



Accessibility of Public Transport for All

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CONTENT

1 INTRODUCTION

This text follows other course materials in the digital library. It adds some terms and lists other characteristics of disabled persons. There is also information to the case study in the end of course.

Accessible environment generally is not only for people with disabilities, but for all users of publicly accessible environment, buildings, public transport systems, etc. This is in accordance with the approaches and strategies of Universal design, Design for all, etc. People with disabilities have the greatest need for environmental adaptations, but other people without disabilities will also benefit from the measures. E.g. a mother with a baby pram or a person with walking sticks will also be happy to use the lift to the railway platform or low-floor bus or train. The visual information system in the vehicle is not only for the deaf people, but for all passengers (visitors) who do not know the city or urban mass transport system well.

In author´s opinion, it is necessary to release the term "accessibility" from its historical conception and links to people with disabilities and to understand it in a new point of view as a quality and comfort for all users of the public environment. This concept is a logical response to the changing demographic structure of the population, the development of technology, technology and societal trends.

When designing an accessible environment, it is necessary to apply a systemic approach to ensure a synergistic effect. This means, e.g. design the accessible whole transport chain from place *A* to place *B* and solve – if possible – all barriers within it.

When designing accessible public transport (PT), it is necessary take in account all of its subsystems: fleet, infrastructure, information, orientation and communication systems for passengers, personal, additional services related with public transportation and also transportation technology.

2 TERMS

In this chapter are defined some additional terms not mentioned in the "Handout" study material. The special (urban) transport service has crucial importance in cities where there is not accessible public transport or where is not public transport at all.

2.1 SPECIAL URBAN TRANSPORT SERVICE

The author defines it – in the conditions of the Czechia – as "*a transport system in the city or its immediate surroundings intended exclusively for disabled persons, their guides or senior citizens*". It is not public transport but an "on-demand" / "demand responsive" service.

In Czechia, special urban transport services (SUTS) are operated mainly in large cities (Prague, regional cities), but also in some smaller ones (e.g. district cities).

Abroad, e.g. in West European countries (Germany, Great Britain, France, Spain, Belgium), Scandinavian countries (Sweden, Finland), in the USA or Japan, taxi services or special transport services for people with disabilities are much more operated thanks to subventions from the budgets of local governments, the state, the region or health insurance.

In the USA, Australia or Japan, the term '*paratransit*' is used for this transport system, defined as '*a mode of public transport providing services particularly for persons with disabilities or other persons with special needs – e.g. seniors, passengers with young children*'. Another definition describes this system as '*a type of on-demand transport service – one of the subsystems of a multimodal public transport system with a wider range of services and a position at the interface between traditional public and individual transport*' (1). In Scandinavia, it is Special Transportation Services' or 'Special-needs transport services'.

In the USA, from where this mode of transport and the term itself has spread, 'paratransit transport' is characterized by the following attributes:

- a fleet of vehicles adapted for the transport of wheelchair users or other disabled persons (low floor, boarding platform, interior layout),
- routing: fixed between locations with a higher potential for transporting PRMs or transport on demand (door-to-door),
- special tariff,
- limited operating hours,
- defined area of operation (city, agglomeration; intercity rather rarely),
- different operators (city transport company, other entity, e.g. Ltd., association, NG-organizations etc.).

More about special urban transport services – see e.g. conference paper (2).

2.2 CRITICAL POINT

The author of this text defines a critical point for a passenger with reduced mobility as any place or situation of increased risk:

1. a safety hazard: e.g. the interface between the platform and the track (the part of the railway not accessible to the public), interface between the pavement and the roadway at a pedestrian crossing, the access path from the passenger hall in a station to the platform;
2. loss of orientation: pedestrian crossing, public transport stop, cycle path with mixed pedestrian and cyclist traffic, entrance to large areas (e.g. station hall), underpass on the access to the railway platform, etc.;
3. decreasing of transport quality: in case of incorrectly processed order for transport of a passenger in a wheelchair; when missing a guaranteed barrier-free service; in case of changing in transfer hubs, if the specifics of the PRM movement are not considered, etc.

