EUROPEAN UNION AGENCY FOR RAILWAYS

Making the railway system
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ACCOMPANYING REPORT N. ERA-REC-128-2/ACR TO THE RECOMMENDATION OF THE EUROPEAN UNION AGENCY FOR RAILWAYS on

The amendment of Commission Regulation (EU) No 1300/2014 on the technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility

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Date	12/03/2020	15/03/2020	20/03/2020
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Document History

Version	*Date*	*Comments*
1.0	12/03/2020	Final version

Contents

1. Introduction

This accompanying report complements the recommendation ERA-REC-128-2 of the Agency on the amendment of Commission Regulation (EU) No 1300/2014 of 18 November 2014 on the technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility.

It deals with the technical and organisational aspects, which lead to the text of the recommendation. It lists the main points of evolution and explains the reasons for this evolution.

2. Reference documents and legislation

2.1. Reference legislation

N°	*Title*	*Reference*	*Version*
[1]	Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system (Recast)	OJ L 138, 26.5.2016, p. 44.	*N.A.*
[2]	Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004	OJ L 138, 26.5.2016, p. 1.	*N.A.*
[3]	Commission Delegated Decision (EU) 2017/1474 of 8 June 2017 supplementing Directive (EU) 2016/797 of the European Parliament and of the Council with regard to specific objectives for the drafting, adoption and review of technical specifications for interoperability (Delegated Act on TSIs, DA on TSIs)	OJ L 210, 15.8.2017, p. 5–15	*N.A.*
[4]	Commission Regulation (EU) No 1300/2014 of 18 November 2014 on the technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility (PRM TSI 2014)	OJ L 356, 12.12.2014, p. 110–178	*N.A.*
[5]	Regulation (EC) No 1371/2007 of the European Parliament and of the Council of 23 October 2007 on Rail Passengers' Rights and Obligations	OJ L 315, 3.12.2007, p. 14–41	*N.A.*
[6]	Commission Regulation (EU) No 454/2011 of 5 May 2011 on the technical specification for interoperability relating to the subsystem 'telematics applications for passenger services' of the trans-European rail system	OJ L 123, 12.5.2011, p. 11–67	*N.A.*

3. Definitions and abbreviations

3.1. Definitions

Definition	*Description*
PRM TSI 2014	Technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility
TAP TSI	Technical specification for interoperability relating to the subsystem 'telematics applications for passenger services' of the trans-European rail system

3.2. Abbreviations

Abbreviation	*Description*
CEN	European Committee for Standardization
ERA	European Union Agency for Railways
IM	Infrastructure Manager
PRM	Person with Reduced Mobility
RISC	Railway Safety and Interoperability Committee
RU	Railway Undertaking
TSI	Technical Specification for Interoperability
WP	Working Party

4. Working Party

4.1. Composition and activities of the Working Party

The following table lists the participants to the Working Party: many of the participants are the same as for the previous Working Parties that discussed the TSI PRM and the Inventory of Assets. This facilitated the inception of activities as all participants were aware of the context and of the conclusions already made.

Table 1: participants to the Working Party

Organization	**Representative**	**Deputy**
AGE Platform		
AGE Platform		
CER		
CER		
EDF		
EDF		
EIM		
EIM		

EPF		
EPTTOLA		
ETF		
NB-Rail		
NB-Rail		
NSA Austria		
NSA Denmark		
NSA Finland		
NSA France		
NSA Germany		
NSA Hungary		
NSA Norway		
NSA Spain		
NSA Spain		
NSA Sweden		
NSA Sweden		
NSA Switzerland		
NSA United Kingdom		
UITP		
UNIFE		
UNIFE		
EC – DG MOVE		
ERA Interoperability		
ERA Interoperability		
ERA Interoperability TAP		
ERA Economic Evaluation		

4.2. Meetings

18 meetings were organized between the 6th September 2016 and the 10th December 2019:

- Meetings 1 to 4 were dedicated to the earlier recommendation on the Inventories of Assets mentioned in 4.3.1
- Meeting 5 to 18 were dedicated to the discussion on the other points.

4.3. Mandate for the revision and tasks of the Working Party

4.3.1. Delegated Act on TSIs

Article 10 of the DA on TSIs gives the specific objectives for the revision of the PRM TSI:

1. Lay down requirements on the Inventory of Assets system: this point was covered already with an earlier recommendation;
2. Define common priorities and criteria to further improve accessibility to persons with reduced mobility: this point is discussed by the European Commission with the Advisory body established according to Article 9 of the PRM TSI 2014 on the basis of a comparative overview of the strategies contained in the national implementation plans. The working party did not have a legal mandate to re-discuss this proposal;
3. Provide a clear definition of manual and electrical wheelchairs and the requirements applicable to innovative electric wheelchairs to access passenger trains safely: this point was discussed by the Working Party.

The DA on TSIs also mentions in its recital (31), that the revision "*should include a review of permanent structural solutions that may be required in passenger coaches to ensure equal access to extra services for persons with reduced mobility, including in particular access to restaurant cars"*. This point was discussed by the Working Party.

