



NAPCORE strategic position and common strategy for cooperation with major stakeholders and related activities

Milestone 1.2

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Abstract

This document represents M1.2 of WG1 and focuses on identifying specific goals for cooperation with major stakeholders in the mobility landscape, especially those not connected in any formal way to NAPCORE activities – i.e. project partners or members of the Advisory Board. For each goal, strategic actions for NAPCORE partnership are defined to reach the respective goal.

Abbreviations

Abbreviation	Meaning
AI	Artificial Intelligence
BRT	Bus Rapid Transit
DFRS	Data for Road Safety
DRs	Delegated Regulations
EMDS	European Mobility Data Space
ERA	European Railway Agency
ERTMS	European Rail Traffic Management System
EU	European Union
FCD	Floating Car Data
GBFS	General Bikeshare Feed Specification
GTFS	Google Transit Feed Specifications
HD Maps	High Definition Maps
IoT	Internet of Things
MDMS	Multimodal Digital Mobility Services
MS	Member State
NAP	National Access Point
NPRA	Norwegian Public Roads Administration
NRAs	National Regulation Authorities
NSB	National Standardisation Body
OD	Origin-Destination
OJP	Open Journey Planner
PA	Public Authority
PSO	Public Service Obligations
PTA	Public Transport Authority
PTO	Public Transport Operator
SMA	Sustainable Mobility Authority
TMCs	Traffic Management Centres
TVRA	Threats, Vulnerabilities and Risks Analysis
W3C	World Wide Web Consortium

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Overview of this milestone and document

This document represents M1.2 of WG1 and proposes a strategic position and common strategy for cooperation with major stakeholders in the mobility landscape, especially those not connected in any formal way to NAPCORE activities – i.e. project partners or members of the Advisory Board. The strategy is defined by identifying specific goals and for each goal, strategic actions for NAPCORE partnership are defined to reach the respective goal. The document also gives a comprehensive overview of all the stakeholders that are relevant for NAPCORE, across different transport modes.

The document is divided in six chapters and a set of Annexes. The first chapter is the introduction, followed by four main chapters and the conclusions in chapter six. [Annex 1](#) contains a detailed description of the members of NAPCORE Advisory Board. [Annex 2](#) documents a selection of relevant national standardisation activities identified by NAPCORE WG4. Finally, the categorization of relevant stakeholders within WG5 as of September 2023 is presented in [Annex 3](#).

The introduction provides an overview of the mobility market in terms of actors and transport services, as well as a review of other results from NAPCORE relevant for this milestone.

Chapter Two deals with several topics: overview of NAPCORE Advisory Board; establishing major external stakeholders' categories targeted for cooperation; presentation of a comprehensive list of potential major external stakeholders.

Chapter Three is the main chapter, and it describes in detail the proposed goals for cooperation and strategic actions that define the strategic position and common strategy for cooperation with major stakeholders, those not represented in NAPCORE nor the Advisory Board.

Chapter Four presents potential cooperation activities with other initiatives such as X4ITS, DFRS or C-Roads platform.

Finally, Chapter Five briefly describes potential impacts of emerging technologies (e.g. Internet of Things, Block chain, Artificial Intelligence) on NAP operations.

1. Introduction

This document was developed as part of Task 1.2 activities in Working Group 1 of the NAPCORE project. The main objective of Task 1.2 is to monitor existing and upcoming projects, activities or initiatives in the mobility data and data exchange domain. Relevant valuable results from these activities will be considered or incorporated via regular liaisons.

This document represents M1.2 of WG1 and focuses on identifying specific goals for cooperation with major stakeholders in the mobility landscape, especially those not connected in any formal way to NAPCORE activities – i.e. NAPCORE partners or members of the Advisory Board. The document also gives a comprehensive overview of all the stakeholders that are relevant for NAPCORE, across different transport modes.

Task 1.2 started the work in March 2023 and since then regular meetings were held to define a common methodology and content for this report. The first challenge was how to define a common strategy that considers both the ongoing activities of NAPCORE, and the potential needs or requirements of stakeholders involved in the NAP ecosystem. After many discussions between Task 1.2 members, it was agreed that a pragmatic approach is needed, and that the targeted stakeholders should be categorized in a small number of generic categories.

As a result, the strategic position and common strategy we propose consists in several goals for cooperation with external stakeholders. The goals are presented in Chapter Three and for each one, strategic actions for NAPCORE partnership are defined to reach the respective goal.

The goals for cooperation are the result of the expert knowledge of the partners involved in Task 1.2. These goals do not represent any obligations for NAPCORE partners, instead they are meant as a guiding framework to facilitate and focus cooperation activities with external stakeholders.

The goals for cooperation and the strategic actions were developed with the primary objective of contributing to NAPCORE's mission: promote NAPs and support their harmonised implementation at European level. In this sense, NAPCORE should cooperate with external stakeholders to understand their needs for data exchange through the NAPs.

1.1. The mobility market

This section deals with the mobility of persons, and does not consider the transport of goods (commercial vehicles). The two travel domains may overlap when mobility data are at stake (e.g. for transport by rail).

1.1.1. What is mobility

Mobility is a decision of a *person* – the *traveller* – to move/perform a *trip* from a geographical Origin to a geographical Destination D (*OD trip*) – in a given territory (*mobility area*) - for a given reason (*trip purpose*) at a given date/time (*trip time*). Mobility is achieved either only by *on-foot travel – walking* – usually for very short distance, or through the *individual use of a transport mean* (active modes or private cars and other motorized modes), or through the *use of one (or a set of) transport modes shared with other travellers*, or through a *combination of these options*.

To assist a traveller moving, the “*mobility market*” proposes “*mobility services*” before, during and after the travel¹.

¹ The “*mobility services*” can be proposed to the traveller or to someone acting on behalf of the traveller before the travel, the “customer”.

Part of the mobility services are digital information services and therefore focusing on mobility data (see mobility datasets below).

As regards passenger mobility, the car remains the dominant² form of inland transport in all EU Member States (MSs). Private cars and motorised two- (or three-) wheels and potentially some categories of car-pooling are the only modes which can serve with one vehicle any mobility needs over the European territory from any geographical origin to any geographical destination (end-to-end OD trip), except in cases where car usage or car parking is restricted in specific urban areas.

Restricting car usage is more and more common in major conurbations and is also one of the instruments promoted by the Clean Air Directive. This is where UVAR's stem from.

Where car usage is limited and/or restricted, collective public transport and active mobility (by bike or by foot) are usually highly developed and attractive.

1.1.2. Mobility alternatives for passenger transport depend on the location of the origin and destination of the travel

The other private modes allowing to serve on their own any end-to-end OD trip are active modes (walking and (e-)bike or (e-)scooter)³, but of course this is *only possible for trips located in one single urban area*, and when O and D are close to each other.

The “urban area” is not often an administrative area, but rather a functional area with permeable limits over which the daily-life mobility needs of local citizens can be served. The local citizen can find in the urban area the various services provided by a city and its hinterland (which might include some rural areas). These services are purposes of trips: home, education, health, work, shopping, administration, culture, religion, entertainment...

By far, most of mobility trips are confined in one single urban area. When the local travellers do not use private car or private active modes, they use to travel between the physical origin and the physical destination of their trip within the single urban area:

- either *one public transport mode only* (like taxi, or Uber-type services) or
- a *combination of transport modes* including always some walking to access a stop point of a public transport service at the origin of the trip or to egress from a stop point to the final destination of the trip.

In some cases *the access to the public transport stop point can be done with a private mean* (car, motorised two-wheels or (e-)bike or (e-)scooter).

In all cases, there is also one public transport mode which can be available for free at the very beginning or destination of the trip: the lift, which is the second most used mode in local mobility in terms of number of passengers (but of course not in terms of passenger x km).

The public transport modes which can be used *between two public transport stop points within the same urban area* are providing:

- *collective public transport* scheduled or on-demand services, by bus (various categories with more or less capacity and access restriction to specific categories of users, including touristic coach or bus services), by tram or Light Rail, by (urban) metro or (regional) metro-like train

² An Eurostat survey demonstrated that in 2018, car travel accounted for 82.9% of passenger-kilometres across the EU. Source: (Car travel dominates EU inland journeys - Products Eurostat News - Eurostat (europa.eu))

³ Taxi may also be ordered in very specific cases (e.g. in case of accident with a private mode covered by insurance).

services and by suburban/regional train services⁴, or by some waterborne services (ferry-type like in Lisbon or inland waterways type, e.g. the “vaporetto” in Venice);

- *alternative public transport modes* provided mostly on demand by:
 - taxi, water taxi, rental car or motorised two-wheels rental,
 - car-sharing, motorised two- (or three-) wheels-sharing, (e-)bike or (e-)scooter sharing, the two latter being called “new mobility services”. The access to the shared vehicle fleet is a public transport service, but the vehicle is used privately by the driver.
 - car-pooling especially in low density suburban areas where conventional public transport services are limited.

All mobility services provided in an urban area (by private modes, by public modes or in combination) are depending on agreements from national or local competent authorities.

The public transport modes which can be used for *trips between two different urban areas depend on the characteristics of the urban areas at either end of the trip*, and the public transport modes involved between two urban areas are usually called “air”, “rail” or “waterborne”. Therefore, in addition to local public transport, the customer shall use in such a case:

- *Rail services* – most of them are scheduled⁵ and ruled by the Interoperability Rail Directive (EU) 2016/797 and its delegated regulations (like the TAP TSI and TAF TSI⁶); and/or
- *Air services* – most of them are scheduled⁷ and follow air regulations; and/or
- *Coach services* (a coach is a category of bus where all passengers are seated and which follows specific technical requirements) – most of them are scheduled⁸ and follow the EU bus and coach regulation; and/or
- *Waterborne services* – most of them (maritime or inland waterway) are scheduled and follow a waterborne regulation.

When the ends of the mobility trip (the origin or the destination) are in two different urban areas, the rules which apply for the services between the two urban areas (or “urban nodes”) are set up by a mix of authorities which can be national, European or even international, depending if the two urban areas are in the same country, or in two different EU countries, or if one urban area is outside of the European Union territory (in Europe at large – 47 countries, or outside Europe).

1.1.3. Split of passengers according to the public transport mode used

Within NAPCORE the territorial area covered by the datasets related to the passenger and freight trips and their origin and destination is that of the 27 MS of the EU plus the United Kingdom, Norway, and Switzerland.

⁴ These rail services are excluded from the so-called “Single European (interoperable) Railway Area” – SERA – this is the case of tram/Light Rail and metro, and some suburban/regional services which are also “functionally separate” from mainline services can be excluded by Member States from the SERA.

⁵ ordering a train service for private use of a group is extremely complicated. But some air companies order a train service replacing an air service (e.g. Air France between Paris and Brussels).

⁶ TSI: Technical Specifications for Interoperability. TAP: Telematic Applications for Passengers. TAF: Telematics Applications for Freight.

⁷ Some (rich) customers can order on-demand flights, and some services (e.g. for medical reasons) can be ordered by insurance companies to serve a customer getting a relevant contract protecting his trip (like Europe Assistance or Mondial Assistance).

⁸ however some customers can order on-demand services (e.g. when a climate event like the Eyjafjallajökull eruption in 2010).

Referring to public transport users in the mobility market, *local collective public transport customers travelling by bus, tram/Light Rail, metro and suburban/regional train* represent according to UITP surveys around 55 billion passengers per year⁹, compared with 1,5 billion passengers/year by air, with 2+ billion international and intercity rail passengers, and with around 7 billion passengers by coach.

New mobility services represent a very few percent of the ridership measured in terms of number of passengers carried or in terms of passenger x km.

Since some trips may originate from or end in a country which is not in the above territorial area, specific attention should be given to international actors whose competence and area of operation is wider than that of the territory covered by the NAPCORE project.

1.1.4. Categorisation of transport modes and services in MMTIS regulation

The categorisation of transport modes and services in MMTIS regulation is defined in its Annex I as follows:

Partition of transport modes and transport means and included services, such as:

- *Scheduled transport* such as:
Air, rail including high speed rail, conventional rail, light rail, cableways, long-distance coach, maritime including ferry, inland waterways, metro, tram, bus, trolley-bus.
- *Transport on demand* such as:
Shuttle bus, shuttle ferry, dial-a-ride services, taxi, car-sharing, car-pooling, car-hire, ride-sharing, bike-sharing, bike-hire, bike-rental, e-scooter sharing.
- *Personal transport* such as:
Car, motorcycle, bicycle, scooter, walking.

The relevant mobility data to be provided to the NAP have to follow some more precise requirements presented in section 1.1.5 and 1.1.6.

1.1.5. Interoperability requirements

Road traffic and some public transport services by road, by air, by rail or waterborne and their relevant assets (infrastructure, vehicles, equipment) require some kind of “interoperability” at (national or) European level - to allow the movement of vehicles and people throughout (a country or) Europe¹⁰, when the origin and destination of the trips are located in different cities or countries. Other modes/services stay purely local and do not require (national or European) interoperability, even if they are fully “multimodal” like local public transport modes/services (including ticketing) already implemented in most important urban areas. This is why in the latter case the decisions regarding technical specifications for public transport are usually in the hands of competent national and/or local authorities (a challenge being to integrate properly locally “alternative modes” as “complementary services” to collective public transport).

The type of data needed to support public authorities and to be delivered to the NAPs are related to the various modes used along the travel chain between the origin and the destination: data describing the transport supply (assets and services); data describing the customers potential needs; data flows on each “mode”, resulting from counting or ticket sells for the modal journey, data on OD trips and

⁹ Broad figures before the COVID crisis according to UITP estimates.

¹⁰ Note that the definition of « Interoperability » is different in the Interoperability (rail) Directive, in the ITS Directive, and in the new regulation on TEN-T.

purposes, usually resulting from specific mobility surveys (to be able to see which journeys are part of the OD trip “multimodal travel chain”).

Note 1: when mobility management covers long term mobility evolution, additional data and specific studies are required regarding economic and land use development within the urban areas involved, in order to plan major transport infrastructure development (road, rail, BRT, LRT, Metro, Suburban/regional rail).

Note 2: passenger mobility may overlap in some cases the mobility of goods. The approach should be similar for what regards the territories at stake and the relevant mobility authorities (which might or not be the same as the “passenger” transport authorities).

