We showed that the leaflet leaves space for interpretation and that the specification is not unique with respect to practicability and reasonable capacity evaluation.

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IMPROVING RAILWAY VEHICLE ACCESSIBILTY

Bernhard Rüger[1], Benjamin Petutschnig[2]

PubTrans4All
Public Transportation - Accessibility for All

Summary: According to EU regulations, it is a must that public transportation systems need to be accessible for anyone without restrictions, and it is also a must for all European railway operators. As a consequence of the ageing society, there is an increased need for mobility and effective methods in order to overcome accessibility obstacles. There are also further groups of people with reduced mobility which influence the variety of needs of passengers in regards to accessibility of public transport systems. This paper shows the first research results of the EU-founded (FP7) project PubTrans4All (Public Transport – Accessibility for All).

1. Introduction

The interface between platform and vehicle is one of the key areas of potential difficulties in regards to accessibility.

Most of the existing boarding assistance devices are designed for wheelchair users, whereas a variety of many other groups of passengers do also have special needs and expectations regarding the boarding process. In order to improve the existing situation, a project consortium approved by the European Commission within the 7th Framework Programme will develop a new boarding assistance system that can be used by a larger number of mobility reduced persons than it is the case today.

The project consortium recently had the pleasure to welcome representatives from the United Kingdom, e.g. from the Department for Transport, to an Expert Workshop in Vienna within this European 7th Framework Program Project organized by the Vienna University of Technology, who gave their valuable input and shared their expertise in order to improve European standards and best practices.

The UK has had many years of experience in this field already, implementing regulations improving and standardizing railway accessibility for all user groups. This contribution focuses on the experiences made in the UK, which ultimately turned into regulations and best practices applied in the daily procedures, as well as on recent experiences and research of the European 7th Work-frame Program Project. The presentation will give you an overview on the range of existing boarding devices, and will describe the criteria that need to be fulfilled by such systems. The

[1] Dr. Bernhard Rüger, Project Manager, Vienna University of Technology, Department for Transport – Railway Research, Austria, +43 1 58801 23212, bernhard.rueger@tuwien.ac.at
[2] Benjamin Petutschnig, Glocal Mobility Consulting, Consultant with Vienna University of Technology - Dept. for Transport, Austria, +43 664 2040062, bp.intl.consulting@gmail.com

operators within the European Union have been asked to give their input and describe their requirements and expectations. All passenger groups have also been contacted through a survey, the results will be presented within this presentation.

We will highlight the Status Quo within Europe, and best practices in the UK in order to show successful methods which could be adapted within the European railway system in order to facilitate accessibility and mobility when travelling by train as a person with reduced mobility.

2. Groups of people with Reduced Mobility

When talking about people with handicaps, children, bulk luggage, etc in transportation they are referred to as "Persons with Reduced Mobility", a term that is commonly in use within the European legislation.

The Inclusive Mobility report, conducted by the Department for transport, London, has looked in depth into the specific needs of passengers in regards to accessibility requirements within rail transportation, the operators'needs, and the environmental infrastructure, as well as the legal requirements in regards to the UK Disability Discrimination ACT of the U.K. for example, as well on a European level into the TSI PRM (Technical Standard for Interoperability for Persons with Reduced Mobility), being a European Union draft that is developed by the TSI PRM working group. This chapter will give you an overview of the specific groups amongst persons with reduced mobility, emphasizing on their specific needs.

2.1. Specific passenger groups with reduced mobility

"Basic human factors information, definitions: It is essential that design for people with mobility impairments should be to the highest possible standards. This requires knowledge of the capabilities of different types of person. This section provides information on the basic human requirements for ease of movement. In designing or modifying facilities the aim should be to be generous in the allocation of space.

The term disability is a broad one. It includes people with physical, sensory or mental impairment; at a conservative estimate between 12 and 13 per cent of the population have some degree of impairment. Many, though not all, face barriers to movement in the environment. This [.] is intended to show how these barriers can be removed or at least reduced, but it does have a wider relevance because there are many other people not conventionally considered to have a disability who also encounter barriers to movement.