4.3.2. Relevant Technical Opinions and Advices

The Agency published a number of Technical Opinions to clarify some aspects of the PRM TSI 2014:

- ERA-OPI-2014-4 - Staircases requirements in the PRM TSI
- ERA/OPI/2015-7 - Technical opinion regarding the question of NB-Rail (ref. QC-NB Rail 017) concerning Definition of Stairs in the PRM TSI
- ERA/OPI/2017-1 - Opinion of the European Union Agency for Railways to the European Commission regarding PRM TSI deficiencies

They are available on the Agency website. These opinions were considered by the Working Party.

4.3.3. Return of experience of the TSI users

Stakeholders provided comments and requests for changes based on their return of experience with the TSI.

5. Outputs of the Working Party

5.1. Definition of a wheelchair

In order to reach the objective of Article 10(3) of the DA on TSIs, ERA proposed to define a 'wheelchair transportable by train', being a *manually or electrically propelled wheelchair or scooter the characteristics of which permit the full usage of all features of a rolling stock designed for wheelchair users, the characteristics of a wheelchair transportable by train being within the limits specified in appendix M.*

This definition is based on the dimensional characteristics of the wheelchair, whatever its type. It is complemented with the characteristics defined by each RU according to point 4.2.6.1 of the TAP TSI; that point requires the RU to publish the maximum size and weight permitted for a wheelchair to access the rolling stock. Therefore, on the basis of dimensional characteristics only, the situation is as shown on Figure 1

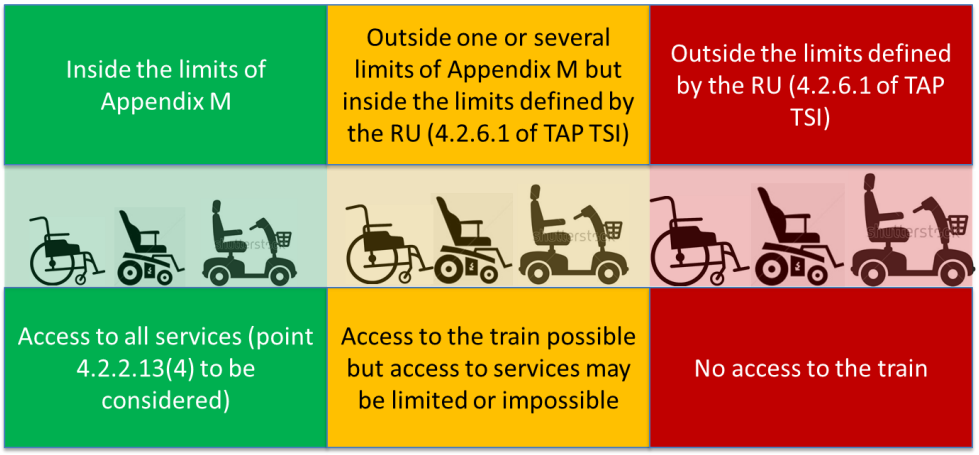

Figure 1: accessibility of wheelchairs according to their dimensions

The definition was clarified to avoid the misunderstanding that a wheelchair with one or more characteristics outside the limits of appendix M could be considered as not transportable by train. A wheelchair the characteristics of which are within the limits specified in appendix M is finally defined as an "interoperable wheelchair transportable by train".

Discussions took place about a more general definition of a wheelchair in order to differentiate it from a personal mobility device (PMD), the usage of which is more and more frequent. However, no acceptable compromise was reached: tentatives all came to a point involving the user of the device (wheelchair or PMD) and putting in question her/his rights as a person with disability or person with reduced mobility. Eventually, only a system of cards such as used for parking places could solve the issue, a solution that was rejected by associations. In addition, a proposal giving RUs the possibility to have a policy on the use of wheelchair spaces so as to ensure their availability to persons with disabilities and persons with reduced mobility in priority was not retained.

In conclusion, the TSI is modified as follows:

- In point 2.3, the definition of an interoperable wheelchair transportable by train is added: *an interoperable wheelchair transportable by train is a wheelchair the characteristics of which permit the full usage of all features of a rolling stock designed for wheelchair users. The characteristics of an interoperable wheelchair transportable by train are within the limits specified in appendix M*.
- In appendix M, the following clarification is added: *this appendix identifies the maximum engineering limits for an interoperable wheelchair transportable by train. These limits are used for designing and assessing the rolling stock (architecture, structure, layout) and its components (access doors, internal doors, seats, toilets etc.). When the characteristics of a wheelchair exceed these limits, the conditions of use of the rolling stock might be degraded for the user (for instance no access to the wheelchair areas). Exceeding some limits may prevent the user to access the rolling stock. Those limits are defined by each railway undertaking as specified in the point 4.2.6.1 of the TAP TSI.*

The dimensions of the Interoperable wheelchair transportable by train raised many comments from the associations. This aspect is further detailed in point 5.4.

5.2. Access to services

As per recital (31) of the DA on TSIs, coming further to a request to the European Ombudsman[1], the Working Party was asked to review the permanent structural solutions that may be required in passenger coaches to ensure equal access to extra services for persons with reduced mobility, including in particular access to restaurant cars.

[1] https://www.ombudsman.europa.eu/cases/summary.faces/en/76303/html.bookmark

A first remark is the following: given the length of a railway vehicle, it is not conceivable to gather in the same car a passenger access door, wheelchair spaces, wheelchair accessible toilets and a restaurant area. Therefore, giving access to wheelchair users to a restaurant means giving access to an adjacent car, while respecting the TSI requirements on clearways (point 4.2.2.6) and height changes (point 4.2.2.8).

