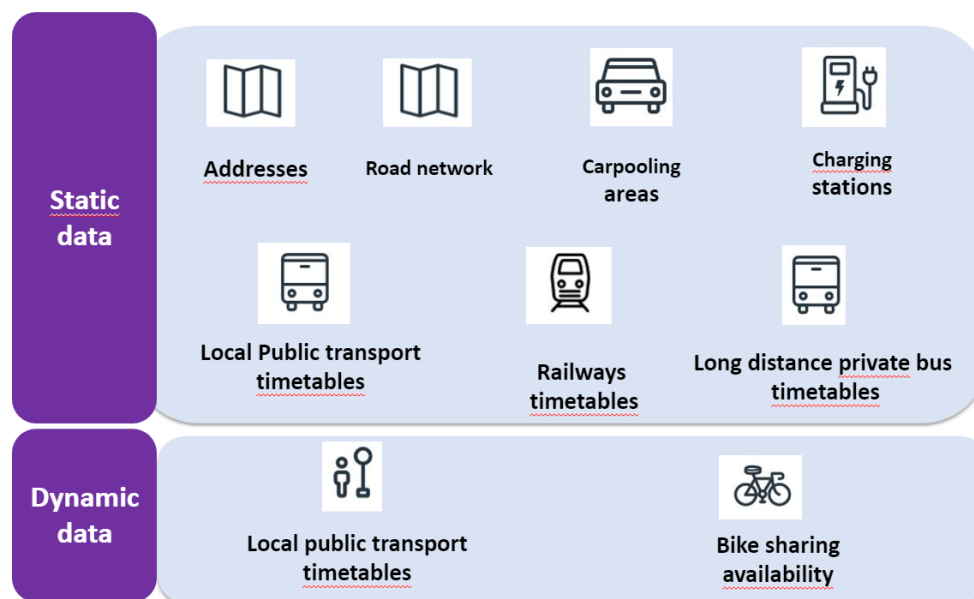


Figure 8. Data already collected through the French NAP.

2.5.2 TYPE OF DATA

All available data in NAP will be used for this pilot.

2.5.3 PILOT SPECIFIC OBJECTIVES

Pilot implementation in France, will also contribute:

- to the development of European (common) and national profiles,
- to the development of shared tools for quality and conversion,
- to the capacity building of the users through training.

2.6 ITALY

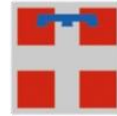
Italy NAP is available here: <http://www.cciss.it/>

Piedmont Region is chosen for the Italian pilot. Local Authority called Piedmont Region enables 100 PTOs to operate with 3.400 PT Vehicles, 15.000 bus stops, 300 railway stations and 2,000,000 passengers per day.

The region, managed by 5T S.R.L company, is able to exchange PT data from different operators (Trenitalia, Regional bus and train, urban buses, local train) with the NAP. In Piedmont Region, Smart Ticketing system (called BIP) is established and currently is coordinated by 5T s.r.l. company. The BIP System assigns an active role to PTA in designing and managing the e-ticketing systems. Like this, technological neutrality and independence from suppliers is guaranteed.