1.1.6. Mobility data sets and stakeholders

Mobility datasets are related not only to the travel option including effective, reliable and secure transportation, but also to infrastructure, vehicles, and Intelligent Transport Systems components involved in the transport chain.

The infrastructure may vary in nature and be shared - or not - among various types of vehicles. The vehicle might be a private vehicle (owned by an individual for passenger travel or by a company for goods travel) or a public transport vehicle either used for a private use (like Uber for passenger travel or a road haulage operator for goods) or for a collective use for passenger transport (like a bus)). Therefore, *in addition to the customers and transport service providers, the mobility stakeholders are those involved in:*

- *the provision of infrastructure and vehicles:* public authorities, civil works companies, vehicle and equipment manufacturers...
- *the use of infrastructure and vehicles:* public authorities, private or public operators, vehicle service providers, individuals... The use of vehicle can address the vehicle itself (technical requirements), the right to use the vehicle (driver license), the right to offer a transport service (registered companies and drivers).
- *the provision of information on transport services (e.g. transport offers, journey planning, transport services booking and purchase):* public authorities, private or public operators, information service providers.

The “digital mobility services” are covering “on-line” and/or “off-line” information on transport services for “connected” travellers.

Mobility data targeted by NAPCORE encompass static and dynamic time datasets (in the form of data register and/or database and/or data warehouse and/or data marketplace managed in metadata directory or data platform) which shall be used for identifying, monitoring, understanding, organising, regulating, and facilitating the movements of people, freight, and vehicles. Some services are limited to the provision of digital information on the transport services but may include the booking and the purchase of tickets through internet when a commercial transaction is required.

It can be noticed that the MMTIS regulation is entitled “MultiModal Travel Information Services” but deals with transport services of people and vehicles, while “mobility services” may also include “travel services” which are not actual transport services but which complement them and depend on the

purpose¹¹ of the trip at either end of the OD trip¹² or at intermediate stops¹³ of the travel chain. These travel services might be referred to as “location-based” services, since they are provided to customers before or after using a vehicle (including at transfer points between two vehicles).

For passenger travel, there exist various types of travel service providers, and the type of transport service is determined by two primary categories:

- “**commercial services**” provided on request for a price paid by the consumer, at a rate which allows the Travel Service Provider to self-sustain the delivery of the service;
- “**PSO services**” (PSO=Public Service Obligations) which are transport services not fully commercially viable, and are provided with the support of competent public authorities and taxpayers contributions, which means services operated under “public service contracts” agreed between the operator and competent “**public transport authorities**” (“**PTAs**”). The contract includes public service obligations to be applied by the operator, and the price to be paid by the customer (if any) is decided by the PTA.

The largest part of local public transport service, and all urban rail services are provided under PSO, which means that the PTAs are a stakeholder influencing both the transport supply and the transport demand including in terms of data provision, data collection and data management.

Passenger “commercial” travel services are operated by private companies such as:

- collective transport services operators (e.g. airlines, mainline rail companies, coach companies like Flixbus, Blablacar Bus, Alsa, Marino bus) or
- taxis or other services with a driver (e.g. Uber, Bolt) or without driver (e.g. bike-sharing, scooter-sharing) or
- car rental companies or carsharing companies etc. or
- travel agencies, mainly organisers and most often not operators or
- digital mobility services providers (MaaS).

Although most of the transport services providers can be regarded as public transport operators, ***the term PTO is usually applied to public transport operators providing collective transport services operated under public services obligations or PTOs which are “in-house” operators owned by the PTA.***

In urban areas the services provided by the PTOs are part of an integrated passenger public transport system and are integrated in a fare policy system combining bus lines (and sometimes on-demand bus or shared taxi services) and in bigger conurbations tram/light rail lines, metro lines, and suburban rail lines (and sometimes ferry services like in Lisbon or waterborne services like the Vaporetto in Venice). The integration is a political decision of competent public authorities, which are more and more responsible for the overall sustainable mobility policy at the urban area level.

1.2. Related NAPCORE activities

Following is the list of the most relevant NAPCORE activities carried out in different WGs:

- The template produced by T5.4 on mapping data providers to NAP types,
- The contribution from WG4 and SWG4.3, and

¹¹ home, work, education, business, shopping, culture, religion, tourism, leisure, specific event...

¹² E.g. the reservation of e.g. a hotel or a ski resorts or ski passes or the access to a museum, an exhibition, a sport facility or a sport event, a cultural event...

¹³ e.g. access to a lounge, a restaurant...

- The outcomes of WG2, Milestone 2.7 List of requirements (under Task 2.2) - concerning the use of data standards, profiles, and metadata.

A summary for each of the activities is presented in the next sections.

1.2.1. Results from T5.4

Milestone report M5.6 presents the status of the WG5 Task 5.4 “Accelerate the provision of data on the NAPs” and elaborates on initial reflections on strategies and actions to motivate private, international organisations to provide data on the NAPs. This work is crucial, as cooperation with various stakeholders and organisations is required in order to implement the Delegated Regulations, especially MMTIS and the new RTTI. Due to the high number of stakeholders, also because of the extension of the requirements to the entire European mobility network, motivating stakeholders to provide data on the NAPs proves to be challenging. To address these challenges, different kind of measures are required, e.g. organisational, communicational and strategic ones.

More specifically, the milestone report has the following objectives:

1. Identification and categorisation of relevant organisations (see [Annex 3](#))
2. Reflection on strategies and actions to address and motivate these organisations to provide data on the NAPs

The identified stakeholders have been grouped according to their geographical scope (national, international), type (data holder, service provider) and nature (public, private). In further consequence, a short- and long-term vision for national as well as international stakeholders was developed (see [Annex 3](#)). The measures include communication guidelines, Q&As, best practices, technical support and actions to raise awareness.

The outcome of the process illustrated that a joint approach regarding the stakeholders’ motivation to provide data on the NAPs is necessary to maximise synergies but also to reduce the risk of multiple contacts and (potential) contradictory messages being exchanged. Furthermore, the establishment of a trustworthy rapport between NAPCORE and organisations via signed contracts and agreements paves the way for more comprehensive collaboration. To tackle challenges regarding Compliance Assessment it is crucial to define a framework of harmonised strategies and processes. The creation of an incentive system or a selection of sanctioning options in case of non-compliance is to be defined. Future attention within the NAPCORE project should revolve around the following activities:

- Increase the understanding and awareness of the benefits and importance of the ITS Directive and the role of private international organisations in achieving its objectives
- Foster the dialogue with and better understanding of relevant stakeholders
- Streamline the National Bodies for the NAPs
- Evaluation incentives for stakeholders to provide data on the NAPs

In the first half of 2024, first actions have been taken to raise awareness of the ITS Directive among relevant stakeholders and to foster the dialogue with them. In order to better understand the concerns, experiences and challenges stakeholders face when sharing data on the NAPs, a survey has been conducted and an interactive webinar was organised.

1.2.2. Results from SWG4.3

NAPCORE Milestone 4.3.1 refers to the description of the current ecosystem for the provision of multimodal data in the framework of NAPs or other related activities and initiatives. Milestone was completed in October 2022 and distributed internally. More specifically, this includes:

- Description of the characteristics of the NAPCORE-related data exchange standards, including the description of the standardisation stakeholders and their role.
- Identification of standardisation activities and their scope.
- Identification of developed and existing standards linked with services/or data categories.

Closely related to it, the milestone 4.0.2 (in WG 4) aims to build upon the identified ecosystem, offering a roadmap for harmonising the way in which data is exchanged among the different standards addressed at NAPCORE, and thus includes the following steps:

- Identification of the topics that require alignment and/or harmonisation
- Identification of the relevant actions, either at topic level or at a broader level. An action could aim to enable collaboration between the entities that already work on one of the prioritised topics and align with NAPCORE findings. Another action could be the active contribution to a WG, etc.
- Defining internal coordination perspectives and building liaisons with external stakeholders, outside of the NAPCORE partners and Advisory Board.

Arguably, the most relevant standardisation committee is CEN TC278 Intelligent Transport Systems. The details on this committee can be found at <https://www.itsstandards.eu/>. A website that introduces all of ITS standards with a focus on mobility was commissioned by DG MOVE and can be found here: <https://www.mobilityits.eu/>

A simplified overview of CEN TC278 is presented in the figure below.



Figure 1: Overview of CEN TC278

These are some examples of current data standardisation issues raised by the NAPCORE ambassadors, as well as by external stakeholders such as the European Parking Association:

- The parking standard ISO 5206-1 was developed by the parking associations under the auspices of CEN TC278/WG17 and the twin group ISO TC204/WG19. It defines the core data model and is being harmonised into the other standards families in Europe and deployed by the major parking operators around the world.
- Cycling infrastructure has been identified as a gap, because none of the standards include this data.

An extended overview of national standardisation relevant activities is provided in [Annex 2](#).

1.2.3. Results from WG2

In order to achieve more interoperability, it is imperative to analyse the status of NAP implementation in all MSs with respect to data standards, reference profiles and metadata used and identify eventual gaps. This work is carried out as part of Task 2.2 - and consolidated into the Milestone 2.7 report. This report is an updated version of NAPCORE Milestone 2.4, which was limited to the analysis of data standards. In addition to updating such analysis, M2.7 extends it by including the identification of gaps and listing recommendations and requirements for profiles and metadata. In that sense, the report provides an analysis, inventory of shortcomings and recommendation of the three subjects that constitute the referred task, as well as a set of recommendations and requirements destined to standardisation bodies (main stakeholders).

The data standards mentioned in the DRs and NAPCORE WG4 (Data Exchange Standards) are used for the analysis in this report. Open data standards such as GTFS, rail, and air data models are also included. It is worth mentioning that some of these specifications, such as GTFS (and GTFS-RT), OJP, and IATA, have been included in the analysis since they are frequently used in the mobility domain; however, they are not referred to in the EU Delegated Regulations. The following standards are part of the analysis: INSPIRE, DATEX II, TN-ITS, Transmodel, NeTEx, SIRI, GTFS & GTFS-RT, OJP, IATA, TAP-TSI, and GBFS.

The adopted methodological approach for this report is based on a combination of targeted desktop research and extensive analysis of data collected by the other WGs of NAPCORE, later supplemented by internal WG discussions and expert review by some project partners and external stakeholders from standardisation entities (e.g., MobilityData, EU Agency from Railways).

Section 2 details the analysis of data standards. As part of this analysis, targeted research was a major task carried out to identify gaps in the standards. Such research allowed one to verify which standards can cover (totally or partially) the elements addressed by each data category specified at the four DRs. Recommendations for further development of data standards followed the gap identification process. Moreover, by using outputs of other WGs and extending them with an internal (Task 2.2) survey and review procedure, we were able to analyse the use of standards in the NAPs, quantifying the coverage of each data category, as well as the standards (or formats) used for such coverage.

Additionally, the concept of profiles is available to support the different types of services using these standards. A profile is a subset of the entire standard, only containing the relevant data elements required for a specific use case. At first, a review of existing European and national profiles was conducted by consulting databases from the standardisation entities and completed with inputs from Task 2.2 members. Based on this initial research, gaps in the scenario of the existing profiles that may hinder interoperability were identified, such as missing profiles for specific use cases and governance issues for national profiles, among others. Then, a set of recommendations was drafted in order to tackle those gaps.

In addition to standards and profiles, detailed and standardised descriptions of datasets, i.e. metadata, are also crucial for enabling the discoverability of mobility data, which is one of the main objectives behind the existence of the NAPs. Outcomes of sWG4.4 are used to describe and detail relevant aspects concerning current recommended metadata specifications for the NAPs, as well as to provide a list of requirements concerning metadata. Furthermore, results of the NAP Levels of Service (LoS) self-assessment carried out under Task 2.1 were used to assess how the NAPs currently align/adhere to these requirements and specifications.

The amendment of the ITS Directive (reference 3) is anticipated to have implications for the analysis conducted in the report. Article 7 of the directive indicates future amendments to data categories

referenced in Annex 3, suggesting that required data types may be added or removed for priority areas, thereby impacting the analysis of data standards performed in this work. Additionally, the directive's Article 8 implies that efforts will be made to rapidly adopt recommended standards, potentially leading to a reduction in the range of standards analysed in future analyses, which could enhance the depth and richness of the analysis for each of these standards. Furthermore, the directive emphasises the development and use of specifications (e.g., metadata catalogues) and standards in priority areas, suggesting that upcoming reports may dedicate special attention to these areas during analysis. Additionally, Article 5 underscores the need for supported coordination projects to focus on aspects of the implementation of harmonised profiles and common metadata, reinforcing the necessity of addressing them in an eventual updated version of this report.

2. Major stakeholders and NAPCORE

2.1. NAPCORE partnership and Advisory Board

The NAPCORE project is supported by the NAPCORE Advisory Board. The members can be broadly categorised as from road sector and urban transport sector. They are listed below and detailed information about them is available in [Annex 1](#).

The members representing the “road sector” (infrastructure, vehicles, traffic and parking, IT services) are:

- **ACEA** – The European Automobile Manufacturers’ Association
- **ASECAP** – European Association of Operators of Toll Road Infrastructures
- **CEDR** – Conference of European Directors of Roads
- **CIE** – Cycling Industries Europe
- **C-Roads**
- **CAR 2 CAR Communication Consortium – C2C CC**
- **Data for Road Safety**
- **EAFO** – European Alternative Fuels Observatory
- **EPA** – European Parking Association
- **ETSC** – European Transport Safety Council
- **IRU** – International Road Transport Union
- **ITS private service providers:** HERE, BeMobile, INRIX, TomTom, Google
- **TISA** – Traveller Information Service Association
- **TM2.0**
- **EV Roaming Foundation**, for charging electric vehicles

The members representing the “urban transport” sector (mostly associations) are:

- For public transport services, **EMTA** – European Metropolitan Transport Authorities
- For Intelligent Transport Services, **ERTICO – ITS Europe**
- For the rail sector, **JSG – RU/IM Telematics Joint Sector Group**
- For e-mobility services, **MaaS Alliance**
- For local transport, **POLIS** – Cities and Regions for Transport innovation
- For local passenger public transport, **UITP** – The International Association of Public Transport

2.2. Identification of major stakeholders’ categories

From the perspective of NAPCORE, a major stakeholder is any organisation, company, or authority at national or international level which either develops standards/regulations for NAPs, or is a data user, data provider or service provider. This section will elaborate the categories in which major stakeholders can be grouped. It should be noted that individual entities are not listed here, since examples for individual stakeholders are given in section 2.3. Moreover, it is important to note that it is not in the scope of this document to compile and provide a complete list of all potential major stakeholders.