This does not represent a technical problem in the trains that provide a level circulation throughout at a level of +/- 1200mm above the top of the rail; those trains are accessed from the platforms of the target system via 3 or 4 steps. It is much more a technical challenge in the trains that provide a level access from the platforms of the target system; in those trains the floor level at the vestibule is 600 to 800 mm and ramps are necessary to pass over the bogies. Figure 2 illustrates that case with an articulated train with a maximum speed of 250 km/h.

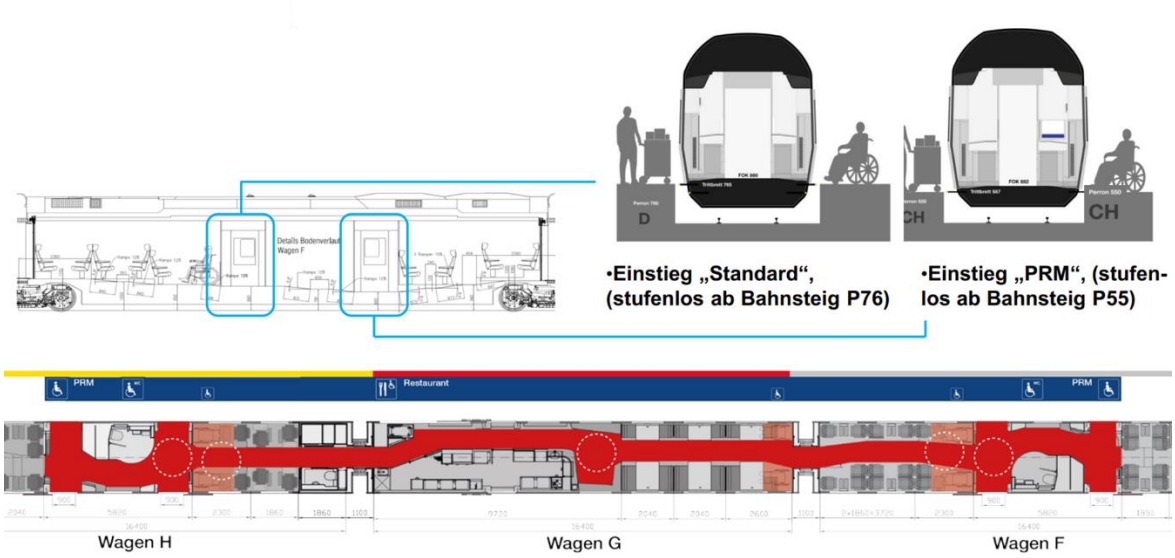

Figure 2 – Example of rolling stock giving level access from platforms at 550mm and 760mm and permitting circulation throughout to the adjacent car

Restaurant cars are mentioned as a particular example but ERA proposed not to consider the restaurant cars only, because RUs offer a number of other extra services in trains and the trend is to increase the number of those. If the principle is that a service shall be accessible, this should apply to all services and not only to the restaurant.

An example of the services offered on-board was provided by VR Group from Finland and is illustrated by Figure 3 below:

