

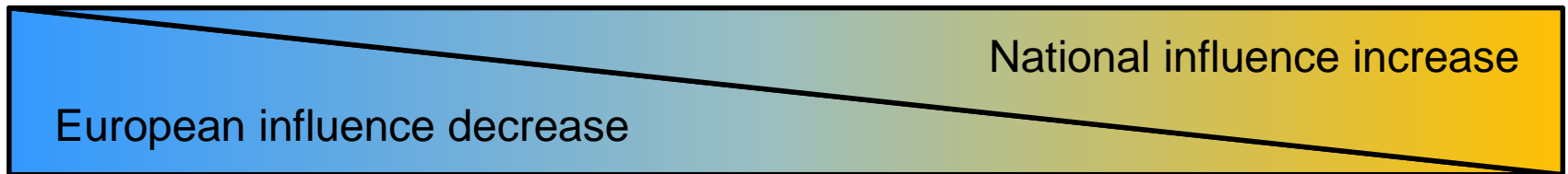
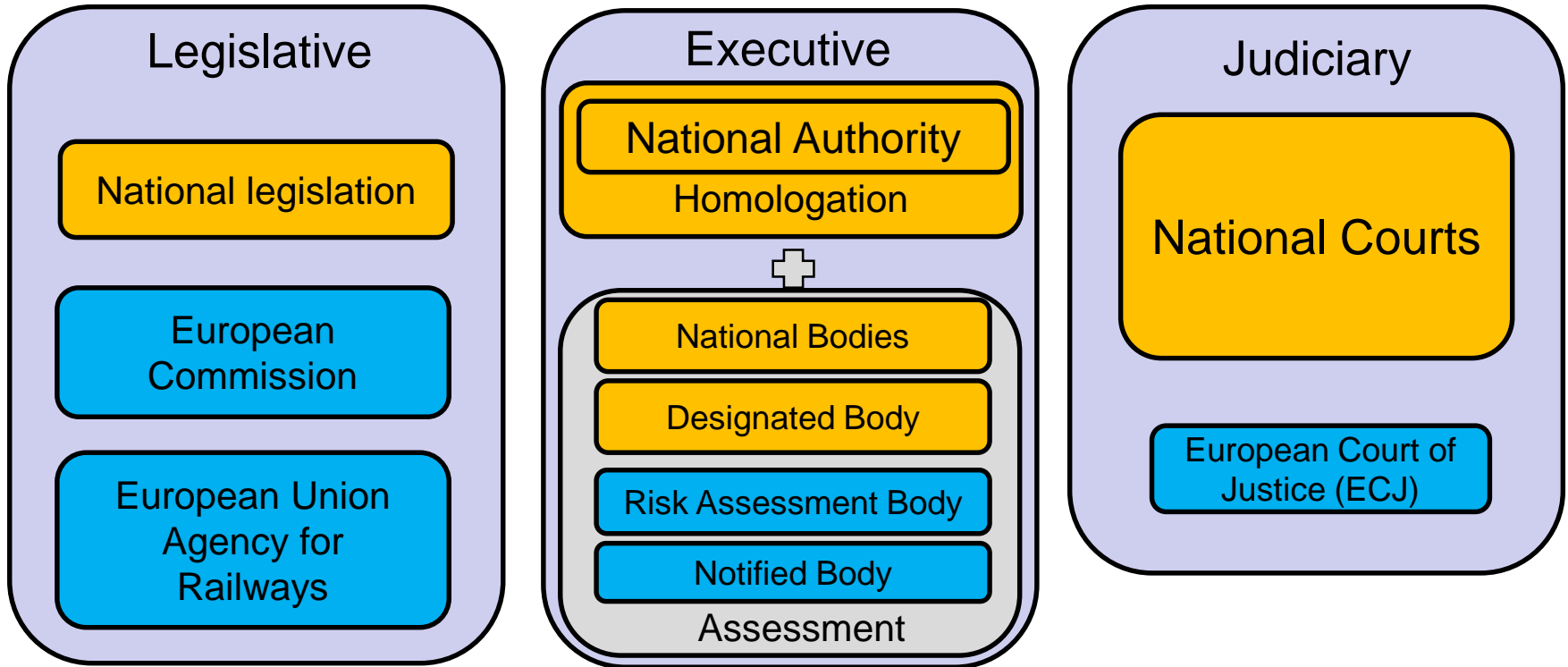
# Assessment of passenger stations in Hungary

From the point of view of a notified body

# Content

- Legal background
  - Role of the notified body – EC verification
  - Requirements in the TSIs
  - Specific characteristics of TSI PRM
- Passenger stations in Hungary
  - Examples of EC verification
  - Comparison TSI PRM 2008 to 2014
- Conclusions
  - This presentation is based on current legal framework
    - IOD 2008/57/EC and TSIs from 2014

# Roles of the stakeholders



# Directive 2008/57/EC

Reference / Description		Explanation	Responsibility
<b>Art. 15.1</b>	Technical compatibility with the system	Safety authorisation	<b>Member State</b> (or DeBo competent for MS)
	Safe integration acc. to 2004/49/EC	Common Safety Method CSM	<b>MS resp. Risk Assessment Body RAsBo</b>
<b>Art. 15.2</b>	Requirements for operation and maintenance	TSI OPE	<b>Member State</b> (or DeBo competent for MS) within the SMS
<b>Art. 17.3</b>	Open points (no relevant TSI exists)	Notified national technical rules (NNTR)	<b>Designated Body</b>
	Specific cases without spec. requirements in TSI		
	Derogations		
<b>Art. 18</b>	<b>EC verification</b>	Includes also specific cases, if requirements are given in TSI	<b>Notified Body</b>