2.2.1 Relationship between critical point and barrier

Critical points – as its definition implies – is a more general term than the term barrier. A critical point becomes a barrier if the conditions for making it barrier-free are not met, i.e. in particular safe and, if possible, independent use by the PRM. A pedestrian crossing meeting the required parameters (e.g. tactile walking surface indicators for blind persons, curb height and slope for wheelchair users) is not a barrier. On the other hand, if a pedestrian crossing with a lowered curb lacks tactile walking surface indicators at the interface between the road and the pavement (warning, signal strips with continuity with the guide lines), such a crossing is a barrier for blind people (decreases their safety).

Note: There will always be critical points in the urban environment and in the public transport chain. However, barriers can be removed by design or by environmental adaptations.

2.2.2 Critical points for different passengers

Different passengers, different PRM perceive a critical point differently. What is a critical point for a wheelchair people, it may not be, and often is not, a critical point for a visually impaired person using a blind cane (white stick). Typical examples are vertical differences (stairs) or horizontal differences – gaps between the vehicle and the boarding edge of a public transport stop or railway platform.

Table 1 offers possibility of reflection over critical points in PT vehicles, selected infrastructure and information, orientation and communication systems for passengers. Some aspects influencing public transport accessibility are listed in the first column.

Critical points will vary for different groups people with reduced mobility. Some critical points (barrier which is perceived as critical point) for wheelchair people may not be barrier for visually impaired people which used white stick. You can fulfill this table – put symbol × in case 'is not critical point' and ✓ in case 'is critical point'.

Tab. 1 Critical points for different PRM groups

	Moving disability	Visually impairment	Hearing disability	Seniors 65+	Pregnant women	Children accompany
Vehicles						
Floor height						
Reserved place						
Information IS						
Infrastructure						
Pedestrian crossing						
Access to PT stop						
PT stop equipment						
Information on stop						
Platform edge height						
Information, orientation and communication systems for public						
Visual						
Acoustic						
Printed information						

What do you see? You can add other potential critical points in vehicles, infrastructure and information / orientation / communication systems.

2.3 WHO IS THE BARRIER-FREE ENVIRONMENT FOR?

As mentioned, term 'people with reduced mobility' include not only people with disabilities but also many others. In most European countries, PRMs include people with mobility impairments, sensory and intellectual disabilities, elderly people (65+) and pregnant women. In the Czech Republic, this group also includes people accompanying baby prams / children up to 3 years of age. Table 2 gives an overview of the PRM categories in the Czech Republic, Germany and Poland (3). As the overview shows, deaf-blind people are not "de jure" PRMs in any of these countries. In Germany, on the other hand, PRM also includes persons with heavy luggage, persons of short stature, persons with a walker and / or other aids, persons with reduced grasping abilities and persons experiencing problems with concentration and orientation.

Tab. 2 PRM categories in Czechia, Poland and Germany

PRM category	CZ	PL	DE
persons with physical disabilities	✓	✓	✓
visually impaired persons	✓	✓	✓
persons with hearing disabilities	✓	✓	✓
deaf-blind persons	×	×	×
persons with intellectual disabilities	✓	✓	✓

persons experiencing mental health problems	×	✓	✓
persons with holistic developmental disorders	×	✓	×
persons with disabilities caused by neurological disorders and injuries	×	✓	✓
persons with disabilities caused by chronic diseases	×	✓	×
persons with multiple disabilities requiring a high level of support	×	✓	×
elderly people (65+)	✓	×	✓
pregnant women	✓	×	✓
accompany for children up to 3 years of age / in baby pram	✓	×	✓
persons with heavy luggage	×	×	✓
persons of short stature	×	×	✓
persons with a walker and / or other aids	×	×	✓
persons with reduced grasping abilities	×	×	✓
persons experiencing problems with concentration and orientation	×	×	✓

Table 3 presents historical overview of regulations, directives and standards regulating issues of public areas or transport related to selected countries since the given year. They mostly cover the definitions of terms 'barrier', 'accessibility', 'disability' or 'person with disability / person with reduced mobility' (PRM). Some countries have addressed the issues of disability by regulations starting in the late 1970s and early 1980s; the predecessors to ADA (Americans with Disabilities Act) were also Architectural Barriers Act (1968) or Rehabilitation Act (1973). Another approach which has been applied since the 1990s in the USA is so called 'Adaptable Design' using common elements to create barrier-free environment without drawing attention to them. Using special elements or adaptations is recommended only in necessary cases. Some of the regulations were amended or changed the name, e.g. in UK (DDA → Equality Act, 2010) or USA (ADA → ADA Amendments Act, 2008). for details see (5).