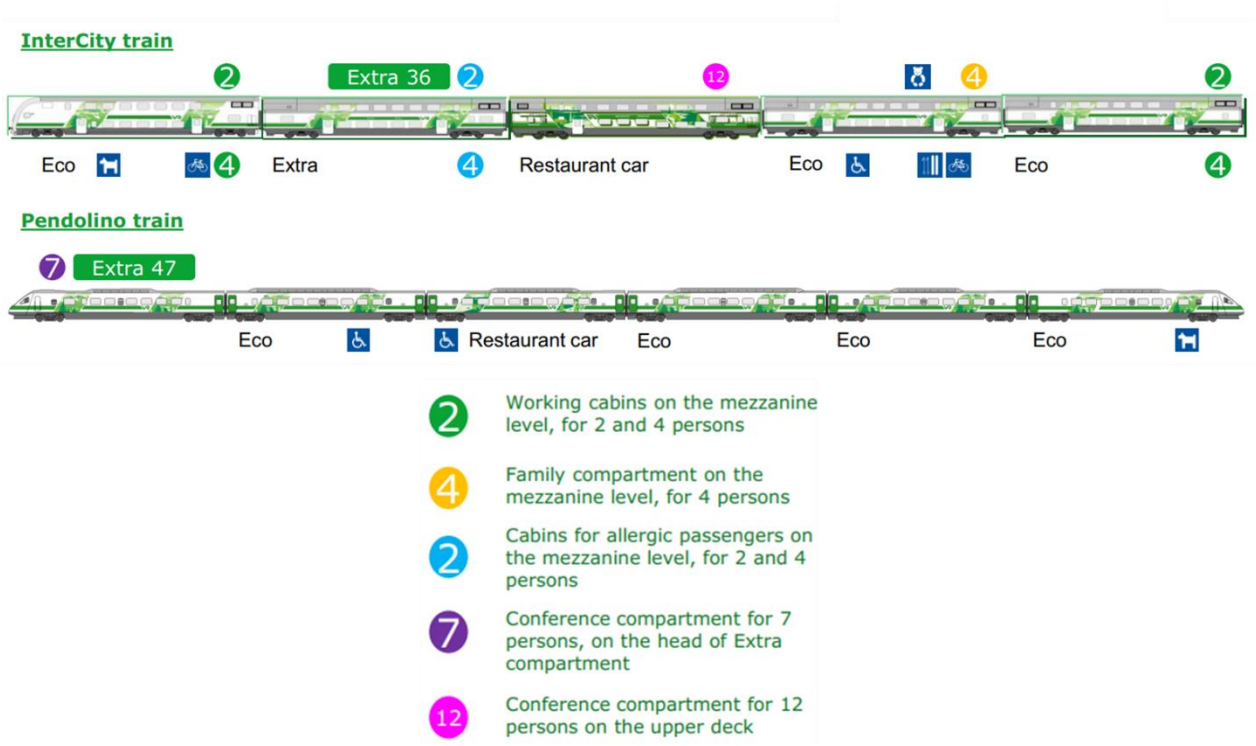

Figure 3 – exemple of services provided on VR Group trains

Not listed on the figure are the spaces for pets, the children playground, luggage lockers, etc.

The WP members recognised that a rolling stock is a very constrained environment with strict limits in width, length, height and axle load. Bogies at both ends of each vehicle with their wheels, suspensions and sometimes electric motors are obstacles that need to be passed at a certain height above the rail level, not necessarily compatible with low access and with moderate internal ramps. Finally, the relative movement of adjacent vehicles in S-curves reduces drastically the permitted width of the gangway.

UNIFE was asked to provide an analysis of those constraints and the consequences of enabling the circulation of wheelchair users within a vehicle, from the lower deck to the upper deck of a double-decker vehicle and from one vehicle to the adjacent one. This analysis is summarized here below:

1. Circulation within a vehicle

   Without consideration of the level changes, the width of an aisle usable by wheelchair users would need to be 800mm minimum, compared with 450mm minimum for an aisle in standard class with 2+2 type seating. The vehicle width being limited by the gauge, this could only be achieved by removing 1 seat on each row, i.e. by reducing the seating capacity by 25% (and even 33% in 1st class with 2+1 type seating).

   The Figure 4 below shows an example on a train where the bistro car is located five vehicles away from the wheelchair spaces, and the consequence on the seating capacity of giving access to a wheelchair user.

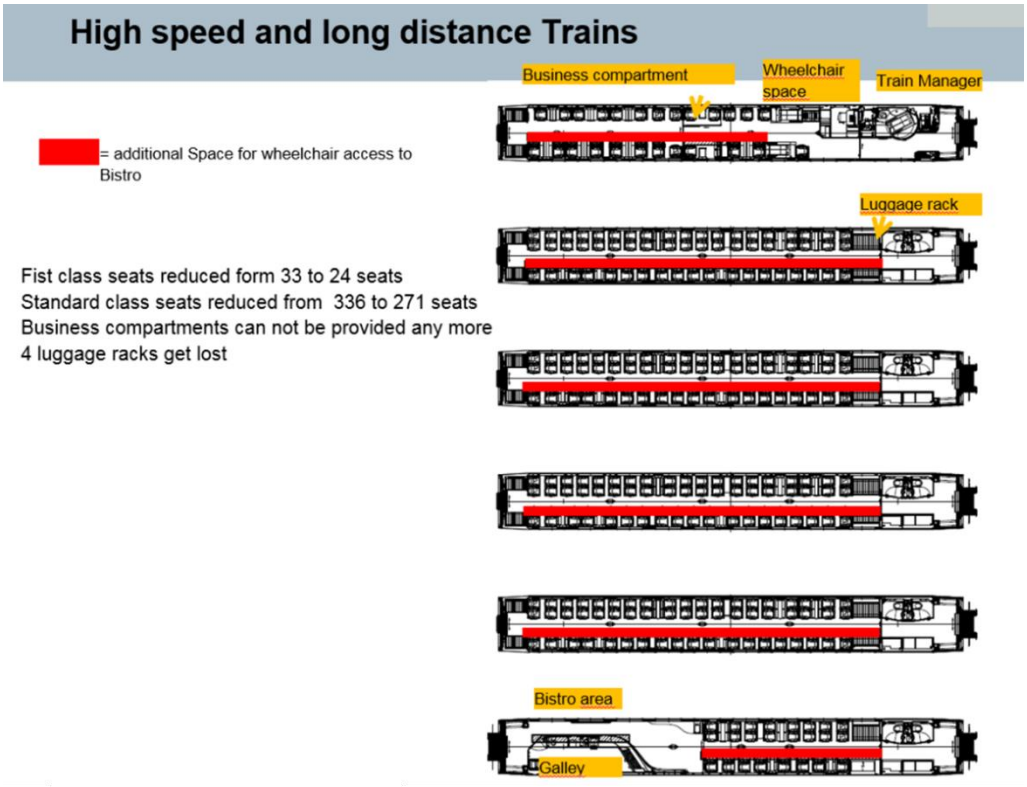

Figure 4 – Example of the removal of seats for increasing the aisle width to 800mm from a wheelchair space to a bistro car

2. Access to upper decks in double deck vehicles

   In order to give access to the upper deck of a double-deck vehicle, there would need to be lifts fitted; these would take up considerable space, add reliability/safety issues, mass and cost. The Figure 5 below illustrates the case and shows a capacity reduction of 28 seats.