# EC Certificate of Verification

Scope of the EC certificate of verification

Whole project

Technical scope of the EC verification

Areas where EC verification does not apply

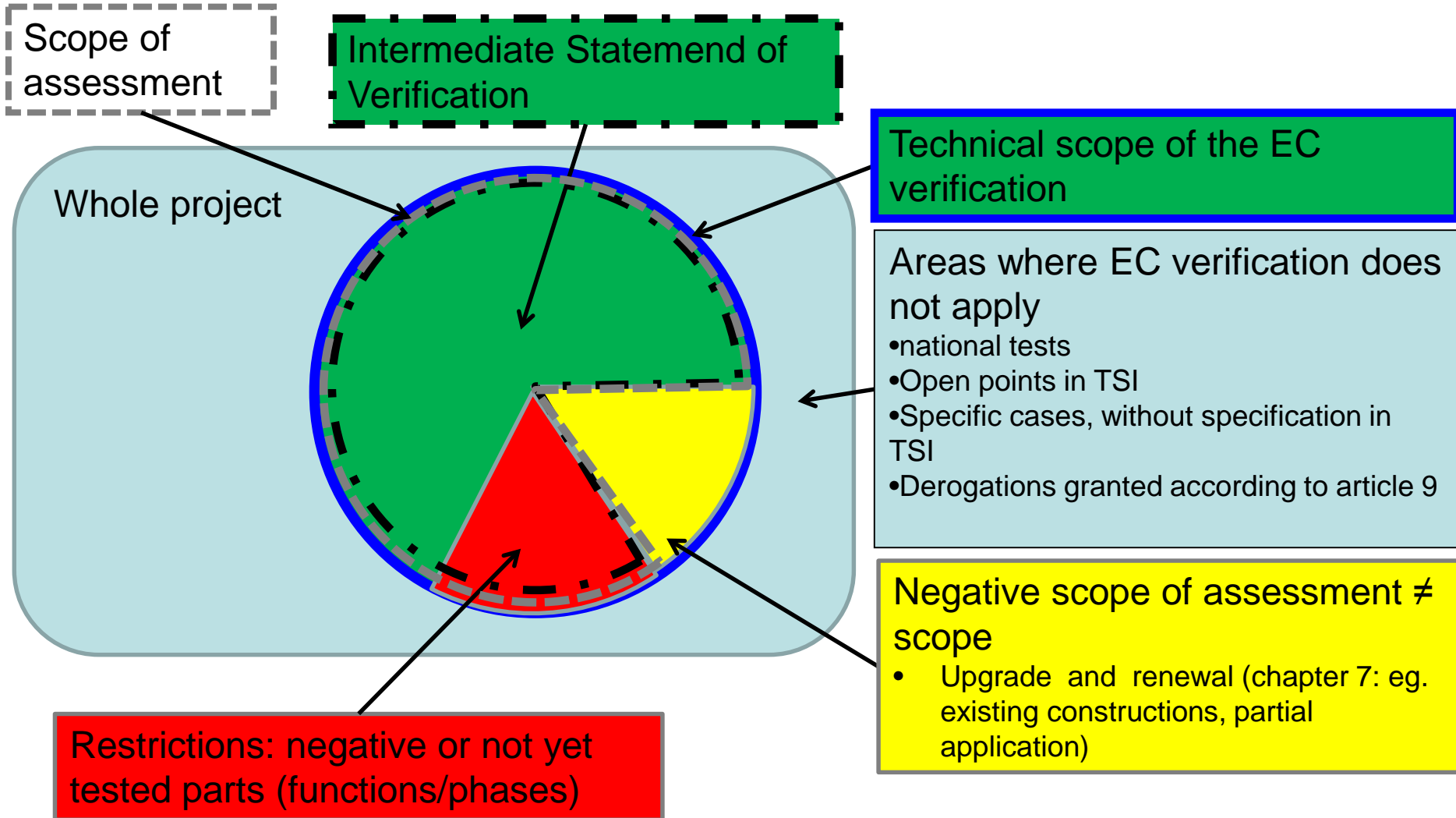
- National tests
- Open points in TSI
- Specific cases, without specification in TSI
- Derogations granted according to article 9 of 2008/57/EC

Negative scope of assessment  $\neq$  scope

- Upgrade and renewal (chapter 7: eg. existing constructions, partial application)

There are no restrictions for a positive EC certificate of verification

# Intermediate Statement of Verification



# Requirements in TSIs

- Requirements are defined by the following documents:
  - Requirements defined in TSI chapters 4, 5 and 6 including all referenced documents
  - Requirements defined by the chosen module(s) according to 2010/713/EU
  - Requirements of Harmonized Standards, Voluntary Standards and Alternative Solutions (as defined by the applicant)
- Additional documents used by the NoBo
  - RFUs of NB-Rail
  - Q&Cs and Technical Opinions or Advices
- Supporting documents
  - Application Guides of ERA (for each TSI)
  - ERA-Advices, ERA-Recommendations, ERA Technical Documents
  - Recommendations of the Commission
    - e.g. 2014/897/EU Recommendation Placing into service and use of structural subsystems and vehicles