The identified major stakeholders’ categories are:

- Major public institutions like the European Commission, Parliament and Council (responsible for the legal framework)
- National public authorities responsible for mobility and transport (by road, air, rail or waterborne) (major data and service providers)

- Private companies which activities are developed internationally over several states of the EU or also in other continents, for the provision and/or management of (major data and service providers):
 - road, rail, air or waterborne infrastructure,
 - road, rail, air or waterborne vehicles,
 - road, rail, air or waterborne travel information services (e.g. Google, Apple, Waze)
- Standardisation Bodies setting up the technical specifications which shall be used by all the above stakeholders. These can operate both, on a European (e.g. CEN, CENELEC, ETSI) or international (e.g. ISO, IEC, ITU) level., (responsible for the development of the standards and technical specifications)
- International platforms (e.g. W3C, UIC) producing “de-facto” standards

The part played by commonly shared technical specifications is essential when multimodal travel is at stake. All the above stakeholders need to use standards. Official European standards are produced by the two European Standardisation Organisations – ESOs (CEN and [CENELEC](#), and [ETSI](#)). Many EU standards are co-produced with or by International Standardisation Organisations (e.g. [ISO](#), [IEC](#), [ITU](#)). Standards are produced by the market (under the guidance of EU legislation for the ESOs) following a bottom-up approach of national market leaders and national standardisation bodies for voluntary use. Some standards are made of mandatory use by national or European legislation. Other “de-facto” standards are largely used internationally like the specifications produced by the [World Wide Web consortium – W3C](#) or for rail by the [Worldwide Railway Association – UIC](#).

Key players as far as urban passengers and goods road transport is concerned are the urban, suburban and regional competent public authorities (PAs) – and for what regards local passenger public transport the Public Transport Authorities (PTAs) and Public Transport Operators (PTOs). They are responsible for setting up the regulatory framework which applies to urban public transport and for delivering the services which are offered for collective public transport.

Sectorial players which are active in smaller territories (a state, a region, or an urban area) or in specific transport sectors (air, rail, waterborne, local public transport, new mobility providers) are often represented by national or international associations which are recognised as “representative” national, European, or international associations.

For the description of the goals in Chapter Three, the categories of stakeholders were mentioned by regrouping them in the following more broader categories:

- Data owners/producers
- Service providers / data users (multi-region / multi-country)
- European / international standardisation bodies
- Passenger transport operators / authorities
- Association of public transport companies
- Multimodal travel planners
- MaaS or Mobility Service Providers

2.3. Major stakeholders currently not represented in NAPCORE nor Advisory Board of NAPCORE

In this section, a presentation of individual stakeholders/entities are presented, which MAY or CAN be approached to gain information on their insights, involvement or experience regarding future strategic positions or collaborative initiatives.

2.3.1. Local Public transport infrastructure, vehicles and services

Major stakeholders in the local public transport sector have already been presented in the above sections, in relation with the category of infrastructure used for the services.

Special attention must be given to the PTAs and PTOs. As already stated, they are represented by international associations mentioned above. However, it is important to recall that urban public transport has a specific decentralised governance. Urban public transport networks are usually a mix of various collective public transport networks organised based on the capacity, functional specifications, and performances of various categories of services by bus, tram/Light Rail, metro, and suburban/regional rail, serving various categories of customers. In many cities using urban rail systems, urban rail is the backbone of an integrated multimodal sustainable urban mobility system. Each urban mobility system is unique, depending on decisions taken by the PTA.

Since most local public transport services are operated under Public Service Obligations, which are commonly established within a national framework with diverse interpretations of “public services” among the EU MSs, PTAs and PTOs initially align within national associations, the roles of which vary depending on the country. The European associations are often “associations of national associations”. Among national associations some members may decide to extend the scope of responsibility to new mobility services. Many PTAs are becoming Sustainable Mobility Authorities, (SMAs), responsible for the regulation of all public transport services as well as of traffic and parking and even land use (as it is the case for the Greater London Area PTA named TfL, Transport for London).

In many countries PTAs and PTOs have been cooperating within their respective MS. Some national associations of PTAs and/or PTOs have taken the responsibility of defining the technical specifications to be applied across the country for some categories of public transport modes (e.g. the VDV in Germany, see below). In such cases, these specifications shall be adopted by the relevant National Standardisation Body (NSB) and brought at the EU level in CEN, CENELEC and ETSI by the NSB.

In most populated EU countries, some national associations of PTAs and PTOs can be regarded as key European players, even when their action towards the EU institutions is mainly channelised through the international associations (UITP, POLIS, EMTA, ERTICO, MaaS Alliance). Several operators are acting internationally and may have direct contacts with the European institutions and representations in Brussels.

2.3.2. Examples of key national public transport associations

Germany: VDV - ([Informationen in Englisch | VDV - Die Verkehrsunternehmen](#))

The German association VDV advises its member companies at regional and national level and offers a platform for the exchange of experience and know-how. About 600 members from the fields of public passenger transport and rail freight transport are organised in the VDV in nine regional groups and five divisions; Bus, Tram, Passenger Transport with Railways (PTR), Rail Freight Transport (RFT) as well as Association and Principal organisations (A/P). The advisory board meets once a year in Berlin and has more than 40 members, who are representatives of the highest transport authorities of the federal government and the German states, the local central associations, the transport and trade associations, the trade unions and science. This board aims at strengthening the contacts between science, transport, politics, and administration.

France: GART and UTP

GART – ([Gart – Le site du GART](#)) The French association “Groupement des Autorités Responsables de Transport” defends the interests of mobility authorities (“Autorités Organisatrices de Mobilité”: AOM) in charge of mobility and public transport. It brings together elected representatives from all types of communities and all political sensibilities and supports local authorities – local AOM, regional AOM, communities of communes, departments – in the exercise of their competences in terms of mobility. The GART has 219 members¹⁴: 197 local AOMs, 8 “Départements” and 14 Regions including [Paris] Ile-de-France Mobilité (IdFM¹⁵). GART is recognised, by local authorities and the State, as the essential expert in public transport and sustainable mobility in France.

UTP – (<https://www.utp.fr/>) The French association “Union des Transports Publics et Ferroviaires” is the professional organisation bringing together public transport companies and companies in the railway sector (freight and/or passenger transport, infrastructure and service facility managers, others) in France. Some members are linked to transport groups such as [Keolis](#), [Groupe RATP](#), [Vectalia France](#), [Transdev](#). Others are independent and may be part of the AGIR – [Transport](#) association¹⁶. The UTP also federates railway companies¹⁷ (since 2006) and infrastructure managers¹⁸ (since 2013). The UTP embodies the unity of the railway branch in France. The UTP represents nearly 170 urban transport companies spread over the French territory and is responsible for the negotiation of the collective agreements in urban passenger transport and for the construction of the collective agreement for the railway sector.

Italy: ASSTRA – ([ASSTRA - Transport Association](#))

The Italian association “Associazione Trasporti” is the national employers' association of regional and local public transport companies in Italy, both with public and private capital. It was founded in 2001 by the merger of the two trade associations Federtrasporti (federation of municipal companies) and Fenit (federation of granted railways). ASSTRA includes urban and suburban transport companies, operators of services with buses, trams, subways, cableways, as well as local and regional rail transport and lagoon and lake navigation systems. ASSTRA has 146 members. It stipulates the National Collective Labour Agreement of the category of railway drivers and assists its members in the stipulation of company agreements and in local labor disputes.

2.3.3. Examples of key collective transport operators

Key European collective transport operators acting internationally (with national subsidiaries) are:

Arriva – (Arriva) is a UK company providing passenger transport services by bus and coach, tram/light rail, train and Demand Responsive Travel (DRT) in 10 countries across Europe.

Mobico Group - ([Mobico Group](#)) formerly National Express Group, is a British multinational public transport operating bus, coach, train and tram services in 10 countries (among which 5 EU MSs). Its Spanish subsidiary ALSA ([Wherever you want to go - Alsa](#)) is the leading operator in the Spanish road passenger transport sector and operates bus and coach services in Spain and 17 European countries (and in North Africa).

¹⁴ The board has 48 members, the Scientific Committee 33 members, the “club of partners” 23 members.

¹⁵ [Île-de-France Mobilités | Transports en commun sur Paris, sa région \(iledefrance-mobilites.fr\)](#)

¹⁶ [Agir – Le Transport Indépendant \(agir-transport.org\)](#)

¹⁷ [Arriva](#), [Captrain France](#), [CargoBeamer](#), [Colas Rail](#), [DB Cargo France](#), [Europorte / Getlink](#), [Eurostar](#), [RATP Group](#), [Keolis](#), [Objectif OFP](#), [Railcoop](#)<https://www.eurostar.com/>, [RRT PACA](#), [SNCF Freth](#)<https://www.sncf.com/>, [SNCF Gares & Connexions](#), [SNCF Voyageurs](#), [Thalys International](#), [TRENITALIA France](#), [Transdev](#).

¹⁸ [LISEA](#), [SNCF Réseau](#)

Go-Ahead - ([The Go-Ahead Group - Reconnecting people and communities](#)) is a UK company providing bus services across the UK, Ireland, Sweden and Singapore and Rail services in the UK, Germany and Norway.

Keolis – ([Groupe Keolis : Leader mondial de la mobilité partagée | Keolis.com](#)) is a French company owned by SNCF([SNCF – Timetables, Trains, Traffic, Services, International | SNCF](#)) and CDPQ ([CDPQ | Global investment group](#)). Keolis is a world leader in shared mobility operating in 13 countries and operating services by train, metro, tram/light rail, bus and coaches, bicycle, river and maritime transport as well as on-demand transport, transport for people with reduced mobility and autonomous mobility.

Eurostar – Since Eurostar and Thalys have joined forces under the Eurostar name, the company is now one single rail network connecting France, Belgium, the Netherlands, Germany, and the UK on high-speed direct and indirect routes.

MTR-Group – ([MTR > Our Business](#)) The Mass Transit Railway Corporation is a Hong-Kong based public transport company owned by the Hong Kong Government and by various private investors. It operates the metro and light rail lines of Hong Kong Island, Kowloon and the New Territories and the Kowloon-Canton Railways. From its starting base in Hong Kong, the Corporation has expanded into Mainland of China (Metro lines in Beijing, Shenzhen, Hangzhou) and Macao and taken on a range of railway-related projects and operations internationally. Internationally, the Corporation operates and manages rail or metro services in UK (e.g. TfL Rail renamed as "Elizabeth Line"), Australia and Sweden (Stockholm Metro and commuter rail and intercity railway between Stockholm and Gothenburg (MTRX)).

RATP Group – (<https://ratpgroup.com/en>) RATP Group is a French company created by the state-owned company RATP offering services through 12 subsidiary companies over 5 continents in 15 countries (including in Europe: France, Belgium, Italy, Serbia and Switzerland). The services are offered by rail, metro, tram/Light Rail, urban and interurban bus, cable car and funicular, waterborne shuttle, sightseeing, on-demand transport, and in partnership by bike, scooter, carsharing and carpooling and connected parking.

Transdev – ([Mobility operator : bus, railway, ferry, cargo... transportation - Transdev](#)) is a French/German company jointly owned by CDPQ ([CDPQ | Global investment group](#)) and RETHMANN Group ([RETHMANN \(rethmann-gruppe.de\)](#)) operating services over 5 continents in 19 countries, among which in Europe: France, Germany, The Netherlands, Portugal, Spain and Sweden. The services are offered by coach, bus (including Bus Rapid Transit – BRT), trolleybus, light rail, regional rail, metro, maritime and river transport, cable car and funicular, carsharing and bike-sharing, as well as transport services for health institutions, connected transport-on-demand and autonomous shared transport.

2.3.4. Rail transport stakeholders for infrastructure, vehicles and services

Major stakeholders in the rail sector are including:

ERA – (European Union Agency for Railways Moving Europe towards a sustainable and safe railway system without frontiers. (europa.eu)) The European Union Agency for Railways (ERA) is an independent and neutral body created by the EU for the mainline rail sector with the mission of moving Europe towards a sustainable and safe railway system without frontiers. Its main tasks are to:

- Promote a harmonised approach to railway safety;
- Devise the technical and legal framework in order to enable removing technical barriers, and acting as the system authority for the “European Rail Traffic Management System” (ERTMS) and telematics applications;
- Improve accessibility and use of railway system information;

- Act as the European Authority under the 4th Railway Package issuing vehicle (type) authorisations and single safety certificates, while improving the competitive position of the railway sector.

UNIFE - ([Home - UNIFE](#)). UNIFE is a European association representing the European Rail Supply Industry, and its membership accounts for 84% of the European, and 46% of the global, market for rail equipment and services. UNIFE communicates members' interests at the European and international levels while actively promoting rail equipment and standards worldwide. UNIFE has 119 full members and 12 associate members. The UNIFE activity covers all segments of the rail market, mainline rail for passengers and freight as well as urban rail systems like tram/Light Rail, metro, and suburban railways.

UIC – ([Home | UIC - International union of railways](#)) The UIC is **the worldwide professional association representing the railway sector and promoting mainline¹⁹ rail transport** (Passenger, Freight, Rail System including infrastructure, rolling stock, operations). Its 219 members are coming from the 6 UIC Regions (Africa, Asia, North America, South America, Europe and Middle-East). UIC's scope of activities is global and embraces the universality of railway topics. UIC's original principal task is to harmonise and improve conditions for railway constructions and operations.

The UIC European region (Regional Assembly Europe – RAE) comprises 118-member²⁰ companies from 39 countries (including Israel, Russia, and Turkey) and amounts to some 350,000 kilometres of rail network. In the context of the work that is being undertaken within the European region, UIC speaks on behalf of the railway operating community (ROC) gathering the “railway undertakings” (railway operators) and “infrastructure managers”.

Since its inception in 1922, the UIC has been producing harmonised specifications for mainline railways through ‘UIC leaflets’ widely used worldwide within the railway sector. The UIC has an important contribution to make to the success of the creation of the Single European Railway Area (SERA) as a member of the European Standardisation Management Group (ESMG) created in 2020 together with the Community of European Railway (CER) and with the European Rail Infrastructure Managers (EIM) (see below), with the purpose of preparing, considering, and coordinating the ROC contributions to all European bodies related to standardisation issues.

