

European Approaches to Accessible Transport Systems

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Introduction

The rapid approach of the new millennium is matched by equally rapid changes in the world's economies, social values and technology. Although the world's population is still increasing overall, there are significant differences in growth rates between countries. The low growth rates in the European Union (EU) are resulting in an aged population and by 2020, some 31% of Europeans will be elderly and/or disabled (E&D).

The high and growing number of E&D people with mobility problems suggests that society, politicians and businesses should focus on these problems because they concern a significant part of the population. Moreover, every individual should be concerned too, because we are all vulnerable to age and disability.

People with higher spending power, which includes the more affluent E&D, travel more and their transport requirements can be met by various modes. Short distances can be covered on foot, or using a wheelchair and other aids if necessary, but urban and long-distance travel requires

either private transport and/or use of the various public transport modes. For most travellers, a journey just means using the various transport modes that form the 'travel chain.' But for E&D travellers, the ability to travel independently over the entire journey means that every link in this travel chain must support their special needs. Solving these problems means using a 'systems approach' to transport accessibility.

Elderly and Disabled Users

Transport providers commonly say that they aim to meet their users' requirements, but they often have little or no idea who their users are. The travelling population is not a single market but is a mixed group of all types of people each with varying requirements. Many providers do not realize that a large and growing percentage of their potential users face various mobility difficulties, such as reliance on a wheelchair or walking stick, difficulty walking up and down stairs, etc. In addition, some may have hearing, visual, or cognitive impairments that present another challenge.

Accomplishing a journey, no matter how long or short, in dignity and comfort, requires successful negotiation of every link in the travel chain. Even before taking a single step, the traveller must have easy access to accurate information to be able to plan the journey. Independent mobility means that the travel chain must be barrier free to every traveller.

Special Travel Chain Needs of E&D Travellers

In an effort to systematically identify the requirements of E&D travellers, 17 European organizations established TELSCAN (Telematic standards and co-ordination of ATT systems in relation to E&D travellers), as a European Commission (EC) research project financed by DGXIII (<http://hermes.civil.auth.gr/telscan/telsc.html>). This group selected a number of major impairment categories for study including: lower limbs, upper limbs, upper torso, coordination/dexterity, physical strength, sight, hearing, language, speech, and cognitive functions.

As part of a travelling task model, TELSCAN has defined the main requirements in terms of travel information and impairment categories for the major transport modes, including private cars, adapted cars/vans/minibuses, taxis, buses/trams, subways/trains, ships, and aeroplanes. The result is a series of tables describing the main impairment category requirements for each travelling task and each transport mode (Table 1).

Current work aims to develop both checklists for main impairment groups as well as guidelines for content and presentation. The results will be published in June 1999, most probably at the above URL. Hopefully, this information on existing facilities and ways to meet E&D requirements will help transport providers along the entire travel chain to make journeys more enjoyable for E&D people.



The Heathrow Express is a model of full E&D accessibility.

(Author)

Table 1 Summary of Main Requirements of Elderly and Disabled Travellers in Subway/Train