# Requirements in TSIs

- There exist 3 ways how requirements are defined in a TSI
  1. Essential Requirement (as defined in the Annex of 2008/57/EC)
  2. TSI text on Basic Parameters formulated as directly assessable requirement
  3. TSI text on Basic Parameters not formulated as directly assessable requirementThe requirements are contained within
  - a) (parts of) Harmonised Standards or
  - b) (parts of) Voluntary Standards or
  - c) (parts of) Alternative Solutions (Innovations)
- 3 a), b) and c) are defined by the applicant and related to the TSI text on parameters



# Requirements in TSIs

## 1. Essential Requirement

- TSI CCS 2012/88: 4.2.1.1 Safety
- „The Control-Command and Signalling On-board and Trackside subsystems shall respect the requirements for ETCS equipment and installations stated in this TSI.“

## 2. Directly assessable requirement

- TSI INF 1299/2014: 4.2.3.4 (1): Minimum radius of horizontal curve
- „The minimum horizontal design curve radius for new lines shall not be less than 150 m.“

## 3. Not direct assessable requirement

- TSI Loc&Pas 1302/2014: 4.2.2.2.3 (b-2) (1), Appendix A
- „Buffers shall be sized so that in horizontal curves and reverse curves, it is not possible for vehicles to lock buffers“
- UIC 527-1 (especially Annex B&C) provides detailed assessment criteria for the requirement contained in example above

# Requirements in TSI

## 3. Not direct assessable requirements

- If fulfilment is shown by use of harmonised standard:
  - Requirement is fulfilled, no additional assessments are necessary, because fulfillment of essential requirements is approved
- If fulfilment is shown by use of voluntary standard :
  - „Gap“ between requirement and fulfilment shall be verified by notified body
- If alternative solutions are applied:
  - Verification of fulfilment of the requirements is more extensively,
  - Fulfilment of the requirements shall be verified by notified body
  - Whether all essential requirements are fulfilled, is not the duty of the NoBo
- Important: NoBo only assesses against the requirements defined by the TSI
- EC verification does not include the verification of all essential requirements (only those covered by TSI), this is obligation of the applicant

# Differences between TSIs

- General differences:
  - Subsystem Infrastructure only includes a minimum set of requirements necessary for interoperability of the rail system, still a lot of national rules apply
  - Subsystem Rolling Stock is mainly defined by European standards, requirements are defined nearly for whole vehicle  
Requirements for vehicles are more extensive
- New TSI PRM 1300/2014
  - Defines many „functional requirements “ = not directly assessable requirements
  - In application guide for TSI PRM: also national standards may be used
  - A harmonisation on national level is possible