Tab. 3 International laws and standards

Country	Law / Standard	Year	Term definition
Australia	Disability Discrimination Act, DDA	1992	Disability, PRM
Austria	Bundes-Behindertengleichstellungsgesetz	2006	Accessibility, disability, PRM
Belgium	Zugänglichkeitserlass	2007	Disability, barrier-free, PRM
Czech Republic	ČSN 73 4959	2009	Accessible rail platform for PRM
Croatia	Pravilnik 151	2005	Accessibility
EU	Regulation 1107/2006	2006	PRM (in air transportation)
Germany	Behindertengleichstellungsgesetz	2002	Barrier-free
Ireland	Disability Act	2005	Universal design
Japan	Shougaisha Kihonhou**	1993	Person with disability
Norway	-	1997	Universal design

Poland	Karta praw osób niepełnosprawnych	1997	Person with disability
PR of China	PPD*	1990	Disability, PRM
Slovakia	Technické podmienky 10/2011	2011	Barrier
Serbia	Zakon 33/2006	2006	Person with disability
Spain	Ley 51/2003	2003	Universal accessibility
Sweden	Diskrimineringslag Nr. 567/2008	2008	Disability
Switzerland	Behindertengleichstellungsgesetz	2004	Disability, PRM
UK	Disability Discrimination Act, DDA	1995	Disability
USA	American with Disability Act, ADA	1990	Disability

* Law of the People´s Republic of China on the Protection of Person with Disabilities;
** Revised version Shintai Shougaisha Kihonhou (1970) – Japanese Disability Law.

2.4 THINK ABOUT …

1. Even more people / categories are included to PRMs in other European countries. What groups of persons belong to PRM in your country?
2. What regulation defines PRM in your country?
3. You can make your own table with categories according your country legislation.

3 PRM CHARACTERISTIC

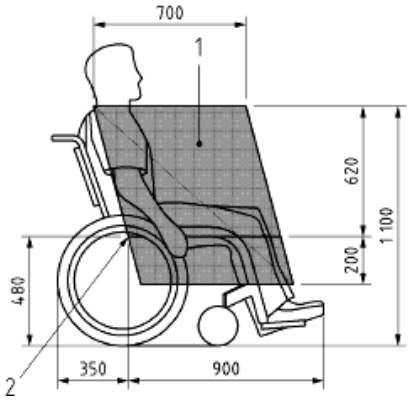
Although it is necessary to design the public environment for all its users, especially according to UD principles, it is good to know the basic specifics of PRM, especially wheelchair users, visually impaired and deaf / hard of hearing people. The following text lists some of this characteristic which influence the designing of a barrier-free environment in the city and in transport as well.

3.1 PEOPLE WITH MOBILITY IMPAIRMENT

This group includes not only people in wheelchair but also other people with walking difficulties, i.e. users of canes, crutches, walkers or other mobility / stability aids). The specifics that characterize and impact the independent and safe movement and orientation of these persons include:

