



# **MAPPING ACCESSIBLE TRANSPORT FOR PERSONS WITH REDUCED MOBILITY**

Executive Summary

Daniela Carvalho, Alexandra Rodrigues (TIS)  
Maria Rodrigues, Tharsis Teoh, Jasper Tanis (Panteia)  
Bryan Matthews (ITS Leeds)  
Carlos Costa, Rui Gomes (Armis)

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Contact: Andras Mogyoro

E-mail: [MOVE-B5-SECRETARIAT@ec.europa.eu](mailto:MOVE-B5-SECRETARIAT@ec.europa.eu)  
[Andras.MOGYORO@ec.europa.eu](mailto:Andras.MOGYORO@ec.europa.eu)

*European Commission  
B-1049 Brussels*

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## EXECUTIVE SUMMARY

This document is the Final Report for Mapping Accessible Transport for Persons with Reduced Mobility Study, under the Multiple Framework Service Contract MOVE/ENER/SRD/498-2016 Lot 6. This study aims for progress in the provision of multimodal travel information services suited to the needs of persons with disabilities and reduced mobility (PRM).

A key aspect underlying this study is the assessment of whether digital travel information systems (DTIS) are already providing sufficient information regarding the transport infrastructure accessibility conditions and of the respective services offered, allowing all users to take informed decisions concerning their travel plans. In addition, this study also aims to identify and propose actions to enhance the quality of digital travel information systems for users with disabilities or reduced mobility. Accordingly, the particular target of this study focuses on the available information services for public transport accessibility i.e. whether these provide information on accessibility aspects along the transport chain, bringing a complementary perspective to recent studies focusing on good practices to promote transport accessibility.

With this in mind, existing research literature and relevant policies were reviewed. In particular, it can be noted that the ITS Directive<sup>1</sup> and the Delegated Regulation 2017/1926 on multimodal travel information services<sup>2</sup> set the legal framework for travel information services in Europe.

Even before considering the perspective of persons with disabilities and reduced mobility (PRM), the provision of multimodal travel information services and the implementation of the Delegated Regulation face several challenges such as: the low quality of data, the lack of common data formats, the absence of profiles and standards for certain data files, the lack of existing common interfaces, as well as the lack of common interfaces for dynamically linking travel information services. These issues inhibit existing information service providers from complying with the existing regulations (who are obliged to provide routing results to other information service providers when requested) and deliver the relevant accessibility information.

Therefore, it was necessary to understand the status quo regarding services commonly provided (in Europe) for persons with disabilities and reduced mobility within the DTIS context. In this regard, 125 digital tools were analysed, with their services assessed against a common framework. These 125 DTIS were selected to cover all European Union Member States, starting from those identified in the study on multimodal travel information services<sup>3</sup>, being then refined based on the suggestions from our survey with users and other stakeholders. The approach was discussed and validated during a workshop with stakeholders and DG MOVE in Brussels on the 3rd October 2018.

From the analysis of the 125 DTIS, general trends were obtained, which unfortunately ended up being less positive than expected, having identified that 41% of the analysed DTIS do not provide any PRM-specific information (in the scope of the analysed criteria which is presented further on in this report) and only 16% are considered as addressing

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<sup>1</sup> Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport

<sup>2</sup> Commission Delegated Regulation (EU) 2017/1926 of 31 May 2017 supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of EU-wide multimodal travel information services

<sup>3</sup> Study on ITS Directive, Priority Action A: The Provision of EU-wide Multimodal Travel Information Services (2016) ([https://ec.europa.eu/transport/themes/its/studies/its\\_en](https://ec.europa.eu/transport/themes/its/studies/its_en))

most of the requirements of PRM DTIS. For the remaining 43%, some relevant features for PRMs have been found:

- 21% had an interface that supported persons with visual impairments.
- 12% supported users with hearing impairments.
- 10% supported those with cognitive difficulties.

As a preliminary conclusion it can be stated that a great amount of work is still needed from various directions in order to provide a truly inclusive transport service.