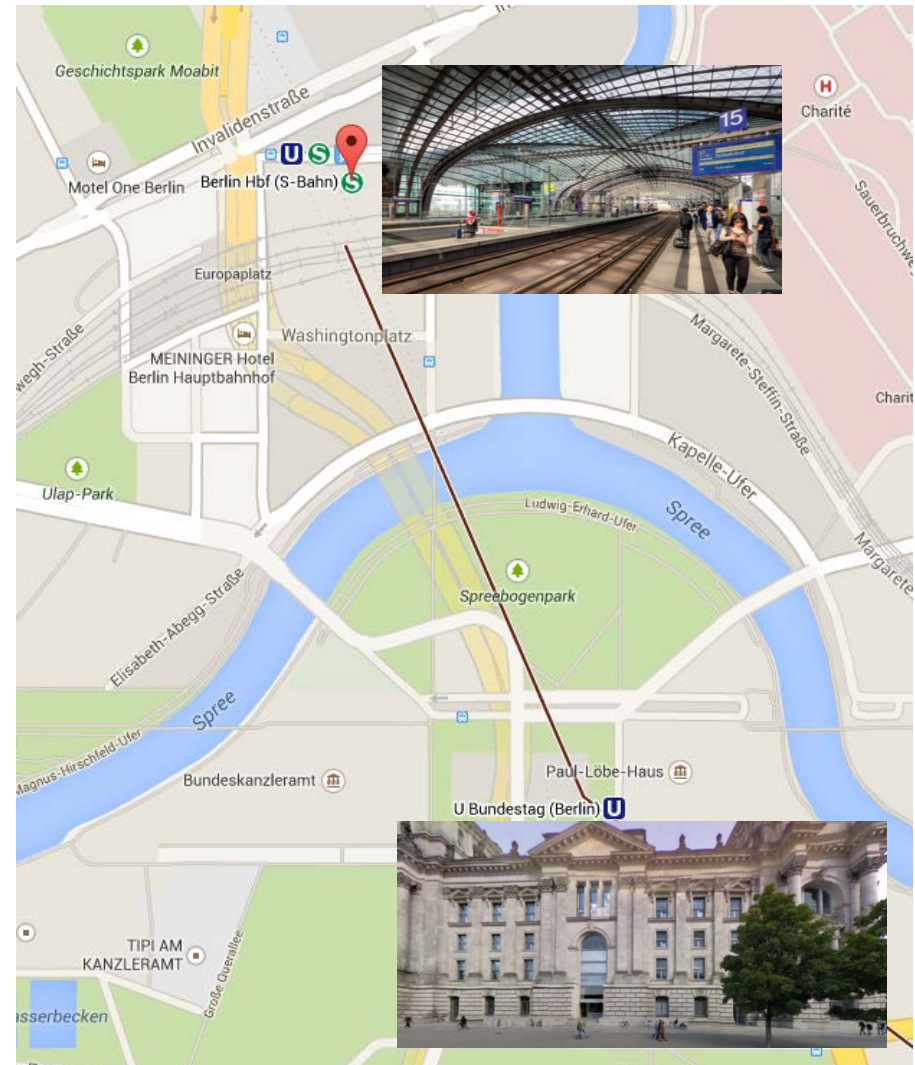
# TSI PRM 1300/2014

- Background for new concept of TSI PRM:
  - Lack of implementation in many member states for TSI PRM 2008
  - A lot of opposition against requirements in TSI PRM 2008
  - Many national solutions for people with reduced mobility are in contradiction to TSI PRM 2008
  - Many unclarities and small errors do exist
- Main changes in comparison to TSI PRM 2008/164/EC
  - Essential requirements are defined by functional and technical requirements
  - Technical requirements
    - Technical details are identified and specified
  - Functional requirements
    - Only essential functions resp. requirements are defined and different technical solutions are possible (case 3 as explained above)
  - This means: for many requirements the exact solution/implementation (standard) can be chosen by the applicant

# TSI PRM 1300/2014

- Public buildings in a city are accessible in the same way
- Why should the main station be accessible differently than the government building?

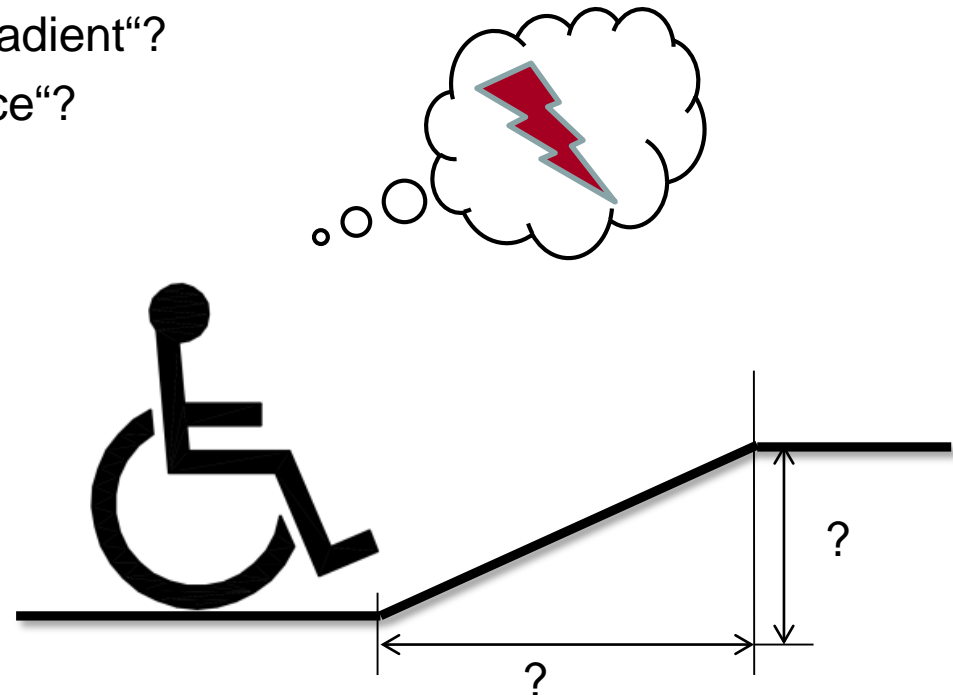
This means that uniform accessibility within a city is more important than uniform accessibility in Europe's railway stations.



Datenquelle: Google Maps

# TSI PRM 1300/2014

- Functional requirements using the example of ramps
- Ramps are necessary, when no elevators are existing
  - Ramps shall have a moderate gradient. A steep gradient is allowed for ramps on short distances only.
- Questions
  - What exactly is „a moderate gradient“?
  - What exactly is „a short distance“?
- Answer:
  - These parameters cannot be chosen freely, but are defined by equivalent national rules or international standards



# TSI PRM 1300/2014 table 3

Basic Parameter	Technical details provided	Functional requirement only
Parking facilities for persons with disabilities and persons with reduced mobility		Complete point 4.2.1.1
Obstacle-free route	Location of the routes Width of the obstacle-free route Threshold Double handrails Type of lift Height of braille signs	Detailed characteristics
Doors and entrances	4.2.1.3 (2): Door width 4.2.1.3 (4): Height of door operating device	4.2.1.3 (1) 4.2.1.3 (3)
Floor surfaces		Complete point 4.2.1.4
Highlighting of transparent obstacles		Complete point 4.2.1.5
Toilets and baby nappy changing facilities		Complete point 4.2.1.6
Furniture and free-standing devices		Complete point 4.2.1.7

# TSI PRM 1300/2014 table 3

Basic Parameter	Technical details provided	Functional requirement only
Ticketing, Information desks and Customer Assistance points	4.2.1.8 (5): Passageway for ticket control machines	4.2.1.8 (1) — (4) 4.2.1.8 (6)
Lighting	4.2.1.9 (3): Lighting on platforms	4.2.1.9 (1), 4.2.1.9 (2), 4.2.1.9 (4): Lighting in other locations
Visual information: signposting, pictograms, printed or dynamic information	Detail of information to be provided Location of information	Detailed characteristics of visual information
Spoken information	Complete point 4.2.1.11	
Platform width and edge of platform	4.2.1.12 (2) to (5) & (7) only width of visual marking	4.2.1.12 (1), 4.2.1.12 (6), 4.2.1.12 (7), 4.2.1.12 (8), 4.2.1.12 (9)
End of platform	4.2.1.13	4.2.1.13
Boarding aids stored on platforms	Complete point 4.2.1.14	
Passenger track level crossing at stations	4.2.1.15 (2) & (4)	4.2.1.15 (1), 4.2.1.15 (3)