1. **slower speed of movement** (except for people in electric wheelchairs) - to be considered when determining the times required to cover distances – at pedestrian crossings, when changing between connections or moving between places in a transfer hub, etc.;
2. **limited use of both hands** – when opening, operating and other operations, wheelchair users, if go alone, have not both hands but only one hand, as the second hand controls the electric wheelchair;
3. **reduced visual horizon** – both for orientation and for reading texts; wheelchair users sit at a height of 450-500 mm; at this height there are objects and obstacles such as bicycle racks, advertising boards, urban furniture or greenery separating the roadway from the pavement; this results in a different view of the surroundings (both forward and sideways), but can also cause the wheelchair user to be overlooked by the driver;
4. **wider passing space** – a person in a wheelchair or with a rollator (Fig. 3-1) needs a wider space to pass than a pedestrian;
5. **less reach area** – a person in a wheelchair has less ability to reach or service objects in their environment (in front of them, above them, beside them) compared to other people - see Fig. 3-2;
6. **larger free surface area** – a person in a wheelchair needs a larger free maneuvering area to move, turn in place;
7. **limited horizontal and vertical differences**, longitudinal and transverse gradients – if gradients and height differences are higher than norm value, the safety of a wheelchair people may be reduced or their independent movement significantly limited;
8. **more sensitive perception** of the surface quality of walking surfaces – wheelchair people perceives the quality of pavements and other publicly accessible surfaces much more sensitively than others pedestrians.

Fig. 3-1: Rolator – popular mobility aid for seniors



Obr. 3-2: Reach area for wheelchair people

3.2 PEOPLE WITH HEARING DISABILITIES

To this group belong not only deaf persons and who is hard hearing but also people who lost hearing. People who lost hearing in later age were learned spoken speech and so they can her to use it. There are other less known types of hearing disability e.g. hypersensitivity on common sounds (Hyperacusis) or ear murmurs (Tinnitus atrium). To this group also belong people deafblind people. It is important to know that all above mentioned disability is different type of impairments with different consequences for life of these people and their communication abilities.

Compared to the general knowledge of the needs of people with visual or mobility impairments, the issue of people with hearing impairments is the least known. The following text therefore aims to clarify some basic concepts and facts.

1. **deaf person:** a deaf person who has lost his / her hearing during his / her lifetime, i.e. after developing spoken language, acquiring the language and consolidating the necessary knowledge. Even if a deaf person has a good command of English, in the absence of auditory feedback, the speech is somewhat different from that of hearing people (articulation, loudness, rhythm or intonation of speech), which may give the hearing person the false impression that he / she is a person with a mental disability, drunk, etc.
2. **hearing impaired people:** a person with residual hearing; people with mild to moderate hearing impairment are usually proficient in Czech and can pick up spoken speech with technical aids in varying quality (depending on the acoustic conditions in the environment). They usually need to echo to understand speech well, especially in acoustically unsuitable conditions.
3. **deaf person:** a person with total hearing loss.
4. **Induction loop:** a technical device that amplifies a signal (the spoken word) by electromagnetic induction, enabling hearing impaired people to hear with better quality using hearing aids.
5. **hearing aid:** a compensatory aid enabling hearing impaired persons to hear the spoken word and other sounds.

6. **cochlear implant:** an electronic sensory substitute that bypasses damaged inner hair cells; using a bundle of electrodes, electrical auditory impulses are sent through the auditory nerve to the center where further speech processing takes place. More (TV program (2006) in Czech) can you see there.

Note: A cochlear implant corrects a hearing loss in a completely different way than hearing aids: a microphone picks up speech, a processor processes it into electrical signals, and a cable carries them to a transmitting coil attached to a magnet, under which the "body" of the implant (which also contains the magnet) is under the skin. The implant contains a receiver that receives the encoded sounds in the form of electrical signals. A bundle of electrodes ending in the ossicle (cochlea) sends out electrical impulses, creating a signal that is transmitted to the brain via the auditory nerve. The difference between the functioning of hearing aids and implants is that with a hearing aid, the sound wave that arrives in the form of speech to the middle ear is acoustically amplified by the hearing aid, while the implant electrically stimulates the auditory nerve.

7. **Signed English:** a form of communication often used as a compromise when a deaf person needs to communicate with a hearing person, or vice versa when a hearing person knows some signs (not sign language) and is trying to communicate with a deaf person.

Note: When using signed Czech, Czech sentences are pronounced aloud and without voice, and at the same time the corresponding signs are shown, "borrowed" from the Czech sign language vocabulary. It is Czech encoded into signs, but incompletely, because not all grammatical aspects of Czech are expressed. The order of the words in the sentence is preserved and some prepositions are expressed, but e.g. there is no expression of endings.