TECNOLOGIE
TELEMATICHE
TRASPORTI
TRAFFICO
TORINO



REGIONE
PIEMONTE

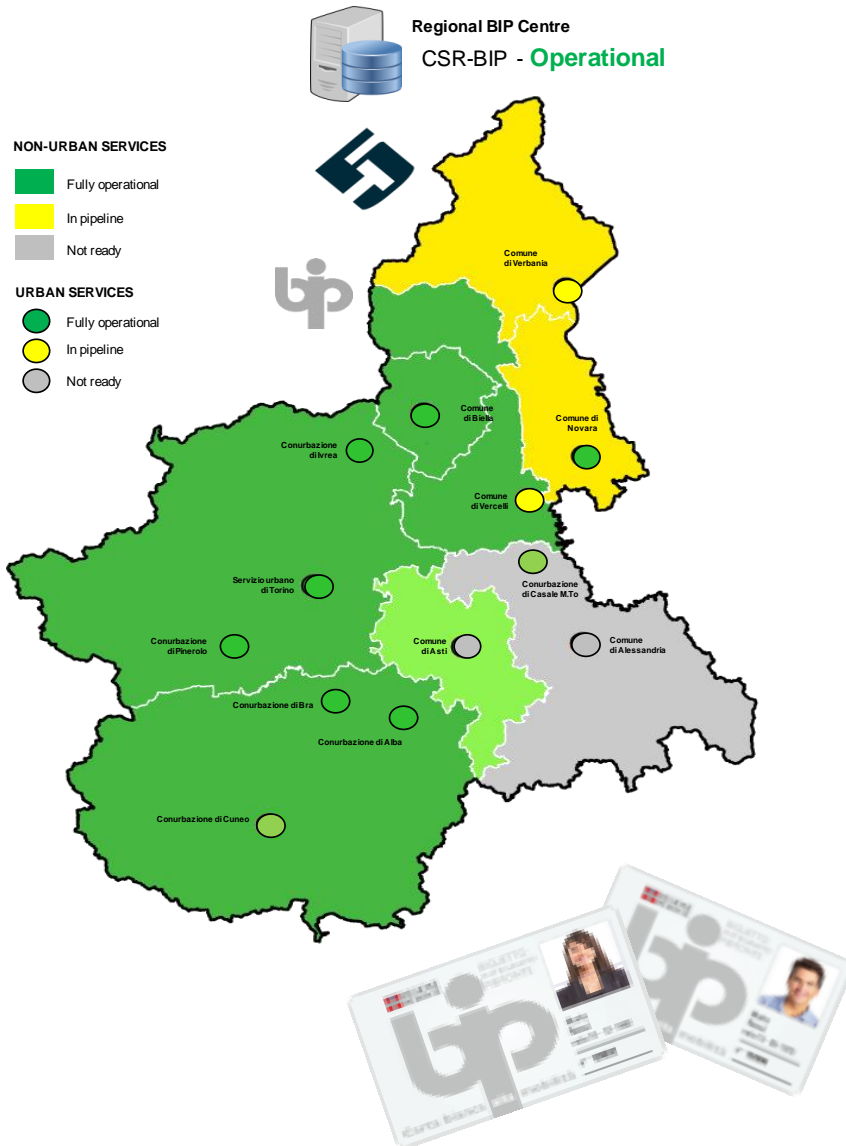


Figure 9. Level of implementation of e-ticketing in Piedmont Region, the pilot site for Italy.

The e-ticketing system is operational in Torino and in the bigger part of the region. It involves 5 areas, with public transport road and railway services, with more than 1,000,000 users.

2.6.1 CURRENT STATUS

In Italy, Public Transport Operators consortia (CCA) gather and send public transport data to Regional BIP Service Centre (CSR-BIP). The BIP provider (5T) is in charge of Regional BIP Service Centre (CSR-BIP). In Data4PT has received funding from the European Union's DG for Mobility and Transport under grant agreement No MOVE/B4/SUB/2019-104/CEF/PSA/SI2.821136

particular, the company is responsible to assure security, regional interoperability, independent public governance and to monitor and control PT networks and services.³ CSR-BIP is the unique point, designed with an open architecture, where PT data are currently gathered and relevant KPIs are estimated.

BIPEX stands for the public transport Data Exchange Protocol. It was developed and used in Piedmont region and it is considered as a good starting point for Italian national profile⁴. Other region close to Piedmont will also adopt BIPEX profile but in general, the situation in Italy differs depending on the region⁵.

Furthermore, the Region participates in the Shift2Rail initiative for performing web semantic approach experimentation.

Also a working group have been launched in summer 2020 to define a NeTEx Italian profile.

³ BIP modules are: a) Card Data Model – Portable Object data structure to ensure interoperability of the travel documents; b) BIP Security Architecture – Based on Secure Access Modules managed by the Regiona BIPEX Protocol potential usage in NAP; c) On Board Telematic Network – inspired by EN 13149 part 7-8-9, based on integration and sharing of resources on board.