# TSI PRM 1300/2014

- Published as Regulation
- Entry into force on 01.01.2015 in all Member States
- Steps of the gradual transition to the target system
  - TSI applies to subsystems when they are renewed or upgraded
  - Existing infrastructure and rolling stock achieve compliance with the TSI through gradual implementation
  - each TSI indicates an implementation strategy
  - Member States shall adopt national implementation plans
    - Should be based on inventory of assets
    - Implementation plans shall run over a period of at least 10 years
    - Shall be updated regularly at least every five years
    - Shall contain a strategy, including a prioritisation rule

# TSI PRM 1300/2014

- Chapter 4.2.1

(2) The basic parameters that are specified in points 4.2.1.1 — 4.2.1.15 apply to the scope of the infrastructure subsystem that is defined in point 2.1.1; they can be divided into two categories:

- Those for which technical details need to be specified, such as the parameters relative to the platforms and how to reach the platforms. In this first case, the basic parameters are specifically described and the technical details to be satisfied in order to fulfil the requirement are detailed.
- Those for which technical details are not necessary to be specified, such as the value of ramps or the characteristics of parking places. In this second case, the basic parameter is defined as a functional requirement that can be met by applying several technical solutions.

- Category 1 => technical requirement  
case 2 from above: directly assessable requirement
- Category 2 => functional requirement  
case 3 from above: Not direct assessable requirement

## Category 2: functional requirements

- It was ensured that they can always be covered by an international (ISO) or European (EN) standard
  - a few exceptions only
  - If not either covered by a more local standard, it is possible to utilize standards from another EU Member States or from another region of the Member State
- Application Guide lists international & European standards that applicant may apply (voluntarily) in order to meet funct. Requirement
- Principles for the application of other standards are:
  - National/regional/local standards can be applied when they provide an equivalent solution than the one specified in the standards listed in this guide
  - National/regional/local standards can only be applied on the territory they cover
  - Company rules can be used when they are derived from the above standards or when they have been validated by a representative group of users

# Requirements

- 4.2.1.3 Doors and entrances
  - Technical requirements
    - (2) *Doors shall have a **minimum clear** useable **width** of **90 cm** and shall be operable by persons with disabilities and persons with reduced mobility.*  
Door operation: Red text is functional requirement!  
ERA application guide references to ISO 21542:2011
    - (4) *Door **operating devices** shall be available at a **height** of between **80 cm and 110 cm.***

# Requirements

- 4.2.1.3 Doors and entrances
  - Functional requirements
    - *(1) This point applies to all doors and entrances that are on obstacle-free routes, with the exception of doors giving access to the toilets which are not dedicated to persons with disabilities and persons with reduced mobility.*
    - *(3) It is permitted to use manual, semi-automatic or automatic doors.*
  - Applying national requirements
    - (3) national requirements can restrict door types