Mobility as a Service (MaaS) is defined as the integration of various forms of transport services into a single mobility service accessible on demand, offering added value through use of a single application to provide access to mobility<sup>4</sup>. Facilitating multimodality in cities to accelerate the shift to sustainable mobility is one of the main EC objectives, and efforts to contribute to the last mile enabling to travel door to door has been implemented. However, some concerns are being raised on whether persons with disabilities and reduced mobility will benefit from MaaS. On one hand, this is related to a higher reliance on smartphones and, on the other hand, to the growth of potentially less regulated transport mode of operations (i.e. on demand services, shared modes, electric scooters, shared bicycles, etc). To ensure that persons with disabilities and reduced mobility benefit from a MaaS environment, further attention is needed during planning, implementing and further monitoring during operation both in relation to infrastructure and vehicles as well as in terms of the information being offered to persons with disabilities and reduced mobility. This framework for MaaS should contain higher levels of detail and accuracy targeting the specific needs of those users.

In order to fully understand the perspective of users and their specific mobility challenges, a conceptual framework was developed. This framework had its focus on analysing PRM needs for information when planning their trips, including access to the transport services (e.g. step-free access; on-site assistance). The framework was developed based both on the literature review undertaken and on expert opinion, which created a list of relevant criteria to describe the accessibility of information services. This framework was included in a survey on user experience, primarily carried out in the three key countries involved in the project: the UK, Portugal and the Netherlands. The survey asked users to describe and evaluate both the general characteristics of the DTIS and the characteristics and requirements they value the most. This served as basis to establish minimum user requirements for PRM DTIS.

The results from the evaluation exercise previously referred were integrated into our findings on the state-of-the-art and good practices of DTIS in Europe.

Taking as reference the requirements and priorities for a DTIS supporting PRM travel, a five-step approach to evaluate and identify good practices offered by existing DTIS was developed. Again, it is remarkable that none of the existing services are fully comprehensive in terms of their features. Hence, the exercise conducted also assists in drawing lessons on how existing and future information systems can be enhanced for a better service. The good practices and transferable features were compiled and are available in the booklet "Improving Accessibility of Persons with Reduced Mobility by Improving Digital Travel Information Services: A Selection of Good Practices in Europe", which is also part of this report.

A key task in the project was the development and testing of a software demonstration that integrates key features identified in the task on user requirements, as well as the

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<sup>4</sup> <https://maas-alliance.eu/homepage/what-is-maas/>

related European Directive on the provision of multimodal travel information services. The pilot demo was evaluated in three different contexts:

- A cross-border scenario, involving the border between Germany and the Netherlands (NL/DE);
- A national scope scenario for rail, involving the United Kingdom (UK);
- A last mile scenario, involving the urban region of Lisbon (PT).

Each pilot intended to make use of both public transport information (commonly understood as timetables and/or any unforeseen event in the transport availability), as well as dedicated information for accessibility (existence of elevators, escalators, step-free access, on-site assistance, etc). In some cases, accessibility data from the operators' data sources and/or other data sources was not available for the use in the pilot context, and consequently it was necessary to collect such information from scratch and/or to synthesise the few available data. The execution of the real-life testing (i.e. the software demonstration) proved challenging and yielded much insight into the challenges that service providers still need to address.

Besides a general lack of data and in particular one related with accessibility, other observed key challenges are the lack of standardization in the use and understanding of data formats or profiles, data quality and data access. These underlying data shortcomings relating to both physical infrastructure and vehicles, weaken the quality of any journey planner.

The evaluation of the software demonstration was undertaken by persons with disabilities and reduced mobility groups that are very much involved in testing the solutions of transport operators in the countries involved in this study. In light of the known technical challenges of the demonstration, the feedback was restricted to:

- the relevance and helpfulness of the tool, including aspects such as the user interface, tutorial, the usefulness of the data provided, the system stability and the capacity for its usage in different devices;
- the accuracy of the data provided in general and, more specifically, to the most *relevant stops*<sup>5</sup> for the scope of each pilot case;
- the pitfalls identified, particularly addressing to data availability and data coverage;
- the suggestions and recommendations for further enhancements of the tool, particularly in relation with how to extend and populate the tool with more data (i.e. intensifying data collection campaigns, through crowdsourcing<sup>6</sup> etc.) and data quality.