⁴ BIPEX Protocol enables standard data exchange flows between transport operators and public authorities, adopted in Piedmont Region and good candidate to be used in other Regions.

⁵ Lombardie does not have current protocol or implementation of NeTEx. In Bolzano province, which is close to German border, data exchange is established with Germany by adopting VDV protocol and last version of German profile from NeTEx. Campania region raised ticketing BIPEX aligned protocol.

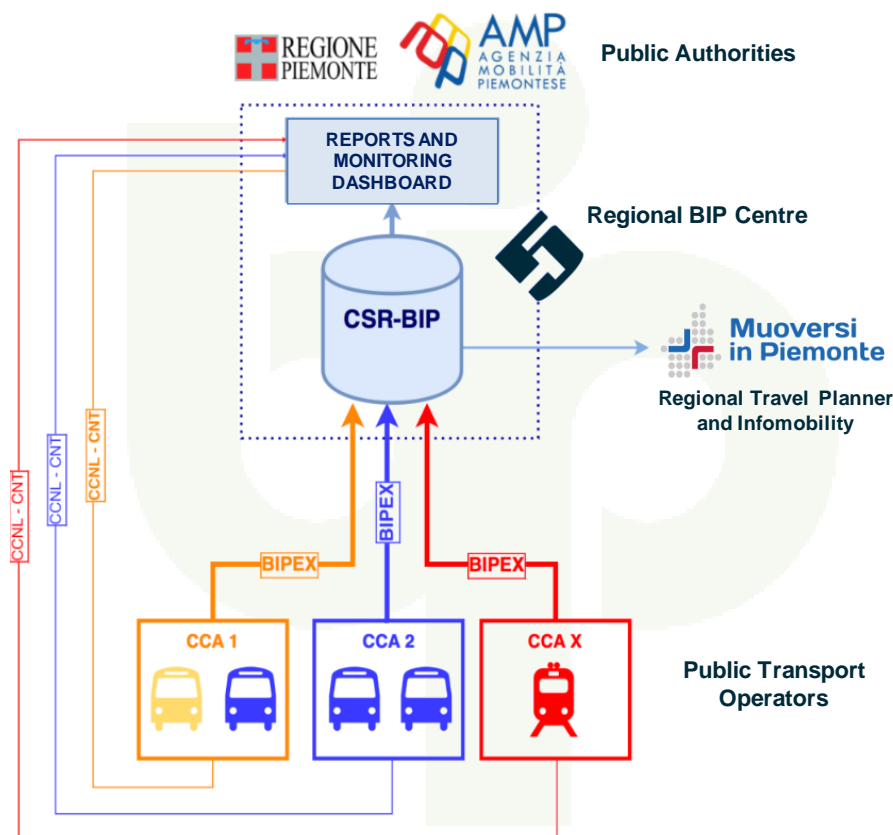


Figure 10. Schema illustrating the data gathering process in Piedmont Region.

2.6.2 TYPE OF DATA

The data sets (XML files) to be tested, are:

- **Public Transport Planned Service** (resources, calendar, network topology...)
- **Public Transport Accounting** (dated vehicle journeys, events...)
- **E-Ticketing Data** (fares, sales network and balance, customers, validations, blacklists, ...)
- **Real-time vehicle monitoring**

These data are transmitted with the BIPEX protocol.

2.6.3 PILOT SPECIFIC OBJECTIVES

The specific objectives of this pilot were identified as follows:

- to support Italian NeTEx profile definition and usage based on EU profile,
- to support validation tools development and deployment,
- to prepare the conditions to link NAP with the regional access point.

2.7 PORTUGAL

One of the Portuguese pilots will involve the Metropolitan Area of Lisbon (AML), located in south-central Portugal and divided by the two banks of the Tagus River. AML embraces a geographical area composed by 18 municipalities (Alcochete, Almada, Amadora, Barreiro, Cascais, Lisboa, Loures, Mafra, Moita, Montijo, Odivelas, Oeiras, Palmela, Seixal, Sesimbra, Setúbal, Sintra, Vila Franca de Xira). It is the most populous metropolitan area in the country with 2,840,006 inhabitants in an area of 3,015 km².