The main concerns of the ESGM are:

- the relationships with the Rail Standardisation Coordination Platform for Europe²¹ (RASCOP), JPCR²² (SFR), ERA Technical Working Groups and cooperation with CEN-CENELEC and ETSI as well as the interface with the Group of Representative Bodies (GRB) and S2R (SHIFT2RAIL, now Europe's rail) - see below – and
- supporting the work related to the development by the European Union Agency for Railways of the future European « acceptable means of compliance » (AMoCs) in cooperation with the French Railway Safety Authority (EPSF).

ALLRAIL – ([Home page | ALLRAIL - The Future of Passenger Railways](#)) The Alliance of Passenger Rail New Entrants (ALLRAIL) is a European non-profit association representing independent passenger rail

¹⁹ Mainline rail includes all freight and passenger heavy rail systems and components, while urban rail (represented by UITP) is addressing tram/Light Rail and metro systems and components as well as some suburban/regional railway systems integrated in multimodal local urban public transport networks.

²⁰ 56 active member companies, 30 associate member companies and 32 affiliate member companies.

²¹ RASCOP is a joint coordination and advisory group established by the European Commission to coordinate and streamline the activities of relevant stakeholders active in the EU in the development of European and international standards and other technical documents related to the railway sector.

²² JPCR: Joint Programming Committee for Railways, now Sector Forum Rail (SFR)

companies, both rail operators and ticket vendors. ALLRAIL is lobbying for the non-state-owned rail companies.

CER – ([Home \(cer.be\)](http://cer.be)) The CER is an official European mainline rail representative association. CER brings together close to 70 railway undertakings, their national associations as well as infrastructure managers and vehicle leasing companies. CER's role is to represent the interests of its members on the EU policy-making scene, in particular to support an improved business and regulatory environment for European railway operators and railway infrastructure companies acting in the "Single European Railway Area".

EIM – ([Homepage - EIM - European Rail Infrastructure Managers Website \(eimrail.org\)](http://eimrail.org)) The EIM is an official European mainline rail representative association of "Infrastructure managers" responsible in each EU MS for railway systems which are part of the "Single European Railway Area". EIM Members consist of owners/managers of infrastructure from most European/ EEA countries²³.

UITP ([The International Association of Public Transport | UITP |](http://uitp.be)). UITP (Union Internationale des Transports Publics) is the International Association of Public Transport and a member of NAPCORE AB. As regard rail, UITP officially represents the local passenger rail market segments of tram/Light Rail, metro, and suburban and regional railway systems (for some of them, together with CER and UIC). UITP coordinates with UNIFE the Urban Rail Platform created with DGMOVE to coordinate the urban rail sector in the domains of EU legislation, Research and Innovation and standardisation.

UIP – ([About – UIP – International Union of Wagon Keepers \(uiprail.org\)](http://uiprail.org)) UIP is the umbrella association of national associations from fourteen European countries, representing more than 250 freight wagon keepers and Entities in charge of Maintenance (ECMs) with more than 234'000 freight wagons, performing 50 % of the rail freight tonne-Kilometres throughout Europe.

GRB - (<http://www.grbrail.eu/>) The Group of Representative Bodies (GRB) is a grouping of railway associations in Europe with the role of supporting, in a transverse way, the rail sector's input to the European Railway Agency (ERA) work programme and its effect on safety and interoperability. GRB is formed from the associations that are named as rail "Representative Bodies", comprising the companies making up the railway operating community and the supply and manufacturing industry. Together these companies are responsible for the design, construction, operation and maintenance of the railway system. There are 14 Rail Representative Bodies: AERRL²⁴, ALE²⁵, ALLRAIL, CER, EAL (ERTMS ACCREDITED LAB), EIM, ERFA²⁶, FEDECRAIL²⁷, NB Rail Association²⁸, UIP, UIRR²⁹, UITP, UNIFE and UIC.

²³ EEA - The European Economic Area (EEA) includes EU countries and also Iceland, Liechtenstein and Norway. It allows them to be part of the EU's single market. Switzerland is not an EU or EEA member but is part of the single market.

²⁴ AERRL ([Association of European Rail Rolling stock Lessors – We promote interoperable, sustainable, efficient and safe passenger and cargo rolling stock for the European Railways \(aerri.eu\)](http://aerri.eu)). AERRL represent more than a half of the whole rolling stock leasing fleet in operation in European Union, Switzerland and Norway.

²⁵ ALE - [ALE | European Autonomous Train Drivers Union \(ale-org.eu\)](http://ale-org.eu). ALE represents Train Drivers' unions from 13 European Member States.

²⁶ European Rail Freight Association (ERFA): <http://www.erfarail.eu/>

²⁷ FEDECRAIL: the European Federation of Museum and Tourist Railways: [FEDECRAIL - European Federation of Museum & Tourist Railways](http://fedecrail.eu)

²⁸ The NB-Rail Association is an international non-profit organization of the notified bodies for interoperability in the railway sector. The association is installed to support and to complement the activities of NB-Rail coordination group with activities not mandated in the mentioned basics: [NB-Rail | Home](http://nbp-rail.eu)

²⁹ UIRR - International Union for Road-Rail combined transport: <http://www.uirr.com/>

SFR - CEN/CENELEC/ETSI Sector Forum Rail (SFR) A Sector Forum is a platform set up by the three official European Standardisation Organisations (ESO) - CEN, CENELEC and ETSI - aiming at facilitating the exchange of information between the various stakeholders impacted by, involved in or interested in the European standardisation activities in a particular domain. It also constitutes a convenient means of coordinating the standardisation activities and identifying new standardisation needs. SFR is the Sector Forum dedicated to rail which members are the three ESOs (and especially the Technical Committees dedicated to rail in CEN (CEN TC256), in CENELEC (CLC TC9X and its Sub-Committees) and in ETSI (ETSI RT – Rail Technology) and the GRB.

Europe's Rail - ([Europe's Rail Joint Undertaking | European Union \(europa.eu\)](https://europe-rail.eu)) EU-Rail is the European partnership for rail research and innovation under the Horizon Europe programme (2020-2027) and the successor to the Shift2Rail Joint Undertaking. This partnership aims to accelerate research and development in innovative technologies and operational solutions (see its research programme at: <https://rail-research.europa.eu/>). It supports EU policies and objectives for the rail sector, its competitiveness, and the European rail supply industry. EU-Rail accelerates the use of integrated, interoperable and standardised technological innovations necessary to support the Single European Railway Area.

ERRAC – (<https://errac.org/>) The European Rail Research Advisory Council (ERRAC) is a European Technology Platform (ETP) established in 2001 to serve as a much-needed single European body with both the competence and capability to help revitalise the EU's rail sector and make it more competitive by fostering increased innovation and guiding research efforts at European level. The council comprises of 45 representatives from both the sector and outside of it: manufacturers, operators, infrastructure managers, the European Commission, EU Member States, academics and users' groups. ERRAC covers all forms of rail transport, ranging from conventional, high speed and freight applications to urban and regional services. ERRAC's primary objective is to communicate the railway sector's common Research & Innovation vision to the European institutions and other important stakeholders. By doing so, the council aims to help shape a favourable funding landscape for railway research initiatives that drive innovation via calls for projects and joint undertakings like the influential Shift2Rail Joint Undertaking and its successor programme Europe's Rail.

RISC – The Railway Interoperability and Safety Committee (RISC) holds the deciding vote on whether a draft technical delegated act can be adopted by the European Commission. The committee consists of representatives from the MSs and is chaired by the European Commission. The decision is addressing the so-called TSI, CSM, CSI or CST. TSI are the Technical Specifications for Interoperability which must be mandatory applied by the railway systems belonging to the Single European Railway Area. They are two TSIs specifically covering Telematic Applications, the TAF TSI for Freight Service and the TAP TSI for Passenger Service. CSM are the Common Safety Methods, CSI the Common Safety Indicators and CST the Common Safety Targets.

OTIF – ([OTIF – Intergovernmental Organisation for International Carriage by Rail](https://www.otif.org/)) The Intergovernmental Organisation for International Carriage by Rail (OTIF) offers to its members, 50 MSs from all over the world, a framework for cooperation in the railway sector with a view to promote, improve and facilitate international traffic by rail (Article 2 COTIF 1999), and especially:

- extend and develop the application of COTIF, the Convention concerning International Carriage by Rail ratified by the European Union in 2011
- agree on uniform legal regimes,
- envisage and enshrine systems of technical compatibility and harmonisation,
- contribute to the elimination of barriers to border crossing.

Some of OTIF's MSs are also members of the Organisation for Co-operation between Railways (OSJD) and/or the EU. OTIF is unique in letting each of its MSs choose how to deal with issues relating to the organisation of and access to the railway markets. By means of its flexible regulations, OTIF thus makes it possible to organise international transport between different railway systems on the three continents. Since the EU acceded to COTIF in 2011, OTIF has strengthened its role as a bridge between the EU and non-EU MSs. OTIF ensures the consistency of the regulations between its MSs, whether or not they are members of the EU.

The Secretariat of OTIF and the European Union Agency for Railways jointly keep up to date the Vehicle Keeper Marking (VKM) register, the register for the certification of entities in charge of maintenance (ECM) and the register of Common Safety Method (CSM) assessment bodies.

2.3.5. Air transport stakeholders for infrastructure, vehicles and services

Major stakeholders in the air sector are including:

EASA - ([The Agency | EASA \(europa.eu\)](#)) The European Union Aviation Safety Agency (EASA) is an independent and neutral body created by the EU for the air sector to be the dynamic centrepiece of aviation safety and environmental protection in Europe. EASA ensures confidence in safe air operations in Europe and world-wide by proposing and formulating rules, standards, and guidance; by certifying aircraft, parts, and equipment; and by approving and overseeing organisations in all aviation domains. They develop the Acceptable Means of Compliance (AMC) and Alternative Means of Compliance (AltMoC) with the European technical specifications of EU air legislation.

AIRBUS – ([Airbus | Pioneering sustainable aerospace](#)) Airbus is a leader in designing, manufacturing and delivering aerospace products, services and solutions to customers on a worldwide scale. Airbus offers products that connect people and places via air and space. With around 134,000 employees and as the largest aeronautics and space company in Europe and a worldwide leader, Airbus is at the forefront of the aviation industry. Airbus objective is to build the most innovative commercial aircraft and consistently capture about half of all commercial airliner orders.

IATA - ([IATA - Home](#)) The International Air Transport Association (IATA) is the trade association for the world's airlines, representing some [300 airlines](#) or 83% of total air traffic. IATA support many areas of aviation activity and help formulate industry policy on critical aviation issues.

ECAC – ([Home \(ecac-ceac.org\)](#)) The European Civil Aviation Conference (ECAC) is an intergovernmental organisation seeking to harmonise civil aviation policies and practices amongst its MSs and, at the same time, promoting understanding on policy matters between its MSs and other parts of the world. ECAC's long-established expertise in aviation matters, pan-European membership and close liaison with the International Civil Aviation Organisation (ICAO) enable it to serve as a unique European forum for discussion of every major civil aviation topic. It enjoys active cooperation with its sister regional organisations ACAO, AFCAC and LACAC through Memoranda of Understanding, and with the European Commission, EUROCONTROL and the JAA Training Organisation.

ICAO - ([Home \(icao.int\)](#)) The International Civil Aviation Organisation (ICAO) is a United Nations agency, established to help countries share their skies to their mutual benefit. ICAO assists the 193 Contracting States to the Chicago Convention as they cooperate here to adopt standards, practices, and policies for international civilian flight. Industry and civil society groups, in addition to relevant multilateral organisations, contribute importantly to these ICAO outcomes as 'Invited Organisations'. The ICAO Secretariat is funded and directed by United States of America to provide technical, legal, and administrative support for their air transport cooperation. It also develops programmes, guidance materials, and closely integrated auditing, training, and implementation support initiatives to help

countries benefit and prosper from their improved compliance with global norms. To serve as the global forum of States for international civil aviation. ICAO develops policies and Standards, undertakes compliance audits, performs studies and analyses, provides assistance and builds aviation capacity through many other activities and the cooperation of its Member States and stakeholders.

EUROCONTROL - ([EUROCONTROL | Supporting European Aviation | EUROCONTROL](#)) EUROCONTROL is a pan-European, civil-military organisation dedicated to supporting European aviation.

JAA Training Organisation - ([Home | JAA TO](#)) JAA TO is the European Training Centre of Excellence (TCE) recognised by the International Civil Aviation Organisation (ICAO) facilitating aviation-related knowledge solutions and training consultancy. Through innovative virtual training JAA TO capacitates aviation professionals globally.

3. Goals for cooperation and strategic actions

This chapter presents the six goals that define the common strategy for cooperation with major stakeholders outside NAPCORE. The goals were selected through several iterations of discussions and analysis between the members of Task 1.2 and considering feedback from all members of WG1.

The goals are described in a template with eight areas:

- Name of the goal
- The categories of major stakeholders relevant to the goal
- Relevant NAPCORE groups for carrying out the strategic actions of the goal
- Extended description of the goal
- Proposed strategic actions
- Main communication channels for reaching out to the relevant categories of stakeholders
- Expected outcome during NAPCORE until 2024
- Expected long term effects (i.e. after the end of NAPCORE)

For each goal, one of the partners was assigned to be responsible for leading and coordinating the writing of the description template. Then, the descriptions were reviewed by all partners involved in Task 1.2 to produce the final versions included in this document.

For the description of the goals, the categories of stakeholders identified in section 2.2 were mentioned by regrouping them in the following more broader categories:

- Data owners/producers
- Service providers / data users (multi-region / multi-country)
- European / international standardisation bodies
- Passenger transport operators / authorities
- Association of public transport companies
- Multimodal travel planners
- MaaS or Mobility Service Providers

A deliberate choice was made not to rank or number the goals, as we believe there are no valid criteria to quantify the importance of each goal.