A key finding is the need for sufficient data coverage concerning accessibility features, to allow reliable journey planning when using accessibility aspects as variables in any search. Services should also provide clear feedback mechanisms that can identify problems and request users' support to improve the services.

The outcomes of the different tasks suggested several further actions, including the increasing of research investments from the funding agencies to improve technological issues, further development of standards and data collection in line with those standards.

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<sup>5</sup> in Lisboa referring to long-distance/ last mile connections, in NL/DE cross – border stops.

<sup>6</sup> Allow users to populate the information systems with accessibility data as already being used for the classification of public spaces. This requires, however, a strong and close monitoring to assess the reliability of data before its acceptance for publication in the systems

Furthermore, there is a need for more data to be made available before full-scale research projects can yield significant results measured in terms of improving PRM travel experience.

The work conducted in the current study already differentiates between the type of information that is a prerequisite and data that could be useful, also serving as a basis for future research. In fact, this study wishes to highlight the technical and political topics that may be addressed as baseline when undertaking a full-scale project in the area of DTIS for persons with disabilities and reduced mobility.

The work conducted had elements of community awareness building, besides the standard promotion activities. This occurred at different stages of the project and targeted different audiences, such as passengers, public transport operators, public transport authorities, digital service providers, ITS professionals and the transport research community.

From the initial review of the DTIS inventory, it seems clear that the provision of guidance on the minimum requirements and standards for information for persons with disabilities and reduced mobility should be considered as a priority in the future. This should be undertaken in parallel with the ongoing and desirable efforts to reinforce physical accessibility measures and extend passenger rights, especially in the context of multimodal travel.

Efforts to ensure that websites and DTIS are accessible and follow the accessibility requirements of Directive (EU) 2019/882<sup>7</sup> will be meaningless if no actions are taken to assure that reliable information is displayed in relation to the (physical) accessibility of the selected trip or journey. At this level, the inventory and pilot cases of the study show that there is still a great deal of work to be done, along two main streams covering (i) data standardization and (ii) data quality.

Under those constraints, it was necessary to develop data standardization procedures, assuring that the web portal was consistent across all pilots. For that, a first version of a persons with disabilities and reduced mobility NeTEx profile<sup>8</sup> was developed, addressing the common data attributes. This might be a basis for a draft accessibility profile, making use of the NeTEx standards<sup>9</sup> and improving the feasibility of future projects. Such objective can already be pursued throughout the ongoing Data4PT CEF PSA project which has the objective to support the development and deployment of TRANSMODEL standards including profiles for NetEX and SIRI standards.

In many European cities, data covering accessibility to the different transport networks is still largely missing, while in other cases, only partial data is available. Accessibility data is fundamental for designing DTIS with the capacity to select and plan an accessible journey. Without the underlying data, this aim cannot be reached. With high costs involved in undertaking an exhaustive data collection campaign and subsequent data formatting, this is acting as a constraint for a wider adoption of more suitable DTIS.

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<sup>7</sup> Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services.

<sup>8</sup> NeTEx (Network and Timetable Exchange) is a data exchange standard (provided using XML) for public transport network, timetables and fares based on Transmodel. It is a large standard applied to different business objectives thus each NeTEx service only has to implement the specific elements relevant to its business objectives. This means that Parties using NeTEx for a particular purpose will typically define a "profile" to identify the subset of elements that must be present, as well as the code sets to be used to identify them. In this specific case we are dealing with a PRM NeTEx profile.

<sup>9</sup> <http://netex-cen.eu/>

Relevant progress can be anticipated at the EU level for the coming years with the implementation of the technical specifications for interoperability related to accessibility of the Union's rail system for persons with disabilities and reduced mobility (PRM-TSI<sup>10</sup>). The ongoing inventories<sup>11</sup> for accessibility under the umbrella of the European Railway Agency (ERA) will progressively make harmonised data available on accessibility in railway stations, being made available to DTIS providers. Some detailed accessibility inventories in other indoor environments, such as metro stations, are also occurring in several cities. However, for urban and open environments, such as walking pathways and bus stops, progress is slower and challenged by the multiplicity of actors involved.