People with small children, people carrying heavy shopping or luggage, people with temporary accident injuries and older people can all benefit from good design of the pedestrian and transport environment. Without a barrier free environment, many of these people will be mobility impaired.

While it is true that there are many aspects of design in the pedestrian environment that are helpful to all or most disabled people (and many others as well) there

are also some specific facilities needed by people with a particular kind of impairment.

Manual wheelchair users need sufficient space to be able to propel the chair without banging their elbows or knuckles on door frames or other obstacles. But someone who walks with sticks or crutches also needs more space than a non-disabled walker; so too does a long cane user or person carrying luggage, or a lot of shopping bags, or with small children. Thus providing adequate clear space on pavements, along passages in public buildings, through doorways etc, is of benefit to many people.

Similarly, visually impaired people need a good level of lighting in transport buildings and elsewhere and, if information such as a train or bus timetable is displayed, a print size that they can read easily. But almost everyone else benefits from good lighting, not least because it gives a greater sense of security, and practically everyone finds reading timetables easier if the print is clear and large.

These are just two examples of design requirements that are essential for people with a particular impairment but which have a much wider relevance. [..] The term disability is a broad one. The Disability Discrimination Act in the United Kingdom defines a person as having, a disability if he has a physical or mental impairment which has a substantial and long term adverse effect on his ability to carry out normal day-today activities.

There are various ways or models used to define disability, but in functional terms this guide is mainly concerned with the following:

Locomotion, which includes people who use wheelchairs and those who can walk but only with difficulty often using some form of aid such as a stick or walking frame. Approaching 70% of disabled people have locomotion difficulties: those with walking difficulties outnumber wheelchair users by about 10:1.

Seeing, this can be sub-divided into blind and partially sighted people. [..]

Hearing, which can also be sub-divided into those who are profoundly deaf and those with impaired hearing, ranging from severe to mild deafness.

Reaching, stretching and dexterity, frequently the result of arthritis, which can make these movements painful and difficult, or of muscular dystrophy causing a loss of muscular strength, or of complaints of the nervous system.

Learning disability, making it hard to understand complicated information or to use complex machines (like some ticket machines). It should be remembered that these categories are not mutually exclusive. Many disabled people, particularly older people, have more than one impairment." [1]

3. Design Needs, Operators´ Needs, Staff Training

Towards an Accessible Railway - Railways for All -The Accessibility strategy for Great Britain's Railways, is a report compiled by the department of Transport, describing how to improve access to UK Railways, to the point it states the following:

"A transport chain is often only as strong as its weakest link. We have therefore structured this Strategy to describe how we intend to improve access at all stages of rail travel, including:

- finding information, buying tickets and making reservations
- access to station buildings and platforms
- accessibility of train carriages
- the quality and consistency of our staff training [..]

The gap between the platform and the train is a concern for many disabled people and can undermine the confidence of mobility or visually impaired passengers to use the railway. [..]" [2]

Also a number of handicap organisations in the UK are involved in the improvement process for accessibility, such as the Joint Committee on Mobility of Blind and Partially Sighted People (JMCBPS): "Rail and Underground Accessibility: We have continued to highlight our concern over the lack of tactile paving to warn of platform edges at train stations. We responded to Department for Transport consultations on Train and Station Design for Disabled Passengers: A Code of Practice; and on How to Write Your Disabled Persons' Protection Policy: A Guide for Train and Station Operators." [3]

Staff training represents a key area of executing affectiv mobility. The inclusive Mobility Report of the Department of Transport in the UK reffers to this subject as follows:

"Staff who are in regular contact with the public need to have awareness of how to serve a disabled person without discrimination and how to mitigate the effects of inaccessible premises, vehicles and services etc., in compliance with the Disability Discrimination Act (DDA). All staff need to be able to think on their feet in unexpected situations or in an emergency.