Task	User Needs	Task	User Needs
Trip planning <i>General</i>	<ul style="list-style-type: none"> • Dependent on disability-planning assistance with wheelchair, embarking/disembarking, way-finding, asking directions, transfer to other modes • Support where needed without accentuating 'disabilities' • Improved sources of planning information (simple, concise information, use of symbols/pictograms, etc.) • Human assistance • Alternative means of planning train journey • Non-verbal methods of obtaining and giving information 	<i>Taking seat</i>	<ul style="list-style-type: none"> • Automatic seat detection
<i>Identify facilities and accessibility en route</i>	<ul style="list-style-type: none"> • Accessible information on availability and location of such devices in station and/or on train • Information before or during trip that supports independent movement around station 	<i>Using toilets</i>	<ul style="list-style-type: none"> • More obvious location, larger
<i>Find destination and information</i>	<ul style="list-style-type: none"> • Facilities for clear and easy identification, understanding and memorizing location of trip goal • More reliable system 	Travelling on train — communication	<ul style="list-style-type: none"> • Inform others of communication difficulty and be able to use non-verbal methods —sign language, written text or other visual method
<i>Choose travel scheme: departure</i>	Ability to compare different travel schemes for same destination, define choice criteria, make decision	Trip information <i>Finding whereabouts</i>	<ul style="list-style-type: none"> • Visual presentation of the same information, and/or better auditory announcements • Accurate information on one's own stop • Clear & easy identification of station (e.g. adequate panels & signs)
<i>Consult map or travel scheme</i>	Clear and easy identification of destination and/or route within map	<i>Hearing and understanding announcements</i>	<ul style="list-style-type: none"> • Clear auditory information and complemented by visual display of same information (both in station and on train)
Ticketing <i>General</i>	Improved sources of ticketing information (simple, concise information, use of symbols/pictograms, etc.)	<i>Identifying visual display (stations)</i>	<ul style="list-style-type: none"> • Clear and easy identification of different visual displays • Detailed plans of each station and interchange terminal
<i>Buying and validating ticket</i>	<ul style="list-style-type: none"> • Alternative means of buying ticket or locating ticket window • Alternative methods of user input and system output • Automatic means of paying for ticket • Non-verbal communication (one way or two-way), e.g. sign language or other visual method 	<i>Detecting arrival point</i>	<ul style="list-style-type: none"> • Information on station before and at arrival in different output forms
<i>Approaching ticket desk</i>	<ul style="list-style-type: none"> • Clear and easy identification of ticket desk via adequate signs, etc. • Easy communication between users and operators 	<i>Changing travel schedule</i>	<ul style="list-style-type: none"> • Travel according to trip planning • Clear and accurate information on schedule deviations • Solutions and facilities for waiting
<i>Using ticket machine/ stamping ticket</i>	<ul style="list-style-type: none"> • Easy and explicit controls • Providing help for using ticket machine when required • Clear and easy identification of validating machines 	Handling emergency situations <i>Following station announcements</i>	<ul style="list-style-type: none"> • Visual indication of nature of emergency and action to take
Access <i>Transferring wheelchair</i>	<ul style="list-style-type: none"> • Standardization of wheelchair/access sizes 	<i>Evacuating train</i>	<ul style="list-style-type: none"> • Help with evacuation • Staff and passenger awareness training
<i>Finding train station/platform</i>	Improved localization methods	Handling during rush hours	<ul style="list-style-type: none"> • Non-reliance on staff for information
<i>Entering/exiting train</i>	<ul style="list-style-type: none"> • Means of informing staff of need for assistance • Method to enable easier identification of platform or carriage, location/heights/gaps • Easier door opening system • Visual warning 	Dealing with weather and environmental conditions	<ul style="list-style-type: none"> • Visual presentation of same information, and/or better announcements
		Using advanced technology <i>Visual displays</i>	<ul style="list-style-type: none"> • Simple, well-designed systems
		<i>Tactile input</i>	<ul style="list-style-type: none"> • Simple, well-designed systems (few keys/buttons with clear layout)
		<i>Sound output</i>	<ul style="list-style-type: none"> • Non-auditory method of information presentation
		<i>Sound input</i>	<ul style="list-style-type: none"> • Non-speech input

(Source: Adapted from TELSCAN table)



The Paris Météor metro has almost no platform gap.

(Author)

Ideally, a caring society should provide solutions for all travellers, but sometimes it is either difficult or impossible to adapt infrastructure (for example, old subway systems) to the needs of the E&D traveller. However, construction of new infrastructure must offer and apply solutions that take the needs of all groups into account.

European Railway Accessibility

Barrier-free access to trams, light railways, subways, and heavy railways in Europe has attracted much attention with various efforts at national and EU levels to promote accessibility solutions. However, Europe has no legislation with powers equivalent to the US Americans with Disabilities Act (ADA). Instead, action groups, public pressure on politicians, and market awareness are the slower locomotive of change.

The combined efforts of EU countries via the EC have contributed to systematizing and disseminating knowledge to various countries, especially those where barrier-free access is less developed. Public awareness on E&D issues is growing in

Europe and COST 335 is a good example. This EC initiative aims to produce a best practice guide for governments and railway operators on achieving full accessibility to their services and facilities.

Similarly, European Directive 96/48/EEC on the interoperability of the trans-European high-speed railways, which is based on Article 129d of the 1957 Treaty of Rome,

mandates technical specifications for interoperability and provides a basis for including passenger accessibility in design of infrastructure and rolling stock.

There are many stand-alone accessibility solutions in Europe but there are few good examples using a systems approach to the travel chain. The ideal system solution has the following basic elements:

Adequate and easy-to-understand pre-travel information:

The information content, quality, format, and availability should be consistent, and ticket reservation should also be possible.

Full access to station: The journey from the origin to the station must be fully accessible too.

Fully accessible station: All the station facilities, including the station entrance, ticket office, waiting areas, toilets, public spaces, public telephones, information and signs, etc., must provide full access.

Fully accessible carriages: If the railway carriages are not level with the platform or if the gap is too large, access must be available by an easy-to-use ramp, wheelchair lift, or other aids. Simple luggage transfer is another pre-requisite. Mobility inside carriages must be unimpeded with



The Docklands Light Railway has colour coding and clear information displays.