Of particular concern is the fact that even when data is available, and supposedly available in a standardised and harmonised way (i.e. in NeTEx or in GTFS formats), in reality, we are faced with various constraints, such as:

- different information,
- different data attributes,
- different creation purposes,
- some datasets more frequently updated while others are outdated and obsolete,
- some datasets being validated, with others including erroneous data.

Thus, **data profiling<sup>12</sup> is paramount for ensuring truly continuous and interoperable PRM journey planners.**

It is to be expected that the Regulation on multimodal travel information services (MMTIS)<sup>13</sup> will boost the provision of multimodal travel information in general and more specifically for persons with disabilities and reduced mobility. However, the **data heterogeneity and gaps are blocking the process**, with major efforts being still required to achieve the desired levels. The evidence we collected through our analysis and pilots showed that the data fusion process is highly complex and inefficient, and that accurate route accessibility planning with most of the data available is virtually impossible to perform, even when engaging with frontrunner cities and Member States, such as the ones partnering this project.

**Further action from the EC, notably throughout communication and support actions for data collection and standardisation, is highly recommended, in order to provide guidance to those willing to take steps in this field** and take the maximum benefit from the ongoing journey planner deployments. The ongoing Programme Support Action (PSA) to support Member States in the development and deployment of European public transport data standards (Transmodel, NeTEx and SIRI) for the provision of Union-wide, multimodal travel information services which apply to the TEN-T network including urban nodes already provides the first step in this direction and could also focus on PRM accessibility and the development of relevant profiles.

However, actions are also required at a local level. One action that could contribute to the development of indicators for monitoring this process could be to establish a link

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<sup>10</sup> Commission Regulation (EU) No 1300/2014 of 18 November 2014

<sup>11</sup> According to the Commission Implementing Regulation (EU) 2019/772. Member States are required to collect accessibility data by June 2022

<sup>12</sup> Process of reviewing source data, understanding structure, content and interrelationships, and identifying potential for data projects

<sup>13</sup> Commission Delegated Regulation (EU) 2017/1926 of 31 May 2017 supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of EU-wide multimodal travel information services

with the SUMI (Sustainable Urban Mobility Indicators) project<sup>14</sup>. The project aims to provide a common European set of 19 indicators including "Accessibility for mobility impaired groups". The objective is to assist cities in collecting and carrying out quality overviews of the data for each set of indicators allowing for a comprehensive analysis of the accessibility for PRM at the city level. The added value of this exercise is in having a good overview of accessibility levels across the EU and all efforts should be envisaged for extending the geographical coverage of this study. However, for the specific purpose of developing this type of journey planner the data available through SUMI is not sufficient<sup>15</sup>.

Additionally, and particularly at an urban and regional scale, transport authorities could boost the work on SUMI by further foresee and monitor progress in Public Service Contracts. The requirement to provide accessibility information is already included in the quality criteria in a large number of Public Service Contracts (under Regulation 1370/2007<sup>16</sup>), though few PSO contracts require PRM data in digital format.

An EC Communication raising awareness and promoting the inclusion of the requirement for the collection and maintenance of accessibility data in public service contracts would be of added value. Additionally, promoting the share of examples of **contractual and monitoring procedures** established between transport operators and respective transport authorities, including the **conditions for information systems and accessibility, minimum level of information, data interoperability and data quality conditions** could largely contribute to enhance such practices. Moreover, if this could be implemented along with the PRM -TSI for rail modes, a significant boost in this field might be observed.

The results will benefit infrastructure and transport operators, national or local authorities, as well as information service providers (in particular application developers). This can be enhanced with a detailed description and elaboration of a data catalogue specifically targeted towards accessibility in DTIS, including at least, the necessary data, reference formats and how to support the development of the NeTEx profiles for accessibility.