Metropolitan Area of Lisbon is an inter-municipal entity that aims to promote the planning and management of the economic, social, and environmental strategy of its territory. Since 2015, AML is also the transport authority responsible for the intermunicipal as well as for the municipal (15 out of the 18 municipalities) road public transport passenger services.

In 2019, AML set out a new simplified and integrated fare system, with a significant reduction of prices and since then, it is also the transport authority of all public passenger transport companies operating in Lisbon metropolitan area for pricing related issues.

The following operators serve currently the AML⁶:

- Municipal PT Authorities/Municipal Bus Operators:
 - Lisbon Municipality / Carris
 - Barreiro Municipality / Transportes Colectivos do Barreiro
 - Cascais Municipality / Mobi Cascais
- Public State Operators:
 - CP (rail)
 - Metropolitano de Lisboa (underground)
 - Transtejo (inland waterway)
 - Soflusa (inland waterway)
- Operators with a concession contract with the Portuguese state:
 - Fertagus (rail)
 - MTS (light rail)

The second Portuguese pilot concerns Porto Metropolitan Area (AMP). The metropolitan area of Porto embraces a geographical area composed by 17 municipalities, is the second largest urban area in the country, with a population of 1,721,038 (in 2011) in an area of 2,040 km². AML and AMP are the largest Portuguese urban nodes as defined in Annex II of the TEN-T Guidelines.

AMP is also the transport authority for the intermunicipal and municipal road public transport passengers services in the metropolitan area of Porto.

Both entities, AML and AMP are responsible for the planning and management of the provided public transport services, support and promote initiatives related to the transportation system and mobility in their regions.

⁶ During the course of this project, some of these operators may disappear or see their services changed as a result of the tender for the concession of road services in the Metropolitan Area of Lisbon.