3.1. Influence international standardisation

Goal: Influence international standardisation	
Major stakeholders: European / international standardisation bodies	Relevant NAPCORE groups: WG4
Description:	
The goal is to identify processes and procedures to include NAPCORE results/opinions/comments in relevant major European standards development. The use of standards is very important for the harmonisation of services at national, European, and international levels. Following the same standards creates the premise for interoperability and compatibility between systems and services. NAPCORE has the unique advantage of bringing together representatives from all European NAP operators and providing them a platform to share experiences on technical and organisational issues. This is an opportunity to discuss and agree on the technical requirements for the implementation of all solutions related to NAPs and transport data exchange. However, these technical requirements need to be reflected in the	

industry standards to ensure that equipment providers and integrators respect them. In most cases, NAPCORE is not directly connected to the standardisation bodies – national, European or international – and cannot impose the development of a specific standard. As such, the NAPCORE community must identify ways to cooperate with those organisations and to ensure that NAPCORE developments are considered. There is already great expertise on this from DATEX II, TN-ITS and Transmodel groups which are now part of NAPCORE.	
Action needed: To reach this goal, NAPCORE groups could take the following actions: • Identify what technical requirements/specifications related to NAPs require harmonisation and/or improvement. • Identify which NAPCORE groups could work on the requirements. • Nominate NAPCORE representatives/ambassadors to liaise with each of the standardisation bodies concerned. These persons should be members of those bodies or have cooperation agreements with them. Representatives could also be persons from NAPCORE partners that are not involved in NAPCORE activities, but they are involved in standardisation activities. • Cooperate with industry representatives to have their input and support, such as with EPA in the parking domain. • Draw up a document highlighting the issues associated with standardisation, particularly the difficulties associated with access to standards documentation. • Prepare a roadmap for the harmonisation of data exchange standards and define the actions to be taken towards the standardisation bodies.	
Communication channels: Direct communication with representatives of relevant standardisation bodies should be arranged. Dedicated workshops can also be organised.	
Expected outcome during NAPCORE until 2024: The framework for cooperation will be defined and the ambassadors are selected. At least one dedicated workshop is organised.	Expected long term effects: The framework for cooperation remains active and future NAPCORE is participating directly in the standardisation activities.

3.2. Cyber security for data distribution through NAPs

Goal: Cyber security for data distribution through NAPs (collection, storing and distribution)	
Major stakeholders: Data owners/producers, Service providers	Relevant NAPCORE groups: WG3 and WG4
Description: The goal is to conduct Threats, Vulnerabilities and Risks Analysis (TVRA) for the NAP system and to define cybersecurity techniques that prevent damage and support quick recovery after an	

incident. Because of their central role for discovering/accessing transport related data, NAPs should be considered critical infrastructure. They are a potential target for cyberattacks or intentional misuse. In cooperation with the stakeholders, we can identify the most relevant vulnerabilities and discuss solutions to mitigate them. The results will guide NAP implementers to make their systems more resilient and trustable.	
Action needed: To reach this goal, NAPCORE groups could take the following actions: • Evaluate requirements coming from Cybersecurity Resilience Act and NIS 2 directive for NAPs. • Evaluate work done in this area in related domains/projects/groups and make use of results where it makes sense. • Identify threats, vulnerabilities and risks through a TVRA. • Propose cybersecurity solutions to increase trust. • Promote a harmonized approach for trust-building mechanisms to ensure that all parties involved in data sharing and usage can have confidence in the authenticity, integrity and reliability of the information being exchanged • Identify which NAPCORE groups could work on solutions. • Cooperate with industry representatives to have their input and support.	
Communication channels: Direct communication with representatives of companies involved in NAP implementation. Dedicated workshops with NAP implementers, NAP operators and cybersecurity experts.	
Expected outcome during NAPCORE until 2024: Definition of cybersecurity techniques and solutions that meet TVRA.	Expected long term effects: Cybersecurity solutions are implemented in all future NAP developments and upgrades.

3.3. Facilitate Multimodal Mobility

Goal: Facilitate Multimodal Mobility	
Major stakeholders: Data owners/producers, Service providers / data users, Passenger transport operators / authorities, Association of public transport companies, Multimodal travel planners, MaaS or Mobility Service Providers	Relevant NAPCORE groups: WG1 and WG4
Description:	

The goal is to include NAPCORE's deliverables (results/opinions/recommendations) in the discussions and policy/implementation actions by relevant stakeholders, to facilitate the provision of multimodal mobility services.

Data provision and the use of data are important for achieving seamless and door-to-door services that satisfy the needs of the users. As a result, travellers will adopt a multimodal lifestyle in which one does not need a private vehicle, and rather uses a combination of public transport, active and private micromobility travel options. Data provision, high quality of data and harmonisation of data through standardisation at the NAP level play a crucial role in providing user-centric mobility services at national, European, and international level. NAPCORE has the unique advantage of bringing together representatives from all European NAP operators and providing them a platform to share experiences on technical and organisational issues. This is an opportunity to discuss and agree on the technical and organisational requirements for the implementation of all solutions related to NAPs and multi modal transport data exchange and reuse.

In this sense, the NAPCORE community can identify relevant policy initiatives at the European level. NAPCORE can also identify major stakeholders inside and outside of the NAPCORE community for cooperation and interoperability in facilitating multimodal mobility. Work is already ongoing as part of WG1 and SWG4.3 which are bringing together NAPCORE partners, working in EU policy-related activities with other partners active in implementation activities. The key EU policy activities at stake are those addressed in MMTIS, and to a less extent RTTI and SRTI, as well as the announced MDMS initiative and EMDS (WG1); whereas key technical requirements to enable multimodal mobility are addressed by SWG4.3. However, these activities must be better coordinated and aligned with major stakeholders to achieve the goal. As such, the NAPCORE community must identify ways to cooperate with those organisations and to ensure our developments being considered.

Action needed:

To reach this goal, NAPCORE groups could take the following actions:

- The list of "other major stakeholders" presented in section 2.3 should be completed with stakeholders from identified missing domains (e.g. waterborne).

NAPCORE partners and members of the Advisory Board should select the "other major stakeholders" to be contacted. ***The "priority major stakeholders" are preferably those who at various territorial levels - local, national, European, and international- are in a way or another regulating, implementing or operating the services provided in the multimodal "travel hubs" located in the 424 "urban nodes" ("cities") defined on the TEN-T network³⁰.***

The sheet "Relevant data holders and providers" produced by WG5.4 should be enlarged to the "other major stakeholders" who have been selected. The sheet should also be completed with MDMS and EMDS when more information is available from the Commission.

- The initiatives identified in the survey from SWG4.3 may be complemented by each "new" major stakeholder.

³⁰ See [Creating a green and efficient Trans-European Transport Network.pdf\(europa.eu\)](#). These 424 urban nodes need to have sustainable urban mobility plans by 2025, in order to align their mobility developments on the TEN-T network, and the 337 "core" nodes are expected to be fully operational and modernised by 2050.

- Based on the explanations provided in section 1.2 regarding the various categories of technical specifications, each selected “major stakeholder” should be contacted to get its views (including experiences/issues in using NAPs) on the “technical specifications” - EU standards, “de facto” standards and other specifications, including their own³¹ - as follows:
 - Which specifications do they know (“awareness”),
 - Which specifications do they use (“application” either imposed (by whom?) or voluntary),
 - Which specifications are they willing to share (“readiness” and “support” for cooperation),
 - Which experience do they want to share (proposed “additional input” for the community).

As for what constitutes multimodal mobility, all actors of the information supply chain are involved in a way or another in the implementation of the standards produced by CEN on multimodal mobility (depending upon CEN TC278) which are mentioned in the revised MMTIS delegated act and, probably in the future, possible MDMS and EMDS legislations.

The process for implementation of commonly shared specifications is however hampered by the fact that the scope of these future legislations is not yet stabilised, and both the technical requirements and the calendar of their implementation are still relatively unknown.

- On the official standards production side, other CEN/ISO TCs than CEN TC278 WG3, and other potentially relevant CEN/ISO32, CENELEC/IEC and ETSI/IET Technical Committees – and all their Working Groups - have also to be aware when multimodal travel data management is at stake. As this is first a responsibility of the European Standardisation Organisations, some clarification on how this can be achieved could be asked to the CCMC (CEN-CENELEC Management Committee).
- Based on the large overview of the available information, NAPCORE partners could then identify what information can/should/could be provided through NAPs and shared between major stakeholders and decide on further actions to build adequate bridges to consider or incorporate relevant or valuable results, e.g. via regular liaisons.

To reach this objective, NAPCORE groups could take the following steps:

- Identify what technical requirements/specifications related to NAPs require harmonisation and/or improvement
- Identify which NAPCORE groups could work on the requirements
- Nominate NAPCORE representatives/ambassadors to liaise with each of the stakeholders concerned. These persons should be members of those bodies or have some cooperation agreements with them. Representatives could also be persons from NAPCORE partners that are not involved in NAPCORE activities, but who are involved in standardisation activities
- Cooperate with industry representatives to have their input and support.

Communication channels:

³¹ From stakeholders who are legitimate to produce their own datasets on their territory of competence according to EU legislation and EU market organisation.

³² E.g. ISO TC204.

Direct communication with representatives of relevant major stakeholders should be arranged. Also dedicated workshops and events can be organised.	
Expected outcome during NAPCORE until 2024: The framework for cooperation will be defined with identified key stakeholders as well as the organisational/policy/technical areas of cooperation. The ambassadors are selected. At least one dedicated workshop is organised on multimodal mobility topic.	Expected long term effects: The framework for cooperation remains active and future NAPCORE is actively enabling multimodal mobility.

3.4. Stimulate increased usage of data accessible through the NAPs

Goal: Stimulate increased usage of data accessible through the NAPs (visibility of NAPs)	
Major stakeholders: Service providers/data users, Passenger transport operators/authorities, Multimodal travel planners, MaaS or Mobility Service Providers	Relevant NAPCORE groups: H3, WG3 and support from WG5
Description: The main objective is to achieve greater use of data by service providers and end users of the data available through NAPs. For this, the benefits of using data from the NAPs must be promoted and demonstrated with use cases and/or best practice examples. Currently, most NAPs have few registered users, and the goal is to increase those numbers through cooperation with major stakeholders. More awareness of the NAPs and the data available is also needed. More relevant data on the NAPs increase their relevance as the place to find useful data for end user services.	
Action need: To reach this goal, NAPCORE groups could take the following actions: • Ensure easy access to published data on NAPs. To this end, it is possible to test the accessibility of NAPs through different profiles that may be interested in making use of such data, such as administration staff, service providers, mobility consultants, engineers, IT and telecommunication technicians, etc. ○ Create a team of “testers” whose feedback can be used to develop a best practice guide to ensure easy access to the data published on the NAPs. • Guarantee a simple and intuitive data structure. To maximize awareness of the benefits of having a NAP, <u>create use case examples using the information that is publicly available on the NAP.</u> By employing a straightforward explanation suitable for diverse audiences, potential users and interested parties should be able to grasp the various applications and benefits of downloading and processing this information.	

- Develop a use case for a particular NAP and organise a workshop with the other Member States participating in the project so that they can replicate it and include it in their respective NAPs, if considered appropriate.
- Generate publications on social media profiles and major stakeholders' websites and disseminate how the information is organised in the NAPs, either through guidelines or catalogues or through attractive data architectures that encourage the user/administration to browse and investigate the potential uses of the published data.
 - Create a communication plan with a guide on how each country can make publications through their official channels and social networks (regular posts, attractive news items, engaging users, etc.), to promote and encourage the use of NAPs data. Likewise, these types of communications can also be shared or published from the NAPCORE project communication channels to achieve greater coverage.
- Create a public forum through which questions, suggestions, improvements, etc. can be posted. In this way, it will be possible to identify the barriers that prevent certain profiles from using the full functionality of the NAPs and to share points of view that will make it possible to continually improve this place for the exchange of data.
 - Create a forum for participation/debate both on the project's own website and on the channels or social networks linked to it. In any case, in addition to its creation, it should be publicised so that potential users are aware of its existence and their participation is promoted through publications in social networks.
- Consider the perspectives and knowledge of the different types of users and the resources available to each of them, not only in terms of formats, which should comply with reference standards, but also in terms of accessibility and ease of downloading and further processing of the information.
 - Organise a series of workshops with guests from different sectors (e.g. data/service providers that currently upload/download information to the NAPs, personnel from administrations of different levels and companies in the sector that do not do so to understand why).
- Check which of the NAPs in operation have the best upload and download rates and try to follow their model. Sometimes it is not necessary to reinvent the wheel, but to take best practices from different developments and replicate them together to achieve the best solution.
 - Create a working team/committee in charge of analysing in detail the development of the NAPs of the Member States, establishing meetings with them (bodies responsible for each NAP) and identifying those characteristics that lead to better download ratios, registrations, etc.
- Identify the barriers mostly mentioned by the service providers (when asked what stops them from using data from the NAPs). Carry out an assessment by the stakeholders of the current data exchange and reusing possibilities, such as:
 - usability of the NAPs

○ legal issues (terms of use) ○ the quality of the data being registered in NAPs ○ the availability of the required data categories ○ the findability of those data in NAPs ○ the possible needs for additional data that re-users would need to be able to develop services for multimodal mobility ● Set up long-term stakeholder cooperation and engagement.	
Communication channels: Dissemination of the NAPCORE video, new developments or progress implemented in the NAPs through multiple media: social networks, websites of major stakeholders, newsletters to the main stakeholders, etc. Similarly, through webinars with dynamic explanations in the form of tutorials, workshops with specific groups, presentations at congresses, conferences or any event that allows a greater number of members potentially interested in the subject to be reached.	
Expected outcome during NAPCORE until 2024: Increase not only the number of users who use the data published in the NAPs, but also the number of service providers, both public and private, who upload their information to the NAPs.	Expected long term effects: Generate a reference platform at European level (e.g. in the framework of the continuation of the NAPCORE project) that allows all actors involved in the mobility ecosystem and intelligent transport systems to interoperate with data in an optimal, efficient and fruitful way to provide better mobility services for all citizens.