**Data collection is a heavy and cost-intensive activity.** In the case study of Lisbon PRM users supported the collection and assessment of accessibility data. The advantages of this alternative method include the easy deployment and low associated costs (which are much lower than in exhaustive inventories). More importantly, this method allows a more detailed evaluation and perception of accessibility for the different PRM users. This method can be considered as a good practice example for cities and operators willing to involve users in the collection process, and **can be used as basis for a Public Support Action through CEF, targeting the support to Member States to involve PRM associations (with the necessary training for the different PRM users) in the collection and data inventories in some cities.**

### Scaling up the pilot is not possible

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<sup>14</sup> [https://ec.europa.eu/transport/themes/urban/urban\\_mobility/sumi\\_en](https://ec.europa.eu/transport/themes/urban/urban_mobility/sumi_en)

<sup>15</sup> As a title of example, SUMI indicator on accessibility per mode, displays the percentage of vehicles with free access step in comparison to the total fleet in that city (Total number of vehicles/ number of vehicles qualified as accessible or Total number of stops/ stations served by mode/ number of stops/ stations that qualify as accessible), while for the purpose of a pilot journey planner it is necessary to identify exactly that the accessible vehicle is in service in a certain route, for a given timetable and in a specific stop/station.

<sup>16</sup> Regulation (EC) No 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70

A scalable pilot journey planning tool for persons with disabilities and reduced mobility that could be broadly used by Member States, is not possible today. As a prerequisite for such a tool, data must be collected and made available in a standardised data format. The data must also be of reliable quality before considering scale-ups.

Experience has shown that there are still too many open variables to be faced, with minimum data quality conditions having to be guaranteed in advance. A general shortage of accessibility-related data across the pilot cases was identified. The availability (or lack) of data is not only due to technical issues, but also hindered by political and procedural issues, which lead to difficulties in the access to data or to data content becoming divergent from that available through the National Access Points (NAP) or Open Data Portals. In fact, whilst cities and operators tend to have their own databases, which they have refined and improved using much of their own resources, this data is very valuable and cannot be easily obtained. Notwithstanding the implementation of the Delegated Regulation 2017/1926 establishing that transport authorities (PTA) and transport operators (PTO) are obliged to make data accessible through the NAP, this data heterogeneity and gaps are still difficult and complex to address.

One conclusion that must be drawn from this pilot case is that there is a **clear role for the different players**:

- the European Commission in facilitating throughout a Communication a common approach and the sharing of best practices for the inclusion of requirements on PRM digital data in public contracts and in facilitating the financial support to further elaborate on PRM data quality standards and public support actions for data collection, etc.;
- Member States, in developing the full potential for the implementation of the Delegated Regulation (EU) 2017/1926 and to evaluate its impact on the provision of multimodal planners for persons with disabilities and reduced mobility;
- local and regional authorities, in defining a framework for PRM digital accessibility data establishing minimum levels of standardised data that needs to be provided and shared and its regular monitoring through public service contracts.

In sum, this study revealed that there is still a long way to go before achieving seamless accessibility for persons with disabilities and reduced mobility through digital information systems. It is of the outmost importance to define the minimum requirements that journey planners must fulfil and at the same time plan a suitable monitoring procedure to verify the implementation of the defined requirements.

There are a few good practices that can already be understood as exemplary and with high potential for replication in similar contexts. This study has identified some of these practices and presented them in the Good Practices booklet.

Furthermore, National Access Points provide a glimpse of a brighter future, in the sense that they aim to offer easier access and harmonisation of data, with a single access point and the use of data format standards. However, validation and data update processes still have to progress. Although the MMTIS Regulation (art. 6) specifies that data updates shall be done by transport authorities, operators, infrastructure managers, and transport on demand service providers, it does not establish clear guidance or recommendations for data validation. Therefore, this remains an open issue for further elaboration as it is foreseen in the above mentioned Data4PT CEF PSA project. As such, it might be expected that in the coming years further validation tools would be developed and tested. Moreover, and in relation to accessibility information, there is still no obligation to create or collect these data, nor is there an agreed set of attributes that should be presented in the datasets. One of the outputs of the study is the production of a first version of a NeTex profile for PRM data, bringing added value for

those working in this field, addressing a possible common set of attributes and improving the feasibility of future projects.

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