8. **Sign language:** generic, more generally term for Czech sign language and signed Czech.
9. **Czech sign language:** a natural and full-fledged communication system consisting of specific visual-motor means, i.e. hand shapes, hand positions and movements, facial expressions, head and upper torso positions. Czech sign language has its own grammatical rules, differs from Czech in the way it expresses time, space, questions, sentence structure and phraseology. Even the lexical vocabulary of sign and Czech words does not always coincide. Sign language can express several characteristics of the reality being communicated at the same time.
10. **Communication systems of deaf and deafblind persons:** they are based on Czech sign language and include: signed Czech, finger alphabet, visualization of spoken Czech, written recording of spoken speech, Lorm's alphabet, dactylography, Braille using tactile form, tactile echoing and the Tadoma vibration method.

3.3 PERSONS WHO ARE DEAFBLIND

Although deafblind persons are not listed in Decree No. 398/2009 Sb., they include to PRM. The most of these persons are not completely blind and completely deaf. Among the specific characteristics of deafblind persons are:

1. use of a red-white cane, movement with a guide or guide dog – depending on the degree of impairment of both organs (eyes, ears); deafblind persons with severe visual impairment use a red-white cane in a similar manner and technique as blind persons;

2. the use of guide lines and tactile adjustments – in the case of severe visual impairment, in a similar way to blind persons;
3. limited response to acoustic (visual) stimuli / signals – e.g. warning acoustic signals of approaching vehicles, closing doors, etc.;
4. preference for different ways of communication – depending on the visual impairment.

The above-mentioned characteristics also imply slower movement and more difficult orientation in the environment, as well as communication and information difficulties.

3.4 PEOPLE WITH VISUAL IMPAIRMENT

Blind persons, persons with others visual impairment (partially sighted) belong to this group of PRM. To understand the basic aspects related to the designing of accessible environments and conditions for the independent and safe movement, orientation and information gaining of people with visual impairments, it is necessary to remember the following:

1. the blind person uses a long white cane or a guide dog to move around – the tactile arrangements on the pedestrian ways and on other relevant places must correspond to this;
2. the use of hearing and touch – some information, especially orientation and operational information (in public transport), can also be communicated to a blind person acoustically (spoken word) as well as tactilely (in the form of Braille or relief signs / pictograms);
3. blind people with long white cane goes along guide lines (often also in the opposite direction to other pedestrians) – it is important for right designing of guiding lines. The guiding lines must be clear even in winter – hence the need to reduce of guiding lines in the public area to necessary cases – crossings, railway platforms, etc.;
4. a blind person goes at the interface of tactilely contrasting surfaces – using a stick to distinguish changes in surface texture between a normal surface and a tactile surface (domes or grooves);
5. color contrast, size and font type of visual information – very important for people with visual impairments and people with other visual impairments; this includes e.g. color contrast markings on stair treads (in transport buildings), narrow passageways or otherwise dangerous areas, large glazed surfaces, use of sufficiently large, bold letters – all of which will contribute to the safety and ease of information acquisition for people with visual impairments with minimal cost and considerable effect in facilitating movement;
6. higher time requirements - a blind passenger is slower to orientate and move in unfamiliar environments, e.g. when changing between connections, boarding a vehicle, crossing the road; this should also be borne in mind when planning certain technological times in public transport.

3.4.1 Specifics and principles of movement and orientation

People with visual impairments compensate their visual disability by:

1. touch: using a white stick for identifying a tactile arrangements of walking surfaces;
2. touch and feel: reading of information in Braille, relief fonts, numbers or pictograms, etc.;

3. hearing: using an acoustic information system, e.g. acoustic beacons, acoustic crossing signals, acoustic system in public transport means, etc.

Measures which make a public area more accessible and safer for persons with visual impairments include adaptations:

a. tactile – on walking surfaces (pedestrian ways, squares, PT stops, rail platform, etc.) for perception with a white stick;
b. perceived by touch – Braille, relief embossed letters / numerals, embossed plans;
c. color contrast – marking of selected – important or dangerous places, elements, etc.;
d. acoustic – mostly in public transport means, passenger halls, platforms, etc.