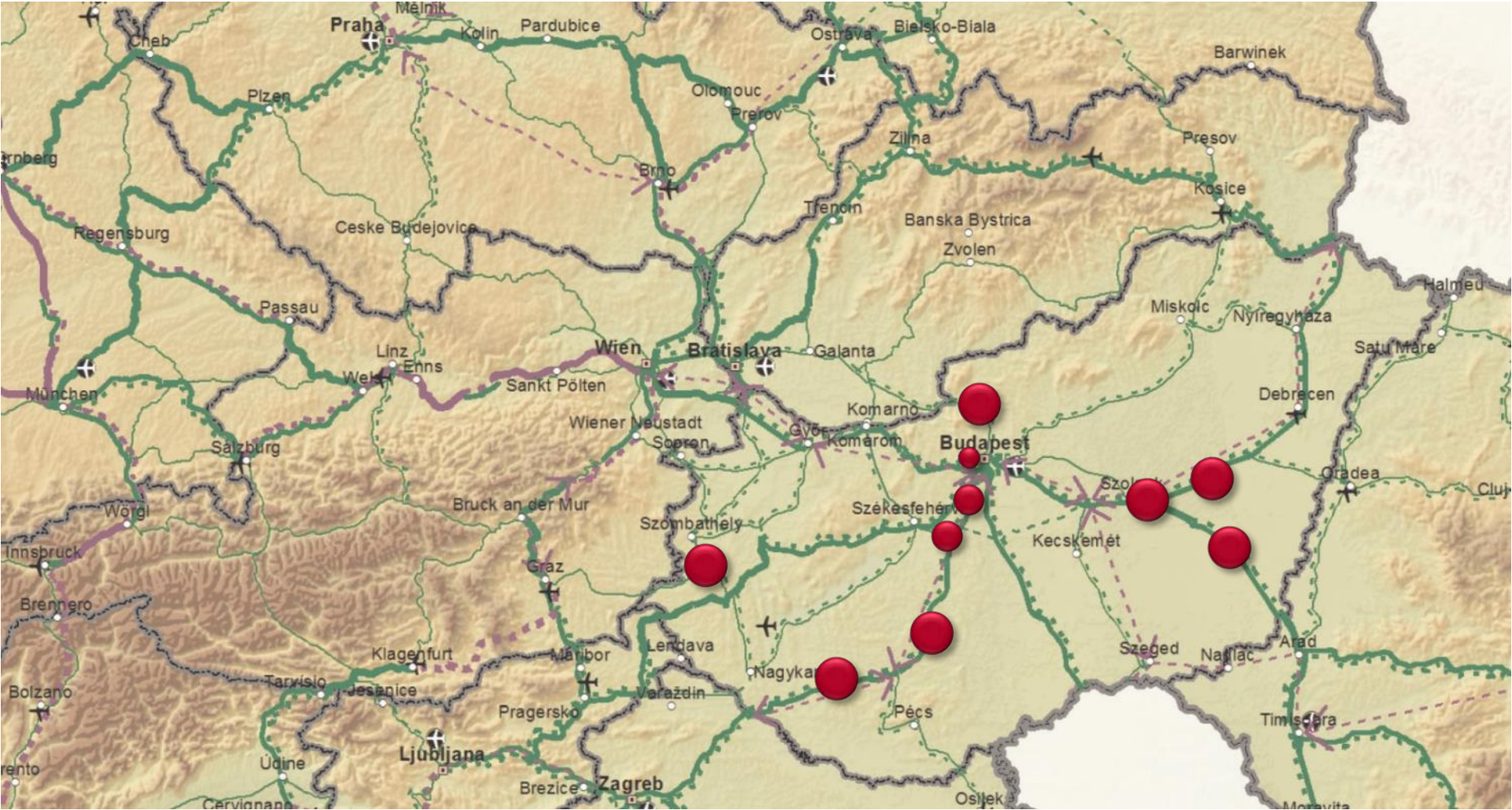
# Functional Requirements

- Parking facilities for PRM
  - OTÉK 253/1997. (XII. 20.) § 42 (3)
- Ramps
  - OTÉK 253/1997. (XII. 20.) § 66 (2)
- Slip resistance of floor surfaces
  - DIN 55130 according to application guide
- Highlighting of transparent obstacles
  - OTÉK 253/1997. (XII. 20.) § 62 (11)
  - Application Guide ERA/GUI/02-2013/INT Appendix 2, § 1.6
- Guarding of suspended items / obstacles
  - ISO 21542:2011, § 7.14

# Functional Requirements

- Contrast
  - EN 16584-1:2017
- Tactile walking indicators
  - ISO 21542:2011 Appendix A
- Vertical circulation
  - EN 16584-2:2017
- Mix between different international and national requirements which has to be defined by applicant for the design and construction companies

# EC-Verification Projects in Hungary





# Contrast



Different colours of the tactile elements

**$\Delta$ LRV = 65 / 77 / 46**

# Contrast



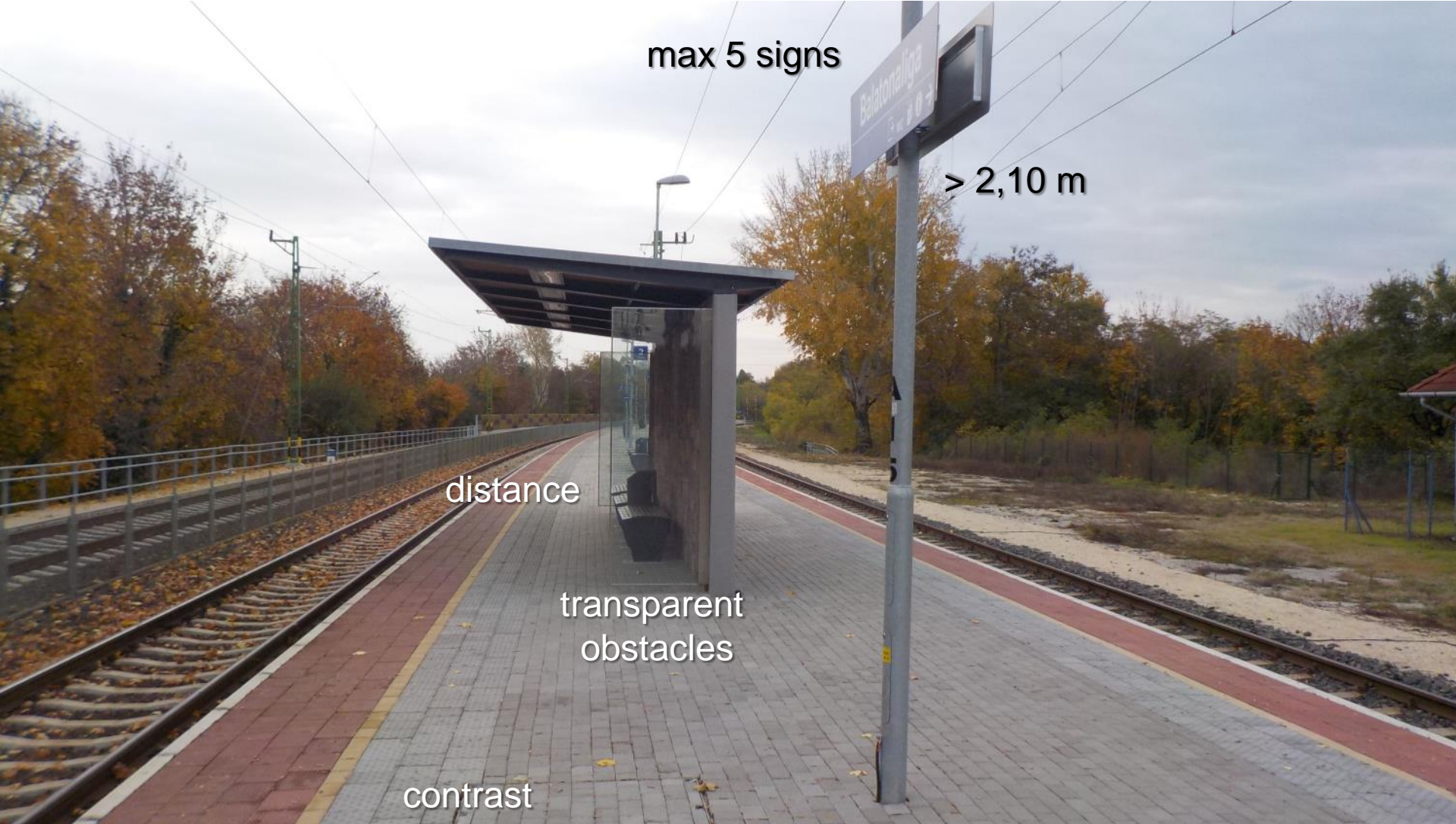
Different colours of the tactile elements