3.5. Improve data and metadata quality

Goal: Improve data and metadata quality	
Major stakeholders: Data owners/producers, Service providers / data users	Relevant NAPCORE groups: WG2, WG3, Sub WG4.4, WG5 and the interoperability demonstrators.
Description: One of the most important tasks for NAPCORE is to increase the efficiency of NAPs in terms of acceptance and exploitability of data being offered on NAPs. The data presented on NAPs comes from various providers, various domains and different collection techniques. Thus, an increasing heterogeneity of NAP data might be challenging for potential data consumers, as they need to access the usability of individual data sets on their own. There are several ways to ease this process: an efficient usage of metadata on NAPs; transparent communication of quality levels of NAP data; and minimum agreements on such quality levels. Various NAPCORE groups are working on that matter. In relation to metadata, the new metadata profile by SWG4.4 plays an important role in providing meaningful and efficient metadata. The major outcome is a new metadata profile	

(mobilityDCAT-AP), being a common metadata specification for all NAPs. This profile allows for structured and extensive expressions of relevant metadata in the mobility domain. These expressions include information on the data theme, data provider and data format, among others. The profile is built upon established metadata standards in the internet community, allowing interoperability even outside the mobility domain.

Data quality is a topic that all working groups in NAPCORE touches upon, because it is the foundation for data sharing. If data isn't correct and trustworthy it can in worst cases be more harmful than useful to use in mobility services.

The data quality frameworks made in WG3, Task 3.2 set a frame for how to measure and describe data quality. Considering that quality can be assessed differently in different domains of mobility data, a set of various, domain-specific quality frameworks is elaborated.

Action need:

To reach the goal of harmonised metadata, NAPCORE groups could take the following actions:

- Support actions that can motivate real life implementation of mobilityDCAT-AP on NAPs in order to create the foundation for an improved, harmonised and interoperable usage of metadata
- Inform deployers of NAPs (and other mobility data platforms) about this new metadata profile, that we would like to see used as widely as possible – trying to make it a worldwide known (and used) mobility metadata format.
 - Go into dialog with interested parties outside Europe.
 - Consider making a video that explains why mobilityDCAT-AP was made and why it is important to implement it in your NAP
 - Join international conferences.
- Continue the work on developing updated version of the metadata profile – listen to feedback from data providers, data consumers, NAP operators and other parties involved in the use of the metadata profile.
- Learn from the results of the interoperability demonstrators – how can the mobilityDCAT-AP profile support increased interoperability?
- Promote the use of the Validation Tool for mobilityDCAT-AP and Metadata Conversion Tools, and further develop them in cooperation with the stakeholders
- Continue the work of the Data dictionary in order to “speak the same language”.

To reach the goal of improved data quality, NAPCORE groups could take the following actions:

- Continue the close dialog between NAP operators, NRAs and Service Providers with regards to the new RTTI delegated act. This includes a review of former quality definitions for RTTI data (as previously presented by EU EIP project), and a closer exchange with TISA, where a new star rating system for measuring data quality is being discussed.
- Look at the data quality work already done in the different NAPCORE working groups and sum up the most important and useful findings.

Communication channels:

Workshops, conferences, dissemination materials, online documentation, collaboration platform (GitHub)

Expected outcome during NAPCORE until 2024:
A dedicated work item for the new

Expected long term effects:
Improved data and metadata quality.

mobilityDCAT-AP metadata profile is dealing with the support of early adopters of this profile. This includes hands-on practical guidance and sharing of experiences between NAP operators. A set of domain-specific Quality Frameworks will be published, accompanied with public workshops where stakeholders can contribute their own quality perspectives and help validate the Framework contents. The NAPCORE Quality elaborations will be also aligned with external quality activities. This includes the recent TISA “star rating system” which defines quality expectations towards road-authority data, from a service-provider perspective.	
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3.6. Increase provision of data through the NAPs

Goal: Increase provision of data through the NAPs	
Major stakeholders: Data owners/producers	Relevant NAPCORE groups: WG2, WG3, SWG4.2
Description: NAP is a digital platform that consolidates ITS-related data in a properly formatted and structured way, complete with metadata. The main objective is to achieve greater provision of data visible through NAPs. For this, the benefits of using data from the NAPs must be promoted and demonstrated with use cases and/or best practice examples. However, to make NAPs relevant, there is also the need to have as much ITS-related data as possible available through the NAPs.	
Action need: To reach this goal, NAPCORE groups could take the following actions: • Provide guidelines for optimising metadata based on the metadata mobilityDCAT-AP created within the NAPCORE project by SWG4.4 to ensure comprehensive and accurate metadata is associated with each dataset. Provide guidelines for harmonisation of search engine within the NAP in order to enhance the search functionality on NAP's by foreseeing advanced user required search features that will allow data filter, and search based on specific criteria, keywords, or metadata tags • Data description convention – Identify set of rules for provision of Clear Data Descriptions resulting in clear and concise descriptions for each data set. Explain the purpose of the data, its relevance, and potential use cases. This information will help users quickly assess whether the dataset meets their needs • Provide guidelines on data visualisations - Usage of data visualisations within the data set presenting data structure and key insights and trends. Usage of visual	

representations such as charts, graphs, and maps can make complex data more understandable and engaging for users • Promote Open Data Standards - Encourage the use of open data standards to foster interoperability and collaboration. Adhering to widely accepted standards makes it easier for external applications and platforms to integrate with the National Access Point • Identify and recommend tools supporting data provision. Easy to use tools for data digitalisation and conversion of common format into standardised ones (e.g. Excel -> NeTEx, or GTFS -> NeTEx) will encourage non-technical data providers to engage to NAP • Demystification of service and data providers benefits and its role in value chain for data provision in NAP – Provide comprehensive document that will elaborate on service and data providers benefits for data provision, as well as its role in value chain, answering most common questions data and service providers have prior engaging to NAP (why should the data be published, what are the benefits, is it worth to invest in digitalisation and data provision, who will use their data and for what purpose etc.) • Engage with User Feedback - Establish a feedback loop with data users. Actively seek feedback on the usability of the platform, data quality, and any additional features they may require. Use this feedback to continuously improve the National Access Point. The work on this topic carried on by SWG4.2 within the NAPCORE project (M4.2.7).	
Communication channels: Workshops, conferences, dissemination materials.	
Expected outcome during NAPCORE until 2024: Increase not only the number of users who use the data published in the NAPs, but also the number of data and service providers, both public and private, who upload their information to the NAPs.	Expected long term effects: Generate a reference platform at European level (e.g. in the framework of the continuation of the NAPCORE project) that allows all actors involved in the mobility ecosystem and intelligent transport systems to interoperate with data in an optimal, efficient, and fruitful way to provide better mobility services for all citizens.

4. Cooperation between NAPCORE and related initiatives

This chapter gives an overview of the initiatives which have signed cooperation agreements with NAPCORE up to the date of writing this report. It is important to acknowledge these cooperations because they provide valuable input to NAPCORE and create the framework for harmonization of their activities with those of NAPCORE.

4.1. X4ITS

Central European cross-border cooperation for ITS, short “X4ITS” is a CEF funded deployment project, following previous CROCODILE corridor projects. Overall goal is an **improved cross-border cooperation** regarding (C-)ITS between public authorities, cities, public transport operators, rail supply industry, road administrations and traffic information service providers. Additionally to previous corridor projects, X4ITS not only focuses on high-level network, but also on secondary road network and multi-modal or urban nodes.

The X4ITS corridor is located in the **East and Central European (CE) area** and combines six different countries with five core TEN-T network corridors, including Austria, Croatia, Czechia, Hungary, Romania and Slovenia.

In connection to NAPCORE, part of X4ITS is an **enlarged cooperation with NAPCORE** and a harmonised integrated (C-)ITS implementation, this takes place especially in work packages 1,2 and 4. Work package 1 includes not only project management and communication, but also enhanced cross-corridor cooperation.

In X4ITS Task 1.3 there will be on the one hand an interconnection with other corridor projects like MERIDIAN and MATIS, on the other hand with NAPCORE and the European C-Roads Platform. Cooperation with NAPCORE will support the implementation of harmonised recommendations for upgrading NAPs. Therefore, X4ITS will participate in discussions and coordination activities to engage in a harmonised integrated implementation of ITS and C-ITS in Europe. Focus will be the end-user support and an increase of accessibility of mobility data. There will be a participation in workshops and events, starting with a workshop at the NAPCORE Mobility Data Days in Budapest. The workshop links not only NAPCORE and X4ITS but aims to connect the other corridor projects MERIDIAN and MATIS as well. In this session, expectations and further needs will be discussed.

X4ITS Work package 4 “Data access and collection” will result in an improvement and harmonisation of data exchange standards. The implementation of DATEX II nodes will take place in X4ITS Task 4.1, considering recommendations worked out in NAPCORE. X4ITS features the implementation of DATEX II nodes, including a common profiling and minimum quality parameters. Existing DATEX II nodes of Hungary and Slovenia will be upgraded, Croatia will digitise video surveillance as well as detection systems and Czechia will upgrade datasets.

X4ITS Task 4.2 focuses on the upgrade of National Access Points and the new requirements resulting of the revised Delegated Regulation (EU) 2022/670, regarding structure and functionalities of the National Access Points. Austria, Hungary, Czechia, Romania and Croatia will upgrade their NAPs including recommendations of NAPCORE. NAPs of Croatia and Hungary will include newly collected data of a previous task and in Czechia also a functional upgrade will take place.

Concluding, X4ITS contributes to the strategic goals of NAPCORE mentioned in 3.4. A close cooperation as planned in work package 1 can help to achieve for example the goal “Improve data/metadata quality and public services” successfully.

4.2. DFRS

Significantly improving road safety across Europe for all road users requires the mass involvement of vehicle manufacturers, traffic information service providers, road operators, authorities and agencies, and policy makers/public authorities. Such a level of participation is necessary to ensure the pace and critical mass of safety data required for comprehensive safety related traffic information services.

In various European MSs, the number of seriously injured victims of road crashes continues to increase, whereas the decrease in the number of road deaths is stagnating. Governments are actively working together to structurally improve road safety. Data sharing of safety related events can play an important role in this. Warning road users about dangerous situations, such as temporary slippery road, reduced visibility, broken-down vehicles, and accidents, can prevent accidents and limit consequences. The European regulatory framework thereto is embedded in the European Commission DR 886/2013 of 15 May 2013.

The Data For Road Safety (DFRS) Safety Related Traffic Information (SRTI) Ecosystem has been established by MSs/public authorities and the industry to provide a multi-party contractual framework for the exchange of safety related traffic information among the participants, and to make the SRTI events mentioned in the DR 886/2013 available through the NAPs.

NAPs as central platforms for mobility data facilitate access, easy exchange, and reuse of transport related data in Europe, in order to help support the provision of EU-wide interoperable travel and traffic services to end users. Safety related data events are an important part of the intelligence that can be made available through the NAPs.

DFRS and NAPCORE agreed to:

- Exchange intelligence on each other's governance set-up and working of the ecosystem (contractual framework, regulatory policy, other legal issues)
- The creation of a win-win situation for both parties by enabling the pooling of knowledge through the respective stakeholder communities
- Exchange on best practices in terms of creation and availability of data that are relevant for road safety purposes
- Benchmarking of the performance of data sharing mechanisms, lessons learnt, enablers, blocking factors (aggregated/anonymised, with due respect to confidentiality)
- Exchange and upgrade of knowledge on the availability and use of SRTI data (as defined and regulated by the EU DR 886/2013) at the NAPs
- Disseminate each other's ecosystem and its working
- Jointly organise activities of common interest and invite each other when such participation would be beneficial or appropriate
- The development of joint actions with the aim of improving the quality and accessibility of road safety related data
- Intelligence and lessons learnt from each other's data availability and sharing SRTI through the NAPs

4.3. C-Roads

The C-Roads Platform is a joint initiative of the European MSs and road operators for testing and implementing Cooperative Intelligent Transport Systems (C-ITS) services in light of cross-border harmonisation and interoperability. The goal is to achieve the deployment of interoperable cross-border C-ITS services for road users.

An agreed list of Day-1-C-ITS Use-Cases for Europe, to be deployed in the short-term, was endorsed by the wider C-ITS community in the course of the EU-C-ITS-Platform based on recommendations of the Amsterdam Group. Such a list is essential for building agreements on which services to deploy first, aligning funding and investment priorities and innovation activities. These services were chosen on their importance from a policy perspective as well as their potential to answer major societal needs, such as increasing road safety, and a further split was introduced based on technical readiness in the short-term.

The agreement of the EU-C-ITS-Platform on that list maximises the chances of achieving Europe-wide coverage and continuity of C-ITS services as soon as possible, which in turn increases the societal benefits achieved.

MSs across Europe are installing C-ITS pilot sites needed for the testing and later operation of “Day-1-Use-Cases”, and “Day-1.5-Use-Cases” and progressing towards “Day-2-Use-Cases” as recommended by European Commission’s “C-ITS platform”.

It is the task of several C-Roads WGs to elaborate specifications and agreements for harmonised and interoperable infrastructure-based deployments. Building on top of these specifications and agreements, technical and organisational issues will be piloted in several pilots across Europe, where different organisational frameworks, different technical approaches, different operating environments, and different vehicle fleets will test and evaluate the performance and feasibility of harmonised C-ITS systems and services.

The C-Roads Platform has signed a collaboration agreement with NAPCORE. The agreement, signed at the ITS European Congress 2023 in Lisbon, aims to unlock the full potential of C-ITS and NAPs to support future mobility developments. This represents a major step forward in the advancement of mobility services.

This collaboration represents a significant milestone in the pursuit of enhanced mobility and European connectivity. NAPCORE and C-Roads contribute to the creation of a sustainable, connected, and efficient mobility ecosystem that benefits all stakeholders.

NAPCORE and C-Roads agreed to:

- Discuss and explore the role of C-ITS and NAPs in facilitating mobility services and driving advancements in the mobility domain
- Jointly work on developing processes and procedures to maximise the benefits by linking NAPs and C-ITS
- Align and elevate the quality, usability and standardisation of data in order to guarantee improved functionalities both, for C-ITS services as well as for NAP data contents

5. The impact of emerging technologies on NAP operations

Considering the span of the last five years, several new technologies have been introduced in the field of mobility, and transportation in general. Some proved very useful and expanded their usage, while others remained only as pilot trials or are present only in very limited use cases. In this context, it is too early to identify any significant impact of such technologies for the NAPs or any other operational aspects related to them. Therefore, this chapter briefly mentions examples of emerging technologies and suggests potential impacts they might have towards NAPs.