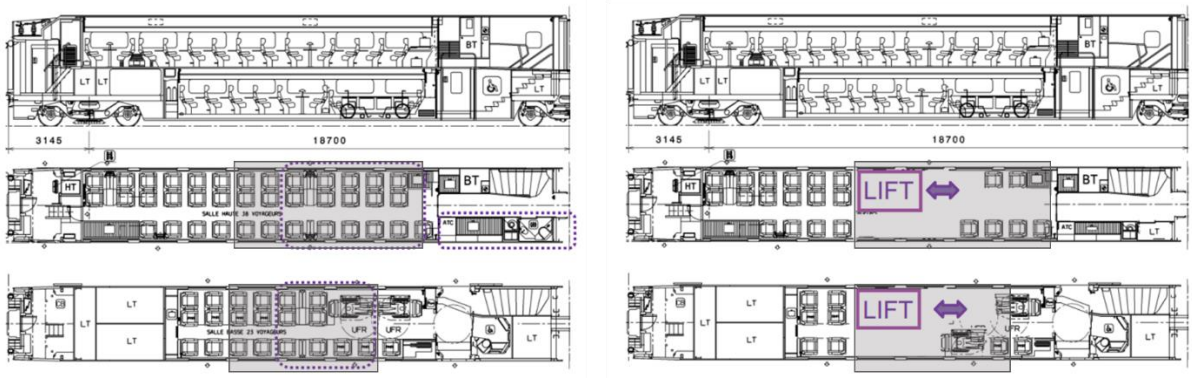

Figure 5 – Example of the installation of a lift in a double-deck vehicle

3. Change in levels and movement to an adjacent vehicle

   Railway vehicles are mounted on bogies at both ends. Many parameters influence the minimum possible floor height at the bogie level, such as (non-exhaustive):

   - the train architecture, with vehicles supported each by two bogies (conventional architecture) or sharing them with the adjacent vehicles (articulated architecture)
   - the maximum speed, increasing the wheel diameter
   - the presence or not of a motor

According to the parameters, the floor height at bogie level is around 900mm for an articulated train to 1200mm for a conventional one.

The TSI specifies the maximum slope for ramps in rolling stock in its point 4.2.2.7 (7). For wheelchair accessible areas, the values are 12% for ramps up to 840mm long (i.e. covering a 100,8mm vertical difference) and 6.25% for longer ramps (i.e. covering a 62,5mm vertical difference per meter of ramp). With such values, it would take 4.8m long to cover a vertical difference of 300mm that corresponds to the difference between 900mm and the floor level of a vehicle designed for a platform of 550mm.

Combining the floor height at bogie level, the maximum slopes permitted in the vehicle and the request for level access from low platforms results in a very difficult equation; in some cases it can be solved but in many others it can't.

The conclusion of this analysis is that the PRM TSI cannot include a requirement that could be satisfied only by permitting the circulation of wheelchair users along a train. Consequently, it cannot require that services available on-board a train are accessible to all passengers.

To compensate the lack of accessibility of services, the PRM TSI includes a requirement that services that can be provided remotely are provided free of charge to the wheelchair users at the wheelchair spaces. This operational measure applies only to wheelchair users as its extension to all persons with disabilities and/or with reduced mobility would be very questionable from both the operational and technical perspectives.

5.3. Other outputs

5.3.1. Rolling stock: passenger access doors audible signals

There were many discussions on the doors audible signals.

On one hand, the door audible signals are necessary:

- at opening, to alert people – particularly those with impaired vision – that the door control can be operated and to help locate the door / door control;
- at closing, to alert people of the imminent door movement.

On the other hand, some passengers and people living near stations may perceive the door audible signals as a nuisance. In order to find the best possible balance between the necessary signal and the reduction of the nuisance, the TSI already permits the implementation of door signals with an adjustable sound pressure level. The proposed revision includes two new innovative proposals:

1. Introduction of the door finding signal: the characteristics of this signal are such that it is audible only near the train. When a door finding signal is provided, the door opening signal outside the train can be omitted;
2. Introduction of alternatives to the door closing signal: door closing signals can be omitted when a door is closing for reasons other than departure if alternative means are in place to mitigate the risk of injury to the passengers and the train crew. These alternative means are, for instance, the light curtain or sensitive edges combined with a low door closing speed.

These possibilities given by the TSI should enable stakeholders to find the most appropriate solution.

5.3.2. Assessment: on-site visits by Notified Bodies

The Working Party debated in depth about the role of Notified Bodies for the assessment of stations. During the revision of the PRM TSI conducted in 2011-2014, the number of parameters that NoBos have to check on-site was considerably reduced. As expressed in the report made during that revision: *"most of the parameters related to stations in the PRM TSI can be easily assessed with a simple ruler: door width, marking of transparent obstacles, presence of information,… for all those parameters, it is expected that the realization*

on site will comply to the approved design and therefore the revised TSI does not require the on-site inspection by a Notified Body".

The return of experience shows that the assessment of these parameters is not as easy as it seems and that expertise is required for ensuring proper accessibility. Works in stations being generally performed by subcontractors of the Station Manager, solutions designed with expertise are often not implemented with the same level of expertise, resulting in mistakes/omissions caused by a misperception of the importance of some parameters. NB-Rail provided several examples of stations showing severe non-conformities to the PRM TSI while the design was compliant.