**$\Delta$ LRV = 65 / 77 / 46**

# Handrails



# Requirements



# Level Crossing

How to make a passenger level crossing safe for wheelchair, blind, impaired peoples?



Train speed increase but the safety requirements didn't follow

# Other station project in Hungary

	<b>TSI PRM 2008</b>	
4.1.2.2	Parking facilities for PRM	rebuilding
4.1.2.3	Obstacle-free route	rebuilding
4.1.2.4	Doors and entrances	not fulfilled
4.1.2.6	Transparent obstacles	not fulfilled
4.1.2.7	Toilets and baby-changing facilities	not fulfilled
4.1.2.8	Furniture and free-standing devices	not fulfilled
4.1.2.9	Ticketing, Information desks	rebuilding
4.1.2.10	Lighting	not fulfilled
4.1.2.11	Visual information	rebuilding
4.1.2.15	Stairs	not fulfilled
4.1.2.16	Handrails	rebuilding
4.1.2.17	Ramps	fulfilled
4.1.2.18	Platform height and offset	not fulfilled
4.1.2.19	Platform width and edge of platform	fulfilled
4.1.2.20	End of platform	rebuilding



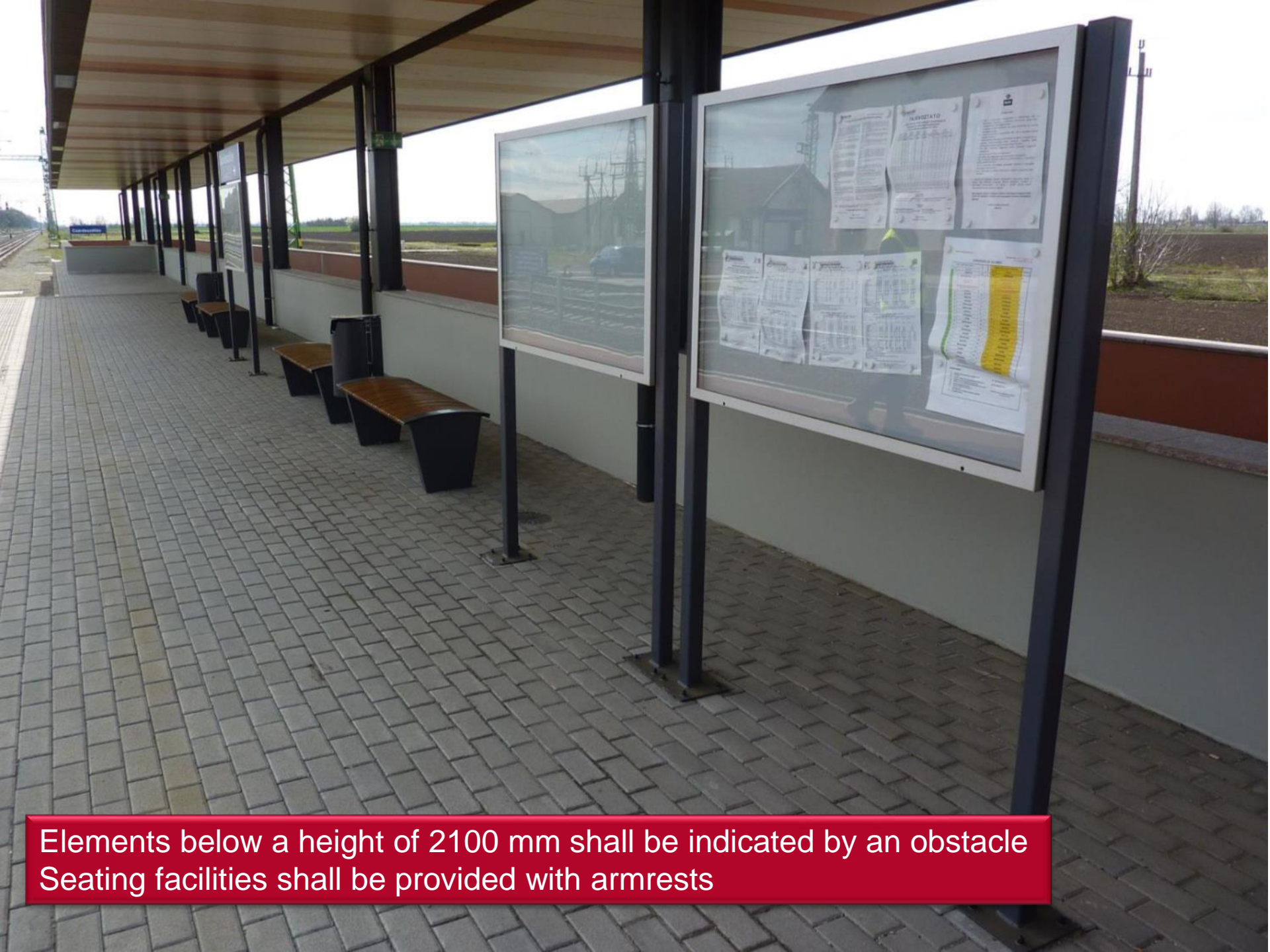
Transparent obstacles

Glass doors shall be marked with at least two contrasting bands



Handrails in two defined heights with a defined diameter and distance  
No more than five pictograms together with a direction arrow