Some transport operators and other organizations have produced training programmes on disability awareness which can be used by other organizations. Training in disability awareness should form part of both induction training and refresher or promotion courses for staff. Disabled people should be involved in the design of training programmes as well as their delivery where possible. Training should be tailored to the particular job function [..]" [4]

The RVAR, Rail Vehicle Accessibility Regulations – Guidance, implemented 1998 by the British Government, and updated in 2008 within the Exemption Orders Annual Report 2008, specifies boarding devices and assisting systems currently in use in the UK. The manual ramp is mainly used on heavy rails up to today, representing the device being mainly in use in the rest of Europe as well, where manual devices in general outnumber automatic boarding devices. In Austria for example, the National Railways are still using manual lifting devices which are mobile and platform-bound, operated by the staff after a wheelchair passenger having had his trip booked in advance. In recent years, passenger lifts being integrated within the vehicles are becoming a preferred solution within new rolling stock. They could mean the future, as well as levelled boarding as a European solution for heavy and

light rails. This chapter will provide information on available boarding devices being currently commonly in use in Europe, and specifically the UK systems in use.

Today requirements towards mobility are constantly changing, the mobility devices used by persons with reduced mobility are constantly being further developed and hence improved, for those reasons, technical requirements are also subject to a constant change.

As a matter of fact, today's power-wheelchairs, including occupant and luggage taken on the wheelchair, often are getting close to a weight of 400 kilograms in total. Wheelchairs used nowadays are commonly getting close to 200 kilograms, and occupants sometimes exceeding 100 kilograms, plus the luggage wheelchair occupants carry on their wheelchair.

The RAVR has been constantly reviewed since its introduction until today in regards to technical specifications. It shall provide you with successfully implemented best practices, being applied on a daily basis:

"When a wheelchair-compatible doorway in a regulated rail vehicle is open at a platform at a station or a tram stop a boarding device must be fitted between that doorway and the platform or stop if a disabled person in a wheelchair wishes to use that doorway, unless the gap between the edge of the door sill of that doorway and the edge of the platform or stop is not more than 75 millimetres measured horizontally and not more than 50 millimetres measured vertically.

Design need: Wheelchair users need to be able to board and alight from rail vehicles safely. If the gap between vehicle and platform is within the stated limits, no boarding device will be needed. Such a small gap will also benefit other passengers suffering from mobility impairments.

Application: If the horizontal gap between the edge of a platform or stop and the edge of the vehicle door sill exceeds 75mm or the vertical gap exceeds 50mm and access is required by a passenger in a wheelchair a boarding device must be fitted to bridge the gap. Such a boarding device can be either vehicle or station based. Operators must ensure that staff are available to deploy a manual boarding device when required. [..]

Where new railway or tramway systems are introduced the opportunity should be taken to ensure that level access is provided between vehicles and platforms. As well as benefiting disabled passengers, this would mean operators would not have to provide boarding devices. [..]

No boarding device other than a lift or a ramp shall be used. [..] Lifts and ramps are considered the only suitable methods of assisting passengers in wheelchairs to board or leave the vehicle.

The lift must be capable of bridging any vertical gap between the vehicle and platform. There must be no gap between the lift platform and station or tram stop platform when the lift has been fully lowered. [..] The lift shall be operable only by persons (other than passengers) who are authorised to operate it by the operator of the vehicle and who shall provide assistance by operating it for disabled persons in

wheelchairs. [..] To prevent misuse and the danger of accidents, nobody other than staff who are authorised to do so are permitted to operate the lift. [..]

Wheelchairs vary in weight depending on their design, but those that are within the dimensions prescribed for the reference wheelchair are unlikely to exceed 300 kilograms in weight with a person seated in them. Manufacturers must ensure that lifts can support a weight of 300 kilograms." [5] As mentioned before, these weights have become outdated in the meantime, and recently taken into account in recent drafts for new ISO Standards reference wheelchair specifications.