Autonomous vehicles as well as connected and automated vehicles are one of the new technologies of the last years. They are highly promoted and supported both by policy frameworks and manufacturers. They also come in different formats such as autonomous shuttles, robo-taxies, autonomous delivery vehicles or private cars with automated and connected capabilities. The potential impacts of all these vehicles for transport operations are:

- Create a need for new traffic management procedures:
Traffic management operations will need to consider the new mixed traffic situation and account for the different needs of “human-driven” vehicles and the others. Differences are also between autonomous vehicles and connected vehicles, the latter being capable of receiving direct instructions from a TMC. For example, METR (Management of Electronic Traffic Regulation) standards are being developed, which aim at defining a governance and processes to generate trusted electronic traffic regulation.
- New Floating Car Data (FCD) sources:
The new vehicles will represent new sources of data, potentially better or enriched compared to what is available from traditional vehicles. The use of FCD is already mentioned in the scope of the new RTTI regulation.
- Create opportunities for dynamic rerouting:
Because connected vehicles can be given direct routing instructions, it might be possible to reroute traffic much quicker and more reactive than the current situation.
- Create a need for more HD maps:
All autonomous or connected vehicles need high quality HD maps and as their numbers and usage increases, the length of the road network for which those maps are available needs to increase as well.

Internet of Things (IoT) is a technology that became increasingly used in all fields of activity, and it has proven to be effective for many of them. In terms of NAPs or traffic information/management, there might be an impact of IoT for a better and more comprehensive collection of traffic data. IoT traffic sensors could be easier to deploy than conventional ones, and as such provide the opportunity to cover more sections of the road network. On one hand, the information from them would be provided through the NAPs, and on the other hand, based on this information, TMCs could be more effective.

Block chain is a technology known for many years, but it is still considered new. In the field of transport it has limited applications, mostly in logistics for the exchange of electronic documents.

The latest new technology is **Artificial Intelligence (AI)**. Although promoted especially by generative AI solutions, it has many other uses. In the field of transport, it proved to be useful for image processing and it could become useful in TMCs for two use cases: a) improved and more reliable incident detection and b) decision support tool for operators.

6. Conclusions

This document is part of Task 1.2 activities in WG1 of NAPCORE. The report proposes a strategic position and common strategy for cooperation with stakeholders outside NAPCORE, defined by several goals with strategic actions for each of the goals.

It was not intended to be a comprehensive strategy, rather it is a pragmatic approach aiming to guide NAPCORE activities related to the most relevant topics for which cooperation with external stakeholders will ultimately benefit the development and harmonization of NAPs.

The first chapter starts with an overview of the mobility market in terms of actors and transport services. The chapter continues with an overview of the results of other NAPCORE WGs that are relevant for the cooperation with external stakeholders.

The second chapter has three main objectives: 1) to give a brief overview of the members of NAPCORE Advisory Board; 2) to define the categories of major stakeholders targeted for cooperation; and 3) to present the major stakeholders with whom NAPCORE could potentially cooperate. The liaison and cooperation methods are different depending on how much a stakeholder is already involved in the project. Therefore, in this chapter more focus is put on the stakeholders that are not members of the Advisory Board than on those which are. As such, only the list of the Advisory Board members is provided (with some further information in Annex 1), while section 2.3 offers a comprehensive overview of external stakeholders, grouped by public transport modes. Although extended, this overview does not include all possible stakeholders and it is meant only as a starting point for further additions resulting from future work of Task 1.2 and of other NAPCORE WGs on potential stakeholders.

The third chapter is dedicated to describing the goals for cooperation which define the strategic position and common strategy. The following goals have been selected based on the expert knowledge of the partners participating in Task 1.2:

- Influence international standardisation
- Cyber security for data distribution through NAPs
- Facilitate Multimodal Mobility
- Stimulate increased usage of data accessible through the NAPs
- Improve data and metadata quality
- Increase provision of data through the NAPs

The strategic actions are defined considering activities that are within the scope of NAPCORE WGs and SWGs, correlated, whenever possible, with the results already achieved. Those actions are not meant as binding obligations for work to be carried out, instead their role is to focus and guide the activities of NAPCORE towards better cooperation with external stakeholders.

Chapter four presents several initiatives or projects related to NAPCORE and provides examples and suggestions for cooperation between NAPCORE and those initiatives. The aim of the cooperation is to identify synergies, avoid double work and ensure that the results are put into practice. The initiatives identified are:

- X4ITS project
- Data for Road Safety – DFRS
- C-Roads platform

Chapter five discusses the potential impact of emerging technologies on NAP operations. In particular, the following technologies were selected:

- Autonomous vehicles, connected and automated vehicles
- Internet of Things (IoT)
- Block chain
- Artificial Intelligence (AI)

This chapter does not present extended details about these technologies because we believe that currently their impact on NAP operations is very limited.

After formal delivery of this report, Task 1.2 will monitor the implementation of the strategic actions and will cooperate with NAPCORE groups to ensure that the goals are reached as much as possible. It is however the decision of each WG which of the actions to follow up and how to allocate resources and responsibilities for them.

Although we tried to define the strategic actions in close collaboration with all NAPCORE WGs, we are aware there might be either overlaps with what has already been done, or that it might never be possible throughout NAPCORE lifetime to allocate resources for some of the strategic actions.

The strategic actions proposed in this document should be considered in the future evolution of NAPCORE and expanded or updated depending on the achievements until the end of the NAPCORE project.

Annex 1: Members of NAPCORE Advisory Board

Members representing the “Road sector” (infrastructure, vehicles, traffic and parking, IT services)

- **ACEA**³³ – The European Automobile Manufacturers’ Association ([ACEA - European Automobile Manufacturers' Association](#)) is a European representative association uniting the 14 Europe-based manufacturers producing road vehicles, passenger cars, trucks, vans and buses: BMW Group, DAF Trucks, Daimler Truck, Ferrari, Ford of Europe, Honda Motor Europe, Hyundai Motor Europe, Iveco Group, JLR, Mercedes-Benz, Renault Group, Toyota Motor Europe, Volkswagen Group, and Volvo Group
- **ASECAP**³⁴ – European Association of Operators of Toll Road Infrastructures ([HOME - Asecap Corporate](#)) is a European representative association which members are representing national associations of operators of toll road infrastructure (covering 22,000 km in 2022).
The 17 full members of ASECAP are France (ASFA), Italy (AISCAT), Spain (ASETA, and now SEOPAN), Austria (ASFINAG), Greece (TEO, and now HELLASTRON), Portugal (APCAP), Denmark (the Sund & Baelte Holding A/S), Hungary (AKA) and Slovenia (DARS), Croatia (HUKA) and Serbia (PE "Roads of Serbia"), United Kingdom (M6 TOLL, and now Macquarie Motorway Group), the Netherlands (N.V. Westerscheldetunnel), Germany (Toll Collect), Poland (Polskie Autostrady Koncesyjne PAK), Ireland (Irish Tolling Industry Association), and Turkey (ICA).
ASECAP has also:
 - three Associate members: Morocco (Société Nationale des Autoroutes du Maroc), the Slovak Republic (Narodna diaľnicna spoločnosť - National Motorway Company), and Russia ("Russian Highways"(AVTODOR));
 - one Advisory Group Partner: **KAPSCH Telematic Services (KTS) from the Czech Republic** ;
 - one Supporting partner: Ukraine (UKRMOSTOBUD Corporation)
- **CEDR** – Conference of European Directors of Roads ([CEDR](#)) is a European association of national road administrations representing most of the EU Member States and some other countries.
Among the 27 Member States, 22 national road administrations are members of CEDR³⁵ are: Austria, Belgium (Flanders and Wallonia), Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Spain and Sweden.
Other national road administrations members of CEDR are: Liechtenstein, Norway, Switzerland, Ukraine and United Kingdom.
CEDR has close cooperation with: [World Road Association \(PIARC\)](#); [American Association of State Highway and Transportation Officials \(AASHTO\)](#); [Board of Directors of Iberia and Latin America Roads \(DIRCAIBEA\)](#); [Nordic Road Association](#); [Baltic Road Association](#); [Transport Research Arena \(TRA\)](#); [European Road Transport Research Advisory Council \(ERTRAC\)](#); [European Construction Technology Platform \(ECTP\)](#)
CEDR has also other cooperations with: [Organisation for Economic Co-operation and Development](#) and the [European Council for Automotive R&D](#).
- **CIE** – Cycling Industries Europe ([Cycling Industries Europe - The voice of cycling businesses in Europe](#))

³³ Association des Constructeurs Européens d’Automobiles.

³⁴ Association Européenne des Concessionnaires d’Autoroutes et d’Ouvrages à Péage.

³⁵ Member States not represented in CEDR are Croatia, France, Malta, Romania and Slovakia.

The 92 members of Cycling Industries Europe³⁶ come from across the globe and represent the entire supply chain, from bicycle and parts makers to bike sharing, cycle logistics, online services, financial services, infrastructure, tourism and consultancy.

- **C-Roads** ([Platform: C-Roads](#)). The C-Roads Platform is a joint initiative of European Member States and road operators for testing and implementing C-ITS services in light of cross-border harmonisation and interoperability. C-Roads has 19 [Core Members](#)³⁷ which have their own C-ITS pilot deployments, either in place or in preparation.

Additionally, [Associated Members](#) are linked to the C-Roads Platform, liaising with the different groups within the Platform and committing themselves to use C-Roads specifications in their pilot implementations.

The platform aims at improving road safety³⁸ (see SCOOP@F, a cooperation between road managers and car manufacturers) as well as developing **services in the urban environment and at the urban/interurban interface** (such as GLOSA, traffic light optimisation, multimodal information, park and ride information, etc.), and **traffic information services increasing comfort on transit stretches** (such as smart routing, information on truck parking areas, services on the rest areas, etc). C-Roads has a pragmatic and user-centric approach: to increase penetration rates, has developed a **C-ITS smartphone application** supporting early I2V services roll up and further scale up.

- **C2C CC** ([CAR 2 CAR Communication Consortium | CAR 2 CAR Communication Consortium \(car-2-car.org\)](#)). This consortium has 11 Partners, 32 Associate Members and 31 Development Members:

C2C-CC Partners are European companies or European divisions of international companies active in road vehicle production: General Motors, Honda, Hyundai, KTM, MAN, Groupe Renault, Toyota, Volkswagen, Volvo cars, Volvo Trucks and Yamaha.

Associate Members are subcontractors developing and producing safety and efficiency relevant systems based on ad-hoc communication.

Development Members are European research organisations doing research and development on road transport related ad-hoc communication systems, vehicle or infrastructure electronics, or on active road safety and driver assistance systems.

- **Data for Road Safety** ([Home \(dataforroadsafety.eu\)](#)) is a Multi-Party agreement established as a practical implementation of the Delegated Regulation 886/2013 by all European Transport Ministers, the European Commission and current industry partners established the Data for Road Safety during the High-Level Meeting on Connected and Automated Driving on 15 February 2017 in Amsterdam. The mission of the European Data for Road Safety is to improve road safety by maximizing the reach of safety-related traffic information powered by safety data generated by vehicles and infrastructure. It aims at creating a Safety-Related Traffic Information (SRTI) Ecosystem.
- **EAFO** – European Alternative Fuels Observatory ([Homepage | European Alternative Fuels Observatory \(europa.eu\)](#)). EAFO is the European Commission's key reference portal for alternative fuels, infrastructure and vehicles in Europe.
EAFO currently provides comprehensive information on alternative fuels use in the road transport sector, while succinct information is provided about alternative fuels use in maritime and inland waterway shipping. Gradually, EAFO intends to provide alternative fuels

³⁶ 92 logos are presented in the website.

³⁷ [Austria](#), [Belgium/Flanders](#), [Belgium/Wallonia](#), [Czech Republic](#), [Denmark](#), [Finland](#), [France](#), [Germany](#), [Greece](#), [Hungary](#), [Ireland](#), [Italy](#), [the Netherlands](#), [Norway](#), [Portugal](#), [Slovenia](#), [Spain](#), [Sweden](#) and [United Kingdom](#).

³⁸ And the security of the road maintenance agents who intervene on the roads for construction works and other maintenance operations.

information for all transport modes: first, more comprehensive data for maritime and inland waterways, followed by a gradual introduction of data for the rail and aviation sectors.

- **EPA** – European Parking Association ([Home \(europeanparking.eu\)](http://europeanparking.eu)). The EPA is the umbrella organisation for European parking associations. The 23 full members are [national member associations](#) representing the parking sector which is consisting of private companies and public bodies that are operating and managing on- and off-street parking structures and services.

The European Parking Association, the British Parking Association and the International Parking Institute have joined forces to form the [Alliance for Parking Data Standards \(APDS\)](#) focused on developing and managing an international data standard for the parking industry.

- **ETSC** – European Transport Safety Council ([ETSC – European Transport Safety Council](#)). ETSC is a Brussels-based independent non-profit making organisation dedicated to reducing the numbers of deaths and injuries in transport in Europe and providing a source of expert advice on transport safety matters to the European Commission, the European Parliament, and national governments. It maintains its independence through funding from a variety of sources including membership subscriptions, the European Commission, and public and private sector support for various activities. ETSC has 60 members and sponsors:

They come from 20 EU Member States (Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, The Netherlands, Poland, Portugal, Romania, Slovenia, Spain, Sweden) and from 6 other European countries (Bosnia and Herzegovina, Norway, Serbia, Switzerland and United Kingdom). They also include 6 International organisations.

- **IRU** – International Road Transport Union ([IRU | World Road Transport Organisation](#)). IRU is the International Road Transport Union, founded 75 years ago in Geneva to facilitate trade, international road transport, logistics and passenger mobility, and to support sustainable development worldwide. It is “the voice of more than 3.5 million companies operating mobility and logistics services in over 100 countries”. IRU members are primarily national associations for passenger or goods transport. They include associations of truck, bus, coach and taxi operators, associations for a specific category of road transport, chambers of commerce and automobile clubs. IRU also has associate members who are national and international not-for profit associations and companies. Among the members can be found some associations of bus and coach operators.
- **ITS private service providers** (HERE ([Platform Overview](#) | [Location Data Platform](#) | [HERE Technologies](#)), BeMobile ([Be-Mobile](#) | [A revolution in traffic](#)), INRIX ([Leading Transportation Analytics Solutions](#) | [INRIX](#)), TomTom ([TomTom — Mapping and Location Technology](#)), Google ([Google - About Google, Our Culture & Company News](#)).
- **TISA** – Traveller Information Service Association ([TISA](#)). TISA is a market-driven membership association with worldwide scope, established as a non-profit company focussed on proactive implementation of traffic and travel information services and products based on existing standards, including primarily RDS-TMC and TPEG technologies. TISA has a worldwide membership coming from right across the travel information domain, public and private – broadcasters, service providers, car manufacturers and transport ministries to name but a few. TISA membership is widely represented across the whole value chain of the Traffic and Traveller Information Services. TISA has 40 members from 12 EU Member States (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, The Netherlands, Slovenia and Sweden) and 5 members from Norway, Switzerland and UK, 12 members from 5 Asian countries (China, India, Korea, Singapore and Taiwan), 1 member from Australia and 5 members from the USA.