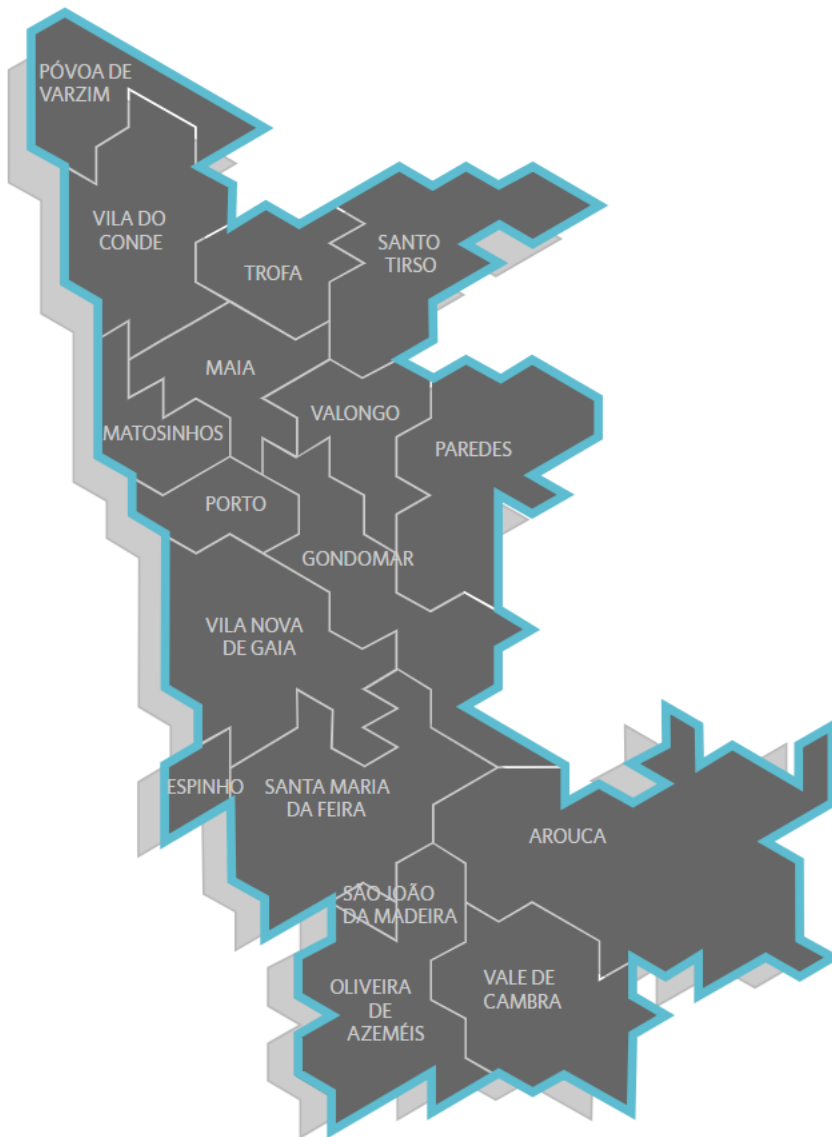


Figure 11. AMP area

Instituto da Mobilidade e Transportes (IMT) is the national PTA, working under the Ministry of Infrastructures and Housing, which will coordinate both pilots.

2.7.1 CURRENT STATUS

In Portugal, PTOs send their data to PTAs, which are responsible to check data conformity and quality. So far, the provided data are not harmonised with EU standards. Nevertheless, Portugal uses a national data model.

To feed this system, received data are “translated” into GTFS⁷. They have also developed the first version of national profiles, publicly available. Finally, a multimodal map is planned to be online by the end of October 2020.

In particular, PTA from Lisbon (AML), is implementing a large data platform that will collect data from all public transport services of the region and will feed the National Access Point. This platform is being designed in compliance with European data standards and it should be tested with the standardized data sets by the operators. The tender, that was recently launched for the public transport bus network in AML, already requires that the future companies deliver data according to European standards. Moreover, it is foreseen a change of PTOs map in the next 3 or 4 years.

2.7.2 TYPE OF DATA

TRANSPORLIS, an Association for the exploration and management of multimodal travel information services in the Metropolitan Area of Lisbon, will contribute to this pilot with data (NeTEx and SIRI whenever real-time data is available) from the following Public Transport Operators members:

- Rodoviária de Lisboa, TST, TCB, Sulfertagus, Vimeca and Scotturb (road)*
- Metro Lisboa; Metro Transportes do Sul (underground)
- Transtejo/Soflusa (ferry)
- Fertagus (rail)

Data will concern fares topology, timetables and real-time vehicle geo referenced information.

2.7.3 PILOT SPECIFIC OBJECTIVES

For Portugal, it is important to streamline the process making NeTEx used natively and without needing consecutive data translation from other different formats (from PTOs personalised format to GTFS and then to NeTEx). Minimum European profile is also recognised by Portugal as a need, in order to finalise their national profile accordingly.

2.8 SLOVENIA

Slovenian National Access Point (NAP) is available here: <https://www.ncup.si/en>

In Slovenia, DATA4PT validation tools will be used to validate data formats, profiles and processes in relation to the Slovenian NAP, which is hosted by the National Traffic Management Centre (NTMC, or NCUP in Slovenian). NTMC is an internal organisational unit of the Ministry of Infrastructure (Republic of Slovenia).

⁷ Rail operators are the only using GTFS standard.