3.4.2 It is important to know

- the difference between adaptations (tactile, acoustic) for blind persons and for persons partially sighted, they do not usually use a white stick – for these people are essential color contrast, size and type of letters (font) of visual information.
- a blind person has only touch, supported by a white stick and hearing, with limited ability to identify the location of the acoustic information source.
- a visually impaired person can use rest of sight when moving.

An example of a functional difference is the requirement for the handrail to overhang the last step of the staircase (at least 150 mm) – for their safe movement and stability, this is particularly used by elderly or people partially sighted, while blind people look for a tactilely legible label with information about the platform number in this part of the handrail and track numbers on the right and left.

Note: Sufficient skills and experience are essential for a blind or partially sighted person to move independently and safely in public area and public transport.

3.4.3 Specific terminology

It is good to know some technical terms which are used by designing of barrier-free / accessible area for people with visual impairment.

Orientation point: a permanent place, significant different from the surrounding environment; cleary and easily identifiable by touch or hearing; gives information about location of person with a visual impairment, e.g. about an entrance to a building, a stair wall on a railway platform or a corner of a house.

Orientation sign: additional permanent information tactile, acoustic, exceptionally also olfactory, leading to the correct image of the environment or space – PT stop, platform, street, etc.

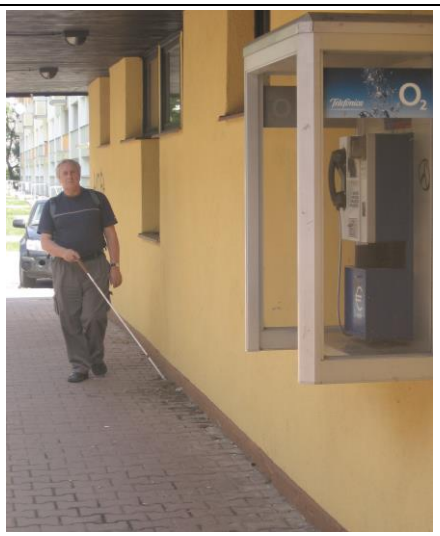
Guiding line: a connecting line of tactilely orientation points; used to guide blind persons with a white cane. According to the character and design are there natural and artificial guiding line.

Natural guiding line: a connecting line between orientation points using the layout of a building (space) created by standard construction activity; it consists of, for example, house

walls, raised lawn borders, fence bases, railings with fixed infill or with a stop for a blind cane. See Fig. 3-4.

Artificial guiding line: a connecting line between orientation points; proposed where other orientation information is lacking, the natural guide line is interrupted or cannot be used to guide a blind person. Examples of an artificial guiding line are a crosswalk guiding line, a signal line, a guiding line with a warning function on the rail platform or an artificial guide line (grooves) in a large open space area (Fig. 3-3).

Fig. 3-3: Artificial guiding line for blind people



Obr. 3-4: Wall of the house - natural guiding line for blind people with white cane

For more information about tactile measures on a pedestrians and other surfaces which use for guiding or informing the blind people with white stick you can see e.g. (5) or (6). Both papers present measures and adaptation for safe and independent moving and orientation of visually impaired persons in from point of view the Czechia as well as from foreign perspective.

3.5 THINK ABOUT…

1. What is the difference between persons with disability (in wheelchair), with visually impairment and deaf persons / who is hard hearing?
2. What limitations have mentioned persons?
3. What conditions or measures do these persons need for their safe and (if possible) independent movement in city area and transportation?
4. What measures are available for these persons in your country?

4 HOW TO CHECK AN PUBLIC TRANSPORT CHAIN ACCESSIBILITY

To design or check the accessibility of the public transport chain, all phases of the transportation have to be considered. Some phase (phases) can be omitted according to specifics of particular journey, city, etc. Especially the initial – preparatory phase (P0) is very important for smooth running of the whole journey.

4.1 TRANSPORTATION CHAIN PHASES

Journey preparation (P0) – finding out information and conditions for the journey, esp. in case of journey people in wheelchair; obligation to book a barrier-free service, possibility or obligation to book a reserved seat on a long-distance service, etc.