- **TM2.0** – ([TM2.0 | Traffic Management 2.0 \(tm20.org\)](http://tm20.org)). TM2.0 is an innovation platform launched in 2014 under the ERTICO umbrella of activities, bringing together 40 members from all ITS sectors to focus on new solutions for advanced interactive traffic management.
- For charging electric vehicles, **EV Roaming Foundation** ([Open Charge Point Interface \(evroaming.org\)](http://evroaming.org)). The objective of the EVRoaming Foundation is to facilitate roaming services for charging electric vehicles and provide transparent information to consumers about charging locations and prices, by use of the open and independent Open Charge Point Interface (OCPI) protocol which it manages and maintains. The Foundation can also support other related activities and services. The board currently consists of representatives of Freshmile, Chargepoint, Google Maps, Gireve, Last Mile Solutions and NKL.

Members representing the “urban transport” sector (mostly associations)

- *For public transport services*, **EMTA** – European Metropolitan Transport Authorities ([EMTA: European Metropolitan Transport Authorities](http://emta.eu)). EMTA is an association that was created in 1998 so as to form a venue for exchange of information, experience and best practices in the field of planning, integrating and financing public transport services in the larger European cities and their metropolitan areas. Public transport authorities in metropolitan areas represent key decision-making bodies for resolving issues related to public transport and infrastructure policy, including sustainable and smart mobility. EMTA brings together 34 authorities from 21 European countries: Amsterdam, Athens, Barcelona, Belgrade, Berlin, Bilbao, Birmingham, Brussels, Bucharest, Budapest, Copenhagen, Frankfurt, Helsinki, Krakow, Lisbon, London, Lyon, Madrid, Manchester, Oslo, Palma de Mallorca, Paris Ile-de-France, Porto, Prague, Rotterdam/The Hague, Sofia, Stockholm, Stuttgart, Thessaloniki, Turin, Valencia, Vienna, Vilnius, Warsaw.
- *For Intelligent Transport Services*, **ERTICO** ([Homepage » ERTICO](http://ertico.eu)) ERTICO – ITS Europe is a public-private partnership organisation which develops, promotes and facilitates the deployment of intelligent mobility services by providing multi-stakeholder platform for action. It has close to 120 members (see [Partners](#)), connecting 8 different sectors in the ITS Community: 38 members represent Public Authorities (at national or local level), 19 represent research, 18 represent traffic and transport industries, 13 represent mobility providers, 10 represent suppliers, 9 represent vehicle manufacturers, 4 represent the connectivity industry and 4 represent users.
- For the rail sector, **JSG – RU/IM Telematics Joint Sector Group** (<http://taf-jsg.info/>). The TAF and TAP RU/IM Joint Sector Group (JSG) was set up in October 2012 as a voluntary organisation and is now supported by 14 European Associations involved in the implementation of the Technical Specification for Interoperability relating to the subsystem ‘Telematics Applications for Freight services’ (TAF TSI) of the of the rail system in the European Union.

Starting January 2014, the JSG in collaboration with the project team dedicated to the implementation of the ‘Telematics Applications for Passenger services’ (TAP TSI), has included the technical management of the common part of the two specifications (Railway Undertaking/Infrastructure Manager IT communications).

In order to effectively implement the Regulation about telematics applications, an efficient sector-driven organisation is required to be in place specifically to harmonise and coordinate the work-plans of the sector and work to agree a common sector position towards European Union Agency for Railways (ERA) and Directorate-General for Mobility and Transport (DG MOVE) whenever required.

The main tasks of the JSG are:

- To prepare and present the rail sector positions to the TAF/TAP Steering Committee.

- The coordinated management of the rail sector change requests (CRs) of the TAF IT specifications at the Change Control Management (CCM) Working Party for TAF/TAP RU/IM communication TSI managed by the European Union Agency for Railways.
- To support the assessment process of the TAF TSI Implementation managed by the European Railway Agency.
- *For e-mobility services, MaaS Alliance* ([The Alliance – MAAS-Alliance](#)). The MaaS Alliance (Alliance) is a public-private partnership bringing together stakeholders from all sectors to enable the successful deployment of Mobility as a Service (MaaS) around the world. It has currently 107 members representing Public Authorities (38 national or local authorities, among which 21 from Europe), Technology Solutions Providers (29 members), Consultancy, Research and Innovation (18 members), Transport/mobility Service Providers (16 members) and Associations (6 members). It has in addition 11 partners.
- *For local transport, POLIS – Cities and Regions for Transport innovation* ([Home - POLIS Network](#)). POLIS is the leading network of European cities and regions working together to develop innovative technologies and policies for *local transport*. It has 115 members representing European cities (61), metropolitan areas, provinces and regions (26), various public agencies including research institutes (21) and NGOs (6), and SBB, the Swiss Federal Railway carrier.
- *For local passenger public transport, UITP* ([|| The International Association of Public Transport | UITP ||](#)). UITP (Union Internationale des Transports Publics) is the International Association of Public Transport. Established in 1885 in Brussels, with more than 135 years of history, it is the only worldwide network to bring together all passenger public transport stakeholders and all sustainable transport modes. UITP has over 1900 members spread out over more than 100 countries with 13 offices across the globe. It has also two Centres for Transport Excellence and regional Training Centres. In Europe ([|| Europe | UITP ||](#)), UITP's main activity consists of working closely with **European Union Institutions**, bringing together more than 450 urban, suburban and regional public transport operators and authorities from all member states. UITP represents the perspective of local passenger transport services by all sustainable road, rail and waterborne modes.

Annex 2: National standardisation relevant activities identified by WG4

Partner that registered the initiative	Country	Objectives
Ministry of Infrastructure	PL	NAP - National Access Point for multimodal travel information services - Information provision for travellers and data integrators: information on the rules/conditions relating to a travel such as schedules and timetables
Fintraffic	FI	NAP - Redraft system architecture and services for Finnish MMTIS NAP and public transport database services – Stop data, timetables, calendars, routes, vehicles
Norwegian Public Roads Administration	NO	NPRA has implemented a rich DATEX II set of data available through the current NAP. NPRA is working on METR (Management of Electronic Traffic Regulations) and the related PKI cybersecurity. The intention is that this data will be made available through NAP. NPRA is also Convenor of CEN TC278/WG17 and ISO TC204/WG19 Mobility Integration, and will in this way be able to influence the development of ITS standards
ENTUR	NO	NAP - Harmonise data in NAP Norway- Make it super-easy to use data from one dataset for Norway
Authority for Transport in Malta	MT	NAP - A common and standardised system following the frame architecture and data standards that can eventually be integrated at a pan-European level.
Fintraffic	FI	co-Operate and co-develop Finnish multimodal route planning service for cities, regional and national authorities
Transport ministry	FR	describe the accessibility paths - pedestrian network - the format used is based on the NeTex standard
French NAP transport.data.gouv.fr for MMTIS	FR	Proposed standards for categories of data that do not have European or international standards -data format for static data exchange for cycle network and bike parkings, public charging stations for electric vehicles, carpooling area and low emission zones.
ASFINAG Maut Service GmbH	AT	Based on a common understanding of all partners, access to different mobility service providers will be defined in different ways, with the aim of making the system flexible, scalable and affordable - Sharing: free floating, semi-free floating, station based; Ride-

		Sharing, Ride-Hailing, Taxi, Car Rental, public transport, Micro-PT
Cerema	FR	to provide standardised interfaces for Maas projects (booking, payment, cancellation, authentication): • charging systems • Mobility accounts (user ID, characteristics) • Carpooling • Off-street parking • “On demand” Mobilities like bike-sharing systems, free-floating systems, car-sharing systems
Transport ministry	FR	to define minimum national profiles for Netex and SIRI formats - data format for static and dynamic data exchange for public transport and car parking
Cefriel	IT	Define a standardised data model as a modular set of ontologies to collect interoperable data from different mobility service providers operating in a city - Sharing and Electric mobility
5T S.r.l.	IT	To describe the Public Transport Network topology, with Fare information, timetables description for planned and performed service (also in real-time) - National profiles
Centre for Research & Technology Hellas (CERTH)	GR	Review the current data standards landscape ; explore whether current standards are fit for purpose in a Future of Transport context - Data ontology for supporting the future of transport; mapping of core standards for transport data exchange

Annex 3: Categorization of relevant stakeholders within WG5 as of September 2023

This table displays the identification and categorization of relevant stakeholders within T5.4 as of September 2023. It is based on the elaboration of relevant stakeholders and sectors for data and service provision covered by the ITS Directive, which was carried out as solid base for setting up the Advisory Board by Task H.1.3. (see Milestone MH.1.3) and was further enlarged within the scope of this activity. It highlights the identified stakeholders and the relevant Delegated Regulation(s). Stakeholders are allocated according to the above-mentioned approach to the following groups:

- ITS private service providers
- Associations/networks with relevant data
- European Commission data holders
- Networks with potential to engage other stakeholders/data holders
- National data holders (main categories)
- Users' representatives

This list of data holders and service providers still requires further refinement and alignment with the stakeholders identified in the context of the NAPCORE WG1, WG2, WG3 and H1 related tasks. This means that the list above is not exhaustive and will be regularly updated, maintained and reviewed periodically.

Delegated Regulation (EU)	MMTIS	RTTI	SRTI	SSTP
ITS private service providers				
Google	x	x	x	
HERE	x	x	x	
BeMobile	x	x	x	
INRIX	x	x	x	
TomTom	x	x	x	
Associations / Networks with relevant data				
ETSC - European Transport Safety Council		x	x	
TISA - Traveller Information Service Association	x	x	x	x
MaaS Alliance * several MaaS providers as members	x	x		
CIE - Cycling Industries Europe	x		x	
CEDR - Conference of European Directors of Roads		x	x	x
ASECAP - European Association of Operators of Toll Road Infrastructures		x	x	
C2C CC – Car 2 Car Communication Consortium		x	x	
IRU - International Road Transport Union * Probably few data, but network of drivers that could report on real time through apps	x			x
EPA - European Parking Association	x			x
ACEA - The European Automobile Manufacturers' Association		x	x	
CLEPA – European Association of Automotive Suppliers		x		
EV Roaming Foundation	x	x		
ESPORG – European Secure Parking Organisation				x
ERF - European Road Federation	x	x	x	x

Smart Ticketing Alliance	x			
Open Autodrive Forum		x	x	
European Commission data holders				
EAFO - European Alternative Fuels Observatory	x			
ERA (EU railway agency) - RINFE, TSI PRM	x			
EUSPA * Green lanes, solidarity lanes, waiting times in borders	x	x		
Networks with potential to engage other stakeholders data holders				
POLIS - Cities and Regions for Transport innovation * Access to city authorities in their network	x	x	x	
Eurocities * Access to city authorities in their network	x			
EMTA - European Metropolitan Transport Authorities * Access to metropolitan transport authorities in their network	x			
Data for Road Safety * Mainly SRTI, but because of the automotive OEM partners and the access to vehicle-generated data possibly also interesting for RTTI use-cases		(x)	x	
CCAM Partnership		x		
C-Roads * pilots for MMTIS in C-Streets, but in general I would say data holders are transport authorities and transport operators	*	x	x	
TM2.0		x	x	
ERTICO	x	x		
UITP	x			
EU Alliance for industrial data, edge and cloud	x	x	x	x
IDSA – International Data Spaces Association	x	x	x	x
ITxPT	x			
National data holders				
National Transport Authorities / Regulators	x	x		x
National Safety Authorities			x	
Road Operators / road concessionaires		x	x	x
Infrastructure managers	x	x	x	x
Public Transport operators	x			
On-demand transport operators	x			
Transport Authorities (local, regional)	x			
City authorities	x			
Sharing community (Car-Sharing/Bike-Sharing/...)	x			
Taxis & Ride hailing operators	x			
Air Transport	x			
Shipping community (ferries, ...)	x			
Users' representatives				
EPF - European Passenger Federation	x			
IRP International Rail Passenger Transport	x			
BEUC	x			

This table is an outcome of NAPCORE WG5 and depicts the incentives, obligations and short- as well as long-term vision for national and international stakeholders obliged to provide data on the NAPs according to the Delegated Regulations (EU).

	National	International
Incentives	• Visibility • Certified, reliable and trusted provider • Compliance with political objectives (safety, tourism, ecology) • Feedback (validation tools/dissemination tools) • New/mutual business opportunities	• One NAPCORE point of contact instead of 27 different NBs or even more NAPs • Legal perspective on interpreting the Delegated Regulations
“Sticks”	• Need to comply with the legal framework (EU/national)	• Need to comply with the legal framework (EU/national)
Short term vision (topics to be further worked on during the coming years)	• Setting up NAP > collect data > create value (business) • National & local campaigns/pilot cases • Support to data owners for preparing data in accordance with standards to assure compliance (additional funding to NAP?) • Claims emerge when business found problems in NAP data; when it happens, it shows how the role of NAP is fundamental in assuring quality	• Pilot test with multiple NBs for some selected datasets (not feasible right now, but a possibility) • Data provisions to a single MS or European entity instead of multiple entries • Self-declaration submission to single NB (e.g., where data is registered) • NAP/NB that is capable to cover several countries (definition needed and communicated); start by trying for a cross border pilot
Long term vision		• More European vision, make process easier and decrease workload for NBs • NB carries out CA in cooperation with other NBs • CA in one MS is valid for all MS
Strategies	• NAPs included in national strategies, legal frameworks • Communication guidelines • Newsletter • Standardisation (methodological support) • Showcases from different NAPs • Best practices • Q&A section (basic, intermediate, personalised) • Service/data registration/concession	