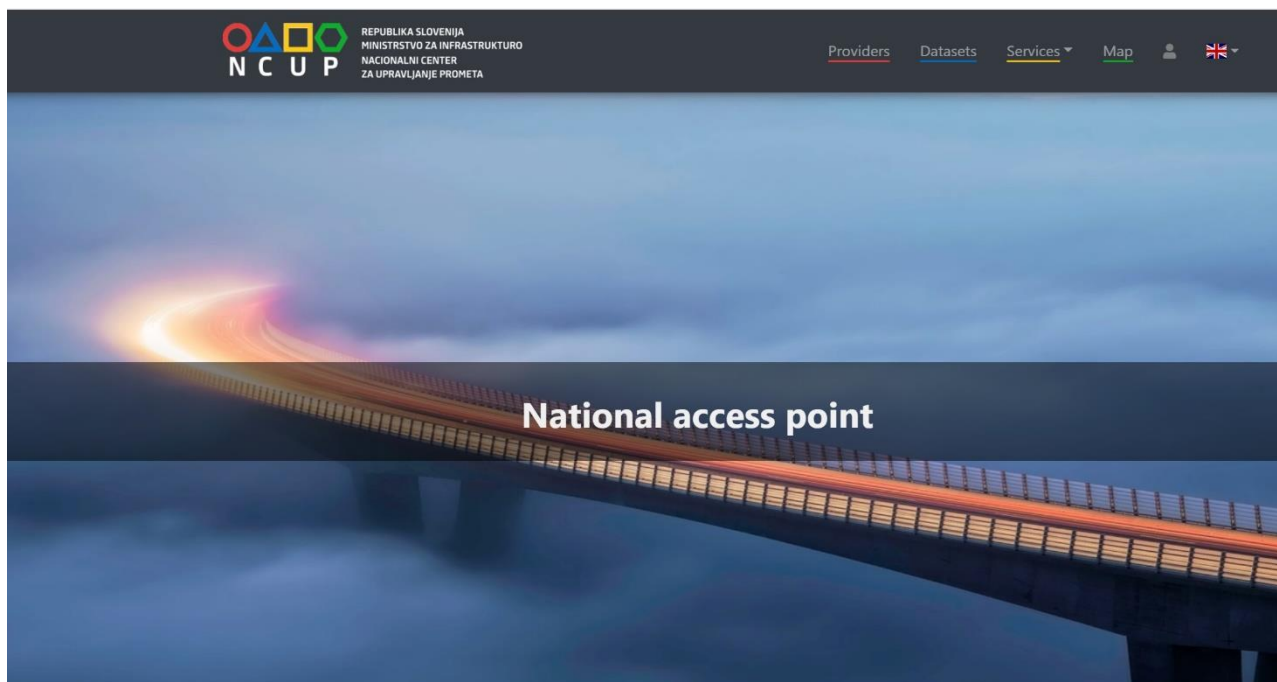


Figure 12. Slovenian NAP website (<https://www.ncup.si/en>)

At the moment, the NAP is providing all the data according to the Delegated Regulations 885/2013, 886/2013 and 2015/962. Within the NAP new services for the Multimodal Traffic Information are being established according to the Delegated Regulation 2017/1926.

The Slovenian DATA4PT pilot will validate the national integrated public passenger transport (IJPP) system data on the national level. Together with the NTMC and the Ministry of Infrastructure (as the IJPP authority), University of Maribor will also be involved in the pilot. The validation tools will be tested by the NTMC and University of Maribor to verify the compliance with the Delegated Regulation 2017/1926.

2.8.1 CURRENT STATUS

The IJPP is in operation since 2017. It integrates all public transportation operators in Slovenia, including the national railways, to provide a unified ticketing & fare collection system. The IJPP adopted the Transmodel-like conceptual database model. However, the model does not yet consistently separate infrastructure, timing and service pattern layers as suggested in Transmodel. The IJPP will be further upgraded so that it can provide standard based (NeTEx, SIRI and Open API for distributed journey planning) multimodal transport information services (MMTIS). The development at NTMC started in 2020 with the following activities:

- **Based on the IJPP** a national NeTEx and SIRI profile will be established in the beginning of 2021 to provide timetable exchange and dynamic data from PT vehicles
- **Multimodal route planner** is going to be established in the beginning of 2021. It will support bus and rail passenger transport within the IJPP and will also include alternatives for bicycle and walking, including P+R support (park and ride) and will be available to end users. The multimodal route planner will support the Open API for distributed journey planning.

As the MMTIS are being implemented in the Slovenian NAP, the main data provider will be the IJPP, which will feed the NAP. Data exchange is not operational yet.