EIM and NSA SE expressed concerns about the role given to NoBos by the Interoperability Directive. EIM would like to work together with the NoBos during the course of projects and not only at the end. Therefore, EIM and NSA SE are opposed to the site inspections. However, it is clear that NoBos must not act as consultants and therefore, to ensure the correct application of the PRM TSI, it is proposed to reintroduce the on-site visits.

5.3.3. Interoperability constituents: case of displays

The dynamic visual displays were Interoperability constituents in the PRM TSI 2014 but the requirements applying to displays were not assessable at constituent level: how to assess the minimum duration of displaying full words when station names are unknown?

In practice, in particular for the rolling stock subsystem, displays were assessed in every new project, which is not the idea of an interoperability constituent.

Consequently, the revised TSI proposes that displays are not considered Interoperability Constituents anymore.

5.3.4. Stations: various clarifications

The Working Party made several minor clarifications on several aspects of the obstacle-free routes, mostly based on the return of experience; for instance:

- in case ramps are used in addition to stairs, they can have a reduced width of 120cm,
- the use of contrasting bands and Tactile Walking Surface Indicators (TWSIs) on stairs is clarified,
- the cases where TWSIs can be omitted is clarified.

5.3.5. Other evolutions

Reference to standards have been updated. In particular, the publication of the following standards enables the removal of several annexes of the TSI and their replacement by references to the standards:

- EN 16584-1:2017 - Railway applications - Design for PRM use - General requirements - Part 1: Contrast
- EN 16585-1:2017 - Railway applications - Design for PRM use - Equipment and components onboard rolling stock - Part 1: Toilets
- EN 16585-2:2017 - Railway applications - Design for PRM use - Equipment and components on board rolling stock - Part 2: Elements for sitting, standing and moving
- EN 16585-3:2017 - Railway applications - Design for PRM use - Equipment and components on board rolling stock - Part 3: Clearways and internal doors

Several other changes are detailed in the annex 1

5.4. Discussion on the reference wheelchair (Appendix M)

EDF made repeated statements on the values of appendix M. They can be summarized as follows: the measurements for an interoperable wheelchair as defined in Annex M are old-school, as they cover a manual

wheelchair only, and thus do not correspond to up-to-date standards of motorized wheelchairs and electric scooters, which means exclusion of a large number of passengers.

EDF gave the example of Denmark where the wheelchair length limit was 1400 mm for many years; people using motorized wheelchairs are now frustrated as they are prohibited from rail travel in the most recent trains due to the conformity of those trains with the TSI PRM.

Indeed, the reference wheelchair in appendix M is derived from ISO 7193 from 1985 with some adaptations made during the first PRM TSI drafting in 2003-2005 based on anthropometric data from 1999 relative to the size of a wheelchair with occupants. However, the requirement to increase the dimensions could not be satisfied. The Working Party and the Agency are not favourable to modify these dimensions because of:

- structural impacts of a possible weight increase due to passive safety requirements,
- consequences of any increase in length and width on the corridor size, the turning spaces etc., which, combined with the width and length limitations of a railway coach, may result in a reduction of the possible train architectures,
- consequences on the accessibility and circulation within the train due to the combined need for: level access from the target platform height, smooth ramps and the necessity to have a high flor above the bogie wheels.

As highlighted in point 5.1, the values of Appendix M are to be understood as engineering values. They are not intended to provide limits of acceptability of wheelchair users. This is made clearer in the proposed revision of the TSI.

For comparison, UNIFE provided some values from the regulation in force in the USA: the American Disabilities Act (ADA) specifies a design load of 600 pounds for wheelchair and occupant (273kg) and the wheelchair spaces are required to be 760mm wide by 1220mm long. The values of the TSI are in the same range.

6. Outputs of the public consultation

The consultation took place from 19 July 2019 to 19 October 2019 on the ERA website. 24 organisations participated to the consultation; a separate report that lists all comments and ERA answers was drafted.

7. Conclusions and next developments

7.1. Conclusions

The WP did not modify fundamentally the TSI PRM from 2014.

The PRM TSI has been in application since 2008 and it is permitted to draw some conclusions on its benefits, its drawbacks and the areas for improvement.

Benefits:

- harmonised improvement of the accessibility of new rolling stock (clearly visible at exhibitions such as Innotrans)
- some improvement of the accessibility of stations, although very uneven
- increased awareness of accessibility issues among the sector (not the TSI alone, many MSs also have national accessibility legislation)

Drawbacks:

- there is a risk that stakeholders (RUs and manufacturers) do not go for more than what is required in the TSI: some examples were given of cases where the accessibility decreased since the entry into force of the TSI, due to previous own specifications of stakeholders being more stringent that the TSI

- the prescriptive requirements and assessment process for infrastructure may hinder the improvements

Areas for improvement

- the role of associations should be facilitated, leading to the development of new solutions
- promotion of level access / independent boarding

7.2. Further developments

An analysis of possible improvements for a more ambitious future revision at a 5 to 7 years horizon should be launched, in particular regarding the following points:

- Platform train interface: passengers express the need for more harmonisation in platform heights as being the only solution to provide level access to the rolling stock on a large scale.
- Modular approach to the design and the assessment of the passengers areas: possibility for wheelchair users and other persons with disabilities to travel in groups, improved 'universal toilet', possibility of choice between 1st and 2nd class, foot rest for persons of short stature, space for guide dogs, guiding of passengers inside the train, etc.
- Design for all approach to accessibility to benefit wider diversity of passengers (e.g. persons with disabilities, persons with (temporary) reduced mobility, older persons, etc.).