Elements below a height of 2100 mm shall be indicated by an obstacle  
Seating facilities shall be provided with armrests



Baby-changing facilities is an interoperability constituent and has to be designed for 80 kg

# Requirements TSI PRM 2008

		<b>TSI PRM 2008</b>
4.1.2.2	Parking facilities for PRM	rebuilding
4.1.2.3	Obstacle-free route	rebuilding
4.1.2.4	Doors and entrances	
4.1.2.6	Transparent obstacles	
4.1.2.7	Toilets and baby-changing facilities	
4.1.2.8	First aid kit	
4.1.2.9	Travelling assistance	
4.1.2.10	Lighting	
4.1.2.11	Visual information	rebuilding
4.1.2.15	Staircases	not fulfilled
4.1.2.16	Handrails	rebuilding
4.1.2.17	Ramps	fulfilled
4.1.2.18	Platform height and offset	not fulfilled
4.1.2.19	Platform width and edge of platform	fulfilled
4.1.2.20	End of platform	rebuilding

**TSI PRM 2008**  
One weather protected area on each platform  
Ergonomic seating facilities with armrests  
Baby-changing facility for 80 kg  
Lighting minimum 100 lux  
Doors with horizontal push bars  
Handrails in two defined heights with tactile sign

# Requirements TSI PRM 2014

	<b>TSI PRM 2008</b>	<b>TSI PRM 2014</b>	
4.1.2.2	Parking facilities for PRM	rebuilding	rebuilding
4.1.2.3	Obstacle-free route	rebuilding	rebuilding
4.1.2.4	Doors and entrances	not fulfilled	fulfilled
4.1.2.6	Transparent obstacles	not fulfilled	fulfilled
4.1.2.7	Toilets and baby-changing facilities	not fulfilled	fulfilled
4.1.2.8	Furniture and free-standing devices	not fulfilled	rebuilding
4.1.2.9	Ticketing, Information desks	rebuilding	rebuilding
4.1.2.10	Lighting	not fulfilled	fulfilled
4.1.2.11	Visual information	rebuilding	rebuilding
4.1.2.15	Stairs	not fulfilled	fulfilled
4.1.2.16	Handrails	rebuilding	rebuilding
4.1.2.17	Ramps	fulfilled	fulfilled
4.1.2.18	Platform height and offset	not fulfilled	fulfilled
4.1.2.19	Platform width and edge of platform	fulfilled	fulfilled
4.1.2.20	End of platform	rebuilding	rebuilding

# Requirements TSI PRM 2014

	TSI PRM 2008	TSI PRM 2014	
4.1.2.2	Parking facilities for PRM	rebuilding	rebuilding
4.1.2.3	Obstacle-free route	rebuilding	rebuilding
4.1.2.4	Doors and entrances	not fulfilled	fulfilled
4.1.2.6	Transparent obstacles	not fulfilled	fulfilled
4.1.2.7	Toilets and baby-changing facilities	not fulfilled	fulfilled
4.1.2.8	Furniture and free-standing devices	not fulfilled	rebuilding
4.1.2.9	Ticketing, Information desks	fulfilled	rebuilding
4.1.2.10	Lighting	fulfilled	fulfilled
4.1.2.11	Visual information	fulfilled	fulfilled
4.1.2.15	Stairs	fulfilled	fulfilled
4.1.2.16	Handrails	fulfilled	fulfilled
4.1.2.17	Ramps	fulfilled	fulfilled
4.1.2.18	Platform height	not fulfilled	fulfilled
4.1.2.19	Platform width	fulfilled	fulfilled
4.1.2.20	End of platform	rebuilding	rebuilding

**TSI PRM 2014**  
 Continuous obstacle-free route  
 Handrails in two defined heights with tactile sign  
 Max. five pictograms at one sign  
 Sign for end of platform  
 Elements below 2,10 m indicated by an obstacle

# Requirements TSI INF 2014

## TSI INF 2014

4.2.3	Line layout structure gauge, distance between track centres, maximum gradients, curves	fulfilled
4.2.4	Track parameter cant, cant deficiency, abrupt change of cant deficiency EC-declaration for Ics (VAE, Maba, Railone, Vossloh)	fulfilled
4.2.5	Switches and crossings self-declaration of the infrastructure manager or contracting entity	fulfilled
4.2.6	Track resistance to applied loads EC-declaration	fulfilled
4.2.7	Structures resistance to traffic loads new and existing railway bridges new structures over or adjacent the tracks	fulfilled
4.2.8	Immediate action limits on track geometry defects according to table 37 not relevant	n.r.
4.2.9	Platforms platform length, height, offset and layout	fulfilled

# Conclusions

- EC verification process is a complex procedure
  - Interfaces with DeBo and RAsBo should be clarified at the beginning of the project
- Requirements are defined in different ways
- This allows for some freedom for the applicant
  - Different solutions are possible
- Member State should define solutions to assure uniform application on the whole network
- Continuous interaction between applicant and NoBo necessary