2.8.2 TYPE OF DATA

All public transport data available at NAP will potentially be tested. In terms of MMTIS, data feeds from the IJPP can provide data about public transport network and infrastructure, public transport timetables and public transport operators. Data files will be available in several formats like NeTEx, GTFS, GTFS-RT, JSON, GeoJSON, Shape, xlsx. As a minimum NeTEx based datasets for static (planned) public transport data will be tested.

2.8.3 PILOT SPECIFIC OBJECTIVES

For the pilot objective is to validate static (NeTEx) and dynamic (SIRI) public transport data that will be obtained from the IJPP and made available through the NAP. The data can then be also validated as delivered by the NAP. Moreover, the overall consolidation and integration of the whole IJPP and its compliance with the CEN standards would be the most important goal of the Slovenian pilot.

2.9 SWEDEN

Swedish NAP is available here: <http://www.trafficdata.se/>

In Sweden, pilot implementation will focus on NAP. Samtrafiken, co-owned by PTA and PTO, is the manager of the NAP for traffic data and for the national ticketing standard (called BoB). NAP has been launched few years ago, but it is still under development. Currently, the following data are available:

- planned public transport throughout Sweden provided in GTFS format for selected PTO/PTAs,
- planned public transport in NeTEx format for selected PTA/PTO,
- disruption information, arrival/departure forecasts and vehicle positions for selected PTA/PTO in GTFS Realtime format.

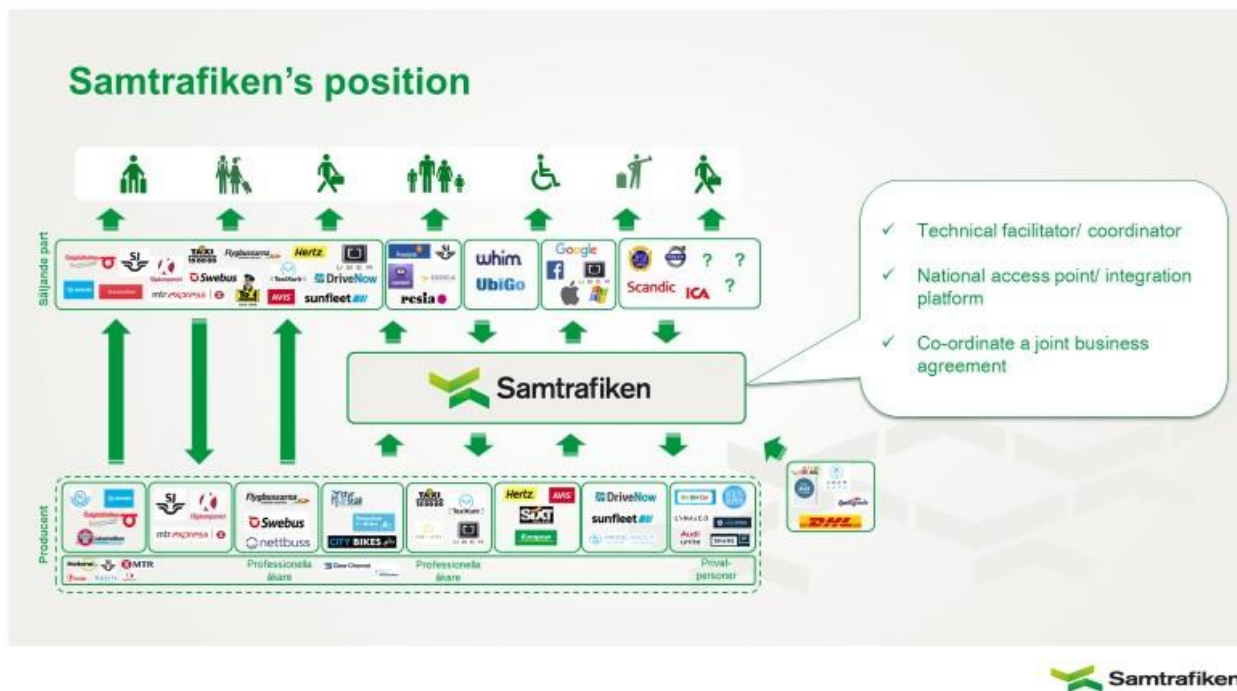


Figure 13. Samtrafikens position

Sweden is in the middle of a transition phase from the old back-end platform based on a proprietary format for import/output to a modern platform which enables import and export of data in NeTEx and SIRI format. Some data are published through the old platform and some data through the new platform, but action on moving data flows to the new platform is taken. Next steps on NAP development are on the one hand the automation of data imports, creating a “self service” data import portal and on the other hand the increase of PTA/PTOs number that use NeTEx data format.