(Author)

corridors wide enough to allow free passage of wheelchairs, convenient toilets, clear information systems, and a safety system for securing a wheelchair while travelling.

Improved staff training and awareness: All staff must be trained about safety and the need to respond with sensitivity to the special requirements of E&D travellers.

Fully accessible cities and buildings: Having arrived at the destination, all the city facilities that travellers enjoy, such as libraries, cinemas, concert halls, restaurants, etc., must also offer full access to every group.

Some examples of good systems are described briefly below.

The 185-km TAG light rail network in Grenoble, France, which runs in the city and out to the rural areas, has adopted a colour-contrast system for handrails and bell pushes as well as for information displays, making them easy to use by the visually impaired. Moreover, a boarding ramp at the central door provides easy access on request.

The 21.7-km Docklands Light Railway line in London is another example of an

accessible system where the vehicle floor is the same level as the platform with a gap of about 8 cm. Colour coding and information displays are also good. All the stations are fully accessible to wheelchair users by ramp and elevator.

The new *Météor* metro line in Paris is a good example of a fully accessible subway system. There is almost no gap between carriages and the platform, and glass barriers protect people waiting on the platforms. The stations themselves are also fully accessible.

The *Heathrow Express* (see *JRTR* 19, pp. 20~24) high-speed air-rail link between Heathrow Airport and Paddington Station in the West End of London is probably the best example of its type catering for different disabilities, but express operations between the two termini certainly simplifies the problems.

Many national heavy railway systems offer various examples of carriage accessibility systems such as wheelchair lifts (French National Railways and Swiss Federal Railways) and rotating platforms (Belgian National Railways). One important modification for long-distance journeys is the number and location of toilets for

wheelchair users.

Most new transport infrastructure projects consider the needs of E&D travellers. For example, the new heavy metro system in Athens is designed with full accessibility for wheelchair users and the recently announced new light rail system in Thessaloniki will be constructed with full access, although no such provision existed at the first call for expressions of interest some years ago.

Accessible Infrastructure for All

There are good social, political, and market reasons for fully accessible public transport infrastructure in the EU (and worldwide).

To conclude this article, I would like to present some basic policy recommendations for achieving the above aim:

- Establishment of accessible travel chains requires a systems approach. The whole travel chain from origin to destination must be made accessible, including pre-trip information, route to first transport mode, subsequent modes, public spaces and buildings.



Duisburg railway station in Germany has tactile guideways to orientate people with vision impairments. (Author)



Lisbon Metro stations have Braille maps for visually impaired travellers. (Author)



Wheelchair lift on French National Railways (COST 335)



Wheelchair lift on Swiss Federal Railways (COST 335)



Wheelchair 90° rotating platform on Belgian National Railways (CARA)

- Our so-called information society must be used to create user-friendly systems that take the needs of E&D travellers into account. Information content and usability must be implemented in all design content.
- Design guidelines and standards facilitating inter-modal travel by E&D people and accessibility to public spaces and buildings must be developed and adopted. However, it is important to avoid the trap of adopting standards that force designers into rigid patterns and stifle creativity. Carefully considered guidelines are much more useful than standards, which should be provided only when absolutely necessary.
- More research is needed towards effective implementation of the 'design for all' concept. More information on this subject can be found at the following URLs: <http://www.stkes.fi/include> and <http://www.stakes.fi/cosb229b.HTML>. The research principle should aim to:
 - (a) Develop solutions and systems for more accessible transport infrastructure, including routes, modes, stations, public spaces, and buildings.
 - (b) Develop individual disability assistance systems to facilitate a more effective use of existing infrastructure. A good

example is the 'go everywhere' wheelchair initiative of the EU TIDE programme and, more specifically, the TRANSWHEEL project (<http://hermes.civil.auth.gr/transwheel>).

Although the ADA is a strong legislative instrument pushing barrier-free access in the USA, there is no such push legislation in Europe, and it probably could not be adopted. Instead, awareness of social, political, and market forces is driving new developments.

One brave step that the EU could adopt would be to require full access for E&D travellers as one of the criteria for financing transport infrastructure projects.

Since meeting the special requirements of all groups with disabilities is difficult in practice, new systems under development should attempt to cover the requirements of the largest groups of the E&D population

so that the systems are directly accessible and usable. The needs of other disability groups should be met by special provisions such as assistance from trained staff, and by making the systems adaptable to the specific needs of each individual, when possible.

Finally, it is important to realize that E&D-friendly transport is friendly for all users and has a positive business impact. ■



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