8. Annex 1:

This annex lists the main evolutions between the TSI 2014 and the proposed revision.

Clause of the TSI	*Characteristics*	*Evolution from the TSI 2014*	*Reason for the evolution*
2. Scope of subsystems			
2.1.2 Scope related to rolling stock subsystem	Persons accompanying a transport of freight are not considered as passengers	New clause not present in the TSI 2014	Clarify the case of coaches gathering truck drivers in freight operations type 'shuttle' The PRM TSI does not apply to such coaches
2.3. Other definitions	Definition of an Interoperable wheelchair transportable by train	New clause not present in the TSI 2014	See point 5.1 of this document
4. Characterisation of the subsystem			
4.2.1. Infrastructure Subsystem			
Table 3	Update and correction of references	Table updated according to the T.O ERA/OPI/2017-1	Correction of a deficiency
4.2.1.2. Obstacle-free route	Width requirement transferred and clarified	The width requirement was in the "horizontal circulation" clause and didn't cover the ramps	Clarification
4.2.1.2.2. Vertical circulation	Details provided of the number of steps from which the requirements apply (contrasting band from 1 step)	No details provided	Clarification

Clause of the TSI	*Characteristics*	*Evolution from the TSI 2014*	*Reason for the evolution*
4.2.1.2.3. Route identification	The tactile paths can give access to one facility only when several of the same types are present and may be omitted in case guiding built or natural elements are present	Addition of the allowances	Adjust the level of information provided to people with visual impairment, align the TSI with the standard on guiding surface indicators
4.2.1.6. Toilets and baby nappy changing facilities	If baby nappy changing facilities are provided at a station, then a minimum of one baby nappy changing facility shall be accessible to wheelchair users both men and women.	The text was: If toilets are provided at a station, baby nappy changing facilities shall be provided which are accessible to both men and women.	The requirement from 2014 was not really relating to accessibility
4.2.1.10. Visual information: signposting, pictograms, printed or dynamic information	Displays are removed from the list of Interoperability Constituents, and the applicable requirements transferred to chapter 4	Displays were Interoperability Constituents with requirements in chapter 5	Assessment of displays at IC level was not pertinent
4.2.2. Rolling Stock Subsystem			
4.2.2.1.2. Priority seats	Identification of priority seats is not required for units intended to be operated exclusively within a seat reservation system	New clause not present in the TSI 2014	The selection of a priority seat being made at the reservation, such identification in the train is useless

Clause of the TSI	*Characteristics*	*Evolution from the TSI 2014*	*Reason for the evolution*
Various clauses of chapter 4.2.2 and Appendixes H to L	References are made to the series of standards on accessibility	References made to Appendixes	The standards being not available, the figures and tables were copied in the TSI – see point 5.3.5 of this document
4.2.2.3.2. Exterior doors	The audible and visible door closing signal can be omitted when a door is closing for reasons other than departure if alternative means are in place to mitigate the risk of injury to the passengers and the train crew.	New clause not present in the TSI 2014	The return of experience of door audible signals shows that they are considered a nuisance for many; hence alternative solutions should be permitted See also point 5.3.1 of this document
	The audible door opening signal for persons outside the train can be omitted when a door finding signal is provided. A door finding signal shall sound continuously whilst the door is released and/or available to be opened.	New clause not present in the TSI 2014	Same reason
4.2.2.7.3. Dynamic visual information	Displays are removed from the list of Interoperability Constituents, and the applicable requirements transferred to chapter 4	Displays were Interoperability Constituents with requirements in chapter 5	Assessment of displays at IC level was not pertinent
4.2.2.12.1. Movable step and bridging plate	Deletion of the text of point (3)	(3) In the case of the movable step or bridging plate extending beyond that permitted by the gauging rules, the train shall be immobilised whilst the step or plate is extended.	Not an accessibility requirement; it should be transferred to the LOC&PAS TSI

Clause of the TSI	*Characteristics*	*Evolution from the TSI 2014*	*Reason for the evolution*
4.4. Operating rules			
4.4.2. Rolling Stock subsystem	When every passenger seat is equipped with an individual light, it is permitted to reduce the lighting level in the vehicle according to the type of operation (e.g. night service, passenger comfort). The requirements of the specification referenced in appendix A, index 6, shall be met.	New clause not present in the TSI 2014	Return of experience showed some issues in the assessment of the lighting level that required clarification
	Providing services on-board trains When a service is provided to passengers in a specific area of a train that can't be accessed by wheelchair users, operational means shall be in place to ensure that: • free of charge assistance is available to assist wheelchair users reach the service or • the service is delivered free of charge to wheelchair users at the wheelchair spaces unless the nature of the service makes it impossible to provide it remotely	New clause not present in the TSI 2014	See point 5.2 of this document