Walking from the origin point to the PT stop or to the SUTS[1] boarding point (P1) – finding the safest route (minimum crossings, orientation difficulties, etc.), how distance to the nearest stop.

Access to the stop (P2) – from the surrounding area / incoming route – via a crossing or directly from pedestrian, etc.

Boarding a local or regional transport service (P3) – boarding options in point of view vehicle equipment (low-floor vehicle, boarding platform, etc.).

Transport by local / regional service / SUTS (P4) – including on-board information. This phase means using the urban public service or regional bus and train up to approx. 100 km long journey.

Boarding from the urban / local / regional service (P5) – analogous P3.

Transfer to long-distance service (P6) – conditions of movement, orientation and getting information at the transfer point, possibility get assistance and other services provided by the carrier's / terminal staff, etc. This phase includes access to next (long-distance) service and boarding (analogous P3 with specifications of individual transport mean).

Long-distance journey (P7) – train, plain (coach?) with / without transfer (see P0, P6).

Transport by local / regional service / SUTS (P8) – incl. transfer to the stop or boarding point, boarding on / off the service (see P4), with or without transfer.

[1] Special urban transport service

Walking from the stop to the destination point (P9) – analogous to P2, P1) – how long distance, what conditions for safe and independent walking etc.

4.2 POSSIBLE SOLUTION PROCESS

1. Choose two cities in different countries: it is recommended to choose medium-sized cities (approx. up to 20, 30 K citizens) or cities with urban public transport. Your local knowledge is advantage, but not necessary.
2. Think about a journey parameter: mode of long-distance transport (plane, train, bus), time-period (day, night), passenger (in wheelchair, blind), how many transfers (if any) on the main line), etc.
3. Collect information for checking level of accessibility in individual phases of transport chain. You can use e.g.:
    a. own knowledge of the place, city, public transport system etc.
    b. maps applications – for check walking distance etc. (P1, P9)
    c. carrier / terminal operator / service provider public information on their websites – for evaluate transport / transfer conditions, transport mode, travel time, the need to change the transport means etc. (P0, P3 – P8)
    d. other information source – e.g. for national / EU legislative – rail, air, bus / couch passengers' rights and obligations (if necessary), etc.
    e. emission calculator for passenger transport – you can use ecopassenger[2] (4) for comparing of carbon footprint respectively greenhouse emissions for travel by train or plane.
4. Write a report about your transportation. You can make table with individual phases and their characteristic in accordance with above mentioned phases. Put a short comment for each of phases.
    a. What are general conditions for your planed journey
    b. Where you have found barrier (in individual phases)
    c. What services for passenger are available before and during travel (in terminal, on board etc.)?
    d. Compare conditions – level of accessibility in individual countries, by each carrier.
    e. What would you improve and by what measure in each phase of journey? In your opinion, which measure consider the cheapest and which the most expensive.
    f. Compare an energy consumption and greenhouse emissions for two alternatives of your travel (variant for main line air transport × train).

Note: In this case study it is not necessary to find out in detail e.g. the specific adaptation or existing of measures for the blind persons on the surface walking routes (pedestrian ways) in both cities. The aim of this study and common – collaborative work is to think about the PRM travel and to use publicly available sources of information or personal knowledge to evaluate the conditions for transportation these passengers and the accessibility of their transportation chain.

[2] Working with this calculator is relatively intuitive, similar to the emissions calculator for freight transport.

5 CONCLUSSION

This study text is only an introduction to a wide range of issues accessibility of public transport and related public areas. Some parts of the text are rather more informative and extend basic knowledge. Together with the other materials in the digital library, it serves as a basis for the Accessible Public Transport for All course. Those interested in the issue of public transport / area accessibility can find further information in the list of references below. It mentions only a selection of a few articles and other papers by the author, his cooperators and other experts dealing with UD, rail accessibility for wheelchair users, with SUTS and following topics.

It is good to know that despite all measures, adaptations, application of all Universal design principles, the public transport system as well as a city area will never be fully accessible for all disabled people, especially those with combined or difficult disabilities. There will always be persons who need the assistance or specific measures in some situations when travelling. In such cases it is recommended to use special urban transport service (if is available).

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