4. Legal Environment

European and National standards have been implemented in the field of mobility and accessibility within the transportation environment, such as the ECE 2001/85 (Annex VII) directive applicable for the Bus Industry, taking into account sufficient accessibility in public transportation. National Standards such as the German National Industrial Standard DIN 75078 have recently been updated, regulating the transportation of people with handicaps, and getting harmonised with the applicable CEN Standards.

International Standards such as the ISO 7176-19 specify minimum standards and cope with crash-severity demands on wheelchairs used in transportation, while ISO Standards such as ISO 10542 specify the demands on wheelchair Occupant tie-down systems (WTORS), which secure the occupant and wheelchair during transportation. The Disability Discrimination Act (DDA) in the United Kingdom regulates the rights for people with disabilities in order to provide them with equal rights and possibilities normally applying to abled persons.

"European Legislation: There are two European Commission proposals which impact on rail travel for disabled people: the draft Technical Specification for Interoperability – Accessibility for People with Reduced Mobility (TSI PRM), and the draft proposal for a Regulation on International Rail Passengers' rights and obligations

The TSI PRM will set minimum standards for the specification of accessible infrastructure on the Trans European railway Network and for new and upgraded rolling stock. [..] The proposed Regulation would establish rights in relation to international rail travel including specific provisions covering disabled people."[6]

Quite often existing Standards show discrepancies, e.g. the TSI PRM currently still referring to outdated wheelchair standards dating back to 1985, while the reality shows real heavyweight power wheelchairs nowadays, representing a potential hazard for the occupant and other passengers in case of an accident during transportation when not sufficiently secured. An integrated view on all available, and also effectively working standards, should help improving efficiently European Accessibility and Mobility Regulations.

"Significant recent European Union developments include: A European Regulation on the Rights of Disabled Persons and Persons with Reduced Mobility when Travelling by Air. This prevents carriers from refusing boarding to such persons (save in defined categories of case) and makes airport operators responsible for

providing assistance to disabled passengers - moves towards possible EU legislation on the rights of persons with reduced mobility travelling by sea and inland waterways – European standards on rail vehicle accessibility for disabled persons and persons with reduced mobility for interoperable rail systems. This provides for common standards – a little lower than those in the UK rail vehicle accessibility standards – on the interoperable European network, which in practice includes the greater part of the UK heavy rail network. Consequently, the UK standards are now disapplied from this part of the network, and from heavy rail vehicles which cross onto the rest of the network.

A noteworthy element which is common to these European provisions is that they relate to persons of reduced mobility as well as to persons with disabilities, e g the elderly, and pregnant women." [5]

5. Conclusion

Today accessibility is a must for each railway operator – not only because of regulations. One special barrier is the link between the platform and the wagon. Two possibilities are state of the art – either level boarding which means accessibility and advantages for all passengers and the operator (e.g. shorter boarding time) – or classical high floor railway coaches with steps. The second case will be the existing situation within the next decades in long distance travelling, especially in high speed traffic. Here we need some kinds of boarding assistance devices to make vehicles accessible especially for wheel chair users. Many different types of railway vehicles and many different platform highs lead to the today's situation of having many different solutions for making boarding accessible. The PubTrans4All project tries to find a standardized boarding assistance device that can be implemented in as many coaches in Europe as possible and can be used at a variety of different platform highs. Additionally the project tries to find a technical solution for as many of the users as possible.

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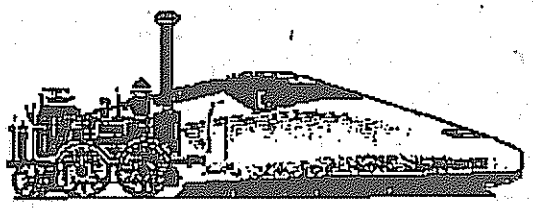

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