Clause of the TSI	*Characteristics*	*Evolution from the TSI 2014*	*Reason for the evolution*
4.4.3. Provision of boarding aids and provision of assistance	Agreement between IM or Station Manager and RU shall include, for boarding aids located on the platforms, the location where they are most likely to be used.	Transfer of this requirement, previously in clause 4.2.1.12 of the TSI 2014, in the chapter on Operating rules	This is an operational requirement more than a technical one
4.8 Infrastructure and Rolling Stock registers	The paragraphs are removed		No need to duplicate –registers are supported by their own regulations
5. Interoperability Constituents			
5.3.1.2. Platform ramps	The ramp surface shall be slip resistant and shall have **a stable position with** an effective clear width of a minimum of 760 mm.	The ramp surface shall be slip resistant and shall have an effective clear width of a minimum of 760 mm.	Non-TSI compliant Rolling Stock are still in operation, and they may have passenger access doors narrower than 800mm. Platform ramps should be able to accommodate those cases.
5.3.1.3. Platform lifts	The bridging plate overriding the gap between the lift platform and the carriage floor shall have **a stable position with** a minimum width of 760 mm.	The bridging plate overriding the gap between the lift platform and the carriage floor shall have a minimum width of 760 mm.	Same reason
5.3.2.6. Interface of the call for aid device	A call for aid device shall be indicated by a sign having a yellow background contrasting with a black symbol (according to the specification referenced in appendix A, index 10). The symbol shall represent a bell or a	A call for aid device shall be indicated by a sign having a green or yellow background (according to the specification referenced in appendix A, index 10) and a white symbol, representing a bell or a telephone; the	A white sign on a yellow background can't respect the contrast. EN 16584-2 requires a yellow bezel or pressel.

Clause of the TSI	*Characteristics*	*Evolution from the TSI 2014*	*Reason for the evolution*
	telephone. The sign can be on the button or bezel or on a separate pictogram;	sign can be on the button or bezel or on a separate pictogram	
6. Assessment of conformity and/or suitability for use of the constituents and verification of the subsystem			
6.2.1. EC verification (general)	For Infrastructure, the objective of inspection by a notified body is to ensure that the requirements of the TSI are fulfilled. The inspection is performed as a visual examination; in case of doubt, for the values verification, the notified body can ask the applicant to perform measurements. In case different methods are possible (e.g. for contrast), the measurement method shall be the one used by the applicant.	New clause not present in the TSI 2014	Clarification of what is expected from a NoBo for Infrastructure. To be read in relation to the update of Appendix E. See also point 5.3.2 of this document
6.2.3.3. Assessment of contrast for the rolling stock subsystem	Assessment of contrast for the rolling stock subsystem shall be performed according to the specification referenced in Appendix A, index 18.	New clause not present in the TSI 2014	The standards being not available, there was no specified methodology for assessing the contrast – see point 5.3.5 of this document
7. Implementation of the TSI			
7.1.2. New Rolling Stock	For those rolling stock projects, where an earlier version of the TSI will have to be applied, it is permissible (but not	New clause not present in the TSI 2014	“Cherry picking” clause added to all TSIs

Clause of the TSI	*Characteristics*	*Evolution from the TSI 2014*	*Reason for the evolution*
	mandatory) to use the revised version, either totally or for particular sections; in case of application limited to particular sections, the applicant has to justify and document that applicable requirements remain consistent, and this has to be approved by the notified body.		
7.3.2. List of specific cases	Update of some specific cases		
Appendixes			
Appendix A	Updated according to the evolution of standards		
Appendix B and C	Deleted		These appendixes should be replaced with the 'common priorities and criteria' developed by the European Commission with the Advisory Body
Appendix E	Re-introduction of site visits for several parameters of the Infrastructure subsystem	Site visits not necessary if as-built drawings were provided	See point 5.3.2 of this document
Appendix G	Characteristics of the Door finding Signals specified	New clause not present in the TSI 2014	The return of experience of door audible signals shows that they are considered a nuisance for many; hence alternative solutions should be permitted

Clause of the TSI	*Characteristics*	*Evolution from the TSI 2014*	*Reason for the evolution*
			See also point 5.3.1 of this document
Appendix H to Appendix L	Content of the appendixes deleted		Publication of standards on accessibility
Appendix M	**Interoperable** wheelchair transportable by train M.1 SCOPE This appendix identifies the maximum engineering limits for an interoperable wheelchair transportable by train. These limits are used for designing and assessing the rolling stock (architecture, structure, layout) and its components (access doors, internal doors, seats, toilets etc.). When the characteristics of a wheelchair exceed these limits, the conditions of use of the rolling stock might be degraded for the user (for instance no access to the wheelchair areas). Exceeding some limits may prevent the user to access the rolling stock. Those limits are defined by each railway undertaking as specified in the point 4.2.6.1 of the TAP TSI.	Wheelchair transportable by train M.1 SCOPE This appendix identifies the maximum engineering limits for a wheelchair transportable by train.	See point 5.1 of this document
Appendix N	N.4 COLOR OF SIGNS	N.3 SYMBOLS TO USE ON SIGNS	The previous wording was misleading as point 4.2.1.10 refers to almost all

Clause of the TSI	*Characteristics*	*Evolution from the TSI 2014*	*Reason for the evolution*
	The **specific signage referred to in this appendix** shall be white on a dark blue background. Where signs are placed on a dark blue panel, it is allowed to invert the colours of the symbol and the background (i.e. dark blue symbol on a white background).	The **signs provided for in point 4.2.1.10** shall have a dark blue background and a white symbol. Dark blue shall have a contrast of 0,6 relatively to white. Where those signs are placed on a dark blue panel, it is allowed to invert the colours of the symbol and the background (i.e. dark blue symbol on a white background).	signage, including some ruled by other regulation such as prohibition signs which have to be red