2.9.1 CURRENT STATUS

Samtrafik receives data from all the PTAs in Sweden. Every PTA in Sweden and a growing number of commercial operators (SJ being the largest) send data either in NeTEx or in other format. The data is gathered (mostly automatically) from the PTAs and PTOs on a regular basis.

The organisation is responsible to convert accordingly the data format into NeTEx and in general to deliver the public transport related data in the NAP. Different standards are used, but NOPTIS (Norwegian profile) is the most common. Then, NOPTIS can be converted to GTFS, GTFS-RT and NeTEx. Data originate from all PT networks (urban, suburban and national) and from all transport modes (train, busses etc.). Sweden has converted the ITS-directive and EU 2017/1926 into national regulations.

2.9.2 TYPE OF DATA

All available data in NAP will be considered. Additionally, it is foreseen to include pricing information in the type of data to collect and test in order to align with MMTIS definitions.

2.9.3 PILOT SPECIFIC OBJECTIVES

One of the pilot's objectives is to facilitate NAP data preparation by collecting all relevant information from data providers directly in NeTEx format. Moreover, the coordination with railway data requirements and specifications is considered as future goal. Finally, knowledge and expertise exchange is very important parameter of the Swedish pilot. In particular, given the fact that Norwegian profile is mainly used, Swedish stakeholders are keen to learn the discrepancies between the Norwegian profile and the integrated EU wide NeTEx format. Validation tools are considered as key outcome of this project which will enable Samtrafiken to check and validate data for NeTEx format compliance.

CONCLUSIONS

The diverging implementation status of EU standards between MS results in identifying different operational use cases. NAPs oriented pilots have been defined by Austria and Sweden considering data from all PT networks (urban, suburban, national) and transport modes (buses, railways, tramways, metro lines). On the other hand, specific pilot sites are selected by Italy and France (at one region level), Portugal (in two urban areas), Czech Republic (in one urban area) and Denmark (in one urban area). Each MS underlines different points depending on the level of pilot preparation and focus.

Current state presentation shows that there is no homogeneous data standard implementation. NAPs are just starting to deliver data in different formats : mix of EU standard-based for few (NeTEx and SIRI), light established standard (GTFS) and background national formats. Data providers, like PTOs, do not necessarily deliver data in EU format either because national legislation is not yet adjusted or not yet implemented. In some MS, the responsible PTAs for centralised data collection and verification, proceed to data conversion to European standardised format but it is the minority at the moment. Moreover, conversion could be a solution to manage transition but this is not expected to be a sustainable implementation as native EU standard data set are expected. Even though NAPs development with regard to MMTIS and their harmonisation with EU standards is in early stage, MS have national procedures, using either advanced or traditional systems on data collection, verification and storage. They are aware of the current gaps and convergence points between established and desired future situation and therefore they have identified specific challenges to address through the pilot.

Finally, MS objectives and expectations can be summarised in the following three points:

- the strengthening of knowledge and increase of familiarity with EU standards by the involved PTOs and PTAs,
- the facilitation of data preparation procedures to feed NAPs,
- the harmonisation of national profiles with a common minimum profile to be adopted in EU level (EU minimum profile).

REFERENCES

- [1] EU EIP SA46 Coordinated Metadata Catalogue, https://eip.its-platform.eu/sites/default/files/EU%20EIP_Coord.%20Metadata%20Catalogue_v2.0_191115.pdf, 2019.

ANNEXES: NATIONAL ACCESS POINTS

Links to National Access Points can be found at this link:

<https://ec.europa.eu/transport/sites/transport/files/its-national-access-points.pdf>